CITY OF LUDINGTON MASTER PLAN

Adopted July 11, 2016

ACKNOWLEDGMENTS

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Planning Commission	Joe Moloney Roger Starr Monica Schuyler Becky Cain Mike Lenich John Kreinbrink Raymond Madsen Meaghan Greene Kathy Winczewski
City of Ludington Staff	John Shay, City Manager Carol Ann Foote, Planning/Zoning Administrator Heather Tykoski, Community Development Director

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CITY OF LUDINGTON
MASON COUNTY, MICHIGAN

RESOLUTION APPROVING THE ADOPTION OF THE MASTER PLAN

At a regular meeting of the Ludington City Council held on July 11, 2016, the following Resolution to adopt the 2015 Master Plan was considered ad adopted:

A RESOLULTION APPROVING THE 2015 MASTER PLAN

WHEREAS, the Michigan Planning Enabling Act, MCL 125.3801 (MPEA) authorizes the Planning Commission to prepare and periodically update a Master Plan for the use, development and preservation of all lands in the City; and

WHEREAS, the Ludington Planning Commission prepared an updated Master Plan and submitted such plan to the Ludington City Council for review and comment; and

WHEREAS, the Ludington City Council received and reviewed the proposed Master Plan on March 21, 2016 and authorized distribution of the Master Plan to the Notice Group entities identified in the MPEA; and

WHEREAS, notice was provided to the Notice Group entities as provided in the MPEA;

WHEREAS, the Ludington Planning Commission held a public hearing on July 5, 2016 to consider public comment on the proposed Master Plan, and to further review and comment on the proposed Master Plan; and

WHEREAS, the Ludington City Council finds that the proposed Master Plan is desirable, proper, and reasonable and furthers the use, preservation, and development goals and strategies of the City;

NOW, THEREFORE, BE IT HEREBY RESOLVED AS FOLLOWS:

1. Adoption of the 2015 Master Plan, The Ludington City Council hereby approves and adopts the proposed 2015 Master Plan, including all of the chapters, figures and maps and tables contained therein. Pursuant to MCL 125.3843, the Ludington City council has asserted by resolution its right to approve or reject the proposed Master Plan and therefore the approval granted herein is the final step for adoption of the Plan.
2. Effective Date, the updated Master Plan shall be effective as of the date of adoption of this resolution.

YEAS: 7

NAYS: 0

ABSTAIN: 0

ABSENT: 0

CERTIFICATION

I, Deborah L. Luskin, Ludington City Clerk, do hereby certify that the foregoing is a true and original copy of a resolution adopted by the Ludington City Council at a regular meeting hereof held on the 11th day of July, 2016.

Deborah L. Luskin

Deborah L. Luskin, CMC
City Clerk

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CHAPTER 1 - INTRODUCTION

This Master Plan is the result of a unique, multi-jurisdictional planning process called *Resilient Ludington*. *Resilient Ludington* brought the City of Ludington, Pere Marquette Charter Township, Hamlin Township, and Mason County together to address shared issues, plan for the future of the entire Ludington Community, and investigate how the Community could better respond to uncontrollable external conditions like the impacts of global climate change and an uncertain economy. Ludington's last Master Plan was created by Williams and Works in 2004 and updated in 2010. The previous Master Plan contained a thorough description of the conditions of the community and identified a variety of important community goals.

Many of the goals from the *2010 Comprehensive Plan* update have been realized and a number of new community challenges have emerged in the past five years. While conditions within Ludington have changed over time, much of the *2010 Comprehensive Plan* remains valid and applicable to the City today. Therefore, this version of the *City of Ludington Master Plan* is intended to build upon the past plan and its update, using direct excerpts and revised language where appropriate.

PURPOSE OF THE MASTER PLAN

The purpose of the Master Plan is to serve as the official document used to guide the future development and growth of the City and the management of its resources. The Master Plan provides the framework and basis for future decision making and establishes a vision and direction for the City. The Master Plan also:

The purpose of the Master Plan is to serve as the official document used to guide the future development and growth of the City.

- Identifies and evaluates existing conditions, characteristics, community values, trends, issues, and opportunities as the factual basis for decision making.
- Gives guidance to property owners, citizens, developers, regional and state agencies, and neighboring jurisdictions about expectations and standards for public investment and future development.
- Solidifies the vision for the community.
- Establishes the basis for the zoning ordinance, capital improvements, new policies, and other implementation tools and programs.
- Provides the framework for day-to-day planning and land-use decisions by the City's staff, Planning Commission, and City Council.
- Establishes the basis for the policies and tools that help build greater community resilience.
- Builds an informed constituency that can help support and participate in plan implementation.
- Builds support for the allocation of funding and helps leverage funding from regional, state, and federal agencies.

The Master Plan is intended to be a flexible document that guides growth and development within the City for the next 20 years and beyond while providing the ability to respond to changing conditions, innovation, and new information. In addition to describing where new development should be directed, the Master Plan also identifies:

- Important natural and cultural resources to be preserved.
- Standards to which new buildings should adhere.
- The characteristics of existing neighborhoods.
- Recommended improvements to transportation systems.
- Ways that the community can better adapt to changing climatic and economic conditions.

BUILDING COMMUNITY RESILIENCE

Most communities across Michigan are wrestling with difficult economic, social, and environmental challenges. The shifting global economy and statewide recession are forcing big changes in business practices and employment. State and federal funding is declining and new long-term assistance appears unlikely. Fuel and electrical energy costs are subject to unpredictable fluctuations. Further, paying for basic energy supplies continuously siphons off community resources. Making matters worse, the harmful impacts of extreme weather events on agriculture, infrastructure, and human health are being felt almost everywhere across Michigan.

These are turbulent times for many Michigan communities. However, with planning and preparation, communities can weather the storms and recover, becoming even better places to live and thrive. Through community-wide planning, resilient cities and townships actively cultivate their abilities to recover from adverse situations and events, working to strengthen and diversify their local economies and communications networks, increase social capital and civic engagement, enhance ecosystem services, improve human health and social systems, and build local adaptive capacity.

Resilience

Resilience can be described as the capability of a person or community to withstand and recover from a shock or serious misfortune without permanent disruption. According to the Rand Corporation, community resilience is *a measure of the sustained ability of a community to utilize available resources to respond to, withstand, and/or recover from adverse situations.*[1,2] Communities that are resilient are able to learn from adversity and adapt quickly to change. In general, the most important characteristics of community resilience are: (1) strong and meaningful social connections, (2) social and economic diversity, (3) innovation and creative problem solving capacity, and (4) extensive use of ecosystem services.

Resilience includes adaptive capacity. Adaptation is a critically important part of resilience because it allows us to prevent further harm from disasters and disruptions while making the most of the new conditions. By adapting rapidly to changing circumstances, our communities may not only survive challenges, but thrive.

Communities interested in becoming more resilient assess their vulnerabilities and make action plans to reduce their sensitivities and exposures to hazards of all kinds. For example, local governments can improve building standards to reduce heating and cooling challenges posed by severe temperature swings (cold and heat). Improvements in social cohesion and civic engagement also improve community resilience, by increasing the capacity of volunteer organizations and providing more secure neighborhoods, among other things. Planning processes can help increase civic engagement by improving communications and cooperation between cultural and service organizations and assuring more effective community projects.

To improve economic resilience, communities can work to encourage and support local production of goods and supplies, increasing self-reliance and reducing the flow of funds out of the community. Programs to encourage local investing and entrepreneurship have been helpful in building both employment and production capacity. Local investments, consumption of locally produced products, and locally owned businesses all help to diversify the community's economy, giving it greater resilience.

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[1] *Rand Corporation, Community Resilience. http://www.rand.org/topics/community-resilience.html*

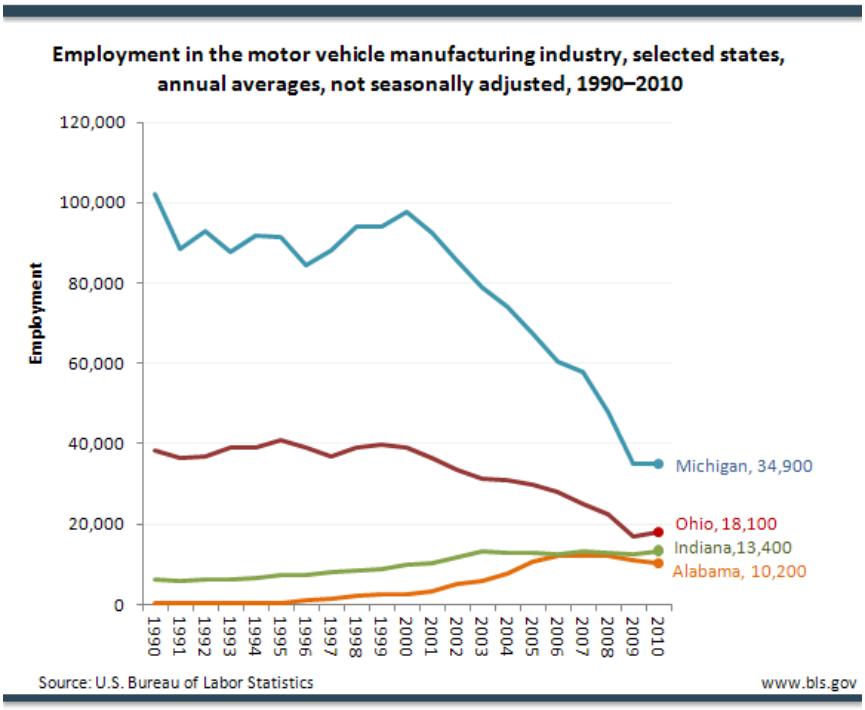
[2] *Focus on Community Resilience. Santa Monica, CA: RAND Corporation, 2012. http://www.rand.org/pubs/corporate_pubs/CP640-2012-04*

Economic Trends and Challenges

Over the past 20 years, technologies such as broadband digital communications and the rapid transport of agricultural and manufactured goods have changed the global economy. Many manufactured goods can now be produced anywhere in the world and transported anywhere else, increasing global competition. As a result, many manufacturing jobs have been and are being moved to countries with the lowest labor and related costs.

The trend toward moving jobs to other, lower-cost countries together with the continuing automation of processes has resulted in the nation, as a whole, losing manufacturing jobs. The impact of this changing trend has been particularly hard on Michigan's economy, which has relied more heavily on manufacturing than most other states' economies. In the vehicle manufacturing sector alone, Michigan lost 65,100 jobs from 1990 to 2010. Overall, between 2000 and 2010, Michigan lost 367,000 manufacturing jobs.[3]

Figure 1



Over the past decade, most communities across Michigan have faced severe economic challenges due in part to a statewide loss of manufacturing jobs combined with a severe national recession. Along with the harsh economic downturn has come a loss in population and a significant loss in real estate values as many people moved to other locations. Ranked 17th of all states in 1970, Michigan was ranked 34th in average household income by 2007.

According to many experts, most of the future economic growth in Michigan will come in the high-technology and services sectors, including health care, financial management, highly-skilled manufacturing, human services, and the food industry. While the recovering manufacturing sector will remain a major component of our state's economy, most of the jobs already lost will not return. Rather than compete for a decreasing number of manufacturing jobs, the experts say, communities and regions should embrace this *New Economy*.

The *New Economy* is a buzz-phrase used to describe the transition from a manufacturing-based economy to a service-based or innovation-based economy. In the new economy, communities and regions are encouraged to build from within, expanding existing businesses and supporting new entrepreneurial enterprises. To rebuild or retain economic vitality, the experts say, communities will need to attract and retain educated and talented people.

There are a number of things that communities and regions can do to improve their economic outlook. Economic development actions recommended by many experts reflect the characteristics of the *New Economy*. For example, the following list presents some of the actions suggested by Michigan State University's Land Policy Institute's (MSU LPI) 2010 training course. All of these actions could, if properly focused, increase community resilience.

[3] *U.S. Bureau of Labor Statistics, BLS Spotlight on Automobiles. October 2011. http://www.bls.gov/spotlight*

Actions We Could Take to Restore Prosperity

1. Diversify our economy.
2. Expand our markets.
3. Embrace the Green Economy and its focus on alternative energy.
4. Promote and support entrepreneurialism.
5. Focus on talent retention and attraction.
6. Focus on population retention and attraction.
7. Focus on effective *placemaking* and place-based strategies.
8. Right-size and maintain our infrastructure.

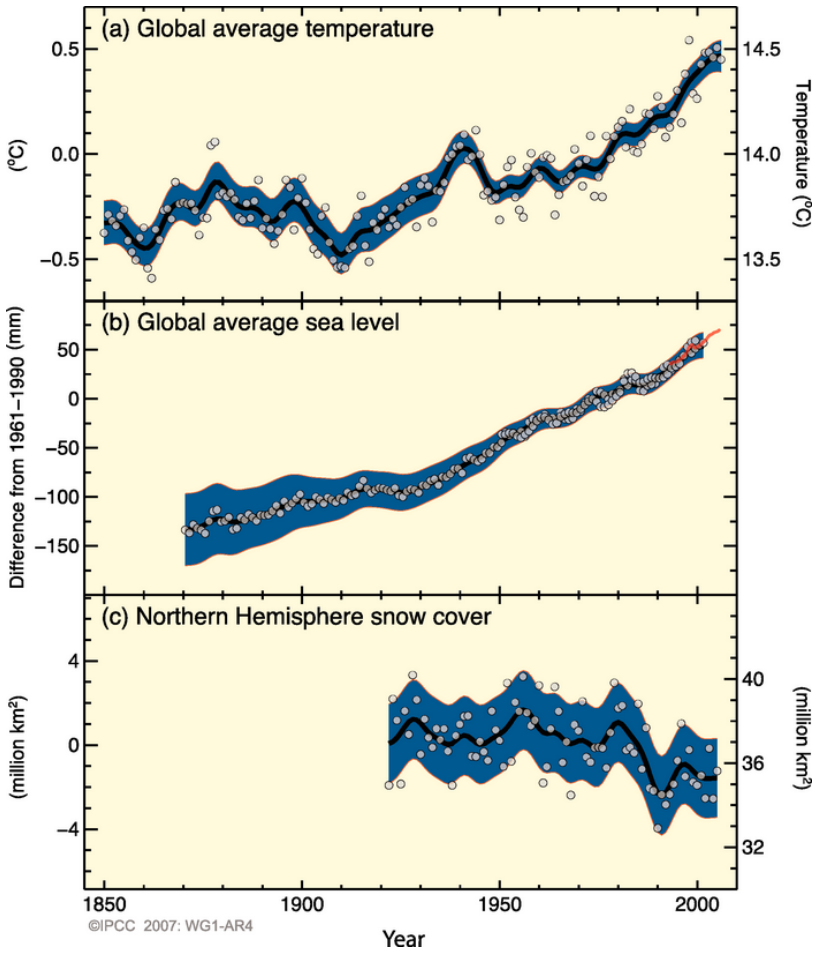
Climate Change and Variability

Climate and *weather* are directly related, but not the same thing. *Weather* refers to the day-to-day conditions we encounter in a particular place: sun or rain, hot or cold. The term *climate* refers to the long-term patterns of weather over regions or large areas. When scientists speak of global climate change, they are referring to generalized, regional patterns of weather over months, years and decades. Ongoing and predicted climate changes refer to the generalized weather characteristics or averages on a regional basis.

As stated by the *Intergovernmental Panel on Climate Change*, significant changes in the Earth's climate have been observed and thoroughly documented. *Warming of the climate system is unequivocal* and is now evident in average air and ocean temperatures, rising sea levels and the melting of ice. Further, more change is expected.

Figure 2 provides a summary of observed changes in several key climate indicators over the last 100 to 150 years, as compiled by the Intergovernmental Panel on Climate Change.

Figure 2



To help predict what the climate will be in the future, scientists are using rapidly improving three-dimensional computer models of the Earth's atmosphere, oceans and land surfaces to understand and predict large-scale changes in climate. These *General Circulation Models* (GCM) have been improved and verified in recent years, resulting in relatively reliable predictions for climate changes over large regions. To help predict climate change at the Earth's surface for smaller regions, scientists apply downscaling techniques.

The *Great Lakes Integrated Sciences + Assessments Program* (GLISA) is a consortium of scientists and educators from the University of Michigan and Michigan State University that is helping to provide downscaled models for the Great Lakes Region in support of community planning efforts like *Resilient Ludington.* According to GLISA, the Great Lakes region has already experienced a 2.3° F increase in average temperatures from 1968 to 2002. An additional increase of 1.8 to 5.4° F in average temperatures is projected by 2050. Although these numbers appear relatively small, they are driving very dramatic changes in Michigan's climate.[4]

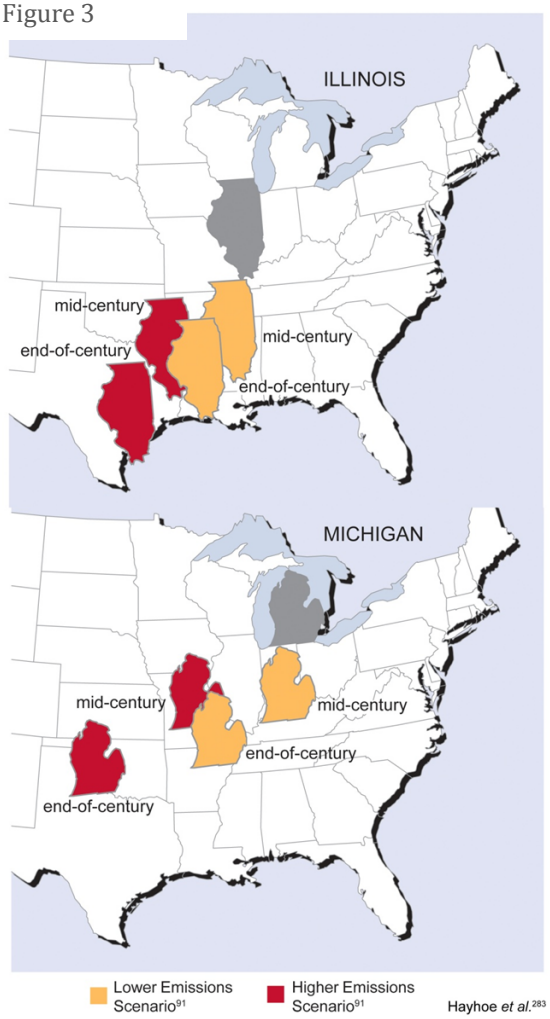
Based on the most recent models, the climate of Michigan will continue to warm, with greater increases in temperature during the winter months and at night. There are a variety of weather impacts expected with this change in average temperatures. For example, storms are expected to become more frequent and more severe. Some of the potential impacts of climate change for Michigan include:

1. Increases in winter and spring precipitation
2. Less precipitation as snow and more as rain
3. Less winter ice on lakes
4. Extended growing season (earlier spring/later fall)
5. Greater frequency and intensity of storms
6. More flooding events with risks of erosion
7. Increases in frequency and length of severe heat events
8. Increased risk of drought, particularly in summer
9. Longer shipping season.

These changes in climate could have a number of both good and bad effects on the greater Ludington area. For example, an extended growing season could help increase crop yields for area farmers. On the other hand, highly variable weather conditions, such as severe storms and flooding mixed with summer droughts, present big challenges to farming. Additionally, increased summer temperatures and a longer summer season could improve the local tourism economy, but at the same time stormwater contamination of the area's lakes could limit their appeal to tourists.

The National Climate Assessment for 2009 (U.S. Global Change Research Program) includes a number of illustrations that help us understand the extent and character of anticipated climate change impacts. The section on the Midwest includes an illustration of projected summer climate for Illinois and Michigan under two different emissions scenarios (see Figure 3). The higher emissions model refers to the continuation of existing discharge levels. Models indicate that Michigan's climate will feel more like present-day Arkansas or Oklahoma by the end of the century.[5]

Figure 3



Model projections of summer average temperature and precipitation changes in Illinois and Michigan for mid-century (2040-2059), and end-of-century (2080-2099), indicate that summers in these states are expected to feel progressively more like summers currently experienced in states south and west. Both states are projected to get considerably warmer and have less summer precipitation.

[4] *U.S. Global Change Research Program. Global Climate Change in the United States, 2009. Cambridge University Press, Cambridge, MA. http://www.globalchange.gov/usimpacts*

[5] *U.S. Global Change Research Program. Global Climate Change in the United States, 2009. Cambridge University Press, Cambridge, MA. http://www.globalchange.gov/usimpacts*

Responding to the impacts of climate change will challenge many different parts of the Ludington Community, from social services to industrial production. The following is a partial list of climate change impacts on community life as described by GLISA and Michigan's State Climatologist:

Rivers, Streams and Lakes

- Decline in cold-water fish populations – changing fisheries.
- Lower river and lake levels and more frequent lake stratification.
- Increases in pollution from stormwater runoff.

Plants and Wildlife

- Increases in invasive species that damage local trees and plants.
- Changes in tree species able to survive in the new regional climate.
- Extended growing season for local crops.

Energy and Industry

- Increases in electrical energy demand due to heat waves.
- Reduced water availability from streams and groundwater.

Transportation

- Increased damage to roads and bridges from flooding and heat waves.
- Additional difficulty for shipping on the Great Lakes due to lower water levels.
- Longer shipping season (less ice).

Public Health Risks

- Increased risk of illness and death due to high heat and humidity.
- Increased risk of water contamination from flooding events.
- Increased risk of disease spread by mosquitoes, ticks and other vectors.

Moving Forward

The *Resilient Ludington* planning process resulted in many recommendations and strategies based on best management practices for promoting economic and climate resilience for a healthy, thriving community. These recommendations and strategies are applied, where applicable, within the *City of Ludington Master Plan*.

CHAPTER 2 – NATURAL AND CULTURAL FEATURES

The City of Ludington is located in Mason County on the western edge of Michigan's Lower Peninsula. Nestled on the eastern shore of Lake Michigan, Ludington's proximity to incredible natural beauty and numerous recreational opportunities, combined with its historic small-town charm, create a unique atmosphere that is cherished by residents and visitors alike. While much of the City's land area is developed for a variety of residential, commercial, and industrial uses, its natural resources provide important quality of life, ecological, and economic benefits and must be carefully considered when planning for the future.

Ludington's history, including roots in Michigan's lumber, shipping, and railroad industries, has helped shape a cultural identity that makes the community a desirable place to live and visit. The City's ties to its past and its waterfront, beaches, and public lands have supported a significant tourism industry for many decades.

Ludington's location on the shore of Lake Michigan contributes to its unique atmosphere. Photo source: United States Army Corps of Engineers.

CULTURAL AND HISTORICAL FEATURES

Prior to European settlement, the Ludington area was inhabited by a number of North American Indian tribes. In 1675, an early explorer and missionary, Jacques Marquette, made the first known European contact at Ludington's location. Pere Marquette Lake was named after the traveler and a memorial currently marks the location of his death on Buttersville Peninsula.

The Ludington area's dense hardwood and pine forests and natural harbor made the location ideal for the logging industry. Formerly called The Village of Pere Marquette, Ludington was platted in 1867 by Milwaukee lumberman James Ludington. The town served as a shipping center for West Michigan lumber. In 1874, the Flint & Pere Marquette Railway reached Ludington, bringing the city into the heyday of the lumber industry and making it home to the world's largest carferry fleet. Lumber barons built grandiose mansions that still line Ludington Avenue today, many of which have been converted to bed and breakfasts or office uses.

Ludington became the Mason County seat in 1873, when county offices were moved from the now-vanished village of Lincoln. At that time, Ludington was the county's most prosperous settlement. The Mason County Courthouse was erected in 1893-94. Grand Rapids architect Sidney J. Osgood designed the Richardsonian Romanesque structure, which was built of Jacobsville sandstone from the Upper Peninsula. The courthouse is listed in the National Register of Historic Places.

Today there are several resources and services in or near the City to educate residents and visitors about the history of Ludington. The Rose Hawley Museum and White Pine Village are operated by the Mason County Historical Society. The museum has meeting facilities, a research library and archives, and exhibit areas where artifacts illustrating county history are displayed on a rotating basis on such topics as local maritime history, lumbering, Indian culture, and industrial and commercial activities.

White Pine Village, located on South Lakeshore Drive overlooking Lake Michigan, has 16 relocated or specially constructed late 19th and early 20th Century-style buildings surrounding the first county courthouse. First opened in 1976, the Village now includes 25 buildings, ranging from a trapper's log cabin built in 1850 to a huge early 20th Century barn that houses historic agricultural displays.

The Mason County Historical Society (MCHS) has enjoyed remarkable support from county residents. In the past, the MCHS was partially funded by a millage that was reaffirmed several times. Now the Historical Society operates on a volunteer and admissions basis. The Society is affiliated with the Mason County Genealogical Society and the Western Michigan Old Engine Club. Currently, the MCHS is working to open the new Port of Ludington Maritime Museum in the former Coast Guard station in the City of Ludington. Plans for the Maritime Museum include a variety of interactive exhibits that will provide visitors an in-depth view of the maritime heritage of the Ludington region.[1]

The Mason County Courthouse was built in 1893-94.

CLIMATE

The influence of Lake Michigan on the climate of the Ludington area is quite strong throughout most of the year. In fact, at one time Ludington boasted the motto, "Ludington: air-conditioned by nature." Because of the prevailing westerly winds coming across Lake Michigan, spring and early summer temperatures are cooler than normally expected at this latitude, while fall and winter temperatures are milder. Ludington experiences few prolonged periods of hot, humid weather or extreme cold. Summers are dominated by moderately warm temperatures with only a few days exceeding the 90 degree mark. Yearly average precipitation is approximately 32 inches.

Local water bodies provide numerous recreational opportunities. Photo source: Ludington Area Convention & Visitors Bureau.

The regional abundance of outdoor recreation is a direct benefit of the natural environment. Area lakes provide the best in boating and water skiing, and Ludington is the number one king salmon port on Lake Michigan. This uniqueness and quality of the environment substantially influences the decisions made by vacationers when choosing to visit the Ludington area. The natural resources around Ludington will continue to be a major

[1] *Port of Ludington Maritime Museum website. (ND). Retrieved from URL http://www.ludingtonmaritimemuseum.org.*

factor in determining Ludington's future by influencing the quality of life, as well as by providing opportunity for economic development. In addition, the climate in the region has proven very conducive for fruit production. Orchards, some vineyards and other small berry farms operate in the Ludington area.

Additional details about how the changing climate impacts the community can be found in Chapter 1 and Appendix E.

TOPOGRAPHY AND SOILS

The topography of Ludington was determined by glacial action. South of Ludington, surface geology consists of moraines composed of *glacial till,* a mixture of sand, gravel and boulders in a matrix of clay and silt. Through the middle and majority of Ludington, the soils are draughty, windblown, sandy soils without much profile development and subject to wind erosion. Slopes vary from moderate to nearly level. Soils in Ludington and surrounding areas are consequently mainly sandy outwash plains with alluvial sands found adjacent to the Pere Marquette and Lincoln rivers. Dune sands are predominant in the City. These have moderate to severe limitations for building, depending on slope. The alluvial soils on the other hand can pose severe limitations on development due to flooding, ponding and frost action. The present topography is generally flat, although this is the result of considerable cutting of hills and filling of gullies since the days of the earliest settlers. Additional information about local soil conditions can be found in the *Soil Survey of Mason County, Michigan*, issued by the United States Department of Agriculture Natural Resources Conservation Service and Forest Service in 1995.

WATERSHEDS AND HYDROLOGICAL RESOURCES

Located on the shores of Lake Michigan and near several inland lakes and rivers, Ludington and the surrounding area have abundant freshwater resources. During the *Resilient Ludington* planning process, the area's bodies of water and their accompanying beaches and waterfronts were identified as some of the Community's most valuable assets. Lake Michigan, its beaches, and the other freshwater resources of the Ludington Community help attract many visitors throughout the year and play an important role in the region's tourism, industrial, and transportation economies. The City of Ludington should seek to protect these assets to the greatest extent possible, partnering with neighboring jurisdictions when needed.

Watershed Protection

The surface water resources in Ludington, specifically Lake Michigan, Pere Marquette Lake, and Lincoln Lake, were identified as some of the most important community assets during the *Resilient Ludington* planning process. Preserving the quality of these resources is important as they enhance residents' quality of life, provide recreational opportunities, provide a wide range of wildlife habitat, perform a multitude of ecosystem services, and help drive the tourism economy. Participants in the *Resilient Ludington* process recognized the importance of protecting the City's natural resources and water bodies, as the prevention of degradation is significantly easier than restoring or repairing these resources should they become significantly damaged.

In the past, water bodies within the watershed were primarily used for transportation, industry, water supply, and waste disposal. In the late 1800s and early 1900s, the lake and rivers were used extensively by the lumber and manufacturing industries that relied upon these waters. While the impact of local industry on water quality has lessened over time, new concerns have emerged. Human activity and development within the watersheds now present the greatest threat to water quality. Erosion and sedimentation from land disturbance, road/stream crossings, and heavy recreational use present concerns. Non-point pollution from agricultural activities, shoreline development, and stormwater runoff also impact the water quality within the watersheds of the City's water bodies.

Sedimentation, increased nutrient loading, habitat loss, invasive species, and increasing water temperatures are among the major threats to the State's inland lakes and rivers. Local advocacy and stewardship groups, like the Pere Marquette Watershed Council, Conservation Resource Alliance, and the Lincoln Lake Improvement Board, are responding to these threats and employing a number of techniques to protect the water quality of local bodies of water. These stewardship groups, along with dedicated local volunteers, work to monitor local water quality, educate the population on the importance of water quality, plan for the protection of water resources, and implement a variety of water quality protection projects.

Major threats to local water quality include sedimentation, increased nutrient loading, habitat loss, and increasing water temperatures.

The Pere Marquette River Watershed Management Plan identifies a number of goals for the protection of the River's watershed that are applicable to the other bodies of water in the City. Those goals can be generalized as follows:[2]

- Protect and improve water quality and fish and wildlife habitat;
- Improve and maintain the road and railroad transportation systems;
- Promote sound agricultural and livestock practices;
- Promote and maintain natural ecosystems;
- Promote sound stewardship of land and water resources through education and outreach; and
- Balance recreation management by collaborating between the different user groups, land and access ownerships, permit systems, and resulting impacts on the natural resources.

Low Impact Development (LID) techniques can be used to reduce the impacts of stormwater runoff and protect water quality. LID is a method of stormwater control that promotes managing stormwater where it falls.[3] Rather than collecting stormwater and removing it through pipes as quickly as possible, LID seeks to mimic a site's predevelopment hydrology and promote the slowing of stormwater runoff speeds and increase stormwater retention and percolation. The utilization of LID techniques can help reduce or prevent:

- Flooding and property damage;
- Degradation of stream channels;
- Soil erosion and sedimentation;
- Loss of habitat;
- Increased surface water temperatures; and
- Surface water pollution.

Additionally, the use of LID techniques can allow for better groundwater recharge and improve the aesthetic quality of the landscape. A variety of LID techniques are applicable within Ludington and should be promoted within all future public and private development. Techniques to consider include both nonstructural and structural best management practices. The *Low Impact Development Manual for Michigan* suggests the following LID best management practices.

Nonstructural Best Management Practices

- Cluster development;
- Minimize soil compaction;
- Minimize total disturbed area;
- Protect natural flow pathways;
- Protect riparian buffers;
- Protect sensitive areas;

The use of Low Impact Development (LID) best management practices, like protecting riparian buffers adjacent to bodies of water, can help protect local water quality.

[2] *Conservation Resource Alliance. 2011. Pere Marquette River Watershed Management Plan. p.104.*

[3] *Southeast Michigan Council of Governments. 2008. Low Impact Development Manual for Michigan. p.1.*

- Reduce impervious surfaces; and
- Stormwater disconnection.

Structural Best Management Practices

- Stormwater runoff infiltration methods such as bioretention areas, rain gardens, pervious pavement, and infiltration basins and trenches;
- Vegetated roofs and rainwater capture/reuse;
- Constructed wetlands;
- Sediment, oil, and refuse trapping/filtering catch basins;
- Underground stormwater detention; and
- Restoration of riparian buffers and native vegetation.

The City should work toward developing comprehensive stormwater control regulations that incorporate the use of LID techniques. Additionally, the City Zoning Ordinance should be analyzed to ensure that its standards promote the use of LID techniques and the protection of water quality.

One way to reduce the negative impacts of stormwater within the City would be to reduce the amount of impervious surfaces on both public and private properties. The City should investigate areas on public sites where impervious surfaces can be removed or replaced with pervious materials, and consider incorporating stricter maximum impervious surface coverage requirements for private developments. The City should investigate the inclusion of permeable paving surfaces in areas of lower traffic not likely to experience spills of pollutants like antifreeze, gas, and oil. Map 2.1 in Appendix A illustrates impervious surface coverage in Ludington.

Lake Michigan

On its western border, Ludington has 1.7 miles of Lake Michigan shoreline. Within the City limits, much of the waterfront is accessible to the public in parks or by sidewalks. The lake provides numerous quality of life benefits to residents and visitors, including spectacular views and a variety of recreational opportunities like swimming, boating, and fishing.

Lincoln Lake

Lincoln Lake divides the City from Hamlin Township to the north. The Lincoln River basin is located north and east of the City of Ludington. This river flows east to west into Lincoln Lake and by a channel into Lake Michigan.

Lake Michigan and Ludington's other water resources provide numerous quality of life benefits to residents and visitors. Photo Source: Simon Thelmann

Pere Marquette Lake

Pere Marquette Lake divides the City from Pere Marquette Township to the south, aside from a small isthmus within the City's jurisdiction just south of the channel. Pere Marquette Lake provides the sheltered harbor for the Port of Ludington and offers both recreational and commercial facilities. At least eight public and private marinas are located on, or adjacent to, the lake. Charter fishing operations are located there as well. The Lake Michigan Carferry Service makes daily seasonal use of the commercial port facilities and brings thousands of tourists and visitors to Ludington every year during warm weather. Pere Marquette Lake serves as an industrial port and plays a vital role in the operation of many local industries.

Pere Marquette Lake provides a sheltered harbor for recreational and commercial boating facilities.

FLOODPLAIN

The Federal Emergency Management Agency (FEMA) develops Flood Insurance Rate Maps (FIRMs) for each county in the United States. According to FEMA, the FIRM is "the primary tool for state and local governments to mitigate the effects of flooding in their communities." The National Flood Insurance Program was created in 1968 to reduce future damage and provide an insurance program that would help protect property owners from losses. The FIRM shows areas subject to flooding, based on historic, hydrologic, hydraulic and meteorological data as well as flood controls. The maps identify a base flood elevation (BFE), sometimes referred to as the 100-year flood zone. These are areas with a 1% chance of flooding in any given year. The maps also identify the areas with a 0.2% chance of flooding in any given year, sometimes called the 500-year flood zone. FEMA points out that these are only probabilities, not forecasts. Therefore, there is a 26% chance of a flood occurring in the 100-year flood zone during a 30-year period, the term of a residential home mortgage. Map 2.2 in Appendix A shows the 100-year flood zone identified by FEMA in Ludington.

Although flooding events in Ludington have been infrequent, winter and spring are the most likely flooding seasons. Additionally, flooding due to heavy precipitation events can occur at any time. The *Hazard Mitigation Plan for Mason County* identifies potential riverine and urban flooding as the 10th highest priority natural hazard in the County.[4] Although traditional riverine floodplain flooding is not as big a concern as other natural hazards, heavy runoff that overwhelms storm sewer infrastructure can cause flooding in low-lying areas. This type of flooding caused extensive damage to both public and private property in the region during and after a large precipitation event in 2008. As the frequency and intensity of heavy precipitation events increases due to the changing climate, the potential for flooding increases. Ludington should evaluate the

[4] *West Michigan Shoreline Regional Development Commission. (2005). Hazard Mitigation Plan for Mason County. p.56.*

ability of its existing stormwater control infrastructure to handle increasingly strong storm events, and encourage the use of green infrastructure and low impact development (LID) techniques throughout the City to better accommodate high volumes of precipitation. Additionally, the Hazard Mitigation Plan for Mason County suggests that local jurisdictions utilize their planning and zoning policies to direct development away from hazardous areas such as floodplains and wetlands.[5]

WETLANDS

Wetlands are an important natural resource that provide both aesthetic and functional benefits. Wetlands perform a variety of important natural functions, including:

- Flooding and stormwater runoff control;
- Water quality improvement and filtration;
- Erosion and sedimentation control;
- Recharge of groundwater;
- Wildlife/bird habitat;
- Natural open space and aesthetic areas; and
- Recreational opportunities.

Typically the Michigan Department of Environmental Quality (MDEQ) only regulates wetlands that are five acres or larger. Smaller wetlands may be regulated if the wetland is contiguous to a lake, pond, river or stream, or is considered to be "essential to the preservation of natural resources of the State". The determination that a site contains a regulated wetland mandates that MDEQ be informed before any development can occur. MDEQ may permit the filling of a wetland, but this often requires mitigation, such as replacing the wetlands, sometimes at a higher volume.

The locations of wetlands within the City of Ludington are shown on Map 2.3 in Appendix A. Ludington should continue to work to preserve wetlands within the City and limit the impacts of future development on these valuable resources. In 2014, the Michigan Department of Environmental Quality (MDEQ) conducted a Landscape Level Wetland Functional Assessment (LLWFA) for Ludington area watersheds. The LLWFA utilizes National Wetland Inventory (NWI) data and assesses wetland function within the Ludington area, including the City of Ludington. The LLWFA evaluated a wide variety of wetland functions including:

- Floodwater storage;
- Streamflow maintenance;
- Nutrient transformation;
- Sediment and particulate retention;
- Shoreline stabilization;
- Groundwater influence;
- Wildlife habitat;
- Carbon sequestration; and
- Pathogen retention.

The LLWFA illustrates the loss of area wetlands that perform these valuable functions over time. In order to protect water quality, limit flooding, and preserve wildlife habitat, the City should carefully consider the impacts of future development on any remaining wetlands. The LLWFA can serve as a valuable resource to help identify wetland areas to preserve and areas for potential wetland restoration.

[5] *West Michigan Shoreline Regional Development Commission. (2005). Hazard Mitigation Plan for Mason County. p.64.*

WOODLANDS AND TREE COVER

While Ludington is mostly developed at this point in time, there are some locations within the City that remain wooded. There is also substantial tree canopy present in many of the City's established residential areas and parks. Wooded areas and substantial urban tree canopy provide a variety of benefits to communities including:

- Improved natural and aesthetic character;
- Visual barriers between conflicting land uses;
- Reduced erosion and stormwater runoff;
- Reduced air pollution;
- Increased wildlife habitat;
- Reduced temperatures (ground, air, and water); and
- Reduced energy costs through building shading.

Significant wooded areas within the city are located in Cartier Park on the north side of the City, and between Bryant Road and Tinkham Avenue on the east side of the City. Additionally, many of the City's other parks and residential neighborhoods have substantial tree canopy coverage, and mature street trees can be found along a majority of the City's streets outside of the main commercial areas. The City should consider the creation of a tree planting program on public properties to increase overall tree canopy. Street trees should be included in all street improvement projects and efforts should be made to introduce street trees along roads in commercial areas of the City. Private development standards that require tree planting should also be included in the City's Zoning Ordinance. Map 2.4, showing the existing tree canopy in the City, can be found in Appendix A.

Mature street trees can be found in many of Ludington's streets.

CHAPTER 3 – THE PEOPLE OF LUDINGTON

This section of the Master Plan provides an overview of the people of Ludington. It describes the population, socioeconomic, and employment statistics and trends of the City. Data included in this section were provided by the U.S. Census Bureau for 1990, 2000, and 2010. Some figures from the Census Bureau's five year American Community Survey estimates are utilized as well. Population forecasts were provided by the West Michigan Shoreline Regional Development Commission.

The characteristics of a community's population can impact its ability to respond to changing circumstances and shocks. For additional information on vulnerabilities in the Ludington Community, see Appendix E.

A Friday Night Live event in downtown Ludington.

POPULATION CHARACTERISTICS

Total Population

According to data published by the U.S. Census Bureau, the population of Ludington in 2010 was 8,076. This marked a 3.4% decline in population between 2000 and 2010. Over the same time period, the overall population of Mason County rose by 1.5%, the population of Pere Marquette Charter Township rose by 6.2%, the population of Hamlin Township rose by 6.8%, and the population of the State of Michigan fell by 0.6%.

The City's population decline mirrors a common trend in Michigan cities. For comparison, the Lake Michigan coastal cities of Manistee and Grand Haven had 5.5% and 6.8% declines in total population between 2000 and 2010, respectively. The decade of population decline for the City of Ludington followed a 1.8% drop in total population between 1990 and 2000. The following table shows the population trends from 1990 to 2010 for Ludington, Pere Marquette Charter Township, Hamlin Township, Mason County, and the State of Michigan.

Between 2000 and 2010, the City of Ludington's population declined by 3.4%.

Population Trends 1990-2010

Community	1990	2000	Percent Change 1990-2000	2010	Percent Change 2000-2010
City of Ludington	8,507	8,357	-1.8%	8,076	-3.4%
Hamlin Township	2,597	3,192	22.9%	3,408	6.8%
Pere Marquette Charter Township	2,065	2,228	7.9%	2,366	6.2%
Mason County	25,537	28,274	10.7%	28,705	1.5%
State of Michigan	9,295,297	9,938,444	6.9%	9,883,640	-0.6%

It should be noted that the seasonal population is not counted in the Census figures. According to the U.S. Census Bureau, 10.1% of the housing units in Ludington are seasonal or recreational in use or only used occasionally. This indicates that Ludington, like many lakeside communities in Michigan, has a seasonal population that is higher than the year-round population.

According to population projections from the West Michigan Shoreline Regional Development Commission, the total population of Ludington is expected to increase to 8,451 by the year 2040, marking a 4.6% increase between 2010 and 2040. While it is impossible to predict population growth with absolute certainty, it is important to consider these forecasts when planning for the future.

Racial Make-up

The population of Ludington is predominantly identified as "white," with those identified as "white" making up between 89% and 93% of the total population in both 2000 and 2010. Between 2000 and 2010, Ludington's population became slightly more diverse, with all categories of citizens defined by a race other than "white" experiencing slight increases. The largest minority population in the City of Ludington is the "Hispanic or Latino" population. The City of Ludington, while predominately "white," is more racially diverse than the surrounding townships and Mason County as a whole. In 2010, Pere Marquette Charter Township, Hamlin Township, and Mason County had "white" populations of 94.6%, 95.0%, and 92.6%, respectively. The following table depicts the racial make-up of the City of Ludington in 2000 and 2010.

City of Ludington Racial Make-up

Race	2000 Census		2010 Census		Change 2000 - 2010
	Number	Percent	Number	Percent	
White	7,731	92.5%	7,194	89.1%	-3.4%
Black	81	1.0%	79	1.0%	0.0%
American Indian and Alaska Native	77	0.9%	90	1.1%	0.2%
Asian	18	0.2%	51	0.6%	0.4%
Hispanic or Latino	347	4.2%	512	6.3%	2.2%
Other	103	1.2%	150	1.9%	0.6%
Total Population	8,357	100%	8,076	100%	

An Aging Population

The age distribution of the population within a community can help identify social trends and the potential for future service needs. The following table shows the age distribution of the City of Ludington's population from 2000-2020. The 2000 and 2010 age distribution data was published by the U.S. Census Bureau and the 2020 age distribution projections were developed by ESRI, a geographic mapping and data services company.

City of Ludington Population by Age

Age	2000 Percent	2010 Percent	2020 Percent	2010-2020 Percent Change
0 to 4	6.1%	7.1%	6.7%	-5.6%
5 to 9	6.5%	5.6%	6.0%	7.1%
10 to 14	7.2%	5.3%	5.7%	7.5%
15 to 24	12.6%	12.6%	11.1%	-11.9%
25 to 34	12.0%	11.8%	12.5%	5.9%
35 to 44	14.0%	9.8%	10.5%	7.1%
45 to 54	12.6%	13.6%	10.1%	-25.7%
55 to 64	9.1%	13.1%	13.0%	-0.8%
65 to 74	7.9%	9.5%	11.6%	22.1%
75 to 84	8.6%	6.5%	8.1%	24.6%
85 +	3.4%	5.1%	5.0%	-2.0%

In 2000, the percentage of Ludington residents aged 55 and older was 29.0%. According to the U.S. Census Bureau, that number had risen to 34.2% in 2010. Additionally, population projections estimate that 37.7% of the City's population will be 55 or older by the year 2020. Recent trends show significant increases in the total percentage of City population for residents aged 45 and above, with reductions or small gains in total percentage of City population for residents aged 44 and under. Age distribution projections indicate that these trends will continue in the near future, with additional growth in City population for those aged 55 and above by 2020.

Projections indicate that 37.7% of Ludington's population will be aged 55 or older by the year 2020.

Generally, the Ludington population is slightly younger than that of Mason County and significantly older than the State of Michigan, with 34.2% of the City's population aged 55 and older in 2010 compared with 34.5% of Mason County's population and 26.4% of Michigan's population in the same year.

An aging population presents challenges to the City as it considers how to plan for the future. The quality of life for seniors can be improved by providing a range of housing options that allows for aging in place, accessible transportation options, and a variety of social services. Additionally, reduced numbers of school-aged children can cause problems for area schools. The area's workforce and entrepreneurial talent pool are also reduced if the number of younger adults declines.

While an aging population can present challenges to a community, it is also important to recognize the benefits that can be provided by retired, or nearly retired, individuals moving into the community. This group has decided on Ludington as the place where they are choosing to live following their careers and greatly appreciates all that the community has to offer. They are generally well educated, professionally experienced, and interested in participating in community activities and volunteer work. The knowledge and willingness to participate in the community makes these individuals a vital part of the City's population.

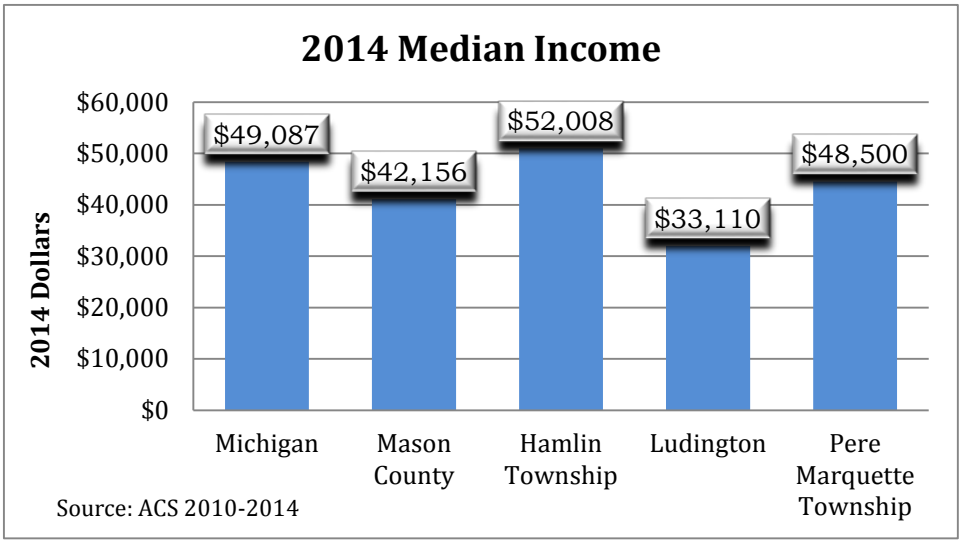
Income and Poverty

Income levels in the City of Ludington are lower than those in Mason County as a whole. According to the U.S. Census Bureau's 2010-2014 American Community Survey, estimated median household income in Ludington was $33,110, compared to $42,156 in Mason County. These values represent increases of 17.9% and 21.5% in median household income since 2000 in the City and County, respectively.

Median Household Income

	Median Household Income 2000	Median Household Income ACS 2010-2014	2000-2014 Percent Change
City of Ludington	$28,089	$32,010	17.9%
Mason County	$34,704	$41,136	21.5%
State of Michigan	$44,667	$48,411	9.9%

The following chart compares median household income in Ludington, Mason County, Hamlin and Pere Marquette Townships, and the State of Michigan.



The percentage of the total population living below the poverty level in the City rose from 16.3% at the time of the 2000 census to 19.0% at the time of the 2010-2014 American Community Survey estimates. Poverty rates within the City are higher than those of both Mason County and the State of Michigan. Rising poverty levels, in conjunction with declining household incomes and rising property values, can lead to an increased need for affordable housing.

Percent of Population Below Poverty Level

Community	Percent Below Poverty Level 2000	Percent Below Poverty Level ACS 2010-2014	Change 2000-2014
City of Ludington	16.3%	19.0%	2.7%
Mason County	11.0%	15.9%	4.9%
State of Michigan	10.5%	16.9%	6.4%

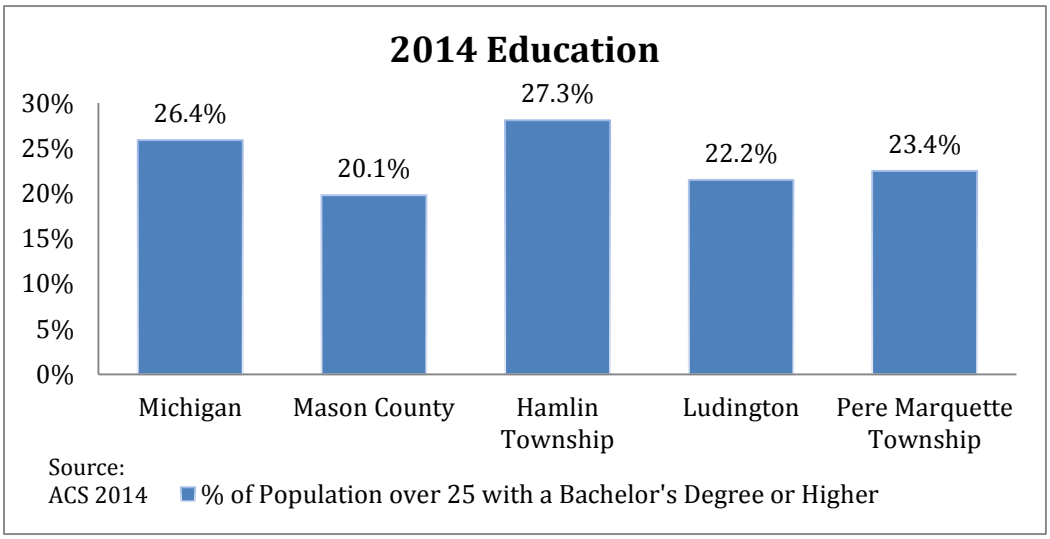
Educational Attainment

Educational attainment levels are increasing in Ludington. Between 2000 and the time of the U.S. Census Bureau's 2010-2014 American Community Survey, the percentage of the City's population that did not graduate from high school fell by 9.1%. Likewise, the percentages of the population that had graduated from high school, attended college, or held a college degree rose over the same period of time. Generally, higher levels of educational attainment correlate with higher incomes.

City of Ludington Educational Attainment

Level of Educational Attainment	2000	2010-2014 ACS	Change 2000-2014
Less Than High School Graduate	17.9%	8.8%	-9.1%
High School Graduate	33.2%	34.0%	0.8%
Some College/Associate's Degree	30.8%	34.9%	4.1%
Bachelor's Degree or Higher	18.1%	22.2%	4.1%

The following graph compares the percentage of the population over 25 with a bachelor's degree or higher in the City of Ludington, Mason County, Hamlin and Pere Marquette Townships, and the State of Michigan.



Employment

Consistent with State- and Nation-wide trends, unemployment levels in the City of Ludington increased between 2000 and the time of the U.S. Census Bureau's 2010-2014 American Community Survey. Over this time period, unemployment rates increased 5.8% in Ludington. This rate is higher than the rate of increase in unemployment found in Mason County and in the State of Michigan, and the overall rate of unemployment in Ludington in 2014 (13.3%) is higher than that of the State as a whole (11.4%). The following table shows unemployment level trends in Ludington, Mason County, and the State of Michigan.

Unemployment 2000-2013

	Percent Unemployment 2000	Percent Unemployment ACS 2009-2013	Difference 2010-2014
City of Ludington	7.5%	13.3%	5.8%
Mason County	7.3%	11.4%	4.1%
State of Michigan	5.8%	11.4%	5.6%

COMMUNITY ENRICHMENT

A chief component of resident and visitor satisfaction with a community is related to arts, culture, education and social engagement. Many communities organize events and design gathering spaces to facilitate improved quality of life, neighborly interactions, and to create or carry on traditions.

The City hosts a number of social and cultural events including Friday Night Live, Oktoberfest in downtown Ludington, the Downtown Farmers Market, the Petunia Parade, and concerts at Waterfront Park Amphitheater as well as holiday events and parades. Private organizations join in hosting events like fishing tournaments, the Fourth of July fireworks celebration, and the Carferry first sailing celebration.

Events and community groups are an excellent indicator of a community's social capital. Ludington proves to be very strong with a well-supported Historical Society, a highly ranked public school system, and fantastic library facilities. Maintaining long-time social organizations like the Ludington Jaycees and growing organizations like the Ludington Center for the Arts and Sandcastle's Children's Museum illustrates care for the City and consideration for the quality of life of fellow residents.

Community enrichment may not be a measurable element of planning, but it can be the single strongest factor in reversing negative patterns or improving perceptions.[1]

Social capital is defined as the "institutions, relationships, and norms that shape the quality and quantity of a society's social interactions….social capital is not just the sum of the institutions which underpin a society — it is the glue that holds them together." *The World Bank Group - Social Capital for Development.*

[1] *Putnam, Robert D. Bowling Alone: The Collapse and Revival of American Community. New York: Simon & Schuster, 2000.*

CHAPTER 4 – HOUSING AND NEIGHBORHOODS

Ludington is primarily built-out with many well-established, attractive, and historically significant neighborhoods. These neighborhoods help define the character and unique sense-of-place of the City. The preservation and enhancement of these neighborhoods is essential to the City's success. Every effort should be made to stabilize and encourage reinvestment in these neighborhoods.

Traditional single family housing units in Ludington.

At the same time, the City must continue to seek out and invest in new housing options. These new housing options should include the types of housing desired by young professionals, empty nesters and seniors, including duplexes, townhouses and live/work apartments. Recent market studies have shown that individuals in these age groups are increasingly looking for these types of housing units instead of detached, single-family homes. These new housing options should be located in the walkable, higher-density, mixed-use areas of the City. Additionally, the need to provide a variety of housing options at price points affordable to all City residents was frequently discussed during the *Resilient Ludington* process.

HOUSEHOLD CHARACTERISTICS

Household Units

The number of households in Ludington in the year 2000 was 3,690. By the year 2010, that number had fallen by 3.8% to 3,549. This decrease in the overall number of households is primarily due to the decrease of population within the City. The average household size in the City of Ludington remained nearly unchanged between 2000 and 2010. According to the U.S. Census Bureau, the average household size in the City in 2010 was 2.21 persons per household, a very slight increase from the year 2000 when the average household size was 2.19 persons per household. Household sizes can be expected to shrink in the future if the City's population continues to age and fewer families with children choose to live in Ludington.

Housing Tenure and Value

According to the U.S. Census Bureau, there were a total of 4,432 housing units in the City of Ludington in 2010. This was an increase of 205 housing units, or 4.8%, from the 2000 Census, where there were a total of 4,227 housing units in the City. Between 2000 and 2010. there was a 7.2% decline in the overall percentage of housing units that were identified as occupied. The number of vacant housing units in the City rose from 537 (12.7% of total housing units) in 2000 to 883 (19.9% of total housing units) in 2010. Of those 883 vacant housing units, approximately half (446) were identified as seasonal or recreational in use or only occasionally used. In 2010, 55.8% of the housing units in Ludington were owner occupied, while the remaining 44.2% were renter occupied. This marked a 2.6% rise in renter-occupied housing units in the City between the years of 2000 and 2010.

The vacancy rate and high number of rental properties in the City are indicative of the seasonal tourism economy. Those who live in Ludington for the summer months may not be present when census counts are

taken in the spring, leading to vacancy rates being recorded as higher than they actually are. Additionally, many of the rental properties in Ludington are vacation rentals, which can create some instability in neighborhoods but are important to the local tourism economy.

City of Ludington Housing Tenure

	2000 Quantity	2000 Percent	2010 Quantity	2010 Percent	Change 2000-2010	Percent Change 2000-2010
Total Housing Units	4,227	100.0%	4,432	100.0%	205	NA
Occupied Housing Units	3,690	87.3%	3,549	80.1%	-141	-7.2%
Owner Occupied	2,155	58.4%	1,980	55.8%	-175	-2.6%
Renter Occupied	1,535	41.6%	1,569	44.2%	34	2.6%
Vacant	537	12.7%	883	19.9%	346	7.2%
Seasonal, recreational, or occasional use	245	5.8%	446	10.1%	201	4.3%

Rental units should be distributed throughout the City's neighborhoods and not concentrated in one area. This helps hold rental property owners to the same standards as surrounding homeowners. Renter-occupied housing unit rates are higher in the City of Ludington than in surrounding areas, and while some of these properties are part of larger housing complexes, many are single-family detached homes. According to participant input during the *Resilient Ludington* process, the lack of maintenance and upkeep on homes (both renter- and owner-occupied) is an important issue for the City.

Housing values throughout the Ludington area have risen in recent years. The median home value in Ludington at the time of the U.S. Census Bureau's 2009-2013 American Community Survey was $104,100, a 42.6% increase from the year 2000. By comparison, median home value in Mason County rose by 43.6% over the same time period. The following table illustrates the change in home values within Ludington, Pere Marquette and Hamlin Townships, and Mason County between 2000 and 2013.

Median Household Value 2000-2013

Community	Median Household Value 2000*	Median Household Value ACS 2009-2013*	Change 2000-2013	Percent Change 2000-2013
City of Ludington	$73,000	$104,100	$31,100	42.6%
Pere Marquette Charter Township	$123,300	$151,900	$28,600	23.2%
Hamlin Township	$115,300	$163,700	$48,400	42.0%
Mason County	$81,500	$117,000	$35,500	43.6%

*Specified owner-occupied housing units

Age of Housing

Nearly 40% of the housing stock in Ludington was built prior to 1940. The largest building boom in the City between 1940 and today occurred between 1950 and 1959, with 612 housing units built. Over time, the construction of residential housing units has slowed. Only 6.9% of the City's housing stock has been built since the year 2000. Many of the older housing units were built before modern building codes were instituted in the latter half of the 20th Century. While most older homes exhibit quality craftsmanship, many of these units might not meet today's code standards. The City should work with homeowners to ensure that older, historic homes meet current building standards while also maintaining their historic character. The following table shows information about the age of the housing stock in the City of Ludington.

City of Ludington Housing Age

Year Structure Built	Quantity
2010 or Later	0
2000-2009	314
1990-1999	261
1980-1989	391
1970-1979	482
1960-1969	393
1950-1959	612
1940-1949	268
1939 or earlier	1,800

Source: US Census Bureau, 2009-2013 American Community Survey

New Residential Development and Redevelopment

New residential growth has been limited in recent years. This has been primarily because the City is nearly built-out, with small portions of its residential land in large, vacant parcels. The newest single-family homes in the area are on the north side of town, and the newer subdivisions are outside the City limits in adjacent townships.

New residential development projects that have been proposed and constructed have been mixed-use developments, multi-family complexes, and senior housing that maximize the yield of the limited remaining lands. Many sites near downtown and the waterfront are prime candidates for either mixed-use or multi-family redevelopment as the demand rises for attached housing units within close, walkable proximity to recreational opportunities, entertainment venues, and commercial centers. Infill development in neighborhoods that consist of primarily single-family residential uses should complement the size, scale, proportion, and design of the existing homes.

Most of the recent residential development in the City has been in mixed use, multi-family, and senior housing developments.

A further indicator of growth in residential land uses in the community is the number of new residences established each year. New housing units are still being constructed within the City and it is interesting that despite the increase in the overall number of housing units, the population is still waning. This illustrates a declining household size, which often occurs in an aging community.

Additional information about redevelopment of all types within the City can be found in Chapter 5.

Housing Quality and Property Maintenance

Ludington is a mature community where approximately half of the housing stock is at least 60 years old. Around a quarter of the homes in Mason County, most of which are in the City of Ludington, are 60 or more years old. During the *Resilient Ludington* process, deteriorating housing quality and the need for maintenance were topics that many participants identified as issues within the City of Ludington. Maintaining the quality of housing within the community is important, as it ensures safe living conditions for residents, preserves aesthetic character, and improves perceptions of the City's neighborhoods.

Many *Resilient Ludington* participants identified the need for maintenance of the existing housing stock as an important issue for the City.

In 2014, the City of Ludington Code Enforcement Office, which is responsible for enforcing the Property Maintenance Code, processed 1,110 code enforcement issues.[1] This number represented a 60% increase in the enforcement of violations from 2013. Of the 1,110 violations in 2014, 438 were for lawn mowing, 338 were for junk removal, 52 were for building maintenance violations, and 52 were for inoperable vehicle violations. By maintaining thorough enforcement of its Property Maintenance Code, the City can help ensure safe living conditions for residents and preserve the character of its neighborhoods. The City should continue to enforce existing property maintenance standards and consider initiating rotating inspections of rental properties.

Ludington may also consider conducting a comprehensive housing quality survey to evaluate the impact of its housing code enforcement program. A housing quality survey can be a good tool when there is a marked decline in the quality of housing stock in a particular area. Such a survey targets homes for improvements and seeks funds for the rehabilitation. The survey can evaluate such exterior home elements as foundation, roof, façade conditions, porch structure, paint, and other detailing. This type of evaluation can be an important benchmark to gauge progress in neighborhood improvement.

The City may also consider creating or supporting an "adopt-a-block" neighborhood beautification program to make positive physical improvements to properties in the City's residential neighborhoods. An adopt-a-block program would encourage churches, community groups, and service organizations to "adopt" an entire block, or at least one property within a designated block, and organize a group of volunteers to perform light maintenance work to improve the aesthetics of the properties and neighborhood.

The City continues to apply for downtown Rental Rehabilitation funding from the Michigan State Housing Development Authority (MSHDA) for renovations of downtown apartments to provide residential opportunities and property improvements in the core of the City. Additionally, the City also administers the Mason County Housing Program, which provides funding to low-income homeowners for home repairs.

[1] *City of Ludington. Planning/Zoning 2014 Year End Report. (2014).*

CHAPTER 5 – ECONOMIC DEVELOPMENT AND REDEVELOPMENT

Facilitating economic growth and prosperity is a complex and constantly changing challenge for communities throughout Michigan. A foundation for prosperity must be established in order to create economic sustainability. A communities must initiate or facilitate investments that help attract new business, retain and expand jobs, support life-long learning, build a strong tax base, and support the amenities that make it a desirable place to live and work. If done well, these investments can also help attract the entrepreneurs that create jobs in the new economy and build greater economic resilience. Establishing the foundation for economic prosperity requires cooperation and investments from local and regional institutions, citizens, business leaders, government agencies, and community stakeholders.

Ludington's economy has always been closely linked to its natural resources. The logging and lumber industry drove the City's early economy, and the chemical, transportation, and manufacturing industries grew as time passed. More recently, Ludington's natural resources have allowed tourism to become a major factor in the area's shift from a manufacturing-based economy to a more diverse economy. This shift, and the nature of the local climate and Michigan's tourism industry, have led to a more seasonal economy in Ludington and many other cities along the Lake Michigan shoreline. While tourism can generate a great deal of prosperity for communities, it also presents a variety of challenges, including susceptibility to fluctuations in the state and national economies, high seasonal unemployment rates, and lower-wage jobs.

This chapter of the Master Plan outlines current economic conditions and identifies potential opportunities for creating a more diverse and resilient local economy.

Employment in Ludington tends to fall more heavily in the "production" and "service" categories relative to the county and state. Generally, these occupational categories have lower wages than others like professional/administrative, sales, and construction. These lower wages are reflected in the income data presented in Chapter 3. Despite recent economic woes in both the region and country, general economic conditions appear to be improving. However, many of the state's manufacturing jobs lost in recent years are unlikely to return. Because they provide a bulk of the employment opportunities for residents, it is important for the City to continue to support its manufacturing and service businesses while looking for ways to diversify local businesses and provide greater opportunity for entrepreneurship to create a more resilient local economy. The table on the following page illustrates the major employers in Ludington and the surrounding community.

Ludington's economy has always been closely linked to its natural resources. The City's water resources help to drive the tourism industry and provide shipping access for entities including the Lake Michigan Carferry.

Major Employers in Mason County (2014)		
50-99 Employees	**100-249 Employees**	**250-499 Employees**
Kaines West Michigan Wire, Ludington	Indian Summer Co-Op, Ludington	Ludington Area Schools, Ludington
West Shore Bank, Ludington	Lake Michigan Carferry, Ludington	**500-999 Employees**
Ludington Components/Haworth, Ludington	Mason County Central Schools, Scottville	Spectrum Health - Ludington Hospital, Ludington
City of Ludington, Ludington	Metalworks, Ludington	Whitehall Industries, Ludington
Mason County Eastern School District, Custer	FloraCraft, Ludington	
Proact Services Corporation, Ludington	Oakview Medical Care Facility, Ludington	
Cal-Chlor Corporation, Ludington	Harsco Rail, Ludington	
Ludington Daily News, Ludington	House of Flavors Manufacturing, Ludington	
Home Depot, Ludington	Western Land Services, Ludington	
House of Flavors Restaurant, Ludington	West Shore ESD, Ludington	
	West Michigan Community Mental Health, Ludington	
	Great Lakes Castings, Ludington	
	Occidental Chemical Corporation, Ludington	
	Lowe's Home Improvement, Ludington	
	Walmart, Ludington	
	Mason County, Ludington	
	Tendercare, Ludington	

Source: Mason County Growth Alliance

NEW ECONOMY

According to many experts, most of the future economic growth in Michigan will come in the high-technology and services sectors, including healthcare, financial management, highly-skilled manufacturing, human services, and the food industry. While the recovering manufacturing sector will remain a major component of our state's economy, most of the jobs already lost will not return. Rather than compete for a decreasing number of manufacturing jobs communities and regions should embrace this "New Economy."

The New Economy is a phrase used to describe the transition from a manufacturing-based economy to a service-based or innovation-based economy. In the New Economy, communities and regions are encouraged to build from within, expanding existing businesses and supporting new entrepreneurial enterprises. To rebuild or retain economic vitality, the experts say, communities will need to attract and retain educated and talented people. The Placemaking section of this chapter identifies many strategies to help make Ludington a place that these educated, talented people choose to live, work, and play.

ECONOMIC GARDENING

While recruiting new businesses from outside the community is important, recent research has shown that expansion of existing small- to medium-size businesses generates the largest number of jobs. Locally-owned and operated businesses tend to spend more of their money locally, are less likely to move, and are more accountable to the greater community. Further, when people spend money at a locally-owned business, more of the money circulates within the community. According to Local First, a Grand Rapids-based organization that promotes and supports local business growth in Michigan, for every dollar spent at a locally-owned store, 68 cents stays within the local economy as opposed to only 43 cents of every dollar spent at a non-local business or franchise.[1]

In the "New Economy," entrepreneurs, as opposed to government, are the primary engines of economic development. Recent studies have shown that 55% of job creation comes from existing businesses growing and 45% come from new business startups. Successful communities are ones that develop a support system for these entrepreneurs. Support systems come in the form of social networks, a culture that embraces and celebrates entrepreneurs, and resources and information that support new businesses.

Many agencies and programs that support local businesses and entrepreneurs exist in the Ludington area. The Ludington and Scottville Area Chamber of Commerce offers a variety of resources and information to new and existing businesses. The Mason County Growth Alliance strives to attract, expand, and retain business and industry. Additionally, West Shore Community College is an important resource for local businesses, offering training programs for local workers and partnering with the West Shore Inventors Network to help entrepreneurs launch new or expanding business ventures.

TOURISM

Tourism is a large part of the economy in west Michigan, with many visitors traveling to the region each year. Ludington's parks, beaches, water resources, historic attractions, and small-town charm draw tourists throughout the year. Expanding upon the existing opportunities for visitors to provide additional economic development within the region was a frequent topic during the *Resilient Ludington* process, with the potential for expanding recreational and cultural offerings being mentioned as a way to improve not only the visitor's experience, but the quality of life for residents. Existing groups, like the Ludington Area Convention and Visitors Bureau, promote area tourism by coordinating regional marketing, providing information to visitors, and facilitating collaborative partnerships.

Downtown Ludington is a popular destination for locals and tourists alike. Photo source: Ludington Area Convention & Visitors Bureau

[1] *Why Local First? Local First Website. www.localfirst.com/why-local-first*

Recreation-based Tourism

Recreation-based tourism is travel that depends on an area's natural resources or landscape as a setting for recreational activities. Examples of these activities include boating, fishing, hunting, biking, hiking, wildlife viewing, and paddling. Ludington should continue to leverage its unique natural resources in order to draw tourists seeking recreational opportunities to the City. The City should maintain and enhance both the City park system and access to natural resources within the City to provide an abundance of quality leisure and recreational opportunities to both residents and tourists.

Additionally, creating a robust local non-motorized trail system that connects to attractions within the City and other communities in the region can help Ludington take advantage of the growing recreation-based tourism movement. According to a recent Michigan Department of Transportation (MDOT) study, the total economic impact of bicycling in Michigan is $668 million. Capitalizing on local and regional trail improvements helped Marquette, Michigan, increase annual hotel sales by 25,000 rooms from 2009-2012 with an economic impact of $3.8 million. The City should work to enhance existing non-motorized transportation routes, create new trails and walks within the City, and provide trail connections to other communities in the region.

To help make Ludington a destination for trail users, the City recently began development of a "Trail Town" strategy to increase recreational tourism in the form of visiting bicyclists, paddlers, and other trail users. The following basic elements of a "Trail Town Strategy," from *Trail Towns: Capturing Trail-Based Tourism, a Manual for Communities in Northern Michigan*, should be considered as a part of this strategy:

- Entice trail users to get off the trail and into your town;
- Welcome trail users to your town by making information about the community readily available at the trail;
- Make a strong and safe connection between your town and the trail;
- Educate local businesses on the economic benefits of meeting the needs of trail tourists;
- Recruit new businesses or expand existing ones to fill gaps in the goods or services that trail users need;
- Promote the "trail-friendly" character of the town; and
- Work with neighboring communities to promote the entire trail corridor as a tourist destination.

Additional information and implementation strategies related to the creation of local trails and connections between area communities can be found in the *US-10/31 Corridor Planning Charrette Summary* (Appendix D).

Cultural/Heritage-based Tourism

Ludington's unique lumbering and maritime history can provide the basis for *cultural tourism* or *heritage-based tourism*. According Dr. William Anderson, "Cultural tourism means providing the visitor with an engaging and memorable experience based upon our history, the real character of a place, culture, traditions, and creativity."[2] Cultural and historical attractions, events, and festivals can play a valuable role in Ludington's tourism industry. The City should continue to celebrate its history through existing and new festivals, and local historical displays or educational signage should be incorporated throughout the City.

The Ludington Area Center for the Arts provides cultural events, exhibits, and educational opportunities to residents and visitors.

The Ludington area boasts a variety of historic and cultural attractions and many local groups are continuously working to maintain and expand the region's offerings for residents and visitors. Historic White Pine Village in Pere Marquette Charter Township offers insight into the region's past and is popular with visitors. The Cultural Economic Development Task Force is creating a network of cultural trails throughout Mason County — including lumber, agricultural, quilt barn, maritime, and sculpture trails — to provide interactive, educational experiences. The Mason County Historical Society is working to open the Port of Ludington Maritime Museum to celebrate the area's maritime history, and the Ludington Area Center for the Arts provides cultural events, exhibits, and education to the community. The City should continue to support the creation of cultural and heritage events and attractions within the community and seek to preserve historic places and structures whenever possible.

PLACEMAKING

There are many unique assets and characteristics that contribute to Ludington's unique sense of place and distinctive identity. City residents and visiting tourists enjoy the vibrant downtown, exceptional waterfront, and convenient parks. Art installations in public spaces throughout the City, historic sites, and numerous festivals contribute to Ludington's cultural identity. Enhancing the unique identity, or *sense of place,* in Ludington can improve the quality of life for those who live, work, play, and shop there. Creating a unique sense of place, or "placemaking," is an important component for competing in the New Economy.

Placemaking is the process by which we collectively design and manage elements of the public realm to create places that are appealing, accessible, comfortable, and support social activity.

What is Placemaking?

Placemaking is both a process and tool by which we collectively design and manage elements of the public realm (markets, waterfronts, squares, streets, parks, neighborhoods, downtowns, etc.) to create places that are appealing, accessible, comfortable, and support social activity. Placemaking helps to define the pattern and use of the built environment and the manner and ease in which people are able to access, connect with, and move around in it. Placemaking can also help build

[2] *Anderson, W. (2011). Cultural Economic Development: An Economic Force Waiting to be Harnessed. In C. Layton, T. Pruitt & K. Cekola (Eds.), The Economics of Place: The Value of Building Communities Around People (p. 145-162). Ann Arbor, MI: Michigan Municipal League.*

and enhance sense of place by creating spaces that encourage social interaction and support interesting activities.

Some placemaking advocates propose that there are actually four different types of placemaking,[3] and that each placemaking approach can be applied to achieve a specific objective and/or activity.

- **Standard Placemaking -** Standard Placemaking is the process of creating quality places that people want to live, work, play and learn in.
- **Strategic Placemaking -** Strategic Placemaking is targeted to achieve a particular goal in addition to creating quality places. It aims to create places that are uniquely attractive to talented workers so that they want to be there and live there, and by so doing, they create the circumstances for substantial job creation and income growth.
- **Creative Placemaking -** Creative Placemaking works to institutionalize arts, culture, and creative thinking in all aspects of the built environment.
- **Tactical Urbanism -** Tactical Urbanism is a process of creating quality places that uses a deliberate, often phased approach to change. The process begins with a short-term commitment and realistic expectations that can ramp up quickly and often at low cost.

The installation of numerous sculptures in Waterfront Park is an example of existing placemaking efforts in the City.

Placemaking is not a new term or community development tool. In fact, placemaking activities have been taking place in Ludington for many years. Examples of past placemaking projects include the renovation of the downtown streetscape and the installation of numerous sculptures in Waterfront Park. These projects, along with others, have helped contribute to Ludington's unique sense of place.

Placemaking and Competing in the New Economy

"Place" has always been an important element in sustaining long-term economic activity. It used to be that prosperous places were based on their proximity to natural resources (e.g., navigable waterways, extractable minerals).[4] Today, prosperous places are based upon the number of entrepreneurial and knowledge-based workers they have and the ability of these workers to compete in the New Economy. More and more, these knowledge-based workers (and other segments of the population, as it turns out) want to live in communities that offer interesting and vibrant urban settings, access to outdoor recreational amenities, entertainment and cultural diversity, and walkable neighborhoods. In essence, these placemaking attributes make up part of a new strategy for attracting and retaining talented workers and establishing a knowledge-based economy.

[3] *Wyckoff, Mark. (January, 2014). Definition of Placemaking: Four Different Types. Planning and Zoning News.*

[4] *Dr. Soji Adelaja & Mark Wyckoff – Why the economics of "place" matters. The Economics of Place. Michigan Municipal League. (2011).*

Placemaking in Michigan

There are a number of well-known national organizations that have worked to advance the science of placemaking, including the Congress for New Urbanism, the U.S. EPA's Smart Growth Network, and the Project for Public Spaces.

In an effort to better promote placemaking as a fundamental community and economic development tool for Michigan communities, state leaders established the *MIplace Initiative*. MIplace is a statewide initiative whose purpose is to research and develop innovative placemaking tools, educate community leaders on the value and importance of placemaking, and provide assistance to communities looking to implement placemaking tools. The Initiative is supported by a coalition of 14 state agencies and governmental advocacy organizations led by the Michigan State Housing and Development Association (MSHDA), the Michigan Municipal League (MML), and Michigan State University's Land Policy Institute (LPI). The MIplace Initiative was spurred by Michigan Governor Rick Snyder, who made placemaking a key platform in his plans to help revitalize the state. In 2014, LPI hosted a placemaking workshop in the City of Ludington focused on identifying opportunities for the implementation of placemaking projects in the Ludington Community.

Placemaking Elements

Placemaking can help improve quality of life for local residents, attract businesses and entrepreneurs, and increase tourism. Communities must work to attract talented, well-educated people to compete in the changing economy. This makes improving the community through placemaking efforts extremely important. Strategic placemaking improvements for small towns and cities include[5]:

- Creating a wider range of entertainment and eating establishment options;
- Providing entrepreneurship and incubator services;
- Creating more bike paths and links to parks, green spaces, and waterways within town and connect to rural places within a few miles;
- Maintaining good schools;
- Providing a wide range of activities for youth and families;
- Maintaining good shopping areas;
- Constructing small mixed-use developments in key activity locations; and
- Developing regional nodes of activity.

Additionally, the MIplace Initiative has identified key elements of quality places. Implementing components of these elements may involve moving forward with a single project, adopting a new policy, creating a new activity, or a combination of all three. These key elements are:

1. Mixed uses
2. Quality public spaces
3. Broadband service
4. Transportation options
5. Housing options
6. Historic preservation
7. Arts and culture
8. Green places

[5] *Dr. Soji Adelaja & Mark Wyckoff – Why the economics of "place" matters. The Economics of Place. Michigan Municipal League. (2011).*

Mixed Uses

Mixing land uses in areas where people can walk or bike helps to create active and interesting places. In turn, the pedestrian activity helps to revitalize the community by making streets, public spaces, outdoor restaurants and retail establishments places where people want to meet. Additionally, the pedestrian activity can enhance the perceived security of an area, support opportunities for social interaction, and help foster civic engagement.

A mix of uses is also good for business. Studies show that commercial and retail uses located close to residential areas often have higher property values. Areas within downtown Ludington and near the waterfront are ideal locations to promote a mix of uses because of their proximity to desirable natural features, shopping, dining, and entertainment venues.

Providing quality public spaces, and encouraging new uses for them, is an important element of placemaking.

Quality Public Spaces

Quality public spaces are an important component of successful communities. They help build a sense of place and civic identity. They also support social interaction through casual meetings and/or large community events. The size and intensity of a public space can vary greatly. For example, a public space can be a large park with walking paths, picnic facilities, and recreational amenities, or it may be a bench located on a public sidewalk that provides a place for pedestrians to sit and relax.

Ludington is fortunate to have many quality public spaces, including its public parks, beaches, and downtown sidewalks. The City should continue to support and maintain its public spaces and consider new ways to encourage people to use them. Additionally, the City should continue to seek out opportunities to create new public spaces. This may include providing incentives (e.g., increased density) to private developers to include public spaces in their projects. The City should also ensure that consideration is given to creating good public spaces in all future civic and municipal building projects, as they often provide a good example and establish the standard for private building projects.

Broadband Enabled

Good and reliable broadband service is an essential piece of infrastructure in the global economy. Broadband service connects businesses and individuals to the global marketplace. Broadband also allows businesses to communicate and respond to questions and problems in real time. In addition, broadband service has become an essential quality-of-life amenity for most citizens, both young and old. Broadband service allows people to communicate through social media and video conferencing, download music, and watch movies and television. Broadband also allows for more flexible lifestyles by providing access to education through long-distance learning programs or remote working environments.

Multiple Transportation Options

A transportation system that provides multiple ways for people to move around the community is very important. Communities can provide these choices by making it easy for residents and visitors to drive, walk, bike, or take public transportation. Providing for a variety of transportation options has many community benefits. Studies have shown

Ludington should continue to provide — and identify new opportunities to provide — a variety of transportation options for residents and visitors.

that bicycle and pedestrian amenities lead to increased physical activity and better health.[6] A variety of transportation amenities also provides travel options for people who are unable to drive (e.g., children, older adults, and people with disabilities) or cannot afford a car. Ludington should continue to provide — and identify new opportunities to provide — a variety of transportation options for residents and visitors.

Multiple Housing Options

Providing quality housing options for people of all income levels and ages is essential for the long-term growth of the community. According to the Smart Growth Network,[7] *housing is a critical part of the way communities grow, because it constitutes a significant share of new construction and development. More importantly, however, housing availability is also a key factor in determining households' access to transportation, commuting patterns, access to services and education, and consumption of energy and other natural resources.* The City should seek to identify the types of housing that are needed and desired within the community and ensure that the Zoning Ordinance accommodates these housing types.

Preserve Historic Structures

The preservation of historic buildings and structures is important because it preserves the historic, architectural, and aesthetic character and heritage of the community and helps to provide a sense of place and continuity. Historic preservation is also important because it is an efficient use of resources. Reusing existing buildings, instead of tearing them down and building new, conserves resources and reduces waste. Additionally, historic buildings typically have good form, which supports a vibrant street life and social interaction.

Preserving historic structures is an important element of maintaining the aesthetic character and heritage of the community.

Arts and Culture

Arts and cultural activities greatly enhance quality of life. They bring about personal and collective enjoyment, enrich perspectives, stimulate intellectual thought, and provide opportunities for public involvement. Arts and culture can also attract new and exciting activity, increase tourism, and fuel economic development.

Green Places that Link Urban Areas with Rural Areas

Parks, greenways, and trails provide areas for recreation and relaxation. Green places also support social interaction and civic engagement. In a larger, community-wide context, greenways connect urban areas with rural areas. Ludington should continue to explore ways in which trails and greenways can connect different parts of the City, surrounding communities, and regional recreational opportunities.

Placemaking in Ludington

Throughout the *Resilient Ludington* planning process, establishing a vibrant atmosphere with strong connections to the City's unique natural features, parks, and downtown was seen as a way to improve the quality of life for local residents and encourage economic development and tourism. Many of the stakeholder

[6] *McCann, Barbara & Rynne, Suzanne. Complete Streets: Best Policy and Implementation Policies. American Planning Association. (2010)*

[7] *Getting to Smart Growth: 100 policies for Implementation. The Smart Growth Network.*

and community discussions involved, in one way or another, enhancing the community's unique identity, or sense of place.

Numerous ideas, visions, and goals for the future identified during the planning process can be considered "placemaking" recommendations. The following list of placemaking recommendations provides an overview for decision makers when considering how to improve Ludington's unique sense of place. The City should continue to identify, plan, fund, and implement placemaking projects to enhance its unique sense of place, improve quality of life for residents, and attract visitors and new residents.

- Promote the preservation and adaptive reuse of historic structures. The preservation of historic character, particularly in traditional downtowns, helps enhance a sense of place by maintaining a human scale and preserving cultural heritage. The orientation, form, mass, design, and architectural character of historic buildings all contribute to the inviting environment that people associate with traditional main streets. Promoting cultural heritage through the preservation of history and architecture enhances a place's unique identity and can encourage historic tourism.
- Implement building design standards (potentially through the use of a form-based code) in downtown Ludington that complement the character of existing historic buildings.
- Provide additional recreational amenities and increase the usability of the public properties in what is known as the "west end" at the western terminus of Ludington Avenue on the shore of Lake Michigan.
- Provide improvements to the North James Street Plaza, including a farmers market structure, public gathering space, landscaping, and lighting, to enhance the vibrant atmosphere of downtown Ludington.
- Provide streetscape and landscape improvements along South James Street in order to improve the overall experience of entering Ludington from the Lake Michigan Carferry site.
- Improve pedestrian and bicycle connectivity within the City.
- Provide non-motorized trail connections between Ludington, other nearby communities, and recreation destinations like Ludington State Park and the Pere Marquette State Trail.
- Incorporate public art throughout the City's parks, plazas, streetscapes, and other public spaces.

REDEVELOPMENT STRATEGY

In order to stimulate economic development, attract new businesses and talented workers, and improve the quality of life and prosperity of Ludington residents, it is important to enhance qualities that make the City a place that people want to live, work, and play. There are a variety of placemaking techniques that can be used to enhance Ludington's sense of place, but it is also necessary to make the City more attractive to private investment, development, and redevelopment that appeals to existing residents, tourists, and potential residents and businesses. During the *Resilient Ludington* planning process, a number of redevelopment opportunities and priority redevelopment sites and districts were identified. The following Redevelopment Strategy identifies priority redevelopment locations and goals, implementation steps, and timelines for their redevelopment.

Redevelopment Ready Communities in Michigan

The State of Michigan has initiated a program that certifies Michigan communities as "redevelopment ready" to aid them in their redevelopment goals. The Redevelopment Ready Communities (RRC) program was created to "foster communities that creatively reuse space, embrace economic innovation, and proactively plan for the future — making them more attractive for investments that create places where people want to live, work, and play."[8] A certification through the RRC program, which is administered by the Michigan Economic Development Corporation (MEDC), helps ease the barriers to redevelopment and indicates to

[8] *Michigan Economic Development Corporation. (July, 2014). Redevelopment Ready Communities Best Practices. (p. 3)*

developers and business owners that a community embraces economic development and is ready to make positive changes for its future.

Should a community choose to participate in the RRC program, it must undergo an assessment administered by the MEDC and meet a series of required standards prior to RRC certification. One of these standards is the inclusion of a Redevelopment Strategy within the Master Plan.

Priority Redevelopment Areas

The following areas were identified as priority locations where redevelopment activities would help foster economic development in the City and enhance the quality of life and sense of place in Ludington. Redevelopment goals, implementation steps, and a proposed redevelopment timeline are identified for each priority redevelopment area. A Redevelopment Areas map (Map 5.1) showing the locations of these areas can be found in Appendix A.

1 - Downtown Ludington

Redevelopment Goal: Encourage redevelopment and revitalization in the downtown that complements existing historic character and fosters a vibrant and welcoming atmosphere for residents and visitors.

Implementation Steps:

- Analyze the Zoning Ordinance to ensure that desired land use, site design, and building character standards are required within the identified area. (Responsible party: City of Ludington Planning Commission and staff. Timeline: Within one year.)
- Continue efforts to improve building façades, signage, and aesthetic character. (Responsible party: City of Ludington staff, Downtown Development Authority (DDA), and property owners. Timeline: Ongoing.)
- Investigate the potential use of a form-based code for the Central Business District to ensure that new development and redevelopment preserves and/or complements existing character. (Responsible party: City of Ludington Planning Commission and staff. Timeline: Within two years.)
- Improve the North James Street Plaza to create a more usable and attractive public gathering space that provides opportunities for farmers market activities and event space. (Responsible party: City of Ludington staff and DDA. Timeline: Within three years.)

2 – South James Street Corridor

Redevelopment Goal: Encourage development along the corridor that provides for a mix of uses and an aesthetically pleasing and welcoming entry experience into the City of Ludington for car ferry passengers.

Implementation Steps:

- Analyze the Zoning Ordinance to ensure that desired land use, site design, and building character standards are required within the identified area. (Responsible party: City of Ludington Planning Commission and staff. Timeline: Within one year.)
- Create a streetscape improvement strategy that identifies necessary aesthetic improvements, prioritizes potential projects, and identifies a timeline for implementation. (Responsible party: City of Ludington staff and/or hired consultant. Timeline: Within two years.)
- Investigate the potential use of a form-based code for the South James Street Corridor to ensure that new development and redevelopment preserves or creates the desired character for the area. (Responsible party: City of Ludington Planning Commission and staff. Timeline: Within two years.)

3 – West End Development Area

Redevelopment Goal: Develop the public waterfront at the west end of Ludington Avenue to provide greater public access to the water, additional recreation amenities, and connections to the maritime history museum, downtown, adjacent neighborhoods, and Stearns Beach.

Implementation Steps:

- Create a West End Development redevelopment plan that provides designs and phasing plans for the West End Development Area and identifies locations for improved public water access, additional recreational amenities, public gathering space, landscaping, lighting, public art, parking improvements, and improved pedestrian connections to downtown, Stearns Park, and other nearby waterfront locations. (Responsible party: City of Ludington staff and/or hired consultant. Timeline: Within two years.)
- Identify potential public and private funding sources for the implementation of improvements within the development area. (Responsible party: City staff. Timeline: Within three years.)

4 – "Fish Town"/Copeyon Park Development Area

Redevelopment Goal: Encourage rehabilitation and adaptive reuse of historic buildings for a mix of commercial, residential, and cultural uses that cultivates a "fisherman's village" theme while improving public water access and recreational opportunities.

Implementation Steps:

- Analyze the Zoning Ordinance to ensure that desired land use, site design, and building character standards are required within the identified area. (Responsible party: City of Ludington Planning Commission and staff. Timeline: Within one year.)
- Create a set of design guidelines for new development and redevelopment that identify desired building design standards, orientation, and locations within the development area. (Responsible party: City of Ludington Planning Commission and staff. Timeline: Within two years.)
- Create a redevelopment plan for Copeyon Park that provides designs and phasing plans that identify locations for improved public water access, additional recreational amenities, public gathering space, landscaping, lighting, public art, parking improvements, and improved pedestrian connections to South Washington Avenue and surrounding neighborhoods. (Responsible party: City of Ludington staff and/or hired consultant. Timeline: Within three years.)

5 – Pere Marquette Lake Development Area

Redevelopment Goal: Encourage mixed-use redevelopment that capitalizes on the lake frontage, provides pedestrian connections to downtown and surrounding neighborhoods, and increases the City's tax base.

Implementation Steps:

- Ensure that the Zoning Ordinance standards allow for the desired mix of uses and site and building design standards in the identified area. (Responsible party: City of Ludington Planning Commission and staff. Timeline: Within one year.)
- Create a set of design guidelines for new development and redevelopment that identify desired building design standards, orientation, and locations within the development area. (Responsible party: City of Ludington Planning Commission and staff. Timeline: Within two years.)
- Provide streetscape enhancements, including street trees, lighting, and improved walks, within the identified area. (Responsible party: City of Ludington staff. Timeline: Within five years.)
- Create a development area master plan and marketing materials to illustrate development potential to prospective developers and property owners. (Responsible party: City of Ludington staff and/or hired consultant. Timeline: Within five years.)

6 – Former Bowling Alley Block

Redevelopment Goal: Redevelop the former bowling alley block to support a mix of commercial, entertainment, office, and residential uses that complements the character of downtown Ludington.

Implementation Steps:

- Ensure that the Zoning Ordinance standards allow for the desired mix of uses, site design standards, and building character standards in the identified area. (Responsible party: City of Ludington Planning Commission and staff. Timeline: Within one year.)
- Create a conceptual development area master plan and marketing materials to illustrate development potential to prospective developers and property owners. (Responsible party: City of Ludington staff and/or hired consultant. Timeline: Within three years.)

7 – North Rath Avenue Residential Corridor

Redevelopment Goal: Revitalize and enhance the existing neighborhood while maintaining historic, small-town character.

Implementation Steps:

- Consider adopting building design standards for new construction and redevelopment in the identified area that complement the existing historic residential character of the neighborhood. (Responsible party: City of Ludington Planning Commission and staff. Timeline: Within two years.)
- Identify and implement policies and/or programs that provide assistance to home owners to perform needed maintenance and upgrades to residential building façades. (Responsible party: City of Ludington staff. Timeline: Within three years.)
- Target code and property maintenance enforcement where needed. (Responsible party: City of Ludington staff. Timeline: Ongoing.)

8 – Foster Elementary School Neighborhood Residential Area

Redevelopment Goal: Revitalize and enhance the existing neighborhood while maintaining historic, small-town character.

Implementation Steps:

- Consider adopting building design standards for new construction and redevelopment in the identified area that complement the existing historic residential character of the neighborhood. (Responsible party: City of Ludington Planning Commission and staff. Timeline: Within two years.)
- Identify and implement policies and/or programs that provide assistance to home owners to perform needed maintenance and upgrades to residential building façades. (Responsible party: City of Ludington staff. Timeline: Within three years.)
- Target code and property maintenance enforcement where needed. (Responsible party: City of Ludington staff. Timeline: Ongoing.)

CHAPTER 6 – EXISTING LAND USE

The characteristics of the land and the ways people use the land change over time. Vacant lands become developed, and uses on specific properties change as economic, social, environmental, and cultural trends change. Changes in City zoning regulation, infrastructure, and transportation routes also create changes in land-use patterns over time. In order to make informed decisions regarding future land use, it is important to have a clear understanding of existing land uses and relationships between land uses. The existing land-use map (Map 6.1), found in Appendix A, is based on the City's property classification data and identifies the general usage (residential, commercial, etc.) of land in Ludington.

RESIDENTIAL USES

Residential neighborhoods occupy more area within Ludington than any other use. Most of the residential neighborhoods in the City are mature, traditional neighborhoods primarily consisting of single-family homes. The homes in these traditional neighborhoods are built on relatively small lots with shallow setbacks on a grid street pattern. Many blocks have alley access behind the homes that provides service and parking access. Some small multiple-family residential developments, institutional uses, and neighborhood businesses have been integrated into the single-family neighborhoods over time. A small number of larger single-family residential lots are located along the Lake Michigan shoreline in the northwest portion of the City.

A majority of Ludington's residential neighborhoods primarily consist of traditional, single-family homes.

Larger multiple-family residential developments that provide increased density within walking distance of the waterfront and core of the City can be found near Pere Marquette Lake and downtown Ludington. These larger multiple-family developments provide additional housing options for groups like empty-nesters and young professionals, who are increasingly looking to live in attached units near recreational, cultural, and entertainment opportunities. Additional multiple-family residential uses exist in downtown Ludington and in mixed-use projects that are being proposed and built as properties near downtown are redeveloped.

COMMERCIAL USES

Commercial, retail, and office uses within the City are primarily concentrated within the Central Business District (CBD), along Ludington Avenue, and south of the Central Business District near Pere Marquette Lake and the waterfront. The CBD is generally located along the north and south sides of Ludington Avenue between Lewis Street and Rowe Street and contains what is considered the City's downtown. Additional commercial and office uses line James and Rath Streets south of Ludington Avenue. Additionally, a number of small motels and bed-and-breakfasts are located along Ludington Avenue outside of the CBD.

There are significant levels of automobile-oriented, regional commercial uses located just east of the City boundary in Pere Marquette Township. These developments are more suburban in nature, include a number of national chains and big box stores, and create a much different shopping experience than that in downtown Ludington.

INDUSTRIAL USES

Industrial uses in the City of Ludington have traditionally been located along Pere Marquette Lake. This deep-water harbor has played, and continues to play, an important role in the development and prosperity of Ludington. The City's industries provide opportunities and significant tax base to support improvements to infrastructure, facilities, and municipal services. Ludington's industrial park, located on the east side of the City, contains land to serve most small- to medium-scale industrial uses. As the City's land area available for industrial uses becomes built out, future industrial development will likely occur in Pere Marquette Charter Township, which has the necessary utilities, open industrial land, and access to transportation routes to accommodate such uses.

INSTITUTIONAL USES

This category includes uses such as schools, places of worship, libraries, and community medical centers. In keeping with the traditional development pattern of the City, most of these types of uses have become integrated into the neighborhoods. This has contributed to a comfortable, walkable environment for residents, which should be protected as the City grows and changes. If reuse of these sites and buildings is proposed, they should continue to offer services for residents including recreation, open space, educational facilities, or additional City offices and facilities.

PUBLIC USES

This category includes publicly-owned sites such as City, county and state buildings and public parks. Similar to Institutional uses, it is important to maintain the presence of public lands and facilities in order to meet the service and social needs of residents. As development competition increases with nearby communities, the ability to offer extensive, convenient public services and areas will reinforce the City as a desirable place to live or locate a business. Parks, natural areas, City facilities, and other public uses are scattered throughout the City. The extent of these properties and facilities is discussed in greater detail in the Chapter 7 of this Plan. Parks should continue to be integrated into neighborhoods and public facilities should maintain their current use or be reused for other needed public facilities as the City evolves.

Ludington City Hall is located at 400 S. Harrison St.

CHAPTER 7 – COMMUNITY FACILITIES AND SERVICES

Ludington offers a wide variety of municipal services to its residents and businesses and operates a number of public facilities. Local schools, health care facilities, and other entities provide additional community facilities and services to City residents. Quality of life for City residents and the community's growth and redevelopment are impacted by the quality, availability, and cost of these services. When choosing where to live, people consider the ability of the municipality to meet their present and future needs in a cost-effective manner. Similarly, the availability — or lack — of cost-effective municipal services plays a role in where developers, businesses, and industrial operations choose to locate. To remain competitive with other communities in the region and state, Ludington must continue to maintain, upgrade, and diversify its services and facilities. Community facilities include government buildings and agencies, parks, schools, cultural opportunities, and health care facilities.

ADMINISTRATIVE STRUCTURE

The City of Ludington is a Home Rule City that has a Mayor and a City Council made up of seven elected City Council members. The City Manager serves as the Chief Administrative and Executive Officer of the City, is responsible for the day-to-day operation of the City, and reports to the City Council. To offer specialized services to residents, the City has a variety of departments, employees, and advisory bodies that manage different aspects of the City's operation. City departments include Fire, Police, Public Works, Community Development, Planning & Zoning, and Parks and Recreation. The City has a Planning Commission, Zoning Board of Appeals, and Recreation Board that report to the City Commission. Additionally, the City has a Downtown Development Authority (DDA) Board that oversees the operation of the Ludington DDA.

EXISTING FACILITIES AND SERVICES

The City of Ludington owns and operates a number of public facilities and a variety of public services are available to citizens. The following is an overview of those facilities and services.

Water Service

The City of Ludington provides water service through a municipal water treatment and distribution system that consists of a series of pumps, a treatment facility, storage reservoirs/towers, and water distribution lines. Water service is provided to City residents and businesses as well as to the City of Scottville, Epworth Heights, and portions of Amber and Pere Marquette townships. Water is pumped from Lake Michigan to the water treatment plant located on Lakeshore Drive.[1] There, the water is treated to make it safe for consumption and pumped through many miles of water lines to residents and businesses. According to the City's *2014 Annual Water Quality Report*, Ludington's drinking water met or surpassed all Federal and State water quality and safety standards for 2014.

Ludington's water treatment plant, located on Lakeshore Drive.

[1] *City of Ludington. (2015). 2014 Annual Water Quality Report.*

Recently, the City, through the use of a consultant, began an engineering project to make improvements to its water distribution system to address reliability issues identified in a 2014 Reliability Study. There are a variety of infrastructure improvements that are included in the engineering project, including the replacement of water main lines, which will be completed in 2016.

Sanitary Sewer Services

The City of Ludington provides sanitary sewer services to properties within the City, the City of Scottville, portions of Pere Marquette and Amber townships, West Shore Community College, and Epworth Heights. The Ludington Wastewater Treatment Plant, located in Pere Marquette Charter Township at 5160 W. 6th Street, began operation in 1975 and can hold 90 million gallons of effluent in 31 acres of aerated lagoons. Following treatment, effluent is discharged into the Pere Marquette River. The sewage collection system includes approximately 65 miles of sanitary sewer lines as well as 18 lift stations, seven of which are operated by municipalities other than the City. There are plans to replace sanitary sewer main lines in conjunction with water distribution system and road reconstruction work in portions of the City in 2016.

Stormwater Infrastructure

The City of Ludington has stormwater control infrastructure that includes curbs, gutters, and underground stormwater pipes. The management of stormwater is an important service that is provided to protect roads, bridges, homes, and businesses from damage and to ensure the personal safety of residents. Proper stormwater management can also help protect the quality of local lakes, rivers, streams, and groundwater. As significant precipitation events increase in frequency and intensity, effective stormwater management will become increasingly important for the City.

Importantly, Ludington's stormwater control infrastructure is completely separated from the sanitary sewer system. This helps reduce the risk of sanitary sewer overflows into local bodies of water during heavy precipitation events. Despite being separated from the sanitary sewer system, urban stormwater that flows untreated into lakes and streams can still be a significant source of pollution. Untreated urban stormwater is also a source of sediment, oils, grease, and heavy metals.[2] In order to protect the water quality of Lake Michigan, Pere Marquette Lake, and other bodies of water, the City should investigate ways to control stormwater more efficiently in the future. The Tip of the Mitt Watershed Council is a valuable resource in this regard and can provide information that could help the City determine the best course for dealing with its urban stormwater.

Department of Public Works

The Ludington Department of Public Works, located at 975 First Street, is responsible for maintaining the streets, public property and right-of-ways in the City of Ludington. Duties that fall under these categories include snow plowing; tree planting, trimming and removal; street patching, sign installation and maintenance; parking lot maintenance; and maintenance of portions of City parks in conjunction with the City of Ludington Cemetery and Parks crew. The Utility Maintenance Department's responsibilities include maintenance of City water and sewer lines as well as reading water meters and troubleshooting water leaks for area residents.

Solid Waste Collection and Disposal

Through Shoreline Waste, the City of Ludington provides solid waste collection and disposal services to residents. Residents are allowed to dispose of three 33-gallon bags of trash per week plus recycling.

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[2] *Tip of the Mitt Watershed Council (2012). Lake Charlevoix Watershed Management Plan. p.118.*

Additional items to be disposed of can be taken to the Convenience Center. The City also provides an annual spring cleanup service where residents and businesses can dispose of large items, appliances, and other refuse.

Government Facilities

Ludington City Hall is located on the southwest corner of Harrison Street and Foster Street. City Hall is the location of a majority of the City offices and hosts meetings of the City Commission, Planning Commission, and other boards. The City's wastewater treatment plant is located on Sixth Street east of the City boundary and the water treatment plan is located on Lakeshore Drive, adjacent to Lake Michigan. The Ludington Department of Public Works is located at 975 First Street.

Public Safety

Public safety services are important to communities as they protect the well-being of residents and provide much needed help during times of emergency. The perception of security and the quality of public safety impact the attractiveness of a community to visitors and potential newcomers. The City of Ludington operates both a Fire Department and Police Department.

The Ludington Police Department, located at 408 S. Harrison St., provides 24-hour service with manned patrols within the city limits. The office is open for walk-in service from 8 a.m. to 5 p.m., Monday through Friday. Calls for service or after normal business hours are routed through Mason-Oceana 911 (Dispatch Center). The Police Department provides primary road and traffic patrol, response to and investigation of criminal complaints, assistance with crowd control, fire calls, special event activities, narcotics investigation, response to critical incidents, and downtown and park patrol.

As a "Community Policing" agency, officers are assigned to particular council wards and work with the Target Area Problem Solving (TAPS) Committee, a group of citizens representing the various wards as well as businesses within the City. Together, their goal is to "target' three issues per month on which to work toward a solution. This strategy allows the Department to provide the service the community desires.

Ludington has an on-call Fire Department. The department is fully equipped, and water is available on a grid system, with hydrants about 300 feet apart throughout the City. On the average, response time for the 20-person department is 2.5 to 5 minutes to get the trucks rolling. The number of fire calls has decreased over the past several years, attributed to an expansion of public education and prevention activities. All commercial buildings are inspected annually. The fire department has an extrication rescue squad. Emergency medical services are provided by an independent medical first responder located in Pere Marquette Township.

Schools

The Ludington Area Public School District covers 75 square miles and includes, in addition to the City, all or portions of Pere Marquette, Amber, and Hamlin townships. The district operates one pre-school, three elementary schools, one middle school, and one high school. An independent charter alternative high school is also located in the county. In the fall of 2014, the school district had a total enrollment of

2,263 students.[3] The school district gets consistently high marks on all statewide testing. The school system has a fine reputation within the community and was identified as one of the biggest community assets during the *Resilient Ludington* planning process.

Senior Services

The Ludington Senior Citizens Center is located at 308 S. Rowe Street. The building houses a library section, card and game room, offices, a lounge, and two multi-purpose rooms. The Senior Center is available for use every day with public hours from 9 a.m. to 4:30 p.m. Monday through Friday.

Recreational programs offered by the Center include yoga, aerobics, games, billiards, arts and crafts classes, senior health club, recreation for physically limited, line dancing, and several annual cultural and shopping trips. Service programs include Medicare/Medicaid assistance, health education, medical clinics, insurance counseling, tax and other governmental form assistance, driving refresher courses, and case management.

The Center also serves as the designated congregate meals site set up by the Area Agency on Aging. The home-delivered meal program for the western half of Mason County is also monitored by the center. Operation of the Center is funded by the City of Ludington, a Mason County millage, the United Way of Mason County, and state and federal agencies.

TRANSPORTATION

The automobile is the prominent mode of transportation in the City of Ludington, but residents and visitors are also served by a network of sidewalks, other non-motorized transportation routes, and the Ludington Mass Transportation Authority's bus services. Water and rail transportation played an important role in the development of business and industry within the City, and are still significant components of the local transportation network. Ludington's protected harbor provides refuge for recreational boaters and provides an ideal location for the Lake Michigan Carferry, which carries passengers, automobiles, and trucks between Ludington and Manitowoc, Wisconsin.

Street and Highway Network

Ludington's street network is primarily organized in a traditional, rectangular grid pattern with public alleys in much of the City. US-10 provides the primary entrance into the City from the junction with the US-31 freeway just east of Ludington in Pere Marquette Township. From east to west within the City, US-10 runs into downtown as Ludington Avenue and then heads south as James Street, eventually becoming Maritime Drive, where the route continues by water across Lake Michigan to Manitowoc, Wisconsin. M-116 runs from Ludington north along Lakeshore Drive and terminates at Ludington

Ludington Avenue is a major east/west corridor within the City and runs through downtown Ludington.

[3] *Michigan Department of Education. Student Count Snapshot – Ludington Area School District: 2014-15. Retrieved from https://www.mischooldata.org/*

State Park approximately eight miles north of the City.

Complete Streets

In 2011, the City of Ludington adopted a Complete Streets resolution in which the City Council declared its support of Complete Streets policies, design considerations and practices in future transportation projects.[4]

Complete Streets are defined as "roadways planned, designed, and constructed to provide appropriate access to all legal users, whether by car, truck, transit, assistive device, foot or bicycle," by Public Act 135 of 2010.

The Complete Streets movement has been gaining increased attention in communities across the county. The State of Michigan requires local transportation agencies to consider all roadway users in all phases of transportation projects through Complete Streets legislation passed in 2010. State of Michigan Public Act 135 defines Complete Streets as "roadways planned, designed, and constructed to provide appropriate access to all legal users, whether by car, truck, transit, assistive device, foot or bicycle."[5] It is important to consider all modes of transportation when designing and constructing transportation improvements to provide equitable opportunities for those with differing transportation needs, financial means, and physical abilities. Additionally, integrating Complete Streets practices can help encourage safe and active transportation, decrease pollution, and reduce the incidence of childhood obesity, social isolation, and serious health conditions.[6] Ludington should continue to support the inclusion of safe and diverse transportation opportunities in all future transportation projects.

Public Transportation

Public transportation within the City of Ludington is provided by the Ludington Mass Transportation Authority (LMTA). LMTA provides bus services within Ludington, Scottville, and Pere Marquette and Amber townships through a demand-response (dial-a-ride) system. LMTA operates 22 vehicles that are all equipped with lifts to allow for the boarding of those who need physical assistance and provides approximately 175,000 rides to area residents each year. A majority of LMTA riders are area workers and school children who use the bus services to travel to and from work and school, respectively. About one quarter of the total ridership is made up of senior citizens.

LMTA operates 22 vehicles within the area. Photo source: Ludington Area Convention & Visitors Bureau.

Non-motorized Transportation Options

The need for better non-motorized transportation route connectivity within the Ludington Community was frequently mentioned by participants in the *Resilient Ludington* planning process. Generally, it was noted that there are gaps within existing bicycle and pedestrian infrastructure, and places where the infrastructure does not exist at all. Expanding the City's non-motorized transportation network and implementing better safety features for pedestrians and bicyclists will make it easier to get around the City for those who cannot or choose not to drive a car. It was also noted that non-motorized connections between Ludington and surrounding communities were lacking and could be improved. The City should continue to identify opportunities for new and improved pedestrian and bicycle facilities and work with the appropriate agencies and neighboring jurisdictions to provide better regional non-motorized transportation connections.

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[4] *City of Ludington. (2011). Ludington Complete Streets Resolution.*

[5] *Public Act 135 (Complete Streets Legislation) Sec 10 p. 1*

[6] *American Planning Association Magazine, October 2013 Issue, Public Health Policy and Law, p.5*

Pedestrian Routes

The city has made a strong effort to locate sidewalks within neighborhoods and throughout the downtown. Most neighborhood streets, particularly those closest to downtown, have sidewalk infrastructure within the right-of-way. There are some streets, or portions of streets, within the City where sidewalks do not currently exist. These gaps in the sidewalk infrastructure are slowly being filled in as properties are developed or redeveloped, as the inclusion of sidewalks with new projects is required. The City will consider the adoption of changes to its sidewalk policies that would require that sidewalks be constructed where they do not exist.

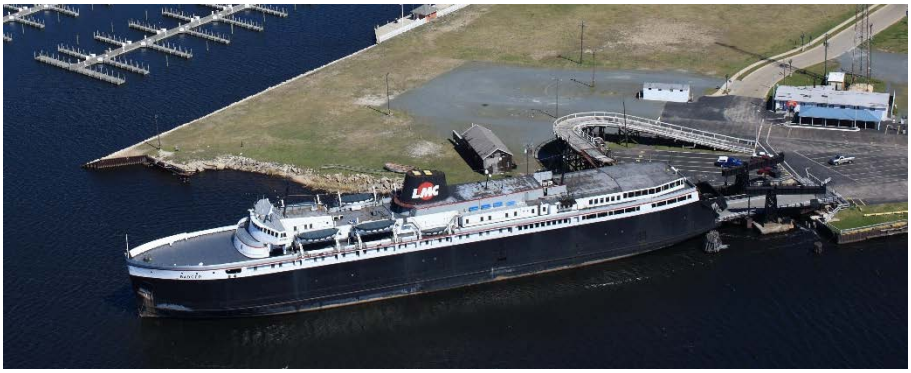
An extensive sidewalk system provides pedestrian access to a majority of the City's neighborhoods, commercial areas, and parks.

Bicycle Routes and Paths

A variety of bicycle paths and routes can be found in and around Ludington. The wide, paved shoulder of M-116 from Stearns Park in the City allows easy bicycle travel along the shore of Lake Michigan all the way north to Ludington State Park. Cartier Park offers a one-mile paved path for bicyclists, and additional bike trails are located within Ludington State Park and at the Ludington School Forest just outside of the City. A variety of local trail advocacy groups have been investigating ways to extend the Pere Marquette State Trail from Baldwin to Ludington. During the *Resilient Ludington* US-10/US-31 Corridor Charrette, many ideas were discussed for the creation of a shared-use path from Ludington to Scottville along US-10. The City should continue to work with neighboring jurisdictions, advocacy groups, and state agencies to create better non-motorized connections between Ludington, it neighbors, and existing regional trail systems.

Lake Michigan Carferry

The Lake Michigan Carferry carries passengers and vehicles 60 miles between Ludington and Manitowoc, Wisconsin on the S.S. Badger, a 410-foot ship. The S.S. Badger has been providing passage across Lake Michigan since 1953, and has become a valuable part of Ludington's identity and heritage. Approximately 140,000 passengers arrive in Ludington on the Carferry each year and the City continues to investigate opportunities to improve the entry experience for these visitors. The City's Waterfront Comprehensive Plan envisions the development of a walkway connecting the Carferry to downtown that provides a welcoming, recreational atmosphere. The City has revised its Zoning Ordinance to allow for a mix of uses in this area in order to promote development that improves the experience of traveling between the Carferry dock and downtown.



The Lake Michigan Carferry provides transportation across Lake Michigan aboard the S.S. Badger. Photo source: U.S. Army Corps of Engineers.

PARKS AND RECREATION

The City of Ludington has a wide variety of recreational opportunities available for residents and visitors. Ranging in size and intensity of development, the City's parks are well distributed throughout its neighborhoods. The City, often collaborating with private partners, strives to provide a wide range of recreational programs, facilities, and equipment within its parks and is continuously upgrading its offerings. The parks and recreational spaces within Ludington and the surrounding area were frequently identified as some of the community's greatest assets during the *Resilient Ludington* planning process. The area's sizeable seasonal population and tourists make use of the City parks, increasing demand on the recreational facilities and bringing money into the local economy.

The *City of Ludington Community Recreation Plan* was adopted in 2011 in order to identify existing recreational lands, facilities, and activities and plan for future development and maintenance of the City's recreational infrastructure. Maintaining a current recreation plan that conforms to Michigan Department of Natural Resources (MDNR) standards is important, as it qualifies the City for recreation grant funding through the MDNR Trust Fund. In order to remain eligible for these funds, the City must review, update, and submit the recreation plan to MDNR every five years.

Ludington's City park system is supplemented by other entities within the City that also provide recreational lands and facilities. The Ludington Area School District funds and maintains a variety of athletic fields, facilities, and a Community Swimming Pool. Ludington State Park, a 5,400-acre state-owned recreational area located north of the City, provides an abundance of recreational opportunities and serves as one of the primary tourist attractions in the region. Additional information on the City of Ludington parks system and other recreational options within the City and region can be found in the *City of Ludington Community Recreation Plan*.

A map illustrating the locations of parks and public lands in Ludington (Map 7.1) can be found in Appendix A.

Public parks in the City of Ludington provide a wide variety of recreational opportunities and public gathering spaces.

CHAPTER 8 – GOALS AND OBJECTIVES

The primary function of this Master Plan is to guide future development and growth within the City of Ludington. The Master Plan identifies a vision for the future of the City and a series of goals and objectives to guide decision making. It is important that the vision and goals of the Plan reflect the needs and desires of the people of Ludington, and the *Resilient Ludington* planning process provided the public input that served as the basis for the guiding principles, goals, and objectives found in this chapter. Over the course of the planning process, the people of the Ludington Community provided input at a public kickoff meeting, a series of Community Action Team meetings, the US-10/US-31 Corridor Planning Charrette, stakeholder meetings and interviews, and through the *Resilient Ludington* Online Community Planning Survey.

GUIDING PRINCIPLES

During the planning process, a number of important community issues and topics were identified by citizens, stakeholders, elected and appointed officials, and community staff. This input, along with valid information from the existing Plan, was used by the planning team and the City of Ludington Planning Commission to develop a list of guiding principles to inform the creation of goals and objectives for the future development of the City and the remainder of the Master Plan. While many specific community issues and ideas were identified during the planning process, the following list summarizes those items and identifies the main themes that formulated the basis of the Master Plan.

- Improve economic, development, educational, and occupational opportunities within the City.
- Improve regional coordination with Hamlin and Pere Marquette townships and Mason County.
- Address the potential impacts of the aging population on housing, transportation, and service needs.
- Utilize the community's unique assets to enhance Ludington's sense of place and drive economic development.
- Protect natural resources, water quality, and open spaces.
- Improve, maintain, and expand infrastructure within the community.
- Improve walkability, biking, and accessibility in the community.
- Provide quality, affordable housing for all members of the community.

To accompany these key topics, and based on input from the planning process, the following concepts were considered important when creating goals and objectives for this Master Plan.

Building Community Resilience

A major portion of the *Resilient Ludington* planning process focused on how the community could become more resilient, or how it could better utilize available resources to withstand and recover from adverse situations. Resilient communities are able to learn from past adversity and adapt quickly to change. Four of the most important characteristics of resilient communities are:

- Strong and meaningful social connections.
- Social and economic diversity.
- Innovation and creative problem-solving capacity.
- Extensive use of ecosystem services.

To become resilient, communities must have the capacity to be adaptive. Adaptation is a critically important part of resilience because it allows communities to prevent further harm from disasters and disruptions while making the most of new conditions.

Communities that become resilient start by assessing their vulnerabilities and then making plans to reduce their sensitivities and exposures to hazards. For example, local officials can encourage or adopt building and site design standards that help reduce heating and cooling challenges posed by severe temperature swings.

Public planning processes can help increase civic engagement by improving communications and cooperation between cultural and service organizations and assuring more effective community projects.

To improve economic resilience, Ludington can work to encourage and support the local production of goods, increasing self-reliance and reducing the flow of funds out of the community. Programs to encourage local investing and entrepreneurship are helpful in building both employment and production capacity. Local investments, consumption of locally produced products, and locally owned businesses all help to diversify the community's economy, providing greater resilience.

Building on the Existing Foundation

The City of Ludington's last master plan was adopted in 2004 and amended in 2010. In the time since its adoption, many of the plan's recommendations have been implemented, and conditions within the City have changed. Applicable portions of the past plan helped inform the creation of this Master Plan.

The *Resilient Ludington* planning process also builds upon a variety of additional City and regional plans and ongoing planning efforts. These past and present initiatives contain many goals that are applicable to the resilience and planning concepts addressed in the current Master Plan. The following plans and planning efforts informed the creation of this Master Plan and continue to be valuable resources for decision makers in Ludington.

City of Ludington Community Recreation Plan (2011)

This plan describes the recreational assets of the community and outlines where future recreational development and investment should be made in the City. Keeping a current parks and recreation plan filed with the Michigan Department of Natural Resources (MDNR) makes the City eligible to apply for MDNR Trust Fund grant funding.

Hazard Mitigation Plan for Mason County and Constituent Local Governments (2015)

Produced by the West Michigan Shoreline Regional Development Commission, this document addresses the importance of reducing community vulnerability to natural and technological hazards. The analysis includes the different types of hazard threats in the county and a risk assessment of each hazard.

US-10/US-31 Access Management Plan (2005)

This plan, created by the Planning & Zoning Center, identifies the existing conditions of the US-10/US-31 corridor and makes recommendations for improvements to the corridor within the City and surrounding jurisdictions.

Comprehensive Economic Development Strategy (2014)

This report, produced by the West Michigan Shoreline Regional Development Commission, provides an overview of the existing economic conditions in west Michigan and recommendations for economic development across the region.

Cultural Economy Development Plan for Ludington/Mason County, Michigan (2011)

Created by Hargrove International and Becky Anderson Consulting, this plan provides recommendations to diversify and strengthen the regional economic base by exploring opportunities associated with the cultural economy.

Proposed East Ludington Avenue Historic District Study Committee Report (2011)

This report, written by the Ludington Historic District Study Committee, inventories historic properties along East Ludington Avenue, identifies boundaries for a potential historic district, and outlines the historic significance of historic buildings in the area.

The Greater Ludington Area Waterfront Master Plan (1996)

Produced by Camiros, Ltd., this plan provides a vision for the future of waterfront areas in the greater Ludington area. The plan identifies potential actions for improvements in City parks, the Central Business District, the City's waterfront, the South Washington Avenue area, and other locations within the City and larger community.

Capitalize on the Community's Unique Assets

Combined with its small-town charm, the City of Ludington's variety of natural and cultural resources create a unique setting and make it a wonderful place to visit and live. The opportunity for the City to better leverage its location, assets, and recreational opportunities for economic development and quality of life improvements was frequently cited during the planning process. Ludington should continue to explore ways to enhance public spaces, encourage redevelopment within the City, and promote its natural, cultural, and historic resources.

Celebrating and enhancing the unique assets within the community will help Ludington remain a place where people want to live, work, and play.

Increasing access to and celebrating the City's natural beauty can foster economic development by enhancing recreation-based tourism within the community and increase the quality of life for residents. Additionally, continuing to support the efforts of groups like the Cultural Economic Development Task Force and the Mason County Historical Society will help solidify Ludington's tourism economy. Strengthening the City's connection to adjacent natural resources, creating cultural opportunities, and providing a vibrant downtown atmosphere helps emphasize Ludington's unique sense of place that can draw the educated, engaged entrepreneurs and knowledge workers that are necessary to compete in today's "New Economy." The New Economy refers to a global, entrepreneurial and knowledge-based economy where business success comes increasingly from the ability to incorporate knowledge, technology, creativity and innovation into their products and services.[1] In the new economy, talented, well-educated people choose where to live first, then look for or create jobs.

GOALS AND OBJECTIVES

The goals and objectives in this chapter of the Master Plan provide guidance for the future planning of the City of Ludington, and are based on the input gathered during the *Resilient Ludington* planning process, discussions with the City of Ludington Planning Commission, and previous community planning efforts. The goals and objectives are grouped under seven headings that represent the major themes that emerged during the planning process. Those seven themes are:

- Natural, Recreational, and Cultural Features,
- Social Enrichment,
- Housing and Neighborhoods,
- Economic Development and Employment,
- Land Use and Community Design,
- Downtown and the Waterfront, and
- Infrastructure.

[1] *Chasing the Past or Investing in Our Future – Summary Report. Land Policy Institute (2009)*

Goals provide statements that describe the desired future for Ludington and provide general direction for local decision makers. Objectives are more detailed descriptions of actions needed to achieve the goals.

Natural, Recreational, and Cultural Features

Goal 1

Recreational opportunities in Ludington will be interconnected by a non-motorized network and include a diverse range of outdoor and indoor activities that further the physical and mental well-being of residents and visitors.

Objectives

A. Develop and take steps towards implementing a plan to establish a connected seasonal system of pedestrian/bicycle paths to interest areas (natural, commercial, parks, recreational, educational) or other attractions.

B. Sustain and improve the community's recreational amenities and opportunities to provide a wide variety of passive and active recreation activities for residents and visitors.

C. Build and strengthen relationships with neighboring townships and the County to work as a region to improve the quality of life of residents.

D. Recognize and support citizen desires for conveniently located, safe and well-maintained parks and public spaces.

E. Support adjoining jurisdictions and Mason County in the creation of a multi-use path from Ludington to Scottville. Identify potential points to connect City pedestrian and bicycle infrastructure to the future multi-use path.

Goal 2

Residents of Ludington will enjoy clean air and water resources. The City will collaborate with surrounding areas to protect water quality and preserve unique natural resources.

Objectives

A. Promote the establishment of a regional watershed council to further water-quality protection activities in the area.

B. Investigate stormwater management standards for private developments that prevent the direct discharge of storm or melt water into bodies of water or wetlands.

C. Encourage the use of Low Impact Design (LID) stormwater control techniques like rain gardens, bio-retention areas, and bio-swales in new developments.

D. Increase tree canopy coverage within the City by planting street trees within the rights-of-way of all public streets, implementing a tree planting program for public properties, and requiring the planting of trees as a part of the site plan review process.

E. Reduce impervious surface coverage within the City on both public and private properties, as appropriate.

F. Update and reference database on hydrology studies through MSU or a similar resource to address issues and potential risk associated with recharging surface or subsurface water flow patterns.

Social Enrichment

Goal 1

The City of Ludington will be known for its unique historic character, a relaxed and casual pace of life, a commitment to strengthen families, and a willingness to cooperate to achieve the continual improvement of the community.

Objectives

A. Provide areas that encourage social interaction and high use in parks and other public spaces. Work to enhance the local arts scene.

B. Work with the Cultural Economic Development Task Force to foster the implementation of the Cultural Economic Development Plan in order to provide additional cultural opportunities for residents and visitors while bolstering the local economy.

C. Continue to explore options for the preservation of historic structures and sites in the downtown and other historically significant neighborhoods.

D. Promote locally grown and produced food by continuing to strengthen the downtown farmers market and encouraging the use of local produce in area restaurants.

Goal 2

Residents of Ludington will continue to benefit from an open, available and transparent communication process with City leadership and staff.

Objectives

A. Collaborate with local organizations to host community activities and cultural events year-round. Develop and implement a program of community involvement in public safety and service activities to strengthen neighborhoods and communication channels.

B. Continue to include local citizens in City decision-making processes and identify new ways to foster public participation and input.

Housing and Neighborhoods

Goal 1

The City will encourage a variety of residential settings to serve all citizens with attractive, efficient and affordable homes located in safe and inviting neighborhoods.

Objectives

A. Develop tools to foster a range of housing types for residents of varying ages and income levels.

B. Expand programs to renew and improve existing housing, and pursue funding to renew areas that require attention.

C. Implement rental housing maintenance codes that preserve the quality and safety of rental properties in the City.

Goal 2

The City will continually work to maximize the safety of residents by collaborating with the Mason County Emergency Management Office to identify and respond to potential hazards.

Objectives

A. Maintain communication with the Emergency Management Office to identify ways that the City can be prepared to better respond to potential hazards.

B. Coordinate and host informational presentations on emergency preparedness to better inform residents of potential hazards and how to respond to them.

Economic Development and Employment

Goal 1

The City of Ludington will continue to attract and encourage industries that provide employment now and in the future. The City will feature attractive development sites and complete services to accommodate future economic development.

Objectives

A. Evaluate existing zoning for its impact on economic development and create appropriate amendments to encourage desired investment.

B. Capture a greater share of Michigan's tourism by enhancing facilities and expanding promotional activities and events.

Goal 2

The City will work with adjoining jurisdictions and local economic development groups to promote a thriving and diverse business environment.

Objectives

A. Collaborate with other jurisdictions and business organizations to identify current economic conditions and needs and develop a comprehensive local economic strategy or plan.

Land Use and Community Design

Goal 1

Residential and commercial property in Ludington will consistently meet or exceed minimum code standards through the cooperative efforts of the City and property owners. Land-use decisions will be made in accord with a living Master Plan and will be reached with broad community involvement and support.

Objectives

A. Evaluate the Zoning Ordinance and develop amendments to further the goals of the Plan.

B. Identify and develop an inventory of infill opportunities and tools to encourage investment and reuse of underutilized properties.

C. Pursue participation in the Michigan Economic Development Corporation's Redevelopment Ready Communities program.

D. Develop a uniform City sign design for public and informational signs.

E. Identify areas in existing residential neighborhoods where the establishment of small-scale, service commercial uses would benefit residents and promote mixed-use development in these areas.

Downtown and the Waterfront

Goal 1

Downtown Ludington will serve as the area's economic and commercial core, characterized by successful retail and service businesses and entertainment venues to meet the needs of residents and visitors. Development in downtown Ludington and along the waterfront will be sensitive to the community's heritage and valuable views, while incorporating attractive and inviting design elements to promote human-scale patterns of growth.

Objectives

A. Assist the DDA in regularly updating its Tax Increment Financing Plan.

B. Enhance the Carferry experience and incorporate the Carferry into downtown.

C. Develop additional marketing tools for Ludington's downtown and waterfront areas.

D. Investigate the potential use of building and development design standards or form-based codes for downtown.

E. Provide high-quality public spaces downtown and along the waterfront to promote gathering, interaction, and commercial activity.

F. Improve the entry experience to downtown from the Carferry site.

Infrastructure

Goal 1

Ludington will be served with abundant clean water, power, fuel and modern communication linkages to support the requirements of a vibrant and active community. A safe and efficient system of roadways and public transportation will serve the citizens of the City, providing effective linkages between and among neighborhoods, shopping and employment areas. Utility presence and capacity will help guide land-use decisions, which will be coordinated among jurisdictions.

Objectives

A. Develop a schedule to bring all streets, curbs, and sidewalks up to good condition.

B. Work with the Ludington Mass Transit Authority to evaluate the need or desire for expanded public transportation systems and increased coordination.

C. Provide pedestrian and bicycle connections between neighborhoods, parks, and commercial areas within the City. Develop a plan to provide sidewalks in areas where they currently do not exist.

D. Identify methods to coordinate the maintenance and clearing of obstructions such as snow and parked cars from all City sidewalks and foster community awareness of the importance of maintaining clear sidewalks.

E. Create a plan for future improvement, maintenance, and expansion of public utilities.

F. Investigate ways to improve community-wide access to technology like wireless Internet and fiber-optic networks.

IMPLEMENTATION TABLE

The table on the following pages identifies the priority levels and general implementation timing for the objectives for each goal in this chapter. Each objective has been assigned a priority of low, medium, or high importance. The objectives have also been assigned a timeframe for completion. Objectives are either identified for completion in the short-term (within the next five years), or over the long-term (five years or more in the future). If an objective is something that should be addressed in the short term, but work will continue for a period of time longer than five years into the future, the objective is considered "ongoing." The goals, objectives, and implementation table from this plan can help inform the creation of the City's Capital Improvement Plan.

Natural, Recreational, and Cultural Features		
Goal 1	**Timeframe**	**Priority**
Recreational opportunities in Ludington will be interconnected by a non-motorized network and include a diverse range of outdoor and indoor activities that further the physical and mental well-being of residents and visitors.		
Objective A: Develop and take steps towards implementing a plan to establish a connected seasonal system of pedestrian/bicycle paths to interest areas (natural, commercial, parks, recreational, educational) or other attractions.	Short-term	High
Objective B: Sustain and improve the community's recreational amenities and opportunities to provide a wide variety of passive and active recreation activities for residents and visitors.	Short-term	High
Objective C: Build and strengthen relationships with neighboring townships and the County to work as a region to improve the quality of life of residents.	Ongoing	Medium
Objective D: Recognize and support citizen desires for conveniently located, safe and well-maintained parks and public spaces.	Short-term	High
Objective E: Support adjoining jurisdictions and Mason County in the creation of a multi-use path from Ludington to Scottville. Identify potential points to connect City pedestrian and bicycle infrastructure to the future multi-use path.	Ongoing	Medium

Goal 2	Timeframe	Priority
Residents of Ludington will enjoy clean air and water resources. The City will collaborate with surrounding areas to protect water quality and preserve unique natural resources.		
Objective A: Promote the establishment of a regional watershed council to further water-quality protection activities in the area.	Ongoing	Medium
Objective B: Investigate stormwater management standards for private developments that prevent the direct discharge of storm or melt water into bodies of water or wetlands.	Short-term	Medium
Objective C: Encourage the use of Low Impact Design (LID) stormwater control techniques like rain gardens, bio-retention areas, and bio-swales in new developments.	Short-term	Medium
Objective D: Increase tree canopy coverage within the City by planting street trees within the rights-of-way of all public streets, implementing a tree planting program for public properties, and requiring the planting of trees as a part of the site plan review process.	Short-term	High
Objective E: Reduce impervious surface coverage within the City on both public and private properties, as appropriate.	Ongoing	High
Objective F: Update and reference database on hydrology studies through MSU or a similar resource to address issues and potential risk associated with recharging surface or subsurface water flow patterns.	Ongoing	Medium

Social Enrichment

Goal 1	**Timeframe**	**Priority**
The City of Ludington will be known for its unique historic character, a relaxed and casual pace of life, a commitment to strengthen families, and a willingness to cooperate to achieve the continual improvement of the community.		
Objective A: Provide areas that encourage social interaction and high use in parks and other public spaces. Work to enhance the local arts scene.	Ongoing	High
Objective B: Work with the Cultural Economic Development Task Force to foster the implementation of the Cultural Economic Development Plan in order to provide additional cultural opportunities for residents and visitors while bolstering the local economy.	Short-term	Medium
Objective C: Continue to explore options for the preservation of historic structures and sites in the downtown and other historically significant neighborhoods.	Ongoing	High
Objective D: Promote locally grown and produced food by continuing to strengthen the downtown farmers market and encouraging the use of local produce in area restaurants.	Ongoing	High

Goal 2	**Timeframe**	**Priority**
Residents of Ludington will continue to benefit from an open, available and transparent communication process with City leadership and staff.		
Objective A: Collaborate with local organizations to host community activities and cultural events year-round. Develop and implement a program of community involvement in public safety and service activities to strengthen neighborhoods and communication channels.	Short-term	Medium
Objective B: Continue to include local citizens in City decision-making processes and identify new ways to foster public participation and input.	Ongoing	High

Housing and Neighborhoods

Goal 1	**Timeframe**	**Priority**
The City will encourage a variety of residential settings to serve all citizens with attractive, efficient and affordable homes located in safe and inviting neighborhoods.		
Objective A: Develop tools to foster a range of housing types for residents of varying ages and income levels.	Ongoing	High
Objective B: Expand programs to renew and improve existing housing, and pursue funding to renew areas that require attention.	Ongoing	High
Objective C: Implement rental housing maintenance codes that preserve the quality and safety of rental properties in the City.	Short-term	High

Goal 2	**Timeframe**	**Priority**
The City will continually work to maximize the safety of residents by collaborating with the Mason County Emergency Management Office to identify and respond to potential hazards.		
Objective A: Maintain communication with the Emergency Management Office to identify ways that the City can be prepared to better respond to potential hazards.	Short-term	Medium
Objective B: Coordinate and host informational presentations on emergency preparedness to better inform residents of potential hazards and how to respond to them.	Short-term	Medium

Economic Development and Employment

Goal 1	**Timeframe**	**Priority**
The City of Ludington will continue to attract and encourage industries that provide employment now and in the future. The City will feature attractive development sites and complete services to accommodate future economic development.		
Objective A: Evaluate existing zoning for its impact on economic development and create appropriate amendments to encourage desired investment.	Short-term	High
Objective B: Capture a greater share of Michigan's tourism by enhancing facilities and expanding promotional activities and events.	Short-term	High

Goal 2	Timeframe	Priority
The City will work with adjoining jurisdictions and local economic development groups to promote a thriving and diverse business environment.		
Objective A: Collaborate with other jurisdictions and business organizations to identify current economic conditions and needs and develop a comprehensive local economic strategy or plan.	Ongoing	High

Land Use and Community Design

Goal 1	Timeframe	Priority
Residential and commercial property in Ludington will consistently meet or exceed minimum Code standards through the cooperative efforts of the City and property owners. Land-use decisions will be made in accord with a living Master Plan and will be reached with broad community involvement and support.		
Objective A: Evaluate the Zoning Ordinance and develop amendments to further the goals of the Plan.	Ongoing	High
Objective B: Identify and develop an inventory of infill opportunities and tools to encourage investment and reuse of underutilized properties.	Ongoing	High
Objective C: Pursue participation in the Michigan Economic Development Corporation's Redevelopment Ready Communities program.	Short-term	High
Objective D: Develop a uniform City sign design for public and informational signs.	Ongoing	Medium
Objective E: Identify areas in existing residential neighborhoods where the establishment of small-scale, service commercial uses would benefit residents and promote mixed-use development in these areas.	Ongoing	Low

Downtown and the Waterfront

Goal 1	**Timeframe**	**Priority**
Downtown Ludington will serve as the area's economic and commercial core, characterized by successful retail and service businesses and entertainment venues to meet the needs of residents and visitors. Development in downtown Ludington and along the waterfront will be sensitive to the community's heritage and valuable views, while incorporating attractive and inviting design elements to promote human-scale patterns of growth.		
Objective A: Assist the DDA in regularly updating its Tax Increment Financing Plan.	Ongoing	High
Objective B: Enhance the Carferry experience and incorporate the Carferry into downtown.	Ongoing	High
Objective C: Develop additional marketing tools for Ludington's downtown and waterfront areas.	Ongoing	High
Objective D: Investigate the potential use of building and development design standards or form-based codes for downtown.	Ongoing	Medium
Objective E: Provide high-quality public spaces downtown and along the waterfront to promote gathering, interaction, and commercial activity.	Ongoing	High
Objective F: Improve the entry experience to downtown from the Carferry site.	Ongoing	High

Infrastructure

Goal 1	**Timeframe**	**Priority**
Ludington will be served with abundant clean water, power, fuel and modern communication linkages to support the requirements of a vibrant and active community. A safe and efficient system of roadways and public transportation will serve the citizens of the City, providing effective linkages between and among neighborhoods, shopping and employment areas. Utility presence and capacity will help guide land-use decisions, which will be coordinated among jurisdictions.		
Objective A: Develop a schedule to bring all streets, curbs, and sidewalks up to good condition.	Ongoing	High
Objective B: Work with the Ludington Mass Transit Authority to evaluate the need or desire for expanded public transportation systems and increased coordination.	Ongoing	Medium
Objective C: Provide pedestrian and bicycle connections between neighborhoods, parks, and commercial areas within the City. Develop a plan to provide sidewalks in areas where they currently do not exist.	Short-term	High
Objective D: Identify methods to coordinate the maintenance and clearing of obstructions such as snow and parked cars from all City sidewalks and foster community awareness of the importance of maintaining clear sidewalks.	Ongoing	Medium
Objective E: Create a plan for future improvement, maintenance, and expansion of public utilities.	Long-term	Medium
Objective F: Improve community-wide access to technology like wireless Internet and fiber-optic networks.	Ongoing	Medium

CHAPTER 9 – FUTURE LAND USE PLAN, ZONING PLAN, AND IMPLEMENTATION

Two important components of any master planning effort are the development of a Future Land Use Plan and a Zoning Plan. The City of Ludington Future Land Use Map was developed based on stakeholder input at public meetings, feedback from the City Planning Commission, and goals and objectives developed throughout the *Resilient Ludington* planning effort. The Zoning Plan reflects the Future Land Use Plan and should be used as a guiding document when updating the Zoning Ordinance. Additional recommendations for future development and strategies for the implementation of this Plan's goals and objectives are also included in this chapter.

FUTURE LAND USE PLAN

A generalized, preferred organization of future land uses in the City of Ludington are described in the Future Land Use Plan and Future Land Use Map. The Future Land Use Plan is a general framework used to guide land use and policy decisions within the City over the next 25 years. The Future Land Use Plan was developed through consideration of a variety of factors, including existing land use, public input from the planning process, analysis of community vulnerabilities, desired community character, development impacts on natural features, and future growth. The Future Land Use Map (Map 9.1), found in Appendix A, shows generalized locations for the broad future land use areas described below.

Residential Areas

The existing neighborhoods of Ludington have a historic, small-town character that is valued by residents. New homes and residential structures, whether in new or infill development, should be constructed to complement existing neighborhood character and designed to create a friendly atmosphere that promotes social interaction between neighbors. Streets should be lined with trees and friendly to pedestrians. Infill development and renovations should be done in a way that is compatible with adjacent housing. Providing a variety of housing options to accommodate the needs and desires of existing and future populations is important to consider when planning for future residential development. The following types of residential land use fit with the vision for the future of Ludington.

Single-Family Residential

A primary goal of the City of Ludington is the preservation of family living environments by encouraging attractive residential neighborhoods. The main focus of this district is to establish, preserve, and enhance inviting and walkable neighborhoods at suitable densities with less than five units per acre to accommodate empty-nesters, families with children, and single residents. This designation is meant for single-family houses on individual lots, typically in subdivisions and traditional grid street neighborhoods.

Most of the City is classified as Single-Family Residential. The principal land use in this district will be single-family detached housing. On a restricted basis, higher densities might be considered where the effects of that density on natural features can be mitigated, and where impacts on neighboring residences can be effectively buffered.

Residential Mix

A primary goal of this Master Plan is to provide guidance for high quality and aesthetic forms of development that increase residential density while creating a very attractive living environment for residents. The Residential Mix designation is key to this goal. The primary purpose of this designation is to establish walkable neighborhoods in close proximity to commercial and recreational services with amenities and design that work with respect to views of the waterfront. These neighborhoods are scaled for public transit or for passenger car travel with good pedestrian connections to commercial and institutional land uses nearby.

The primary land use within this area will be attached homes developed in clusters, in multi-unit buildings, or in buildings mixed with commercial uses where land is available or redevelopment is desired. This may also include garden cottages and other senior living opportunities. Designers will be encouraged to establish small pockets of public green space within this relatively intense development form. Innovative design techniques will be considered to accommodate mixed uses that complement one another. Overall residential densities from five to 12 dwelling units per acre will be achieved.

Increasing existing densities around the Central Business District will preserve the more stable single-family residential areas while utilizing the locations in close proximity to goods and services. It is understood that today, much of this area has development of one kind or another on the existing property. Recent condominium projects have demonstrated that there is a market for mixes in residential housing. Since this plan is intended to be the vision for 20 to 25 years into the future, developing a residential mix in this area should be the goal of the Ludington Planning Commission and City Council when reviewing site plans and rezoning requests. This suggestion simply guides the market to take action preferred by the City.

Commercial Areas

The character of downtown Ludington and other commercial areas in the City significantly contribute to the perception of the City, as the primary transportation corridor (Ludington Avenue) and visitor locations within the City are lined by commercial uses. Development and redevelopment within commercial areas should be designed to complement the existing character of Ludington, capitalize on the close proximity to natural beauty, integrate green space, and be pedestrian friendly.

Central Business District

The Central Business District (CBD) is intended to promote efficient and inviting forms of development in the downtown core of the City. With attractive and walkable patterns of development along and off of Ludington Avenue, higher density residential and commercial uses here will allow for a secure and vibrant living and shopping environment. This land-use designation is meant to serve the entire Ludington region and its visitors with goods and services while developing in accord with the surrounding residential and residentially mixed neighborhoods. Finally, this

district is meant to serve as a social gathering place for area residents, as several community facilities are located here.

As the downtown area of Ludington, the Central Business District is located generally north and south of Ludington Avenue and stretches from Lewis Street to Rowe Street. This district also extends to the south along James Street towards Pere Marquette Lake between Harrison and Robert down to Foster Street.

The key to distinguishing the Central Business District from the other land-use classifications in the City of Ludington is high-density mixed uses. For example, buildings along Ludington Avenue are in the process of being redeveloped to encourage a mixture of commercial and residential apartment uses. Planned uses in this district include, but are not limited to, commercial, office, entertainment, civic, high-density residential, and pocket parks. Maintaining a compact downtown core allows public investment to have a greater impact on a smaller area and makes strolling the downtown a pleasurable experience for shoppers and residents.

Performance Commercial

Performance Commercial areas are defined in portions of the City where a mix of commercial and industrial activities exist in close proximity to residential neighborhoods. These areas provide local jobs as well as goods and services to the community. In many cases these types of uses may coexist without conflict. Since these areas are well established and cause little nuisance, they will be preserved in the Future Land Use Plan. However, in the event that new businesses locate in these areas or existing businesses apply to expand or change their facilities and operation, performance standards will be applied to ensure continued compatibility. Developments should, to the greatest extent possible, be designed and built to preserve unique natural features and to support smooth traffic movements.

Facilities in the Performance Commercial district are likely to include wholesale retailing, automobile-related services, mini-storage, harbor-related services, and some offices. It is desirable for such facilities to be designed to be aesthetically pleasing and for parking areas to include adequate landscaping to minimize the appearance of an oppressive, asphalt-dominated look, while respecting the need for easy access and loading.

Visitor Accommodations

Ludington is growing as a tourism destination in Michigan. Providing excellent visitor accommodations is a critical component to building that portion of Ludington's economy. Within and surrounding these areas, it will be critical to enhance the aesthetic appeal of the Visitor Accommodations district and expand the current area designated for hotels and motels to include more resort options. This area may also include some small retail, dining establishments, and other entertainment venues.

The Visitor Accommodation District is located at the eastern entrance to the City on Ludington Avenue and at the very western end of Ludington Avenue. It is intended to portray a sense of welcome and hospitality. As bookends to the City, the district will encourage development concepts that illustrate attention to detail and pride in community, and visually separate Ludington from Pere Marquette Township. The area within this district south of the hospital will serve out-of-town guests attending to hospital patients and those visiting Ludington for vacation and respite. The area at the west end of Ludington Avenue is intended to exist as a Ludington-style resort area.

Industrial Areas

Industrial development within Ludington is vitally important as it provides jobs for residents and tax base for the City. Maintaining existing industrial uses and adding new businesses within these areas will help strengthen the local economy. When planning for the future, it is important to consider not only the site requirements of industrial uses, but the impacts of these uses on surrounding neighborhoods and transportation corridors.

The Industrial land-use classification is meant for manufacturing, shipping, and heavy commercial employment opportunities to serve the greater Ludington area. Facilities should be developed with suitable utility and transportation links and with respect for the City's environmental features.

The future Industrial uses cluster in two sections of the City: along the City's shoreline of the Pere Marquette Lake deep-water port, and in the Ludington Industrial Park. This area actually extends eastward into Pere Marquette Township, which complements the industrial park with additional industrial uses.

Traditionally, the Industrial designation has accommodated the following purposes:

- To shield residential areas against potentially undesirable effects of manufacturing, such as noise, odors, fumes, and truck traffic;
- To provide sufficient lands for base industrial employment and investment; and,
- To establish appropriate land-use controls intended to protect manufacturing and neighboring residential developments from congestion and pollution.

Public and Civic Areas

This designation identifies public institutions, civic facilities, government buildings, schools, and parks that contribute to the sense-of-place in the City of Ludington. Public and Civic areas should be compatible with the character and scale of the neighborhood in which they are located.

Civic

The Civic land-use designation includes government buildings, public institutions, and schools. For example, City Hall, the Ludington Post Office, the Mason County Courthouse, Spectrum Health Ludington Hospital, Ludington High School, the elementary schools, and the Ludington Library are Civic land uses. A primary purpose of this usage is to facilitate public meetings, education, and culture for the City of Ludington. Uses in the Civic land-use districts should be in harmony with governmental and educational purposes, and intended for the public good.

Parks

Recreational activities in the Ludington area are plentiful. The immediate region contains some of the best beaches, hiking trails, camping facilities, and fishing streams in the state. The City contributes opportunities for sporting events, socializing, children's play activity, and passive recreation. With careful planning, these common areas can be enhanced and connected. These lands are a vital part of the community's identity and health. The Parks land-use designation is intended for community parkland, public beaches, trails, pocket parks, and community plazas.

The largest concentrations of "parkland" in Ludington are Cartier Park and Lakeview Cemetery and Stearns Park. The areas falling under the Parks land-use designation are intended for public ownership and use. Maintaining and promoting more green space, safe public gathering places, and recreational opportunities is essential to the quality of life in Ludington.

Other Areas

Historic Maritime

The Historic Maritime District is intended to preserve the historic character of the area while cultivating the "fisherman's village" theme. Currently South Washington Avenue hosts an eclectic mix of historic buildings and charter-fishing operations with supporting facilities. While the five-block area has experienced some deterioration, the authentic, raw character of South Washington makes it prime for young professionals and the "creative class."

The goal of the Historic Maritime District is to encourage rehabilitation and adaptive reuse of the historic buildings for maritime-related business, residential uses, and the arts. Along with the existing charter-fishing businesses, uses in this district may include graphic design, entertainment, working art studios, culinary arts, interior design, and those in the business of other creative-thought industries. This land-use classification will provide commercial and studio options with additional associated residential forms to create a village-like atmosphere. Residential uses are envisioned as flats or loft-style apartments above business spaces.

Waterfront Visitor Arrival

The deep-water harbor in Ludington has long been an asset to the community. The Lake Michigan Carferry, other cruise ships, and charter-fishing boats use Ludington's waterfront to dock. The Waterfront Visitor Arrival area is intended to preserve the location of the Carferry and continue harbor uses in the area while improving both its appearance and its connectivity to the downtown.

ZONING PLAN

According to Section 2(d) of the Michigan Planning Enabling Act (PA 33 of 2008), a Master Plan shall include a "Zoning Plan" depicting the various zoning districts and their use, as well as standards for height, bulk, location, and use of building and premises. The Zoning Plan serves as the basis for the Zoning Ordinance.

Relationship to the Master Plan

The Master Plan describes the vision, objectives, and strategies for future development in the City of Ludington. The Zoning Plan is based on the recommendations of the Master Plan and is intended to identify areas where existing zoning is inconsistent with the objectives and strategies of the Master Plan and guide the development of the Zoning Ordinance. The Zoning Ordinance is the primary implementation tool for the future development of Ludington.

Residential Zoning Districts

The residential zoning districts in the City of Ludington are:

- R1A – Shorefront Residential District
- R1B – Single Family Residential District
- R1C – Planned Residential District
- R2A – General Single Family Residential District
- R3A – Multi-Family Residential District
- R4A – Mobile Home Park District

The main purpose of these zoning districts is to provide a variety of housing options within the City. The R1A Shorefront Residential and R1B Single Family Residential Districts are intended to encourage suitable environments for families with children in primarily single-family housing neighborhoods. The R1C Planned Residential District is intended to accommodate planned residential development of a unique 40-acre site with a former landfill on a portion of the property. The R2A General Single Family Residential District is intended to accommodate primarily single-family residential uses on lots smaller than those in the R1A and R1B districts. The purpose of the R3A Multi-Family District is to accommodate for duplex or multiple-family dwellings. The R4A Mobile Home Park District is intended to provide appropriate locations for the development of mobile home parks.

Commercial Districts

The commercial zoning districts in the City of Ludington are:

- LC – Limited Commercial District
- C1 – Old Town Business District
- C2 – General Retail District
- CBD – Central Business District
- MC – Maritime Commercial District

The purpose of the Commercial Districts is to accommodate a variety of commercial and service uses intended to serve visitors and people residing in the surrounding neighborhoods and region. The LC Limited Commercial District is intended to accommodate limited commercial uses characterized by existing office and residential development within the district. The C1 Old Town Business District is intended to provide for the

use, possible expansion, and improvement of older small neighborhood business areas. The purpose of the C2 General Retail District is to accommodate primarily automobile-oriented businesses that don't rely on pedestrian traffic or proximity to other businesses. The CBD Central Business District is intended to encourage and facilitate the development of a sound and efficient downtown with a mix of commercial, retail, office, entertainment, and residential uses. The MC Maritime Commercial District is intended to provide a transition between the Waterfront District and the Central Business District and to allow for a mix of uses that encourages redevelopment and preserves the historical character of the area.

Industrial Districts

The industrial zoning districts in the City of Ludington are:

- M-1 – Wholesale and Light Industry District
- M-2 – Heavy Industry District

The intended purpose of the M-1 Wholesale and Light Industry District is to encourage and facilitate the development of industrial enterprises within the City. The M-2 Heavy Industry District is intended to accommodate heavy manufacturing and industrial operations.

Waterfront Districts

The following are the waterfront zoning districts in the City of Ludington:

- W – Waterfront District
- W/S – Waterfront/Shipping District
- WM1 and 2 – Waterfront Maritime Districts
- WCB – Waterfront Central Business District

The intended purpose of the W Waterfront District is to accommodate a mix of recreational, resort, residential, service, public, and business uses in waterfront areas within the City. The W/S Waterfront/Shipping District is intended to accommodate waterfront uses allowed in the Waterfront District as well as special uses that provide for a "working harbor." The WM1 and 2 Waterfront Maritime Districts are intended to provide a transition between established business areas and the developing waterfront area. The WCB Waterfront Central Business District is intended to permit expansion of the Central Business District and accommodate higher residential densities in waterfront areas of the City.

Special Districts

The following are considered "special" zoning districts in the City of Ludington:

- P – Parking District
- M-R – Motel-Resort District
- G-1 – Government Service District

The intended purpose of the P Parking District is to provide specific locations for public or private off-street parking. The M-R Motel-Resort District is intended to accommodate motels and related uses oriented to visiting tourists and travelers. The G-1 Government Service District is intended to designate locations for public services.

The following table illustrates the regulations of the existing zoning districts in the City of Ludington Zoning Ordinance.

City of Ludington Zoning District Regulations

Zoning District	Min. Lot Area (S.F.)	Min. Lot Width (Ft)	Setbacks (Ft)			Maximum Building Height (Ft)	Min. Floor Area (S.F.)	Max. % Lot Coverage
			Front	Side	Rear			
R1A Shorefront Residential District	43,560	100	50	15	50	35	1,000	25
R1B Single Family Residential District	7,000	60	25	7.5	30	35	850	35
R1C Planned Residential District	12,000	100	25	15	30	35	1,000	35
R2A General Single Family Residential District	6,000	60	25	7.5	25	35	800	35
R3A Multi-Family Residential District	Varies	60	25	7.5	Var.	35	Varies	Varies
R4A Mobile Home Park District	Conformity with Michigan Mobile Home Commission Regulations							
LC Limited Commercial District	5,000	50	25	10	25	35	-	Varies
C1 Old Town Business District	6,000	60	25	7.5	25	35	-	-
C2 General Retail District	-	-	25' Residential Buffer			35	-	Varies
CBD Central Business District	-	-	25' Residential Buffer			75	-	500
MC Maritime Commercial District	-	-	25' Residential Buffer			75	-	500
M-1 Wholesale and Light Industry District	-	-	25	25	25	50	-	Varies
M-2 Heavy Industry District	-	-	25' Residential Buffer			60	-	100
W Waterfront District	Varies	-	10	7.5	7.5	35	Varies	Varies
W/S Waterfront/Shipping District	Varies	-	10	7.5	7.5	35	Varies	Varies
WM1 Waterfront Maritime District	1,452	-	10	10	10	45	By Code	Varies

WM2 Waterfront Maritime District	1,452	-	10	7.5	10	35	By Code	Varies
WCB Waterfront Central Business District	1,452	-	10	10	10	45	By Code	Varies
P Parking District	-	-	25' Residential Buffer			60	-	500
M-R Motel-Resort District	10,000	100	25' Residential Buffer			35	-	50
G-1 Government Service District	-	-	-	-	-	-	-	-

Opportunities for Rezoning

As development and redevelopment occur within the City of Ludington, rezoning requests may be made by property owners and developers. The City should consider such requests carefully and keep the goals of the Master Plan and desires of residents in mind during the decision-making process. Generally, it is intended that a majority of the land uses within Ludington remain organized in a way similar to the current configuration of land uses while allowing for new mixed-use development in specific locations. Currently, commercial uses are found in downtown Ludington, near the waterfront, and scattered throughout existing neighborhoods. Industrial uses are scattered through the City and located along the shore of Pere Marquette Lake and within the Ludington Industrial Park. The remainder of the City is primarily made up of a variety of intermingled residential, public, and institutional uses. The rezoning of certain areas within the City could be considered to help further the goals of the Master Plan.

Form-Based Code Consideration

In order to maintain Ludington's small-town atmosphere and promote redevelopment within downtown Ludington, the City should consider adopting a Form-Based Code (FBC) for the Central Business District and the various waterfront zoning districts. An FBC is a method of regulating development to achieve a specific urban form. Form-Based Codes create a predictable public realm primarily by controlling physical form (instead of a main focus on land use) through City regulations.[1] Form-Based Codes focus on the quality of spaces and can target a specific development project or an entire portion of a community. They are vision-based, unique to individual places, and can be applied to undeveloped or redevelopment areas.

Because FBCs regulate the intensity and the scale of the built environment, they are often more conducive to foster walkable, dense, vibrant places. Oftentimes, FBCs help developments move forward more quickly by relaxing regulations and expediting the site plan review process. Traditional zoning is often very limiting for developers who are attempting to create new, innovative places.

Many communities adopt Form-Based Codes to protect existing places. Downtown Ludington has a unique character and many historic buildings that should be preserved and protected. FBCs are one tool to help protect these special historic resources. Conventional zoning is often inadequate for revitalizing historic neighborhoods and downtowns because it often fails to foster character and quality of spaces.

[1] *Form-Based Code Institute, Definition of Form-Based Code, www.formbasedcodes.org/definition.html. June 27, 2006.*

IMPLEMENTATION TOOLS AND PRACTICES

Zoning Ordinance Standards

The City Planning Commission should review the Zoning Ordinance to ensure that design and management standards reflect the future vision for the City. Specific attention should be given to desired land uses, building location, building orientation, and signage. Potential amendments should be focused on creating more walkable and pedestrian-oriented development. Additionally, Zoning Ordinance standards that help protect the water quality of Lake Michigan and inland waterways should be considered. Building design guidelines (discussed below) could be encouraged or required in the Zoning Ordinance as well.

Design Guidelines

To create a unified and improved aesthetic character for Ludington, the Planning Commission should consider establishing a set of design guidelines for buildings in the Central Business District and waterfront districts. Guidelines should address building location, orientation, bulk, entrances, façades, roof lines, window placement, and building materials. The City should collaborate with local property owners during the creation of the design guidelines to ensure support for any proposed recommendations. Design guidelines are not regulatory documents, but can serve to inform any future zoning standards related to building design and aesthetics. Similar guidelines could also be applied to the historic residential neighborhoods in the City to help maintain their character.

Redevelopment Ready Communities Program

The Redevelopment Ready Communities (RRC) Program, administered by the Michigan Economic Development Corporation (MEDC), is a certification program that helps communities adopt redevelopment strategies and processes to encourage development. Communities that choose to participate in the program evaluate and modify their practices related to: community plans and public outreach; zoning standards; development review processes; recruitment and education; specific redevelopment sites; and community prosperity. The City should consider participating in the RRC program to show that the community is business friendly and proactive about future development. The MEDC also helps program communities market their top-priority redevelopment sites.

Community Development Block Grants

Community Development Block Grant (CDBG) funding is provided to local communities through the Michigan Strategic Fund with assistance from the Michigan Economic Development Corporation (MEDC). A variety of grants related to economic development, downtown development, and housing projects are available. The City should investigate utilizing CDBG funding for blight elimination, façade improvement, and historic structure acquisition projects. Additionally, CDBG Farm to Food funding is available for the construction, improvement, or expansion of a three- to four-season farmer's market facility. This funding could be used to construct a farmer's market facility at the North James Street Plaza. A local match of at least 25% is required for the grant. Funding requests must be between $30,000 and $750,000.

Transportation Alternatives Program (TAP)

The Transportation Alternatives Program (TAP) was authorized under Section 1122 of the Federal *Moving Ahead for Progress in the 21st Century Act* (MAP-21). Under the Program, each state Department of Transportation is required to allocate 2 percent of its total Federal Highway funds for programs and projects defined as *transportation alternatives*. Examples of transportation alternatives include non-motorized trails,

sidewalks, transit stops or stations, and education and safety programs such as Safe Routes to School. This is a potential funding source for transportation-related improvements in Ludington.

Natural Resource Funding Sources

The Michigan Natural Resources Trust Fund (MNRTF) provides funding assistance for state and local outdoor recreation needs, including land acquisition and development of recreation facilities. This assistance is directed at creating and improving outdoor recreational opportunities and providing protection to valuable natural resources. Development project grant amounts range from $15,000 to $300,000, with a required minimum local match of 25 percent. Trails and greenways are a priority project type for MNRTF grants. The City should pursue these funding sources in support of efforts to support trail and other recreation projects in the community.

The Michigan Department of Natural Resources' (DNR) Land and Water Conservation Fund provides grants to local governments for the acquisition and development of public outdoor recreation areas and facilities. A local match of at least 50% of the total project cost is required. Grant amounts range from $30,000 to $100,000. This funding source could be used to support trail development and the acquisition of properties to expand local recreation and trail systems.

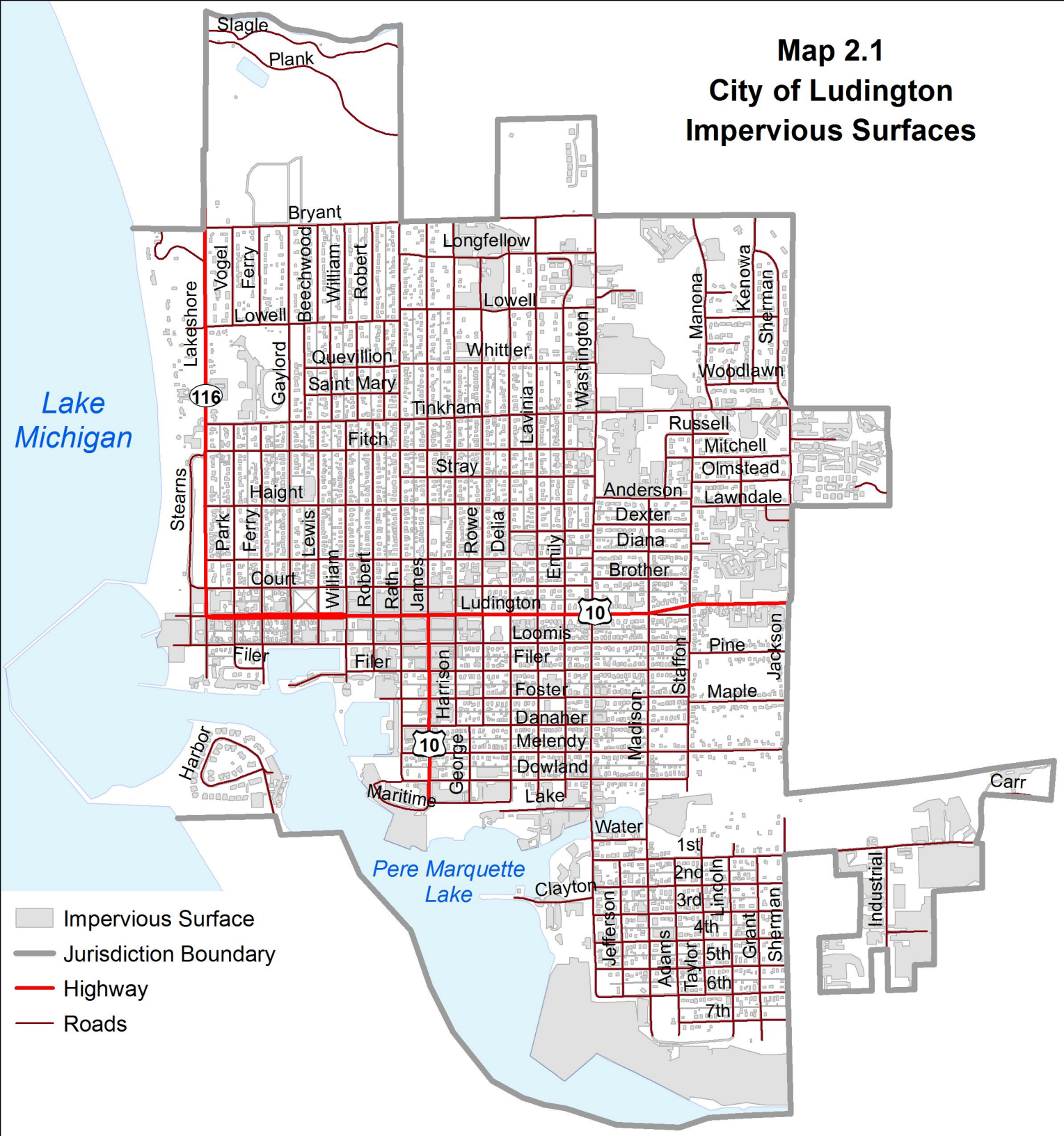
The DNR also provides Waterways Program Grants to local governments for the design and construction of public recreational marina and boating access facilities through the Michigan State Waterways Fund. Grant priority may be given to projects where a local match of 50% or greater is made. Grants can be used for design and implementation of new marina or access projects or infrastructure improvement projects. This funding source could be used for the development of improvements for the City's marina and water access sites.

Downtown Development Authority

The City should continue to use its Downtown Development Authority (DDA) to plan for, fund, and implement mutually beneficial public infrastructure projects and the redevelopment and revitalization of underperforming commercial properties. The DDA has utilized Tax Increment Financing (TIF) to fund public infrastructure and streetscape projects in the past and should utilize this technique to fund future projects as well.

APPENDIX A – MAPS

Map 2.1
City of Ludington
Impervious Surfaces



Prepared February 2016 by:

LIAA

Data Sources:
Mason County
City of Ludington
MI Geographic Data Library

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Miles
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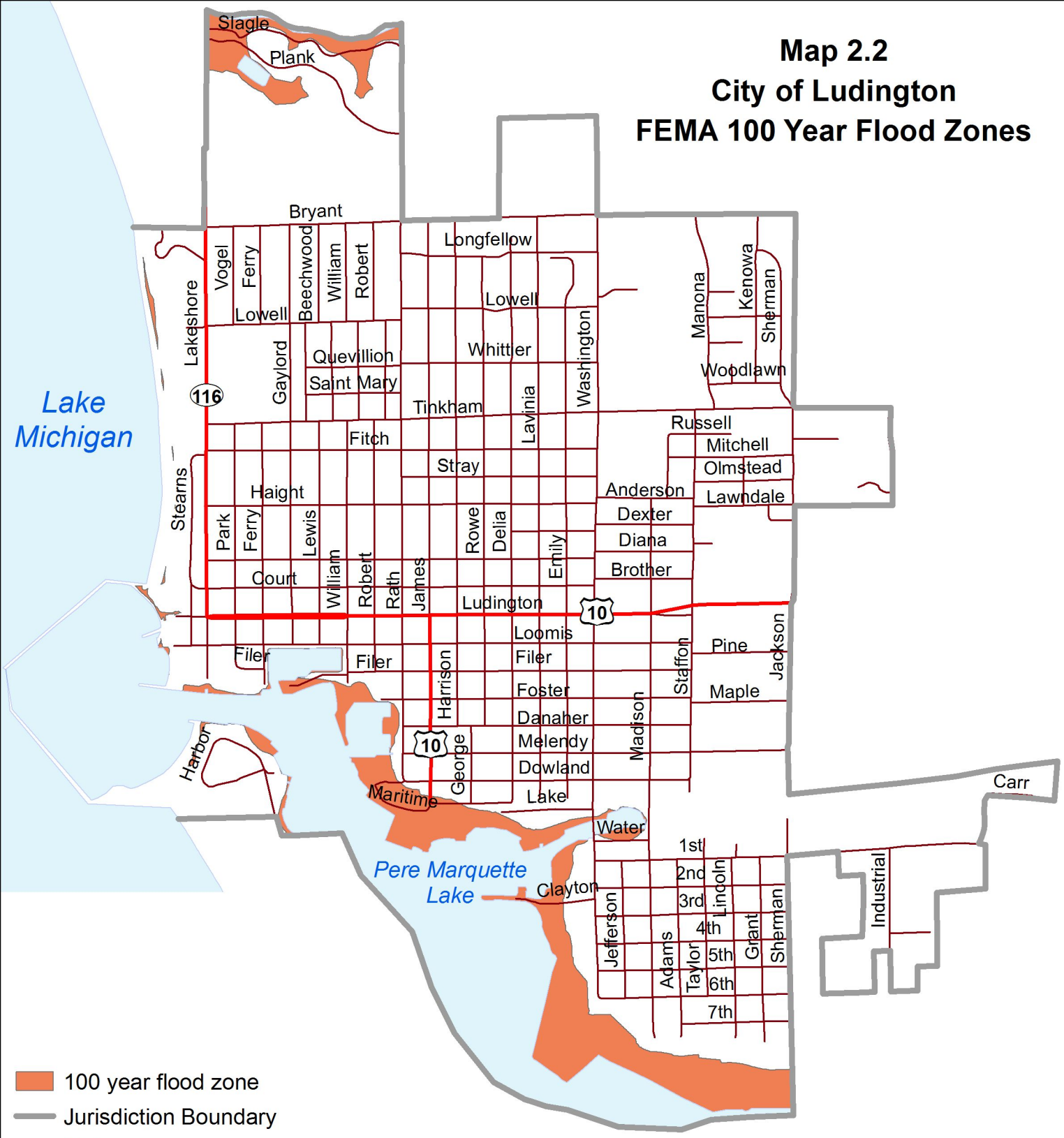
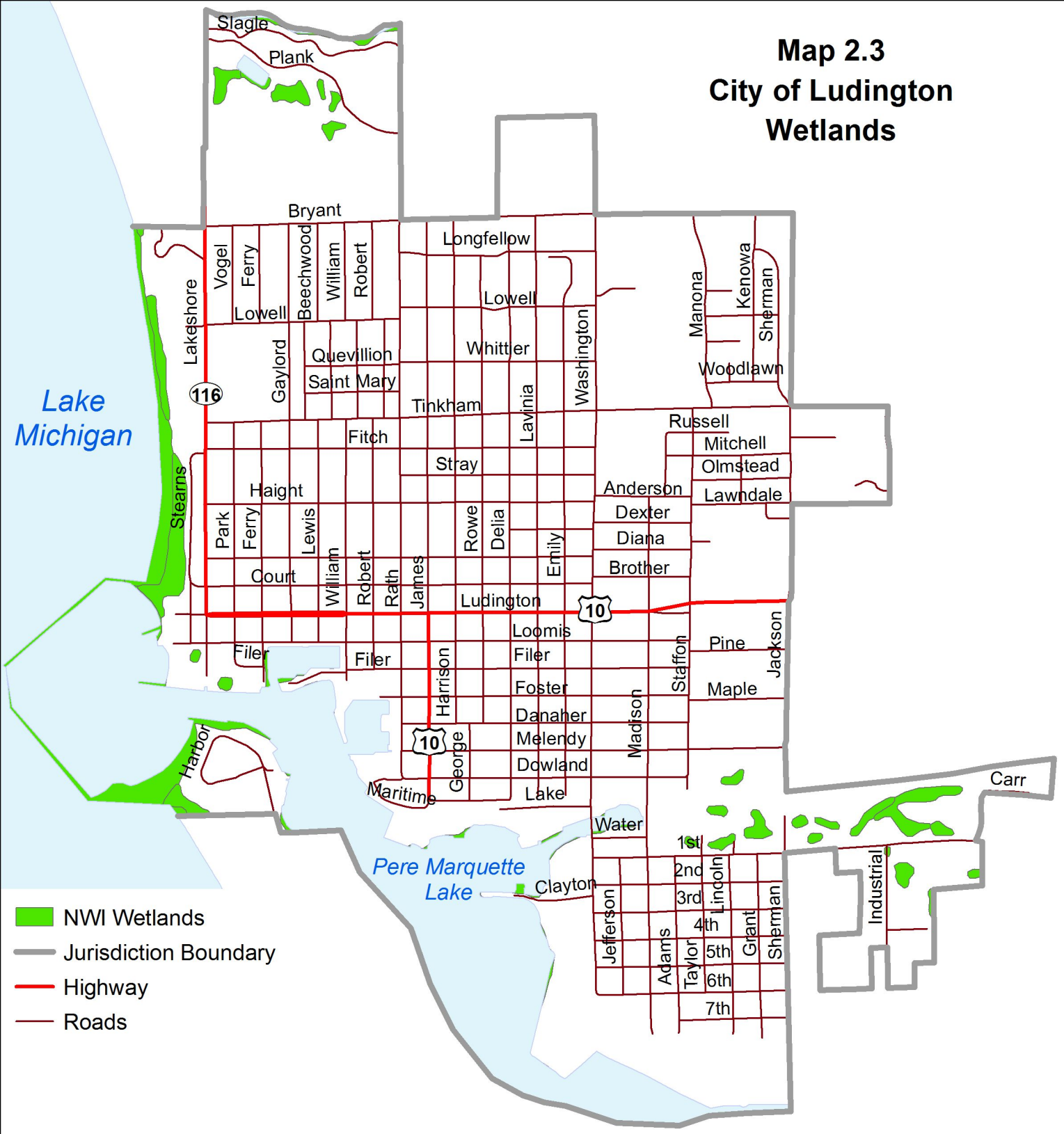
Map 2.2
City of Ludington
FEMA 100 Year Flood Zones



Map 2.3
City of Ludington
Wetlands



Prepared February 2016 by:

LIAA

Data Sources:
Mason County
City of Ludington
MI Geographic Data Library

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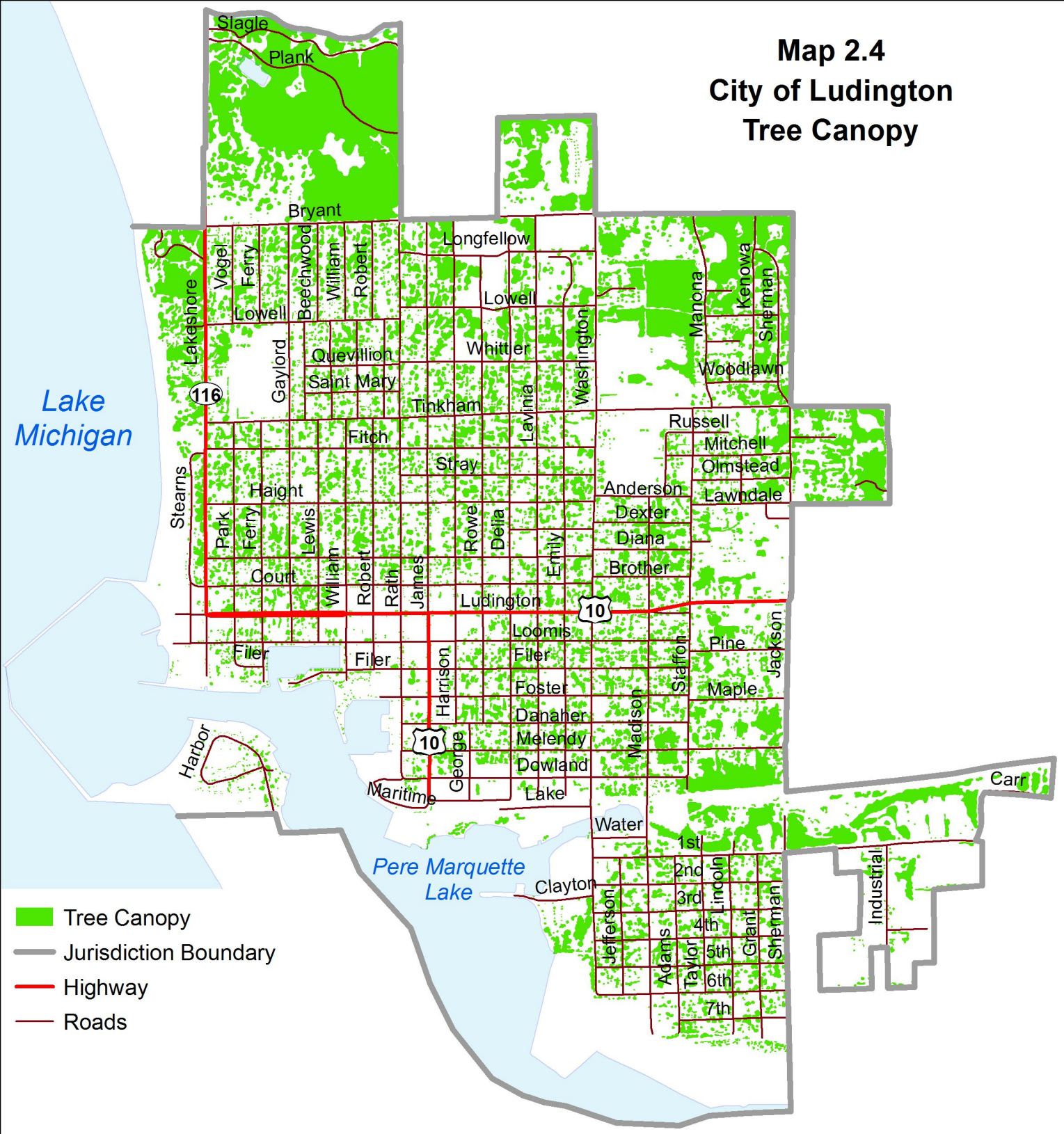
Map 2.4
City of Ludington
Tree Canopy



Prepared February 2016 by:

LIAA

Data Sources:
Mason County
City of Ludington
LIAA
MI Geographic Data Library

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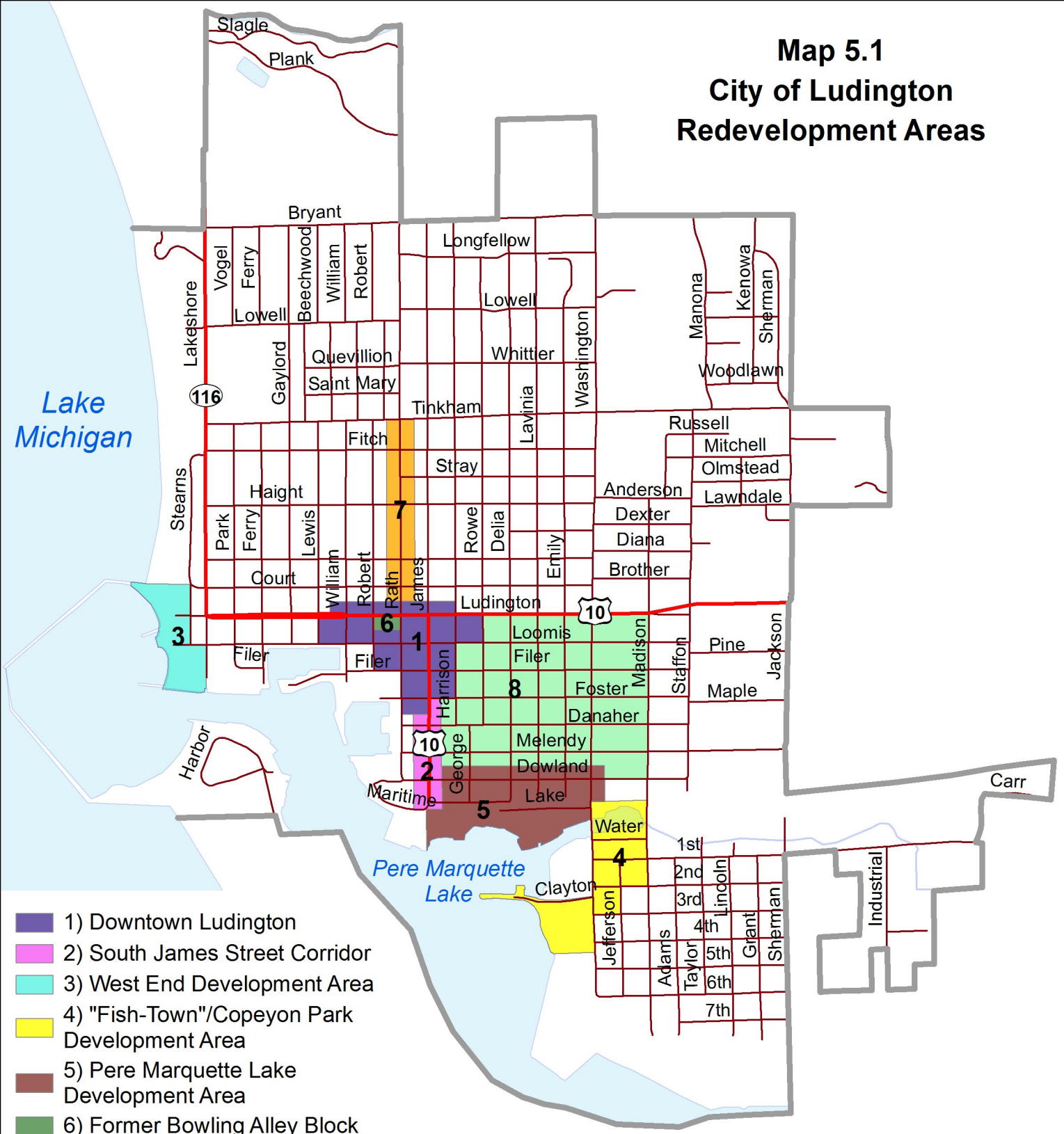
Map 5.1
City of Ludington
Redevelopment Areas



1) Downtown Ludington
2) South James Street Corridor
3) West End Development Area
4) "Fish-Town"/Copeyon Park Development Area
5) Pere Marquette Lake Development Area
6) Former Bowling Alley Block
7) North Rath Ave. Residential Corridor
8) Foster Elementary School Neighborhood Residential Area
Jurisdiction Boundary
Highway
Roads

Prepared February 2016 by:

LIAA

Data Sources:
Mason County
City of Ludington
MI Geographic Data Library

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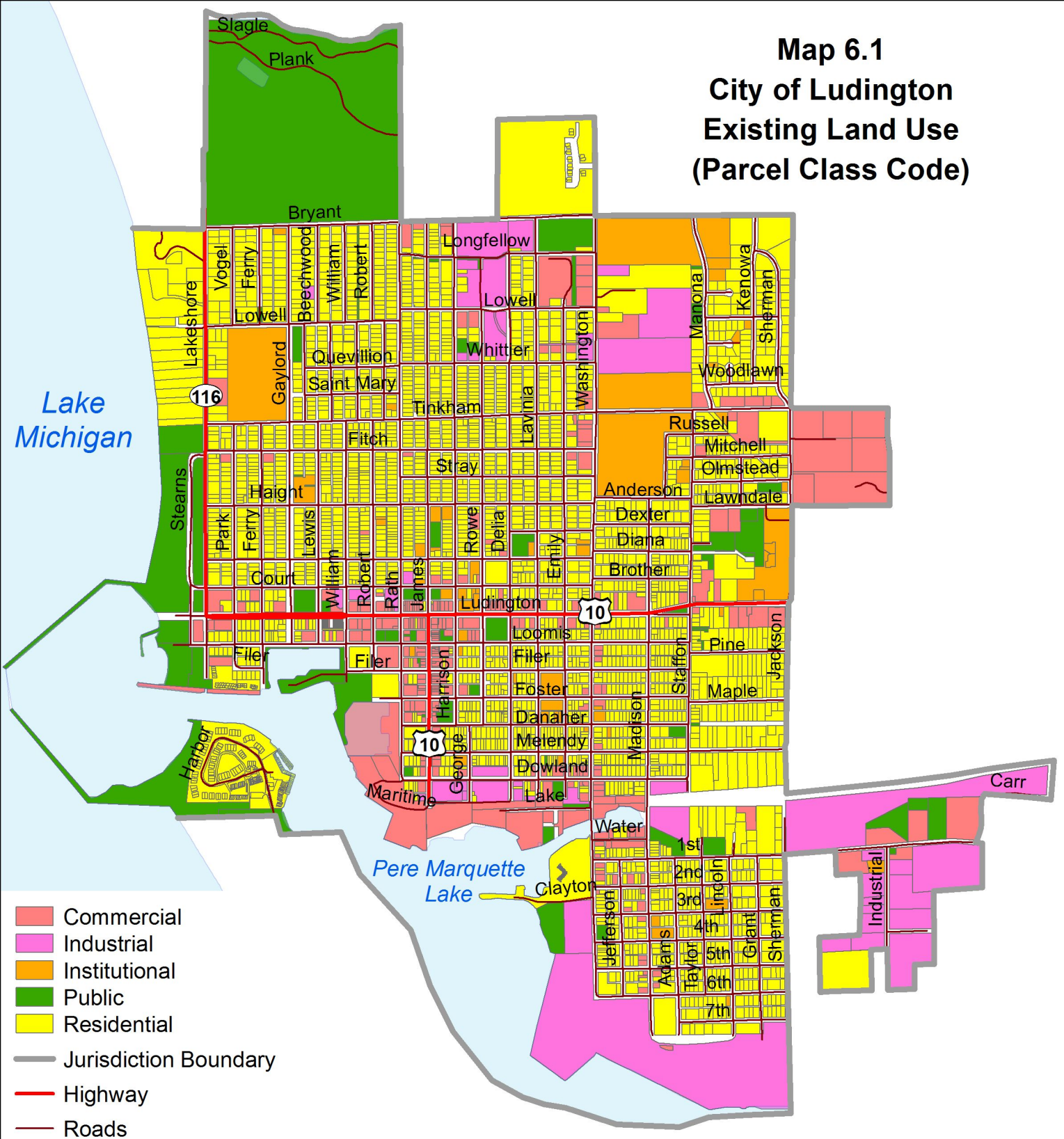
Map 6.1
City of Ludington
Existing Land Use
(Parcel Class Code)



Prepared February 2016 by:

LIAA

Data Sources:
Mason County
City of Ludington
MI Geographic Data Library

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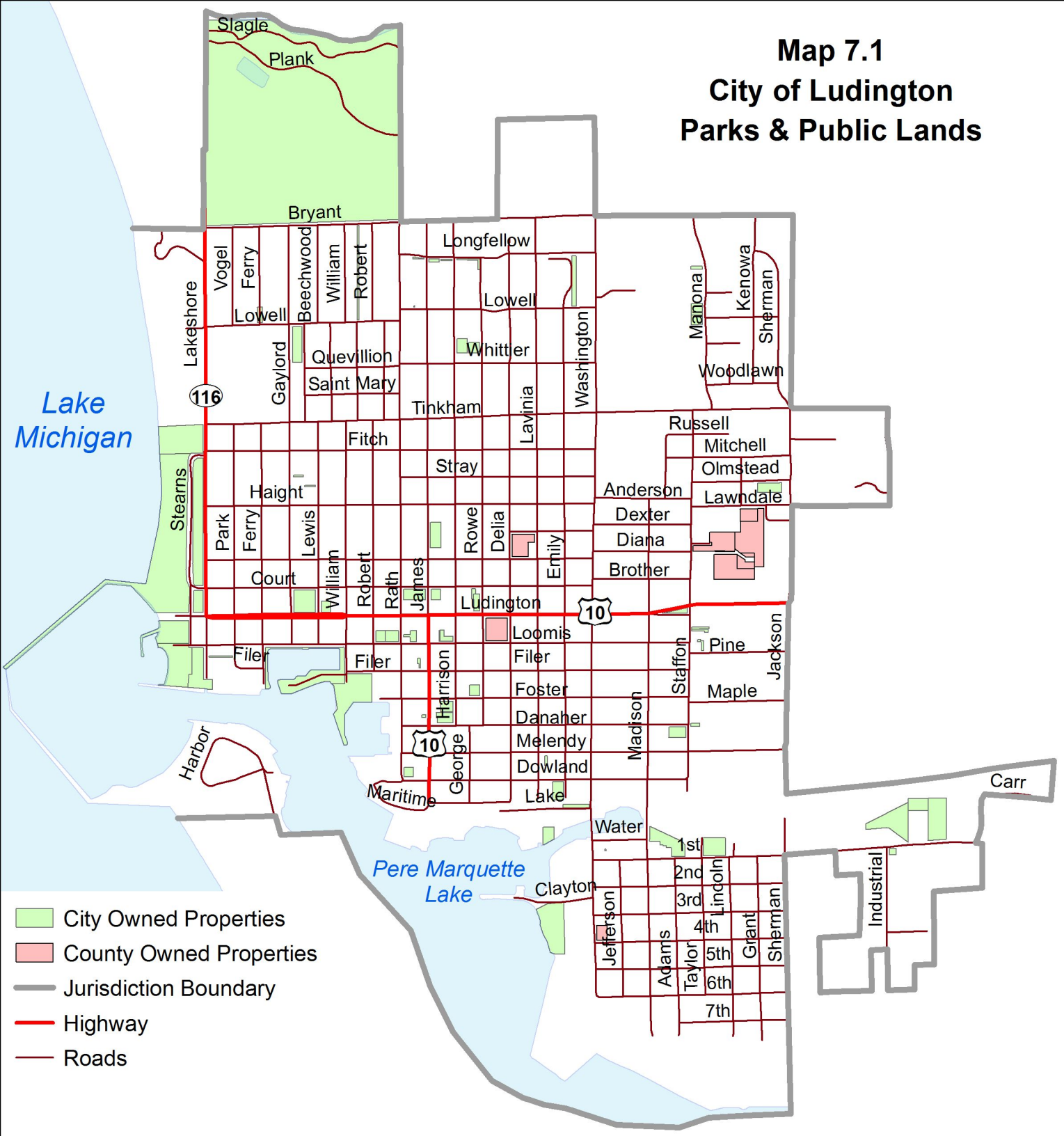
Map 7.1
City of Ludington
Parks & Public Lands



Prepared February 2016 by:

LIAA

Data Sources:
Mason County
City of Ludington
MI Geographic Data Library

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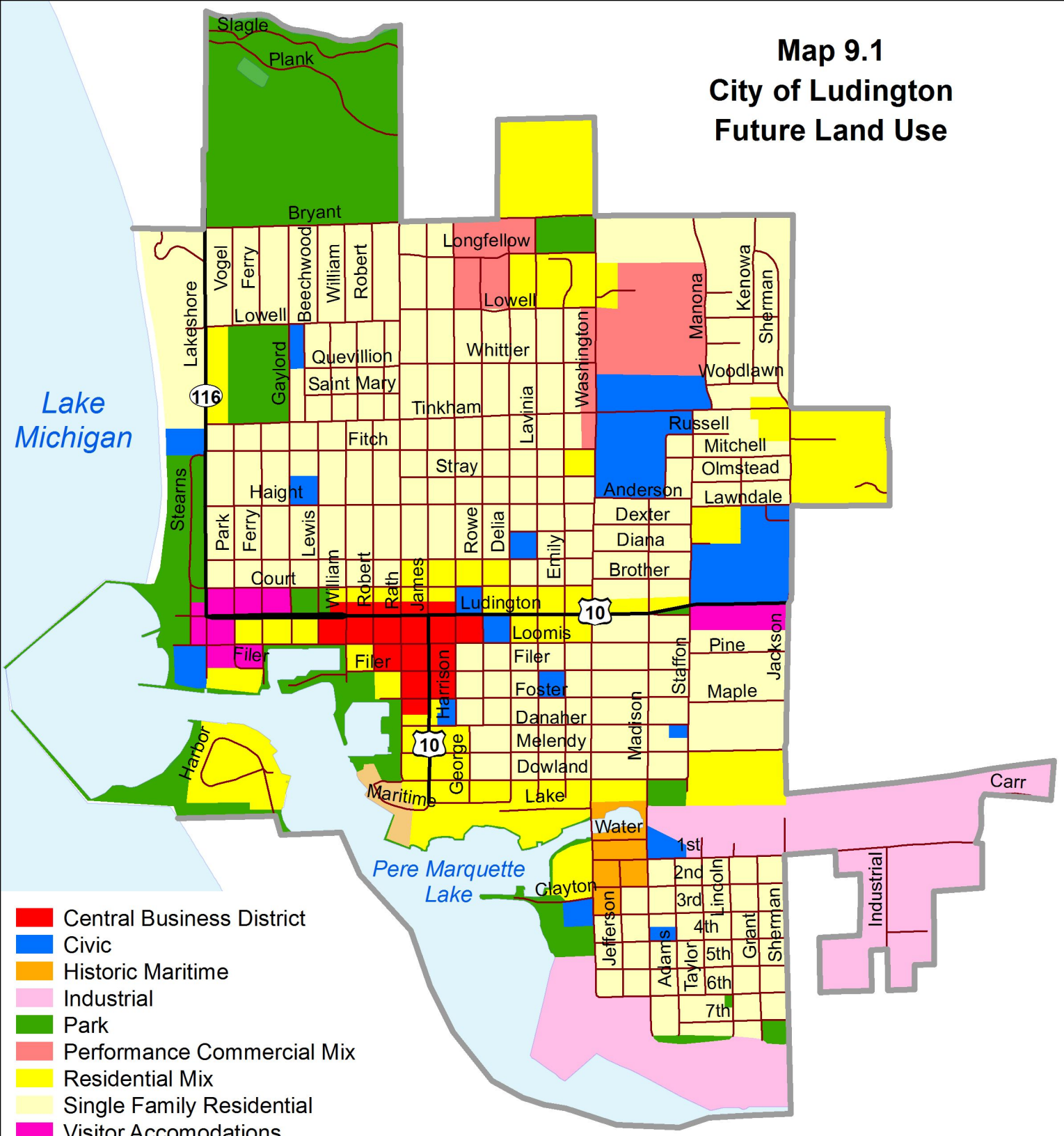
Map 9.1
City of Ludington
Future Land Use



APPENDIX B – RESILIENT LUDINGTON PLANNING PROCESS

In early 2014, the City of Ludington, Hamlin Township, Pere Marquette Charter Township, and Mason County began a community-wide planning process called *Resilient Ludington.* Through this cooperative planning effort, the citizens and leaders of the greater Ludington Community worked together to address shared issues and identify ways to manage changes and challenges of all kinds. The City of Ludington, Hamlin Township, and Pere Marquette Charter Township reviewed and revised their respective Master Plans as a part of the project.

Local officials and staff from each of the four participating governments formed a joint Community Planning Committee to oversee the planning process and consider the recommendations created during the project. Research, planning, and facilitation services for the *Resilient Ludington* project were provided by the nonprofit Land Information Access Association (LIAA) with support from the Michigan Municipal League (MML), Michigan Townships Association (MTA), Michigan Association of Planning (MAP), and the University of Michigan's Taubman College of Architecture and Urban Planning. Funding for the *Resilient Ludington* project was provided by the City of Ludington, Hamlin Township, Pere Marquette Charter Township, Mason County, and the Kresge Foundation.

Ultimately, the goal of the *Resilient Ludington* project is to help the citizens and local officials of the greater Ludington Community refine and update their land use and development plans with a focus on building greater community resilience. The planning process will support the City of Ludington, Hamlin Township, and Pere Marquette Charter Township in performing the required five-year reviews of their Master Plans. In all cases, this community planning process is following the requirements of the Michigan Planning Enabling Act (P.A. 33 of 2008).

Community Planning Committee

A Community Planning Committee (CPC) was formed to manage and oversee the *Resilient Ludington* project. The CPC was made up of appointed planning commissioners, elected officials, and municipal staff from the City of Ludington, Hamlin Township, Pere Marquette Charter Township, and Mason County. The CPC met regularly over the course of the project to review existing planning documents and make recommendations for the Master Plan updates of the City, Hamlin Township and Pere Marquette Charter Township. CPC meetings were open to the public and included informational presentations designed to build a better understanding of local land use and demographic trends as well as climate and economic resilience. The project team also conducted personal interviews with a wide variety of community stakeholders during the beginning portions of the planning process. These interviews, along with insight from the CPC, helped identify the major issues and land use and development topics that became the focus of the *Resilient Ludington* process.

Public Forum

In May of 2014, the *Resilient Ludington* project team held a Public Forum at Ludington City Hall to officially begin the public involvement portion of the project and gather input from citizens of the greater community. The Public Forum consisted of brief informational presentations on the *Resilient Ludington* project, community resilience, the potential impacts of climate change, and the master planning process. A community visioning session was also conducted at the Public Forum, allowing citizens the opportunity to voice their concerns, identify important community issues, and share their visions for the future of the Ludington Community.

Leadership Summit

In May of 2014, a day-long Leadership Summit was held to educate and engage interested citizens, public officials, and community leaders in discussions about the future of the greater community. The Leadership Summit provided educational presentations that helped the audience better understand the challenges presented by a changing climate and global economy. Presentations were made by experts from Michigan State University, the University of Michigan, Michigan Technological University, Michigan District Health Department #10, the City of Grand Rapids, the Mason County Emergency Management Office, and LIAA. Following the presentations, attendees gathered in small groups to discuss community-wide issues and visions for the future. These small group discussions helped form the basis for the Community Action Team meetings that were held later in the summer and fall.

Community Action Teams

As part of the *Resilient Ludington* community planning project, leaders formed Community Action Teams (CATs) to discuss the various aspects of systems that sustain the Ludington Community, with an emphasis on resilience. Citizens from the entire community were invited to attend a series of working sessions to formulate system-specific recommendations for the City of Ludington, Pere Marquette Charter Township, and Hamlin Township. Participants chose to participate on one of six CATs addressing different systems within the community. Those systems were (1) Access and Transportation, (2) Agriculture and Food, (3) Energy and Economy, (4) Environment and Natural, (5) Human and Social, and (6) Neighborhoods and Infrastructure. Each team had the opportunity to learn about the workings of the system, as well as its strengths and weaknesses. Then, the CATs established goals and recommendations to submit to the Community Planning Committee.

Approximately 70 individuals participated in the CAT process, which included a series of three meetings between June and September of 2014. CAT members were able to choose the system they were most interested in by signing up using forms provided at community meetings, using an online signup page, or choosing a system at the CAT meetings. Each CAT meeting was conducted in a large meeting space and began with a presentation to the entire group. The presentations included information about community planning, the *Resilient Ludington* project, community resilience, and instructions for meeting activities. Following the presentations, the CATs conducted separate discussions focused on the six systems, then reported their conclusions to the overall group.

Approximately 70 community members participated in the Community Action Team process.

The primary outcome of the CAT gatherings was a series of key recommendations and goals that addressed community issues and concerns. The goals and recommendations were further developed to include underlying objectives and specific tasks. The following is a listing of the overall goals developed by the CAT participants, many of which are incorporated into this Master Plan. Additionally, a summary of the CAT process can be found in Appendix C.

Access & Transportation Systems CAT Goals

1. Reduce congestion on US-10/US-31, specifically near the intersections of Pere Marquette Highway and Jebavy Drive.
2. Create a multi-jurisdictional US-10/US-31 overlay zone that addresses sidewalks, landscaping, buildings, access management, and crossings.

3. Create a multi-use path from Ludington to Scottville.
4. Stabilize funding for maintenance and planning for all modes of transportation.

Agriculture & Food Systems CAT Goals

1. Educate the local community about agricultural assets and the importance of agriculture.
2. Utilize agricultural assets to drive economic development.
3. Preserve and protect agricultural land.

Energy & Economy Systems CAT Goals

1. Become a community that is knowledgeable about diverse energy systems.
2. Establish current economic conditions and needs.
3. Develop and identify systems to connect locally made and grown products with the local community.

Environment & Natural Systems CAT Goals

1. Support the water quality of Lake Michigan, inland lakes, and rivers.
2. Support the area's rural character, natural areas, and farmland.
3. Control stormwater runoff and erosion.
4. Discourage gas well creation and gas exploration.

Human & Social Systems CAT Goals

1. Encourage affordable continuing education to create a highly skilled workforce.
2. Develop a proactive system of collaborative services to address long-term solutions for personal success.
3. Encourage quality education from birth to 12th grade to produce career-ready students.

Neighborhoods & Infrastructure Systems CAT Goals

1. Improve, maintain, and expand infrastructure in the community (water, sewer, lighting).
2. Improve walkability, bicycle transportation options, and accessibility throughout the community.
3. Encourage life services such as pharmacies, groceries, and hardware stores in localized areas.
4. Encourage quality affordable housing for all members of the community.
5. Integrate County-wide disaster preparedness with local governments and citizens.
6. Sustain and improve the community's recreational amenities and opportunities.

US-10/31 Corridor Planning Charrette

In July of 2014, the *Resilient Ludington* project team conducted a three-day planning charrette focused on the US-10/US-31 corridor between Ludington and Scottville. A charrette is a multi-day collaborative planning event that engages community members to create and support a feasible plan for sustainable and positive change for a specific issue or area of the community. The US-10/US-31 Corridor Charrette incorporated a public workshop, multiple community stakeholder meetings, an open house meeting, and a final presentation. Over the course of the three-day event, a wide variety of conceptual alternatives for the corridor were developed. The findings of the Charrette were presented to the public, collected in a Charrette Summary Report, and presented to the Community Planning Committee. A summary of the Charrette and its recommendations can be found in Appendix D.

Online Community Planning Survey

The project team worked with the CPC to develop questions for an online survey that was conducted in order to gather additional public input for the *Resilient Ludington* planning process. The survey was announced in late August of 2014 and responses were accepted through the end of September, 2014. The goal of the survey was to learn more about the citizens of greater Ludington, the importance they placed on a variety of community-wide issues, and their visions for the future of the community.

The online survey allowed anonymous participation and solicited feedback from all members of the greater community. Due to the fact that the open, anonymous online survey could be taken multiple times by one individual and that relatively few (88) survey forms were submitted, the project team and CPC used the survey results to verify the themes that had emerged during other public input opportunities. A summary of the responses to the online survey can be found in Appendix F.

APPENDIX C – COMMUNITY ACTION TEAM PROCESS SUMMARY

Overview

As part of the Resilient Ludington community planning project, leaders formed Community Action Teams (CATs) to discuss the various aspects of the systems that sustain the Ludington Community, with an emphasis on resilience. Citizens from the entire community were invited to attend a series of working sessions to formulate system-specific recommendations for the City of Ludington, Pere Marquette Charter Township, and Hamlin Township. Participants chose to participate on one of six CATs addressing different systems within the community. Those systems were (1) Access and Transportation, (2) Agriculture and Food, (3) Energy and Economy, (4) Environment and Natural, (5) Human and Social, and (6) Neighborhoods and Infrastructure. Each team had the opportunity to learn about the workings of the system, as well as its strengths and weaknesses. Then, the CATs established goals and recommendations to submit to the Community Planning Committee. The following is a summary of the outcomes and recommendations from the Community Action Team process.

Process

Approximately 70 individuals participated in the CAT process, which included a series of three meetings between June and September of 2014. CAT members were able to choose the system they were most interested in by signing up using forms provided at community meetings, using an online signup page, or choosing a system at the CAT meetings. Each CAT meeting was conducted in a large meeting space and began with a presentation to the entire group. The presentations included information about community planning, the *Resilient Ludington* project, community resilience, and instructions for meeting activities. Following the presentations, the CATs conducted separate discussions focused on the six systems, then reported their conclusions to the overall group. The following describes the topics covered at each of the three CAT meetings.

1st Gathering – Assets, Threats, and Vision

The CATs began by building a reasonably complete picture or inventory of assets and threats within each system. CATs reviewed and built upon lists of assets and threats first created at the Leadership Summit and also considered visions for each community system.

2nd Gathering – Goal Creation and Prioritization

Building on the asset and threat inventories developed at the first gathering, the CATs developed ideas and goals for improving the system's resilience to identified threats. Then, goals were categorized and prioritized.

3rd Gathering – Objective and Task Creation

Building on the discussions, information, and goals developed in the first two gatherings, the CATs created a series of recommended community goals, objectives, and tasks for the City of Ludington, Pere Marquette Charter Township, and Hamlin Township.

Community Assets

At the first CAT meeting, the teams were asked to create an inventory of community assets from each of the six systems, and then identify potential linkages between the assets of each system. The CATs were asked to consider four important characteristics of community resilience when identifying system assets: (1) strong and meaningful social connections, (2) diversity of all kinds, (3) innovation and creative problem solving, and (4) extensive use of ecosystem services. The following is a summary of the community assets identified by the CATs. The assets are organized by the four important characteristics of community resilience listed above.

Strong and Meaningful Social Connections

Many of the system assets identified by the CATs contribute to strong and meaningful social connections within the Ludington Community. The people of the community come together in places like parks, beaches, downtown Ludington, area schools of all types, museums, senior centers, and churches. Many festivals, celebrations, events, recreation programs, and gatherings create strong social connections and foster a sense of community pride. Area roads, sidewalks, pathways, transit, the Mason County Airport, and the Lake Michigan Carferry are the key connections that bring people together. The CATs also identified a number of intangible community ideals like a collaborative spirit, volunteerism, and entrepreneurship that provide social connections within the community.

Diversity of All Kinds

Diversity in transportation, agriculture, energy, economics, recreational opportunities, natural resources, area services, and housing were noted by the CATs. The Ludington Community offers a variety of housing options including condominiums, apartments, and detached single-family dwellings. These options are available in a variety of price ranges and in a range of rural to urban settings. A diverse community economy includes manufacturing, agricultural, tourism, medical, governmental, and entrepreneurial employment opportunities. Transportation choices in the community include walking, bicycling, transit, and driving. The CATs also noted the diverse number of agricultural products that are grown in the area.

Innovation and Creative Problem Solving

The CATs indicated that collaboration between individuals, service groups, businesses, educational institutions, and local governments in the community provides for innovation and creative problem solving. Examples of collaboration that support economic development, provide services to the community, and help protect natural resources were identified. Programs like the Lakeshore Employer Resource Network provide community services through the collaboration of public and private entities.

Extensive Ecosystem Services

The Ludington area is blessed with abundant natural resources that provide ecosystem services to the community. Lake Michigan, inland lakes, rivers, wetlands, agricultural soils, parks, and open spaces all provide benefits of some kind to community residents. Wetlands help store and filter stormwater runoff, limiting flood damage and protecting water quality. Area parks, lakes, and rivers provide transportation and recreation opportunities that allow residents to connect with nature and provide the basis of the local tourism industry. Local soils provide for agricultural production and opportunities for agri-tourism, as well as some stormwater control.

Community Threats

The CATs were also asked to identify threats, or weaknesses and vulnerabilities, to the Ludington Community at the first CAT meeting. A number of specific threats were identified by multiple CATs. Themes that emerged during the discussions included the impacts of the aging population on the community; aging infrastructure; a lack of non-motorized transportation options and connectivity; and the impacts of pollution on natural features. Other threats that were noted by multiple groups included the impact of extreme weather on people, the built-environment, and local crops; the lack of job creation and loss of jobs; a lack of community-wide communication and collaboration; the loss of natural and agricultural areas to development; and the deteriorating condition of parts of the built environment.

The aging population of Ludington impacts the community in a variety of ways. Older populations are more vulnerable to the impacts of climate change, and an aging population is likely to place a higher demand on social services and the healthcare system. Demand for different types of housing, which may not be present in the community, occurs as a population ages. Additionally, the transportation needs within a community change as its population becomes older.

It was noted by some CAT participants that the infrastructure of the community is aging and, in some cases, does not meet the needs of the community. Many roads are in need of repair and portions of the community are not well served by sidewalks or bike paths. Many buildings and homes are in disrepair and CAT members expressed a concern that water and wastewater systems may be at higher risk of failure due to their age.

The lack of a consistent non-motorized transportation system within the community was another weakness cited by multiple CATs during discussions. It was noted that it is difficult to get around portions of the community without using a car. Without adequate non-motorized transportation routes, those who cannot drive or afford an automobile can find it difficult to reach the services they need. Additionally, there is a growing demand for non-motorized transportation options, like bike paths and bike lanes, for tourists and others seeking ways to get to and from lodging, attractions, beaches, and parks without driving.

Threats to the environment and natural features from various pollution sources and severe weather events can have a direct impact on the local tourism economy. Runoff from impervious surfaces such as parking lots and rooftops within the community can negatively impact water quality in Lake Michigan, inland lakes, and rivers that are often used for recreation by area residents and visitors alike. Additionally, failing septic systems in rural areas can damage groundwater and surface water quality.

Extreme weather events, specifically heavy precipitation and high winds, emerged as key concerns during discussions. Heavy precipitation events have damaged public infrastructure and private property in recent years. Large storms have washed out roads, flooded homes and businesses, and overwhelmed stormwater drainage systems. High winds and ice storms can damage electrical lines and structures. Many CAT members mentioned a need for community members to be more involved in planning for, and better educated about, extreme weather events and other emergency situations. Local crops can also be damaged by extreme weather events and irregularities in the growing season as the climate changes.

The loss of manufacturing jobs during the economic recession and the lack of new jobs were concerns identified by CAT members. Also, the lack of education and training opportunities available to area workers was mentioned as a weakness. The skilled workforce, for many area industries, is aging and there are few well-trained employees available to fill vacancies when workers retire. Many of the jobs associated with the local tourism economy are seasonal and workers are left without jobs for a portion of the year.

Residential and other types of development have replaced some of the community's natural and agricultural areas as full-time and part-time residents build close to, or within, the beautiful landscapes of the area. Open spaces, forests, wetlands, and agricultural lands not only provide the basis of the area's tourism and agricultural economies, but provide valuable ecosystem services, like stormwater control, as well. CAT members noted the loss of agricultural and natural lands to development as a threat to the community.

Community resilience is a continuous process of adapting rapidly to changing circumstances and threats. Communities interested in becoming more resilient assess their vulnerabilities and make action plans to reduce their sensitivities and exposures to hazards of all kinds.

Community Vision

During the first CAT meeting, each group identified a broad, system-specific vision for the Ludington Community. The visions were further refined during the second gathering. The following paragraph combines and summarizes all six vision statements.

In 20 years, Ludington will be a vibrant, safe, and balanced community. Residents will have an effective, multi-modal transportation system with increased connectivity, modern roadways, and broad access to public transportation. There will be a diverse, prosperous business environment that celebrates entrepreneurship and capitalizes on the unique setting of the community. Neighborhoods will provide a variety of housing options for those of all ages, abilities, and incomes. Land uses will be carefully balanced so that farmland, natural resources, and open spaces are protected and preserved. Community members will have a vast knowledge of the importance of the area's agricultural and natural resources and will work to protect them. Residents will enjoy a high quality of life that offers excellent education, training, and employment opportunities.

Community Action Team Recommendations

At the second and third CAT meetings, participants focused on identifying key goals that would address community-wide issues and concerns. Then, these goals were further developed by each CAT to include underlying objectives and tasks. The CAT participants submitted the following list of goals, objectives, and tasks as their community planning recommendations to the City of Ludington, Pere Marquette Charter Township, and Hamlin Township. The CAT participants requested that these community planning recommendations be considered for inclusion into the Master Plans and local government policies of the Ludington Community.

Access and Transportation

Goal 1: Reduce congestion on US-10/US-31, specifically near the intersections of Pere Marquette Highway and Jebavy Drive.

Objectives:

1. Form a team, including an MDOT project manager, to address congestion problems.

   Task: Assign a team leader.

   Task: Identify stakeholders and a sponsor in MDOT.

   Task: Complete the formation of the team.

2. Set targets for reduction of congestion.

   Task: Review existing data on congestion, accidents, etc.

   Task: Set reduction targets.

3. Design alternative solutions.

   Task: Charter an MDOT design to determine costs, physical requirements, layout, and reductions in congestion.

4. Select a design solution.

   Task: Collect public input on design alternatives.

   Task: Select a final design.

   Task: Gather funding for design implementation.

   Task: Construct the proposed design.

Goal 2: Create a multi-jurisdictional US-10/US-31 overlay zone that addresses sidewalks, landscaping, buildings, access management, and crossings.

Objectives:

1. Identify stakeholders.

   Task: Contact MDOT, Townships, Mason County, corridor businesses, and corridor residents. (County Building and Zoning Department)

2. Form an Authority, or team.

   Task: Identify voting members. (Authority)

   Task: Determine rules for the Authority. (Authority)

   Task: Identify overlay zone boundaries. (Authority)

   Task: Determine legal authority. (Authority)

3. Create the overlay zone language.

   Task: Survey other overlay zones that have been created. (Authority)

   Task: Identify who has done it the best. (Authority)

   Task: Draft the overlay zone language. (Authority)

4. Review the draft overlay zone language and get it approved.

   Task: Determine the necessary approval process.

   Task: Review of the overlay zone language by required jurisdictions.

5. Implement the standards of the overlay zone

   Task: Find funding for overlay zone projects.

   Task: Construct projects recommended in the overlay zone language.

Goal 3: Create a multi-use path from Ludington to Scottville.

Objectives:

1. Assemble a team of stakeholders including MDOT, Townships, Mason County, the City of Ludington, special interest groups, and potential users (hikers, bicyclers, ORV drivers). (County elected officials, MDOT, interest group leaders)

2. Find a project sponsor.

   Task: Gather input from stakeholders. (Stakeholder team)

   Task: Determine the need for a steering committee or oversight team. (Stakeholder team)

3. Identify allowable uses.

   Task: Identify corridor routing options. (Stakeholder team)

   Task: Identify funding sources. (Stakeholder team)

   Task: Create construction cost estimate. (Stakeholder team)

   Task: Establish a maintenance fund. (Stakeholder team)

   Task: Identify where people are going and why they would be using the path. (Stakeholder team)

4. Determine path phasing based on economic realities and matching costs.

Task: Create a timeline for trail construction with phases based on funding availability. (Stakeholder team)

5. Build and maintain the path.
6. Enjoy!

Goal 4: Stabilize funding for maintenance and planning for all modes of transportation.

Objectives:

1. Review funding sources.

   Task: Rely on existing gasoline taxes. (Road Commission, elected officials)

   Task: Revise the funding mechanism (vehicle miles traveled). (Road Commission, elected officials)

   Task: Revise funding. (Road Commission, elected officials)

2. Identify the minimum level of maintenance and planning spending.

   Task: Gather public input on acceptable levels of maintenance. Examples – dust control, snow removal within four hours. (Road commission, State and local agencies, public)

   Task: Review maintenance priorities and determine appropriate increases and decreases in levels of maintenance. (Road commission, State and local agencies, public)

3. Aggressively participate in the political process to fund public expectations.

   Task: Educate the public on how they can provide input. (Elected officials)

Agriculture and Food

Goal 1: Educate the local community about agricultural assets and the importance of agriculture.

Objectives:

1. Connect local businesses and farms to discover how to offer local products and where to get them. (Conduct research to determine if there is enough supply and demand to support a food hub)

   Task: Get local schools to offer local foods in school lunch programs. (School superintendents, USDA)

   Task: Create networking events/summits to bring food producers, businesses, and schools together. (Chamber of Commerce, MSU Extension, local businesses, Farm Bureau)

2. Provide residents with information about the importance of the agriculture industry, nutritional value of local foods, etc.

   Task: Work with local media to communicate with public. (Local media, Farm Bureau)

   Task: Provide informational booths at local events. (MSU Extension, Health Department, Win With Wellness, DHS)

   Task: Educate the public about the "cottage food law." (MSU Extension food educators)

3. Encourage local education to provide programs related to agriculture and career opportunities within the agriculture industry.

   Task: Hold presentations at schools to discuss possible careers and programs for youth like FFA, 4H, etc. (School superintendents, local companies and processors, FFA representatives, 4H representatives)

Goal 2: Utilize agricultural assets to drive economic development.

Objectives:

1. Work with the Cultural Economic Development Task Force to support the development of agricultural assets and attractions.

   Task: Develop local "cottage food" producers to drive economic development. (Cultural Economic Development Task Force)

   Task: Approach farmers to participate in the Agricultural Trail and further develop agricultural attractions. (Cultural Economic Development Task Force)

2. Work with the Convention and Visitors Bureau to support the promotion and marketing of agricultural attractions and products.

   Task: Ensure local information on farmers markets and other attractions and products is included in statewide listings and brochures (Farm Bureau, etc.) and make the information available at the Visitors Center. (Convention and Visitors Bureau)

   Task: Research the efforts and attractions of other communities to gather ideas to implement locally. (Conventions and Visitors Bureau)

Goal 3: Preserve and protect agricultural land.

Objectives:

1. Provide resources to residents to engage them in advocacy of agricultural land preservation.

   Task: Identify interested groups and individuals. (Farm Bureau, MSU Extension, legislative aids)

   Task: Identify communication outlets – email blasts, newsletters, speaking engagements. (Farm Bureau, MSU Extension, legislative aids)

2. Ensure that local zoning recognizes and protects local agricultural lands.

   Task: Participate in the master planning process. (Interested citizens and farmers)

Energy and Economy

Goal 1: Become a community that is knowledgeable about diverse energy systems.

Objectives:

1. Identify both commercial and residential energy systems.

   Task: Create a task force of stakeholders including passionate residents; planning and zoning staff; Township and City governments; the business community; utilities; HVAC professionals; human service organizations; and energy efficiency specialists.

   Task: Research each energy system. (Task force)

   Task: Educate the community on those systems. (Task force)

2. Identify the community's energy goals.

   Task: Review community's energy needs. (Task force)

   Task: Identify goals for balanced energy systems. (Task force)

3. Identify energy conservation systems and programs.

   Task: Create a team to identify energy conservation systems and programs.

   Task: Identify existing energy conservation programs. (Team)

Task: Connect existing programs to users. (Team)

Task: Research or develop new energy conservation systems and programs. (Team)

Goal 2: Establish current economic conditions and needs.

Objectives:

1. Develop a database of current information.

   Task: Gather existing Chamber of Commerce data.

   Task: Gather existing State of Michigan data.

   Task: Create a survey to gather additional data.

   Task: Identify potential grants.

   Task: Compile community demographic data.

   Task: Gather local unemployment data.
2. (All tasks could be completed by the Chamber of Commerce, state agencies, consultants, Scottville Main Street, the DDA, and local planners)
3. Identify gaps in the data and information.

   Task: Gather additional data and conduct a market analysis. (Hired consultant)
4. Use the gathered information to develop economic strategies.

   Task: Develop strategies related to the health care industry.

   Task: Develop strategies for area downtowns.

   Task: Develop strategies for creating additional job opportunities.
5. (All tasks could be completed by elected officials, local residents, local governments, and local businesses)

Goal 3: Develop and identify systems to connect locally made and grown products with the local community.

Objectives:

1. Identify all locally made and grown products.
2. Survey public to identify opportunities and missed connections.
3. Identify hurdles to connecting locally made and grown products to the community.

   Task: Identify areas where lack of capital is a problem.

   Task: Identify areas where location is a problem.

   Task: Identify areas where lack of business expertise is a problem.

   Task: Identify areas where market issues are present.

   Task: Identify areas where zoning issues exist.
4. Create incentive programs for local citizens to buy locally made and grown products.

   Task: Create a stakeholder task force to research opportunities and create incentive programs.

   Task: Test the local market.
5. Educate local producers and buyers

Task: Educate local producers and buyers on existing buy local programs.

Task: Educate local producers and buyers on any newly created buy local programs.

(All tasks for this goal's objectives could be completed by local growers, local producers, MSU Extension, local zoning officials, the DDA, and local schools)

Goal 4: Plan strategies for the US-10/US-31 corridor.

Environment and Natural

Goal 1: Protect the water quality of Lake Michigan, inland lakes, and rivers.

Objectives:

1. Work with various community groups and stakeholders to implement water quality protection measures.

   Task: Educate the community about the importance of water quality and how it can be protected. (MSU Extension, local schools, Soil Conservation District, local watershed councils, AFFEW)

   Task: Raise funds for the implementation of water quality protection projects.

   Task: Create a local watershed council to promote resource protection and implement projects. (Planning commissions, DEQ, local officials)

   Task: Expand and upgrade local sewage and septic facilities. (Municipalities)

Goal 2: Protect the area's rural character, natural areas, and farmland.

Objectives:

1. Utilize local master plans to plan for the preservation of green spaces.

   Task: Examine local master plans to ensure that open spaces are being preserved. (Planning commissions, zoning administrators, County administration)

2. Identify important open spaces for preservation.

   Task: Gather public input to identify locally important open spaces.

Goal 3: Control stormwater runoff and erosion.

Objectives:

1. Implement Low Impact Development stormwater practices.

   Task: Include rain gardens on sites. (Soil Conservation District, landscapers, Drain Commissioner)

   Task: Include onsite stormwater retention facilities. (Drain Commissioner, Zoning Administrators, Road Commission, Planning Commissions, contractors)

2. Work with local Drain Commission to control stormwater runoff and prevent erosion.

Goal 4: Control gas well creation and gas exploration.

Human and Social

Goal 1: Provide affordable continuing education to create a highly skilled workforce.

Objectives:

1. Identify the types of skill sets for the types of jobs that are needed in our community.
2. Identify funding sources for continuing education programs. (e.g., grants, Community Foundation)
3. Create internship opportunities with local companies.
4. Educate individuals on the types of jobs available in our community and the skill sets needed for those jobs.
5. Match West Shore Community College with community needs for training and educating individuals to meet local job demands.

(Groups that could achieve these objectives and tasks include the Chamber of Commerce/SCORE Success Coach, West Shore Community College, local employers, the Employer Resource Network, and strategic partners like Michigan Works, Department of Human Services, etc.)

Goal 2: Develop a proactive system of collaborative services to address long-term solutions for personal success.

Objectives:

1. Determine service providers that need to be included.
2. Develop ways to share financial and human resources across systems and services.
3. Develop a holistic approach to addressing a client's issue across systems and services.

(Groups that could achieve these objectives include United Way and a cross section of other nonprofits, education organizations, health and human services, private sector groups, and the hospital. Examples include the Employer Resource Network and Pathways to Potential – Family Links.)

Goal 3: Provide quality education from birth to 12th grade to produce career-ready students.

Objectives:

1. Identify which service providers and educators need to be involved.
2. Define "career ready" and develop a curriculum.

   Task: Identify best practices.
3. Create a continuum of education.

(Groups that could achieve these objectives include Great Start, Oak Tree, other daycare providers, area schools – public and private, the Children's Museum, the Library, and Strive (Rotary).)

Neighborhoods and Infrastructure

Goal 1-a: Improve, maintain, and expand infrastructure in the community (water, sewer, lighting).

Objectives:

1. Plan for future improvement, maintenance, and expansion rather than reacting to immediate needs.

   Task: Create an "infrastructure business plan."
2. Prioritize the improvement, maintenance, and expansion plans.
3. Identify funding sources for the improvement, maintenance, and expansion of infrastructure.
4. Educate the public on the needs of the community's infrastructure.

   Task: Attend civic group meetings. (Councils, municipal staff)

   Task: Provide information through the local media and news outlets.
5. Increase local tree canopy.

Goal 1-b: Improve walkability, biking, and accessibility throughout the community.

Objectives:

1. Identify parties responsible for maintenance and clearing all obstructions (snow, cars) from sidewalks. (Councils)
2. Educate community members on sidewalk programs.
3. Incentivize the public to put in sidewalks at private homes and businesses.
4. Provide better pedestrian and biking connections between nodes like neighborhoods and business areas.
5. Prioritize a program or initiative for adding sidewalks to blocks where they do not exist.

Goal 1-c: Provide life services such as pharmacies, groceries, and hardware stores in localized areas.

Objectives:

1. Promote the creation of community-centered retail centers.

Goal 2: Provide quality affordable housing for all members of the community.

Objectives:

1. Gain support of local elected officials.
2. Educate the community on quality affordable housing and rental codes so that they know what they are, how they work, and what the need is. (Code enforcement offices)
3. Develop rental codes with the help of a task force. (City Council, Township Boards)
4. Enact rental codes.
5. Enforce rental codes.

   Task: Provide tax incentives for private home improvements (requires state legislation). (City Council, Township Boards, State legislators)
6. Develop a fee schedule utilizing past research.

Goal 3: Integrate County-wide disaster preparedness with local governments and citizens.

Objectives:

1. Foster and maintain better communication between the local units of government, the Emergency Management Office, and the public.
2. Provide easier access to the Emergency Management Plan.
3. Prepare neighborhoods and households with specific emergency plans and escape routes.

Goal 4: Sustain and improve the community's recreational amenities and opportunities.

Objectives:

1. Plan for the future of the community's parks, museums, green spaces, and beaches.

Goal 5: Improve community-wide access to technology like wireless Internet and fiber optics.

Objectives:

1. Collaborate with the Business Energy Group to determine how to improve access.

Appendix D

US-10/US-31 Corridor Planning Charrette Summary

Resilient Ludington

Mason County, Michigan

Plan Prepared By

Resilient Ludington Participating Units of Government:

- Mason County
- City of Ludington
- Pere Marquette Charter Township
- Hamlin Township

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- Streetscaping and Landscaping
- Access Management
- Parking
- Signs
- Buildings
- Jabavy Drive and Pere Marquette Highway Intersections
- Potential Development Opportunities
- Implementation – Tools & Practices

Introduction

In 2014, Mason County, the City of Ludington, Pere Marquette Charter Township, and Hamlin Township agreed to work together on a new land use planning and community development project called ***Resilient Ludington***. This unique planning effort is designed to strengthen the community's ability to better manage the changes and challenges associated with future economic variability and climate change.

The Resilient Ludington project is helping leaders and citizens of the greater Ludington community refine their land use and development plans. Effort will be made to assist the City of Ludington, Pere Marquette Charter Township, and Hamlin Township in reviewing their Master Plans. As a part of the Resilient Ludington process, a planning *charrette* was conducted for the US-10/US-31 corridor between Ludington and Scottville (see inset at right).

What is a Charrette?
A charrette is a multi-day collaborative planning event that engages community members to create and support a feasible plan for sustainable and positive change for a specific issue or area of the community.

US-10/US-31 Corridor

US Highway 10 (US-10) is the primary east-west corridor in Mason County, running from the City of Ludington eastward to the boundary between Mason and Lake Counties and, ultimately, to Bay City, Michigan. US Highway 31 (US-31) runs concurrently along a portion of US-10 between Ludington and Scottville. US-31 is a major north-south highway that stretches along the western edge of Michigan's lower peninsula. The US-10/US-31 corridor connects the City of Ludington, Pere Marquette Charter Township, Amber Township, and the City of Scottville. For the purposes of the Resilient Ludington planning charrette, US-10 and the concurrent portions of US-31 between Ludington and Scottville are referred to as the US-10/US-31 corridor.

The US-10/US-31 corridor

Portions of the US-10/US-31 corridor are travelled by nearly 30,000 cars per day. The corridor is dominated by the automobile. Pedestrian and bicycle infrastructure along the developed portions of the corridor is inconsistent, disjointed, and even absent in many areas. Land uses adjacent to the corridor in Pere Marquette Charter Township and the western portions of Amber Township are primarily commercial, featuring many "strip-mall" type developments, large parking lots, drive-through restaurants, and "big box" stores. The Mason County Fairgrounds and Mason County Airport can be found along the corridor as well. The charrette focused on the eight mile portion of the corridor between the City of Ludington to the west and the City of Scottville to the east.

Charrette Preparation

Prior to the charrette, the project team gathered information and data about the corridor to help inform the charrette activities and planning process. Information gathered included traffic data, right-of-way widths, existing sidewalk infrastructure, existing development character, existing zoning regulations, existing access management plans, and current land use. The project team also conducted walking and driving audits of the corridor to identify potential areas of concern and existing visual character. The charrette studio, or working space, was set up in the Community Room at Ludington City Hall.

To ensure stakeholder and public participation in the charrette process, the project team placed posters throughout the community and submitted press releases to local media which were run in the Ludington Daily News. Additionally, personal invitations were sent to key stakeholders and charrette postcards were mailed to every business and household along the corridor.

The US-10/US-31 corridor is dominated by the automobile, with little pedestrian infrastructure.

Charrette Process and Activities

Charrette - Day One

On the first day of the charrette, the charrette team facilitated a series of meetings with multiple community stakeholder groups in order to get a better understanding of the key issues and constraints of the corridor. Stakeholders also provided information about existing plans and visions for the corridor's future. Based on the input of the stakeholder groups, the charrette team began work on preliminary design concepts and alternatives. These preliminary concepts and alternatives addressed the issues identified by the stakeholders and provided specific ideas for consideration during future stakeholder and public meetings.

Charrette - Day One.
The charrette team facilitated a series of stakeholder meetings and began work on preliminary design concepts.

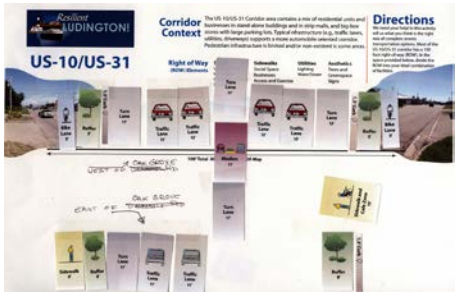
On the evening of the first day of the charrette, the project team hosted a public corridor workshop in the charrette studio. The workshop provided an opportunity for citizens to learn about the charrette process, existing corridor conditions, and the basic principles of good streets, placemaking, urban form, walkability, and connectivity. Following the introductory presentation, participants completed a series of brainstorming activities. Working in small groups, participants were asked to identify, map, and illustrate:

- Five positive aspects of the corridor;
- Five negative aspects of the corridor;
- Three improvements they would like to see along the corridor;
- A vision for the corridor; and
- A vision for the roadway.

The stakeholder meeting and public workshop discussions focused primarily on the western portion of the corridor where more intense land uses and traffic patterns exist. Several common themes were identified throughout the activities of the first day, and would become the primary focus of the charrette. These common themes were:

- The lack of pedestrian and bicycle access.
- Excessive parking lots along the corridor.
- The lack of streetscaping.
- Overhead utilities.
- Large number of driveways and curb cuts.
- Inconsistent signage.
- Inconsistent building design.
- The lack of a sense of place.

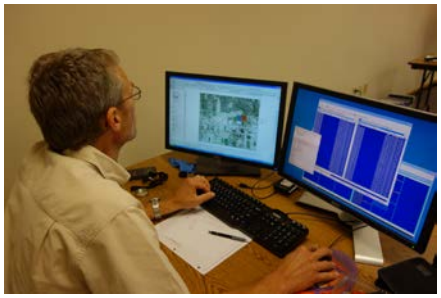
Charrette - Day One.
Charrette team members facilitated a public workshop where participants described their vision for the corridor.



Charrette - Day Two

On the second day of the charrette, the project team held additional meeting with stakeholder groups. These meetings provided opportunities for the stakeholders to review and provide input on the preliminary concepts and design alternatives created the previous day. Using the additional comments and suggestions, the project team continued to refine concepts, explore additional design alternatives, and formulate recommendations for the corridor.

Charrette - Day Two.
Charrette team members continue to discuss and analyze design alternatives with community stakeholders throughout the day.



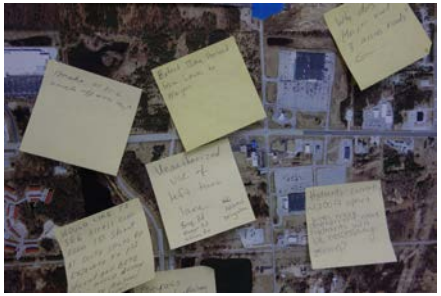
On the evening of the second day, a public open house was hosted in the charrette studio. Information about the corridor, preliminary concepts, potential design alternatives, ideas, and draft recommendations were displayed on the walls of the studio. Stakeholders and interested community members discussed the displayed information with the project team and provided additional comments and suggestions.

Charrette - Day Two.
A comprehensive set of concepts and design alternatives were presented at a public open house, providing an opportunity for citizens to make more comments and suggestions.

Charrette - Day Three

Based on the suggestions and comments received at the open house, the project team refined and developed the final set of concepts, sketches, and recommendations for the corridor. Additional stakeholder feedback was received during the third day of the charrette and incorporated into the final recommendations. The final concepts, sketches, and recommendations were presented to the community at a final public meeting in Council Chambers at Ludington City Hall.

Charrette - Day Three.
Based on feedback from the previous day, the charrette team refined the design concepts and recommendations. These were then presented to the community at a final presentation later in the evening.



Charrette Findings and Recommendations

The results and recommendations of the three day US-10/US-31 corridor charrette are provided in the following pages. It is important to remember that many of these concepts and ideas are just that — concepts and ideas. While these concepts have been vetted by the project team through preliminary analysis and expert verification, additional study, analysis, and design will be required. Implementation of these recommendations will require cooperation with local, regional, and state agencies (e.g., Michigan Department of Transportation).

Most of the charrette recommendations have at least some connection to the creation of a unique identity, or sense of place, along the corridor. Many of the comments collected from stakeholders and citizens noted that the existing development patterns, excessive parking lots, and character of the corridor detract from the overall identity of the Ludington community. Concerns about the corridor's impact as the primary entry experience into community were expressed throughout the charrette. Generally, the study area was described as a typical highway commercial corridor that could be found in any community.

The Ludington community has numerous unique assets that help establish identity and sense of place. Residents and visitors alike flock to the community's beaches, waterways, and parks. Downtown Ludington, the Lake Michigan coastline, and numerous historic sites and buildings contribute to the quality of life in the Ludington Community and make the area a popular tourist destination. The charrette team believes that establishing a unique identity or sense of place along the US-10/US-31 corridor can improve the quality of life for those who live, work, and shop along the corridor. Creating a sense of place and improving the aesthetic character of the corridor can also improve the primary entry experience for the entire community.

Walkability and Pedestrian and Bicycle Access

One of the most commonly cited issues by charrette participants was the difficulty of traveling along the corridor by foot or bicycle. Many comments noted a lack of pedestrian and bicycle infrastructure and uncomfortable, and sometimes dangerous, conditions for walkers and bicyclists. Generally, participants felt strongly that the ability to walk and bicycle along the corridor should be improved.

While no specific data related to non-automobile use of the corridor was available, it was clear that many people walk and bicycle along the corridor to get to work, shop, and access community services. In many locations, the charrette team observed "social trails" along the roadway. "Social trails," sometimes referred to as "goat paths," are paths created by foot or bicycle traffic in locations where there is no pedestrian infrastructure. These "social trails" indicate that, despite the lack of sidewalks, there is frequent pedestrian and bicycle traffic along portions of the corridor. The charrette team also observed many people walking and bicycling the corridor during one of their visual audits. The photos below show how pedestrians and cyclists are currently using the corridor. Additionally, each small group at the public workshop included a bike lane or sidewalk buffered from the roadway as a part of their "vision" for the public right-of-way along the corridor.

Walkability - Charrette participants placed a high importance on being able to walk along the corridor. There are several areas along the corridor where people are obviously walking despite the lack of sidewalk infrastructure, creating "social trails."

Walking and Bicycling the Corridor
The charrette team documented how pedestrians and bicyclists are currently using the corridor during one of their visual audits.

Recommendations

Portions of the US-10/US-31 corridor already have adequate sidewalk infrastructure, with a sufficient buffer between pedestrian and vehicular traffic. The charrette team recommends that sidewalk infrastructure be extended so it is continuous on both sides of the road along the western portions of the corridor. Sidewalks greatly increase pedestrian safety and improve the user experience. Providing sidewalks also promotes community health by encouraging walking and bicycling and increases equity by providing access to residences, businesses, and services to those who cannot drive or are unable to afford to drive. The pictures below (A and B) show the addition of sidewalks and other streetscape elements along the road. It should be noted that, according to the Michigan Department of Transportation (MDOT), the paved road shoulders adjacent to the curbs that exist on portions of the corridor are not intended for pedestrian use. Ultimately, these paved shoulders are used by pedestrians and bicyclists, but are too close to vehicular travel lanes to provide a safe and comfortable experience.

In instances where there is insufficient right-of-way to build a sidewalk between the road edge and right-of-way line, we recommend incorporating sidewalks on private properties. This could be accomplished by working with property owners to purchase easements so the municipality can build sidewalks or requiring that property owners include sidewalks when developing or redeveloping properties. Ideally, the sidewalk network would connect to residential developments along side streets and driveways that intersect the corridor.

Illustration A. Current View

Illustration A. Proposed View

Illustration B. Current View

Illustration B. Proposed View

We also recommend that pedestrian crosswalks be incorporated into future road improvements at signaled intersections. Marked crosswalks increase pedestrian safety by clearly identifying where pedestrian use will occur. Jurisdictions should coordinate the design and creation of crosswalks with MDOT to ensure that the appropriate design and safety standards are met. The images below (C) illustrate what the addition of marked crosswalks could look like along the corridor.

Illustration C. Current View

Illustration C. Proposed View

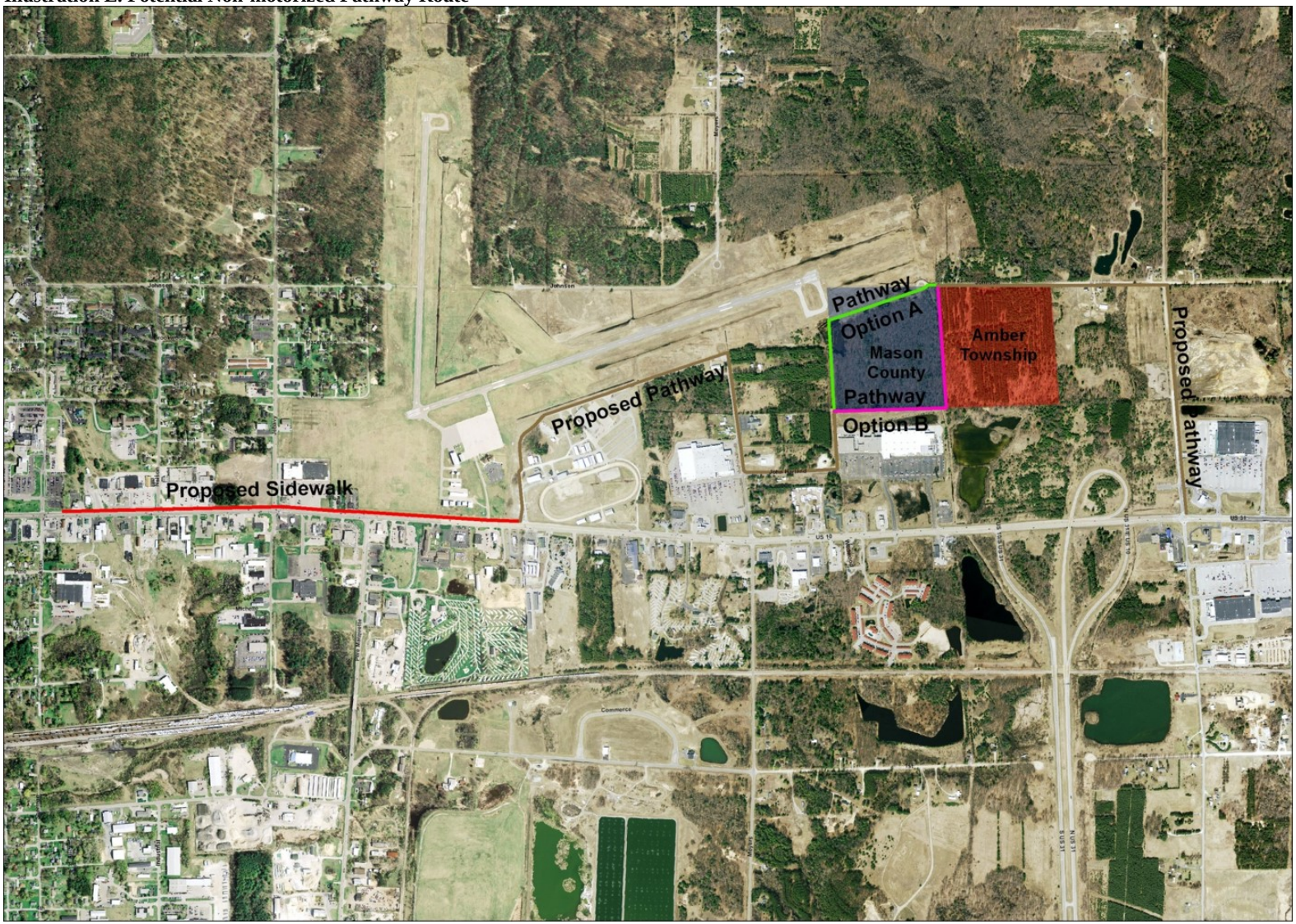
The design and use of the western US-31interchange present a number of challenges in facilitating continuous pedestrian traffic along the corridor. After significant discussion with stakeholders, it appears that east/west pedestrian traffic in this location must be routed to the north of the “cloverleaf” interchange. Specific options for routing pedestrians around the interchange can be seen below (D).

Sidewalk construction may not be feasible or necessary along the more rural eastern portions of the corridor, but a non-motorized pathway, or bike path, should be considered for these locations. Charrette participants felt strongly that a non-motorized connection between Ludington and Scottville should be provided. The charrette team, working with stakeholder and community input, developed a potential route for a non-motorized pathway to the north of US-10 where the western US-31 interchange and other limiting factors make sidewalks difficult to construct. The potential route would connect to the proposed sidewalk network to the west and utilize drives on the Mason County Fairgrounds, public roads north of US-10, and connections across publically owned properties. A combination of sidewalks or non-motorized trail would continue from Brye Road east to Scottville. The images below (D) show a potential non-motorized path utilizing the existing drive at the Mason County Fairgrounds. The image (E) on the following page shows the potential non-motorized path route around the US-31 interchange. If construction of a non-motorized pathway along the roadway in eastern portions of the corridor is not feasible, alternate routes along Johnson Road, 1st Street, or the railroad corridor should be considered. Ultimately, this non-motorized trail could be extended further east to connect to the existing Pere Marquette State Trail in Baldwin.

Illustration D. Current View

Illustration D. Proposed View

Illustration E. Potential Non-motorized Pathway Route



Streetscaping and Landscaping

Streetscaping and landscaping can be used as an effective placemaking strategy to improve the overall appeal of the corridor and help reduce traffic speeds. Creating a unified corridor aesthetic will help generate a unique identity, or sense of place, for the corridor. We recommend implementing streetscape and landscape treatments to transform the character of the US-10/US-31 corridor.

Recommendations

Street Trees and Landscape Buffers

When describing their future visions for the corridor, most charrette participants noted the importance of the addition of trees and landscaping. Each of the small groups at the public workshop included street trees or landscape buffers in their visions for the roadway. Street trees improve the character of a street by creating a more human scale, reduce the visual impact of large buildings, and help improve the pedestrian experience. Landscape buffers between the road and private properties can add visual appeal to the corridor and soften views of parking lots and parked cars. Additionally, rain gardens and bio-retention areas can be incorporated into landscape buffers to provide stormwater storage capacity.

It is recommended that street trees be planted within the road right-of-way continuously on both sides of US-10/US-31. Street trees should be located between the road edge and sidewalk in order to provide additional separation of pedestrians and vehicle traffic. We also recommend that, wherever possible, landscape buffers that include trees, shrubs, and other vegetation be planted on private properties between the right-of-way and parking lots. The illustrations below (F, G, and H) show how potential landscape buffers, street trees, and other streetscape elements could be incorporated along the corridor. Currently, the Mason County Zoning Ordinance requires a thirty foot landscape buffer between parking lots and the road right-of-way. It is recommended that a similar standard be considered in Pere Marquette Charter Township.

Illustration F. Potential Standard Street Tree and Streetscape Treatment

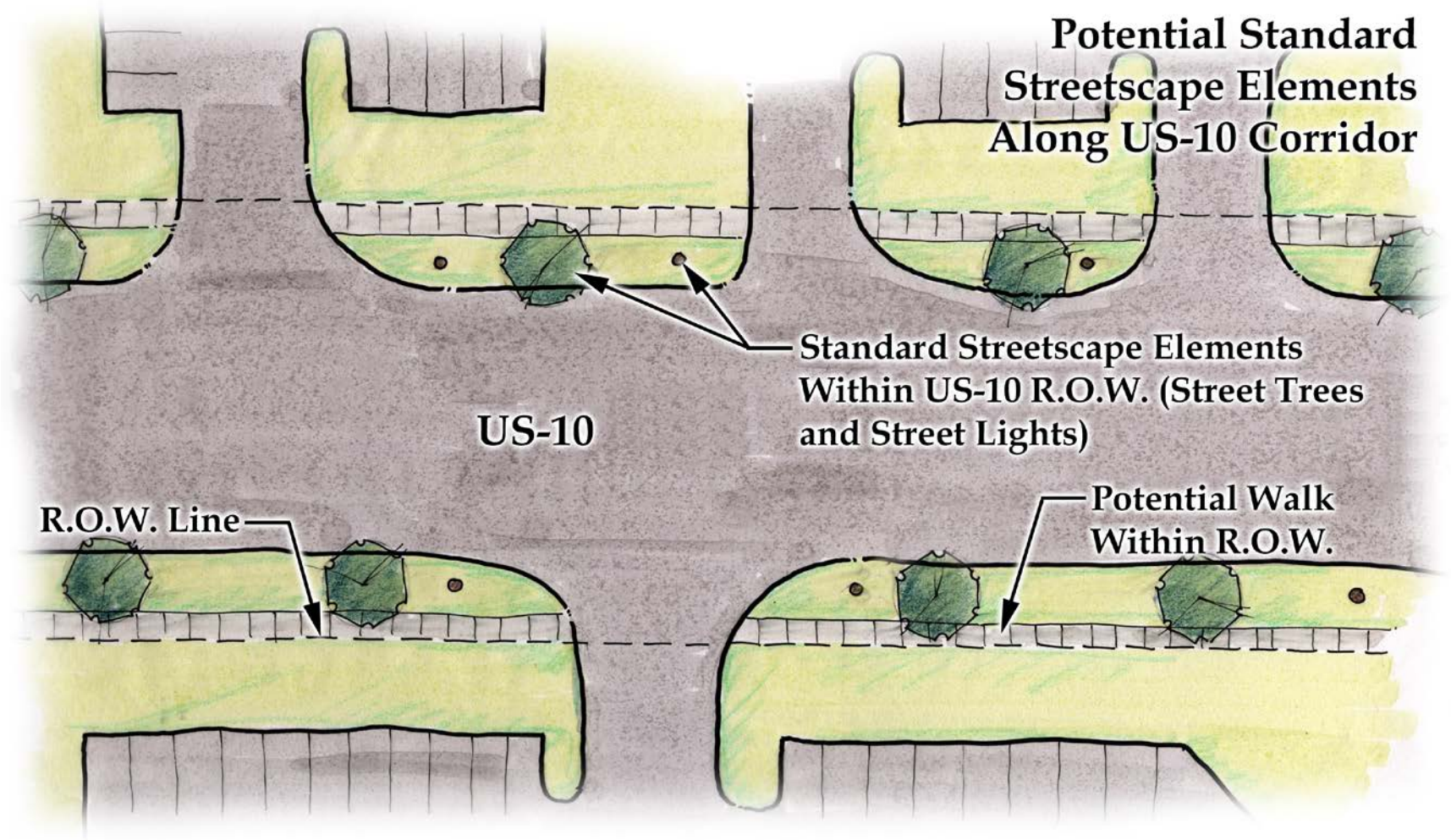


Illustration G. Potential Standard Landscape Buffer Treatment

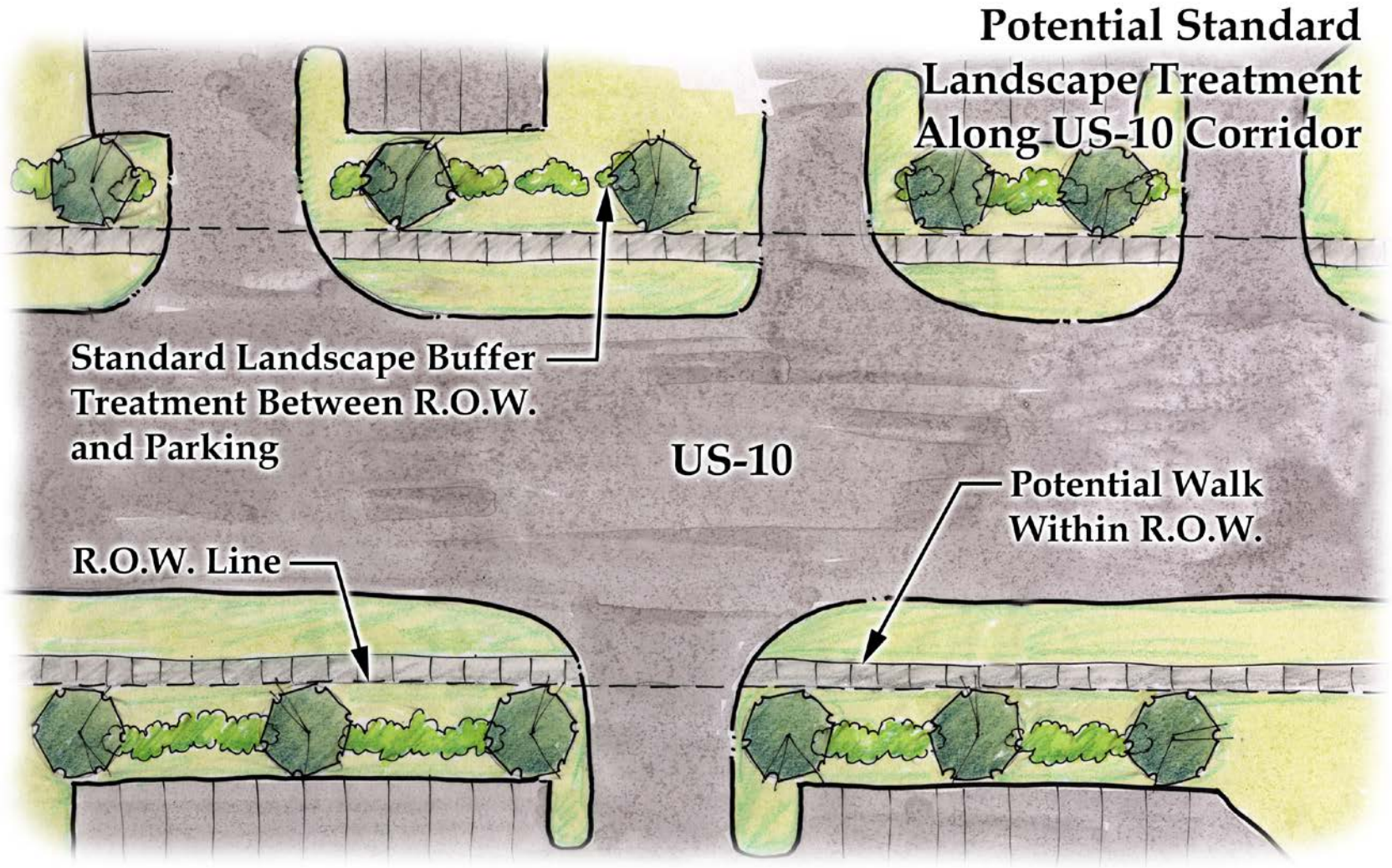
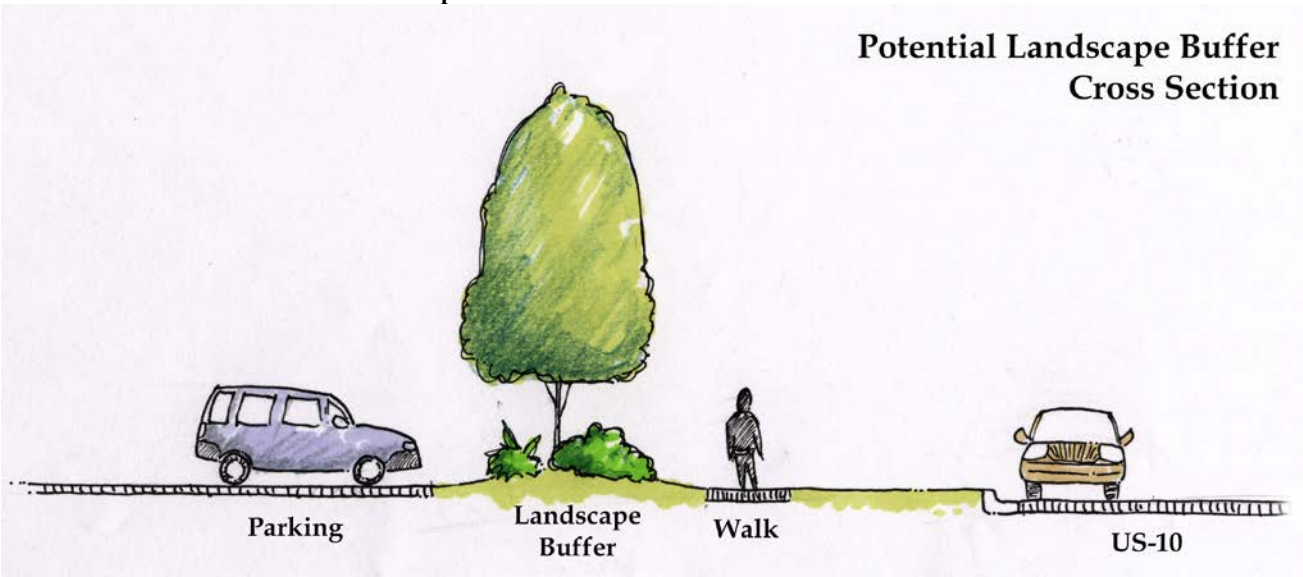


Illustration H. Potential Standard Landscape Buffer Cross Section

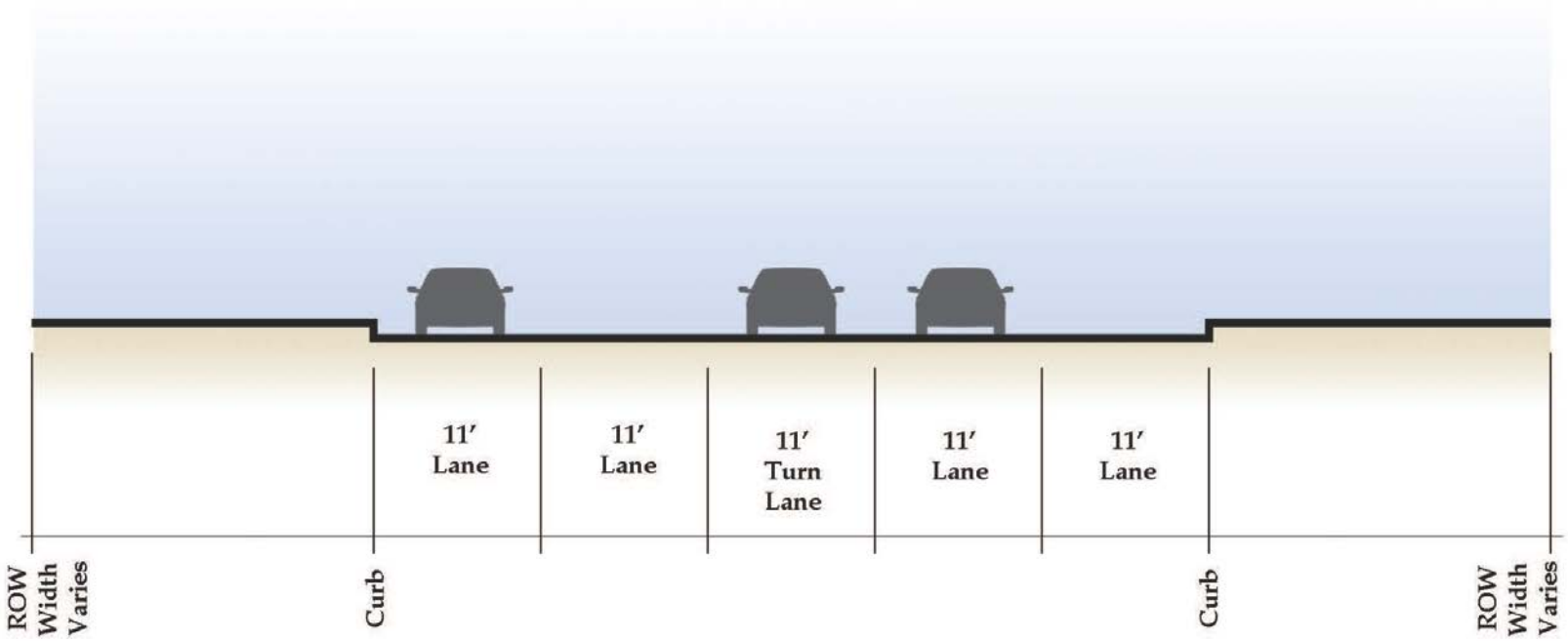


Streetscaping

When discussing ways to increase the visual appeal of the corridor, charrette participants frequently mentioned a desire for attractive streetscape elements. Providing consistent streetscape treatments would improve aesthetic conditions and create a unified identity for the corridor. Providing streetscape elements, like light poles with banners and vegetated medians, can also improve the corridor experience for both pedestrians and motorists.

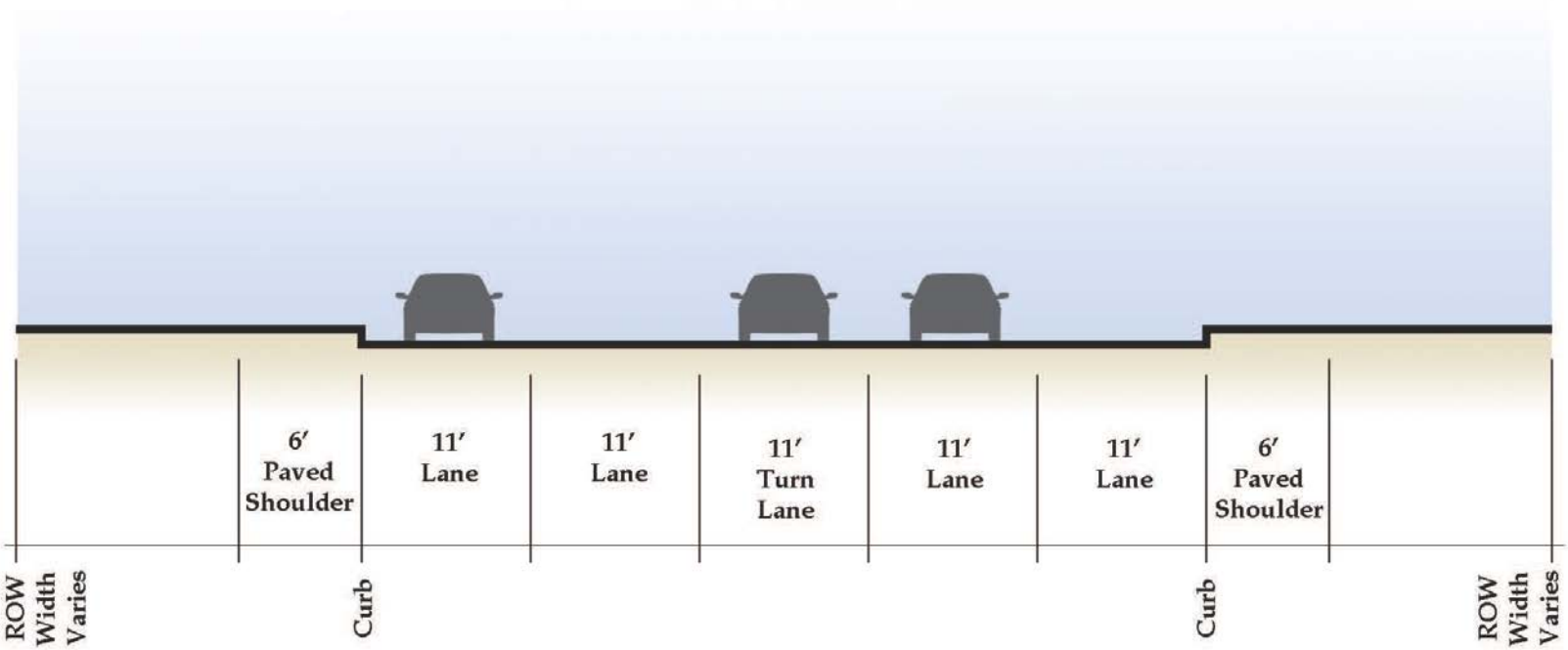
We recommend installing common streetscape elements, including street lights, along the corridor. It is also recommended that vegetated medians be built where possible. Medians can help reduce traffic speeds and provide refuge points for pedestrians as they cross the street. The construction of medians may not be feasible along large portions of the west side of the corridor as left turns into and out of many driveways would be prevented. Medians with trees may be best used along the more rural eastern portions of the corridor where fewer driveways would be impacted. The images below (I, J, K, and L) show cross sections of the existing corridor conditions and potential streetscape additions.

Illustration I. Typical Existing US-10 Cross Section - Jackson Road to Pere Marquette Highway



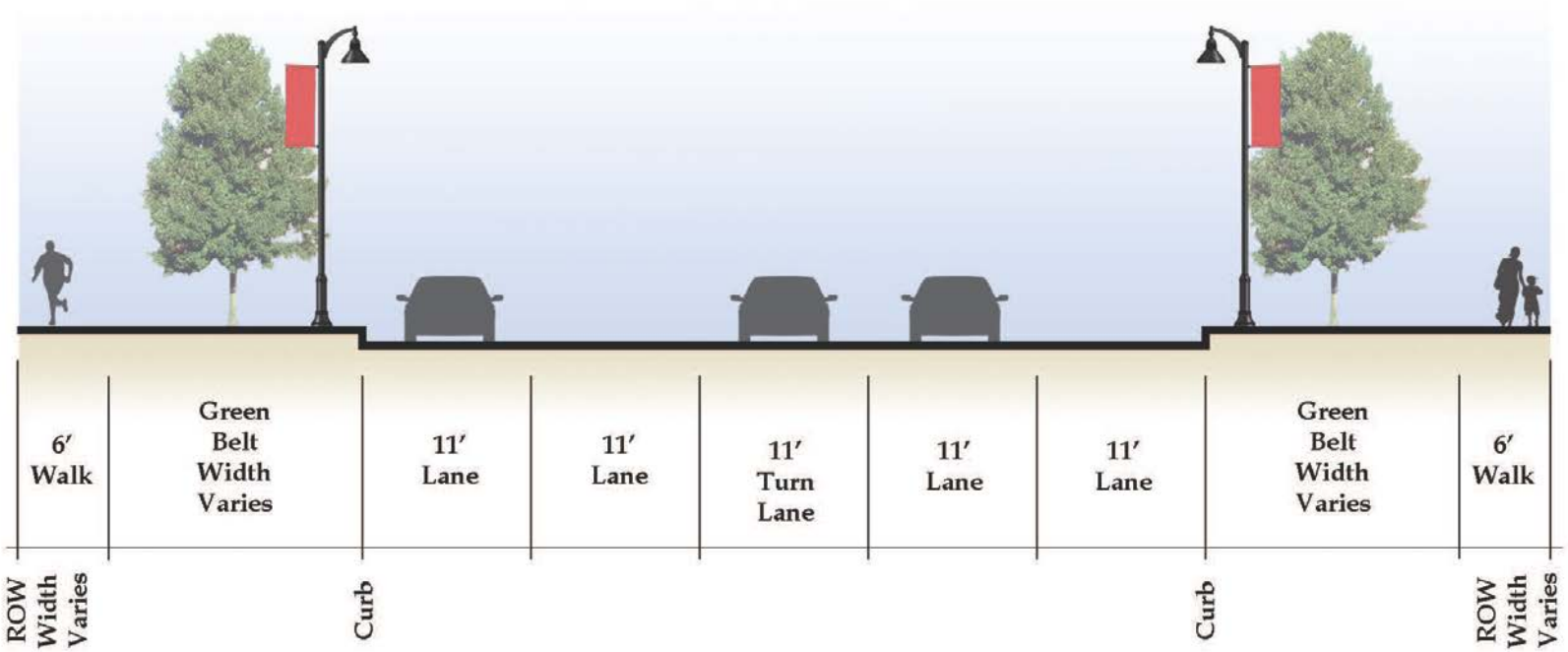
Typical Existing US-10 Cross Section
Jackson Rd. to Pere Marquette Hwy.

Illustration J. Typical Existing US-10/US-31 Cross Section - Pere Marquette Highway to US-31 Scottville Bypass



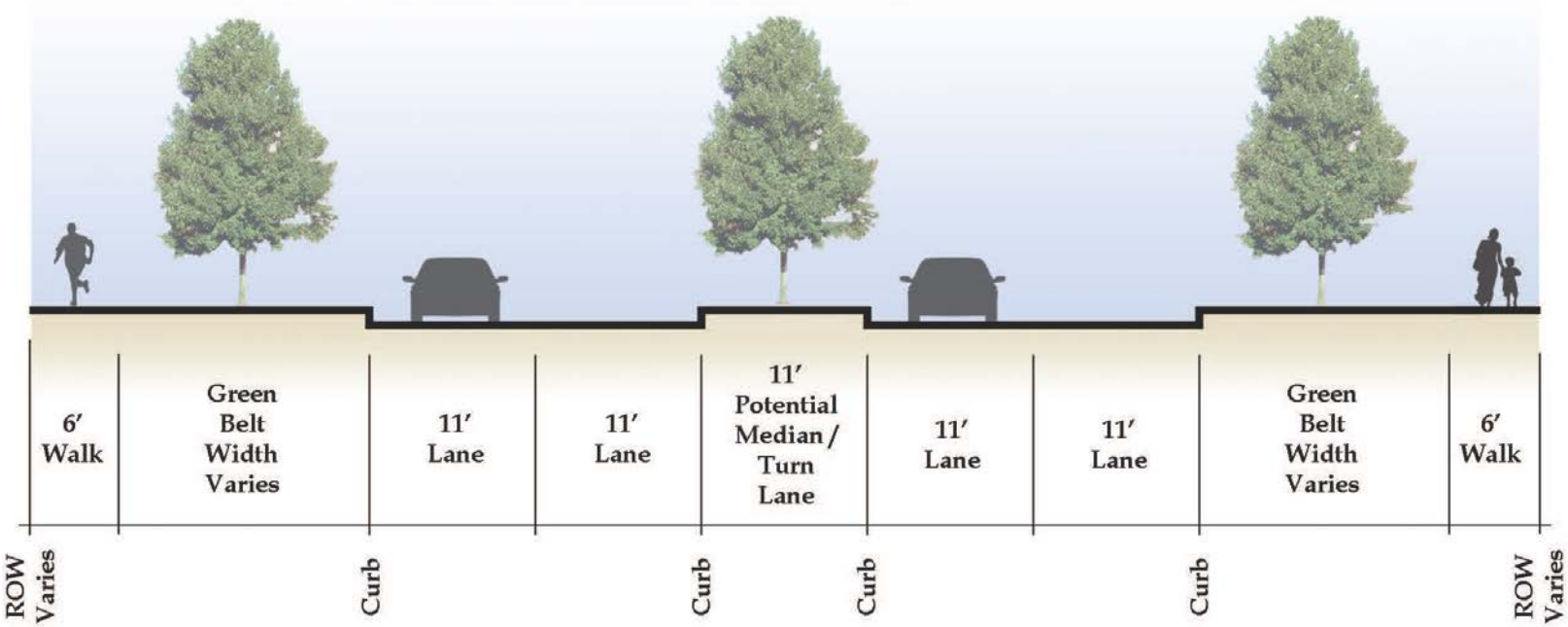
Typical Existing US-10 / US-31 Cross Section
Pere Marquette Hwy. to US-31 Scottville Bypass

Illustration K. Proposed US-10 Cross Section – Jackson Road to Dennis Road



Potential US-10 Cross Section
Jackson Rd. to Dennis Rd.

Illustration L. Proposed US-10 Cross Section – Dennis Road to US-31 Bypass

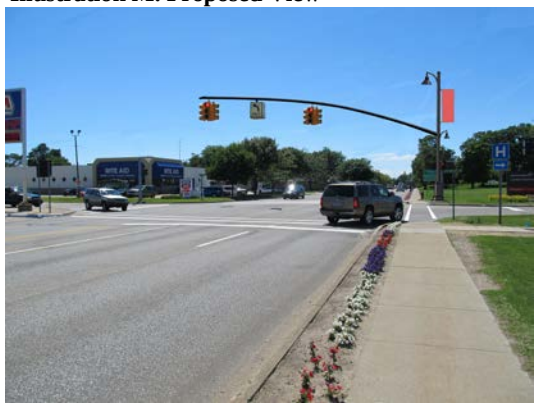


Potential US-10 Cross Section
Dennis Rd. to US-31 Bypass

In the first set of pictures below (M), current traffic signals and lighting are replaced with more aesthetically pleasing infrastructure and painted crosswalks are added.

Illustration M. Current View

Illustration M. Proposed View



The next set of pictures (N) illustrates an updated version of the corridor where a median is added, trees are planted, and streetlights follow a more uniform and consistent design. A median could reduce traffic speeds and provide a safe haven for pedestrians who are crossing the road. In addition, vegetation within the median could absorb stormwater runoff.

Illustration N. Current View

Illustration N. Proposed View

Access Management

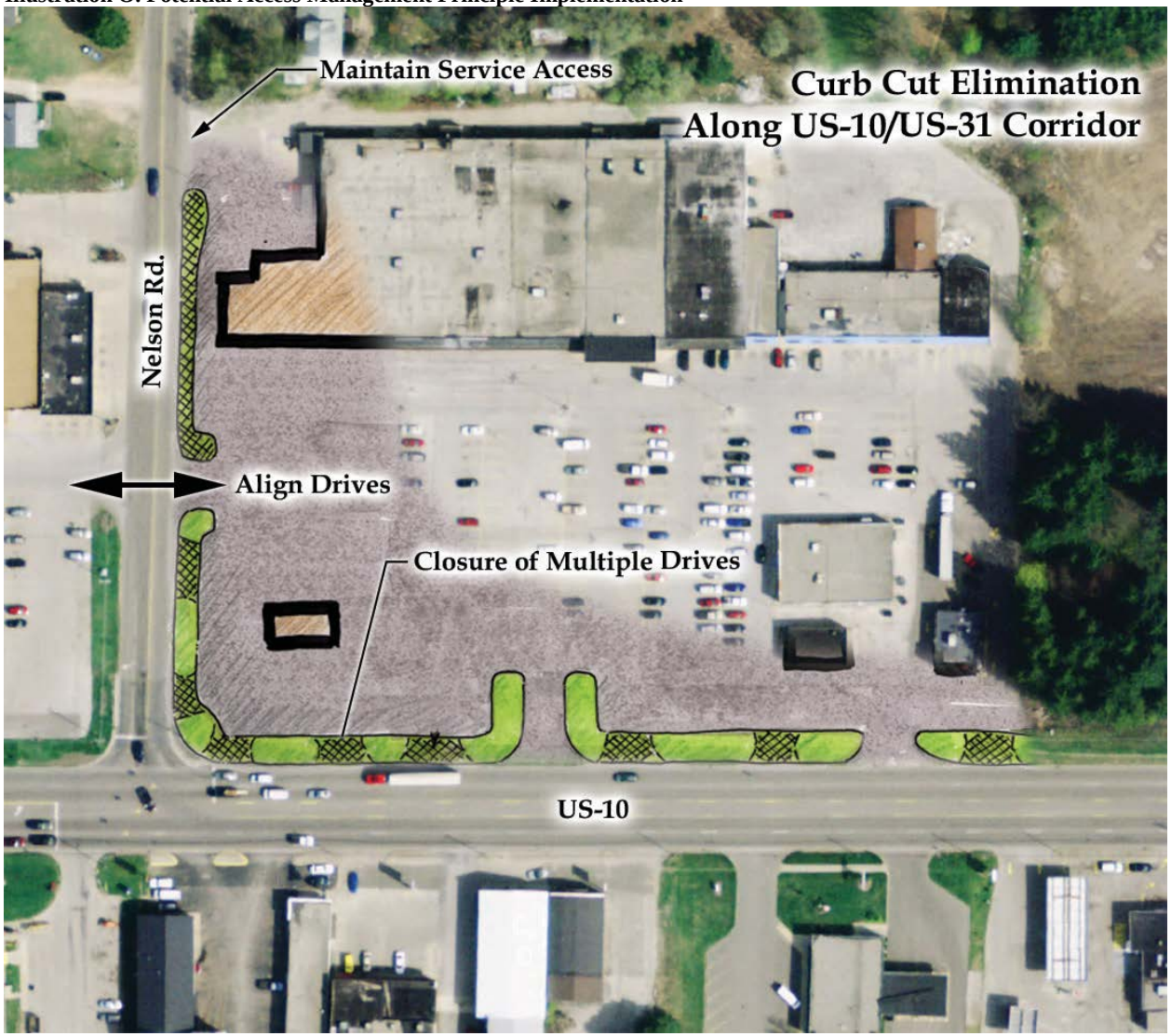
Access management (see inset at right) is another method for improving the function and character of the US-10/US-31 corridor. Many charrette participants were familiar with the principles of access management and mentioned the need for an overall reduction in curb cuts, or driveways, along western portions of the corridor. In 2005, the Michigan Department of Transportation (MDOT) and the Mason County Planning Commission hired an outside firm to create an access management plan for all portions of US-10 and US-31 in Mason County. The access management plan identified specific corridor improvements that could be made to improve traffic flow and safety. Mason County utilized the recommendations and strategies of the access management plan to create a Highway Overlay – Access Management District for the Mason County Zoning Ordinance. The overlay district includes requirements and standards for private property access to US-10 and US-31 to improve safety and roadway function. Unfortunately, implementing these access management standards is a slow process, taking place over the course of years as private properties develop and redevelop.

What is Access Management?
"Access management is a set of proven techniques that can help reduce traffic congestion, preserve the flow of traffic, improve traffic safety, prevent crashes, preserve existing road capacity and preserve investment in roads by managing the location, design and type of access to property."
- The Access Management Guidebook MDOT

Recommendation
We recommend implementing access management strategies on the heavily traveled western portion of the corridor within Pere Marquette Charter Township. The Township should explore the implementation of an access management or highway overlay zoning district, using the recommendations of the access management plan and the Mason County ordinance as guides. As new construction and redevelopment site plans are reviewed, Pere Marquette Charter Township and Mason County should work to ensure that access management principles are incorporated along the corridor. These principles include closing redundant or poorly placed driveways, combining driveways, connecting parking lots, and creating service roads. The illustration (O) on the following page shows how access management principles could potentially be implemented on a portion of the corridor.

The western portion of the corridor contains many curb cuts and driveways.

Illustration O. Potential Access Management Principle Implementation



Parking

The western portion of the US-10/US-31 corridor is typified by big box retail and strip commercial development with large parking lots in front of the buildings. Frequently, these parking lots are relatively empty, leaving large expanses of paved surface unused. Additionally, parking lots along the corridor often lack connections between one another. This increases the number of driveways on the roadway and requires drivers to enter and exit the roadway many times when shopping at multiple locations along the corridor.

Parking - Many large parking lots are found in front of businesses along the western portions of the corridor.

Recommendation
We recommend that each municipality considers reducing the minimum parking requirements for properties along the corridor. Reducing minimum parking requirements can help reduce the size and visual impact of parking lots and reduce impervious surface coverage on corridor lots. Reducing the amount of impervious surfaces within the corridor will reduce stormwater runoff volumes and lessen the impacts of severe precipitation events on retention areas and stormwater drainage infrastructure. Zoning ordinances could also be amended to include standards that limit the amount of parking that could be built in front of businesses. It is recommended that ordinance standards that require parking alongside and behind buildings be adopted.

Encouraging shared parking by adjacent businesses with different patron schedules or business hours is another way to reduce total number of parking spaces but still meet peak parking demand. Impervious surface coverage and stormwater runoff can be further reduced by the use of pervious pavements in parking lots. Including landscape islands within parking lots can reduce the visual impact of large parking areas, reduce heat retention, and provide additional spaces for stormwater retention. Currently, the Mason County Zoning Ordinance requires landscaped islands within parking lots. It is recommended that Pere Marquette Charter Township require landscape islands within parking areas along the corridor as well.

Pervious Pavement - Pervious pavement can reduce stormwater runoff and flooding.

Photo by E-Landscape Specialty Solutions

Signs

There is currently a wide variety of signage present along the US-10/US-31 corridor. Some of these signs do not conform to existing zoning regulations. The municipalities currently allow wall, freestanding, and monument signs along the corridor. Providing a uniform set of sign standards for the corridor will help create a unified corridor character and aesthetic. It is recommended that the municipalities collaborate to create a set of uniform sign standards that promote well-designed, properly scaled signs.

Buildings

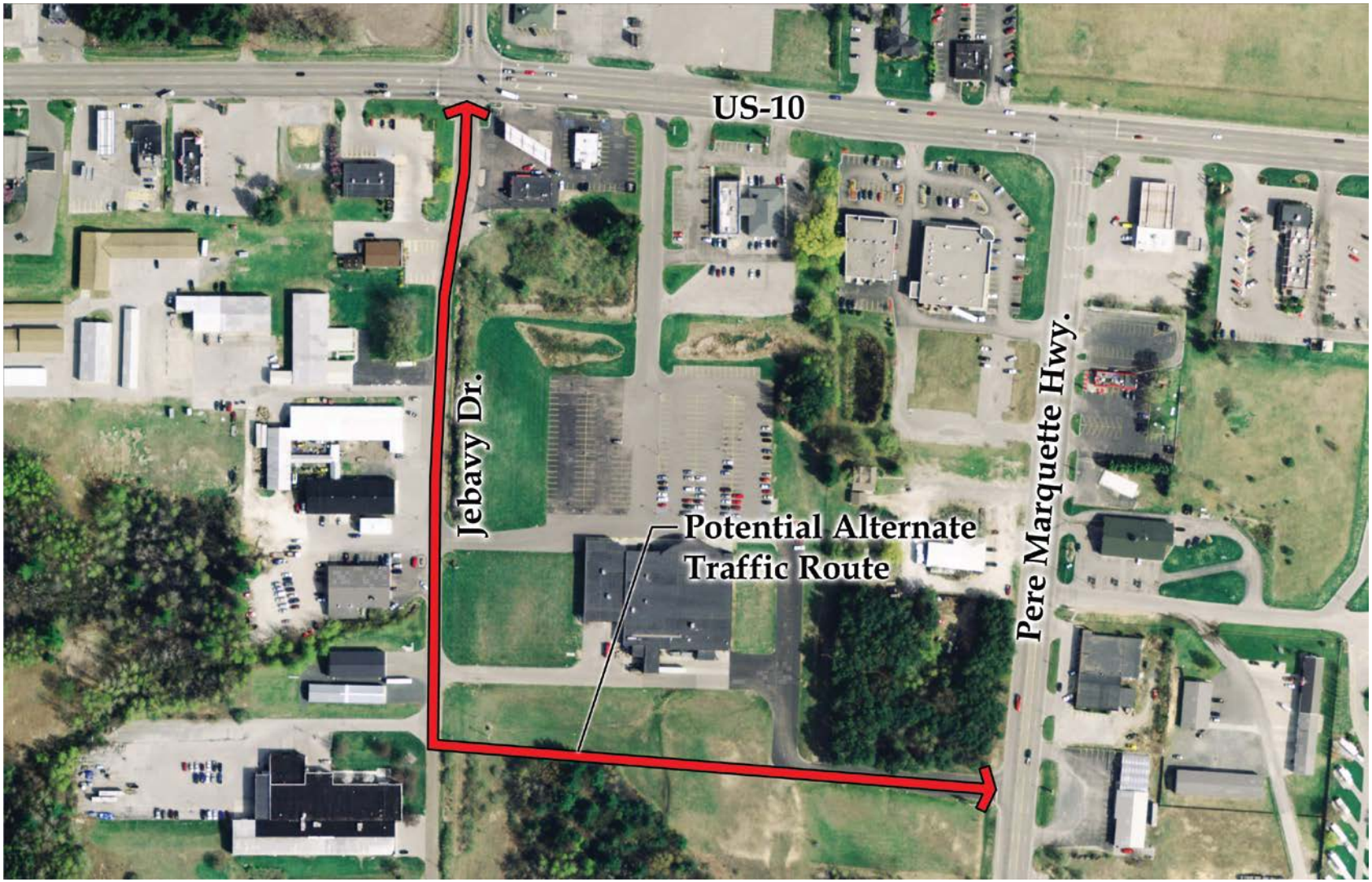
The character of the existing buildings along the western portion of the US-10/US-31 corridor is fairly inconsistent. Maintaining consistent building orientation, mass, height, façade, and architectural features along the corridor would help unify aesthetics and create a unified identity. We recommend that the jurisdictions collaborate to establish building design guidelines for the commercial properties on the western portion of the corridor. Items to consider when exploring these guidelines should include height, mass, orientation, architectural elements, roof lines, and building materials.

Buildings - Local officials should consider establishing design guidelines for buildings along the corridor.

Jebavy Drive and Pere Marquette Highway Intersections

During the charrette, many participants discussed the issue of traffic congestion at the intersections of US-10 and Jebavy Drive and Pere Marquette Highway. The discussions specifically referenced the flow of north/south traffic. There was a strong desire to improve efficiency of north/south travel by identifying an alternative route for traffic that avoids utilizing the portion of US-10 between Jebavy Drive and Pere Marquette Highway. It is recommended that the jurisdictions work with the Michigan Department of Transportation (MDOT) and the Mason County Road commission to investigate the feasibility of an alternate north/south route. One idea that was generated during the charrette is illustrated on the following page (P). This idea involves routing north/south traffic along Jebavy Drive south of US-10 and utilizing a potential connection across what is now private property to Pere Marquette Highway. A version of this route, utilizing private parking lots and service drives, is currently used by motorists and would be improved by formalizing the route and removing through traffic from parking lots.

Illustration P. Potential Alternate Traffic Route



Potential Development Opportunities

Two locations along the western portion of the corridor were identified during the charrette as places with opportunity for potential future development. These locations were seen as nodes of activity that could support the addition of development with a mix of uses and increased residential density within a walkable distance. These locations are near the US-10 and Jackson Road and US-10/US-31 and Brye Road intersections. The locations are shown in the pictures below (Q and R) with a one quarter mile radius circle overlay. This quarter mile radius illustrates potential walkability in these locations and represents the distance that people are generally willing to walk for services and shopping once parking their vehicles.

Illustration Q. Potential Development Node at US-10 and Jackson Road

Illustration R. Potential Development Node Near US-10/US-31 and Brye Road

Placing a focus on mixed uses, increased density, building orientation, and the incorporation of pedestrian infrastructure could transform these locations into people friendly places with unique identities. Jurisdictions could create sub-area plans for these nodes or encourage development patterns that resemble those of “lifestyle centers” in place of traditional strip commercial development. The illustration (S) on the following page shows what the addition of more buildings and pedestrian infrastructure at the US-10/US-31 and Brye Road location might look like.

Illustration S. Potential Development, Increased Density, and Pedestrian Infrastructure

Implementation - Tools & Practices

Zoning Ordinance Standards

The planning commissions of each jurisdiction along the US-10/US-31 corridor should consider amending their zoning ordinances to require corridor design and management standards that reflect the future vision for the corridor. Zoning amendments should address land uses, pedestrian infrastructure, access management, parking, landscaping, building orientation, and signage. Potential amendments should be focused on creating a more walkable and pedestrian oriented corridor. Building design guidelines (discussed below) could be encouraged or required in zoning ordinances as well.

Design Guidelines

To create a unified and improved aesthetic character for the corridor, the planning commissions of each jurisdiction should establish a set of design guidelines for buildings in the commercial areas along the corridor. Guidelines should address building location, orientation, bulk, entrances, facades, roof lines, and building materials. The jurisdictions should collaborate with local property owners during the creation of the design guidelines to ensure support for the proposed recommendations. Design guidelines are not regulatory documents, but can serve to inform any future zoning standards related to building design and aesthetics.

Design Guidelines - Design guidelines work to convey a sense of the preferred vision for an area. It is important to note that design guidelines are not regulatory. Rather, design guidelines provide a connection between general planning principles and the zoning ordinance.

Transportation Alternatives Program (TAP)

The Transportation Alternatives Program was authorized under Section 1122 of the Federal *Moving Ahead for Progress in the 21st Century Act* (MAP-21). Under the Program, each state Department of Transportation is required to allocate 2 percent of its total Federal Highway funds for programs and projects defined as *transportation alternatives*. Examples of transportation alternatives include non-motorized trails, sidewalks, transit stops or stations, and education and safety programs such as Safe Routes to School. This is a potential funding source for many corridor improvements.

Natural Resource Funding Sources

The Michigan Natural Resources Trust Fund (MNRTF) provides funding assistance for state and local outdoor recreation needs, including land acquisition and development of recreation facilities. This assistance is directed at creating and improving outdoor recreational opportunities and providing protection to valuable natural resources. Development project grant amounts range from $15,000 to $300,000, with a required minimum local match of 25 percent. Trails and greenways are a priority

project type for MNRTF grants. The jurisdictions should pursue these funding sources in support of efforts to create a non-motorized trail from Ludington to Scottville.

Corridor Improvement Authority

A Corridor Improvement Authority functions in a similar way to that of a Downtown Development Authority (DDA). Partnering together in an Authority would allow the jurisdictions to jointly oversee a more concerted effort to plan for, fund, and implement mutually beneficial public infrastructure projects and the redevelopment and revitalization of underperforming commercial properties. A Joint Corridor Improvement Authority would be overseen by a board made up of residents, business owners, and public officials from each of the jurisdictions. The Corridor Improvement Authority Act also allows such inter-governmental bodies to utilize Tax Increment Financing (TIF) to fund and maintain public infrastructure projects.

APPENDIX E

VULNERABILITY ASSESSMENT

Defining Vulnerability in the Ludington Community

Introduction

The harmful impacts of climate change on agriculture, infrastructure and human health are being felt almost everywhere across Michigan. With planning and preparation, communities can weather the storms and recover, becoming even better places to live and thrive. Through community-wide planning, resilient cities and townships actively cultivate their abilities to recover from adverse situations and events, working to strengthen and diversify their local economies and communications networks, increase social capital and civic engagement, enhance ecosystem services, improve human health and social systems, and build local adaptive capacity.

Building Community Resilience

According to the Rand Corporation, community resilience is a measure of the sustained ability of a community to utilize available resources to respond to, withstand, and or recover from adverse situations. The Rockefeller Foundation emphasizes equity as an important component of resilience, stating that city resilience is the capacity for people – particularly the poor and vulnerable – to survive and thrive no matter what stresses or shocks they encounter. Communities that are resilient are able to learn from adversity and adapt quickly to change. In general, the most important characteristics of community resilience are: (1) strong and meaningful social connections, (2) social and economic diversity, (3) innovation and creative problem solving capacity, and (4) extensive use of ecosystem services. The Rockefeller Foundation has identified 12 indicators that make for a resilient community (see right panel). However, it is important to acknowledge that every community is unique and not all indicators or characteristics are needed to be "resilient".

According to the Rockefeller Foundation, a resilient community often has…

- Minimal human vulnerability
- Diverse livelihoods and employment
- Adequate safeguards to human life and health
- Collective identity and mutual support
- Social stability and security
- Availability of financial resources and contingency funds
- Reduced physical exposure and vulnerability
- Continuity of critical services
- Reliable communications and mobility
- Effective leadership and management
- Empowered stakeholders
- Integrated development planning

1. The Rand Corporation. http://www.rand.org/multi/resilience-in-action/faqs.html
2. The Rockefeller Foundation: City Resilience Framework. April 2014. ARUP. https://www.rockefellerfoundation.org/report/city-resilience-framework/
3. Walker and Salt. (2006) Resilience Thinking: Sustaining Ecosystems and People in a Changing World. Island Press, Washington.

The Resilient Ludington community planning process aimed to increase resilience by fostering civic engagement and improving communications and cooperation between cultural and service organizations. To improve economic resilience, communities can work to encourage and support local production of goods and supplies, increasing self-reliance and reducing the flow of funds out of the community. Programs to encourage local investing and entrepreneurship have been helpful in building both employment and production capacity. Local investments, consumption of locally produced products, and locally owned businesses all help to diversify the community's economy, giving it greater resilience.

The following is a community vulnerability assessment focused on the City of Ludington, Pere Marquette Charter Township, and Hamlin Township. This assessment begins with an overview of regional climate trends and predicted societal impacts, then transitions to detailed assessments of the community's vulnerabilities to extreme heat and flooding events. Although the assessment is concentrated on these two specific types of events, many of the considerations and societal impacts identified would be present under other stresses and shocks within the community.

In completing the assessment, we consider factors, such as demographics, environmental conditions, locations of critical facilities and essential services, and the built environment. This assessment informs recommendations in the community's master plan for reducing the identified vulnerabilities through policies, programs, and projects, which will inevitably lead to a more resilient community.

Climate Change and Variability

Climate and weather are directly related, but not the same thing. Weather refers to the day-to-day conditions we encounter in a particular place: sun or rain, hot or cold. The term climate refers to the long-term weather patterns over regions or large geographic areas. When scientists speak of global climate change, they are referring to generalized, global patterns of weather over months, years and decades. To help predict what the climate will be in the future, scientists use three-dimensional computer models of the earth's atmosphere, oceans and land surfaces to understand past trends and predict future changes. These General Circulation Models (GCM) have been improved and verified in recent years, resulting in relatively reliable predictions for climate changes over large regions. To help predict climate change at the earth's surface for smaller regions, scientists apply downscaling techniques.

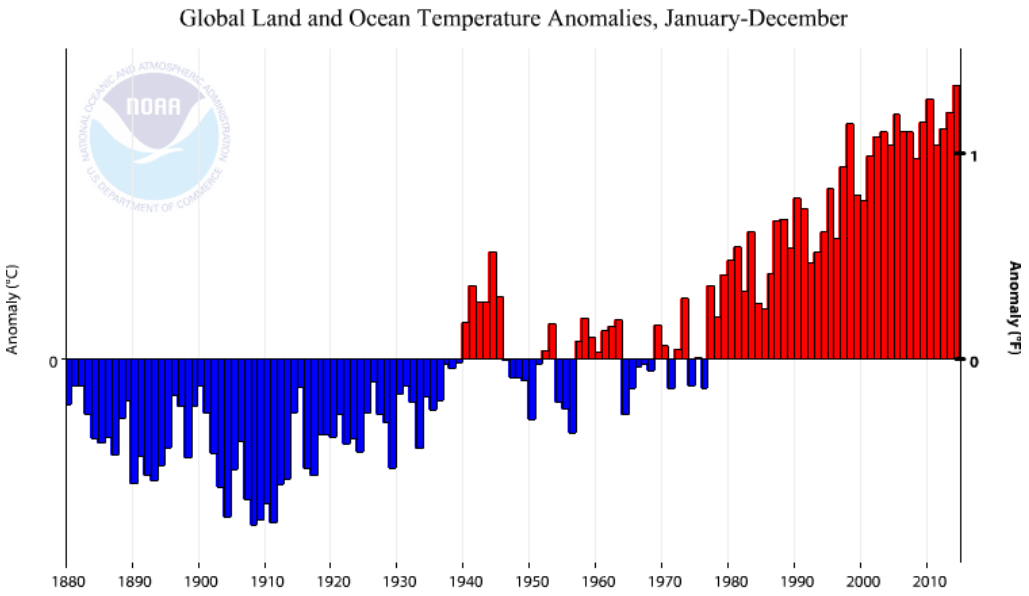
> Downscaling climate data is a strategy for generating locally relevant data using global scale predictions to create regionally specific forecasts.

As stated by the Intergovernmental Panel on Climate Change (IPCC), significant changes in the earth's climate have been observed and thoroughly documented. Warming of the climate system is unequivocal and is now evident in average air

4. Intergovernmental Panel on Climate Change. (2007). Observed changes in climate and their effects. Web. Accessed July 2015.
5. NCDC/NEDIS/NOAA at www.ncdc.noaa.gov

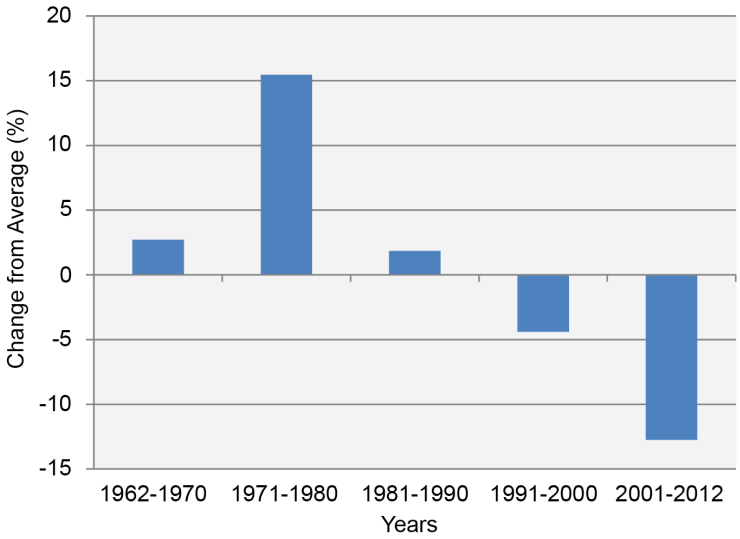
and ocean temperatures, rising sea levels and the melting of ice. Figure 1 provides a summary of observed changes in land and ocean temperatures over the last 150 years. The bar-graph in Figure 2 presents observed changes in the amount of ice cover on the Great Lakes. Overall, there has been a 71% reduction in the extent of Great Lakes ice cover between 1973 and 2010, led by losses on Lake Superior. The decrease in ice cover is another strong indicator of change.

Figure F-1: Global Surface Mean Temperatures Compared to Century Average



Source: http://www.ncdc.noaa.gov

Figure F-2: Ice Cover in the Great Lakes



Source: http://nca2014.globalchange.gov/report/our-changing-climate/melting ice#graphic-16703

In June of 2008, Mason County experienced record-breaking flooding, with an estimated 11 inches of rain over six hours and wind gusts up to 80 miles per hour. Photos above show damage to roads and culverts as a result of that event.

The Great Lakes Integrated Sciences Assessment (GLISA) is a consortium of scientists and educators from the University of Michigan and Michigan State University that is funded by the National Oceanic and Atmospheric Administration (NOAA) to provide climate resources, including downscaled models, for communities across the Great Lakes Region. According to GLISA, the Great Lakes Region has already experienced a 2.3° F increase in average temperatures. An additional increase of 1.8 to 5.4° F in average temperatures is projected by 2050. Although these numbers are relatively small, they are driving very dramatic changes in Michigan's climate.

Based on the most recent models, the climate of Ludington, Michigan will continue to warm, with greater increases in temperature during the winter months and at night. There are a variety of weather impacts expected with this change in average temperatures. Some of the potential impacts of climate change in the Ludington area include:

- Storms are expected to become more frequent and more severe
- Increases in winter and spring precipitation
- Less precipitation as snow and more as rain
- Less winter ice on lakes
- Extended growing season (earlier spring/later fall)
- Greater frequency and intensity of storms
- More flooding events with risks of erosion
- Increases in frequency and length of severe heat events
- Increased risk of drought, particularly in summer

It is important to note that increased flooding and more intense drought are not mutually exclusive nor contradictory. In the Great Lakes region, scientists are predicting more intense rain events in the fall and winter and more intense droughts in the summer months. These changes in climate could have a number of both positive and negative effects on the Ludington Community. For example, an extended growing season could help support new crops and increase crop yields for farmers in Mason County. On the other hand, the highly variable weather conditions such as severe storms and flooding mixed with summer droughts present big challenges to farming.

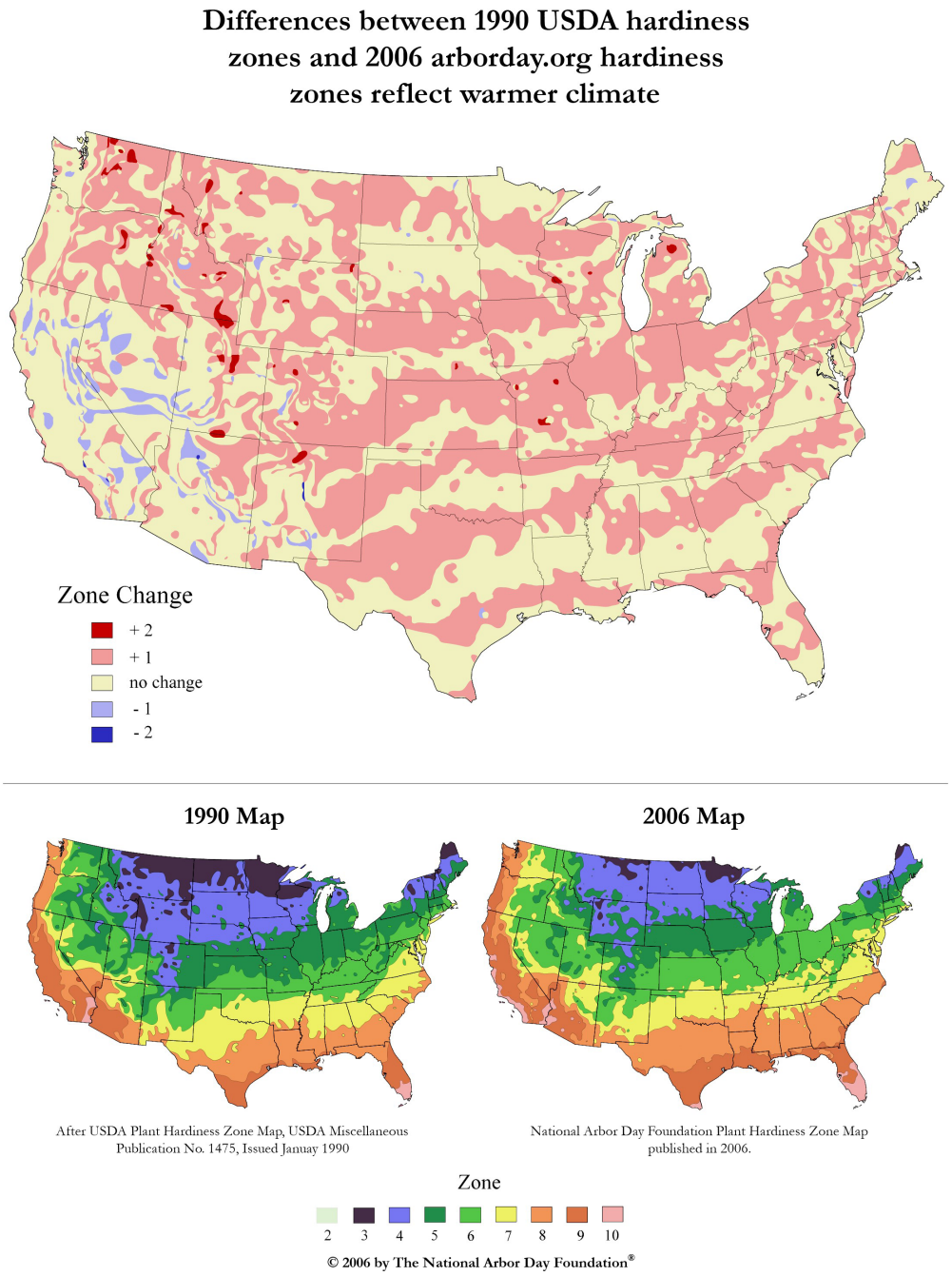
"Future crop yields will be more strongly influenced by anomalous weather events than by changes in average temperature or annual precipitation. Cold injury due to a freeze event after plant budding can decimate fruit crop production, as happened in 2002, and again in 2012, to Michigan's $60 million tart cherry crop."

Third U.S. National Climate Assessment - 2014

Much of the U. S. has been warmer in recent years, and that affects which what plants grow best in various regions. The Arbor Day Foundation completed an extensive updating of U.S. Hardiness Zones based upon data from 5,000 National Climatic Data Center cooperative stations across the continental United States. As is illustrated in Figure 3, zones in west Michigan are shifting northward. Zone 5 plants that previously thrived in Ludington, now do best in northern Michigan, while zone 6 plants that once thrived in states like Tennessee, now will grow well in Ludington.

6. Wang, J., X. Bai, H. Hu, A. Clites, M. Colton, and B. Lofgren. 2011. Temporal and spatial variability of Great Lakes Ice Cover, 1973-2010. Journal of Climate 25:1318-1329.`

Figure F-3



Source: https://www.arborday.org/media/map_change.cfm

Weather Events in the Ludington Community

The following section summarizes a few of the major weather-related events in the Ludington community and west Michigan over the past 40 years. Oftentimes, severe weather events results in negative impacts to the local economy and to vulnerable population s in the community.

July 1936: Heat wave hits Michigan resulting in 570 deaths statewide

1964: Record low water levels on Lake Michigan

August 1995: Lightning and high winds hit Mason County, a church in Ludington burns down.

June 1998: Disaster declaration after severe thunderstorm winds caused $398,000 in public damage in Mason County. Three homes were destroyed, 66 homes and 4 businesses were damaged. Consumers Energy reported over 600,000 lost power.

April 1999: warm temperatures, dry conditions, and high winds caused a wildfire to quickly spread, burning 100 acres of land near Scottsville.

August 2000: Lightning caused two house fires Tuesday night, knocked out power to hundreds of area homes

August 2001: Intense heat and dry weather resulted in a 60% reduction in crop yields in Mason County and millions of dollars in financial loss.

June 2002: Heavy frosts and cold temperatures destroyed much of the buds on fruit trees/vines/plants in west Michigan – including cherry trees, pears, plums, juice grapes, blackberries, brambles, raspberries, strawberries, causing millions of dollars in damages.

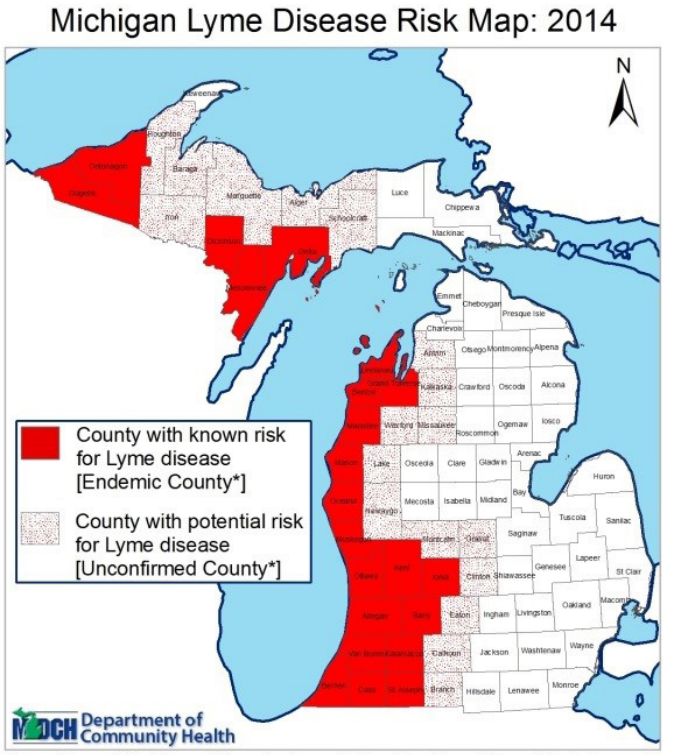
April 3, 2003: Ice storm caused $4.9 million in property damage throughout West Michigan and left hundreds of thousands without power.

Public Health and Climate

Major health effects of long-term climatic change are predicted for the Midwest Region. Already, people in Michigan are experiencing higher rates of skin and eye damage from increased exposure to ultraviolet radiation, increased incidence of respiratory and cardiovascular diseases, and increased incidence of vector-borne and water-borne diseases. Weather conditions and high heat events exacerbate poor health conditions like allergies, asthma, and obesity.

The Michigan Department of Health and Human Services (MDHHS) published the Michigan Climate and Health Adaptation Plan in 2011. The Plan indicates that increasing numbers of illness and deaths as a result of extreme heat events, declining air quality as a result of increased production of ozone and particulate matter from heat and drought events, and adverse changes to water quality and availability following severe weather events can be expected in coming years. In the long-term, health experts are most concerned with a rising incidence of infectious diseases and outbreaks of new diseases not currently endemic to Michigan, increasing numbers of disease vectors and appearance of new vectors not currently established in Michigan, and a degradation of food safety, security, and supply. For example, deer ticks are one disease vector that has increased in recent years. According to the MDHHS, the first official reported human case of Lyme disease was in 1985. Cases have now been reported in both the upper and lower peninsula and are increasing. It is anticipated that the number of cases reported will continue to increase due to public and medical personnel education, and expanding tick ranges. Figure 4 demonstrates the distribution of deer ticks in west Michigan, which has increased in recent years.

Figure 4



* Lyme disease risk in this map is based on known, field confirmed populations of infected blacklegged ticks, or laboratory confirmed human cases.
a) Counties labeled "endemic" are counties where infected tick populations have been confirmed - and/or -
Two or more laboratory confirmed human cases have been identified with local exposure.
b) Counties labeled "unconfirmed" are conties bordering endemic counties, but which do not meet the above criteria for "endemic" counties.

MDCH Zoonotic Disease and Special Projects Section. Revised April, 2014

Vulnerability Assessments

Communities interested in becoming more resilient assess their vulnerabilities and make action plans to reduce their sensitivities and exposures to hazards of all kinds. This Community Vulnerability Assessment has been compiled by the Land Information Access Association to provide a wide variety of useful information aimed at improving climate resilience by reducing human and community vulnerabilities.

7. National Research Council. Reconciling observations of global temperature change. Washington, DC: National Academy Press, 2000:86.

This Assessment supports the land use planning and community development process known as Resilient Michigan and focuses on the City of Ludington, Pere Marquette Charter Township, and Hamlin Township.

Vulnerability = Exposure + Sensitivity

A Vulnerability Assessment is designed to identify and help prioritize adaptation strategies in the community planning process. We use a model that defines 'vulnerability' as 'exposure plus sensitivity.' Exposure refers to hazards in the natural or built environment, while sensitivity refers to the degree to which a community or certain segments of a community could be impacted by an event. This concept has been used recently in a variety of studies such as equity and adaptation assessments conducted by the NAACP , vulnerability and its relationship to adaptation , and hazard-specific vulnerability assessments aimed at measuring exposure, sensitivity, and resilience.

Exposure refers to hazards in the natural or built environment while sensitivity refers to the degree to which a community or certain segments of a community could be impacted by an event.

By assessing the potential for exposure to a hazard and the sensitivities of specific populations, we can generate maps that identify the areas in a community with relatively greater vulnerability. This tool provides direction for community planners and public health workers in reducing risks to human health in the future by knowing where the areas of vulnerability lie and why the vulnerability exists there.

For the purposes of this tool, based on the greatest risks in Michigan and most likely predicted climate changes, we decided to limit our vulnerability assessments to extreme heat waves and flooding. However, climate change is predicted to result in increases of other exposures that should also be considered in community planning and development (e.g., high winds and tornados).

Our assessments were based in part on data obtained from the American Community Survey, a continuing survey program operated by the U.S. Census Bureau. This data includes information on housing, income, and education characteristics of the populations in geographic areas called block groups, containing between 600 and 3,000 individuals. We also used data from the 2010 Census including population age and racial composition collected by Census blocks, which are the smallest available geographic areas for demographic data. Data sets concerning parcel characteristics were obtained from Mason County, the City of Ludington, Pere Marquette Charter Township, and Hamlin Township. Building footprint and tree canopy cover were digitized using an orthophotograph from 2009.

8. Foundations for Community Climate Action: Defining Climate Change Vulnerability in Detroit. University of Michigan. December 2012.
9. Equity in Building Resilience in Adaptation Planning. National Association for the Advancement of Colored people (NAACP)
10. Adger, W. N. (2006). "Vulnerability." Global Environmental Change 16 (3): 268-281. Adger, W. N., N. Arnell, and E. Tompkins (2005). "Adapting to climate change-perspectives across scales." Global Environmental Change 15(2):77-86.
11. Polsky, C., R. Neff, and B. Yarnal (2007). "Building comparable global change vulnerability assessments: the vulnerability scoping diagram." Global Environmental Change 17(3-4): 472-485.

Heat Vulnerability

Community vulnerability to heat events varies spatially, on local, regional, and national scales. In the Michigan communities where we have worked, we see varying degrees of vulnerability to heat based on proximity to the Great Lakes, access to air conditioning, and surrounding environmental factors like tree canopy and impervious surfaces.

Studies have shown that heat-related mortality generally occurs in areas of the community that are warmer, less stable, and home to more disadvantaged populations. One study found that neighborhoods with the highest temperatures and the least amount of open space and vegetation were also likely to be the most socioeconomically disadvantaged. The same study also found that the strongest protective factor for residents was access to air conditioning in the home and in other places, as well as having access to transportation.

A 2012 literature review conducted by researchers at the University of Michigan indicates that infants under five and persons over age 65 are highly sensitive to heat events, as are persons living in lower-income census tracts and minority populations. Living alone, being confined to bed, using tranquilizers, having a mental illness, not leaving home daily, living on higher floors of multistory buildings, and being alcoholic are additional factors that are associated with increased risk of heat-related mortality.

Many of the communities we work with are rural and suburban. There have been limited studies conducted on how heat events impact rural and suburban communities, one study noting that rural populations may exhibit patterns of vulnerability different from those of urban populations.

Heat Sensitivity Assessment

To create the sensitivity and exposure maps, as well as the resulting vulnerability maps, LIAA relied on methodologies developed at the University of Michigan's Taubman College of Architecture and Urban Planning in a 2012 report.

To conduct the heat sensitivity assessment of the Ludington Community, we used a geographic information system (GIS) for spatial data analyses to show the relative distribution of people most at risk. We considered five factors as primary contributors to the sensitivities and risks of people exposed to a heat wave. Using the U.S. Census data, we identified the percentages of people living in each area (Block Group or Block) for each sensitivity factor.

12. USDA and NRCS Geospatial Data Gateway
13. Foundations for Community Climate Action: Defining Climate Change Vulnerability in Detroit. University of Michigan. December 2012
14. Semenza JC, Rubin CH, Falter KH, et al. Heat-related deaths during the July 1995 heat wave in Chicago. N Engl J Med 1996; 335:84–90.
15. Mapping Community Determinants of Heat Vulnerability. Environmental Health Perspectives 117:1730–1736 (2009). doi:10.1289/ehp.0900683 available via http://dx.doi.org/ [Online 10 June 2009]
16. Foundation for Community Climate Action: Defining Climate Change Vulnerability in Detroit (December 2012) University of Michigan's Taubman College of Architecture and Urban Planning.

People who are older have greater sensitivity to extreme heat events. The technical literature also indicates that older age is associated with higher hospital admission rates in heat waves. The Percent of Population 65 and Older (Map 1) depicts the relative concentration of older people in the community by Census Block. Upon review of this map, planning committee members noted that there are very few individuals living in the southern portion of Pere Marquette Township that was flagged as red, so that may be over exaggerating the risk. It was also noted that there is a high concentration of older citizens living in one place at Longfellow Towers. One commissioner noted that the Senior Center will check on older adults who live alone or need help, but only if notified and if they have the resident in their database.

Another sensitivity factor is living alone, which serves as a measure of social isolation. Although living alone is not necessarily a risky thing, people who are socially isolated are at greater risk during an extreme heat event. As noted earlier, isolated people may not be able to recognize symptoms of heat-related illness and take proper action. In this case, we used American Community Survey data for Census Block Groups, broken out into individual Census blocks for geographic representation (blocks with no population were not included). The higher concentration of people living alone in the downtown core is in line with nationwide trends because downtowns generally have a greater supply of live-work units, single apartment and/or condominium units, and accessory dwelling units. This is shown in Map 2.

Literature suggests that minorities are at greater risk during extreme heat events for various reasons, including less reliable access to health care, transportation and other social supports needed to reduce heat exposures. We used Census Blocks to map the relative percentages of non-white populations in the Ludington Community. This is shown in Map 3.

Two socioeconomic factors associated with increased heat-related morbidity and mortality are the percentage of the people living in poverty and percentage of people without a high school diploma. In general, persons living at or below the poverty line have less access to air conditioning or cooling options for their residences. This could limit a person's access to relief from an extreme heat event. We used Census Blocks Groups to map the relative percentages of percent of households living below the poverty threshold in the Ludington Community. Riviera Trailer Park on Rasmussen Road was noted as a particularly vulnerable location. The Planning Committee members brought up a vulnerable group that is often not counted in the Census, which is the area's homeless and mentally ill. While there is a rotating shelter for these populations in the winter at area churches, there is not a designated shelter for the homeless population during the summer months. This can be found on Map 4.

17. Waugh and Tierney (eds.) Emergency Management: Principles and Practices for Local Government. Chapter 13: Identifying and addressing social vulnerabilities by Elaine Enarson.

18. Curriero FC, Heiner KS, Samet JM, et al. Temperature and mortality in 11 cities of the eastern United States. American Journal of Epidemiology. 30 (2001): 1126-8.

Similarly, University of Michigan researchers found studies that demonstrates a direct link between low educational attainment and poor health. There is also an established correlation between lower educational attainment and income. Based on these findings, we used Census Blocks Groups to map the relative percent of persons 25 years and older with less than a high school education in the Ludington Community (Map 5).

To complete the heat sensitivity assessment, we created a cumulative score for all five sensitivity factors for each Census Block. In each of the sensitivity factors, the percentages were grouped into five categories (ranging from a very low percentage of people to a relatively high percentage living with the identified sensitivity). The five categorical groupings were generated by the GIS software ArcMap using natural breaks in the data (groupings). We assigned a ranking of 1 to 5 to each of the categories, ranging from 1 for the lowest percentage to 5 for the highest. Finally, we combined the scores of the sensitivity factors within each Census Block. Thus, the most sensitive Census Blocks would be scored up to 25. The sensitivity is color coded for ease of identifying areas with the greatest sensitivity.

The Ludington Sensitivity to Excessive Heat Map (Map 6) provides a reasonably detailed map of locations where the highest percentages of at-risk residents live. This does not mean that these community residents are in immediate danger. Rather, the map provides planning officials a new way of identifying areas where heat waves could present serious problems for a significant number of citizens. These are populations that could be sensitive to extreme heat events.

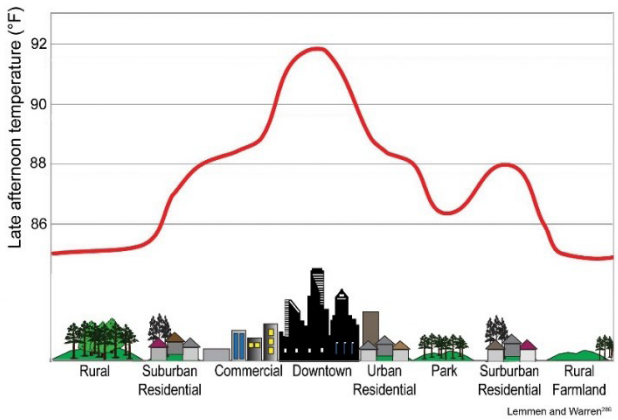
Because the Census data we use likely double-counts people, such as in cases where a person is both a minority and over 65, this may overestimate the severity of the sensitivities in some locations. Additionally, the sensitivity analysis may underestimate risk because it leaves out several key sensitive populations, such as those with preexisting health concerns that denote vulnerability to heat (for example, cardiovascular disease or psychiatric disorders). Such data is not often available publically or on the Census block level. Emergency managers, hospitals, and community health departments may have additional data available that can be included as the community looks to better understand its overall sensitive populations. To further improve the analysis, additional variables could be collected through local surveys and observation, such as the degree of social connections among individuals within a community, or materials used in housing.

19. Mapping Community Determinants of Heat Vulnerability. Environ Health Perspectives 117:1730–1736 (2009). doi:10.1289/ehp.0900683 available via http://dx.doi.org/ [Online 10 June 2009]

Heat Exposure Assessment

When larger communities experience heat waves, air temperatures can vary significantly from place to place both during the day and at night. Some of these differences can be attributed to the varying types of land cover found throughout the community. For example, temperatures can be significantly lower at night in locations with a heavy tree canopy and very little pavement, versus locations with little greenery and lots of pavement.

Figure 5. Urban Heat Island Effect



Large amounts of concrete and asphalt in cities absorb and hold heat. Tall buildings prevent heat from dissipating and reduce air flow. At the same time, there is generally little vegetation to provide shade and evaporative cooling. As a result, parts of cities can be up to 10ºF warmer than the surrounding rural areas, compounding the temperature increases that people experience as a result of human-induced warming.[313]

Source: US Global Change Research Program (2009) http://www.epa.gov/climatechange/impacts-adaptation/health.html

Impervious surfaces such as paved parking lots, roadways, and buildings absorb large amounts of heat from the air and from sunshine that is radiated back into the surroundings when temperatures begin to fall. At the same time, tree canopy and other vegetation tend to help cool an area through evaporation and transpiration of water and by providing shade. In places with a high percentage of impervious surface and little tree canopy, the immediate surroundings can be much warmer. Urban areas typically have higher heat indexes (combinations of temperature and humidity) than surrounding suburban or rural areas. This condition has been termed the Urban Heat Island Effect.

People living in settings with a Urban Heat Island Effect suffer greater exposures to heat over longer periods of time (e.g., warmer nights), making them more vulnerable to health impacts. Studies of the Urban Heat Island Effect (whereby air temperatures in an urban area are 1–5° C, higher than in a nearby rural area) have shown that the albedo, or reflectivity, of an urban area is one of the most important determinants in reducing the magnitude of the heat island. Increasing the tree canopy cover can also reduce air temperature by 1–3° C. Green roofs, or plantings on roofs, may also decrease the Urban Heat Island Effect and decrease storm water runoff and building energy use. An added benefit that stems from increasing albedo and vegetation are positive impacts on reducing ground level ozone and energy costs associated with air conditioning use.

Albedo is the fraction of solar energy reflected from the earth back into space. It is a measure of the reflectivity of the earth's surface. Ice, especially with snow on top of it, has a high albedo, while pavement has a low albedo.

To complete a heat exposure assessment, we focused on the urban heat island effect. With data obtained from Mason County, the City of Ludington, Pere Marquette Charter Township, and Hamlin Township we were able to create two separate exposure maps. The first exposure map depicts the percentage of impervious surfaces within each Census Block, as used in the sensitivity assessment (Map 7). These percentages are divided into five categories using the GIS software's natural

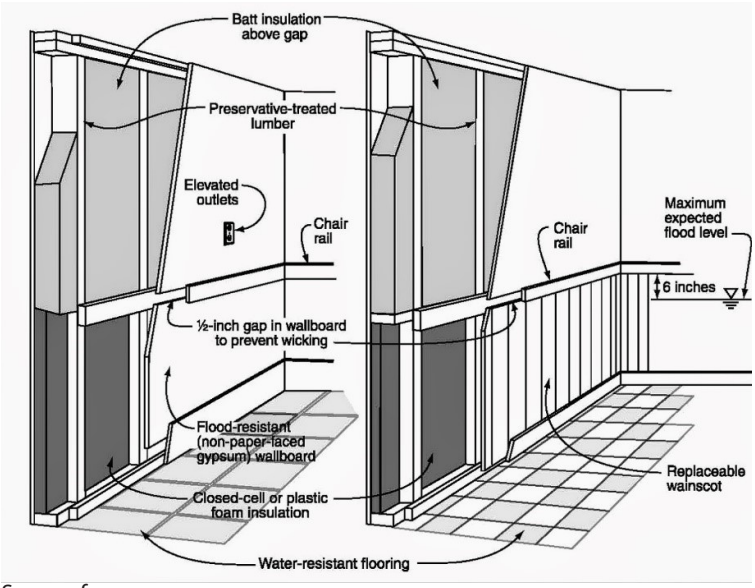
20. Basu and Samet. (2002) Relation between Elevated Ambient Temperature and Mortality: A Review of the From the Department of Epidemiology, Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD.
21. Kolokotroni M, Giridharan R. Urban heat island intensity in London: An investigation of the impact of physical characteristics on changes in outdoor air temperature during summer. Solar Energy 2008;82(11):986–998.
22. Akbari H. Shade trees reduce building energy use and CO2 emissions from power plants. Environmental Pollution 2002;116:S119–S126. [PubMed: 11833899]

breaks calculation. Since exposure is lowest in areas with the lowest percentage of impervious surface, those scored a 1, with 5 ratings assigned to areas with the highest percentage of impervious surfaces.

The second exposure factor is percentage of tree canopy. Here tree canopy is mapped within each Census Block (Map 8) and scored using a similar five category process. The highest percentage of tree canopy (therefore the lowest heat exposure) received a 1 and the least vegetative areas received a 5.

We combined the results of the two exposure maps to provide a single Community Excessive Heat Exposures Map (Map 9), which provides a reliable depiction of where the Urban Heat Island Effect would be most and least intense during a heat wave. Community planners can use this map to better assess where new vegetation and tree canopy would be helpful to reduce the heat impact.

Figure 6. Home Design Techniques for Flood Resilience



Source: fema.org

Composite Heat Vulnerability

The Ludington Heat Vulnerability Map is a simple additive combination of the overall sensitivity map and the overall exposures map. The resulting vulnerability index depicts where concentrations of exposures and sensitive populations create a higher risk for community residents. In general, those areas with a composite score of 8 to 10 (red) have residential populations that may be particularly vulnerable to extreme heat events. This is illustrated in Map 10.

Heavy Rain and Flooding

Climate scientists say that Ludington and west Michigan can expect more frequent storms of increasing severity in the decades ahead. The total amount of rainfall per year is also likely to increase. However, climate models suggest that the precipitation will be more concentrated in the winter, spring and fall seasons and there will be more localized, intense storms at almost any time of the year. The potential for substantially larger rain events raises concerns over the potential for harm to human health and damage to buildings and infrastructure.

The following summarizes a Flooding Vulnerability Assessment we conducted for the Ludington Community. In assessing vulnerability, community planners evaluate potential exposures as well as sensitivity to flooding. Buildings, roads, bridges, sewer lines and other infrastructure located in a flood zone are exposed to greater risks than elsewhere. Where flowing floodwaters have the greatest energy, structures

may be undercut, collapsed or moved, and soils will erode. Even areas outside of an identified floodplain are subject to flooding from heavy downpours. Where the soils have low permeability and physical drainage is inadequate, water will accumulate and cause ponding during large storm events. Appropriate planning and land-use regulations can help reduce exposures caused by poor site selection. The sensitivity of structures can be modified to reduce risk of damage by applying flood-resistant design standards. See Figure 6 for an overview of recommendations from FEMA for retrofitting homes to make them more resilient to flooding events.

Exposure to Flooding Hazards

The Community Elevation Profile and Drainage Map (Map 11) offers a useful view of the topography of Ludington, including the most prominent drainage patterns. On this map, the darkest green colors identify the lowest elevations, while the darkest brown colors identify the highest elevations.

The Federal Emergency Management Agency (FEMA) develops Flood Insurance Rate Maps (FIRMs) for each County in the United States. According to FEMA, the FIRM is "the primary tool for state and local governments to mitigate the effects of flooding in their communities." The National Flood Insurance Program was created in 1968 to reduce future damage and provide an insurance program that would help protect property owners from losses. The FIRMs show areas subject to flooding, based on historic, hydrologic, hydraulic and meteorological data as well as flood controls. The maps identify a base flood elevation (BFE), sometimes referred to as the 100-year flood zone. These are areas that have a 1% chance of flooding in any given year. The maps also identify the areas with a 0.2% chance of flooding in any given year, also known as the 500-year flood zone. FEMA points out that these ratios are only probabilities, not forecasts.

Household Sensitivity to Flooding

In many communities, flooding impacts are felt most significantly at the household level. A home's flood risk is based on its relative location to floodplains and other flooding hazard areas. The household flood sensitivity refers to how well the house structure is equipped to deal with flooding. As modeled by the University of Michigan, household sensitivity to flooding can be determined by looking at the age of the housing stock and homeowner's financial ability to maintain and improve the home, which is approximated using the median household income. In general, homes built before 1940 used a more porous concrete material for basement construction, so water can flow more rapidly through the foundation. Older homes may be more vulnerable if residents have not had the financial resources to make improvements and upgrades. By looking at median household income as a marker of likely upkeep of the home, we attempt to exclude older homes that have been well-maintained and undergone upgrades from our areas of flood damage risk. Map 12 illustrates the FIRM for the Ludington Community. Map 13 shows the locations of homes built before and after 1940. Map 14 illustrates household sensitivity to flooding based on income and housing age.

Flooding Vulnerability

By looking at the overlap of flooding exposure and housing sensitivity, we identified a number of Census blocks that are the most vulnerable in the community to flooding damage, based on available data (See Map 15). It is important to note that other factors contribute to flood risk. For example, mobile and manufactured homes are often particularly susceptible to flood damage because they generally lack a reinforced foundation. In addition, the municipal infrastructure plays an important role in protecting homes from flood damage. Communities with and aging storm sewer system or ones where the storm sewer has not been fully disconnected from the sanitary sewer are more prone to damage from an overloaded system in the event of a severe rain event.

Other Considerations for Defining Community Vulnerability

We are interested in knowing locations of key community assets and looking at how accessible they are to residents. We are also interested in key infrastructure and assets that could be at risk, or would be most negatively impacted if they were impacted.

Critical Facilities

In general usage, the term "critical facilities" is used to describe all manmade structures or other improvements that, because of their function, size, service area, or uniqueness, have the potential to cause serious bodily harm, extensive property damage, or disruption of vital socioeconomic activities if they are destroyed, damaged, or if their functionality is impaired. Map 16 shows the locations of critical facilities in the Community. Critical facilities include:

- emergency response facilities (fire stations, police stations, rescue squads, and emergency operation centers [EOCs]);
- custodial facilities (jails and other detention centers, long-term care facilities, hospitals, and other health care facilities);
- schools;
- emergency shelters;
- utilities (water supply, wastewater treatment facilities, and power);
- communications facilities;
- other assets determined by the community to be of critical importance for the protection of the health and safety of the population; and
- places where 300+ people congregate.

23. Risk Management Series Design Guide for Improving Critical Facility Safety from Flooding and High Winds. FEMA 543 January 2007.

Access and Distribution of Social Services

Service centers and institutions (such as homeless shelters and churches) are important in delivering day-to-day support to residents. In the event of an emergency, such as an extreme heat event or flash flooding episode, service centers and institutions are especially important as a safe place where residents can go if they cannot return home. Map 17 highlights key locations of places where residents may seek temporary refuge in the event of an emergency. These locations include schools, places of worship, governmental buildings, hospitals and clinics, libraries, and other non-profit social service organizations. In Ludington and adjacent Townships, social services are concentrated in the downtown core and along major commercial corridors.

Communities with high population densities, frequent extreme weather events, or both are likely to have designated services centers. In the event of extreme heat waves, designated community cooling centers may provide refuge for sensitive populations and those without access to air conditioning. In the event of loss of power due to flooding or extreme storms, locations with a backup power source, such as a generator, are essential.

A best management practice for a resilient community is to designate community service centers that are accessible, evenly distributed across the population, open 24 hours, and well-known to residents.

Food Availability

Climate change will likely make significant impacts to the availability and prices for global food markets. A community can decrease its vulnerability to disruptions in food sources through a strong local food economy. Support for and reliance upon locally produced foods not only alleviates potential future challenges in the food market, but also helps foster another strong economic sector for the region.

Just as cultivating local entrepreneurship makes a community stronger, the capacity of a community to produce and process its own food greatly increases resilience. Because of its ability to impact health, wealth, and quality of life, there is a national trend in support of the local food movement. Communities can leverage their existing assets, such as the local Farmer's Market, community gardens, and an established agricultural base, to lay the foundation for additional local food-related jobs. Communities can take more creative approaches as well, such as allowing for agriculture on publically owned and vacant lands in existing neighborhoods and parklands.

In evaluating community vulnerabilities, we look at locations of full service grocery stores in relation to where people live. In the event of loss of power or disruption in potable water supplies, it is important to ensure that residents have access to affordable food and drinking water.

We also evaluate access to healthy food to see if there are areas of the community that qualify as a food desert. According to the United States Department of Agriculture (USDA), a food desert is defined as an area vapid of fresh fruit, vegetables, and other healthful whole foods, usually found in impoverished areas. This is largely due to a lack of grocery stores, farmers' markets, and healthy food providers. Communities looking to reduce the number of residents living in a food desert can promote or zone for pop-up farm stands in low income areas, enact housing policies supportive of mixed incomes, and establish community gardens in areas identified as food deserts.

Map 18 identifies neighborhoods within the Ludington Community that are located within one mile of a full service grocery store.

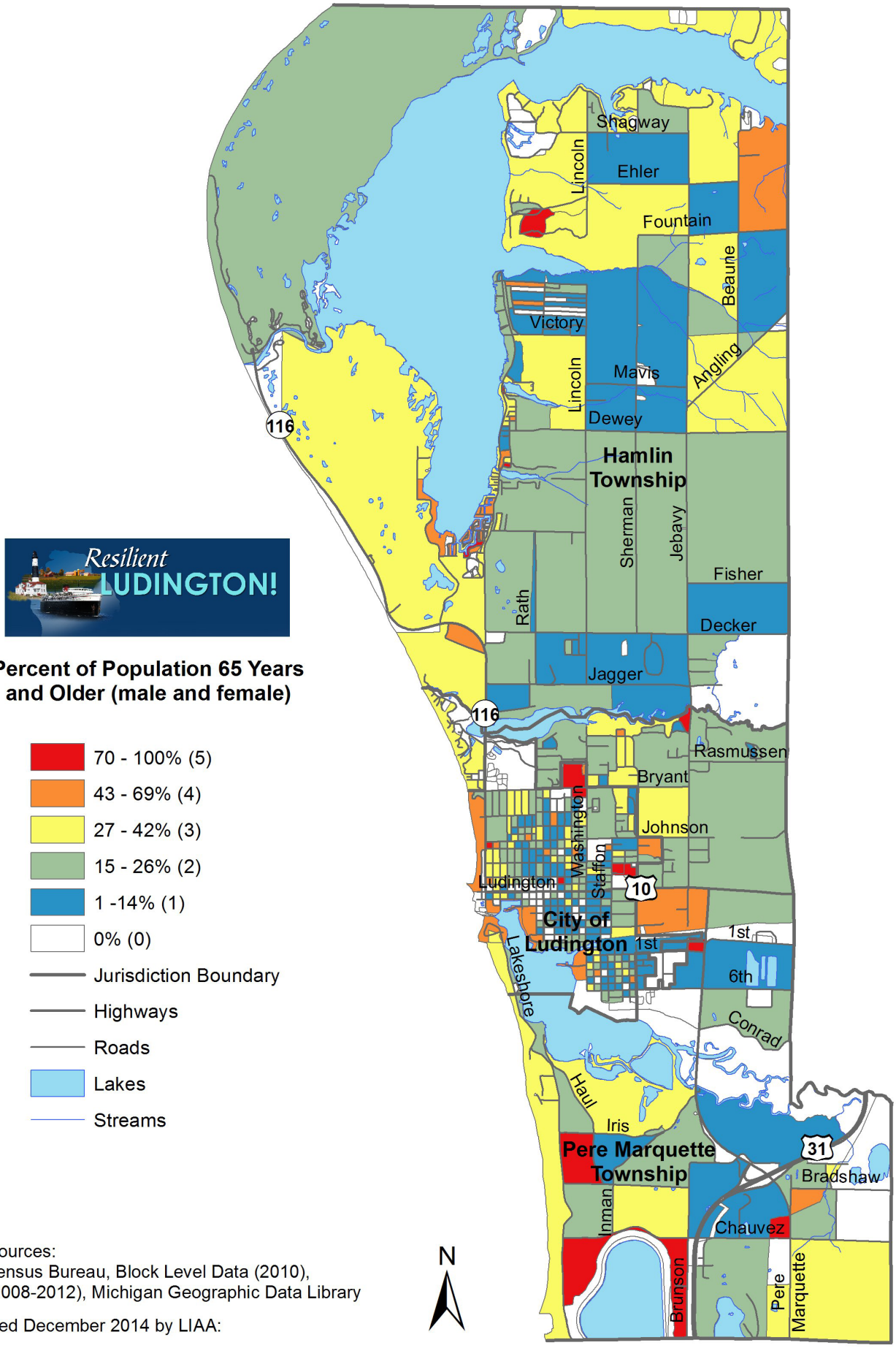
Additional Resources:

Snover, A.K., L. Whitely Binder, J. Lopez, E. Willmott, J. Kay, D. Howell, and J. Simmonds.

2007 Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments. In association with and published by ICLEI – Local Governments for Sustainability, Oakland, CA

Michigan Climate and Health Adaptation Plan 2010-2015 Strategic Plan, Prepared by the Michigan Department of Community Health (2001)

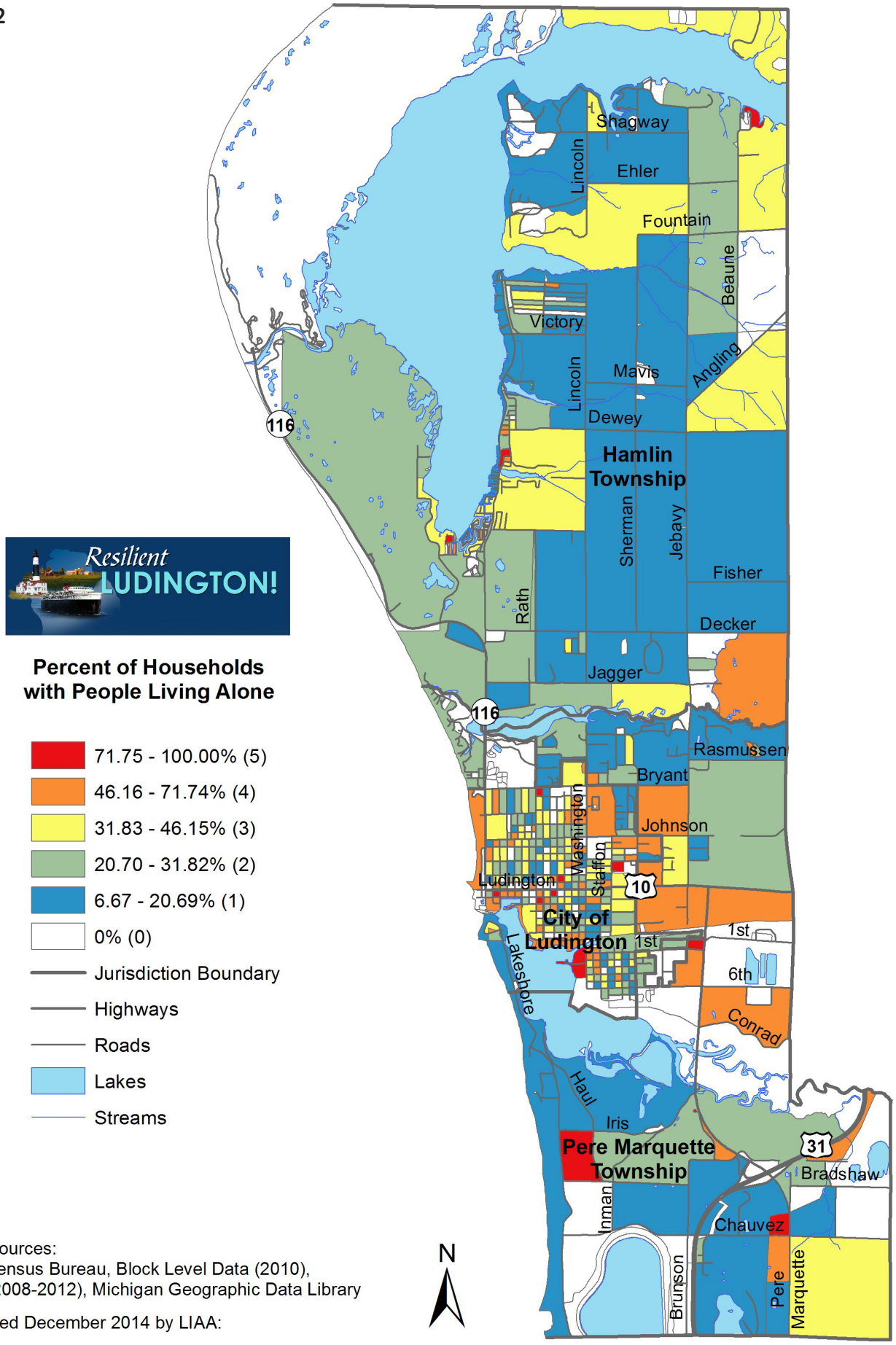
Map 1



Data Sources:
U.S. Census Bureau, Block Level Data (2010),
ACS (2008-2012), Michigan Geographic Data Library

Prepared December 2014 by LIAA:

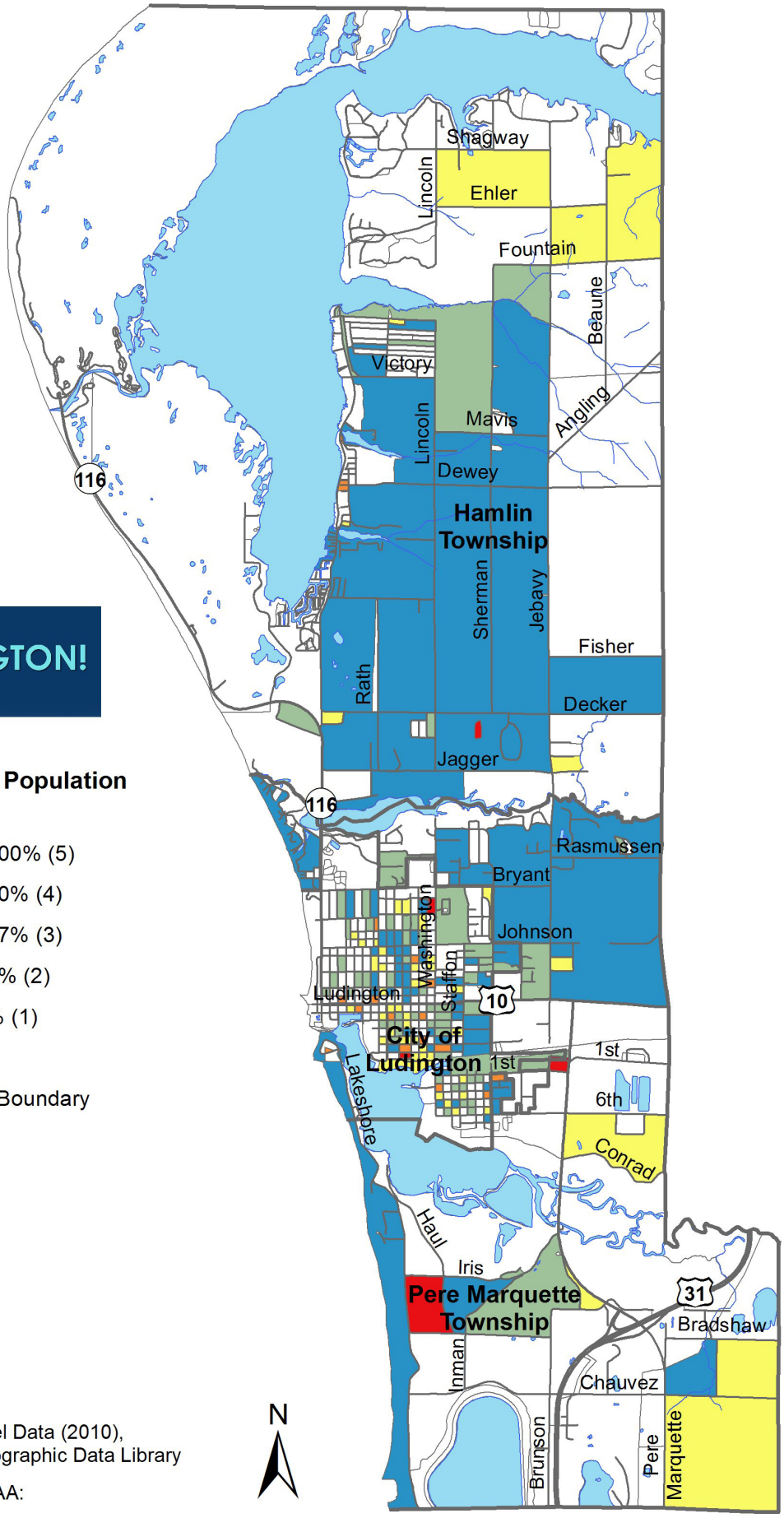
Map 2



Data Sources:
U.S. Census Bureau, Block Level Data (2010),
ACS (2008-2012), Michigan Geographic Data Library

Prepared December 2014 by LIAA:

Map 3



Resilient LUDINGTON!

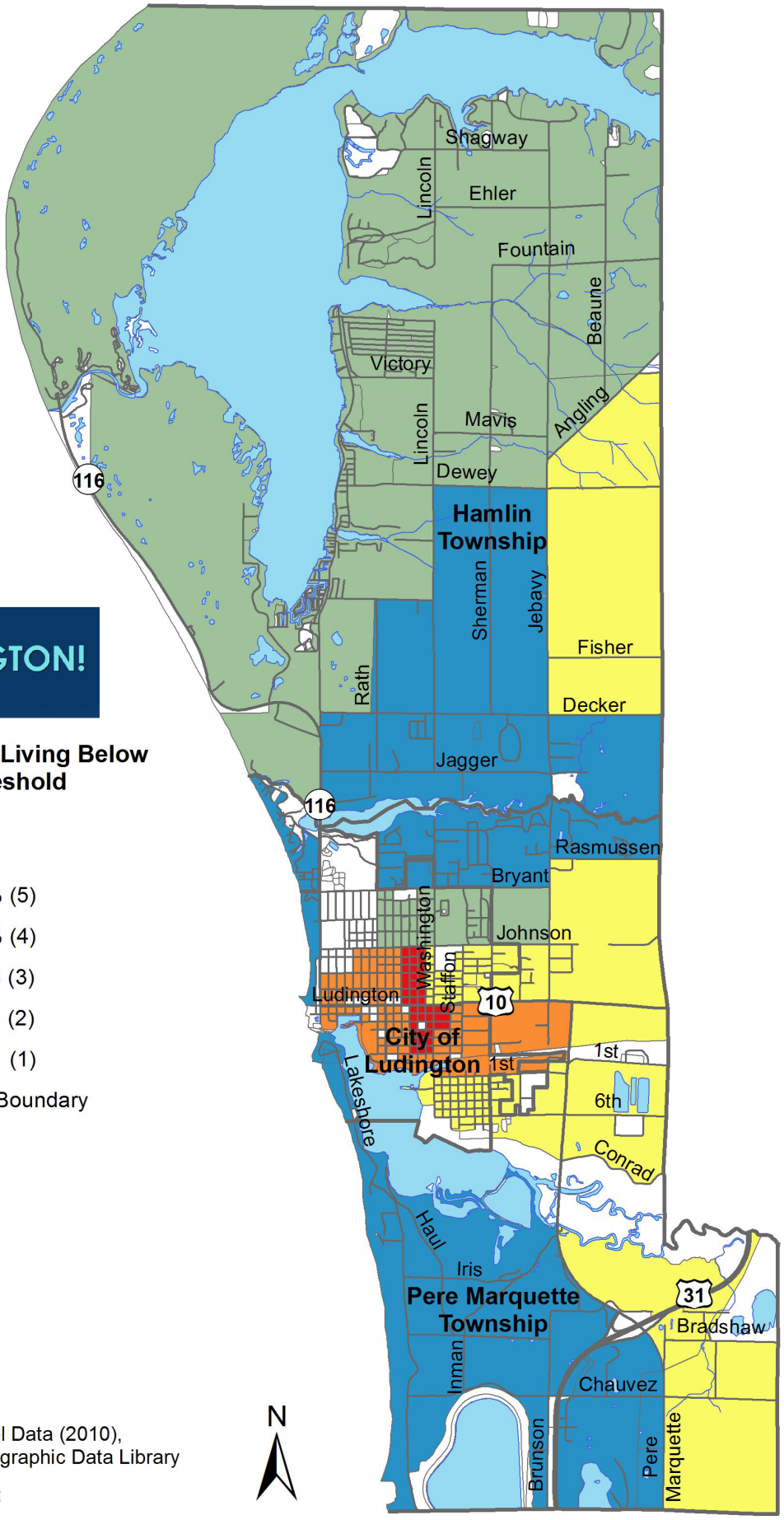
Percent of Non-white Population

- 50.01 - 100.00% (5)
- 27.28 - 50.00% (4)
- 14.30 - 27.27% (3)
- 6.83 - 14.29% (2)
- 0.90 - 6.82% (1)
- 0% (0)
- Jurisdiction Boundary
- Highways
- Roads
- Lakes
- Streams

Data Sources:
U.S. Census Bureau, Block Level Data (2010),
ACS (2008-2012), Michigan Geographic Data Library

Prepared December 2014 by LIAA:

Map 4



Resilient LUDINGTON!

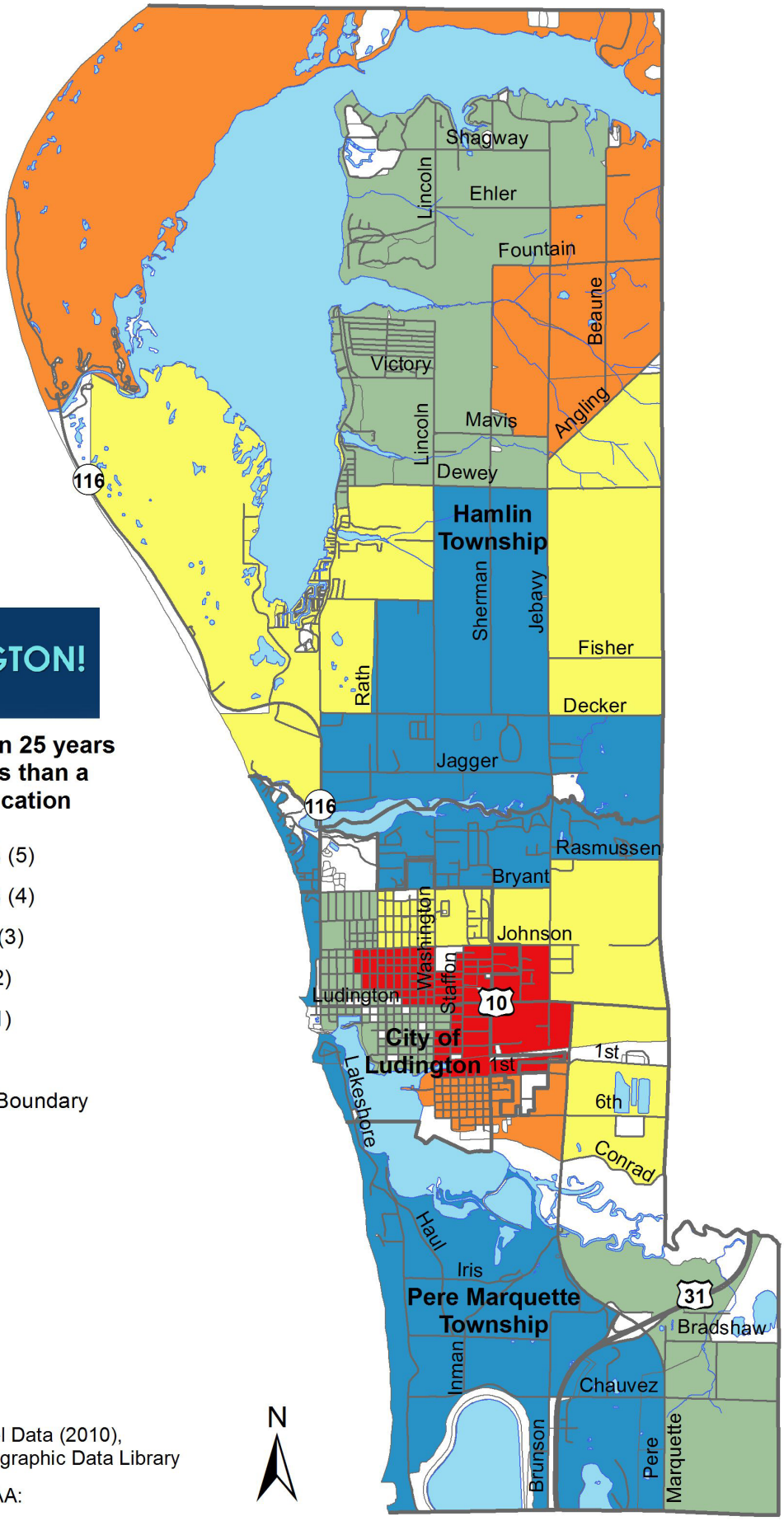
Percent of Households Living Below the Poverty Threshold

- 24.0 - 38.7% (5)
- 15.7 - 23.9% (4)
- 11.6 - 15.6% (3)
- 7.5 - 11.5% (2)
- 4.4 - 7.4% (1)
- Jurisdiction Boundary
- Highways
- Roads
- Lakes
- Streams

Data Sources:
U.S. Census Bureau, Block Level Data (2010),
ACS (2008-2012), Michigan Geographic Data Library

Prepared January 2015 by LIAA:

Map 5



Resilient LUDINGTON!

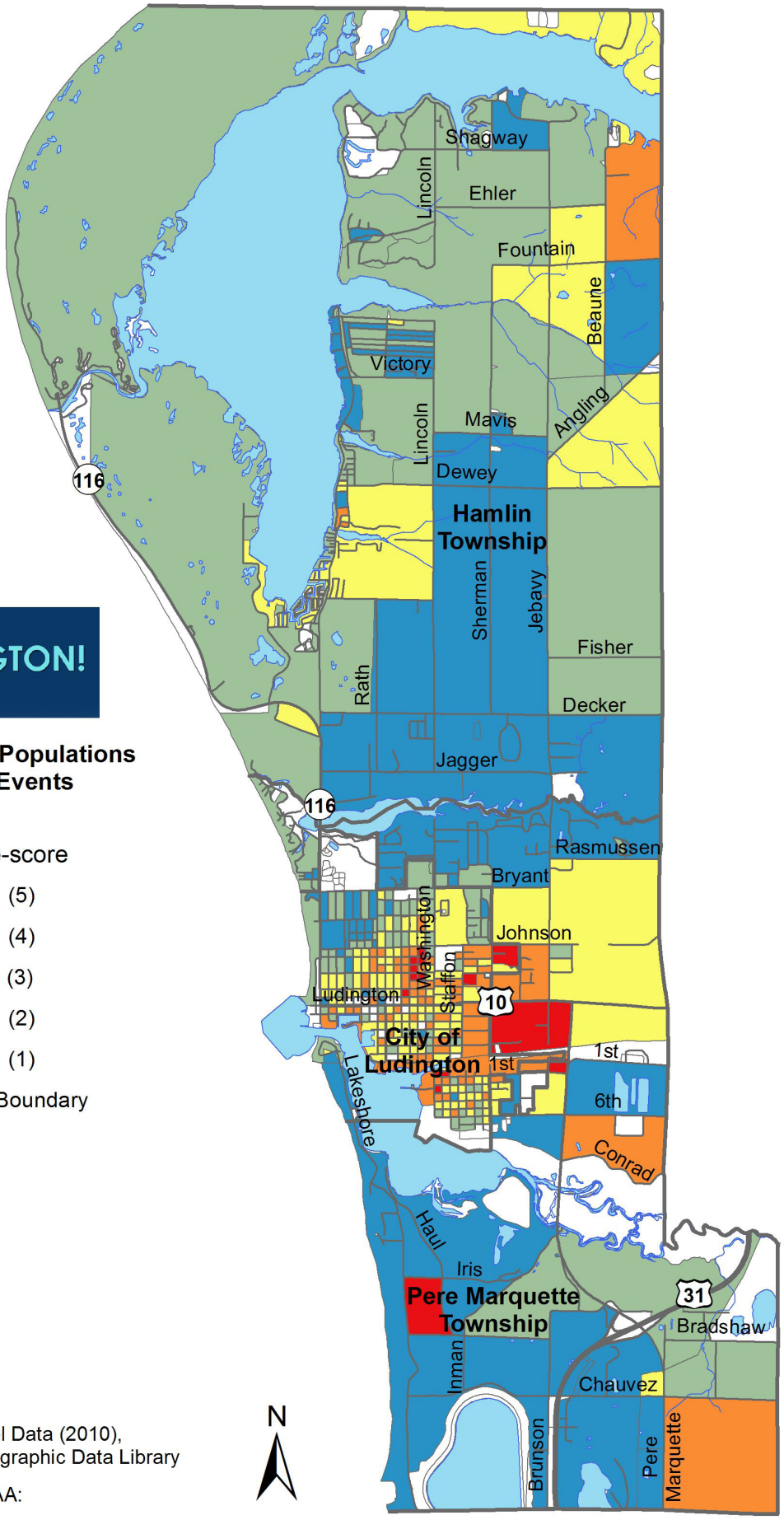
Percent of Population 25 years and Older with less than a High School Education

- 11.8 - 25.4% (5)
- 10.2 - 11.7% (4)
- 6.9 - 10.1% (3)
- 4.6 - 6.8% (2)
- 3.8 - 4.5% (1)
- 0% (0)
- Jurisdiction Boundary
- Highways
- Roads
- Lakes
- Streams

Data Sources:
U.S. Census Bureau, Block Level Data (2010),
ACS (2008-2012), Michigan Geographic Data Library

Prepared December 2014 by LIAA:

Map 6



Resilient LUDINGTON!

Relative Sensitivity of Populations to Extreme Heat Events

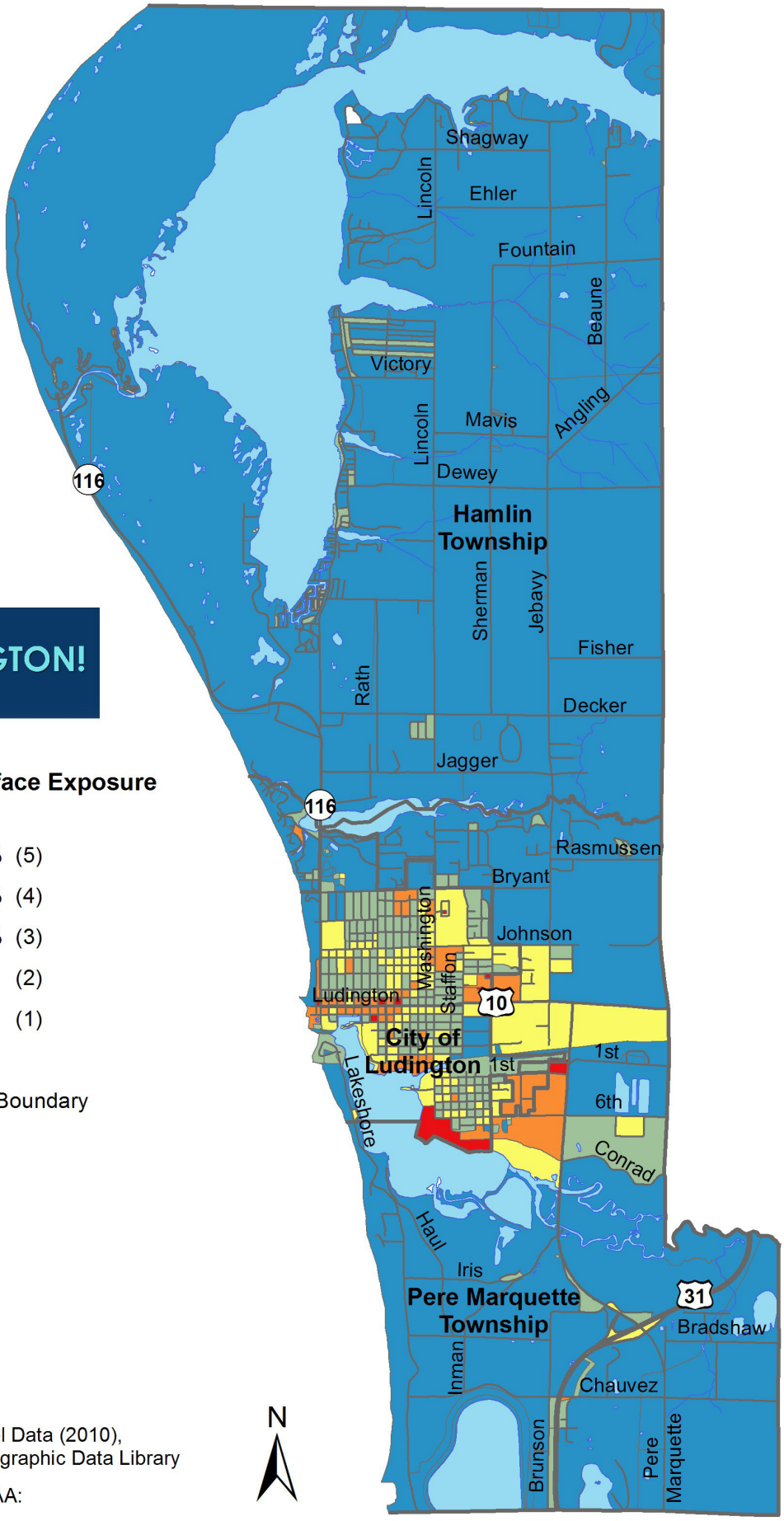
additive score	re-score
17 - 22	(5)
14 - 16	(4)
11 - 13	(3)
8 - 10	(2)
2 - 7	(1)

Jurisdiction Boundary
Highways
Roads
Lakes
Streams

Data Sources:
U.S. Census Bureau, Block Level Data (2010),
ACS (2008-2012), Michigan Geographic Data Library

Prepared December 2014 by LIAA:

Map 7



Resilient LUDINGTON!

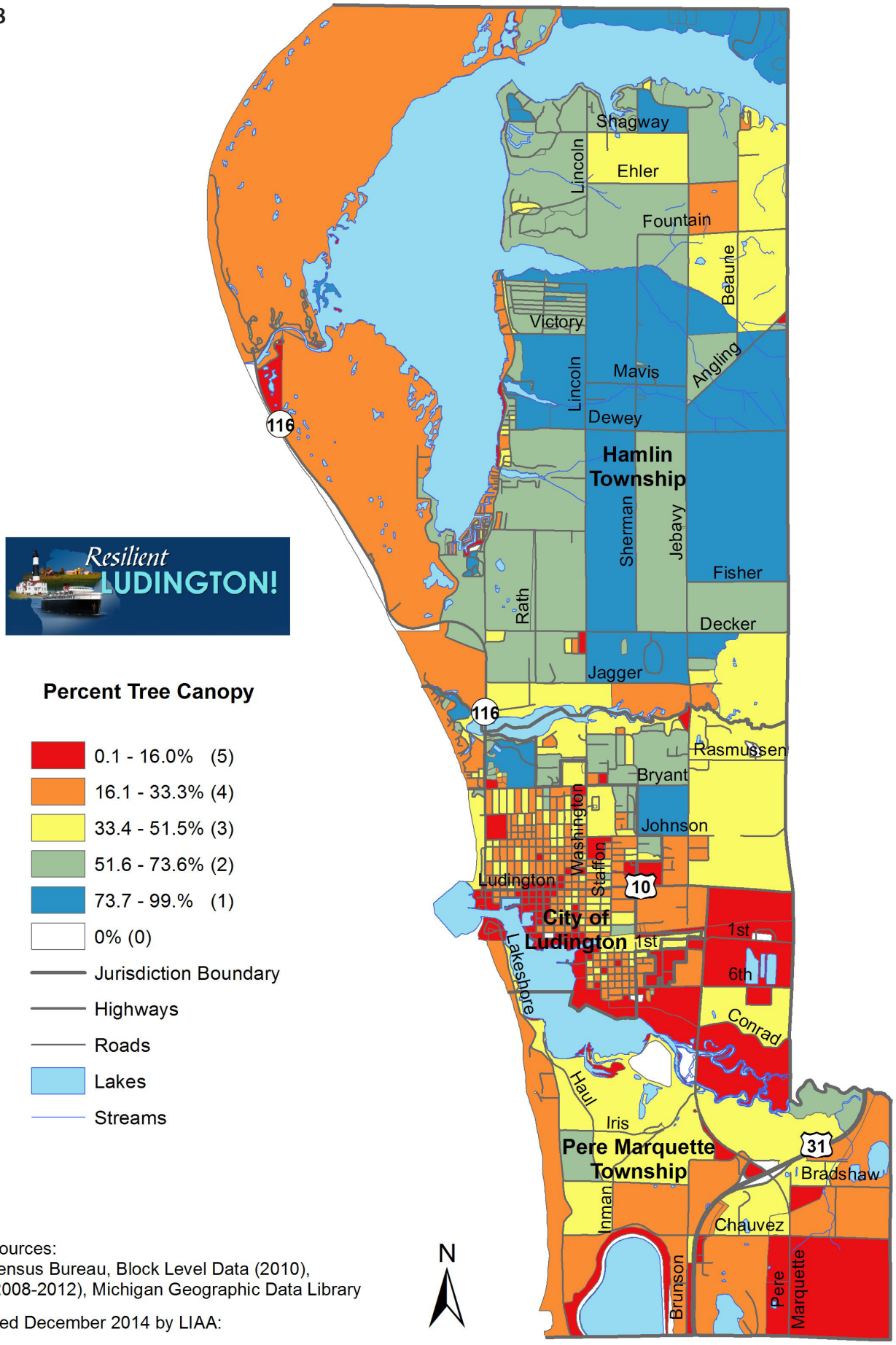
Percent Impervious Surface Exposure

- 48.5 - 87.5% (5)
- 28.6 - 48.4% (4)
- 16.8 - 28.5% (3)
- 8.0 - 16.7% (2)
- 0.1 - 7.9% (1)
- 0% (0)
- Jurisdiction Boundary
- Highways
- Roads
- Lakes
- Streams

Data Sources:
U.S. Census Bureau, Block Level Data (2010),
ACS (2008-2012), Michigan Geographic Data Library

Prepared December 2014 by LIAA:

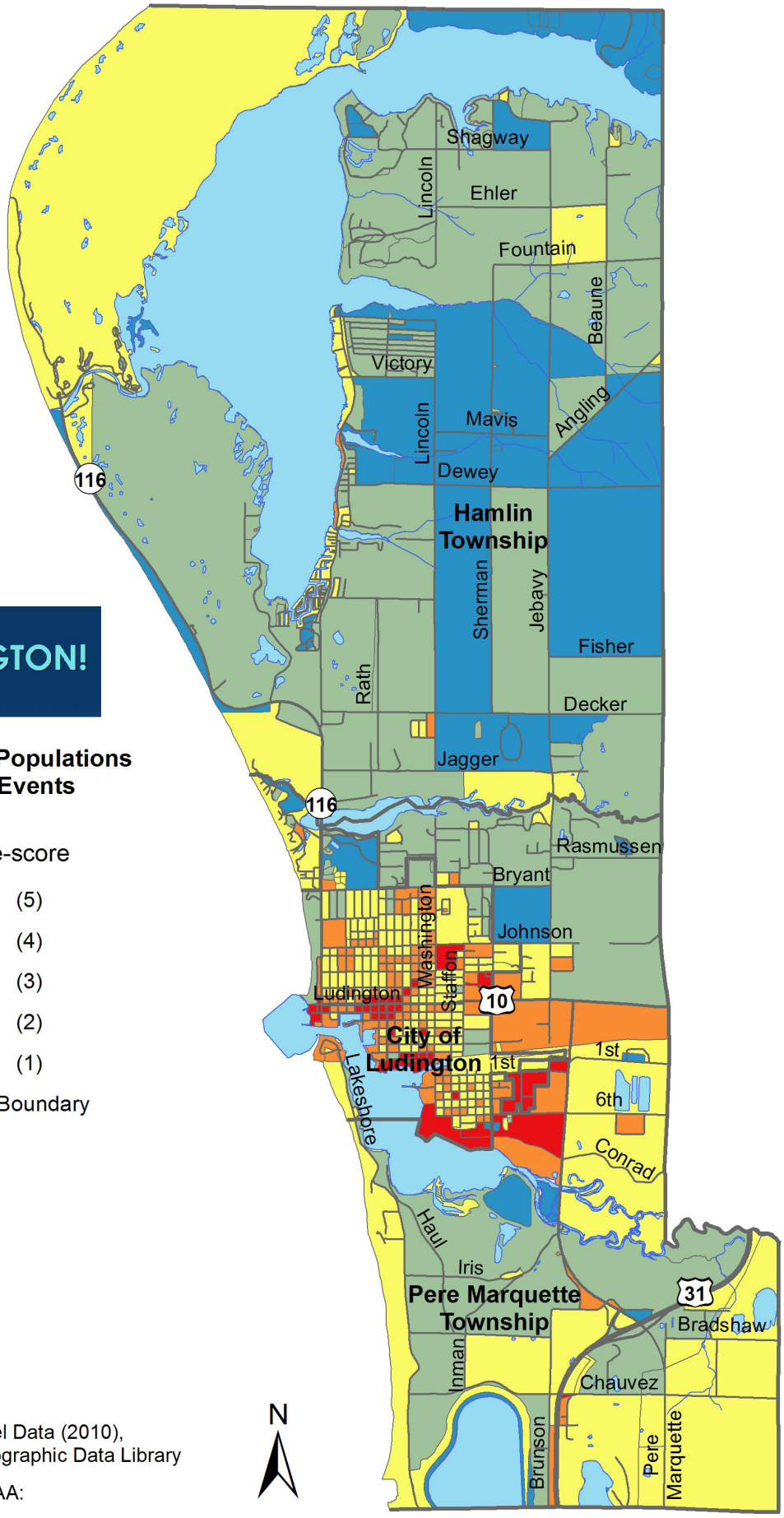
Map 8



Data Sources:
U.S. Census Bureau, Block Level Data (2010),
ACS (2008-2012), Michigan Geographic Data Library

Prepared December 2014 by LIAA:

Map 9



Resilient LUDINGTON!

Relative Exposure of Populations to Extreme Heat Events

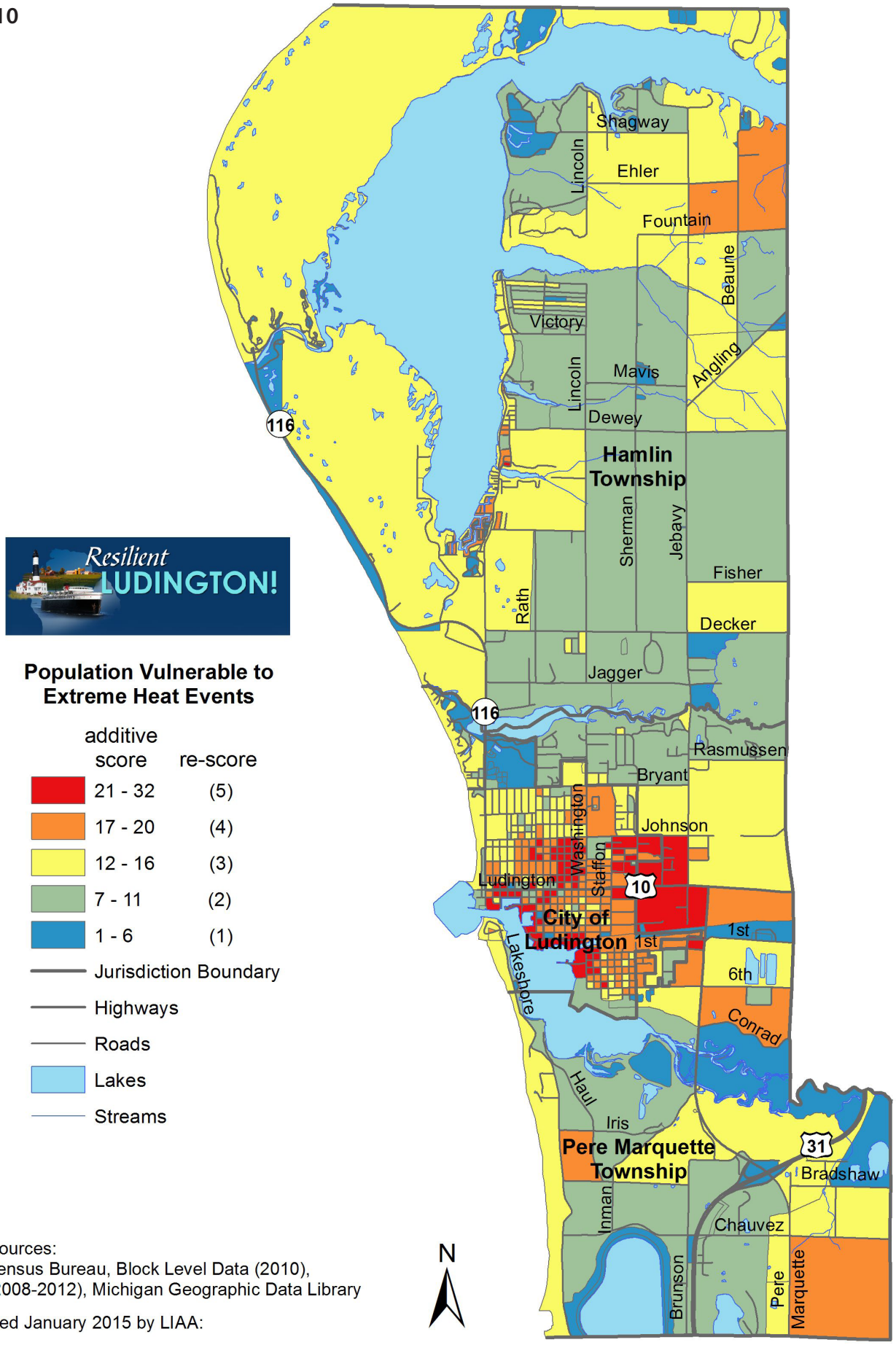
additive score	re-score
9 - 10	(5)
7 - 8	(4)
5 - 6	(3)
3 - 4	(2)
1 - 2	(1)

Jurisdiction Boundary
Highways
Roads
Lakes
Streams

Data Sources:
U.S. Census Bureau, Block Level Data (2010),
ACS (2008-2012), Michigan Geographic Data Library

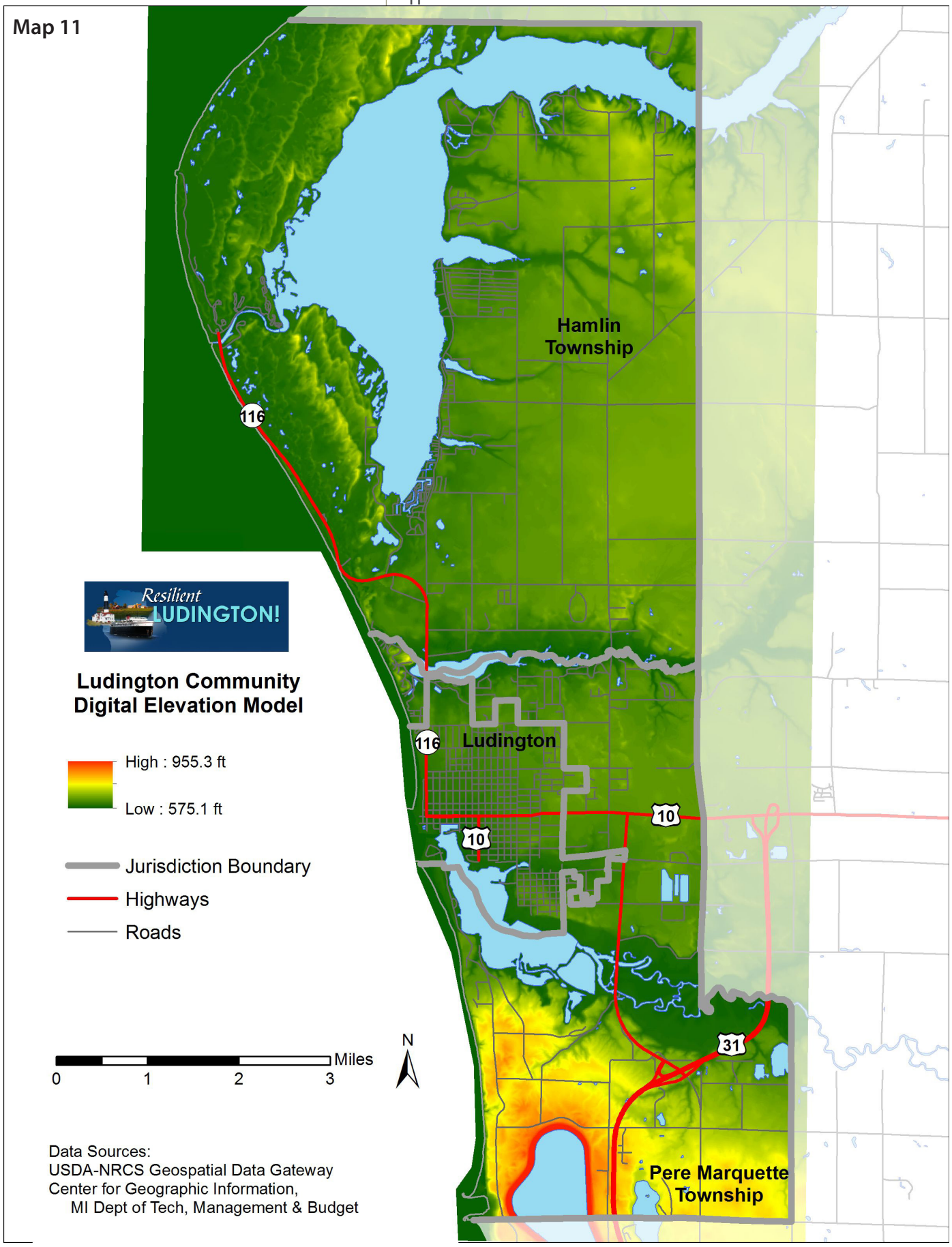
Prepared December 2014 by LIAA:

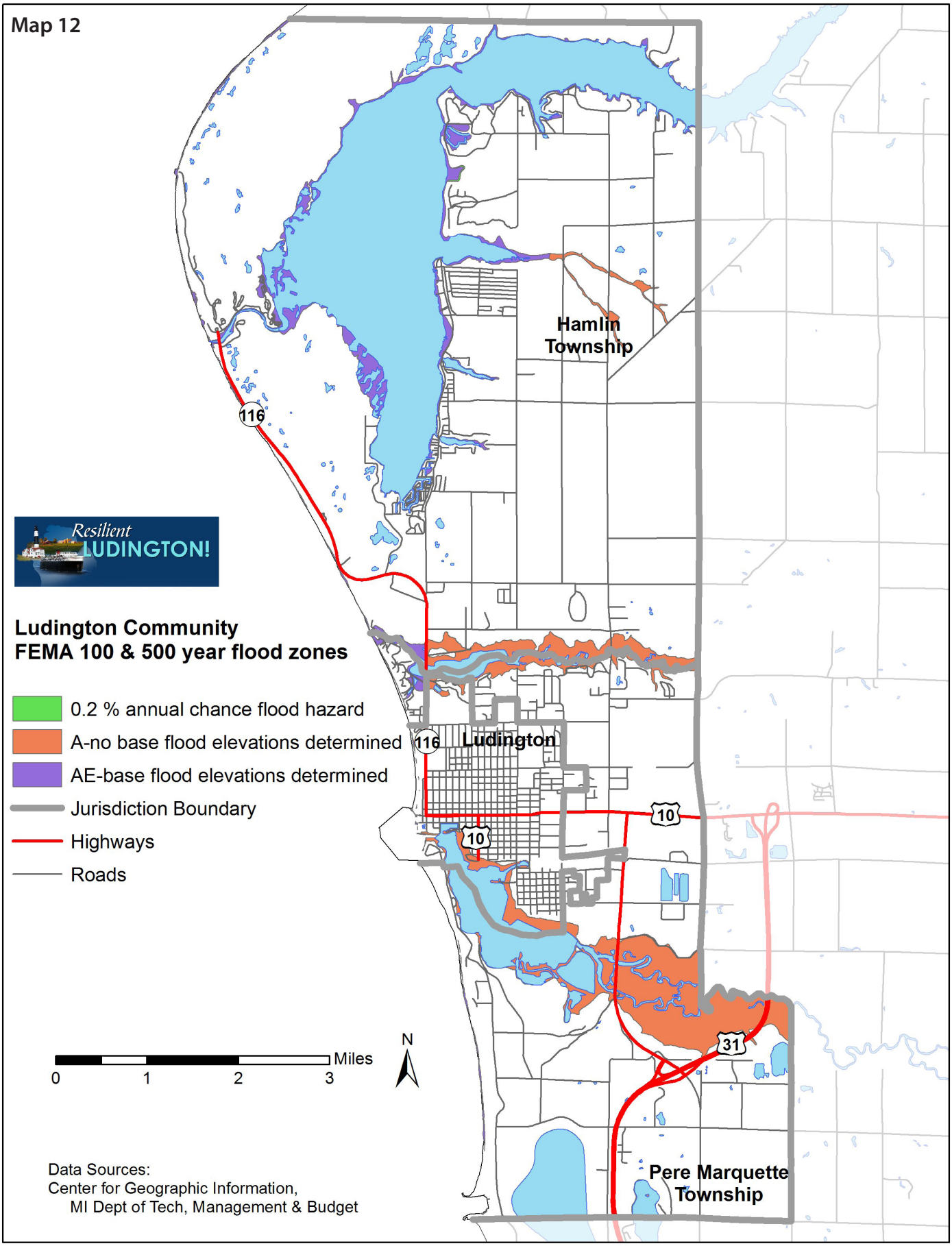
Map 10

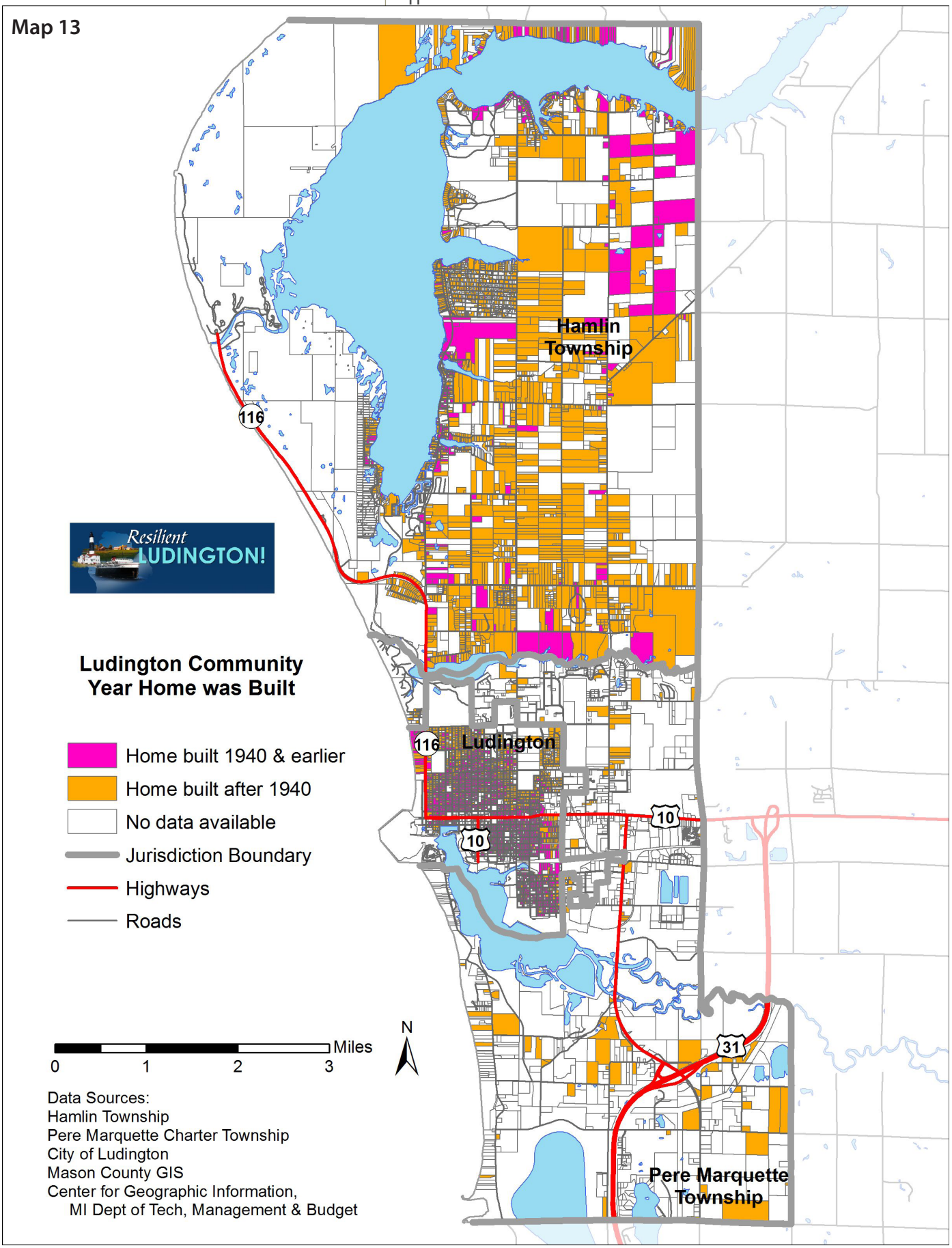


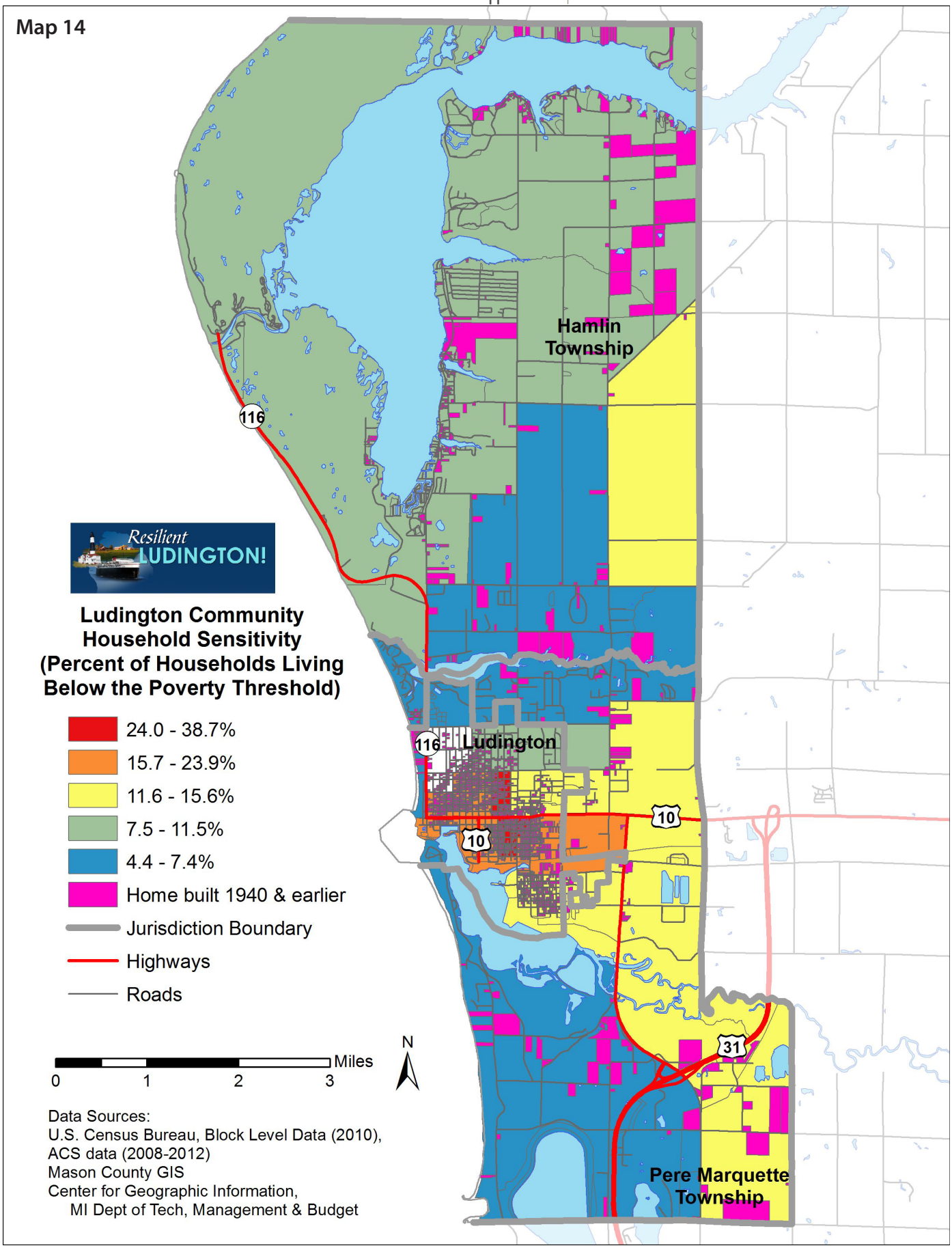
Data Sources:
U.S. Census Bureau, Block Level Data (2010),
ACS (2008-2012), Michigan Geographic Data Library

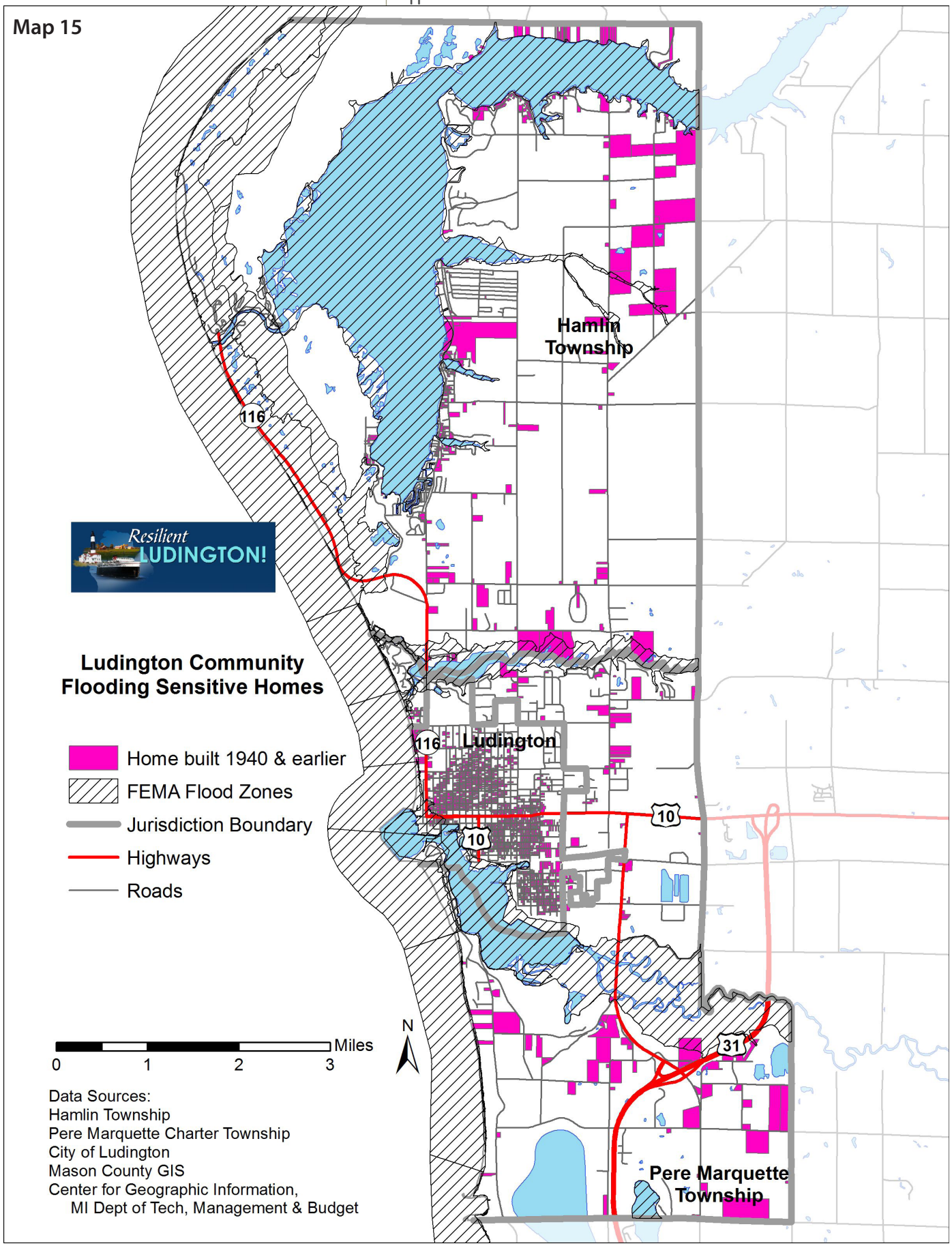
Prepared January 2015 by LIAA:

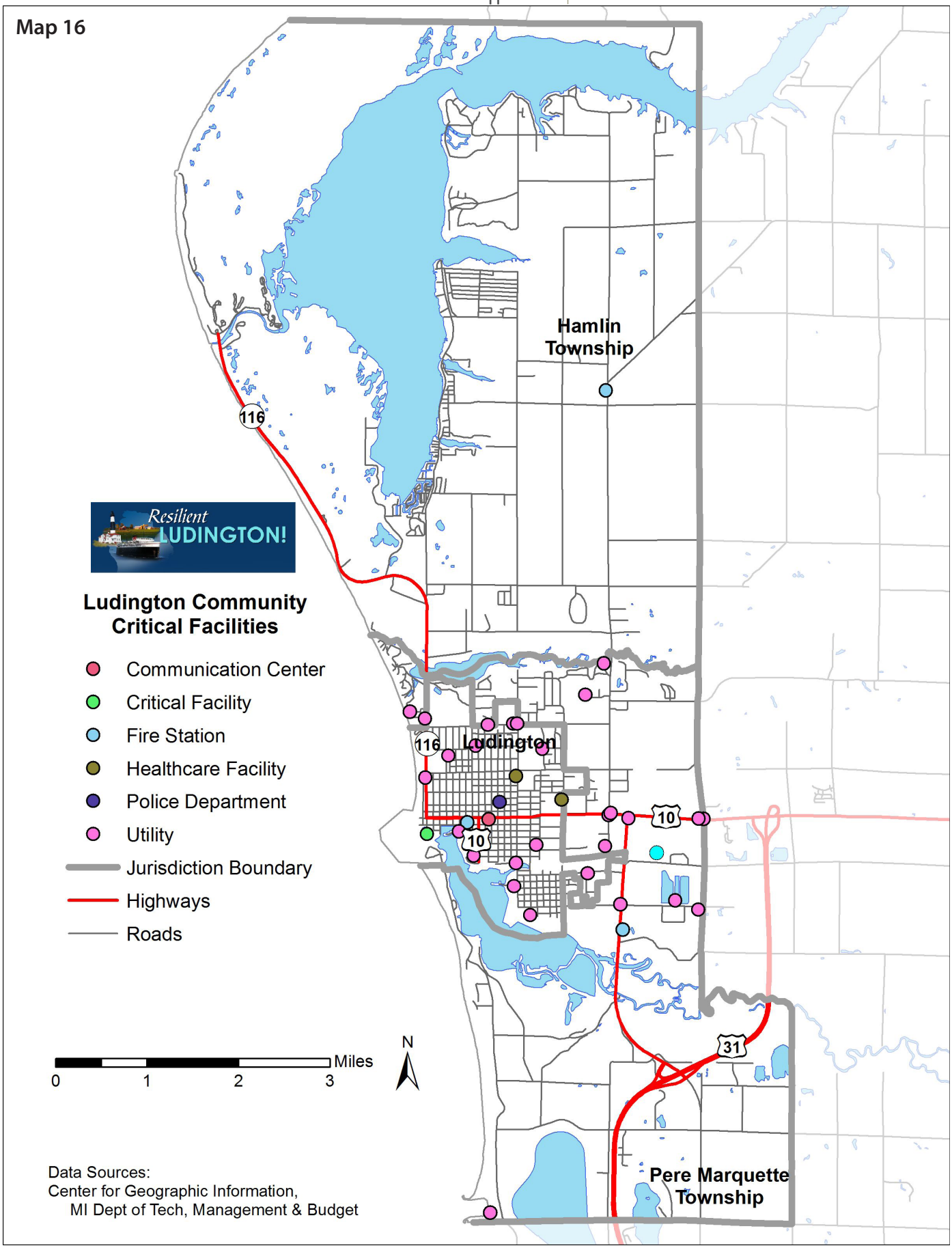

Map 11
Hamlin Township
116
Resilient LUDINGTON!
Ludington Community Digital Elevation Model
High : 955.3 ft
Low : 575.1 ft
Jurisdiction Boundary
Highways
Roads
116
Ludington
10
10
31
Pere Marquette Township
0
1
2
3
Miles
N
Data Sources:
USDA-NRCS Geospatial Data Gateway
Center for Geographic Information,
MI Dept of Tech, Management & Budget

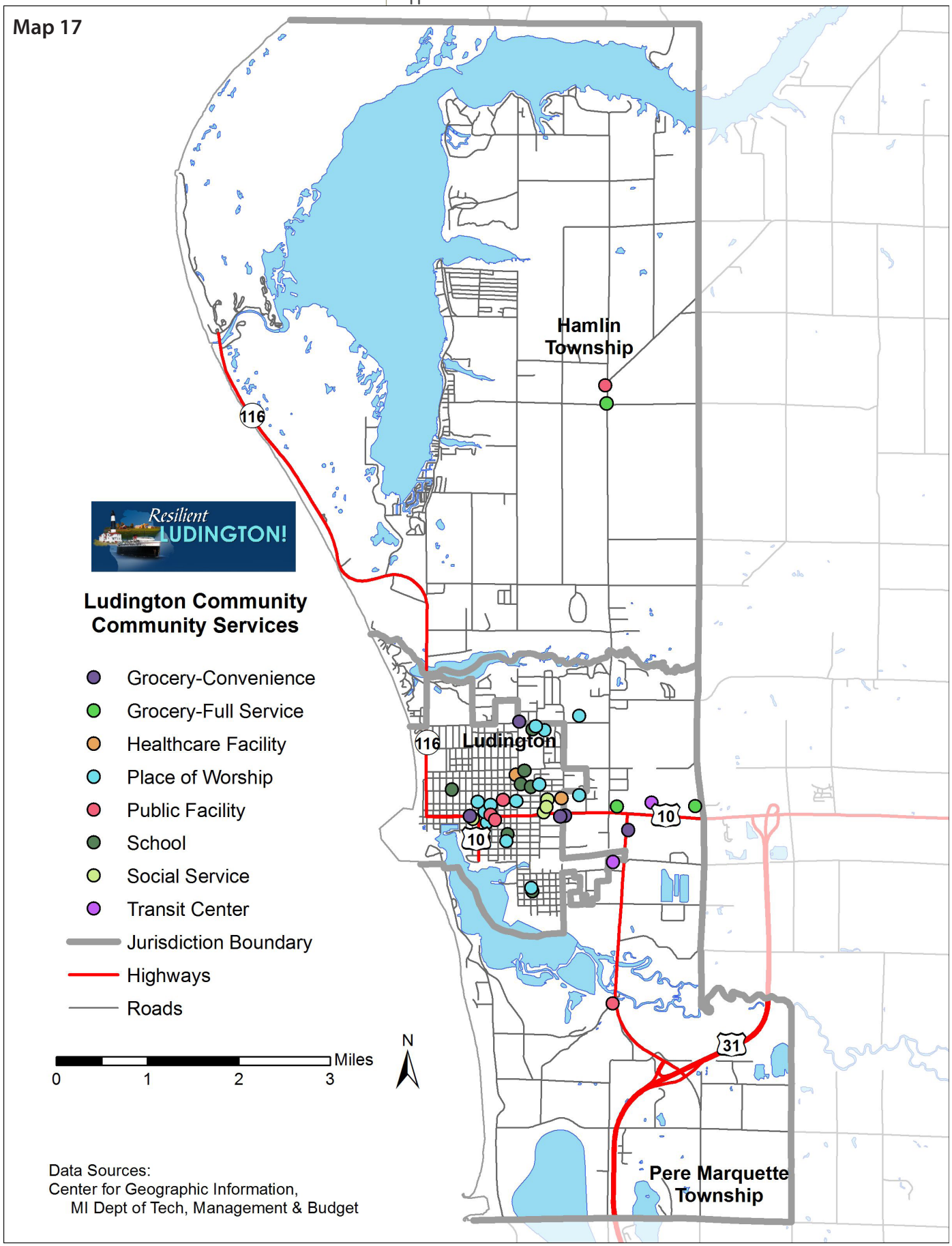

Map 12
Hamlin Township
116
Resilient LUDINGTON!
Ludington Community
FEMA 100 & 500 year flood zones
0.2 % annual chance flood hazard
A-no base flood elevations determined
AE-base flood elevations determined
Jurisdiction Boundary
Highways
Roads
116
Ludington
10
10
31
Miles
0
1
2
3
N
Pere Marquette Township
Data Sources:
Center for Geographic Information,
MI Dept of Tech, Management & Budget

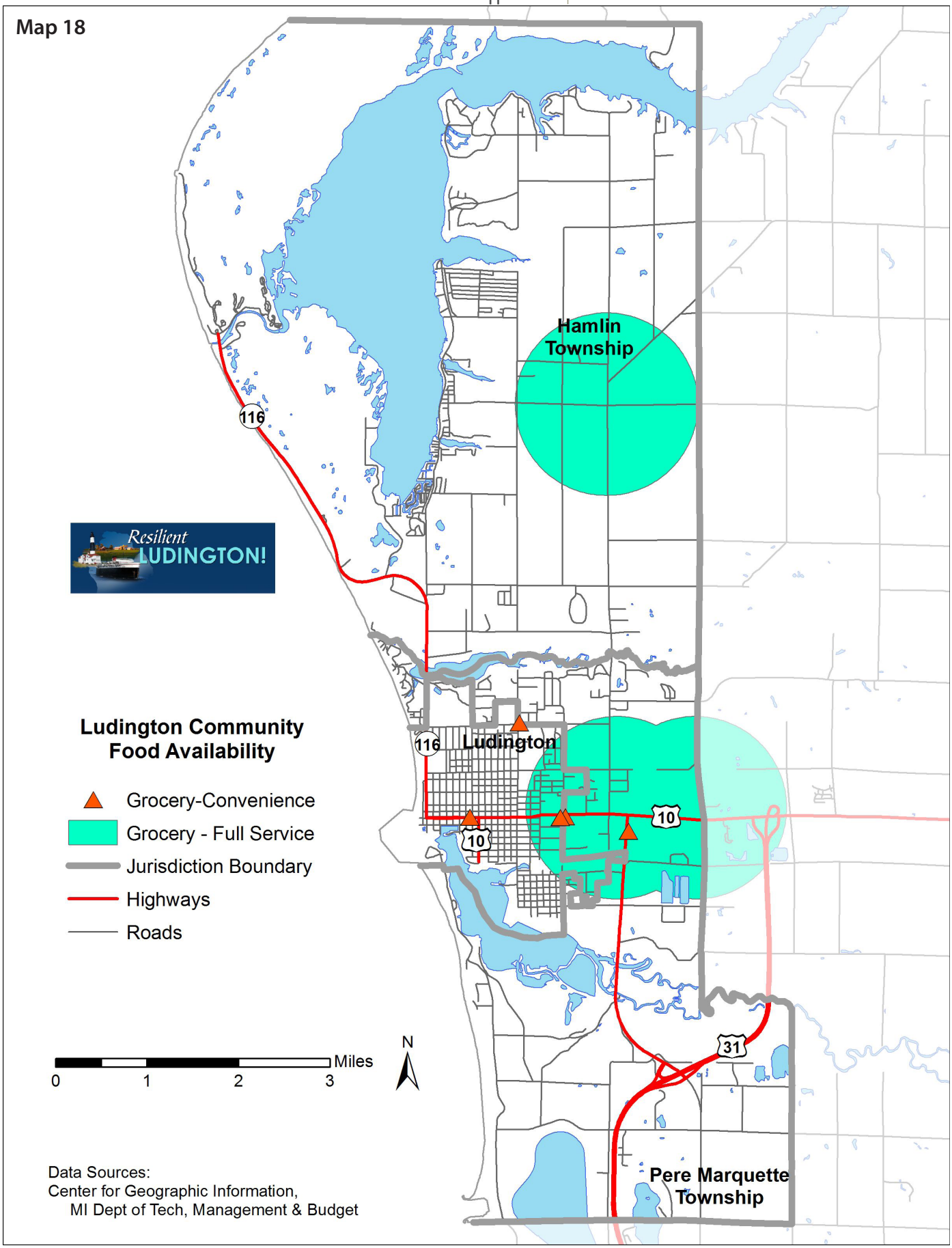

Map 13
Hamlin Township
116
Resilient LUDINGTON!
Ludington Community Year Home was Built
Home built 1940 & earlier
Home built after 1940
No data available
Jurisdiction Boundary
Highways
Roads
116
Ludington
10
10
31
Pere Marquette Township
0
1
2
3
Miles
N
Data Sources:
Hamlin Township
Pere Marquette Charter Township
City of Ludington
Mason County GIS
Center for Geographic Information,
MI Dept of Tech, Management & Budget


Map 14
Hamlin Township
116
Resilient LUDINGTON!
Ludington Community Household Sensitivity (Percent of Households Living Below the Poverty Threshold)
24.0 - 38.7%
15.7 - 23.9%
11.6 - 15.6%
7.5 - 11.5%
4.4 - 7.4%
Home built 1940 & earlier
Jurisdiction Boundary
Highways
Roads
116
Ludington
10
10
31
Pere Marquette Township
0
1
2
3
Miles
N
Data Sources:
U.S. Census Bureau, Block Level Data (2010),
ACS data (2008-2012)
Mason County GIS
Center for Geographic Information,
MI Dept of Tech, Management & Budget


Map 15
Hamlin Township
116
Resilient LUDINGTON!
Ludington Community Flooding Sensitive Homes
Home built 1940 & earlier
FEMA Flood Zones
Jurisdiction Boundary
Highways
Roads
116
Ludington
10
10
31
Pere Marquette Township
N
Miles
0
1
2
3
Data Sources:
Hamlin Township
Pere Marquette Charter Township
City of Ludington
Mason County GIS
Center for Geographic Information,
MI Dept of Tech, Management & Budget


Map 16
Hamlin Township
116
Resilient LUDINGTON!
Ludington Community Critical Facilities
Communication Center
Critical Facility
Fire Station
Healthcare Facility
Police Department
Utility
Jurisdiction Boundary
Highways
Roads
116
Ludington
10
10
31
Pere Marquette Township
0
1
2
3
Miles
N
Data Sources:
Center for Geographic Information,
MI Dept of Tech, Management & Budget


Map 17
Hamlin Township
116
Resilient LUDINGTON!
Ludington Community Community Services
Grocery-Convenience
Grocery-Full Service
Healthcare Facility
Place of Worship
Public Facility
School
Social Service
Transit Center
Jurisdiction Boundary
Highways
Roads
116
Ludington
10
10
31
Miles
0
1
2
3
N
Pere Marquette Township
Data Sources:
Center for Geographic Information,
MI Dept of Tech, Management & Budget


Map 18
Hamlin Township
116
Resilient LUDINGTON!
Ludington Community Food Availability
Grocery-Convenience
Grocery - Full Service
Jurisdiction Boundary
Highways
Roads
116
Ludington
10
10
31
Miles
0
1
2
3
N
Pere Marquette Township
Data Sources:
Center for Geographic Information,
MI Dept of Tech, Management & Budget

APPENDIX F

RESILIENT LUDINGTON ONLINE COMMUNITY PLANNING SURVEY RESULTS

DEMOGRAPHIC INFORMATION

1. In which jurisdiction of the Ludington community do you live?

	Totals
Total Respondents	87
City of Ludington	33
Pere Marquette Charter Township	12
Hamlin Township	22
Other nearby jurisdiction	17
Live elsewhere, but own a second home or vacation in the area	3

2. How many people live in your household?

	Community
Total Respondents	87
% w/1 person	12.6
% w/2 people	44.8
% w/3 people	17.2
% w/4 to 6 people	25.3
% w/more than 6 people	0.0

3. Do you own property in the Ludington community (City of Ludington, Pere Marquette Township, Hamlin Township?

	Community
Total Respondents	88
% YES	78.4
% NO	21.6

4. What is your age group?

	Community
Total Respondents	87
% under 25 years old	2.3
% 24-44 years old	23.0
% 45-64 years old	52.9
% 65 years or older	21.8

5. Are you male or female?

	Community
Total Respondents	86
% Female	61.6
% Male	38.4

6. What is your employment status?

	Community
Total Respondents	86
% Employed	44.2
% Self-Employed	15.1
% Student	2.3
% Unemployed	5.8
% Retired	32.6

7. What is your household income?

	Community
Total Respondents	76
% Up 34,999	11.8
% 35,000-49,999	19.7
% 50,000-74,999	36.8
% 75,000 or more	31.6

8. Do you have school-age children (18 years old or younger) in your household?

	Community
Total Respondents	86
% YES	27.9
% NO	72.1

9. How long have you been a resident of the Ludington community?

	Community
Total Respondents	87
% Less than 1 year	3.4
% 1 to 3 years	10.3
% 4 to 10 years	6.9
% 11 or more years	72.4
% I do not reside in the Ludington community	6.9

10. Are you an appointed or elected local government official or government staff member?

	Community
Total Respondents	88
% YES	18.2
% NO	81.8

ABOUT LIVING IN THE LUDINGTON COMMUNITY

How important are each of the following to your decision to live in the Ludington Community?

11. Safe place to live, work & play

	Community
Average	2.91
Total Respondents	88
% Not At All Important (1)	1.1
% Somewhat Important (2)	6.8
% Very Important (3)	92.0

12. Amenities such as libraries, parks & historic buildings

	Community
Average	2.64
Total Respondents	88
% Not At All Important (1)	5.7
% Somewhat Important (2)	25.0
% Very Important (3)	69.3

13. Desirable neighborhoods

	Community
Average	2.75
Total Respondents	88
% Not At All Important (1)	2.3
% Somewhat Important (2)	20.5
% Very Important (3)	77.3

14. Access to Lake Michigan, inland lakes, and rivers

	Community
Average	2.82
Total Respondents	88
% Not At All Important (1)	2.3
% Somewhat Important (2)	13.6
% Very Important (3)	84.1

15. Public school system

	Community
Average	2.39
Total Respondents	88
% Not At All Important (1)	13.6
% Not Important (2)	34.1
% Very Important (3)	52.3

16. Have a job in the Ludington Community

	Community
Average	2.36
Total Respondents	87
% Not At All Important (1)	21.8
% Somewhat Important (2)	20.7
% Very Important (3)	57.5

17. Easy commute to work

	Community
Average	2.16
Total Respondents	87
% Not At All Important (1)	25.3
% Somewhat Important (2)	33.3
% Very Important (3)	41.4

18. Friends or relatives live here

	Community
Average	2.11
Total Respondents	87
% Not At All Important (1)	25.3
% Somewhat Important (2)	37.9
% Very Important (3)	36.8

19. Affordable housing

	Community
Average	2.41
Total Respondents	88
% Not At All Important (1)	9.1
% Somewhat Important (2)	40.9
% Very Important (3)	50.0

20. Recreational opportunities

	Community
Average	2.64
Total Respondents	87
% Not At All Important (1)	4.6
% Somewhat Important (2)	26.4
% Very Important (3)	69.0

How easy is it to get around the Ludington Community using the following transportation modes?
*(Please rate the ease of movement on a scale from **1** for Very Difficult to **5** for Very Easy.)*

21. By Automobile (Driving)

	Community
Average	1.88
Total Respondents	88
% Very Easy (1)	44.3
% Easy (2)	34.1
% Neutral (3)	13.6
% Difficult (4)	5.7
% Very Difficult (5)	2.3

22. On Foot (Walking)

	Community
Average	2.60
Total Respondents	88
% Very Easy (1)	17.0
% Easy (2)	31.8
% Neutral (3)	27.3
% Difficult (4)	21.6
% Very Difficult (5)	2.3

23. By Bicycle (Biking)

	Community
Average	3.08
Total Respondents	88
% Very Easy (1)	8.0
% Easy (2)	21.6
% Neutral (3)	28.4
% Difficult (4)	38.6
% Very Difficult (5)	3.4

24. Public Transportation

	Community
Average	3.16
Total Respondents	87
% Very Easy (1)	6.9
% Easy (2)	20.7
% Neutral (3)	36.8
% Difficult (4)	20.7
% Very Difficult (5)	14.9

25. Taxi & Hired Transportation

	Community
Average	3.22
Total Respondents	85
% Very Easy (1)	3.5
% Easy (2)	14.1
% Neutral (3)	55.3
% Difficult (4)	10.6
% Very Difficult (5)	16.5

26. Have you visited or shopped at the Ludington Downtown Farmers Market in the last year?

	Community
Total Respondents	85
% Yes (1)	68.2
% No (2)	31.8

What are the most important features or qualities of the Ludington Community?
*(Please rate importance on a scale from **1** for Not At All Important to **5** for Very Important.)*

27. Access to Lake Michigan

	Community
Average	1.32
Total Respondents	88
% Very Important (1)	77.3
% Important (2)	14.8
% Moderately Important (3)	6.8
% Little Importance (4)	1.1
% Unimportant (5)	0.0

28. Rural character (e.g., Farms, Open Fields, Natural Areas)

	Community
Average	1.91
Total Respondents	88
% Very Important (1)	39.8
% Important (2)	38.6
% Moderately Important (3)	13.6
% Little Importance (4)	6.8
% Unimportant (5)	1.1

29. Downtown Ludington

	Community
Average	1.91
Total Respondents	88
% Very Important (1)	44.3
% Important (2)	31.8
% Moderately Important (3)	14.8
% Little Importance (4)	6.8
% Unimportant (5)	2.3

30. Historic sites and structures

	Community
Average	2.24
Total Respondents	88
% Very Important (1)	30.7
% Important (2)	29.5
% Moderately Important (3)	26.1
% Little Importance (4)	12.5
% Unimportant (5)	1.1

31. Sports & Recreation Facilities

	Community
Average	2.33
Total Respondents	87
% Very Important (1)	21.8
% Important (2)	37.9
% Moderately Important (3)	31.0
% Little Importance (4)	3.4
% Unimportant (5)	5.7

32. Affordable Housing

	Community
Average	2.02
Total Respondents	88
% Very Important (1)	35.2
% Important (2)	36.4
% Moderately Important (3)	22.7
% Little Importance (4)	2.3
% Unimportant (5)	3.4

33. Inland Lakes and Rivers

	Community
Average	1.70
Total Respondents	88
% Very Important (1)	47.7
% Important (2)	38.6
% Moderately Important (3)	10.2
% Little Importance (4)	2.3
% Unimportant (5)	1.1

34. State and Local Parks

	Community
Average	1.42
Total Respondents	88
% Very Important (1)	68.2
% Important (2)	25.0
% Moderately Important (3)	4.5
% Little Importance (4)	1.1
% Unimportant (5)	1.1

35. Restaurants and Lounges

	Community
Average	1.99
Total Respondents	86
% Very Important (1)	36.0
% Important (2)	43.0
% Moderately Important (3)	12.8
% Little Importance (4)	2.3
% Unimportant (5)	5.8

36. Events and Festivals (e.g., Harbor Festival, Western Michigan Fair)

	Community
Average	2.23
Total Respondents	88
% Very Important (1)	28.4
% Important (2)	37.5
% Moderately Important (3)	21.6
% Little Importance (4)	8.0
% Unimportant (5)	4.5

37. Retail stores and shopping

	Community
Average	2.13
Total Respondents	87
% Very Important (1)	21.8
% Important (2)	49.4
% Moderately Important (3)	25.3
% Little Importance (4)	1.1
% Unimportant (5)	2.3

38. Safe place to live, work, and play

	Community
Average	1.27
Total Respondents	88
% Very Important (1)	80.7
% Important (2)	13.6
% Moderately Important (3)	4.5
% Little Importance (4)	0.0
% Unimportant (5)	1.1

39. Bicycling and walking paths

	Community
Average	1.99
Total Respondents	87
% Very Important (1)	43.7
% Important (2)	29.9
% Moderately Important (3)	17.2
% Little Importance (4)	2.3
% Unimportant (5)	6.9

40. Friendly and welcoming people

	Community
Average	1.70
Total Respondents	87
% Very Important (1)	51.7
% Important (2)	33.3
% Moderately Important (3)	10.3
% Little Importance (4)	2.3
% Unimportant (5)	2.3

41. Large home lots / yards

	Community
Average	2.43
Total Respondents	88
% Very Important (1)	23.9
% Important (2)	29.5
% Moderately Important (3)	30.7
% Little Importance (4)	11.4
% Unimportant (5)	4.5

42. Availability of Good Jobs

	Community
Average	1.67
Total Respondents	88
% Very Important (1)	55.7
% Important (2)	28.4
% Moderately Important (3)	10.2
% Little Importance (4)	4.5
% Unimportant (5)	1.1

43. Easy to Get Around

	Community
Average	1.70
Total Respondents	87
% Very Important (1)	43.7
% Important (2)	47.1
% Moderately Important (3)	5.7
% Little Importance (4)	2.3
% Unimportant (5)	1.1

Thinking about the future, which new or additional commercial developments do you think are most important to improving the Ludington Community? *(Please rate importance on a scale from **1** for Not At All Important to **5** for Very Important.)*

44. Retail clothing & shoe stores

	Community
Average	2.51
Total Respondents	88
% Very Important (1)	17.0
% Important (2)	34.1
% Moderately Important (3)	33.0
% Little Importance (4)	12.5
% Unimportant (5)	3.4

45. Fast food restaurants

	Community
Average	3.98
Total Respondents	86
% Very Important (1)	1.2
% Important (2)	2.3
% Moderately Important (3)	26.7
% Little Importance (4)	37.2
% Unimportant (5)	32.6

46. Sit-down and fine dining restaurants

	Community
Average	2.41
Total Respondents	88
% Very Important (1)	26.1
% Important (2)	28.4
% Moderately Important (3)	30.7
% Little Importance (4)	8.0
% Unimportant (5)	6.8

47. Food or grocery stores

	Community
Average	2.55
Total Respondents	88
% Very Important (1)	21.6
% Important (2)	27.3
% Moderately Important (3)	30.7
% Little Importance (4)	15.9
% Unimportant (5)	4.5

48. Automobile sales and services

	Community
Average	3.27
Total Respondents	88
% Very Important (1)	4.5
% Important (2)	18.2
% Moderately Important (3)	38.6
% Little Importance (4)	22.7
% Unimportant (5)	15.9

49. Visitor & tourist attractions

	Community
Average	2.23
Total Respondents	88
% Very Important (1)	30.7
% Important (2)	35.2
% Moderately Important (3)	22.7
% Little Importance (4)	3.4
% Unimportant (5)	8.0

50. Boutiques & specialty shops

	Community
Average	2.61
Total Respondents	88
% Very Important (1)	17.0
% Important (2)	31.8
% Moderately Important (3)	33.0
% Little Importance (4)	9.1
% Unimportant (5)	9.1

51. Business offices

	Community
Average	2.69
Total Respondents	88
% Very Important (1)	10.2
% Important (2)	37.5
% Moderately Important (3)	33.0
% Little Importance (4)	11.4
% Unimportant (5)	8.0

How would you rate the importance of the following transportation improvements?

52. Improvements for pedestrians (e.g., sidewalks)

	Community
Average	1.78
Total Respondents	88
% Very Important (1)	44.3
% Important (2)	38.6
% Moderately Important (3)	12.5
% Little Importance (4)	3.4
% Unimportant (5)	1.1

53. Improved appearance for the US-10/US-31 corridor

	Community
Average	1.99
Total Respondents	88
% Very Important (1)	47.7
% Important (2)	27.3
% Moderately Important (3)	9.1
% Little Importance (4)	10.2
% Unimportant (5)	5.7

54. Better safety features for the US-10/US-31 corridor

	Community
Average	1.59
Total Respondents	87
% Very Important (1)	67.8
% Important (2)	16.1
% Moderately Important (3)	9.2
% Little Importance (4)	3.4
% Unimportant (5)	3.4

55. Improved appearance for Pere Marquette Highway

	Community
Average	2.31
Total Respondents	87
% Very Important (1)	32.2
% Important (2)	28.7
% Moderately Important (3)	21.8
% Little Importance (4)	10.3
% Unimportant (5)	6.9

56. Better safety features for Ludington Ave. in downtown Ludington

	Community
Average	2.00
Total Respondents	88
% Very Important (1)	46.6
% Important (2)	27.3
% Moderately Important (3)	11.4
% Little Importance (4)	9.1
% Unimportant (5)	5.7

57. New & improved bicycling routes

	Community
Average	1.92
Total Respondents	88
% Very Important (1)	48.9
% Important (2)	26.1
% Moderately Important (3)	14.8
% Little Importance (4)	4.5
% Unimportant (5)	5.7

58. Additional bus service

	Community
Average	2.60
Total Respondents	88
% Very Important (1)	25.0
% Important (2)	21.6
% Moderately Important (3)	30.7
% Little Importance (4)	13.6
% Unimportant (5)	9.1

How would you rate the importance of the following community services and activities?

59. Festivals, parades & local celebrations

	Community
Average	2.16
Total Respondents	86
% Very Important (1)	30.2
% Important (2)	38.4
% Moderately Important (3)	20.9
% Little Importance (4)	5.8
% Unimportant (5)	4.7

60. Public libraries

	Community
Average	1.86
Total Respondents	88
% Very Important (1)	45.5
% Important (2)	35.2
% Moderately Important (3)	10.2
% Little Importance (4)	5.7
% Unimportant (5)	3.4

61. Properly maintained sidewalks

	Community
Average	1.60
Total Respondents	88
% Very Important (1)	52.3
% Important (2)	37.5
% Moderately Important (3)	8.0
% Little Importance (4)	2.3
% Unimportant (5)	0.0

62. Automobile parking near business & retail locations

	Community
Average	1.80
Total Respondents	88
% Very Important (1)	39.8
% Important (2)	44.3
% Moderately Important (3)	13.6
% Little Importance (4)	1.1
% Unimportant (5)	1.1

63. Roads & bridges for automobiles

	Community
Average	1.66
Total Respondents	86
% Very Important (1)	46.5
% Important (2)	40.7
% Moderately Important (3)	12.8
% Little Importance (4)	0.0
% Unimportant (5)	0.0

64. Services for the poor (e.g., food pantries, shelters)

	Community
Average	1.91
Total Respondents	88
% Very Important (1)	38.6
% Important (2)	38.6
% Moderately Important (3)	15.9
% Little Importance (4)	6.8
% Unimportant (5)	0.0

65. Services for area seniors

	Community
Average	1.88
Total Respondents	88
% Very Important (1)	35.2
% Important (2)	47.7
% Moderately Important (3)	11.4
% Little Importance (4)	5.7
% Unimportant (5)	0.0

66. Public schools

	Community
Average	1.65
Total Respondents	88
% Very Important (1)	52.3
% Important (2)	35.2
% Moderately Important (3)	10.2
% Little Importance (4)	0.0
% Unimportant (5)	2.3

67. Street lights

	Community
Average	2.06
Total Respondents	88
% Very Important (1)	34.1
% Important (2)	39.8
% Moderately Important (3)	15.9
% Little Importance (4)	6.8
% Unimportant (5)	3.4

Which of the following things would you be in favor of local government doing to protect the water quality of lakes, streams and groundwater in the Ludington Community?

68. Work to reduce stormwater runoff from streets & parking lots

	Community
Average	1.84
Total Respondents	87
% Strongly Support (1)	44.8
% Somewhat Support (2)	34.5
% Neutral (3)	14.9
% Somewhat Oppose (4)	3.4
% Strongly Oppose (5)	2.3

69. Maintain shoreline vegetation to filter stormwater runoff

	Community
Average	1.62
Total Respondents	87
% Strongly Support (1)	54.0
% Somewhat Support (2)	33.3
% Neutral (3)	10.3
% Somewhat Oppose (4)	1.1
% Strongly Oppose (5)	1.1

70. Require maintenance of on-site home septic systems

	Community
Average	2.01
Total Respondents	88
% Strongly Support (1)	50.0
% Somewhat Support (2)	17.0
% Neutral (3)	21.6
% Somewhat Oppose (4)	4.5
% Strongly Oppose (5)	6.8

71. Work to protect lakes from *invasive species*

	Community
Average	1.40
Total Respondents	88
% Strongly Support (1)	75.0
% Somewhat Support (2)	17.0
% Neutral (3)	3.4
% Somewhat Oppose (4)	2.3
% Strongly Oppose (5)	2.3

Over the last 10 years, have you noticed a change in any the following weather events in Ludington?

72. Heavy Rainstorms

	Community
Total Respondents	87
% More Common	26.4
% No Change	50.6
% Less Common	9.2
% Don't Know	13.8

73. Snowstorms

	Community
Total Respondents	85
% More Common	45.9
% No Change	35.3
% Less Common	5.9
% Don't Know	12.9

74. Ice Storms

	Community
Total Respondents	86
% More Common	23.3
% No Change	54.7
% Less Common	7.0
% Don't Know	15.1

75. Heat Waves

	Community
Total Respondents	86
% More Common	17.4
% No Change	40.7
% Less Common	27.9
% Don't Know	14.0

76. Cold Spells

	Community
Total Respondents	87
% More Common	36.8
% No Change	44.8
% Less Common	2.3
% Don't Know	16.1

77. Flooding

	Community
Total Respondents	87
% More Common	25.3
% No Change	49.4
% Less Common	5.7
% Don't Know	19.5

78. Droughts

	Community
Total Respondents	87
% More Common	16.1
% No Change	51.7
% Less Common	10.3
% Don't Know	21.8

79. Insect Pests (e.g., mosquitoes)

	Community
Total Respondents	87
% More Common	40.2
% No Change	41.4
% Less Common	4.6
% Don't Know	13.8

80. Brush & Forest Fires

	Community
Total Respondents	86
% More Common	3.5
% No Change	61.6
% Less Common	10.5
% Don't Know	24.4

How would you rate the importance of the following actions that could be used for controlling stormwater runoff and reducing flooding hazards in the Ludington community?

81. Use more effective landscaping with new developments

	Community
Average	1.97
Total Respondents	86
% Very Important (1)	39.5
% Important (2)	37.2
% Moderately Important (3)	15.1
% Little Importance (4)	3.5
% Unimportant (5)	4.7

82. Encourage the planting of more trees & shrubbery

	Community
Average	1.85
Total Respondents	86
% Very Important (1)	43.0
% Important (2)	39.5
% Moderately Important (3)	10.5
% Little Importance (4)	3.5
% Unimportant (5)	3.5

83. Require more on-site storage of stormwater.

	Community
Average	2.61
Total Respondents	84
% Very Important (1)	17.9
% Important (2)	27.4
% Moderately Important (3)	35.7
% Little Importance (4)	14.3
% Unimportant (5)	4.8

84. Reduce or limit the size of paved parking areas

	Community
Average	2.71
Total Respondents	86
% Very Important (1)	18.6
% Important (2)	23.3
% Moderately Important (3)	34.9
% Little Importance (4)	15.1
% Unimportant (5)	8.1

85. Encourage the use of rain gardens & rain barrels

	Community
Average	2.42
Total Respondents	85
% Very Important (1)	34.1
% Important (2)	22.4
% Moderately Important (3)	18.8
% Little Importance (4)	16.5
% Unimportant (5)	8.2

86. Provide more education / information to home-owners

	Community
Average	2.10
Total Respondents	86
% Very Important (1)	46.5
% Important (2)	18.6
% Moderately Important (3)	20.9
% Little Importance (4)	5.8
% Unimportant (5)	8.1

87. Preserve existing wetlands

	Community
Average	1.74
Total Respondents	86
% Very Important (1)	58.1
% Important (2)	19.8
% Moderately Important (3)	15.1
% Little Importance (4)	3.5
% Unimportant (5)	3.5

Which of the following things would you be in favor of local government doing to help improve the Ludington Community's *local economy*?

88. Work to increase all forms of tourism.

	Community
Average	2.18
Total Respondents	88
% Strongly Favor (1)	36.4
% Somewhat Favor (2)	33.0
% Neutral (3)	13.6
% Somewhat Oppose (4)	10.2
% Strongly Oppose (5)	6.8

89. Work to increase local food production

	Community
Average	1.70
Total Respondents	88
% Strongly Favor (1)	50.0
% Somewhat Favor (2)	30.7
% Neutral (3)	18.2
% Somewhat Oppose (4)	1.1
% Strongly Oppose (5)	0.0

90. Provide incentives for locally-owned business

	Community
Average	1.74
Total Respondents	88
% Strongly Favor (1)	56.8
% Somewhat Favor (2)	22.7
% Neutral (3)	12.5
% Somewhat Oppose (4)	5.7
% Strongly Oppose (5)	2.3

91. Work to attract additional manufacturing business

	Community
Average	1.61
Total Respondents	88
% Strongly Favor (1)	62.5
% Somewhat Favor (2)	19.3
% Neutral (3)	12.5
% Somewhat Oppose (4)	5.7
% Strongly Oppose (5)	0.0

Which are the most important improvements to make to the Ludington Community's municipal facilities and services *over the next 10 years*?

92. Re-pave & repair roads

	Community
Average	1.65
Total Respondents	88
% Very Important (1)	47.7
% Important (2)	42.0
% Moderately Important (3)	8.0
% Little Importance (4)	2.3
% Unimportant (5)	0.0

93. Improve municipal parks

	Community
Average	2.20
Total Respondents	88
% Very Important (1)	21.6
% Important (2)	46.6
% Moderately Important (3)	21.6
% Little Importance (4)	10.2
% Unimportant (5)	0.0

94. Construct stormwater detention facilities

	Community
Average	2.37
Total Respondents	87
% Very Important (1)	19.5
% Important (2)	37.9
% Moderately Important (3)	29.9
% Little Importance (4)	11.5
% Unimportant (5)	1.1

95. Add new sidewalks

	Community
Average	2.25
Total Respondents	88
% Very Important (1)	25.0
% Important (2)	37.5
% Moderately Important (3)	26.1
% Little Importance (4)	10.2
% Unimportant (5)	1.1

96. Build new bicycle & walking trails

	Community
Average	2.03
Total Respondents	87
% Very Important (1)	48.3
% Important (2)	20.7
% Moderately Important (3)	16.1
% Little Importance (4)	9.2
% Unimportant (5)	5.7

97. Improve the "curb appeal" throughout Ludington

	Community
Average	2.09
Total Respondents	88
% Very Important (1)	40.9
% Important (2)	22.7
% Moderately Important (3)	25.0
% Little Importance (4)	9.1
% Unimportant (5)	2.3

98. Increase availability of recreation programs

	Community
Average	2.36
Total Respondents	88
% Very Important (1)	28.4
% Important (2)	26.1
% Moderately Important (3)	30.7
% Little Importance (4)	10.2
% Unimportant (5)	4.5

99. Expand recreation facilities

	Community
Average	2.39
Total Respondents	88
% Very Important (1)	26.1
% Important (2)	28.4
% Moderately Important (3)	29.5
% Little Importance (4)	12.5
% Unimportant (5)	3.4

100. Improve & increase bus service

	Community
Average	2.57
Total Respondents	86
% Very Important (1)	26.7
% Important (2)	19.8
% Moderately Important (3)	31.4
% Little Importance (4)	14.0
% Unimportant (5)	8.1

101. Expand municipal utility services (e.g., sewer, water)

	Community
Average	2.65
Total Respondents	88
% Very Important (1)	19.3
% Important (2)	27.3
% Moderately Important (3)	30.7
% Little Importance (4)	14.8
% Unimportant (5)	8.0

Which of the following actions would you take or have you taken to protect yourself and your community from local environmental hazards?

102. Learn about local hazards & the best ways to deal with them

	Community
Total Respondents	87
% Have Done	35.6
% Would Do	44.8
% Would Not Do	8.0
% Don’t Know	11.5

103. Participate in and/or organize family or neighborhood voluntary response effort

	Community
Total Respondents	86
% Have Done	9.3
% Would Do	45.3
% Would Not Do	31.4
% Don’t Know	14.0

104. Purchase an emergency kit

	Community
Total Respondents	87
% Have Done	52.9
% Would Do	37.9
% Would Not Do	5.7
% Don't Know	3.4

105. Install water efficient household appliances to conserve water

	Community
Total Respondents	87
% Have Done	62.1
% Would Do	24.1
% Would Not Do	12.6
% Don't Know	1.1

106. Install energy efficient household appliances and lights to conserve energy

	Community
Total Respondents	87
% Have Done	77.0
% Would Do	17.2
% Would Not Do	4.6
% Don't Know	1.1

107. Increase the amount of insulation in my home to save energy

	Community
Total Respondents	87
% Have Done	63.2
% Would Do	29.9
% Would Not Do	3.4
% Don't Know	3.4

108. Plant more trees, shrubs & greenery

	Community
Total Respondents	86
% Have Done	55.8
% Would Do	32.6
% Would Not Do	9.3
% Don't Know	2.3

109. Install rain barrels at my home

	Community
Total Respondents	87
% Have Done	9.2
% Would Do	46.0
% Would Not Do	28.7
% Don't Know	16.1

Which of the following actions would you take, or have you taken, to improve water quality in Lake Michigan or other inland lakes and rivers?

110. Volunteer for a local watershed group?

	Community
Total Respondents	87
% Have Done	9.2
% Would Do	27.6
% Would Not Do	42.5
% Don't Know	20.7

111. Participate in a river or lake clean-up?

	Community
Total Respondents	87
% Have Done	26.4
% Would Do	43.7
% Would Not Do	19.5
% Don't Know	10.3

112. Organize an environmental education event?

	Community
Total Respondents	87
% Have Done	8.0
% Would Do	18.4
% Would Not Do	51.7
% Don't Know	21.8

113. Financially support or donate to a watershed project?

	Community
Total Respondents	87
% Have Done	13.8
% Would Do	35.6
% Would Not Do	31.0
% Don't Know	19.5

114. How important is environmental quality and watershed quality to the economic vitality of the Ludington community?

	Community
Average	1.42
Total Respondents	88
% Very Important (1)	62.5
% Somewhat Important (2)	33.0
% Not at all Important (3)	4.5