CITY OF GRAND HAVEN

2016 Master Plan

This plan was prepared by the Land Information Access Association (LIAA) as part of the Resilient Grand Haven project. Support for the project came from the Michigan Municipal League (MML), Michigan Association of Planning (MAP), and the University of Michigan's Taubman College of Architecture and Urban Planning. A special thank you is owed to the many organizations and individuals that contributed to the planning process.

This project was funded in part by the City of Grand Haven, Grand Haven Charter Township, the Michigan Coastal Zone Management Program, Department of Environmental Quality, Office of the Great Lakes; and the National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

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CITY OF GRAND HAVEN 2016 MASTER PLAN

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CHAPTER 11. THE FUTURE OF GRAND HAVEN- A YOUTH PERSPECTIVE WRITTEN BY

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CITY OF GRAND HAVEN
GRAND HAVEN, MICHIGAN
REGULAR CITY COUNCIL MEETING
MONDAY, APRIL 11, 2016
(Excerpt)

The Regular Meeting of the Grand Haven City Council was called to order at 7:31 p.m. by Mayor Geri McCaleb in the Council Chambers of City Hall.

Present: Council Members Bob Monetza, Josh Brugger, Dennis Scott, Mike Fritz, and Mayor Geri McCaleb.

Absent: None.

16-090 Moved by Council Member **Monetza,** seconded by Council Member **Brugger,** to adopt the 2016 Master Plan, as endorsed by the Planning Commission. This motion carried unanimously.

CERTIFICATE

I hereby certify that the foregoing is a true and complete copy of a resolution adopted by the City Council of the City of Grand Haven, Ottawa County, Michigan, at a regular meeting held on April 11, 2016, and that notice of the meeting was given pursuant to Act 267, Public Acts of Michigan, 1976, as amended.

Linda L. Browand

Linda L. Browand, City Clerk

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CHAPTER 1. INTRODUCTION

The *City of Grand Haven Master Plan* serves as the official policy guide for Grand Haven's future development and growth, including the management of its assets and resources. Organized through a series of relevant topics, goals, and objectives, the Master Plan provides the framework and basis for sound community development and land use decision making. The *City of Grand Haven Master Plan* also establishes clear direction and expectations for the City.

PURPOSES AND USES FOR THE MASTER PLAN

- Solidifies the vision for the City.
- Identifies and evaluates existing conditions and characteristics, community values, trends, issues, and opportunities.
- Gives guidance to property owners, developers, neighboring jurisdictions, and county and state entities about expectations and standards for public investment and future development.
- Provides support for the allocation and spending of funds.
- Establishes the basis for the zoning ordinance, capital improvements, land use policies, and other implementation tools and programs.
- Provides the framework for staff's day-to-day planning decisions and the Planning Commission's and City Council's land use policy decisions.
- Provides the framework and foundation for creative problem solving and adapting to change – in other words, becoming a resilient community.
- Builds partnerships between informed citizens, community stakeholder groups, non-profit organizations and county and regional entities that help support and participate in plan implementation.

The Master Plan is a guide for growth and development within the City. Local officials and planning staff need to adapt to changing conditions with new, innovative concepts and land use policies.

The Master Plan is intended to take a long-range view of the City, guiding growth and development for the next twenty years and beyond, while also providing flexibility to respond to changing conditions, innovations, new concepts, and available resources.

The Master Plan identifies and discusses important community trends like climate change, which is redefining Grand Haven's natural environment. The Master Plan also highlights resources that help increase sense of place, by designing projects with placemaking strategies in mind. The Master Plan pinpoints where new development should be directed and identifies the design standards for new homes and buildings. In addition, the Master Plan identifies the preferred characteristics of neighborhoods, and lays a groundwork for healthier lifestyles through neighborhood design and improvements to the transportation system. Lastly, The Master Plan also identifies how the City can increase resiliency and better respond to unanticipated events and adverse situations.

The Master Plan Process

The Joint Planning Committee, consisting of the full planning commissions of the City and Township, oversaw and participated in the planning process.

A COLLABORATIVE PLANNING PROCESS

The Master Plan was developed with unique collaboration between public officials from the City of Grand Haven and Grand Haven Charter Township. While local officials from the City and Township have collaborated on joint planning issues before (e.g. Robbins Road Corridor), this marked the first time they collaborated in the development of their Master Plans. This collaborative planning effort also resulted in an updated Master Plan for Grand Haven Charter Township.

The *Joint Planning Committee*, consisting of the full planning commissions of both the City and Township, the respective community development staff, and LIAA, the consultant team, helped oversee and facilitate the planning process. In addition, the *Joint Planning Committee* acted as a sounding board for new ideas and information and a venue for reviewing and considering new materials.

Although the Master Plan was developed under this collaborative approach, ultimately, the final components and content of this Master Plan were established and approved by City of Grand Haven staff members, the City of Grand Haven Planning Commission, and the Grand Haven City Council.

This collaborative planning process sets the groundwork for continued dialogue between local officials from the City and Township on community-wide land use issues, planning policies, community development, zoning matters, and future Master Plan amendments.

PLANNING FOR A UNIQUE FOCUS

Because the City and Township were willing to discuss and consider how climate trends might impact their community and how they might respond to those impacts, portions of the Master Planning Process were funded through a grant from the Coastal Zone Management (CZM) Program. In addition, under a grant of services from the *University of Michigan Water Center*, City and Township staff members and the *Joint Planning Committee* worked with a team of professors and researchers from the University of Michigan's Taubman College of Architecture and Urban Planning to study and determine the potential physical and environmental impacts of dynamic coastline processes. More information about their activities and conclusions, and how it impacts the Master Plans are described in more detail in Chapter 9 and in Appendix B.

OUTREACH AND CIVIC ENGAGEMENT ACTIVITIES

Because the Master Plan should reflect the values and vision of the community, engaging the public was a critical component of the community-wide planning process. Outreach and engagement activities for the Master Plan were designed to:

- Build awareness and promote the community-wide planning process.
- Encourage City and Township residents to talk about issues of mutual concern and interest.
- Engage citizens and community stakeholders about the future of the community.
- Make connections and build partnerships between community stakeholders, non-profits and civic organizations.

- Build awareness about local, state, regional and national issues that impact the community.
- Determine if more detailed information about coastline processes influence coastal land use policy.

The following civic engagement activities were conducted during the community-wide planning effort:

PROJECT WEBSITE

In an effort to raise awareness about the planning project, the consultant team developed an interactive project website (www.resilientmichigan.org/grand_haven.asp). The website provided information about upcoming public meetings, notes from past meetings, draft documents, links to videos and presentations, news articles, and an interactive forum. At the conclusion of the planning process, the City and Township Master Plans were placed on their respective websites.

PUBLIC MEETINGS

Over 200 members of the public directly contributed to the Master Plan by participating in the Leadership Summit, Community Action Team Meetings, and a Public Open House.

LEADERSHIP SUMMIT

Nearly 100 people participated in the Leadership Summit, a multi-faceted workshop designed to engage citizens, public officials, and community stakeholders in an in-depth discussion about community resilience. During the Summit, experts from the University of Michigan, the Michigan State Land Policy Institute and the State's Climatologist Office, among others, delivered presentations on how the community could become more resilient to challenges associated with a changing climate, shoreline processes, and the dynamic global economy.

COMMUNITY ACTION TEAM MEETINGS

Over 120 people participated in three successive public meetings to help develop recommendations for the community. Local stakeholder organizations presented on specific issues facing the community like transportation, local economy, and families in need. Then, participants were organized into topic specific groups, referred to as *Community Action Teams*.

COMMUNITY ACTION TEAMS

1. Access and Transportation
2. Energy and Economy
3. Neighborhoods and Infrastructure
4. Agriculture and Food
5. Human and Social Systems
6. Parks and Natural Systems

Outreach & Civic Engagement

An interactive project website was developed to raise awareness for the master planning effort.

Leadership Summit

During the Leadership Summit, several well-regarded state-wide experts discussed how the community could become more resilient to future climate and economic challenges.

Community Action Team Meetings

Over the course of three meetings, citizens and community stakeholders mapped community assets and developed goals and objectives for six community topics.

Over the course of the three meetings, participants of the six Community Action Teams (CAT) identified and mapped assets and threats pertaining to their specific topic and created goals and objectives. These meetings helped to create the goals and objectives outlined in Chapter 12.

PUBLIC OPEN HOUSE

An open house was held on October 20th, 2015 to introduce the Plan to the public. Many residents attended the open house to view the draft plan, offer comments, and hear about the process.

COMMUNITY OUTREACH

KEY PERSON AND GROUP INTERVIEWS

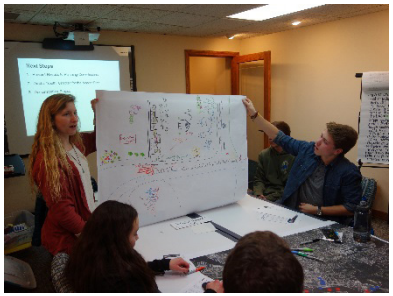
The consultant team met with staff members from different community organizations such as Harbor Transit, the Grand Haven Area Community Foundation and the Chamber of Commerce, as well as City staff members and local officials. These meetings and interviews helped identify current land use trends, community development issues, and community visions for the future.

YOUTH ACTIVITIES

In February 2015, about 30 members of the Grand Haven Area Community Foundation Youth Advisory Committee (YAC) participated in a youth charrette. The YAC consists of high-school students from the Tri-Cities area that regularly meet to discuss and assess youth issues. The youth charrette kicked off with an interactive Resilient Bingo game, in which students were asked to identify fellow students who were doing "resilient" things at home (e.g., "has ridden a bicycle to run an errand sometime in the last six months"). Students then worked to identify and map community assets and illustrate their vision for the community in an activity called Crayon Your Community.

At a second meeting in April, students worked to develop a preferred non-motorized map for the community. Following the meeting, the YAC wrote a "Youth Chapter" for this Master Plan, which can be found in Chapter 11.

Youth Charrette
Members of the YAC worked to identify community assets and illustrate a vision for the community.



MASTER PLAN FRAMEWORK: GUIDING PRINCIPLES OF THE MASTER PLAN

The planning process fostered many ideas and conversations about the past, present, and future of Grand Haven. During the planning process, these ideas coalesced into *Nine Guiding Principles* for the creation of the plan and the direction of Grand Haven going forward.

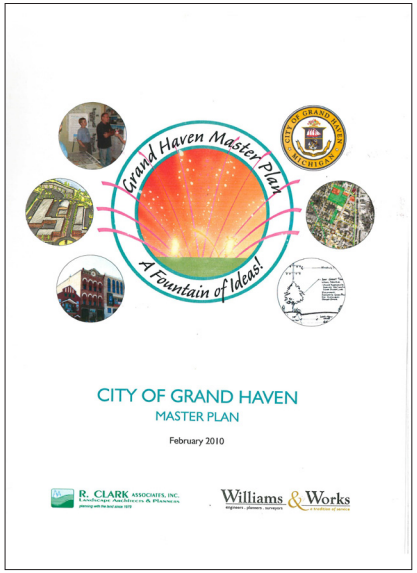
The Nine Guiding Principles came from an iterative planning process that involved Grand Haven City and Township staff members, the *Joint Planning Committee*, the consultant team, and the public. The following nine guiding principles are organized by past, present, and future.

BUILD ON OUR PAST

1) BUILD ON WHAT'S WORKING

Grand Haven's last master plan was developed and adopted in 2010. The master plan was a thorough and well-written document, describing the current conditions of the community and identifying key community goals and objectives. In the five years since the plan was adopted, several of these goals and actions have been realized. At the same time, Grand Haven continues to address many new challenges.

While the conditions and challenges of the City have changed, many of the overarching goals and policies discussed in the 2010 Master Plan remain applicable. In addition to incorporating language from the 2010 Master Plan, the *City of Grand Haven Master Plan* builds upon the existing goals and strategies, as discussed in Chapter 12.



SHAPE THE PRESENT

Each of the guiding principles for shaping the present Grand Haven came from current initiatives resounding themes in the State's current planning and community development efforts and were recognized as important to Grand Haven's planning process by officials, staff, and the public.

2) UNDERSTAND COASTAL PROCESSES

Michigan's beautiful coastline is more than an easy way to find Michigan on a map of the United States. The water resources throughout the state provide an abundance of resources and impact coastal communities in unique ways. Across the state, many efforts are underway to better understand our Great Lakes.

Grand Haven has over two miles of Great Lakes shoreline and is framed by the Grand River. Many residents live along water's edges, enjoying scenic views and recreational opportunities.

For this planning process, a specialized team of researchers from the University of Michigan's Taubman College of Architecture and Urban Planning worked to determine the physical and fiscal impacts of possible climate scenarios throughout the City, including the coastal areas. Their research and recommendations influenced the planning process in a number of ways. More information on University of Michigan's involvement can be found in Chapter 9 and in Appendix B.

3) SUPPORT SMART GROWTH

Smart Growth is a national movement with a strong presence in Michigan. According to the Smart Growth Network, growing is smart when it creates great communities with more choices, greater

History of Grand Haven City

The City of Grand Haven originally formed around the industrial trade routes of fur traders. Grand Haven's strategic location at the opening of the Grand River served as an ideal entryway into the Lower Peninsula.

In 1834, a minister named William Montague Ferry became the first permanent European settler in the City. By 1835, the name Grand Haven was used to identify the village, and in 1839, Grand Haven's first lighthouses were built to signal traders into the Grand River. A church, a tannery, a bank, and a school were operational by 1851. By the mid-1800s, the railroad was bringing industry and vacationers to enjoy the City's prime position and shoreline. In 1867, Grand Haven was incorporated.

By the 1890s, the lumber industry had dwindled, but shipping and shipbuilding became the crux of the growing economy. In the first half of the twentieth century, Grand Haven produced furniture, pianos, and eventually, automobiles. Volunteers established the U.S. Life Saving Service along its two miles of Lake Michigan shoreline in the early 1900s, eventually earning the City of Grand Haven its official designation as "Coast Guard City U.S.A."

return on public investment, a thriving natural environment, and a legacy for future generations.[1] There are 10 key tenets of smart growth worth noting, as each of these are addressed to some degree in planning efforts across the state and in this Master Plan.

Coastal processes are influenced by natural systems such as wind, waves, lake levels, sediment and weather. Understanding coastal processes can help jurisdictions plan for naturally-occurring changes and activities along the shoreline.

TEN TENETS OF SMART GROWTH

1. Mix land uses
2. Take advantage of compact building design
3. Create a range of housing opportunities and choices
4. Create walkable neighborhoods
5. Foster distinctive, attractive communities with a strong sense of place
6. Preserve open space, farmland and critical environmental areas
7. Strengthen and direct development toward existing communities
8. Provide a variety of transportation choices
9. Make development decisions predictable, fair and cost-effective
10. Encourage community and stakeholder collaboration

For Grand Haven, smart growth is a key tool in shaping the current condition of the City's land use, housing, and transportation. As a result, Smart Growth principles are incorporated throughout each section of this Master Plan.

4) PLAN FOR PLACE

Where location refers to a particular geography, "place" refers to the physical components that make a location recognizable. Placemaking, then, is the act of designing and managing elements of the public realm to create places that are exciting, accessible, and comfortable. The State of Michigan has promoted and supported placemaking efforts in various communities and has provided a guidebook for communities looking to bring vibrancy back to neighborhoods and downtowns.

For Grand Haven, placemaking is a key strategy to help protect and increase vibrancy in Downtown and throughout its core neighborhoods. For more on Placemaking, see chapter 8.

Ten Tenets of Smart Growth
The ten tenets of smart growth have been accepted and widely used by local municipalities throughout Michigan.

5) BE A WALKABLE COMMUNITY

A city is walkable when its transportation infrastructure provides multiple ways for people to travel to a variety of locations. Connected sidewalks, bike lanes, and public transit all serve to make a community healthier and more accessible for all incomes and ages.[2] There are currently many initiatives across the state to increase awareness about walkability in all types of communities.

1 The Smart Growth Network, 2014. This is Smart Growth. http://www2.epa.gov/sites/production/files/2014-04/documents/this-is-smart-growth.pdf
2 McCann, Barbara & Rynne, Suzanne. Complete Streets: Best Policy and Implementation Policies American Planning Association (2010)

In Grand Haven, residents already have a number of transportation choices. Downtown and many of its neighborhoods are highly accessible and walkable, but the City can protect, and in some areas, increase its walkability. For more information on goals and recommendations related to walkability, see Chapters 12 and 15.

6) COLLABORATE REGIONALLY

Many elements of a community- from economic health to air and water quality- are not defined by a municipal boundary. City decisions have an impact on surrounding jurisdictions and vice-versa.

The Grand Haven community has recognized that ongoing collaboration is essential. Much of this Master Plan comes from a joint collaboration between Grand Haven Charter Township and the City of Grand Haven. There are also many tie-ins to regional efforts throughout the plan. For examples of these, see chapters 2 and 12.

PLAN FOR THE FUTURE

Each of the guiding principles used to plan for Grand Haven's future come from research on future trends to our climate, economy, and areas of public concern throughout the State. As with the other guiding principles, a culmination of input from officials, staff, and the public helped identify these as resounding themes.

7) BUILD COMMUNITY RESILIENCE

By their very nature, communities are continually complex and dynamic. People move and populations shift, industries go out of business and new industries emerge, natural areas are converted to neighborhoods, housing values fluctuate, and shorelines shift and change. Sometimes these changes emerge over a long period of time. Other changes can be quite sudden. Community resilience, then, is a measure of the sustained ability of a community to use available resources to withstand and recover from adverse situations.[3]

Many strategies can be adopted to increase Grand Haven's ability to learn from adversity, creatively solve problems, and adapt to change. Many qualities of a resilient community, listed on the next page, will be used throughout the plan.[4] Resiliency is mentioned throughout the plan, especially in Chapters 9 and 10.

8) PREPARE FOR CLIMATE VARIABILITY

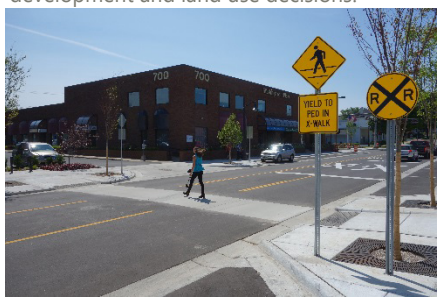
There is no longer doubt in the scientific community over whether the global climate is changing.[5] A changing climate will mean generally warmer temperatures, increased rains, and more severe storms in the Great Lakes region. For Grand Haven, responding to climate change is a challenge in the short-term and the long-term. It requires City officials and community stakeholders to consider how they

Public Realm

The public realm is the everyday spaces (farmers markets, waterfronts, streets, parks, neighborhoods and downtowns) people move through and linger within.

Walkability

The City should consider pedestrian access and connectivity in all future community development and land use decisions.



[3] Rand Corporation, 2015. Community Resiliency Featured. http://www.rand.org/topics/community-resilience.html
[4] Rockefeller Foundation, 2014. Resilience Framework. https://www.rockefellerfoundation.org/our-work/topics/resilience/
[5] NASA, 2016. Global Climate change: Vital Signs of the Planet. http://climate.nasa.gov/evidence/

Qualities of Resilient Systems

According to the City Resilient Framework established by the Rockefeller Foundation, a resilient community is:

Reflective
Robust
Redundant
Flexible
Resourceful
Inclusive
Integrated

plan for new development, transportation, infrastructure, natural resource preservation, energy production, and community health.

For a summary of climate change research globally, regionally, and statewide, see Chapter 9. A number of goals and implementation strategies are intended to address climate change concerns, as seen in Chapter 15.

9) COMPETE IN THE NEW ECONOMY

The economic drivers of Michigan's economy have changed. While the recovering manufacturing sector will continue to remain a component of Michigan's economy, most of the manufacturing jobs lost will not return. Most of the future economic growth in Michigan will come from a variety of industries, most of which are high-technology and service-oriented. According to Michigan State University's Land Policy Institute (LPI), sectors like health care, financial management, highly-skilled manufacturing, human service sectors, and the food industry will become the backbone of what is called the "New Economy".

Competing in the New Economy is a way to increase economic resiliency and proactively attract growing industries. Many strategies to compete in the New Economy are included in Chapter 15.

CHAPTER 2. ENVIRONMENTAL CONDITIONS

The City of Grand Haven is blessed to have some of the most diverse and unique natural environments in Michigan. The following chapter summarizes the water and land assets of the City.

GRAND HAVEN'S ENVIRONMENTAL ASSETS

Grand Haven is located along the beautiful shores of Lake Michigan, in the northwestern portion of Ottawa County. The City is bounded on the north and east by the Grand River, Spring Lake Township and Grand Haven Township, on the south by Grand Haven Charter Township and on the west by Lake Michigan. Because of Lake Michigan and the Grand River, Grand Haven is also home to beautiful sand dunes, wetlands, native vegetation, and rich soils.

GRAND HAVEN'S WATER ASSETS

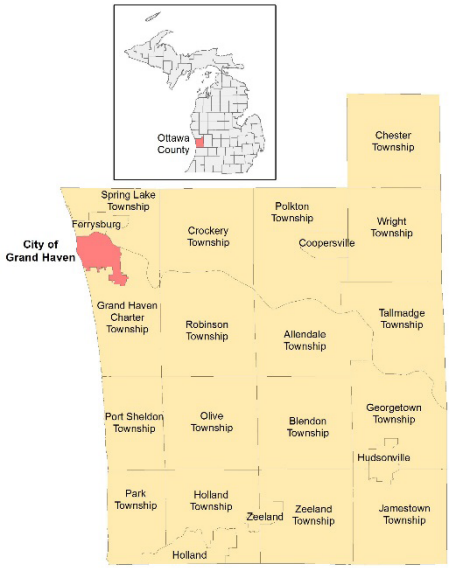
LAKE MICHIGAN

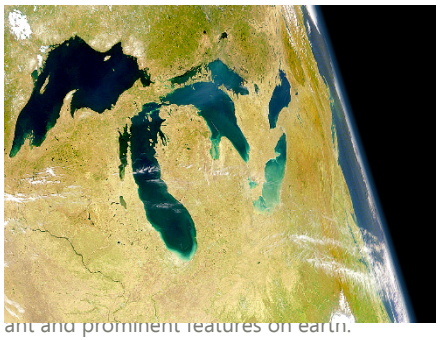
Grand Haven's identity formed largely around Lake Michigan and the Grand River. Water's presence in the City has been central to Grand Haven's history and its legacy as well. Lake Michigan and the Great Lakes are truly one of the most special and unique natural resources on the planet and Grand Haven is fortunate to sit right on its doorstep! Home to 18 percent of the world's supply of freshwater and 90 percent of the United States' supply of freshwater,[1] the Great Lakes has been and continues to be the foundation of Michigan's DNA and our most defining feature. Native Americans and early settlers used the Great Lakes to transfer food and goods to settlements and distant trading posts. In the 18th and 19th century, the Great Lakes powered the lumber mills that helped build our cities and the factories that built the goods that formed the foundation of our economy.[2]

Today, the Great Lakes are center stage for the state's tourism industry and the Pure Michigan campaign. In addition, leaders from around the state are working to utilize the Great Lakes to further the "Blue Economy" – an economy where the Great Lakes provide for clean energy, promote sustainable systems, and create new food and mobility systems. According to a report from the Michigan Economic Center and the Grand Valley State University Annis Water Resource Institute,[3]

> "Michigan can be that unrivaled playground if the water is clean and our communities reconnect to it. It's our 'blue' alongside our 'green' And Innovation in water makes Michigan the world center of education, research, invention and new "smart water" technologies and business development, the World's Freshwater and Freshwater Innovation Capital. It can propel a new era of economic growth and job creation."

FIGURE 2.1





ant and prominent features on earth.

1 Great Lakes Environmental Research Laboratory, NOAA. About our Great Lakes www.glerl.noaa.gov/pr/ourlakes/intro.html
2 Michigan Blue Economy, Making Michigan the World's Freshwater and Freshwater Innovation Capital. John Austin. Michigan Economic Center at Prima Civitas and Alan Steinman, Grand Valley State University Annis Water Resource Institute
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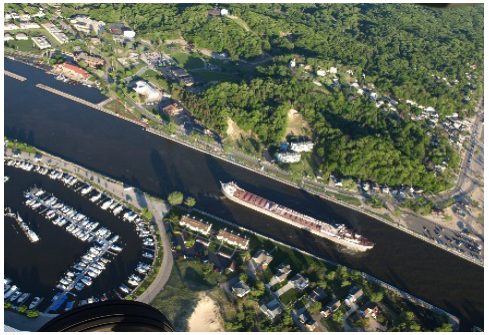


The Grand River

The Grand River continues to support shipping, providing coal to the power plant and other materials for local businesses.

What is a Watershed?

A watershed is a region of land that is drained by a particular river or river system. Typically these systems include many smaller tributaries such as creeks and streams that feed into a larger river and are influenced by the land's elevation.

Chapter 9 of this plan discusses coastal processes and shoreline management strategies in detail.

THE GRAND RIVER

The Grand River is Michigan's longest river winding 256 miles from Jackson to Grand Haven, and spans 19 counties with 12 major tributaries. The river forms part of the eastern and northern borders of the City, emptying into Lake Michigan in the northwestern portion of the City. The river is a navigable stream, although early rapids and downstream dams have limited the development of riverboat commerce.

Much of the Grand River near Grand Haven is bordered by large wetlands. These wetlands and the broad floodplain areas have helped to limit intense development in close proximity to much of the riverbank within parts of the City.

The Grand River supported the development of the region by providing a means of conveying logs to sawmills located on the banks of the Grand River. Steamboats ferried finished products between Grand Rapids and Grand Haven. In addition, gypsum, limestone, sand, and gravel were mined from the banks of the Grand River, and clams were harvested for commercial button production. After large-scale logging ceased in the 1890s, the City of Grand Rapids became a significant manufacturing center, discharging industrial and municipal wastes into the Grand River. Environmental legislation, initiated in the late 1960s, provided the impetus for cleanup of the Grand River and its tributaries.[4]

Today, the Grand River still serves Great Lakes shipping, providing coal to the local power plant and shipping sand and aggregate from local businesses to markets elsewhere. This economic use of the river requires continued maintenance and, at times, dredging to keep shipping channels open.

THE GRAND RIVER WATERSHED

The Grand River watershed covers 5,660 square miles and drains portions of Muskegon, Newaygo, Mecosta, Montcalm, Gratiot, Ottawa, Kent, Ionia, Clinton, Shiawassee, Barry, Eaton, Ingham, Livingston, and Jackson counties. The watershed also includes several major sub-tributaries including the Lower and Upper Grand Rivers, Maple River, and Thornapple River. Local watersheds directly affecting Grand Haven are illustrated on Map 2.1 in Appendix C.

Water quality within The Grand River watershed is directly related to land management practices in the region. For example, if new development creates a large amount of impervious surface (i.e. asphalt) and stormwater is not properly managed on site, flow from the run-off into the creek, stream, or river deteriorates water quality and quickens erosion on stream banks.

Approximately 53 percent of the land within the Grand River watershed is agricultural, 27 percent is urban, and 20 percent is forested.[5] Since Grand Haven lies at the mouth of the Grand River, activities that occur upstream have a significant impact on the quality of the river and riparian areas in the City. While Grand Haven should continue to work towards improving the water quality of the lower Grand River, this task will require cooperation from numerous upstream stakeholders, including agencies and

4 Lower Grand River Watershed Management Plan, September 2004. Prepared for the Grand Valley Metropolitan Council.
5 Grand River and Nature Discovery Learning Network, 2015. The Grand River Watershed- Michigan.

governmental units.

SAND DUNES

Michigan's dunes are one of the most striking environmental features in the world. Together, they represent the largest freshwater dune ecosystem in the world.[6] The dunes provide unique habitats for rare and endangered species and hold enormous environmental and recreational value.[7]

There are about 250,000 acres of sand dunes in Michigan. Of that, the Michigan Department of Environmental Quality classifies 70,000 acres of dunes as Critical Dune Areas (CDAs). [8] Development on CDAs is regulated by the state, and a property owner must receive a permit for many activities that either alter the appearance or contours of a CDA.

The City of Grand Haven has 600 acres of Critical Dune Areas. They are primarily located east of North Shore Drive and north of the Grand River. Critical Dune Areas are illustrated on Map 2.2 in Appendix C.

For more information on current regulation and maps of Critical Dunes in Grand Haven, please see Appendix B.

The City of Grand Haven has 600 acres of Critical Dune Areas.

WETLANDS

Wetlands play a critical role in regulating the movement of water within watersheds. Wetlands are also incredible flood absorbers. The water-holding capacity of a specific wetland varies by the size, slope, type of vegetation, location relative to flooding path, and the water levels in the wetland prior to flooding.[9] Coastal wetlands also control the severity of erosion along a shoreline during a storm.[10] Perhaps more than any other environmental asset, wetlands absorb high energy waves and break the flow of currents.[11] Michigan has coastal, tree, and shrub wetlands, each covered with water either all or part of the year. [12]

This diversity of wetlands was misunderstood as European settlement began, and many wetlands were dredged, drained, and converted to serve industry. Today, less than half of the state's wetlands remain, and in a time of changing climate, the need to conserve and restore wetlands is paramount.[13]

In Michigan, development in some wetlands is regulated through a permitting process. Generally, a wetland is regulated if it is connected to or within 1,000 feet of a Great Lake shoreline, is connected to or within 500 feet of an inland lake, pond, or river, or is at least 5 acres in size.

In Grand Haven, wetlands constitute about 20% of the natural features identified by the City, or about 270 acres. Wetlands are generally found in the northern portion of the City (north of Madison), and

6 Michigan Conservation Districts, 2010. Michigan's Critical Dunes. http://macd.org/critical-dunes.html
7 Ibid.
8 Part 353 of NREPA, PA 451 of 1994
9 Environmental Protection Agency (2001). Functions and Values of Wetlands: Wetland Fact Sheet. Web. Accessed July 2015.
10 Ardizone, Katherine A. and Mark A. Wyckoff, FAICP. FILLING THE GAPS: Environmental Protection Options for Local Governments, 2nd Ed. December 2010.
11 Ibid.
12 Ibid.
13 Ibid.

sporadically in the southern and eastern portions of the City near the Grand River. It is important to note that available data on existing wetlands is collected at a large-scale and may not be accurate. Map 2.3 in Appendix C illustrates the location of wetlands in the City of Grand Haven. This map is intended to illustrate the general location of wetlands and the exact location of any wetland should be determined through a field site inspection by a qualified scientist.

For more information and detailed analysis on wetlands regulation and wetland analysis specific to Grand Haven, see Chapter 9 and Appendix B.

SIGNIFICANT VEGETATION

Natural vegetation, along with other natural features, contributes to the high quality of life and beauty of Grand Haven. The areas containing significant vegetation in Grand Haven include: Critical Dune Areas, Harbor Island, Mulligan's Hollow, Duncan's Woods, Lake Forest Cemetery, private preserves, the southeastern bayous and much of the domesticated tree canopy over the City, planted through the City's successful tree planting and replacement program.

In 2010, at the request of City Council, the City of Grand Haven set a goal to plant 1,000 trees before 2015. This goal was achieved in the fall of 2015 by planting trees in the rights-of-way on City streets and at the request of residents. The trees have diversified the existing tree canopy.

Whenever possible, existing mature vegetation should be preserved as development occurs, and additional plantings may be added in selected areas where aesthetics do not meet the standards established elsewhere in the community. For maps and a discussion of Grand Haven's tree canopy, see Chapter 9 and Appendix B.

SOIL TYPES

Grand Haven contains several different classifications of soils and varying slopes. The majority of the soils with steep slopes are found generally in the western portion of the City where the sand dunes are located. Overall, the City contains soils in eight different classifications, which are described below and illustrated on Map 2.4 in Appendix C, according to the Soil Survey of Ottawa County.

- The **Adrian-Houghton classification** consists of very poorly drained soils that occur together as a complex. Available water capacity for both soils is very high and the surface runoff on both soils is very slow or ponded. These soils have a seasonal high water table at or near the surface from November to May.
- The **AuGres-Saugatuck classification** are somewhat poorly drained soils that occur together as a complex. The available water capacity is low and the surface runoff is slow. These soils have a seasonal high water table from .5 to 1.5 feet below the surface from December to June.
- **Blown-out** land consists of sandy soils that were cleared of their original forest cover and left exposed to the erosive action of water and wind. Some areas have been stabilized, while others are

actively eroding.

- The **Chelsea classification** is a somewhat excessively drained soil. Permeability is very rapid. Available water capacity is low. Runoff is slow to medium depending on slope.
- The **Croswell and AuGres classification** are sandy soils that occur together as a complex. Croswell soils are moderately well drained and AuGres soils are somewhat poorly drained. Permeability is rapid, surface runoff is slow and available water capacity is low. These soils have an apparent seasonal high water table between .5 and 5.0 feet from November to May.
- The **Deer Park classification** is described as an excessively drained sandy soil. Permeability is rapid and the available water capacity is low. Surface runoff is slow to rapid, depending upon slope, and the natural fertility is very low.
- The **Granby classification** is described as a poorly drained sandy soil. Permeability is rapid and the available water capacity is low. Surface runoff is very slow or ponded. The seasonal high water table is near or above the surface from late fall to early spring.
- The **Rubicon classification** is described as an excessively drained sandy soil. Permeability is rapid and the available water capacity is very low. Surface runoff is slow and the natural fertility is low.

MANAGEMENT EFFORTS

After summarizing the environmental assets in the City of Grand Haven, this chapter will now outline some of the management efforts in place to protect and safeguard these resources. The following is not an exhaustive list of environmental management strategies in place. Rather, selected policies and plans are outlined that have significance to the goals, objective, and implementation strategies in Chapter 15.

FLOODPLAIN MANAGEMENT

A river, stream, lake, or drain may occasionally overflow its bank and inundate adjacent lands, and the land that is inundated by water is defined as a floodplain. Floodplains also serve as water recharge areas and natural water retention basins during periods of heavy precipitation or spring snow thaws. Development within the 100-year floodplain requires an exhaustive permit process.

The National Flood Insurance Program (NFIP) is an optional program managed by the Federal Emergency Management Agency where communities can receive flood insurance for disaster relief by agreeing to regulate floodplain development. Most coastal communities participate in the NFIP, including the City of Grand Haven.

Flood Insurance Rate Maps (FIRMs) are created and released by the Federal Emergency Management Agency (FEMA), using event-based modeling and lake level elevations determined by a single storm event, for various return periods.[14] It is important to note that individual property owners can petition to change the flood zone designation for their property, so FIRMs may not be fully scientifically derived.

14 The Great Lakes Coastal Flood Study Website, 2015. http://www.greatlakescoast.org

The FIRMs for Ottawa County, were adopted in 2011 by the City of Grand Haven and Grand Haven Charter Township (Map 2.5 in Appendix C).

For an analysis of properties, fiscal, and environmental features that fall in floodplains based on the FIRMs, see Chapter 9 and Appendix B.

GREAT LAKES COASTAL FLOOD STUDY

In 2010, FEMA and the United States Army Corps of Engineers (USACE) began the Great Lakes Coastal Flood Study. The project seeks to update existing FIRMs to account for revised lake levels, wave setup, and wave energy. The process to create the drafted maps differs significantly from the process to create existing FIRMs. The existing FIRMs are based on event-based modeling, where the projected flooding impacts are based on the influences of a selected historical storm.[15] The updated approach is statistical-based, where the influences of wave energy and wave setup are modeled using refined 100-year lake level elevations provided by the USACE.

The Great Lakes Coastal Flood Study is scheduled to release maps for public comment and adoption in 2016. Preliminary drafted maps are available for Ottawa County and are used in the analysis further described in the UM project in Appendix B.[16]

THE LOWER GRAND RIVER WATERSHED MANAGEMENT PLAN

In 2011, the 2004 Grand River Watershed Management Plan was updated for the Grand Valley Metropolitan Council. The Plan is a broad document that builds upon and elevates existing water quality improvement efforts in the watershed. The members of the Grand River Forum, held in support of the plan, recognized it should take a holistic, ecosystem approach, and provide a vision and broad strategic plan for the entire Watershed under which to operate.

The plan developed goals for the watershed that are based on improving or restoring the designated uses of the Watershed and attaining compliance with established total maximum daily loads.

The Grand River Watershed Management Plan's goals are:

Restore and maintain water bodies for...

- Recreational use
- Indigenous aquatic life and wildlife use
- Cold water and warm water fisheries

Protect and preserve water bodies for...

- Agricultural, navigational, industrial, and public use
- Conserving existing high quality areas

Promote and support desired uses identified during the planning process

15 Ibid.
16 FEMA Flood Insurance Rate Maps. Accessed in 2015 from FEMA.Gov

Educate stakeholders about protection efforts for the Watershed

THE CLEAN WATER LEGACY PLAN

The Clean Water Legacy Plan of the Greater Tri-Cities Area in Northwest Ottawa County is an action and education program with emphasis on restoring and preserving the waterways of the Lower Grand River Watershed in West Michigan. The plan was developed in 2008 for the City of Grand Haven with funding from the Michigan Coastal Management Program and the National Oceanic and Atmospheric Administration.

The program's two-pronged approach of restoration and education addresses the existing problems by cleaning up pollution, reducing sedimentation, and reestablishing eroded riverbanks, and prevents future recurrences with public education, involvement, and directing public policy. This is accomplished with a series of individual location specific target actions, where surrounding property owners, businesses, and policymaking officials are encouraged to become involved with clean up or restoration efforts. Along with correcting physical water quality problems, these groups are educated on the impacts of farming, construction, or personal actions on the creek, river, or watershed.

The program also evaluates the impacts of previous restoration projects, including the separation of stormwater and sanitary sewer systems as evidence that public policy can have a significant impact on the water quality in the Lower Grand River Watershed.

SENSITIVE AREAS OVERLAY DISTRICT PLAN

Grand Haven's natural features add to the character and charm of the City while providing important habitat for wildlife, scenic views, and in some instances, recreational opportunities. The City collected and mapped an inventory of natural features. This inventory was used to create the Sensitive Overlay District in Map 2.6 in Appendix C. The Sensitive Overlay District allows the City to protect important natural features through development standards and other controls.

PLANNING IMPLICATIONS

In general, planning decisions in the City must always balance the legitimate desire of property owners to make economic use of their lands with broader stewardship objectives to protect and enhance natural features. Achieving this balance need not stifle development, but it should assure that development decisions are made in the context of the long-term viability of key features, even if short-term economic interests are impacted.

Many initiatives and programs could be employed to enhance and protect Grand Haven's natural resources. A more detailed discussion of those resources is available in Chapter 9 and Appendix B.

CHAPTER 3. DEMOGRAPHIC CONDITIONS

The following chapter uses data from various sources to describe Grand Haven's population. In many cases, recent Census data was compared to the Census data from 1990 and 2000 to identify demographic trends. Beyond the Census, this analysis also uses other data sources, like population projections from the West Michigan Regional Planning Commission.

SUMMARY OF DEMOGRAPHIC TRENDS

GRAND HAVEN'S POPULATION CONTINUES TO DECREASE. In 2010, there were 10,142 people living in the City, marking the second straight decade of population loss and the first time the population fell below 11,000 people since the 1950s.

RESIDENTS ARE MOVING OUT OF THE CITY'S DOWNTOWN NEIGHBORHOODS. Although each area of the City has experienced population loss, neighborhoods in census tracts closest to downtown lost about 9% of their residents between 2000 and 2010.

GRAND HAVEN'S YOUNG ADULT POPULATION IS SIZABLE, BUT DECREASING. In 2010, 18% of City residents were between 20 and 34 years old. This is slightly below Ottawa County (20%) and on par with the State of Michigan (18%).

GRAND HAVEN IS PREDOMINATELY WHITE, BUT NONWHITE POPULATIONS ARE INCREASING. Although only about 6% of the City's population was nonwhite in 2010, every race and ethnicity other than white gained population from 2000 to 2010.

HOUSEHOLD MAKEUP IN GRAND HAVEN IS CHANGING. From 2000 to 2010, the proportion of single parent households and people living alone has increased.

EDUCATIONAL ATTAINMENT RATES IN GRAND HAVEN ARE HIGH. In 2010, the proportion of residents with a Bachelor's Degree or higher was 31.2%, compared to 30.9% for Ottawa County and 25.9% for the State of Michigan.

THE POVERTY RATE IS INCREASING IN GRAND HAVEN. The poverty rate for City residents increased by 3.5% percent between 2000 and 2010, growing to 12%.

A GREATER NUMBER OF CHILDREN IN GRAND HAVEN ARE LIVING IN POVERTY. The proportion of children under 18 living below the poverty level increased from 3.8% in 2000 to 19% in 2010, some 377 children.

POPULATION CHANGE

The overall population in Grand Haven in 2010 was 10,412. This is nearly a 7% decrease in total population since 2000 and is in line with population trends in the City since 1990. In fact, Table 3.1 shows that between 2000 and 2010 all of the cities and villages in the Tri-Cities area lost population. However, during the same time period, the population in the two neighboring townships increased. According to Figure 3.1, three of the four census tracts in the City lost population between 2000 and 2010.

Population Distribution

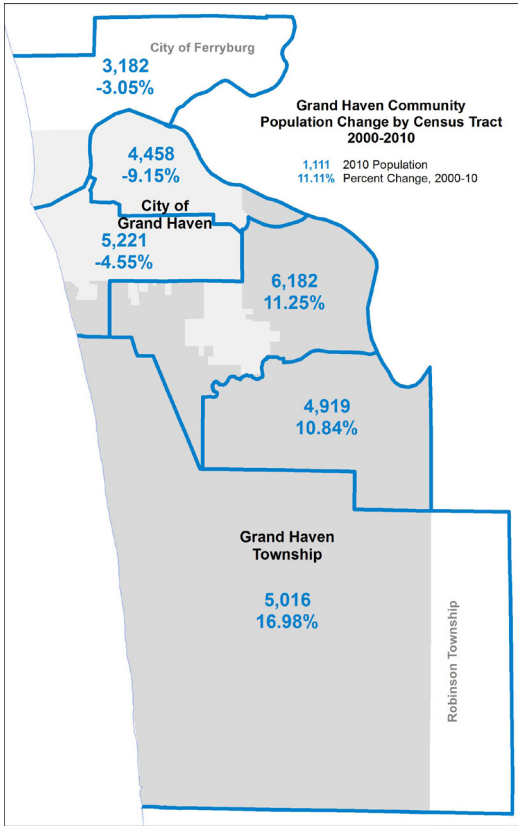
As highlighted by Figure 3.1, between 2000 and 2010 the City lost population, especially in many of the neighborhoods adjacent to downtown. During the same time period, the City gained population in neighborhoods on the southeast side of the City.

TABLE 3.1 POPULATION CHANGE, 1970 TO 2010

	Population					Change (2000 to 2010)	
	1970	1980	1990	2000	2010	#	%
City of Grand Haven	11,844	11,763	11,951	11,168	10,412	-756	-6.8
Grand Haven Township	5,489	7,238	9,710	13,278	15,178	1,900	14.3
Village of Spring Lake	3,034	2,731	2,537	2,514	2,323	-191	-7.6
Spring Lake Township	8,013	9,588	10,751	13,140	14,300	1,160	8.8
City of Ferrysburg	2,196	2,440	2,919	3,040	2,892	-148	-4.9
Ottawa County	128,181	157,174	187,768	238,314	263,801	25,487	10.7

Source: US Census Bureau 1970 to 2010.

FIGURE 3.1



Grand Haven, like many communities along the Lake Michigan coastline, has a substantial seasonal population in addition to the year-round population. This seasonal population is not counted in the total population figures. In 2010, 8.6% of the housing units in the City were designated as seasonal properties that are used for part of the year.

POPULATION PROJECTIONS

Although there is no way to predict changes in total population with certainty, projection methods (based on recent population trends) can be used to obtain useful estimates. The West Michigan Regional Planning Commission (WMRPC) publishes population projections for each community in Ottawa County, including the City of Grand Haven. According to WMRPC, it is likely that the overall population in the City will continue to decrease over the next several decades. Table 3.2 shows that the City could expected to lose about 10% of its population between 2010 and 2030. This projected loss of population could have important implications for school funding, neighborhood stability, housing, service delivery and the City's operating budget.

TABLE 3.2 PROJECTED POPULATION, 2015 TO 2030

	Actual Population	Projected Population				% Change
	2010	2015	2020	2025	2030	2010 to 2030
City of Grand Haven	10,412	10,136	9,859	9,583	9,306	-10.6
Grand Haven Township	15,178	16,953	18,728	20,502	22,277	46.8
Ottawa County	263,801	290,236	316,671	343,106	369,541	40.1

Source: US Census 2010, West Michigan Regional Planning Commission

AGE PROFILE

The age distribution of the City's population is an important factor in identifying social, economic, and public service needs. Eight age ranges, or life stages, are described below. Table 3.3, on the next page, summarizes the distribution of these stages from 2000 to 2010.

LIFE STAGES IN GRAND HAVEN

PRESCHOOL

This age range includes children under 5 years old.

ELEMENTARY

This age range includes children from 5 to 14 years old.

SECONDARY

This age range includes teenagers from 15 to 19 years old.

COLLEGE

This age range includes youth from 20 to 24 years old. It is worth noting that college students typically do not change residency to be counted in the U.S. Census.

YOUNG FAMILY

This age range includes residents from 25 to 34 years old.

ESTABLISHED FAMILY

This age range includes residents from 35 to 54 years old.

MATURE FAMILY

This age range includes residents from 55 to 64 years old.

RETIRED

This age range includes residents over 64 years old.

Overall, the *Established Family* Group is the largest of the City's population, both in terms of number of people (2,622) and share of the total population (25.2%). The Established Family Group was also the largest group in 2000. However, the number of people and share of the total population of the

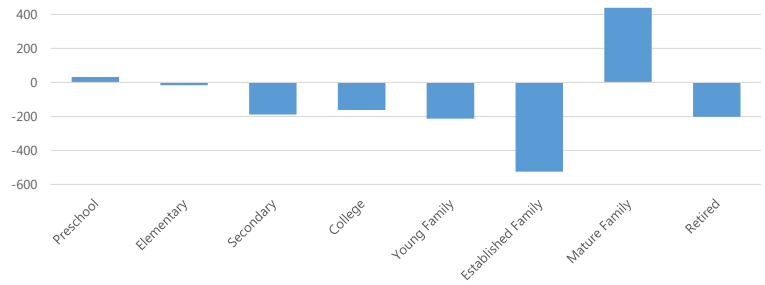
Established Family life stage declined over the 10 year period. Notably, the *Mature Family* Group grew from 9% of the City's population in 2000 to 14.8% in 2010. Figure 3.2 suggests that the amount of young or middle-aged families with children has somewhat leveled off or declined whereas the City's older population has increased.

TABLE 3.3 LIFE STAGES, 2000 TO 2010

Life Stage	2000		2010	
	#	% of total	#	% of total
Preschool	591	5.3	623	6
Elementary	1,205	10.8	1,189	11.4
Secondary	731	6.5	542	5.2
College	753	6.7	591	5.7
Young Family	1,525	14.7	1,312	12.6
Established Family	3,166	28.3	2,622	25.2
Mature Family	1,007	9.0	1,545	14.8
Retired	2,190	19.6	1,988	19.1

Source: US Census 2000, 2010.

FIGURE 3.2 CHANGE IN LIFE STAGE POPULATION, 2000 TO 2010



RACE AND ETHNICITY

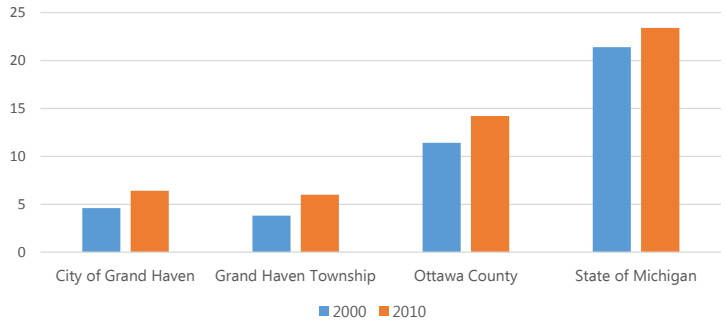
The population of Grand Haven was predominately white (95%) in 2010. Less than 3% of the population identified as Hispanic or Latino in the 2010 census (see Table 3.4). Although the overall population within the City is shrinking, the non-white populations are growing. Still, minorities make up only about 6% of the City's total population. Figure 3.3 shows that Grand Haven has a significantly lower proportion of non-white residents than Ottawa County and Michigan, but tends to be slightly more racially diverse than Grand Haven Charter Township.

TABLE 3.4 RACIAL COMPOSITION, 2000 TO 2010

Race/Ethnicity	2000		2010	
	#	% of total	#	% of total
White	10,654	95.4	9,745	93.6
Hispanic or Latino	9	1.6	249	2.4
Asian	96	0.9	104	1
American Indian	56	0.5	76	0.7
Black	49	0.4	65	0.6
Other, More than One Race	136	1.2	173	1.7

Source: US Census 2000, 2010.

FIGURE 3.3 PERCENT OF NON-WHITE RESIDENTS, 2000 TO 2010



HOUSEHOLD STRUCTURE

The number and types of households help characterize the social and economic forces at work in the City. Table 3.5 shows that between 2000 and 2010, the number and proportion of single parent households and persons living alone increased overall. The proportion of single-mother households stayed the same, and though data on single-father households was not available in 2000, in 2010, these households comprised about 2.2% of all households in the City. In addition, the number and proportion of people living alone showed a small increase between 2000 and 2010. In general, the household changes in the City are somewhat consistent with reported national increases in non-traditional and single-person households.

TABLE 3.5 TYPES OF HOUSEHOLDS BY % OF TOTAL HOUSEHOLDS

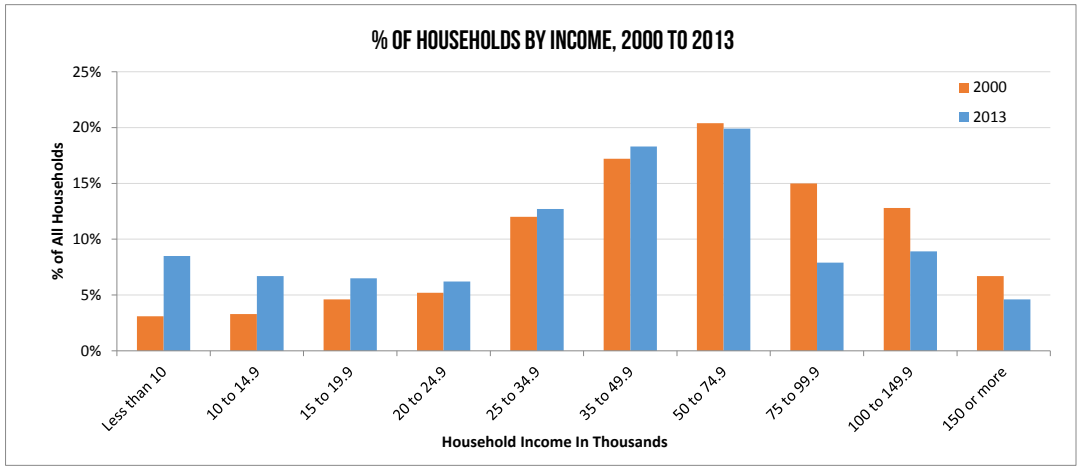
	2000		2010	
	#	% of total households	#	% of total households
Unmarried male, with children	N/A	N/A	106	2.2
Unmarried female, with children	294	5.9	282	5.9
Married couple, no children	1,459	29.3	1,317	27.6
Persons Living Alone Under 65	1,027	59.3	1,062	59.9
Persons Living Alone Over 65	705	40.7	711	40.1
Total Number of Households	4,979	100	4,769	100

Source: US Census Bureau, 2000, 2010.

HOUSEHOLD INCOME

Household income is a key measure of the economic condition of a community. Income helps determine how much a household can spend on housing, retail, and local investments. These expenditures and investments directly and indirectly determine the amount of money available for public facilities and services, primarily through property tax revenue collected by City agencies. Between 2000 and 2010, the median household income in the City of Grand Haven increased 1.5% to $40,967. Based on American Community Survey data from the US Census Bureau between 2000 and 2013 (see Figure 3.4), the percentage of households living on less than $25,000 a year has increased. On the opposite end of the economic spectrum, the percentage of households living on more than $75,000 a year decreased dramatically. During the same time period, the percentage of households living on $25,000 to $75,000 a year either increased or remained fairly stable. These figures suggest that the number of the City's middle class households has remained relatively stable whereas the number of households struggling to afford basic needs continues to increase. Furthermore, the number of households that once had high incomes has decreased significantly.

FIGURE 3.4 % OF HOUSEHOLDS BY INCOME, 2000 TO 2013



Young Professionals

According to a 2013 report from the Detroit Regional Chamber, only about 63% of recent college graduates from Michigan public universities stay in Michigan after they graduate. Of the graduates who stayed, just over 6% moved to the greater Grand Rapids region (including the greater Grand Haven Community). Of the graduates that stayed, 43% said it was because of Michigan's recreational activities and 37% said it was because of Michigan's physical attributes. The City of Grand Haven, in partnership with Grand Haven Township and other neighboring communities, should continue to invest in projects that support and expand recreational opportunities and projects that protect the community's natural resources. In doing so, the community can better position itself to compete for young professionals.

EDUCATIONAL ATTAINMENT

Numerous studies have shown that educational attainment is related to an individual's earning capacity.[1] In other words, people with more education tend to make higher total incomes over their lifetime. Therefore, a City's average educational achievement can be an indicator of its economic capacity. Table 3.6 shows that, in general, over half the City's adult population has at least some college education. In fact, a greater percentage of the City's population has at least a Bachelor's degree (31.2%) than in Ottawa County (30.9%) or the State of Michigan overall (25.9%).

TABLE 3.6 EDUCATIONAL ATTAINMENT

Educational Attainment	%, out of total population 25 years old and over
Less than High School Diploma	5.5
High School Diploma	27.9
Some College, no Degree	26.5
Associate's Degree	7
Bachelor's Degree	21.6
Graduate or Professional Degree	9.6

Source: American Community Survey (2009 to 2013)

Financial Stability

According to the United Way 2015 Community Assessment for Ottawa County, 45% of the households within the City of Grand Haven have incomes above the federal poverty level but below the basic survival threshold that includes being able to pay for basic necessities.

POVERTY

In general, poverty rates in Ottawa County are increasing. According to the 2012 Ottawa County Community Assessment from the United Way of Ottawa County, poverty rates are growing significantly throughout the county, especially among children. This holds true in Grand Haven, where the total poverty rate increased from 4.5% in 2000 to almost 8.0% 2010.

TABLE 3.7 PERCENTAGE OF POPULATION IN POVERTY, BY AGE, 2000 TO 2013

	2000	2010	2013	2000 to 2010, % Increase	2010 to 2013, % Increase
Under 18	3.8	12.0	19.0	215.8	58.3
18 to 64	3.6	7.4	10.3	105.6	39.2
Over 65	3.6	5.5	10.4	52.8	89.1
Total Population	4.5	8.0	12.0	77.8	50.0

Source: US Census 2000, 2010. American Community Survey, 2013.

1 United States Census Bureau, American Community Survey Reports, Education and Synthetic Work-Life Earning Estimates. 2011. <https://www.census.gov/prod/2011pubs/acs-14.pdf>

Poverty rates are growing the fastest among children and seniors. The proportion of children (ages 18 and below) living below the poverty line grew from 3.8% in 2000 to approximately 19% in 2013 (see Table 3.7). In other words, 82 children lived below the poverty line in 2000, while an estimated 377 children lived below the poverty line in 2013. In addition, the number and percentage of people over the age of 65 who live in poverty doubled between 2000 and 2013 (see Table 3.7)

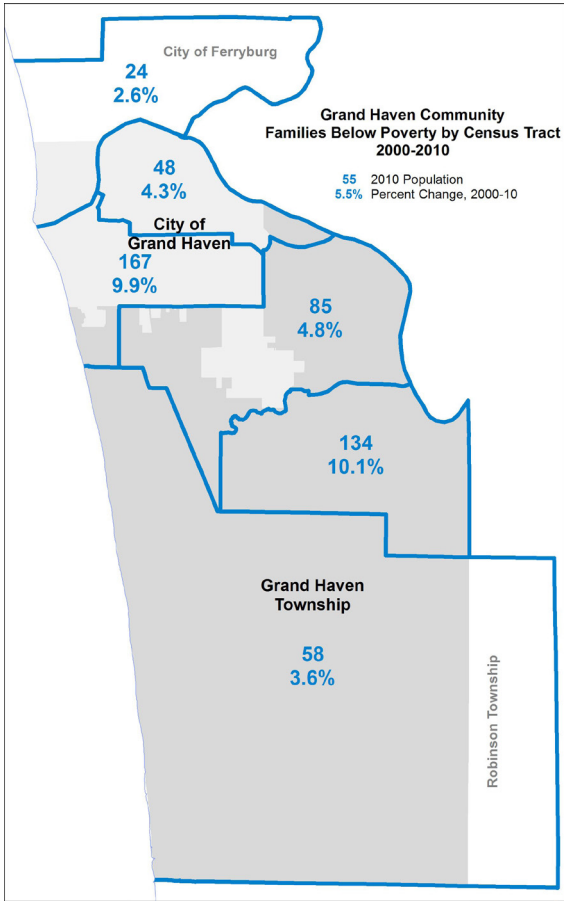
PLANNING IMPLICATIONS

As surrounding townships continue to experience population growth, demand for expanding City services may increase.

A decline in traditional family formations and an aging population means demand for senior housing, affordable multi-family dwellings, and social services like transit may increase.

Increased poverty, especially among children, will require greater social services and coordination to address.

FIGURE 3.5 NUMBER AND PERCENTAGE OF FAMILIES BELOW THE POVERTY LINE



CHAPTER 4. HOUSING AND ECONOMIC CONDITIONS

This chapter provides a summary and analysis of the City's housing characteristics and economic conditions. The housing and economic conditions profile also helps to inform and shape land use and development decisions. Additionally, these conditions help to inform opportunities for both public and private investment.

EMPLOYMENT

The City of Grand Haven is the county seat of Ottawa County and home to the County Courthouse. Part of what's often referred to as the "Grand Rapids Metro Area", Grand Haven along with the cities of Grand Rapids, Holland and Muskegon is the second largest economic engine within Michigan and one of the 100 largest metro areas in the United States.[1]

Efficient transportation connections between Grand Haven, Grand Rapids, Holland and their surrounding communities have created a strong economic tie between Ottawa and Kent counties, as well as the Muskegon area to the north.

The diverse economy of Grand Haven has helped it through recessionary periods, while communities in other areas have suffered more significant economic downturns. Nevertheless, the layoffs of autoworkers in all portions of the state, as well as government policies and the vitality of other western Michigan communities continue to affect Grand Haven's economy.

Grand Haven's downtown is one of the region's most important commercial centers

UNEMPLOYMENT

Table 4.1 below illustrates the annual unemployment rate in Ottawa County from 2008 to 2014, as compared to that of the state for the same period. Data is reported at the county level rather than the Metropolitan Statistical Area because Grand Haven was incorporated into the Grand Rapids- Wyoming Metropolitan Statistical Area at the start of 2015. The June 2015 unemployment rate was 4.0 percent in Ottawa County and 5.8 percent in the state. Generally, the unemployment rate in Ottawa County has been consistently lower than the state's average.

TABLE 4.1 ANNUAL UNEMPLOYMENT RATES, 2008 TO 2014

	2008	2009	2010	2011	2012	2013	2014
Ottawa County	6.8	12.5	10.3	8.1	6.7	6.2	4.7
Statewide	8	13.7	12.6	10.4	9.1	8.9	7.3

Source: Bureau of Labor Statistics

[1] Brookings Institute, Metro Monitor – July 2015 http://www.brookings.edu/research/interactives/metromonitor#/M24340

TOP EMPLOYERS

The diverse employment base of the Grand Haven region is reflected by the list of the largest employers. According to the Grand Haven Chamber of Commerce, the largest employers in the Grand Haven area in 2014 included manufacturers, retail establishments and a hospital system, and are listed in Table 4.2. Employment statistics are based on the number of full time, or full time equivalent jobs.[2]

TABLE 4.2 LARGEST EMPLOYERS IN THE GRAND HAVEN REGION

Employer	Number of Full Time Equivalent Employees
Shape Corporation	1,500
Herman Miller	1,300
Grand Haven Area Public Schools	766
North Ottawa Community Health Systems	478
GHSP	387
Automatic Spring Products	315
Casting Technology Company	270
Meijer	250
West Michigan Molding	250
Engine Power Componenets	188
Brilliance Publishing	153

Source: Grand Haven Chamber of Commerce, 2014

HOUSING AND NEIGHBORHOODS

Most Grand Haven neighborhoods are older, established neighborhoods, and this is supported by the fact that more than one third of the City's housing units (27.7%) were built before 1939. Table 4.3 illustrates the percentage of housing units built during various time periods in the City of Grand Haven. In 2010, there were a total of 5,815 housing units in the City. The majority consisted of single-family dwellings, while nearly a third of the City's housing units are multi-unit buildings (see Table 4.4).

TABLE 4.3 AGE OF HOUSING STOCK

Year Built	Percent of Total Housing Units
1939 or Earlier	33.5
1940 to 1959	19.3
1960 to 1979	26.5
1980 to 1999	13.6
2000 to 2009	7.1

Source: American Community Survey, 2009 to 2013.

TABLE 4.4 HOUSING TYPES, CITY OF GRAND HAVEN, 2000 TO 2010

Housing Type	2000		2010		Percent Change 2000 to 2010
	#	% of total housing units	#	% of total housing units	
1 Unit	3,530	63.5	3,643	64.4	3.2
2 Units	547	9.8	435	7.7	-20.5
3 or More Units	1,088	19.5	1,143	20.1	5.1
Mobile Home	400	7.2	432	7.6	8
Total Housing Units	5,565	100	5,653	100	1.6

Source: US Census Bureau, 2000, 2010.

2 Grand Haven Chamber of Commerce, 2014. Top Employers Sheet.

Like most of the urban areas throughout Michigan, the median housing value in the City has fluctuated greatly over the past five years. In 2000, the median housing value was $113,000. In 2010, Census data indicated that the median housing value in the City was $136,400, an increase of about 20% over the ten year period. 2013 American Community Survey data, produced by the U.S. Census Bureau, estimates the median housing value in the City was $117,700, about a 13% decrease in just three years.

Table 4.5 demonstrates that the City has a fairly high proportion of rental units. According to the 2010 U.S. Census, 1,530 of the City's 4,772 occupied housing units (32%), are renter-occupied. The percentage of owner-occupied and renter occupied housing units stayed about the same over this twenty-year period. By comparison, in Ottawa County and in Michigan overall, renters comprise 21.8% and 27.9%, respectively.

There is also a limited amount of seasonal housing in the City, which is typical of a lakefront community. Seasonal rentals are classified as vacant by the U.S. Census Bureau. In 2010, there were approximately 499 seasonal rentals in the City, which was about half of all vacant housing units.[3] According to the County's Housing Needs assessment, "a high degree of seasonality can be a concern for communities." However, the proportion of seasonal housing units in Grand Haven is similar to the rest of Michigan.

TABLE 4.5 OCCUPANCY AND TENURE, 1990 TO 2010

	1990		2000		2010	
	#	% of total housing units	#	% of total housing units	#	% of total housing units
Owner Occupied	3,623	68.4	3,366	60.8	3,239	67.9
Renter Occupied	1,509	31.6	1,613	29.2	1,530	32.1
Seasonally Vacant	221	4.2	250	4.5	547	9.4
All Other Vacant	245	4.7	303	5.5	499	8.6
Total Housing Units	5,218	100	5,532	100	5,815	100

Source: US Census Bureau, 1990 to 2010.

[3] Note that currently, the City has a total of 636 registered rental properties accounting for 1,562 total units. Of these, the majority (1,409 units) are registered as long-term rentals and 153 are registered as short-term, or seasonal.

EQUALIZED VALUE GROWTH

Property values are a key measure of economic growth and the financial strength of a community. Property values reflect both investment in new development and the degree of growth in the value of those investments. Annually, the assessors of each jurisdiction report total valuation within their respective jurisdictions. These are broken down by property classification and these reports can provide an illuminating impression of the character of a community.

TABLE 4.6 EQUALIZED VALUE CHANGE, 2009 TO 2015, IN MILLIONS OF DOLLARS

	2009	2010	2011	2012	2013	2014	2015
City of Grand Haven	589.5	559	535.4	502.4	513.5	533.3	563.9
Ferrysburg	206.5	186.7	181.9	175.5	172.1	181.7	196
Holland	760.7	671.3	625.9	589.5	604.9	652.9	700.5
Grand Haven Township	835.1	737.7	725.6	730.9	739.7	768.4	794.8
Spring Lake Township	780	747.2	689.6	693.7	691.9	716.3	762.2
Crockery Township	157.7	153.6	147.5	149.5	152.5	158	163.3
Wright Township	141.5	133	131.3	129.2	129.8	131.6	145.3

Source: Ottawa County Equalization Reports, 2009-2015

Grand Haven's equalized values are recovering from the housing recession in 2008. From 2009 to 2015, equalized value in Grand Haven decreased from nearly $590 million to nearly $564 million. In 2012, equalized values reached their lowest point during this time frame, at $502 million. Table 4.6 and Figure 4.1 illustrate the growth in real property in Grand Haven and other nearby communities. It does not distinguish by real property classification nor does it report on personal property (i.e., furniture, fixtures and equipment in commercial or industrial property). Overall, personal property accounts for about $978 million in Ottawa County (about 8.2% of total SEV) and about $61.6 million in Grand Haven (9.8% of total SEV).

TABLE 4.7 EQUALIZED VALUE CHANGE BY REAL PROPERTY CATEGORIES

	2009	2010	2011	2012	2013	2014	2015
Residential	398.2	379.4	535.4	502.4	513.5	533.3	563.9
Industrial	50.2	43.2	181.9	175.5	172.1	181.7	196
Commercial	141	136.4	625.9	589.5	604.9	652.9	700.5

Source: Ottawa County Equalization Reports, 2009-2015

Table 4.7 shows that residential, industrial, and commercial equalized values increased in recent years Overall, Grand Haven's equalized values are recovering similar to the surrounding communities in

Ottawa County as reflected in Figure 4.1. Though equalized value is not at pre-recession levels, Grand Haven is recovering as well as nearby communities.

REGIONAL TRENDS

Commercial development in Grand Haven serves residents, visitors, and motorists from the Greater Grand Rapids Region. While these groups are somewhat distinct, the vitality of the Grand Haven economy is dependent on each.

Since Grand Haven serves as the commercial center for much of the rapidly-developing areas surrounding the City, commercial development in the City is important and serves the residents' everyday needs for goods and services.

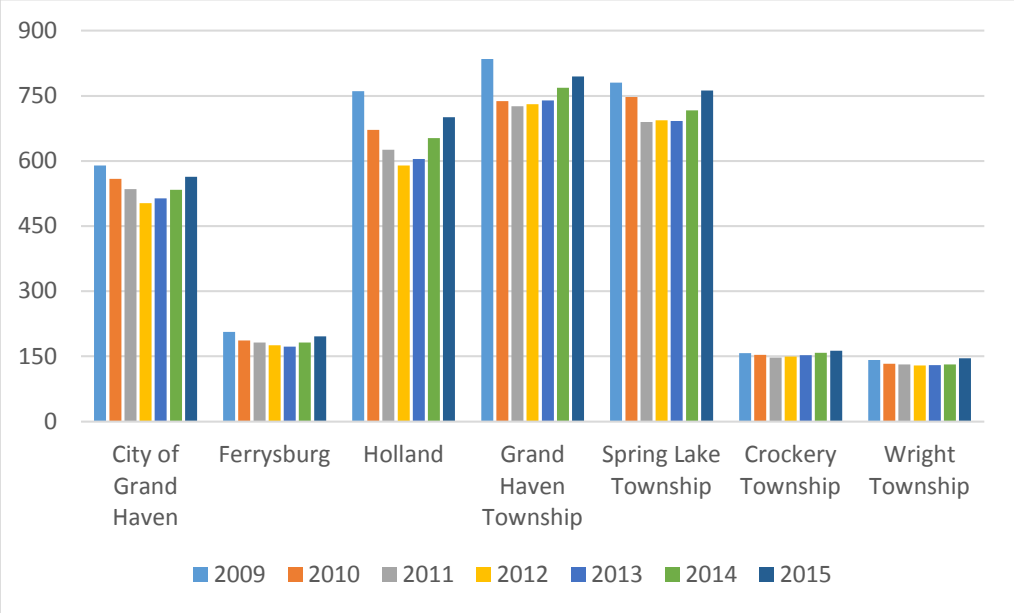
Grand Haven's accessibility and abundant recreational features have also fostered the development of tourism-related commercial uses. Establishments serve visitors who spend a day, or longer, visiting Grand Haven.

In addition to the commercial needs of residents and visitors, there is a third group of consumers who have created a demand for commercial uses - motorists traveling through the City. With the opening of M-231, there are now four crossings over the Grand River in Ottawa County. Increased traffic volumes and increased commercial development in Grand Haven Township, as well as the general increase in population in the region, has influenced the development of a strip of fast food restaurants, gas stations, motels, and other highway-related commercial development.

PLANNING IMPLICATIONS

- Generally, the jobless rate in the Grand Haven-Holland region has been consistently better than the state's average.
- Property values in the City are rebounding from the 2008 recession, suggesting that development and investment in the City will increase in the years ahead.
- Much of the past investment in the City may be a result of numerous planning efforts that have been undertaken by the City, including the Waterfront Strategic Plan, Downtown

FIGURE 4.1 EQUALIZED VALUE, 2009 TO 2015



Grand Haven's abundant recreational opportunities strengthens the City's economy

Blueprints, the Downtown Vision Plan, and the Housing Needs Assessment. These efforts have helped to define a clear vision for the future of the City.

Grand Haven also functions as a center for employment and recreation in the West Michigan region. As a result, many influences outside the City's boundaries can have a significant impact on the City's economy. To meet the needs of this diverse base of residents, businesses and visitors, it will be important that the City continue to provide a healthy and varied housing stock and employment base.

CHAPTER 5. COMMUNITY FACILITIES AND SERVICES

The quality, availability and reliability of community services and municipal facilities play an important role in attracting and retaining residents and businesses. Some community facilities (e.g., parks and libraries) contribute to the quality of life and general character of the community, while other community facilities (e.g., police, fire and light and power) support the health, safety and welfare of area residents and contribute to the expansion of new development and businesses. The location and timing of new infrastructure should be planned in advance to minimize unnecessary costs and promote efficiency of service.

PARKS AND RECREATION

High quality recreational facilities and programming are important quality-of-life indicators in Grand Haven. The City contains parks of various sizes, public school buildings, day care facilities, and a variety of other quasi-public and private recreational and cultural facilities. In addition to recreational facilities, public schools provide local spaces for interaction, learning, and community building, and safety services provide a compulsory service to the community.

In 2015, the City adopted "Explore the Grand Region", a new community-wide Parks and Recreation Plan developed in partnership with Grand Haven Charter Township, the City of Ferrysburg, Spring Lake Township and the Village of Spring Lake. The plan outlines six specific goals for the City of Grand Haven over the next five years.

The splash pad at Bicentennial Park and other nearby waterfront parks support community activities and contribute to the City's quality of life.

CITY OF GRAND HAVEN GOALS

One. To provide multi-generational recreational opportunities within the community as the City is comprised of persons of all ages.

Two. To provide recreational facilities for persons of all mental and physical abilities.

Three. As growth continues within and around the City, our public outdoor areas continue to grow in significance and usage. The City will continue to provide diversified outdoor experiences for the residents.

Four. To continue to provide, as much as possible, maximum use of the parks and facilities by residents.

Five. To seek cooperative efforts with adjoining governmental units in providing the public with parks, recreation facilities, and programming.

Six. To support, as appropriate, non-profit organizations and citizens who choose to provide recreational facilities and programming for the residents.

PARKS RESOURCES

According to the Parks and Recreation Master Plan, the City has four mini parks, two neighborhood parks, eight community wide parks, nine special use parks, two linear parks and seven public school buildings. Map 5.1 in Appendix C contains the location of parks and trail facilities in Grand Haven.

MINI PARKS

Mini Parks are specialized facilities that serve a limited population, or a specific group of citizens such as small children or seniors. Typically, the service area for a mini park is less than a quarter-mile and the size is less than one acre. Grand Haven has four mini parks:

Bolt Park. Bolt Park is located on the corner of Pennoyer Avenue and Beechtree It has an area of slightly less than one acre and is considered passive in use. Currently, it is maintained as lawn space with large trees, flower beds and a stone memorial.

Johnston Park. Located at the corner of Pennoyer and Sheldon, Johnston Park has an area of about 4,500 square feet and is an urban green space.

Klaver Park. Klaver Park is located at the corner of Pennoyer Avenue and Seventh Street. It has an area of less than ¼ acre and is best described as urban green space.

Klempel Park. Located at the corner of Pennoyer and Grant Street, Klempel Park's area is about 7,500 square feet. Klempel Park is considered to be urban green space, with water frontage.

NEIGHBORHOOD PARKS

A neighborhood park is used for intense recreational activities such as field games, court games, crafts, playgrounds, skating and picnicking. Grand Haven has three neighborhood parks:

East Grand River Park. East Grand River Park is about 5 ½ acres in size and located at the end of Franklin and Eastern Avenues, adjacent to the wetlands along the Grand River. Located within the park is Scott Flahive Boat Launch, restrooms, a picnic shelter, parking, a playground, picnic tables, benches and grills. Additionally, there is a barrier-free boardwalk along the wetland area near the Grand River. Many of the park's amenities (including a new dog park) were added in 2010 through a grant from the Michigan Natural Resources Trust Fund.

William Hatton Park. Located on Jackson Street in Old Town, William Hatton Park has historical significance. The park was named William Hatton Park in 1937, although it was not owned by the City until 1989. William Hatton was the president of Eagle Ottawa Leather Company in the early 1900s and was instrumental in the establishment of the City's first hospital in 1919. Currently, Hatton Park has an open structure, walkways, picnic tables and some playground equipment. It has an area of slightly less than 1 acre.

William Hatton Park

COMMUNITY PARKS

Community Parks provide a range of facilities capable of supporting community recreation that would not be feasible in neighborhood parks. Community parks may also provide specialized recreational facilities such as swimming pools, community centers and lighted baseball diamonds. Currently, there are eight community parks in Grand Haven:

The commercial boat dock at Chinook Pier Park

Central Park. Central Park is located on Washington Avenue in the center of downtown, it is about 2 ½ acres in size. It is a passive park that contains walkways, benches and a small fountain focal point.

Chinook Pier Park. Chinook Pier Park is about 1 acre is size and is located along Harbor Avenue on the Grand River. It contains both active and passive uses, including a commercial boat dock, fish cleaning station, playground equipment, farmer's market, miniature golf, and a historic steam train Engine No. 1223.

City Beach Park. City Beach Park is located on Harbor Avenue south of Grand Haven State Park along Lake Michigan. It has an area of about 20 acres and the facilities that are available relate to the park resources, focusing on special event uses such as the regular amateur and professional volleyball events, sand sculpture competitions, sand soccer, kite flying competitions and others.

Duncan Woods Park. Located off Sheldon Road, Duncan Woods is about 38 acres in size. It is a nature preserve that consists of beech and hemlock trees. Facilities at the park include a small picnic area and natural walking trails.

Harbor Island. Located along US-31 and Coho Drive, Harbor Island is a 23-acre park that provides many recreational opportunities including a boat launch and an open area that is suitable for a number of community events and impromptu activities. Harbor Island also contains a paved bicycle/pedestrian path, soccer field, restrooms and transfer dock.

Getting some "air" at the skate-park at Mulligan's Hollow Park

Mulligan's Hollow Park. Mulligan's Hollow is a ski bowl located on 80 acres just west of downtown. Established in 1960, the mission of Mulligan's Hollow is "to provide area youth with affordable winter snow sports in a family oriented environment." Mulligan's Lodge was built in 2005 with assistance from the Grand Haven Rotary, City of Grand Haven, the Grand Haven Area Community Foundation, the Ski Bowl support group, area businesses and volunteers. Mulligan's Hollow also provides leagues for youth skiing, as well as ski and snowboarding lessons.

Other areas of the park contain a lighted softball field, an Imagination Station structure, basketball courts, trails, tennis courts, and a picnic area with grills. The park also includes a 13,000 square foot premier skate-park built for bikes, blades and boards. Constructed of super-slick-cement, this facility features a view of Lake Michigan, full sized bowl, quarter pipe, hubba box, box, rails, c-rails, 2 five stairs, and one 7 stair rail.

Sluka Field. Located at the corner of Waverly and Beechtree, Sluka field is a 5 ½ acre full-size baseball facility used by soccer and baseball leagues each year, in addition to other sporting teams. The baseball field's outfield fence can also be removed, allowing the site to also be used as a full-size soccer field. Sluka Field also contains a barrier-free playground and an ice rink in the winter.

Veterans Memorial Park. Located along Harbor Drive, adjacent to Mulligan's Hollow, Veterans Memorial Park features a memorial with an eternal flame honoring war veterans.

SPECIAL USE PARKS

Tourism in Grand Haven has spurred the development of several special use parks, which are parks that service a single purpose. Examples of special use parks include golf courses, nature centers, marinas and outdoor theaters. Special use parks in Grand Haven are outlined below:

Waterfront Stadium plays host to several unique sporting events, like the "Battle of the Boardwalk" high-school volleyball event

HARBOR PARKS

Bicentennial Park/Riverview. Bicentennial Park is located along Harbor Drive on the Grand River channel and is an urban green space/commercial park and includes a boardwalk extension, benches, small tourist shops and temporary mooring for transient boaters.

Escanaba Park. Escanaba Park is incorporated within the Lighthouse Connector Park on the Grand River Channel. It is approximately one acre in size and is a designated historic site and memorial to men and women that have served in the U. S. Coast Guard. The park features walks, interpretive exhibits, and historic plaques.

Flahive Boat Launch. The Flahive Boat launch is located within East Grand River Park along the Grand River. The launch is very popular as it is one of only two public boat launches in the City where residents and visitors can launch smaller boats (20 feet or less) without paying a fee. Currently, the site includes restrooms, a picnic shelter, a children's play area, picnic tables, benches a raised wetland walkway, and a floating fishing dock.

Grand Haven Municipal Marina. Grand Haven Municipal Marina is located on the Grand River and is approximately 4 ½ acres in area. Currently, this marina contains public restrooms, lighting, benches and 54 boat slips that serve a large private sport fishing fleet.

Harbor Island Boat Launch. Harbor Island Boat Launch is also located on the Grand River. It is just over 3 acres in size. Currently the site contains ten launch ramps, a transfer dock and regular and overflow parking for trailers.

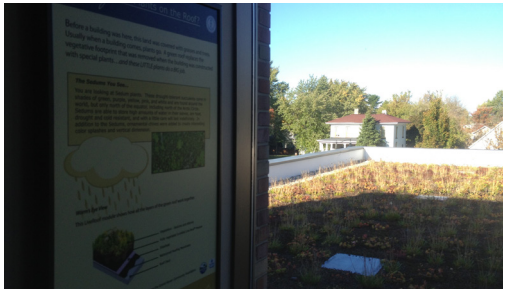
Musical Fountain. The Musical Fountain is nearly 4 acres in area and located on Dewey Hill, within the City-owned North Shore Dunes. The Fountain itself is large and nationally renowned with specialized lighting systems. The musical fountain plays daily during the summer months at dusk and attracts spectators from throughout the neighboring counties.

North Shore Fisherman's Parking Lot. This lot is just over 1 acre in size, and contains a parking lot and restrooms on the Grand River channel adjacent to the Grand River north pier head.

Rix Robinson Park. Rix Robinson Park is located on 5.5 acres along Harbor Island and Grand Isle Drive. The park has a foot bridge and open lawn area. The Tri-Cities connector pathway traverses the park on the south side of the bascule bridge, linking pedestrian and bicycle traffic between Grand Haven, Spring Lake and Ferrysburg.

Waterfront Stadium. Waterfront Stadium is located on Harbor Drive near downtown. The site is about 1/2 acre in size and contains bleachers for the Musical Fountain and a boardwalk. The stadium is often used for civic activities, unique sporting events and other public programs.

Flahive Boat Launch



LINEAR PARKS

A linear park is an area developed for one or more varying modes of recreation travel, such as hiking, biking, snowmobiling, horseback riding, cross-country skiing, or canoeing. Linear Parks may also include active play areas, shopping, concessions, interpretive exhibits or picnicking and others. Parks fitting this category are listed below.

Harbor Island Linear Park. Harbor Island Linear Park is about 5½ acres in size and contains a 252 foot paved bike path along the Grand River South Channel. A picnic shelter, benches and boardwalk sections are also located within the park as well as extensive landscaping. A bituminous parking area is adjacent to the park at the trail head.

Lighthouse Connector Park. Lighthouse Connector Park on Harbor Avenue is a boardwalk connecting Bicentennial Park with the Lake Michigan south pier and runs along the Grand River channel. It is about 170 feet long and has benches, specialty shops, restaurants and parking along the boardwalk.

Lighthouse Connector Park

UNDEVELOPED PARK LAND

The City of Grand Haven is home to additional properties in various stages of development. Some are in public ownership and others are owned as part of the City's parks system. These include:

- Friant Street and Pennoyer Avenue
- Grant Street Overlook
- Highland park (private preserve)
- Hofma Preserve/Green Space (adjoining the Hofma Preserve in Grand Haven Township.)
- North Shore Dunes
- Pottawattomie Bayou Wetland and Waterfront

OTHER PARKS

The following parks are located within the City of Grand Haven but are not owned by the City.

Grand Haven State Park. Located along Harbor Drive, Grand Haven State Park is 52 acres with open, sandy Lake Michigan beach and improved camp sites that are open for spring, summer and fall camping. The park is owned and operated by the State of Michigan and draws visitors from the entire region.

Franklin Street Open Play Area. Located next to the City wastewater treatment facility, this open area is owned by the Grand Haven Sewer Authority and maintained by the City. The park is available for public use and contains a softball field, basketball court, play equipment, and open space which is suitable for soccer and other field sports.

Kieft Island and Suits Island. Totaling 15 acres, Kieft Island and Suits Island contain protected nesting sites for several bird species in the Grand River floodplain. The property is owned by the Michigan Audubon Society and administered by the local Audubon Society committee.

Kitchel/Lindquist Dune Preserve. Located along North Shore Road, the Kitchel/Lindquist Dune Preserve consists of 112 acres of open dunes, Interdunal Wetlands and Great Lakes Barrens. It also contains state and federally threatened plants, and is protected as a natural area. This park is owned by the City of Ferrysburg and managed by the Kitchel/Lindquist Dunes Preserve Committee.

Grand Haven Waterfront Trail

TRAILS

The following trails are located within the City of Grand Haven.

Grand Haven Waterfront Trail. The Grand Haven Waterfront Trail provides a 2.5 mile scenic route from the shores of Lake Michigan to Harbor Island and Coho Drive, along the Grand River and area shops.

Lakeshore Connector Path. The Lakeshore Connector Path is a beautiful 20 mile trail near the shoreline connecting the City of Grand Haven with the City of Holland

Linear Trail Park. The Linear Trail park runs 16.9 miles through many of the City's neighborhoods, from the east and connects at two points of the Lakeshore Connector Path on the west.

RECREATIONAL PROGRAMMING

Responding to calls for increased cooperation in providing for new and expanded recreation opportunities, four local municipalities and the Grand Haven Area Public Schools came together to create the Northwest Ottawa Recreation Authority (NORA) in 2009 under the Public Act 321 of 2000 with

the State of Michigan.

The intergovernmental body is responsible for providing recreational programming throughout the Greater Grand Haven Community. NORA annually operates over 100 youth and adult recreational programs. In addition, the Recreation Authority is charged with exploring opportunities for the construction, operation, maintenance and management of new or under-used recreational facilities.

NORA is guided by a 9-member board of trustees consisting of appointed and elected officials from the City of Grand Haven, Grand Haven Charter Township, Robinson Township, the City of Ferrysburg and the Grand Haven Area Public Schools. NORA is a professional agreement with the Grand Haven Area Public Schools for the administration of the Authority.

COMMUNITY FACILITIES

The Community Center. In 2007 the Community Center underwent a major transformation from a small meeting site to a large multi-purpose facility. The Community Center is located in downtown Grand Haven and hosts many events including business seminars, training sessions, corporate retreats, receptions and family events. Muskegon Community College also offers several classes in the Community Center.

The Loutit District Library. Located at 407 Columbus Avenue, the Loutit District Library is managed by an eight member Board of Trustees of appointed officials from the City of Grand Haven, Grand Haven Charter Township, Robinson Township, the City of Ferrysburg, and the Grand Haven Area Public School District. Library operation and long-term expansion is funded by a millage approved by district voters in 2000 and a bond issue approved in 2007.

The library's mission is to "provide exceptional library services and resources to the public that increase knowledge, inspire imagination, and strengthen the community." The library is a member of the Lakeland Library Cooperative, a consortium serving 1.3 million residents of West Michigan through resource sharing, services, and expertise for the benefit of individuals and communities.

Completely restored and expanded to 50,000 square feet in 2009 through a $10 million bond issue, the library is open seven days per week during the school year. It plays a key role in the community as a place where computers can be used for free by those without home or work access to the Internet, as a space for people to gather, as a focal point for community education, and as a place where residents can research local history and their genealogy. The library advocates for children and under-served populations and fosters community resilience, self-reliance, and a culture of sharing.

The Tri-Cities Historical Museum. Located in downtown Grand Haven, the history museum attracts people from all around the region. Exhibits covering Native Americans, early pioneers, lumberjacks, and French voyageurs illustrate the life and times of the people, places, and events that have shaped the region's history. The third floor of the museum features an authentically

Coast Guard History Exhibit at the track depot, part of the Tri-Cities Historical Museum

Community Asset

A number of organizations add to the City's comprehensive community programming. Two organizations of note are the Four Pointes Center for Successful Aging and the North Ottawa Community Health System. Four Pointes Center for Successful Aging offers wellness programming for over 1,200 individuals in the region aged 50 years and older. Programming includes day trips, care management, medical counseling, cultural events, and exercise activities. In addition to comprehensive medical services, North Ottawa Community Health System offers community programming including support groups, health screenings, and community and volunteer events.

restored soda fountain. The museum also includes temporary exhibits and maintains a second off-site location on the track depot located at First and Jackson with transportation exhibits.

EDUCATIONAL FACILITIES

Ferry Elementary Playground

Grand Haven Area Public Schools. The City of Grand Haven is served entirely by the Grand Haven Area Public Schools (GHAPS). This school district reaches beyond the City's municipal boundaries, serving all or parts of Ferrysburg, Spring Lake Township, Grand Haven Charter Township, Port Sheldon Township, and Robinson Township.

Enrollment in GHAPS is growing steadily in recent years. However, based on the demographic analysis in Chapter 3, it is reasonable to conclude that the growth in enrollment is not taking place in the City of Grand Haven, but rather in nearby townships. Enrollment statistics for GHAPS for the last four years are shown in Table 5.1.

The following Grand Haven Public Schools facilities are located within the City of Grand Haven:

- Central School, 106 S 6th Street

TABLE 5.1 SCHOOL ENROLLMENT

2011	2012	2013	2014
5,930	5,963	6,046	6,141

Source: Grand Haven Area Public Schools

- Ferry Elementary, 1050 Pennoyer Avenue
- Lakeshore Middle School, 900 Cutler Street
- Mary A. White Elementary, 1400 Wisconsin Avenue
- White Pines Middle School, 1100 S Griffin Street
- Griffin Elementary, 1700 S Griffin Street

Higher Learning Institutions. While Muskegon Community College offers classes in Grand Haven, there is no other institution of higher learning (a facility educating beyond a high school level) in the City. However, several colleges and universities are located within a short driving distance. These include Muskegon Community College (in Muskegon), Grand Valley State University in Allendale and Hope College in Holland. Additionally, Grand Rapids is home to several colleges and universities including Calvin College, Aquinas College, Grand Rapids Community College, and Cornerstone University. These academic facilities provide higher education opportunities and provide employment to some City residents.

COMMUNITY SERVICES

Police, fire and hospital services are necessary for any community, as they protect the general welfare, help alleviate crime, and provide treatment when needed. Law Enforcement, Fire Protection and Medical First Responder services in the City of Grand Haven are all contained within the Grand Haven Department of Public Safety. Routine daily activities include enforcement of search and rescue, hazardous materials response and many others. As a first responding agency for both police and fire operations, they are the primary agency to all critical incidents .

In addition to the local public safety departments, the Michigan State Police Post #64 is located in Grand Haven. The Michigan State Police develops and coordinates state-level programs, technologies, and specialized services that enhance enforcement and emergency response capabilities.

UTILITIES

WATER FILTRATION PLANT

A safe, secure, plentiful and reliable source of water is vital to a community's growth and development. Water for drinking, sanitation, fire suppression and industrial uses are the hallmarks of modern society. Grand Haven operates the Northwest Ottawa Water Treatment Plant. In addition to Grand Haven residents, the plant serves residents in Grand Haven Township, Spring Lake Township, the City of Ferrysburg and Village of Spring Lake. Map 5.2 in Appendix C illustrates the locations of water-main installations in Grand Haven.

The Northwest Ottawa Water Treatment Plant produces about 3.8 million gallons of water per day

The source of water for the Northwest Ottawa Water Treatment Plant is Lake Michigan. Water is collected by submerged intakes and is pre-filtered as it enters the treatment facility. The submerged intakes are located several feet under the lake bottom. The natural sand above the intakes provides a pre-filter barrier, which complements the direct filtration process.

The plant, a direct filtration facility, was constructed in 1986 and has two intakes. Each intake can consistently process about 14 million gallons per day. Total system production is responsive to demand, and in 2014, the Plant processed over 2.1 billion gallons of water, or about 5.8 million gallons per day.

To ensure that tap water is safe to drink, the U.S. Environmental Protection Agency establishes regulations that reduce certain contaminants in public water systems. The water supplied by the Northwest Ottawa Water Treatment Plant has and continues to meet all federal and state requirements.

WASTEWATER TREATMENT PLANT

The Grand Haven-Spring Lake Sewer Authority processes wastewater for Grand Haven. The Authority was established in 1970 by agreement between the City of Grand Haven and the Village of Spring Lake to provide regional wastewater treatment. The City of Ferrysburg and Spring Lake Township joined the Authority in 1982, and Grand Haven Township joined in 1986. In 1972, the current wastewater treatment plant was built and over the years has been upgraded and modified to its current capacity. The Authority serves a population of more than 20,000 and in 2011 it operated at an average capacity of 50%.

Map 5.3 in Appendix C illustrates the location of sewer mains within the City of Grand Haven. The Grand Haven-Spring Lake Wastewater Treatment Plant is a Class A activated sludge facility with a design flow of 6.67 million gallons per day. The plant has an average load of 4.37 million gallons per day and has sufficient organic and hydraulic capacity for large-scale industrial users. The Treatment Plant currently disposes of biosolids via the land application process.

The land application process is an approved approach that consists of applying biosolids to rural farmland soils either by injecting into the soil or spraying on the land surface with subsequent tilling. The process used will depend on the type of biosolid and the type of soils present. The primary benefit of land application is that it recycles wastewater and returns valuable nutrients to the soil, which enhances conditions for vegetative growth.

There are potential disadvantages to land application as well, including cost, public opposition (usually due to odor) and potential environmental degradation if the process is not properly managed. The Grand Haven-Spring Lake Sewer Authority is currently updating disinfectant and odor control processes at the plant. These updates will enable the plant to treat wastewater with solar lighting rather than chemicals and are funded through bonds and local money. Currently, the Plant's biosolids are disposed using this process several times a year at sites that have been approved by the Michigan Department of Environmental Quality. The Authority plans to continue using the land application process for the foreseeable future.

GRAND HAVEN BOARD OF LIGHT & POWER

The Sims Generating Station Unit III consumes 550 tons of coal each day

The Grand Haven Board of Light & Power (BLP) was created in 1896 by the residents of Grand Haven. The BLP generates, purchases, sells, and distributes electricity to customers in Grand Haven, Ferrysburg, Grand Haven Township, Robinson Township, and Spring Lake Township. The Grand Haven BLP currently owns and operates two electric generating facilities, six substations, and approximately 220 miles of electric distribution lines. In 2014 BLP served about 13,750 customers.

The BLP is one of more than 2,000 community-owned electric utilities serving homes and businesses across the United States. The BLP is locally controlled by a five-member Board of Directors that is elected by Grand Haven residents.

The BLP owns and operates two electric production facilities in Grand Haven. The J.B. Sims Generating Station Unit III is located on Harbor Island, between the main and south channels of the Grand River, just west of the US-31 Bridge. Constructed in the early 1980s, Sims Unit III began commercial operation in 1983. The Sims Unit III is a 80 MW coal-fired power plant and is equipped with an electrostatic precipitator and a wet flue gas desulfurizer (FGD) system for emission controls. Fuel is delivered to the plant by lake vessel during the annual Great Lakes shipping season, and the plant receives 12 shipments of coal each shipping season.

The BLP Diesel Plant is located at 520 Harbor Drive in Grand Haven, across from the U.S. Coast Guard facility. The Diesel Plant currently houses seven diesel engines, five of which are still operational and are used as standby generators. These engines are operated periodically for maintenance and testing

purposes, and to generate power during hot summer days when the demand for electricity is high.

State and federal environmental standards govern the production and distribution of electricity by the BLP. At the Sims Unit III, more than $20 million in emission control equipment helps to protect the environment.

BLP has made a number of environmentally sustainable improvements. In 2009, selective noncatalytic reduction was installed at the Sims Unit III, resulting in a 30% decrease in Nitrogen Oxide. Additionally, BLP purchased a PHEV Bucket Truck, an electric hybrid utility truck with an anticipated annual fuel savings of approximately 55 percent.

The Grand Haven BLP is active in supporting a number of community events. The BLP offers tours of both the Sims Unit III and the Diesel Plant, and provides safety training to elementary school children in the Grand Haven area.

PLANNING IMPLICATIONS

The City of Grand Haven participates in the respective regional authorities that own and operate the water and wastewater plants that serve the City as well as some of the surrounding municipalities. The source of the local water supply is Lake Michigan.

With nearly all of the City served by public utilities, geographic expansion of the existing systems is unlikely. However, upgrades may be necessary as redevelopment occurs in certain areas, or as residential density increases with new development. It will be important for the City to ensure that the water supply and wastewater systems are responsive to demands as development and redevelopment occurs.

The Grand Haven BLP is owned by the City of Grand Haven and generates and distributes electricity to City residents. The BLP facilities generate and distribute sufficient electricity to meet current demands of the community. Recent upgrades to these facilities ensure that the BLP will continue to generate power in accordance with state and federal environmental standards. It is recommended that the City continue to pursue environmentally sensitive and sustainable power generation.

Grand Haven contains a wealth of high-quality recreational opportunities for residents and visitors alike. The parks contain a variety of facilities and equipment, including playgrounds, ball fields, open spaces, boardwalks and beaches that appeal to the City's entire population.

The City falls within the Grand Haven Public Schools district. Enrollment in the district has been steadily growing over the last five years. Six of the district's school facilities are located within the City limits.

It is likely that Grand Haven's abundant recreational opportunities, together with the City's proximity to Lake Michigan and the Grand River, will continue to be one of the strengths of the community, and will attract visitors from within and from well outside the City's boundaries.

Grand Haven's recreational opportunities and community facilities contribute significantly to the

Grand Haven's identity and character. These facilities have also played a significant role in enhancing the City's profile in the region, fostering economic development and attracting residents, businesses and tourists. Looking ahead, it will be critical for the City to continue emphasizing these strengths if Grand Haven is to solidify its position as an anchor of the West Michigan region.

CHAPTER 6. TRANSPORTATION

A good transportation network provides multiple ways for people to move around the City and connect to surrounding communities and the larger region. A transportation network with a variety of transportation options has a number of community benefits. For example, a well designed grid system of streets can help disperse traffic congestion and ease the load of higher capacity streets. Trails, pathways and sidewalks support active and healthier lifestyles and reduce the need to use cars for short trips. Public transit provides people without the ability or means to drive an environmentally friendly option to access work, school and other community amenities. The following chapter summarizes the transportation network in Grand Haven.

REGIONAL TRANSPORTATION PLANNING

While the focus of this chapter is the local transportation network within the City of Grand Haven, it is important to note that transportation planning in West Michigan also happens at the regional level. The West Michigan Shoreline Regional Development Commission (WMSRDC) is the Metropolitan Planning Organization (MPO) that coordinates the metropolitan transportation planning program for Muskegon and Northern Ottawa County, including the City of Grand Haven. In addition to planning for regional transportation systems, WMSRDC also manages and administers the homeland security program for a number of counties including Ottawa. WMSRDC's mission is to promote and foster regional development in West Michigan through cooperation amongst local governments and other regional partners.

ROADS

Grand Haven's road network is largely laid out in a grid pattern, providing residents and visitors with multiple ways to navigate around the City. Residents' transit experiences vary from quiet, neighborhood streets to gridlocked and congested rush hour traffic along US 31.

ROAD CLASSIFICATIONS

One approach to gaining a better understanding of the City's road network is to classify each road based on the role or function they play. The United States Department of Transportation classifies all roads by their transportation function. This system is called the National Functional Classification (NFC) System. Map 6.1 in Appendix C shows the road classifications for the City of Grand Haven. Several types of road classifications in the City of Grand Haven include:

A City's road network plays a critical role in determining the nature and intensities of land uses that occur throughout a community. For example, the narrow width, bump-outs and slow speeds of Washington Avenue and Ferry Street in Washington Square allow for a more walkable urban environment

TABLE 6.1 STREET CLASSIFICATION

	From	To
U.S. or State Highways		
US-31 (Beacon Blvd)	City Limits (North)	City Limits (South)
Arterial Streets		
168th Avenue	Robbins Rd	City Limits (South)
5th Street	Franklin Ave	Howard Ave
Beechtree St	Fulton Ave	Robbins Rd
Columbus Ave	Harbor Dr	US-31
Franklin Ave	Harbor Dr	5th Street
Fulton Ave	US-31	Beechtree St
N Griffin St	Jackson Ave	Fulton Ave
Jackson Ave	Harbor Dr	Griffin St
Robbins Rd	Sheldon Rd	City Limits (East)
Sheldon Rd	Howard Ave	Robbins Rd
Waverly Ave	US-31	City Limits (East)

Traffic backups are common occurrences on US 31, especially during the summer. The picture below was taken in 2002 when motorists turned around and drove in the wrong direction upon learning it might take up to three hours to cross the US 31 draw-bridge.

Photo Credit: John Hausman, MLIVE

MINOR ARTERIALS

Minor Arterials are similar in function to principal arterials, except they carry trips of shorter distance and to lesser traffic generators.

OTHER PRINCIPAL ARTERIALS

Roads in this classification tend to serve major centers of metropolitan areas and provide mobility for populations in urban and rural areas.

COLLECTORS

Collector roads tend to provide more access to property than do arterials. Collectors also funnel traffic from residential or rural areas to arterials.

LOCAL ROADS

Local roads primarily provide access to property.

Table 6.1 on this page lists the US and State Highways and arterial streets in Grand Haven.

MAJOR ROADS

The majority of roadways in Grand Haven are laid out in a traditional grid format and the City is bisected by US-31 (Beacon Blvd), which carries heavy traffic volumes, especially during the summer months.

Beacon Boulevard (US-31). Beacon Boulevard is a four-lane boulevard that serves as the primary link between the City of Grand Haven and neighboring communities (especially in the summer).

As a result, Beacon Boulevard carries the bulk of local and regional traffic. High volume of traffic using this roadway, coupled with several turning movements, cause congestion on a fairly regular basis.

According to 2013 average daily traffic counts from the Michigan Department of Transportation, US-31 carries approximately 50,700 vehicles a day near the Taylor Avenue intersection. Traffic volume increases to 55,500 vehicles a day on the north side of the City, just south of the drawbridge. The US-31 drawbridge opens at scheduled intervals during the boating season which regularly cause traffic backups both north and south.

Robbins Road. Robbins Road forms much of the southern border of Grand Haven. It is the entry point to the City for many residents living in Grand Haven Township. According to the Ottawa County Road Commission, traffic volumes in 2013 on Robbins Road were around 6,480 vehicles per day. Robbins Road shares important intersections with Mercury Drive/Waverly Avenue, Beechtree Street, Beacon Boulevard and Sheldon Road.

Fulton Avenue. Fulton Avenue runs east and west across the northern portion of the City, connecting the industrial areas on the east end of Beacon Boulevard to the commercial areas to the west.

Washington Avenue. Washington Avenue is a major link between Beacon Boulevard and the lakeshore and serves as downtown Grand Haven's "main street". Washington Avenue volumes on the east side of Beacon Boulevard are much lower than on the west side.

Beechtree Street. Beechtree Street provides north-south access to many employers on the east side of the City. Beechtree has important intersections with Robbins Road, Waverly Avenue, and Fulton Avenue.

Sheldon Road. Sheldon Road provides north-south access west of Beacon Boulevard. It connects the commercial areas at the City's center to neighborhoods to the south. It also provides access to North Ottawa Community Hospital.

Harbor Drive. Harbor Drive is a major route on the western side of Grand Haven. It is particularly important to the City's tourist areas and connects the City to Grand Haven State Park and other destinations.

Jackson Avenue. With development increasing on either side of Beacon Boulevard south of the drawbridge, Jackson Avenue has become an even more important link for commuters. It serves as an alternate connection from the Beechtree corridor and the Airport industrial area to the south and it provides a direct connection to Harbor Drive, the downtown, waterfront, and the State Park.

Washington Avenue serves as downtown Grand Haven's Main Street

US 31 Bypass, under construction

US-31 STUDY AND US-31 BYPASS

US-31 is a primary route for both long distance travelers and local Holland to Muskegon trips, and experiences high traffic volumes in the Grand Haven area. US-31 has been identified as part of Michigan's "Priority Commercial Network" and is considered a critical link in the local economy and county-wide development plans. In the early 1990s, a number of factors prompted a study of US-31 in Ottawa County, between Holland and Grand Haven. A few of the key factors were:

- A high instance of traffic congestion due to high traffic volumes.
- Double the rate of traffic crashes compared to other road segments in the region.
- Existing and future conditions for US-31 in Ottawa County indicated that without increasing the capacity or decreasing travel demand in urban areas and across the Grand River, mobility within Ottawa County would be negatively affected.
- Recurring instances of mechanical and electrical failures that caused the US-31 bridge in Grand Haven to close improperly, sometimes for hours, causing severe congestion in the Grand Haven area.
- Expected traffic growth on US-31 would exacerbate current traffic problems.

The purpose of the study was to determine alternative ways to reduce traffic congestion and improve safety on and around US-31. In 1994, an Environmental Impact Statement (EIS) was initiated by the Michigan Department of Transportation (MDOT). The EIS proposed several alternatives to meet and balance the transportation needs of US-31, between I-196 in northwestern Allegan County and I-96 in southwestern Muskegon County. In 2002, Michigan State University completed a Land Use Study that examined the potential land use impacts of the Michigan Department of Transportation's (MDOT) Draft EIS. Employing land use forecasting models, the study examined five alternatives proposed by the EIS. Ultimately, a design to construct a freeway bypass was selected. However, in 2006, due to limited funding and a shift in priorities from MDOT, the project was scaled down from the original plan for a four-lane limited-access highway.

COMMUTING PATTERNS

According to data collected in the 2009 to 2013 American Community Survey, about 76% of workers who live in the City of Grand Haven work in Ottawa County. The remaining 24% work in either Muskegon or Kent County. In 2012, about 1,250 people, or about 30% of the City's working population worked within the City. About 16% worked in Grand Haven Township, 8% worked in Grand Rapids, 8% worked in Spring Lake Township, 6% worked in Muskegon, and about 6% worked in the City of Holland.[1]

In 2012, about 16% of Grand Haven's workers come from Grand Haven Township, and about 8% come from Spring Lake Township. Others come from Norton Shores, Robinson Township, Muskegon, and nearby townships. According to data collected in the 2009 to 2013 American Community Survey, about 60% of Grand Haven's working population commute less than 20 minutes to work.

1 US Census, Longitudinal Employer-Household Dynamics On The Map Tool, 2012

While most workers in the City of Grand Haven drive alone to work (82.7%, see Table 6.2), a fair percentage (16.5%) of workers carpool, bike, walk, or take public transit to work. According to American Community Survey 2009 to 2013 data, the median age of those who drive to work is 44, while the median of age of those who prefer to bike, take transit, or walk to work is 38, 29, and 26 years old respectively.

TABLE 6.2 COMMUTE MODES

Means of Transportation To Work	%, Out of all Workers Living In Grand Haven
Car	82.7
Carpooled	6.2
Bicycled	3.2
Walked	3.2
Work From Home	2.7
Public Transit	1.2
Other	0.8

Source: American Community Survey, 2009 to 2013.

PUBLIC TRANSPORTATION

Harbor Transit. Harbor Transit is a public demand-response transportation system that serves the City of Grand Haven, the City of Ferrysburg, the Village of Spring Lake and Grand Haven Charter Township. Harbor Transit operates a fleet of 23 buses, two vans and two seasonal trolleys traveling over 420,000 miles per year. In November of 2015, voters in Spring Lake Township approved 0.7 mills over 10-years to expand the dial-a-ride service into the Township.

FIGURE 6.1 ANNUAL RIDES BY LOCATION

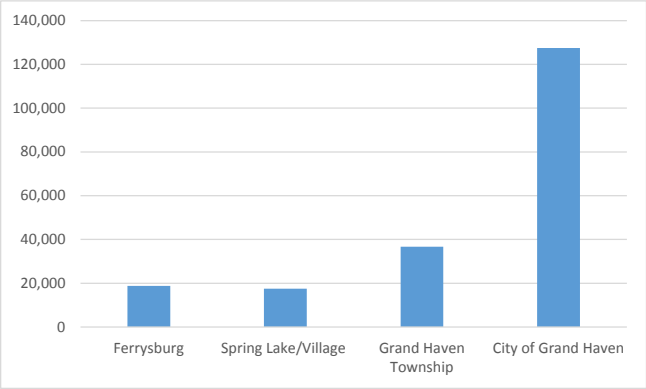
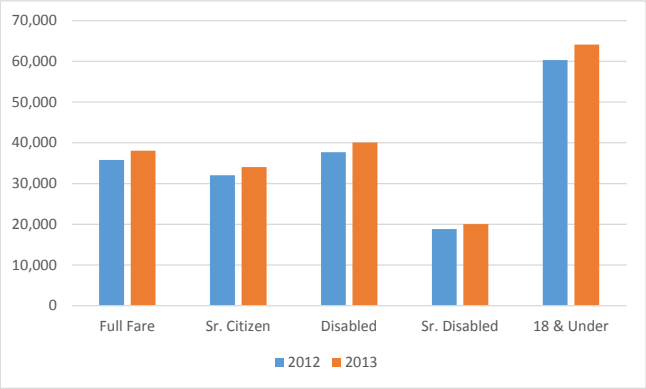


FIGURE 6.2 RIDERSHIP DEMOGRAPHIC COMPARISON



According to their *2013 Annual Report*, 200,437 people utilized Harbor Transit in 2013, with over 120,000 trips originating in the City of Grand Haven (see Figure 6.1). This marked a 6.4% increase in ridership from the previous year and set an all-time record for the 40-year old public transit system. Also, 2013 marked the third consecutive year Harbor Transit has increased its ridership. In fact, the number of riders has increased by almost 60% since 2010. According to the report, ridership was up in all major ridership categories (see Figure 6.1), with the most significant increases coming from those riders 50 years of age and over and students. A 2013 survey of riders also found that 37.9% of survey responders used Harbor Transit on a daily basis and that 22% responders used Harbor Transit to get to work.

Resilient Activities - Harbor Transit

In an effort to move to more environmentally friendly and sustainable practices Harbor Transit has purchased four liquid-propane buses and an on-site LP fueling station. These help reduce emissions by generating 12% less carbon dioxide, 75% less nitrogen oxide and 42% less carbon monoxide than gasoline buses.

Grand Haven Memorial Airport

AIR TRANSPORTATION

Grand Haven Memorial Airport. Located near the City's southern boundary, Grand Haven Memorial Airport is a U-5 General Aviation all-weather facility, licensed by the Michigan Bureau of Aeronautics. The Airport is served with a paved primary runway 3,750 feet long and a paved cross-wind runway 2,100 feet long. The Airport is operated through a management agreement that provides a Fixed Base Operator (FBO) for service, maintenance and general day-to-day airport management. While commercial passenger airline service is not available at this airport, some private charter service is provided.

Muskegon County Airport. The nearest commercial airport to the City of Grand Haven is the Muskegon County airport, which has six daily flights connecting residents to regional destinations. Regional airline services are provided by Northwest Airlines.

Gerald R. Ford International Airport. Located on the southeast side of metro Grand Rapids and about an hour's drive from Grand Haven, Gerald R. Ford International Airport is Michigan's second busiest airport, serving about 2 million passengers annually. The airport offers non-stop service to airports throughout the Country.

NON-MOTORIZED TRANSPORTATION

The City of Grand Haven contains numerous non-motorized trails and pathways, offering residents and visitors an alternative to automobile travel. The network provides connections to Spring Lake Village and Township, Grand Haven Township, the Cities of Holland and Ferrysburg and Fruitport Township. An effective non-motorized trail network offers numerous benefits to a community such as personal satisfaction, health, and recreation. Trails also have an economic benefits like increased revenues from tourism and increased business activity and employment.

Grand Haven has several forms of non-motorized transportation. Bike paths in Grand Haven are located along portions of 168th Avenue, Beechtree, Waverly, Franklin, Columbus, Beacon Boulevard and Harbor Drive. A boardwalk is located on the south side of the Grand River from Lake Michigan east to Wharfside Marina. A Boardwalk has also been constructed along the Grand River at Linear Park and East Grand River Park. Map 5.1 in Appendix C illustrates the location of the City's non-motorized trails and pathways.

PLANNING IMPLICATIONS

Traffic in Grand Haven is generally manageable, with the heaviest traffic volumes occurring on Beacon Boulevard (US-31). Other important streets in the City include Robbins Road, Fulton Avenue, Washington Avenue, Beechtree Street and Harbor Drive. The "grid" layout of City's streets aids significantly in the relatively limited amount of traffic congestion of the City's major corridors.

Before the construction of M-231, also known as the US-31 bypass, the US-31 bridge over the Grand River was one of only three crossings in all of Ottawa County. The bypass was constructed to address the

heavy regional traffic along US-31. It is likely that the construction of this bypass has attracted some of this regional traffic, further reducing congestion along US-31 in the City.

The number of Harbor Transit riders within the community has increased steadily over the last several years, suggesting City officials should continue to work with the Harbor Transit Board to discuss the potential of a fixed-routes system.

The City also contains a network of non-motorized trails and pathways, which offers residents and visitors an alternative to automobile transportation. Trails within the City also connect to a County-wide network of trails and pathways, connecting users to a wider range of recreational opportunities.

Three-fourths of Grand Haven's labor force work within Ottawa County and don't travel far for work, suggesting that many weekday trips are local and highlight the potential for future expansion of transportation options. Additionally, it is likely that many of these trips could be made via non-motorized means. Grand Haven should continue to create walkable neighborhoods and business centers that are built to accommodate pedestrians, instead of automobiles, first.

CHAPTER 7. LAND USE AND DEVELOPMENT PATTERNS

Grand Haven's development pattern has been well-established for many years, but this is not to say that many changes have not occurred. The City continues to pursue the adaptive reuse of old buildings and empty lots into mixed use developments in the immediate downtown area. New multi-unit housing developments continue to rise in the Northside and Southside neighborhoods just outside the downtown area. In addition, the City invested in streetscaping improvements along Washington Avenue between 7th Street and US 31, creating a more pedestrian-friendly and secondary retail hub in the downtown.

New multi-unit housing development

Over the last decade, several year-round homes have been converted to seasonal, or short-term rentals and traffic-oriented commercial uses along Beacon Boulevard have grown. The downtown has maintained its role as the heart of the City, which is reflected in its high retail occupancy rate and regional draw as a tourist destination. Additional outside impacts, such as the steady population growth and new retail development experienced in Spring Lake Township and Grand Haven Charter Township have not diminished the value and prominence of downtown Grand Haven.

Grand Haven contains a variety of land uses laid out in a traditional grid format with a mixture of housing types, commercial development, established industries, new industrial parks, redeveloped areas, a wealth of community facilities, and an abundance of natural features. The City's historic development has resulted in a pattern of defined neighborhoods, distinct commercial areas, and scattered industrial uses.

LAND USE

Existing land use categories are generalized and are based on property classification data contained in the parcel database, zoning data, mapping tools and general knowledge of the community.

Single family homes comprise about 28% of the City

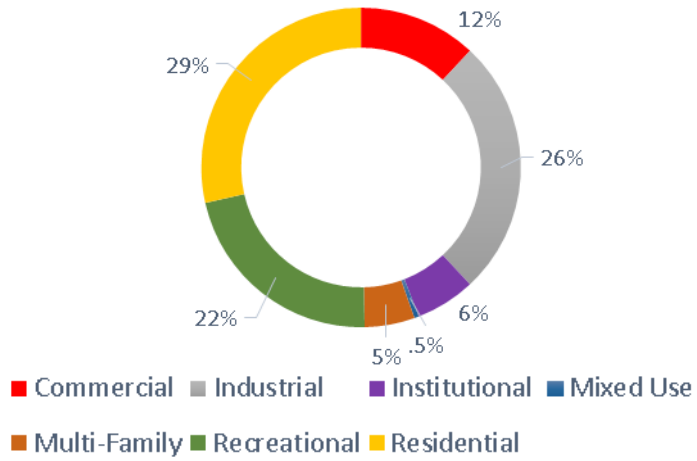
- The Single Family Residential category consists of single-family homes. This is the largest land use category in the City, comprising about 28.6% of the City's total parcels.
- The Multiple Family Residential category occupies about 5.1% of the City's total parcels and consists of apartments, condominiums, duplexes, multiple-unit dwellings and manufactured housing communities. While multiple-family land uses are located throughout the City, the bulk of this land use category is located in the eastern portion of the City.
- Commercial land uses consist primarily of retail establishments and offices. The largest commercial areas in the City are the downtown and surrounding areas, Beacon Boulevard, Robbins Road, Beechtree Street, Jackson Street and the northern portion of Ferry Street. Commercial uses comprise about 12% of the City's total land area.
- Institutional land includes schools, hospitals, churches, government facilities and similar uses, and are located throughout the City. This land use occupies about 6.1% of the City's land area.

Grand Haven contains many auto-oriented commercial uses, particularly along Beacon Blvd (US-31)

- The City's Recreational uses are primarily public parks and vacant, publicly-owned properties located throughout the City. This land use comprises about 21.8 % of the City's parcels, with the majority of these lands consist of large contiguous parcels east of North Shore Drive near Dewey Hill and the Kitchel-Lindquist Dune Preserve, Mulligan's Hollow, Grand Haven State Park, Forest Hill Cemetery, and Duncan Park.
- The Industrial classification consists of industrial parks, power plants, and the airport and comprises 26.1% of the City's parcels.

Figure 7.1 summarizes existing generalized land uses in the City. Map 7.1 in Appendix C illustrates the breakdown of land uses in Grand Haven.

FIGURE 7.1 LAND USE BREAKDOWN, 2015



HISTORIC DISTRICTS

There are six historic districts in Grand Haven, five of which are located on the west side of Beacon Boulevard. Map 7.2 in Appendix C illustrates the location of historic districts in the City, and they are described below:

- The Downtown Historic District is located between Harbor Drive to the west, 7th Street to the east, Franklin Street to the South, and Columbus Street to the north. This 14-block area includes City Hall, Central Park, the core downtown area, Harborfront Place, and many other commercial and government buildings.
- The East End Historic District is the City's newest and largest Historic District covering over 24 blocks. This district is concentrated between Fulton to the north, Pennoyer to the south, Beacon to the west, and Beechtree to the east. Included in this area are tannery houses associated with Eagle

Ottawa and the City's first drive-up restaurant, *Ray's*.

- The Highland Park Historic District is located just east of Northshore Drive, concentrated between Lake Avenue to the north and Grand Avenue to the south. This historic district is located in a sensitive area overlay district. Development in the district dates back to the 1880s, when it was developed as a summer resort community.
- The Northwest Historic District is located between Columbus Street to the south, Jackson Avenue to the north, First Street to the west and Fifth Street to the east. This is approximately a 12-block area just north of the Downtown Historic District.
- The Riverfront Historic District is a long narrow strip of land that runs between Harbor Drive and the Grand River. Its southern boundary is Grand Haven State Park and Harbor Drive and its northern boundary is the Wharf Marina and the Grand River. This district includes the U.S. Coast Guard station, the Waterfront Stadium, the Tri-Cities Museum, the boardwalk, and Chinook Pier Park.
- The Southwest Historic District is between Howard Street/Pennoyer Avenue to the south and Franklin Street to the north. Its western and eastern boundaries are Harbor Drive and Beacon Boulevard. The area is approximately 22 blocks.

The Northside Historic District

These historic districts are not registered as historic districts with the State Historic Preservation Office or the National Park Service. Since these districts are not registered, development protections do not exist. In order to qualify for tax incentive programs for rehabilitation of historic properties, local historic districts would need to be established pursuant to the provisions of the Local Historic Districts Act (Act 169 of 1970).

MASTER PLAN SUB-AREAS

During the 2010 Master Planning process, land uses were analyzed in six predefined sub-areas within Grand Haven: the Beechtree Corridor, Centertown, the Robbins Road Corridor, the Southwest Business Corridor, Washington Square, and North Beechtree. The following paragraphs describe land use characteristics in each of these areas. Sub-area plans have also been completed for each of these areas and can be found in Appendix A. Appendix A also includes a summary of the 2004 Downtown Vision Plan and the 2005 Waterfront Strategies Plan.

BEECHTREE CORRIDOR

The Beechtree Corridor sub-area runs along Beechtree from the City's southern boundary north to Fulton Street. Beechtree contains a mix of land uses, including a dance studio, various auto repair shops, single-family dwellings, a medical clinic and a park. The corridor is characterized by a predominance of auto-oriented land uses. The majority of the buildings are set back from Beechtree with parking areas located in the front yards. Few of the parking areas are interconnected or serve multiple parcels, and most of the properties in this sub-area are accessed via Beechtree Street.

CENTERTOWN

The Centertown sub-area is located west of Beacon and is bounded by 6th Street, Franklin, Beacon and Jackson. It is characterized by a good mix of residential, retail, service and office uses. Building setbacks are consistent for the mixture of land uses. In several places, parking lots are interconnected and serve multiple parcels. Additionally, several properties in the southern portion of this sub-area are in need of additional landscaping between parking areas and the street. This sub-area also contains a historical marker at the intersection of Fulton and 7th Street. In 2014, the Centertown Vision Plan was created to help identify areas in need of property improvements, street landscaping, and marketing initiatives.

Beechtree

ROBBINS ROAD CORRIDOR

The Robbins Road Corridor sub-area forms a part of the southern boundary of the City and is bounded by Beacon Blvd on the west and Beechtree on the east. This corridor contains a mixture of land uses, with a wide variety of building masses, scales and setbacks. Robbins Road experiences relatively high traffic volumes, and signage along the corridor is varied. Many properties in this sub-area can be accessed from two or more streets, and automobile circulation patterns are poorly-defined in other areas. Many of the land uses in this sub-area are regional in scope and serve a large area of the community, including much of Grand Haven Charter Township, and the sub-area plan was completed in conjunction with the Township.

SOUTHWEST BUSINESS CORRIDOR

The Southwest Business Corridor sub-area is located along the west side of Beacon Blvd, and is bounded on the north by Marion and the south by Robbins Road. The majority of land uses in this sub-area are major retail establishments, hospitality, restaurants and automobile sales facilities. One manufacturing facility is also in this sub-area. West of the railroad right-of-way, some former manufacturing faculties are being adapted for smaller businesses, and new office facilities are taking advantage of the proximity of residential uses and the US-31 corridor.

WASHINGTON SQUARE

The Washington Square sub-area is located along Ferry Street, generally between Madison and Washington. This sub-area contains a variety of land uses including retail establishments, offices, clinics, auto service stations and residences. In some areas, access management is poor and there is little separation of parking areas and areas devoted to pedestrian circulation. However, there are several properties that have been improved or developed, and sidewalks connect most properties within this sub-area. In some instances, additional landscaping is needed between parking areas and the street.

NORTH BEECHTREE

The North Beechtree sub-area is located in the northeast portion of the City, immediately north of Beechtree Street along the Grand River. Several existing land uses are industrial in nature including several foundry facilities. The former Eagle-Ottawa tannery facility is now an RV resort community. The

area is challenged by traffic and poor connections to the larger community, and fails to capitalize on its Grand River frontage. The North Beechtree sub-area offers a great opportunity for redevelopment, with suggested improvements including increased access to the river, improved traffic circulation and a mixing of land uses.

Washington Square

ZONING

In 2007, Grand Haven adopted a hybrid zoning ordinance. The central purpose of the ordinance was to build on the strengths of the existing patterns of development in the City, while emphasizing the aesthetic and functional elements of the community. Another tenet of the ordinance was to minimize obstacles to rational and appropriate development in the City.

The ordinance combines traditional use-based standards with elements of form and building design, resulting in a unique "hybrid" that meets the challenges presented by Grand Haven's existing neighborhoods, commercial centers and industrial areas. The Zoning Map is shown on Map 7.3 in Appendix C.

In recognition of the importance of building consensus on land use regulation, the process to develop the hybrid Zoning Ordinance involved significant public input. This included a community meeting centered on a visual preference exercise, as well as a series of focus group discussions to address the needs of particular neighborhoods or areas. In addition, the effort worked to identify and codify the unique characteristics of each neighborhood of the City. These included the physical characteristics as well as particular land uses and landmark features. The result was the development of building form and architectural standards for those portions of the community where these characteristics contributed significantly to the personality of an area. Eventually, these standards were codified and included in the particular zoning districts that govern those areas.

PLANNING IMPLICATIONS

Grand Haven contains a mix of residential, commercial, industrial and recreational uses. More than a third of the City's land area is occupied by single-family residential land uses, and about 16% of the City's land area is commercial in use. Consistent with Grand Haven's image as that of a tourist destination, about 30% of the City's land area is used for recreational purposes.

The Master Plan sub-areas – the Beechtree Corridor, Centertown, the Robbins Road Corridor, the Southwest Business Corridor, Washington Square, and North Beechtree – contain a mix of land uses and development patterns. While each area possesses its own character and identity, there are several land use issues that the City should consider in each of those areas. These land use issues include walkability and pedestrian safety, landscaping, shared parking areas and building placement and setbacks.

While there are historic areas of the City, none are either state- or nationally-recognized historic districts. This means that protection from demolition or neglect is not available. Furthermore,

without a designated and registered historic district, property owners are missing out on valuable tax incentives for rehabilitation.

Regionally, Grand Haven is one of four significant urban centers in the greater Grand Rapids area, which implies that economic activity in Grand Haven affects the rest of the region as well. Additionally, cooperation with other regional jurisdictions and planning agencies will be needed to protect the important natural and cultural features in order to enhance the quality of life for all residents.

CHAPTER 8. PLACEMAKING

Every community is unique in one way or another. For some communities, it is their proximity to a lake or river. For others, it is their active downtown, vibrant festivals, or walkable neighborhoods. Each attribute is part of a collage of placed-based community assets that shape the identity, quality of life, and livability of the community. The City of Grand Haven is fortunate to have a number of unique community assets that shape its character and define its sense of place.

WHY IS PLACEMAKING IMPORTANT?

Placemaking is not a new concept or community development tool in Grand Haven. In fact, the City has been actively pursuing place-based projects for many years - the preservation of historic buildings, downtown streetscaping and the splash pad to name a few. Each of these projects, along with others, make Grand Haven a distinctly interesting and unique place.

"Place" has always been an important element in sustaining long-term economic activity. It used to be that prosperous places were solely based on their proximity to natural resources (e.g., navigable waterways, extractable minerals). Navigable waterways and industrial areas are still important.[1] However, in the 21st century, prosperous places are also based on their ability to attract entrepreneurial and knowledge-based workers. More and more, these knowledge-based workers (and other segments of the population as it turns out) want to live in communities with interesting and vibrant urban settings,[2] outdoor recreational amenities, entertainment, 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.

PLACEMAKING ELEMENTS

During his first term, Michigan Governor Rick Snyder made placemaking a key platform in his plans to revitalize the state. He continues to ask each community to make a more concerted effort and take a more deliberate approach to placemaking. In response, a number of statewide municipal organizations established place-based planning initiatives (e.g., MIPLACE Initiative) to help cities better think about how to apply placemaking elements in local projects and position themselves for success in today's economy.

This Plan highlights how the City of Grand Haven has and can continue to implement elements of one such initiative - the Michigan Municipal League's Eight Assets of 21st Century Communities.[3]

What is Placemaking?
Placemaking is both a process and tool to collectively design and manage elements of the public realm (markets, waterfronts, squares, streets, parks, neighborhoods and 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 and move around in it. Placemaking can also help build and enhance sense-of-place by creating spaces that encourage social interaction and support interesting activities.

[1] Dr. Soji Adelaja & Mark Wyckoff - Why the economics of "place" matters. The Economic of Place Michigan Municipal League (2011)

[2] The Next Real Estate Boom. Patrick C. Doherty and Christopher B. Leinberger. http://www.brookings.edu/research/articles/2010/11/real-estate-leinberger 2010

[3] Michigan Municipal League. http://placemaking.mml.org/21st-century-communities/

Downtown's wide sidewalks encourage social interaction around public seating areas and outdoor cafes.

The City should continue to employ low-impact development techniques, like this green roof, throughout the City.

PHYSICAL DESIGN AND WALKABILITY

Market analysis shows that today's millennials, young professionals, Baby Boomers and empty nesters want to live in neighborhoods with walkable downtowns, access to culture and entertainment opportunities and a variety of transportation options. As described in Chapters Five and Six, Grand Haven is a very walkable community, featuring an extensive system of sidewalks and pathways that connect neighborhoods to the downtown, the waterfront and other community and regional assets. Downtown Grand Haven has wide sidewalks that encourage social interaction around public seating areas and outdoor cafes. The City should continue to explore ways in which it can expand its pedestrian infrastructure in areas of the City that are not already served by sidewalks, bike lanes or pathways.

GREEN INITIATIVES

Green Initiatives are critical for any community intending to be viable in today's economy. The way cities use energy and natural resources impacts quality of life and the financial bottom line. Grand Haven continues to explore ways to implement sustainable land use practices. The City continues to employ low-impact development techniques like green roofs, underground detention systems and grass swales to better manage storm water runoff. As discussed in more detail in Chapter Ten, the City will continue to study how sustainable practices may better protect residential areas from coastal flooding and the impacts of climate change.

CULTURAL ECONOMIC DEVELOPMENT

Arts and culture are essential components of a thriving, knowledge-based economy. A healthy creative sector attracts and retains residents and businesses, and produces economic benefits including jobs, a stronger tax base, downtown and neighborhood revitalization, and tourism. The City has been a very active supporter of local artists by displaying a number of public art pieces around the downtown and waterfront areas. In addition, the City continues to work with the Grand Haven Area Arts Council to host several community events.

ENTREPRENEURSHIP

Growing knowledge-based jobs in "ones and twos" creates sustainable economies in the 21st century. Strategies that solely focus on seeking out large manufacturers and big box retailers overlook the positive impact that entrepreneurs and small businesses have on local communities. The Grand Haven, Ferrysburg and Spring Lake Chamber of Commerce, often referred to as "the Chamber" through initiatives like E-Merge, the Small Business Development Center (SBDC) and six specialized networking groups are helping entrepreneurs start and expand small businesses. The City of Grand Haven will continue to support these efforts by creating desirable neighborhoods, an active downtown and community assets that attracts talented and entrepreneurial workers.

MULTICULTURALISM

Creating and sustaining a genuine commitment to diversity and multiculturalism is vital to attracting key demographics and global businesses. Today's fluid, mobile and global workforce is seeking out places that embrace people of all religions, ethnicities, national origins and races. Grand Haven will continue to support and embrace cultural events within the City. In addition, City officials and their community partners can help support a more diverse community by providing adequate transportation choices, affordable housing options and continuing education opportunities.

MESSAGING AND TECHNOLOGY

Internet and communication technologies are connecting people and allowing them to share information in the virtual world in unprecedented ways. Social networking applications like Twitter, Facebook, Instagram, and YouTube, as well as communication platforms like blogs and Wikis, can build stronger relationships between people and local government. The City of Grand Haven currently has a Facebook page in which it posts information about public meetings, public safety notices and pictures. The City will continue to explore additional communication technologies as a mode to disseminate information to residents and visitors.

The City should continue to embrace cultural events and programs within the City.

TRANSIT

Developing effective public transit options is a necessary tool for attracting and retaining residents, workers, and businesses. Research shows that people across the nation are choosing to reside in communities that offer various transportation options, have easy access to the places they live, work, and play, and provide opportunities to travel without having to rely on a car. As previously mentioned Grand Haven is a very walkable community, featuring an extensive system of sidewalks and pathways. In addition, 2014 saw the largest number of people use the Harbor Transit system in its history. City officials should continue to work with the Harbor Transit Board to discuss how to better serve this growing number of public transit riders and explore the potential and feasibility of a fixed-route system.

EDUCATION

Educational institutions play a central role in growing a knowledge-based economy and encouraging a more engaged citizenry. As anchor institutions, colleges and universities bring opportunities for entertainment, arts and culture, healthcare and recreation, and serve as engines of economic development. The Grand Haven Community Center serves as a satellite campus for the Muskegon Community College. The City will continue to explore partnerships with community colleges and universities throughout Michigan to bring relevant trainings and courses to Grand Haven.

CHAPTER 9. PLANNING FOR COASTAL AND CLIMATE TRENDS

THE IMPORTANCE OF PLANNING IN COASTAL COMMUNITIES

It is no secret the Great Lakes are one of the most unique and precious environmental features in the world. In fact, "the Great Lakes basin contains more than 20% of the world's surface freshwater supplies and supports a population of more than 30 million people."[1] Michigan is home to nearly 3,300 miles of Great Lakes shoreline, with 36,000 miles of rivers and streams, and 11,000 inland lakes.[2]

Yet in general, riparian land throughout Michigan is not adequately protected from development pressures.[3] Coastal communities especially have an important role to play in protecting the Great Lakes. In 2001, the Michigan Department of Environmental Quality acknowledged "fragmentation of coastal habitats, loss of agricultural and forest lands, increased impervious surfaces and resulting stormwater runoff, and the increased development in coastal hazard areas, wetlands, and Great Lakes Islands, could be improved through better coastal land use planning."[4]

Planning for coastal areas at the local level requires knowledge of both local conditions and state and federal regulations. This chapter aims to address these challenges for the Grand Haven community and provide clear, well-founded recommendations for future land use planning.

OVERVIEW OF COASTAL DYNAMICS AND THE GREAT LAKES

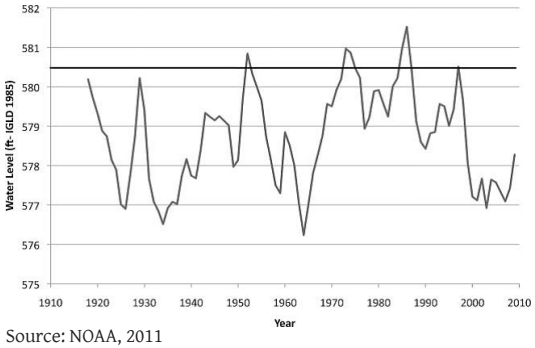
The Great Lakes function differently than other inland water bodies and tidal oceans. Understanding these dynamics can help Grand Haven Township plan for naturally occurring changes along the shoreline.

CHANGING WATER LEVELS OF THE GREAT LAKES

Great Lakes water level changes result not from the moon's gravitational pull, but from cyclical changes in rainfall, evaporation, and river and groundwater inflows.[5] These factors work together to raise and lower the water levels of the Great Lakes in small increments daily, and larger increments seasonally and over the course of years and decades. Long-term water levels fluctuate by multiple feet as shown in Figure 9.1.

The Great Lakes are in a period of rising lake levels. Since the early 2000s, water levels have remained

FIGURE 9.1 WATER LEVELS OF THE GREAT LAKES



Source: NOAA, 2011

[1] Mackey, S. D., 2012: Great Lakes Nearshore and Coastal Systems. In: U.S. National Climate Assessment Midwest Technical Input Report. J. Winkler, J. Andresen, J. Hatfield, D. Bidwell, and D. Brown, coordinators.
[2] Ardizone, Katherina A. and Mark A. Wyckoff, FAICP. Filling the Gaps: Environmental Protection Options for Local Governments, 2nd Edition. 2010.
[3] As cited by Norton 2007- Michigan Department of Environmental Quality. 2001. 309 Enhancement Grants Assessment/Strategy. Lansing, MI: DEQ Coastal Management Program.
[4] Ibid.
[5] Norton, Richard K. , Meadows, Lorelle A. and Meadows, Guy A.(2011) 'Drawing Lines in Law Books and on Sandy Beaches: Marking Ordinary High Water on Michigan's Great Lakes Shorelines under the Public Trust Doctrine', Coastal Management, 39: 2, 133 — 157, First published on: 19 February 2011 (iFirst)

low, but historical patterns over the last century indicate higher water levels are sure to return.[6] Lake Michigan's water level in August of 2015 averaged 579.79 feet, which is equal to the water levels in fall of 1998.[7]

The changes in water levels are not solely responsible for the movement of the shoreline landward and lakeward over time. The velocity and height of waves, erosion of shorelines, and pace of changing water levels also contribute to coastal dynamics on the Great Lakes.

WAVE ENERGY AND HEIGHT

The Great Lakes experience high energy waves and wave setup along the coastline. High energy waves are high in speed and strong in intensity and are primarily created as fast winds move across the surface of the water for extended distances.[8] Wave setup is the height of the water as waves reach the shore. High wave setup results as regional storms create high winds on the Great Lakes.[9] Powerful and tall waves can quicken the rate of erosion and damage structures near the shoreline.[10]

EROSION

The shorelines of Lake Michigan are mostly made of gravel and sands that easily erode during times of high energy waves.[11] Coastal erosion can flood and damage infrastructure along bluffs and beaches. Erosion is caused mainly by storms and winds, not necessarily by rising lake levels.[12]

QUICKLY CHANGING CONDITIONS

The Great Lakes are contained in gradually shifting and tilting basins. This tilting results as the Earth slowly decompresses and rebounds from the immense weight of the glaciers that created the Great Lakes.[13] This shifting causes water levels to change more quickly in some places than others, because the shape of the water basin varies along the coast.[14] This attribute of the Great Lakes makes it difficult to predict the pace of shoreline movement. Therefore, it is safest to plan for great variability and rapid change in water levels.[15] Figure B.2 shows the movement of the shoreline in the Grand Haven community.

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6 Meadows, Guy A., and Meadows, Lorelle A., Wood, W.L., Hubertz, J.M., Perlin, M. "The Relationship between Great Lakes Water Levels, Wave Energies, and Shoreline Damage." Bulletin of the American Meteorological Society Series 78: 4. (1997): 675-683. Print.
7 http://www.glerl.noaa.gov/data/dashboard/GLWLD.html
8 National Oceanic and Atmospheric Administration. "Coastal Currents." Ocean Service Education. NOAA, 25 March 2008. Web. Accessed July 2015.
9 Norton, Richard K. , Meadows, Lorelle A. and Meadows, Guy A.(2011) 'Drawing Lines in Law Books and on Sandy Beaches: Marking Ordinary High Water on Michigan's Great Lakes Shorelines under the Public Trust Doctrine', Coastal Management, 39: 2, 133 — 157, First published on: 19 February 2011 (iFirst)
10 Ibid.
11 Ibid.
12 Meadows, Guy A., and Meadows, Lorelle A., Wood, W.L., Hubertz, J.M., Perlin, M. "The Relationship between Great Lakes Water Levels, Wave Energies, and Shoreline Damage." Bulletin of the American Meteorological Society Series 78: 4. (1997): 675-683. Print.
13 Dorr, J. A., and D. F. Eschman. 1970. Geology of the Great Lakes. Ann Arbor: University of Michigan Press.
14 Wilcox, D.A, Thompson, T.A., Booth, R.K., and Nicholas, J.R., 2007, Lake-level variability and water availability in the Great Lakes: U.S. Geological Survey Circular 1311, 25 p
15 Ibid.

FIGURE 9.2 MOVEMENT OF THE SHORELINE IN GRAND HAVEN, 2015 PHOTO

Source: Google Earth Pro, 2015 Imagery

CLIMATE CHANGE AND THE GREAT LAKES

Powerful waves, erosion, and changing shorelines on the Great Lakes have been well-documented throughout history, and each has implications for planning efforts along the coast. Climate change, however, augments these natural processes, and requires preemptive planning in coastal communities. This section will discuss climatologist predictions of increased precipitation and storminess in the Great Lakes region, variable lake water levels, and rising water temperature. First, it is important to understand the global context of climate disruption.

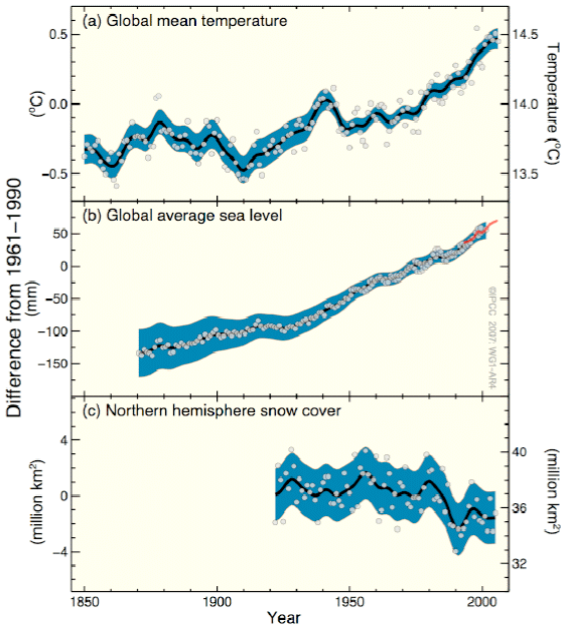
GLOBAL CHANGES IN CLIMATE

Climate and weather are directly related, but not the same thing. Weather refers to the day-to-day conditions in a particular place, like sunny or rainy, hot or cold. Climate refers to the long-term patterns of weather over large areas. When scientists speak of global climate change, they are referring to changes in the generalized, regional patterns of weather over months, years and decades. Climate change is the ongoing change in a region's general weather characteristics or averages. In the long term, a changing climate will have more substantial effects on the Great Lakes than individual weather events.

Evidence collected over the last century shows a trend toward warmer global temperatures, higher sea levels, and less snow cover in the Northern Hemisphere (see Figure B.3). Scientists from many fields have observed and documented significant changes in the Earth's climate.[16] Warming of the climate system is unequivocal and is now expressed in higher air and ocean temperatures, rising sea levels, and melting ice.[17]

To help predict what the climate will be in the future, scientists use computer models of the Earth to 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.[18] Scientists downscale these techniques to predict climate change for smaller regions.

FIGURE 9.3 CHANGES IN TEMPERATURE, SEA LEVEL, AND SNOW COVER



Source: International Panel on Climate Change, https://www.ipcc.ch/publications_and_data/ar4/syr/en/mains1.html

CLIMATE CHANGE ON THE GREAT LAKES

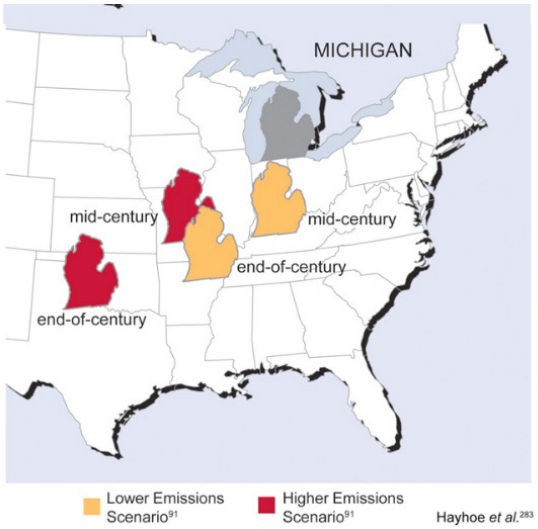
The Great Lakes Integrated Sciences + Assessments Center (GLISA) is a consortium of scientists and educators from the University of Michigan and Michigan State University that provides climate models for the Great Lakes Region in support of community planning efforts like this Master Plan. According to GLISA, the Great Lakes region experienced a 2.3 degree Fahrenheit increase in average air temperatures from 1900 to 2012.[19] An additional increase of 1.8 to 5.4° F in average air temperatures is projected by 2050. Although these numbers appear relatively small, they are driving very dramatic changes in Michigan's climate and greatly impact the Great Lakes.[20]

The National Climate Assessment for 2009 included a number of illustrations to help us understand

16 Intergovernmental Panel on Climate Change. (2007). Observed changes in climate and their effects. Web. Accessed July 2015.
17 Ibid.
18 Intergovernmental Panel on Climate Change (2013). What is a GCM? Web. Accessed July 2015.
19 Great Lakes Integrated Sciences and Assessments (2015). Temperature. Web. Accessed July 2015.
20 Ibid.

the extent and character of anticipated climate change impacts.[21] One of these illustrations, Figure 9.4, shows Michigan under several emissions scenarios, each leading to changes in Michigan's climate. Just by maintaining current emission levels, Michigan's climate will feel more like present-day Arkansas or Oklahoma by the end of the century.[22]

FIGURE 9.4



Source: National Climate Assessment, 2009

INCREASED PRECIPITATION AND STORMINESS

There is strong consensus among climate experts that storms, greater in number and intensity, will occur in the Great Lakes region.[23] This is already happening as "the amount of precipitation falling in the heaviest 1% of storms increased by 37% in the Midwest and 71% in the Northeast from 1958 to 2012."[24] As storms drop more precipitation and generate stronger sustained winds, the Great Lakes will see stronger and higher waves.[25] In addition to direct damage caused by storms, sustained increases in the number of storms and their intensity can both directly and indirectly pollute waters by overloading sewage and stormwater capabilities.[26] Increases in the intensity of storms also quickens the pace of erosion on Great Lakes shorelines. In fact, the Federal Emergency Management Agency (FEMA) projects approximately 28% of structures within 500 feet of a Great Lakes shoreline are susceptible to erosion by 2060.[27]

VARIABILITY OF LAKE WATER LEVELS

The natural ups and downs in the water levels of Lake Michigan will continue regardless of the impacts of climate change.[28] However, climate change is likely to augment this natural process resulting in more variable water levels as warmer air temperatures result in fewer days of ice cover and faster evaporation.[29] In other words, lake levels will rise and fall faster and with less predictability than in the past. Fortunately, much of Michigan's coastal infrastructure was built in previous decades during times of high water levels.[30] However, fast rising waters can erode shorelines, damage infrastructure, and cause extensive flooding in inland rivers.[31] When lake levels fall, access to infrastructure like docks may be restricted and navigation hazards in shallow waters may be exposed. Low lake levels pose a threat to coastal vegetation and can reduce the pumping efficiency of drinking water intake pipes.[32] Additional

21 U.S. Global Change Research Program. Global Climate Change in the United States, 2009. Cambridge University Press, Cambridge, MA.
22 Ibid.
23 Ibid.
24 Mackey, S. D., 2012: Great Lakes Nearshore and Coastal Systems. In: U.S. National Climate Assessment Midwest Technical Input Report. J. Winkler, J. Andresen, J. Hatfield, D. Bidwell, and D. Brown, coordinators.
25 Great Lakes Integrated Sciences and Assessments. Climate Change in the Great Lakes Region. GLISA, 2014. Web. Accessed July 2015.
26 Cruce, T., & Yurkovich, E. (2011). Adapting to climate change: A planning guide for state coastal managers–a Great Lakes supplement. Silver Spring, MD: NOAA Office of Ocean and Coastal Resource Management.
27 The Heinz Center. (2000). Evaluation of Erosion Hazards. Web. Accessed July 2015.
28 Dinse, Keely. Preparing for Extremes: The Dynamic Great Lakes. Michigan Sea Grant. Web. Accessed July 2015.
29 Cruce, T., & Yurkovich, E. (2011). Adapting to climate change: A planning guide for state coastal managers–a Great Lakes supplement. Silver Spring, MD: NOAA Office of Ocean and Coastal Resource Management.
30 Dinse, Keely. Preparing for Extremes: The Dynamic Great Lakes. Michigan Sea Grant. Web. Accessed July 2015.
31 Ibid.
32 Ibid.

ramifications of changing lake levels include a drop in water supply,[33] restricted fish habitats,[34] more invasive species,[35] faster erosion, and an overall decline in beach health.[36] Climate change is likely to augment the natural highs and lows of lake levels, causing more variability and a faster rate of change, making each of these potential ramifications both more likely and less predictable.

WATER TEMPERATURE

Climatologists predict there will be fewer days below freezing in Michigan and other Great Lakes states. As temperatures remain warm for a greater part of the year, the winter season will shorten and the lake ice cover that accompanies winter weather will decline. Lake ice cover allows heat radiation to be reflected, and when it declines, the surface water temperature will increase as more heat is absorbed by the water. The ice coverage on the Great Lakes and Lake St. Claire declined by 71% from 1973 to 2010, and ice covers the lake for an average of 15 fewer days each year.[37]

The associated impacts of rising water temperature include changes to where fish and other aquatic animals can live, increased vulnerability to invasive species, and increased risk of algae blooms.[38] Rising water temperature also enables winds to travel faster across the surface of the lake, increasing the vulnerability of coastal communities to damaging waves as storms and winds increase.[39] Lastly, ice cover protects the shoreline during winter storms. With less ice cover, the shoreline is more susceptible to erosion and habitat disruption.

UNIVERSITY OF MICHIGAN RESEARCH STUDY

As part of this master planning process, the University of Michigan has analyzed shoreline ecosystem and physical dynamics to help Grand Haven manage its shoreline. A brief summary of the team's framework, results, and recommendations are presented in this chapter. Much more detail on this process, methodology, and results are presented in Appendix B.

OVERVIEW OF RESEARCH FRAMEWORK

The Research Framework of this study uses scenario planning to assess environmental and land use conditions under different management options and Climate Futures. Scenario planning, in general, identifies driving forces to inform a range of scenarios that are then analyzed and evaluated. In this context, the project team identified two driving forces: (1) rising levels of flood waters and (2) local government management options. These forces informed the creation of multiple Climate Futures each of which are managed differently. Each Climate Future was tested against each management option

33 Cruce, T., & Yurkovich, E. (2011). Adapting to climate change: A planning guide for state coastal managers–a Great Lakes supplement. Silver Spring, MD: NOAA Office of Ocean and Coastal Resource Management.
34 Ibid.
35 Ibid.
36 Dinse, Keely. Preparing for Extremes: The Dynamic Great Lakes. Michigan Sea Grant. Web. Accessed July 2015.
37 Austin, J. A., & Colman, S. M. (2007). Oceans- L06604 - Lake Superior summer water temperatures are increasing more rapidly than regional air temperatures: A positive ice-albedo feedback (DOI 10.1029/2006GL029021). Geophysical Research Letters, 34, 6.).
38 Dinse, Keely. Preparing for Extremes: The Dynamic Great Lakes. Michigan Sea Grant. Web. Accessed July 2015.
39 Cruce, T., & Yurkovich, E. (2011). Adapting to climate change: A planning guide for state coastal managers–a Great Lakes supplement. Silver Spring, MD: NOAA Office of Ocean and Coastal Resource Management.

and evaluated for impacts on the environment and land use in the community. This framework is presented visually in Table 9.1.

TABLE 9.1 RESEARCH FRAMEWORK

	Lucky Climate Future	Expected Climate Future	Perfect Storm Climate Future
Current Structures and Infrastructure			
Build-Out According to Current Zoning			
Build-Out According to Current Master Plan			
Build-Out According to Best Management Practices			

CLIMATE FUTURE DEFINITIONS

- "Lucky" Future – Under the Lucky Climate Future, Great Lakes water levels will continue to stay relatively low. Although there will be wave and wind action, major storm events and wave impacts will not encroach on properties landward of current beaches. A Lucky flood projection is shown in Map 9.1.

- "Expected" Future – Under the Expected Climate Future, Great Lakes water levels will continue to fluctuate according to long-term decadal patterns, including recent extreme storm events incorporated into FEMA's ongoing Great Lakes Coastal Flood Study. There will be periods of high water levels similar to the long-term highs recorded in 1986, with Great Lakes still-water elevation closer to that of long-term average (580 feet). There will also be more frequent large storm events than in the past. Map 9.2 shows an Expected flood projection.

- "Perfect Storm" Future – Under the Perfect Storm Climate Future, Great Lakes water levels will continue to fluctuate according to decadal patterns, consistent with assumptions made for the Expected future. However, still-water elevation will be higher than the long-term average and closer to the long-term high (583 feet). The Perfect Storm Climate Future also accounts for flooding from rivers. Map 9.3 shows a Perfect Storm flood projection.

MANAGEMENT OPTIONS

1. Current Practices

   Under this option, the Grand Haven Community will continue to manage land in the same manner it currently employs, in accordance with adopted plans, zoning ordinances, and relevant local ordinances.

2. Build-out According to Current Zoning

   Under this option, the community will undergo a full build-out of residential development according to its existing zoning code. Additional homes are built in areas at the base flood elevation and are at risk for flooding. This is not an exact picture of the development capacity in the community; rather, this work equates to an estimate of where development may possibly occur under the current zoning, with additional land set aside for open space, driveways, streets, and yards. See Map 9.4 for a visual of where these points are located.

3. Build-out According to Master Plan

   Under this option, the community will achieve a full build-out in accordance with guidelines set forth in its master plan. This experimental option was intended to capture measurable differences between a master plan and a zoning ordinance, which could help local jurisdictions identify opportunities to improve both documents.

4. Build-out According to Best Management Practices (BMPs)

   Under this option, the Grand Haven community will adopt and implement Best Management Practices to preserve natural resources and protect private property. See Map 9.4 for a visual of where these points are located. For this study, only several Best Management Practices are modeled. The selected BMPs were chosen as they have a significant spatial effect that can be easily modeled using CommunityViz software. Additionally, each has a policy or regulatory impact achieved through a zoning ordinance.

   The intent of including this management option is to present several amendments that could be adopted that may influence the impact on land use and the environment in the community.

   The BMPs modeled in this management option are:

   - 50-foot buffers around any inland water like rivers, lakes, and streams.
   - 50-foot buffers around any wetland 5 or more acres in size, as defined by the State of Michigan's Final Wetland Inventory data.
   - A complete restriction of any development within a wetland 5 or more acres in size, as defined by the State of Michigan's Final Wetland Inventory data.

Each Climate Future was tested against each management option for its impact on the land use and environmental conditions in the Grand Haven community. The experimental "Build-out According to Master Plan" management option served as a useful conceptual aid during the planning process, but it did not yield enough measurable data to be effectively modeled. Therefore, only the results of the "Current Practices," "Build-out According to Current Zoning," and "Build-out According to Best Management Practices" management options are discussed in this chapter.

SCENARIO PLANNING TO ASSESS LAND USE AND ENVIRONMENTAL CONDITIONS

Each management option can be analyzed in each of the three Climate Futures. This creates an array of scenarios the City could reasonably encounter in the foreseeable future regarding flooding and local government management options. Each scenario has a different impact on the land use and environmental conditions in the City of Grand Haven. The remainder of this chapter presents the results of the modeling, derived by pairing each management option with each Climate Future. Land use impacts include the acreage, parcels, structures, and critical facilities that would be impacted under different Climate Futures for each management option. Environmental conditions include the acreage of wetlands, tree canopy, impervious surface, Critical Dune Areas, and High Risk Erosion Areas impacted in each Climate Future for each management option.

LAND USE RESULTS

TOTAL ACRES

The total acres of land impacted by flooding increases from the Lucky Climate Future to the Perfect Storm Climate Future. The number of acres impacted increases the most between the Lucky and Expected forecast (68%). Between the Expected and Perfect Storm, the total acres impacted increases by about 7%. Table 9.2 shows the total acres of land impacted under each future flood forecast in the City of Grand Haven.

TABLE 9.2 TOTAL LAND ACRES IMPACTED BY FLOODING

	Lucky	Expected	Perfect Storm
City of Grand Haven	336	565	606

PARCELS

As Table 9.3 shows, between 667 and 985 parcels are impacted depending on the severity of the climate future in the City of Grand Haven.

In the Lucky climate future, about 30% of the parcels impacted are zoned Waterfront. An additional 23% (154 parcels) are 'other', which are largely unclassified under current zoning. An additional 17% (112 parcels) are zoned for planned development. About 12% (77 parcels) of the parcels impacted in the lucky climate future are in some type of residential zone.

In the Expected climate future, the number of residential parcels impacted increased by 122%, to a total of 171 parcels. A greater number of parcels zoned as Waterfront, North Shore, and parcels that are publicly owned are impacted.

In the Perfect Storm climate future, 985 parcels are impacted. Only about 21% (236 parcels) are zoned waterfront. A greater mix of industrial, residential, North Shore, and Old Town parcels are impacted.

In general, as the future climate causes more severe flooding, greater numbers of residential and

TABLE 9.3 TOTAL PARCELS IMPACTED BY ZONE

	Lucky	Expected	Perfect Storm
Planned Development	112	112	182
Old Town	24	24	33
Waterfront	197	201	211
Waterfront 2	0	25	25
North Shore	4	99	99
Commercial	2	2	2
Traditional Industrial	60	60	61
Industrial	37	37	40
Moderate Density Residential	46	46	51
Multiple Family Residential	31	53	53
Dune Residential	0	72	72
Publicly Owned Impacted (118 total)	0	27	40
Other	154	156	156
Total Parcels Impacted	667	887	985

industrial parcels may be impacted. While waterfront parcels are likely zoned to anticipate some measure of flooding, as flooding increases, a greater mix of residential and industrial properties may be impacted. Commercial parcels seem to bear the least impact across all future climate forecasts.

Maps 9.5, 9.6, 9.7 in Appendix C visualize the type of parcels impacted under the lucky, expected, and perfect storm.

STRUCTURES

Between 78 and 497 structures may be impacted in the City depending on the severity of the climate and the management practices the City pursues. Table 9.4 summarizes the total number of structures impacted under the climate futures and management options.

In the Lucky climate future, if no Best Management Practices are implemented and the City achieves a full build-out, 228 structures could be built in areas subject to inundation. This number reduces to just 80 properties, 78 of which are currently built, if the City implements Best Management Practices.

In the Expected climate future, 287 properties could be impacted if Best Management Practices are implemented for future development. If no Best Management Practices are implemented, 441 structures could be subject to inundation.

In the Perfect Storm climate future, 305 properties could be impacted if Best Management Practices are implemented for future development. If no Best Management Practices are implemented, 497 structures could be subject to inundation.

TABLE 9.4 NUMBER OF STRUCTURES IMPACTED BY FLOODING

	Lucky	Expected	Perfect Storm
Current Infrastructure and Development	78	239	256
Build-out According to Current Zoning Ordinance *(Additional Structures Impacted)*	150	202	241
Build-out According to Best Management Practices *(Additional Structures Impacted)*	2	48	49

In general, as the future climate causes more severe flooding, implementing Best Management Practices prove to be reduce the number of structures damaged by about 60% as the community grows.

CRITICAL FACILITIES

There were no critical facilities impacted under any future climate forecast. Again, the critical facilities analyzed included the current locations of police and fire stations, schools, places of worship, utilities, public facilities, and water treatment plants.

ENVIRONMENTAL RESULTS

WETLANDS

Wetlands are an important tool for community resilience, particularly for benefits related to flood control and water quality. GIS was used to compare existing wetlands to areas of potential wetland restoration in each Climate Future to give the City a broader picture of areas that could best provide the flood-control benefits of wetlands. Additionally, unprotected wetlands (i.e., under 5 acres in size) were counted using GIS. It is important that this analysis is an overall, generalizable study useful to compare one scenario to another. It should not be used to identify individual wetlands or areas of private property suitable to wetland restoration.

Table 9.5 shows the number of acres of wetlands impacted by flooding in each Climate Future. Existing wetlands are estimated using national and state data, and wetlands included in Maps 9.8, 9.9, and 9.10 either are, or are likely to be, a wetland. Table 9.5 shows the inundation of existing wetlands is relatively stable across the Climate Futures. There are nearly 500 acres of existing wetlands impacted by all three Climate Futures. These wetlands provide some flood protection by absorbing flood water. While this study does not quantify the benefit of the existing wetlands to the City, studies have shown one acre of coastal wetlands can hold up to one million gallons of water.

Over 90% of the City's existing wetlands are likely to received flood waters in the Lucky Climate Future. The existing wetlands compared to the three Climate Futures are shown in Maps 9.8, 9.9, and 9.10 in Appendix C.

Potential wetlands are areas with hydric soils, are not currently developed, and have been identified

TABLE 9.5 WETLANDS SUMMARY

	Lucky	Expected	Perfect Storm
Existing Wetlands (Acreage)	491	492	496
%, out of total existing wetlands	87.50%	87.70%	88.40%
Potential Wetlands (Acreage)	127	127	150
%, out of total potential wetlands	17.40%	17.40%	20.50%
Unprotected Wetlands (Acreage)	42	44	45
%, out of total unprotected wetlands	64.60%	67.70%	69.20%

by the National Wetland Inventory as potential wetland restoration areas. Table 9.5 shows there is some opportunity to increase wetlands in each flood zone – an increase of about 17% to 21% depending on the Climate Future. Potential wetlands compared to three Climate Futures are shown in Maps 9.11, 9.12, and 9.13 in Appendix C.

Wetlands are under 5 acres in size are considered unprotected, as they are not currently regulated by any local or state process. In aggregate, small wetlands can still have a large effect on the ecosystem's flood control. Table 9.5 shows the City has about 40 acres of unprotected wetlands in areas likely to flood in each Climate Future. Over 60% of the City's unprotected wetlands are in areas likely to flood under each Climate Future. Unprotected wetlands are shown in Maps 9.14, 9.15, and 9.16 in Appendix C.

WETLANDS AT RISK

It is difficult to estimate the impacts of future development on existing and potential wetlands, given the site-specific permitting process currently in place. That is, it is impossible to predict how many land owners may apply to develop a wetland area, or how many of those applications may be approved or denied. However, the project team was able to demonstrate the impact future development may have on wetlands by visually showing the wetlands on or near properties with room for development under current zoning. Map 9.17 shows existing wetlands and nearby areas that are open, under current zoning, for development. Many existing wetlands in the City are near areas open to development.

If the City pursues development in line with Best Management Practices, fewer existing wetlands are at risk by comparing the orange and purple build-out points in Map 9.17 in Appendix C.

TREE CANOPY

Trees help absorb some inundation during times of flooding. In addition to flood mitigation, tree canopies reduce heat by providing shade and wildlife habitat, improving air quality, and adding aesthetic value.

The purpose of this tree canopy analysis is to roughly estimate the area within public properties and road right of ways that might be forested to better mitigate increased flooding and its associated

impacts. It may lay a groundwork for future research into areas that could be strategically reforested to help reduce flood risk. Table 9.6 shows the acres of existing and potential tree canopy in each Climate Future.

TABLE 9.6 TREE CANOPY ANALYSIS

	Lucky	Expected	Perfect Storm
Existing Acres	184.8	219.15	235.2
Potential Acres	27.9	32.3	37.1
% of Potential Increase	15.10%	14.70%	15.80%

This tree canopy analysis shows the potential for increased tree canopy on public properties and road right of ways (i.e., not including private property) in each flood zone. Map 9.18 in Appendix C shows the existing and potential tree canopy used in this analysis. In general, the City has many areas where tree plantings could be a strategy to reduce flooding in the City. In the Perfect Storm Climate Future, the City could increase its tree canopy by nearly 30 acres.

IMPERVIOUS SURFACES IN AREAS LIKELY TO FLOOD

Impervious surfaces have a well-understood negative impact in a flood event. The increased runoff can exacerbate the risk of structural damage and reduce regional water quality. This is an especially important variable to consider in a flood zone. Impervious surface includes building footprints as well as sidewalks, driveways, and roads.

The purpose of this analysis is to roughly estimate the percentage of each flood zone that is currently impervious. These numbers only reflect current conditions and can be seen as conservative in light of inevitable future growth.

The City of Grand Haven has 1,144 acres of impervious surface, about 28% of its total land area. Table 9.7 shows that each climate future's flood area is around 10% paved. Studies recommend that the

TABLE 9.7 SUMMARY OF IMPERVIOUS SURFACE

	Lucky	Expected	Perfect Storm
Impervious (Acres)	34	60	71
% of Climate Future Impervious	10%	11%	12%

percentage of impervious surface in any general area be below 10% to remain protected from harmful amounts of runoff.[40] This analysis suggests that any increases in the amount of impervious surface should be carefully considered, and the City should take steps to reduce the amount of impervious surface, especially in the Climate Future flood areas. Map 9.19 in Appendix C shows the impervious surface currently in the City of Grand Haven.

[40] Flinker, AICP (2010). The Need to Reduce Impervious Cover to Protect Water Quality. Web. Accessed July 2015.

CRITICAL DUNE AREAS IMPACTED BY FLOODING

Critical Dune Areas are important assets for the Grand Haven community and, due to their soil composition, may be especially vulnerable to damage from flooding. Our intent is to provide some base of analysis for the future health of Critical Dunes, especially as development on Critical Dunes is likely to increase due to weakened regulations noted earlier.

While it is impossible to predict the number and scope of development permits that may be granted in the future, we were able to provide some insight into parcels that may be developed in or near Critical Dune Areas (Maps 9.20 and 9.21).

Table 9.8 shows that relatively few acres of Critical Dune Area would be impacted by flooding in the Lucky Climate Future. Around one-third of the City's Critical Dunes are impacted under the Expected and Perfect Storm Climate Futures. While this analysis does not investigate how dune land behaves during flooding, the proportion of dune land in each flood zone is useful information for planning future development in the City.

TABLE 9.8 ACREAGE OF CRITICAL DUNE AREAS IN EACH FLOOD ZONE

	Lucky	Expected	Perfect Storm
Critical Dune (Acres)	7	177	177
% of critical dune land in each climate future	2%	31%	29%

Perhaps more importantly, the potential for development in and near Critical Dune Areas is very high. Map 9.20 shows the "Build-out According to Current Zoning" management option in relation to Critical Dune Areas. It is clear the Grand Haven community has intense build-out potential in areas designated as Critical Dunes. The City should consider methods, as recommended in the next section, to restrict this potential for development. Map 9.21 in Appendix C shows the build-out potential of the City in relation to Critical Dune Areas if the City builds out according to Best Management Practices. Still, great potential for development is clustered in or near Critical Dune Areas, suggesting the City should consider new methods, beyond what is modeled here, to address this concern.

HIGH RISK EROSION AREAS IMPACTED BY FLOODING

The shoreline north of the Grand River is designated as a High Risk Erosion Area (HREA). As part of this study, we compared HREAs in the City with VE zones, the zones designated in the Great Lakes Coastal Flood Study as having strong, high velocity waves that could increase the pace of erosion. Map 9.22 in Appendix C shows the areas along the coastline designated as an HREA as a line offset from the shore. The map also shows areas designated as a VE zone in the Great Lakes Coastal Flood Study.

RECOMMENDATIONS

The analysis presented above modeled only several of many Best Management Practices. Yet, even these minimal interventions greatly reduced the land use and environmental assets at risk as the community and the climate continues to change. The goal of this exercise was to identify how the order of magnitude changes as flood risks rise. By implementing Best Management Practices, this analysis suggests that the land use and environmental risks can be largely addressed.

Following is a list of Best Management Practices collected from other research throughout the state. This list is in no way comprehensive, and each recommendation needs further research to determine if it is appropriate in either community. These recommendations are listed separately from the goals, objectives, and actions discussed later in the plan. The City should use the results of this study to further develop recommendations.

These recommendations are summarized around six key areas of focus:

- Private Property
- Public Health
- Emergency Management
- Public Infrastructure
- Natural Resources and Ecosystem Services
- Water Quality

PROTECTING PRIVATE PROPERTY

a. Public acquisition of repetitive loss areas or areas identified as at risk for coastal flooding. Develop these areas as parks, trails, or other community amenities that can withstand temporary flooding and inundation.

b. Participate in the FEMA Community Rating System and set benchmarks to increase score.

c. Adopt a local wetland ordinance that protects smaller wetlands (less than 5 acres) to promote wetland services in neighborhoods.

d. Require that state and local wetland permits are obtained prior to a zoning amendment approval.

e. Enact deed restrictions stating the existence of an environmentally sensitive area on public property.

f. Encourage implementation of green infrastructure, through incentives, storm water utility fees and storm water credit manuals.

g. In new developments, cluster development that allows structures to be sited in less vulnerable coastal areas.

h. Adopt performance standards that minimize on-site soil and vegetative disruptions.

i. Transfer of Development Rights – to a receiving zone in an inland area away from coastal hazards.

j. Purchase of Development Rights – Work with a land bank or conservation district to purchase rights to development in areas at risk for coastal zone flooding.

PROTECTING PUBLIC HEALTH

k. Provide incentives for on-site stormwater treatment to reduce standing water.

l. Increase capacity of stormwater sewer system to handle heavier precipitation events.

EMERGENCY MANAGEMENT

m. Regularly update the County Hazard Mitigation Plan to address coastal hazards and dynamic coastal conditions.

n. Ensure at least one municipal staff employee is a certified floodplain manager.

o. Convene collaborative discussions regarding emergency management planning and long-term adaptation strategies.

p. Implement and test emergency communications systems.

q. Identify public locations with back-up power supplies.

r. Require homes in areas prone to flooding and/or storm events to have back-up power supplies.

s. Ensure all large institutions have an all hazards plan.

PROTECTING PUBLIC INFRASTRUCTURE

t. Update design standards to build roads, culverts, and bridges in adherence with updated precipitation tables.

u. Do not allow public infrastructure to be built in Special Flood Hazard Areas, VE zones, AE zones, AO, or X zones.

v. Ensure critical facilities are sited outside the VE/AE zones.

PROTECTING NATURAL RESOURCES AND MAXIMIZE ECOSYSTEM SERVICES

w. Target wetland restoration

x. Identify high priority public lands for wetland restoration and apply for MDEQ grants to fund restoration projects.

y. Conduct a community inventory of environmentally sensitive areas and create 50 ft. buffers around all environmentally sensitive areas.

z. Require native vegetation on coastal properties, particularly near Critical Dune Areas and other environmentally sensitive areas.

aa. Zone for low intensity and low density around environmentally sensitive areas.

bb. Continue to use Sensitive Overlay District in zoning and future land use plans.

PROTECTING WATER QUALITY

cc. Require street vacuuming or street sweeping on a regular basis.

dd. Prioritize open space protection through the master plan process for areas that are contiguous, provide flood protection, and provide storm water filtration.

ee. The Master Plan should recognize the relationship between water quality and stormwater management.

ff. Limit percentages of impervious surfaces in new developments (no more than 10%).

gg. Adopt lakeshore setbacks to regulate tree cutting, mowing, and fertilizer use.

hh. Regulate key hole development (large developments with narrow frontage on the water).

CONCLUSION AND NEXT STEPS

Overall, this project outlines a clear way for the Grand Haven community to identify areas at risk of flooding. It includes a strategy for reasonably assessing build-out potential in relation to flood risk, and evaluates how that risk levels lower when each jurisdiction adopts several Best Management Practices as ordinances. These carefully adopted Best Management Practices can make the community more resilient to flood risk in terms of land use (structures, roads, and critical facilities impacted) and environmental assets (wetlands, trees, pervious surface). This analysis suggests that the Grand Haven community should conduct further research and choose Best Management Practices that best fit the community's unique needs. To that end, this report includes a library of Best Management Practices that could be adopted in this and future master plans, zoning ordinances, and other ordinances.

CHAPTER 10. DEFINING VULNERABILITY IN THE GRAND HAVEN COMMUNITY

INTRODUCTION

The effects of climate change have been felt by everyone. 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 communication 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, withstand, and/or recover from adverse situations.[1] The Rockefeller Foundation emphasizes equity as an important component of resilience, stating that community resilience is the capacity for people – particularly the poor and vulnerable – to survive and thrive no matter what stresses or shocks they encounter.[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.[3] 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".

The Grand Haven planning process aimed to increase resilience by fostering civic engagement and improving communication 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 Grand Haven Township and the City of Grand Haven. 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

ACCORDING TO THE ROCKEFELLER FOUNDATION, A RESILIENT COMMUNITY OFTEN HAS…

1. Minimal human vulnerability
2. Diverse livelihoods and employment
3. Adequate safeguards to human life and health
4. Collective identity and mutual support
5. Social stability and security
6. Availability of financial resources and contingency funds
7. Reduced physical exposure and vulnerability
8. Continuity of critical services
9. Reliable communications and mobility
10. Effective leadership and management
11. Empowered stakeholders
12. 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.

be present under other stresses and shocks within the community.

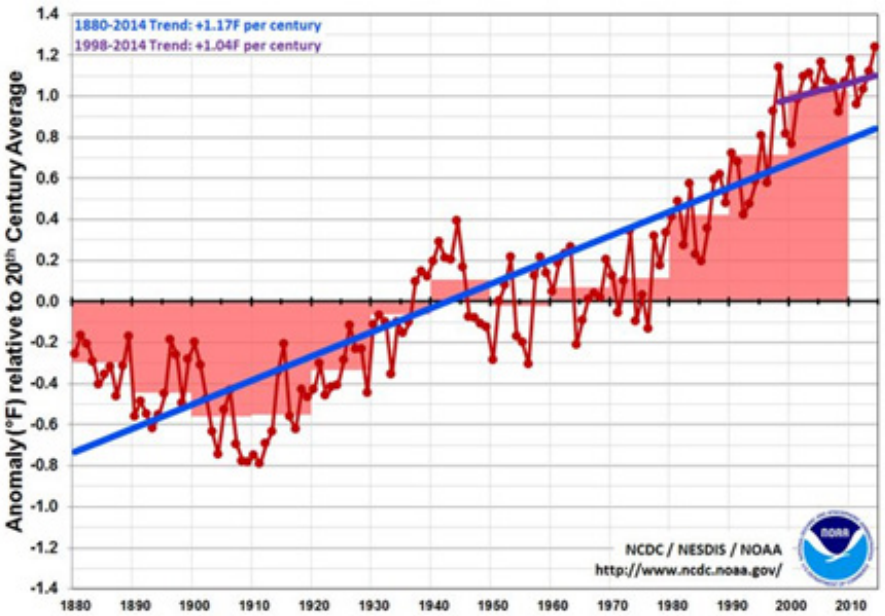
In completing the assessment, factors, such as demographics, environmental conditions, locations of critical facilities and essential services, and the built environment are considered. This assessment informs recommendations in both community's master plan for reducing the identified vulnerabilities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

Downscaling climate data is a strategy for generating locally relevant data from global scale predictions. The result is regionally specific forecasts

CLIMATE VARIABILITY

Climate and weather are directly related, but not the same thing. Weather refers to the day-to-day conditions 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 trends at the earth's surface for smaller regions, scientists apply *downscaling techniques.*

FIGURE 10.1 ANNUAL GLOBAL TEMPERATURES, COMBINED LAND AND OCEAN



As stated by the Intergovernmental Panel on Climate Change (IPCC), significant changes in the earth's climate have been observed and thoroughly documented.[4] 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. Figure 10.1 provides a summary of observed changes in land and ocean temperatures over the last 150 years.[5] The bar-graph in Figure 10.2 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 Ontario.[6] The decrease in ice cover is another strong indicator of change.

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

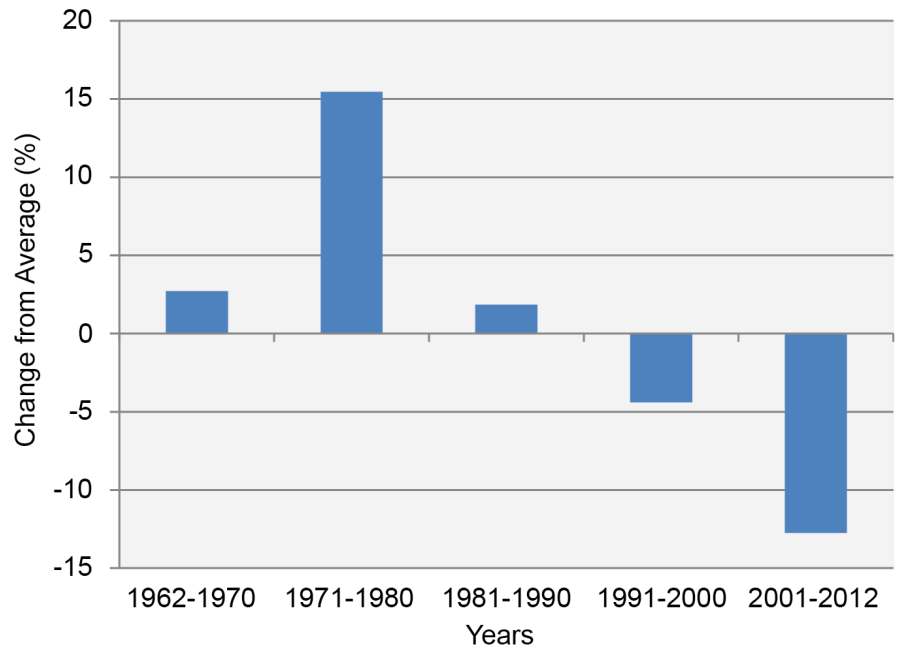
4 International Panel on Climate Change 2014 Synthesis Report. 2014 http://www.ipcc.ch/
5 NCDC/NEDIS/NOAA www.ncdc.noaa.gov
6 Wang, J., X. Bai, H. Hu, A. Clites, M. Colton, and B. Lofgren. 2011. Temporal and spatial variability of Great Lakes Ice Cover, 1973-2010. Journal of Climate 25:1318-1329.

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 Grand Haven, 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 Grand Haven 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

FIGURE 10.2 ICE COVER IN THE GREAT LAKES



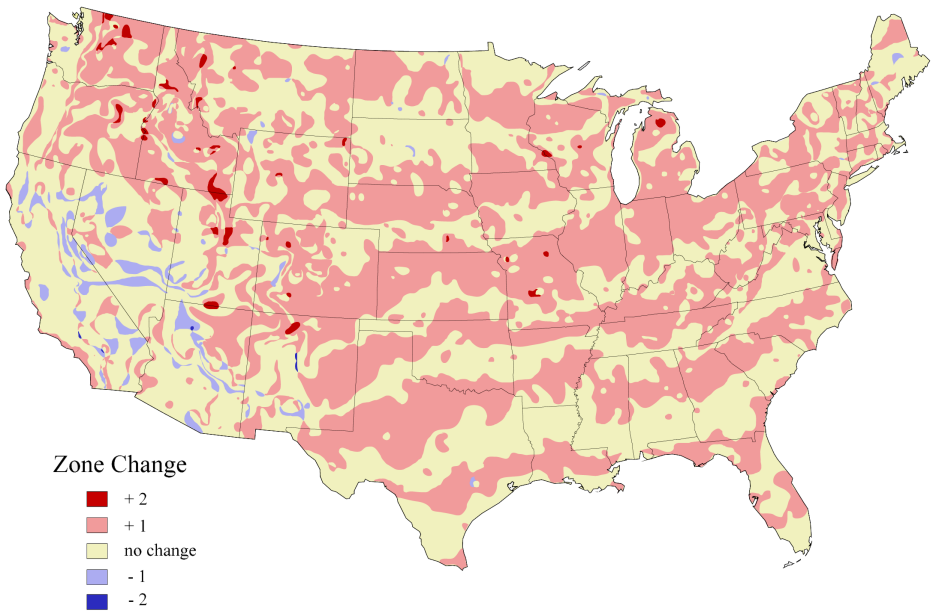
Source: http://nca2014.globalchange.gov/report/our-changing-climate/melting ice#graphic-16703

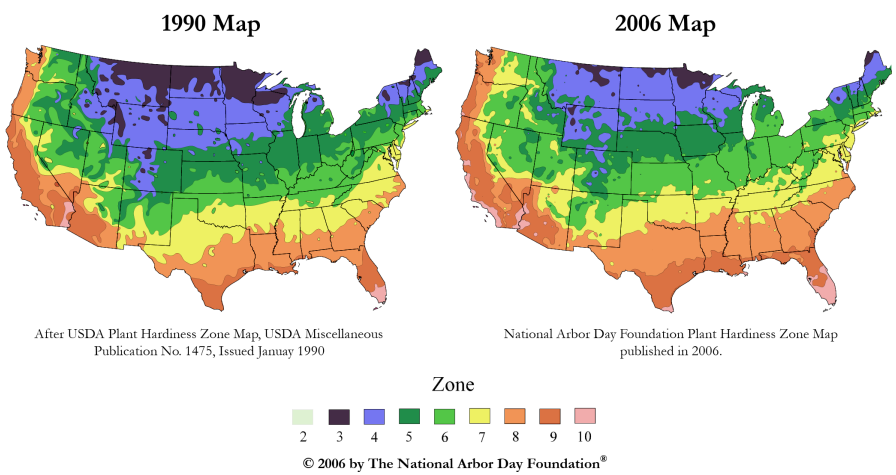
It is important to note that increased flooding and more intense drought are not mutually exclusive nor contradictory. In the Great Lakes region, scientists are predicting more intense rain events in the fall and winter and more intense droughts in the summer months. These changes in climate could have a number of both positive and negative effects on the Grand Haven Community.

For example, an extended growing season could help support new crops and increase crop yields for area farmers. On the other hand, the highly variable weather conditions such as severe storms and flooding mixed with summer droughts present big challenges to farming.

FIGURE 10.3

Differences between 1990 USDA hardiness zones and 2006 arborday.org hardiness zones reflect warmer climate





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

Much of the U. S. has been warmer in recent years, and that affects which 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 10.3, zones in west Michigan are shifting northward. Zone 5 plants that previously thrived in Grand Haven, now do best in northern Michigan, while zone 6 plants that once thrived in states like Tennessee, now will grow well in Grand Haven.

SEVERE WEATHER EVENTS IN THE GRAND HAVEN COMMUNITY

The following section summarizes a few of the major weather-related events in the Grand Haven community and west Michigan over the past century. Oftentimes, severe weather events result in negative impacts to the local economy and to vulnerable populations in the community.

"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

FIGURE 10.4 SEVERE WEATHER EVENTS TIMELINE

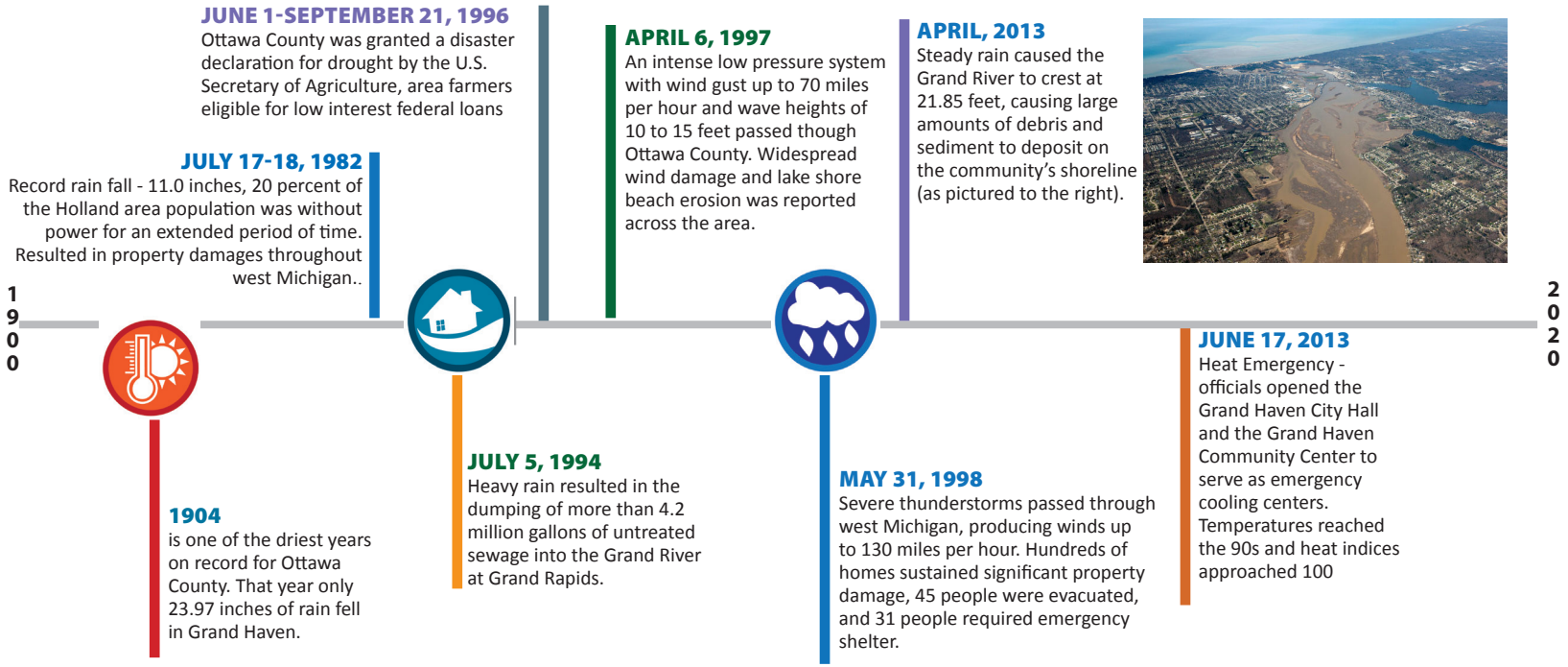
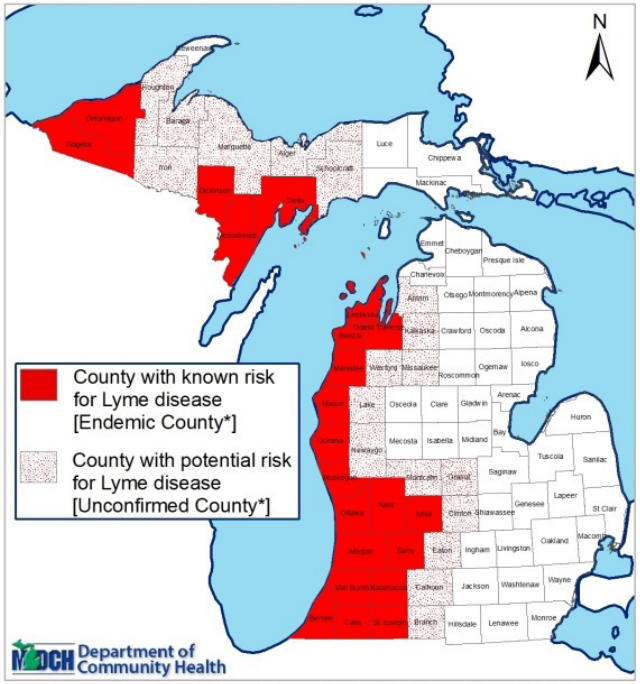


FIGURE 10.5 MICHIGAN LYME DISEASE RISK MAP IN 2014



* 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

Source: MDCH 2014, Disease and Special Projects Section

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.[7] 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 (2011). The Plan indicates there is an increase in the number of illnesses 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. 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 and security and food supply. For example, backlegged 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 10.5 illustrates the distribution of the risk for Lyme disease in Michigan, which has increased in recent years.

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. This Assessment supports the land use planning and community development process known as Resilient Michigan and focuses on the City of Grand Haven and Grand Haven Charter Township.

VULNERABILITY = EXPOSURE + SENSITIVITY

A Vulnerability Assessment is designed to identify and help prioritize adaptation strategies in the

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

community planning process. A model that defines 'vulnerability' as 'exposure plus sensitivity' is used to complete the assessment.[8] 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[9], vulnerability and its relationship to adaptation[10], and hazard-specific vulnerability assessments aimed at measuring exposure, sensitivity, and resilience.[11]

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, maps are generated that identify the community's areas 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.

For the purposes of this tool, based on the greatest risks in Michigan and most likely predicted climate changes, the vulnerability assessments were limited 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, tornadoes).

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 population in geographic areas called block groups, containing between 600 and 3,000 individuals. Data from the 2010 Census was also used, including population age and racial composition collected by at the Census block level, which are the smallest available geographic areas for demographic data. Data sets concerning parcel characteristics were obtained from Ottawa County, the City of Grand Haven, and Grand Haven Charter Township. Building footprint data was obtained from Ottawa County and tree canopy cover was digitized using an orthophotograph from 2009.[12]

HEAT VULNERABILITY

Community vulnerability to heat events varies spatially, on local, regional, and national scales. In Michigan communities there are 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

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.
12 USDA and NRCS Geospatial Data Gateway

are warmer, less stable, and are home to more disadvantaged populations.[13] 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. [14] The same study also found 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 children 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, having a mental illness, not leaving home daily, living on higher floors of multistory buildings, and suffering from alcoholism are additional factors that are associated with increased risk of heat-related mortality.

Many Michigan communities are rural and suburban. There have been limited studies conducted on how heat events impact rural and suburban communities, but one study notes that rural populations may exhibit patterns of vulnerability different from those of urban populations.[15]

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.[16]

To conduct the heat sensitivity assessment of the Grand Haven Community, the project team used a geographic information system (GIS) for spatial data analyses to show the relative distribution of people most at risk. Five factors have been identified as primary contributors to the sensitivities and risks of people exposed to a heat wave (people over 65 years of age, people living alone, people over 25 with less than a high school education, minority populations, and people living below the poverty line). Using the U.S. Census data, the project team identified the percentages of people living in each area (Block Group or Block) for each sensitivity factor.

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 10.1 in Appendix C) depicts the relative concentration of older adults in the community by Census Block.

Upon review of the map, planning commission members noted that many older people do not live in the Grand Haven Community full-time, thus people who leave for the winter (snowbirds) may not be

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. Environ 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.

counted. It was also noted there are three senior complexes in close proximity to one another at the intersection of Ferry and Robbins Road.

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. Isolated people may not be able to recognize symptoms of heat-related illness and take proper action. In this case, the project team used the American Community Survey data for Census Block Groups, broken out into individual Census blocks for geographic representation (blocks with no population were not included). Map 10.2 in Appendix C depicts the high concentrations of people living alone. 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 apartments and/or condominium units, and accessory dwelling units.

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.[17] Census Blocks were used to map the relative percentages of non-white populations in the Grand Haven Community (see Map 10.3 in Appendix C). One red polygon that was flagged by the planning commission was a cluster of migrant housing in the southeast corner of the community.

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. Census Block Groups were used to map the relative percentages of households living below the poverty threshold in the Grand Haven Community (please see Map 10.4 in Appendix C).

Similarly, University of Michigan researchers found studies that demonstrate a direct link between low education attainment and poor health as well as income.[18] There is also an established correlation between lower educational attainment and income. Based on these findings, Census Block Groups were used to map the relative percent of persons 25 years and older with less than a high school education in the Grand Haven Community (see Map 10.5 in Appendix C). One area with a high concentration of low education attainment was the Village Green Mobile Home Park. However, planning commissioners also noted that higher income neighborhoods in the northern part of the City were being flagged as having high concentrations of low education attainment, but may not necessarily be at higher sensitivity for heat events.

To complete the heat sensitivity assessment, a cumulative score for all five sensitivity factors for each Census Block was created. In each of the sensitivity factors, the percentages were grouped into

[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.

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). A ranking of 1 to 5 was assigned to each of the categories, ranging from 1 for the lowest percentage to 5 for the highest. Finally, the team combined the scores within each Census Block. Thus, the most sensitive Census Blocks could be scored up to 25. The sensitivity is color coded for ease of identifying areas with the greatest sensitivity.

The Grand Haven Community Sensitivity to Excessive Heat Map (Map 10.6 in Appendix C) provides a reasonably detailed map of locations where the highest percentages of at-risk residents live. This does not mean 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.

The Census data used likely double-counts people, such as in cases where a person is both a minority and over 65, this may over-estimate 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), since such data is not often available publicly. 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]

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.

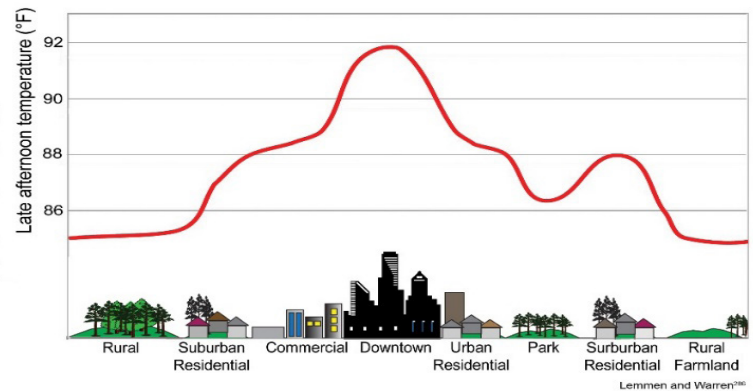
Impervious surfaces such as paved parking lots, roadways, and buildings absorb large amounts of heat from the air and from sunshine that is radiated back into the surroundings when temperatures begin to fall. At the same time, tree canopy and other vegetation tend to help cool an area through evaporation 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

[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]

surrounding suburban or rural areas. This condition has been termed the Urban Heat Island Effect.[20]

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 2–9° F, 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.[21] 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.[22]

FIGURE 10.6 URBAN HEAT ISLAND EFFECT



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

To complete a heat exposure assessment, the project team focused on the Urban Heat Island effect. With data obtained from Ottawa County, two separate exposure maps were created. The first exposure map depicts the percentage of impervious surfaces within each Census Block, as used in the sensitivity assessment (Map 10.7 in Appendix C). These percentages are divided into five categories using the GIS software's natural breaks calculation. Since exposure is lowest in areas with the lowest percentage of impervious surface, those scored a 1, with a rating of 5 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 10.8 in Appendix C) and scored using a similar five category process. To see a map of the raw mapping data of locations of tree canopy throughout the City, please refer to Map 10.9 in Appendix C. On Map 10.8, the highest percentage of tree canopy (therefore the lowest heat exposure) received a 1 and the areas with the least amount of tree canopy received a 5.

The project team combined the results of the two exposure maps to provide a single Community Excessive Heat Exposure Map (Map 10.10 in Appendix C), 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.

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.

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]

COMPOSITE HEAT VULNERABILITY

The Grand Haven Community Heat Vulnerability Map is a simple additive combination of the overall sensitivity map and the overall exposures map (See Map 10.11 in Appendix C). 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 22 to 27 (red) have residential populations that may be particularly vulnerable to extreme heat events.

FIGURE 10.7

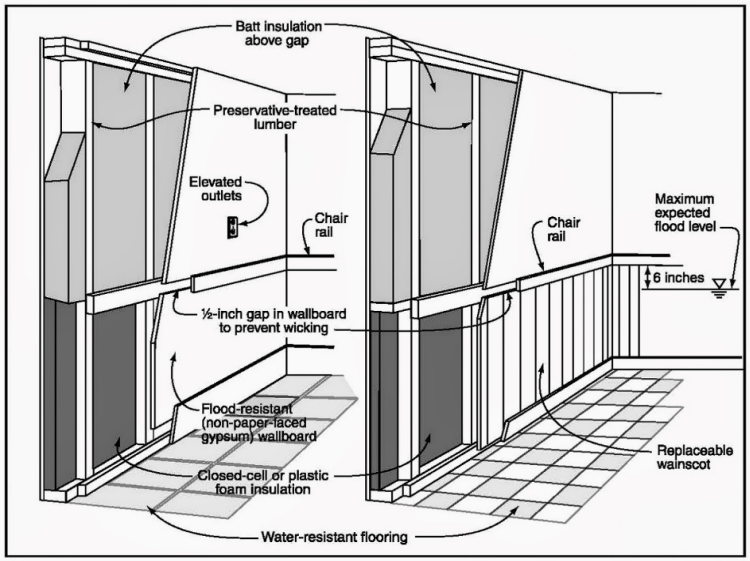


Figure 4. Partial wet floodproofing technique using flood damage-resistant materials for finished wall construction.

HEAVY RAIN AND FLOODING

Climate scientists say the Grand Haven Community 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 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 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 conducted for the Grand Haven 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. Where flowing floodwaters have the greatest energy, structures may be undercut, collapse or move, 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 10.7 for an overview of recommendations from FEMA for retrofitting homes to make them more resilient to flooding events.

EXPOSURE TO FLOODING HAZARDS

The Digital Elevation Model Map (Map 10.12 in Appendix C) offers a useful view of the topography of the City of Grand Haven, including the most prominent drainage patterns. On this map, the darkest green colors identify the lowest elevations, while the darkest red colors identify the highest elevations.

The Federal Emergency Management Agency (FEMA) develops Flood Insurance Rate Maps (FIRMs) for many counties in the United States (Map 2.5 in Appendix C). 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, 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 these percentages 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 homeowners 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 (See Map 10.13 in Appendix C for locations of homes built before 1940). 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, an attempt was made to exclude older homes that have been well-maintained and undergone upgrades from our areas of flood damage risk (See Map 10.14 in Appendix C).

FLOODING VULNERABILITY

By looking at the overlap of flooding exposure and housing sensitivity, the project team identified a number of Census blocks that are the most vulnerable in the community to flooding damage, based on available data. 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 an 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. Map 10.15 in Appendix C depicts the Community Flooding Vulnerability

OTHER CONSIDERATIONS FOR DEFINING COMMUNITY VULNERABILITY

Locations of key community assets are helpful to map to provide insight on how accessible they are to residents. It is also helpful to map locations of 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 man made 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.[23] Map 10.16 in Appendix C shows locations of critical facilities within the Grand Haven Community.

- emergency response facilities (fire stations, police stations, rescue squads, and emergency operation centers);
- custodial facilities (hospitals, long-term care facilities, jails and other detention centers, 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.

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 10.17 in Appendix C 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 Grand Haven, 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

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

that are accessible, evenly distributed across the population, open 24 hours, and well-known to residents.

FOOD AVAILABILITY

Climate change is likely to significantly impact the availability and prices of food throughout the globe. 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 publicly owned and vacant lands in existing neighborhoods and parklands. To evaluate community vulnerabilities, locations of full service grocery stores in relation to where people live are mapped. 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.

The project team also evaluated 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 lacking 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.[24] 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 income, and establish community gardens in areas identified as food deserts.

Map 10.18 in Appendix C identifies neighborhoods within the City of Grand Haven 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)

[24] http://americannutritionassociation.org/newsletter/usda-defines-food-deserts

CHAPTER 11. THE FUTURE OF GRAND HAVEN – A YOUTH PERSPECTIVE

In an effort to better understand the values and vision for the community of young people in Grand Haven, the consultant team engaged the local Youth Advisory Committee (YAC). Organized as a formal program within the Grand Haven Area Community Foundation, the YAC consists of high-school students from the Tri-Cities area that regularly meet to talk about and think through youth issues. In February, about 30 YAC members participated in a "youth charrette" in which students were asked to identify and map community assets and illustrate their vision for the community in an activity called *Crayon your Community*. In April, the consultant team worked with YAC members to develop a preferred non-motorized map for the greater Grand Haven Community. Following these hands-on activities, a handful of YAC members were tasked to summarize and write - in their own words - the results of the planning activities for this chapter of the Master Plan.

YAC members participate in a mapping exercise during the Youth Charrette

YAC members

YOUTH DEMOGRAPHIC OVERVIEW:

The population of 15 - 19 year olds in the City of Grand Haven and Grand Haven Charter Township in 2010 was just over 1,600. However, between 2000 and 2010 the population of the youth in this age range decreased by 25.9% in the City, but increased 12.9% in Grand Haven Charter Township. It is also important to note that the number of households with children under 18 years has decreased by 7.4% in the City of Grand Haven and 0.1% in Grand Haven Charter Township between 2000 and 2010.

The racial makeup of the students in Grand Haven Area Public Schools is relatively Caucasian, which has stayed consistent over the past years hovering right around 90% since 2010.

Between 2010 and 2015, the number of students in the Grand Haven Area School District increased by 4.6% (273 students), to 6,203 students.[1] There are a number of students who receive a Reduced Lunch in the GHAPS District. According to the United Way 2012 Community Assessment for Ottawa County 37.8% of students in GHAPS receive free or reduced lunch. There have also been expanded learning opportunities to accommodate for the different preferences in learning styles – Grand Haven Central High School offers a more individualized learning environment, and a smaller class size. Additionally, Grand Haven Cyber School is offered.

1 Michigan Department of Education

Photo Credit: Ed Post

Photo Credit: Ed Post

Photo Credit: Ed Post

Photo Credit: Ed Post

WHAT WE LOVE ABOUT DOWNTOWN GRAND HAVEN:

THE YOUTH OF GRAND HAVEN LOVE THE FOLLOWING ASPECTS OF OUR DOWNTOWN:

We love the Waterfront area because it connects our downtown area to the Boardwalk and Beaches. We like the accessibility factor of the downtown area and that everything is walkable and in close proximity. This makes it easy for people of all walks of life to enjoy our downtown. We like that our downtown supports privately owned businesses, and that our downtown offers a diverse array of stores. We feel there is something for everyone.

There are great recreational opportunities in the Mulligan's Hollow area – the skate park, YMCA, and the Imagination Station are just a few. We think it is great that our downtown area supports a variety of festivals and activities. These help to draw diverse crowds of people to our community – especially our downtown area. We enjoy having a Farmer's Market connected to our Boardwalk and downtown area. We love the access to organic, fresh, and locally grown produce. We would love to see this Market continue to grow and expand.

WHAT WE LOVE ABOUT THE GRAND HAVEN COMMUNITY:

THE YOUTH OF GRAND HAVEN LOVE THE FOLLOWING ASPECTS OF THE GRAND HAVEN COMMUNITY:

We are very fortunate to have a great parks system that provides us with access to several local parks and nature centers (Rosy Mound, Kirk Park, Hofma Park, and Harbor Island). We are also lucky to have a wide variety of recreational opportunities in our community such as the Rod & Gun Club, various boat launches, kayak launches, sports fields, and other water sport rentals. It is important for our community to be able to take advantage of the great recreation opportunities that are provided to us by our natural resources and landscapes.

We also like the family friendly entertainment options that are available, such as Grand Haven 9 Movie Theater, and Starlite Lanes. We also like that local businesses support our school system in many ways – with their time, or with monetary support – it is great that they encourage us as students, and invest in our futures.

MODES OF TRANSPORTATION/DIFFICULTIES:

THE GRAND HAVEN YOUTH UTILIZE THE FOLLOWING MODES OF TRANSPORTATION (SOME FOR RECREATION):

We tend to travel via: car, bike, moped, Harbor Transit, skateboards, and by foot. There are other modes of transportation that we use as well. For recreational purposes we utilize: boats, bicycles, skateboards, and the Trolley.

We recognize the following barriers to transportation in our community:

> We feel there is incomplete coverage in service with Harbor Transit and the inability to travel in a timely fashion (it does not provide service to all areas of our community). We also notice that in the summer, traffic is often congested and there is a lack of accessible parking spots. This leads us -- the youth and others in our community -- to seek other modes of transportation in the summer months.
>
> We would like to see the following expanded:
>
> We would like to see the Non-Motorized Trail Networks expanded throughout the Grand Haven community in order for non-motorized modes of transportation to be utilized safely. This will also help contribute to the health and well-being of our community members and give us more opportunities to participate in recreation. We would also like to see increased efficiency with the pick-up, and delivery, times of Harbor Transit. Ridership, including other youth in our community, would grow if it was easier to access.

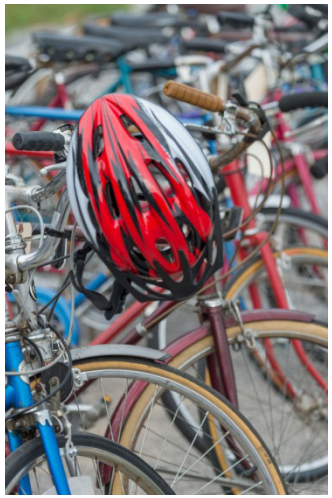


Photo Credit: Ed Post

EDUCATIONAL OPPORTUNITIES IN OUR COMMUNITY:

THE YOUTH OF GRAND HAVEN WOULD LIKE TO SEE THE FOLLOWING EDUCATIONAL OPPORTUNITIES AND/OR CURRICULUM EXPANSIONS IN OUR SCHOOLS:

We would like to be able to take courses that will prepare us for life beyond high school – either career or college readiness (Home Economics, Financial Planning, etc.).

It is also important to expose us to as many career opportunities as possible – this could be done by offering more courses focused on specific career opportunities (Engineering, Coding, General Business, Accounting, etc.) and we'd also like to see expanded Technical learning opportunities (trade schools, etc.).

Photo Credit: Kelly Ruffing, IFG Photography

POTENTIAL FUTURE AMENITIES FOR GRAND HAVEN:

Photo Credit: Ed Post

THE YOUTH OF GRAND HAVEN WOULD LIKE TO LIVE IN AREAS THAT HAVE THE FOLLOWING:

We would like to live in an area that has more diversity and cultural opportunities for us to participate in. We'd like to be involved in creative opportunities through art, music, etc. that would be available in our community. We would like to live in an area that gives us the opportunity for an urban/bigger city feel in the downtown area while also providing the choice of living in more spacious areas. For this, we would need reliable, and easily accessible, public transportation.

In our future community we will also be looking for a family friendly environment. A community that will provide and support good school systems, good childcare, and a high quality healthcare system. We would love to live in an area with expanded and continued recreational opportunities – the parks system, water access, and beaches.

WHAT WE PLAN TO DO AFTER COLLEGE:

THE YOUTH OF GRAND HAVEN HAVE MANY PLANS FOR LIFE AFTER COLLEGE INCLUDING:

We would like jobs in the following fields: Medical, Education, Financial, Public Relations, Automotive/Engineering, Social Work, and Technology. We would like to live in apartments, loft, single-family homes (in subdivisions), and single-family homes that are within walking distance to the downtown area.

We see Grand Haven as a great place to raise a family and would eventually like to return to the area. When we return to the area we would like to live in Grand Haven Township, the downtown area, or on waterfront property. We would also like to work in the downtown area, for major companies that are well-established in the area, or those that have recently relocated to provide jobs that are relevant to our experiences and provide great value to Grand Haven.

Photo Credit: Ed Post

The following is a list of all members of the Youth Advisory Council at the Grand Haven Area Community Foundation who contributed to the ideas and concepts mentioned in this chapter: Max Anthes, Sophia Barron, Sydney Borchers, Tommy Clover, Gabby Coates, Jack Costello, Hannah Dillree, Sydney Fritz, Geoff Gabala, Abbi Garrison, Adam Greer, Leah Hoffer, Landon Hudson, Kaden Kar, Connor Kippe, Olivia Kuhn, Anish Mandala, Ryan Montgomery, Chase Palmer, Alli Pennington, Michala Ringquist, Ellie Scholtz, Lukas Steffel, Brant Verlinde, and YAC Advisor; Lauren Grevel.

Photo Credit: Ed Post

CHAPTER 12. GOALS AND OBJECTIVES

As a result of the City's efforts to form a community consensus opinion about growth and development in the community, a series of twenty broad goal statements have been developed. Each goal is supported by more specific objectives, and the policies of this plan are founded on these statements. The goals are intended to describe a desirable end state or the condition of the City about twenty-five years into the future. They are intentionally general but are felt to be attainable through concerted effort. The objective statements tend to be more specific and may be regarded as milestones in the journey to achieve the larger goal.

An effective goal serves as a useful guide for policy decisions by the Planning Commission, City staff and the City Council. For a goal to be useful, it must meet the following criteria:

- *Define a desired end.* A goal statement should describe a desired end state, outcome or result. The statement may be worded in either the present or future tense, but if the future tense is used, it should be stated as a prediction, rather than a hope.
- *State in positive terms.* For a goal to be effective, it should state a positive outcome, as opposed to avoidance of an undesirable result. It is tempting to state goals as the reversal of an undesirable trend, such as "Grand Haven will limit developments containing large amounts of impervious surfaces near the Grand River." This statement, however, does not address the idea of stormwater runoff, nor does it address the underlying issue: Protection of water quality in the Grand River for the benefit of future generations.
- *Bold, but realistic.* For a statement to be meaningful, it needs to require effort to achieve. If goals were achieved without effort, they would simply be re-statements of current trends. On the other hand, a goal also needs to be realistic. Goals that are impossible to achieve will languish, resulting in community frustration and acrimony.
- *Reflect a consensus.* Most importantly for goal setting, the goal must reflect a community consensus on a particular issue. Since implementation of these goals will require broad community support, the goals need to reflect community ideas and values. A statement that does not reflect the ideas and values of a broad section of the community is doomed to failure.

HOUSING AND NEIGHBORHOODS

Goal 1. Dwellings in Grand Haven will include a broad range of housing types, including detached and attached units, appropriate for all segments of the population

a. Adjust the zoning ordinance to enable the use of incentives to allow a mix of types in larger projects in all residential districts, not just the Neighborhood Mixed Use and Old Town.
b. Review and adjust the zoning ordinance to allow two-family units and accessory dwellings to be more prevalent in appropriate neighborhoods.
c. Support a variety of housing types and densities and mixed use developments for all segments of

the population that place users near daily services.

d. Evaluate the operation of the Planned Development (PD) standards of the zoning ordinance and identify ways to foster mixed use developments.
e. Support and encourage the development of senior housing and assisted living facilities to meet expected demand.

Goal 2. Residential neighborhoods will be attractive, well maintained, safe and inviting places with convenient connections to recreation facilities, employment, transportation, shops, services and natural areas.

a. Continue to support the City's property maintenance enforcement program.
b. Develop and implement education programs for landlord and tenant rights and responsibilities.
c. Evaluate the capacity of neighborhoods for accommodating seasonal rentals and establish standards to balance local interests with hospitality and investment objectives.
d. Protect the character, safety and historical patterns of development in residential neighborhoods from inappropriate development.
e. Strengthen and enforce a tree protection and replacement ordinance for public property.
f. Evaluate the operation of existing Neighborhood Mixed Use standards and identify and implement refinements to enhance residential opportunities.
g. Continue to proactively use brownfield incentives to spur high quality redevelopment in mixed use areas.
h. Evaluate the operation of the (PD) standards of the zoning ordinance and identify ways to broaden its use in fostering mixed use developments.

Goal 3. Residents will have skills and resources necessary to improve and maintain their homes

a. Continue to support the efforts of Neighborhood Housing Services to provide grant funding to residents for home purchase, home improvement, energy efficiency upgrades, and associated initiatives to improve housing affordability.
b. Evaluate the formation of a community development corporation to offer homeowner assistance and strengthen neighborhoods, if feasible.
c. Weatherize existing housing stock.
d. Develop a program to conduct energy audits and implement energy saving measures.
e. Evaluate the construction/building permitting process to improve, streamline, and clarify if possible. Seek input from builders and Neighboring communities for standardization.

TRANSPORTATION AND CONNECTIVITY

Goal 4. Residents and visitors to Grand Haven will move about the community safely and conveniently using private and public transportation options that connect to the greater West Michigan region.

a. Evaluate and implement, if feasible, a requirement for shared driveways and cross-access

agreements for compatible adjacent land uses, particularly those along Beacon Boulevard and Robbins Road.

b. Establish streetscape design standards for major thoroughfares.
c. Work to implement features of the Robbins Road Corridor Plan as private development opportunities and public funding allow.
d. Support the goals and objectives of Harbor Transit's strategic plan to develop and implement a stronger public transit system to serve the greater Grand Haven Area.
e. Evaluate and implement, if feasible, a system of remote shuttle parking lots to reduce downtown parking lots.
f. Work with neighboring communities and MDOT to explore the long-term establishment of intercity transit to effectively serve the Ottawa, Kent, and Muskegon region.
g. Work with MDOT to monitor and plan for the short-term and long-term maintenance needs of the US 31 bridge to assure vehicular and pedestrian safety and to reduce the potential traffic disruptions.
h. Evaluate the Robbins Road Corridor Plan. Update as needed and remove barriers to implementation.
i. Establish a commuter parking lot for ride sharing.
j. Evaluate overnight parking policies.
k. Improve access to waterways for kayaking, canoeing and boating.
l. Encourage tourism exchange opportunities between the City of Grand Haven and places like Muskegon and Grand Rapids to facilitate transportation between the communities during special events.

Goal 5. Non-motorized connections, including sidewalks, bicycle paths and recreation trails, will serve all areas of the community offering safe, attractive and barrier-free connectivity.

a. Complete the non-motorized trails, pathways and sidewalk system.
b. Establish additional north-south bicycle lane connections.
c. Complete the Boardwalk connection along the entire Grand River edge.
d. Develop and implement trails and pathway designs that minimize runoff through the use of porous surfaces.
e. Establish a regional bicycle and pedestrian plan and coordinate with adjacent communities to create seamless non-motorized connections across municipal boundaries to serve residential, commercial, and institutional land uses.
f. Promote the placement of bicycle racks and lockers in numerous locations in the community.
g. Evaluate and implement, if feasible, a community bicycle sharing program.
h. Establish parking areas that are near trail systems and trolley stops to make it easier for people to reduce vehicle trips to area attractions like the State Park and the farmers market.
i. Continue to retrofit existing sidewalk crossings with accessible ramps to provide increased accessibility.

j. Identify areas of the City that are not conducive to safe bicycling, running, and walking due to a lack of lighting or poor surface conditions. Develop a plan to improve these routes.
k. Consider creating parking requirements by districts or sub-areas in order to allow for parking arrangements that encourage walkability.

EMPLOYMENT AND THE ECONOMY

Goal 6. Grand Haven will be a vital economic center in West Michigan and the Midwest with a variable balance of clean manufacturing, technology, healthcare, agriculture, professional and seasonal service, hospitality, retail and institutional employment.

a. Support the Chamber of Commerce's strategic plan for economic development and business retention.
b. Evaluate and amend local ordinances that may be a barrier for new business trying to locate within Grand Haven.
c. Develop a "new business relocation guide" to assist new businesses with the permitting process to legally occupy and operate in the City.
d. Research the viability of offering alternative incentives for development, such as density bonuses for providing a percentage of affordable housing units.
e. Partner with the Tri-Cities to create a marketing and branding program for the community.
f. Explore the opportunity to develop a commercial kitchen incubator.

Goal 7. Commercial and industrial development will be clean, attractive and efficiently designed to adapt to changing business needs.

a. Encourage an evaluation of the re-use of existing industrial buildings before new or replacement structures may be approved.
b. Evaluate and implement, if feasible, a streamlined permitting and approval process for job generating economic development projects.
c. Evaluate and strengthen as needed both code enforcement and development incentives to promote high quality commercial neighborhoods.
d. Establish requirements for electric vehicle parking infrastructure.
e. Explore the opportunity to develop a local warehouse, processing, and cold storage facility. This could involve defining a kitchen incubator in the Zoning Ordinance and allowing kitchen incubators as a permitted use and/or special land use in appropriate districts.

Goal 8. The community will include world-class education and training opportunities and facilities.

a. Establish state-of-the-art higher education and retraining facilities in the community focusing on increasing brainpower, job creation and retention.
b. Improve access to high-speed and reliable wireless broadband service throughout the community.
c. Strengthen collaboration between area schools and the local business community.

Kitchen Incubator Considerations

A kitchen incubator, also known as a culinary incubator, is a business incubator dedicated to early-stage catering, retail, and wholesale food businesses.

Business incubators make it easier for new businesses to grow by mitigating the cost of facilities and equipment and providing a nurturing environment to entrepreneurs. According to the National Business Incubation Association, business incubators have successfully graduated over 87% of their firms and kept an astounding 84% of these thriving businesses within their local communities for years after graduation.

Kitchen incubators help new businesses by covering the capital cost of kitchen facilities. Shared kitchen facilities are leased on an hourly or timeslot basis to incubatees, enabling a business to develop to the stage where it can invest in its own kitchen faculties. Additionally, kitchen incubators assist their tenants with business planning, access to financing, and other business needs.

Kitchen incubators are mostly found in areas with significant levels of food safety regulation where capital investment in commercial kitchen equipment can be prohibitive for new businesses.

d. Develop curriculum with local schools and universities for students to learn about careers in manufacturing and agriculture.
e. Encourage the addition of a satellite campus within the region.
f. Assure the development of a well prepared and educated youth ready to compete in the global knowledge economy.
g. Assure the development of a well prepared and educated workforce that is continually ready to compete in the global knowledge economy.

Goal 9. Hospitality and tourism will be an important part of the local economy, structured to offer visitors year-round memorable and enjoyable experiences while balancing the interests of local residents and the other key sectors of the economy.

a. Evaluate zoning and land use standards to attract small-scale, boutique hotels.
b. Evaluate capacity of neighborhoods for accommodating seasonal rentals and establish standards to balance local interests with hospitality and investment objectives.
c. Support efforts for voluntary residential and non-residential historic preservation while allowing for appropriate building re-use.
d. Develop and implement improved communication channels to communicate with "snow birds" when they have left town for the winter.
e. Support "buy local" programs.
f. Evaluate opportunities for encouraging longer term winter activities in addition to the existing weekend festivals.
g. Encourage the development of a United States Coast Guard Museum and promote "Coast Guard City USA" year-round.

NATURAL FEATURES AND THE ENVIRONMENT

Goal 10. The preservation and enhancement of natural features of the community will be the central consideration in all civic decisions in Grand Haven. Buildings and infrastructure will be planned, constructed and maintained to protect and improve the quality of the natural environment while serving the needs of the population and allowing residents and visitors appropriate access to enjoy natural features.

a. Develop a green infrastructure plan to enhance and sustain the network of natural features of the City and the ecological interaction of those features, within the context of the built environment and the community.
b. Proactively use brownfield incentives to spur high quality redevelopment in mixed use areas.
c. Evaluate and implement, if feasible, programs to use IFTs, streamlined processing and other development incentives, to encourage energy-efficient building design standards and low-impact development techniques.
d. Establish goals, standards, and ordinances to maintain a minimum of 40 percent tree cover.
e. Support NORA initiatives for enhanced regional recreation.

f. Work with Ottawa County and NORA to develop a County-wide map of all recreation amenities. (i.e. parks, open space, trails, sidewalks, pathways, etc.).
g. Adhere to the 10-20-30 formula for municipal street tree planting (no more than 10% of a single species, no more than 20% of a single genus, no more than 30% of a single family.
h. Explore administrative and funding options for future harbor dredging needs.
i. Look for opportunities to establish green roofs on buildings.
j. Continue to promote waterfront and park activities.
k. Consider the Best Management Practices described in Chapter 9 - Coastal Resilience.

Goal 11. Grand Haven will be a leader in the encouragement of energy production systems that improve energy independence and conserve and enhance natural resources.

a. Develop and implement programs to promote energy conservation in municipal operations and in local businesses and residences.
b. Evaluate local ordinances to support renewable energy and adjust as needed to improve feasibility and encourage use.
c. Develop a long range renewable/sustainable energy plan that meets or exceeds state and national goals.
d. Work with local builders to host energy efficiency training programs such as LEED and encourage builders to seek special certifications.
e. Begin to formally discuss the long-term future of the J.B. Sims Generating Station and consider future energy sources.
f. Continue to seek opportunities to exceed Michigan's 10% renewable energy source requirements.
g. Explore opportunities to develop localized renewable energy projects.

Goal 12. New developments and buildings re-use in Grand Haven will maximize energy efficiency and improve environmental quality.

a. Evaluate and implement, if feasible, stronger requirements for Low Impact Design.
b. Include site design criteria in Planned Developments, public projects, subdivision planning, etc., to optimize energy efficiency, minimize road and infrastructure needs, promote green spaces, and reduce stormwater runoff and pollution.
c. Identify methods and create ordinances to encourage the development of energy efficient buildings and sites, such as an energy audit program.
d. Research options available to re-use outdated buildings and/or decommission buildings to promote infill development.
e. Increase residential and commercial rainwater capture and reuse.
f. Continue to retrofit existing or install new exterior light fixtures with energy efficient light fixtures.

INFRASTRUCTURE AND GOVERNANCE

Goal 13. Grand Haven's public facilities, including roads, utilities, parks and buildings will be carefully planned, constructed and maintained to efficiently serve the needs of current and future generations.

a. Periodically review and update the Parks Master Plan in keeping with the policies, goals, and objectives of the Master Plan.
b. Develop assured sources of revenue to support strong maintenance programs for public infrastructure, buildings and facilities.
c. Complete an evaluation of City buildings and facilities to identify improvements to reduce energy consumption and stormwater runoff and implement those that prove feasible.
d. Regularly review and update as necessary the future land use map and coordinate with the adjacent communities wherever possible.
e. Coordinate capital projects such as street projects with neighborhood development (i.e. resurfacing street after water/sewer installation; reviewing sub-area plans for neighborhoods that are scheduled to have infrastructure improvements, like Centertown in 2014.
f. Review the Zoning Ordinance for opportunities to include language to address coastal flooding in cooperation with the University of Michigan.

Goal 14. Information on planning, development and governmental services decision-making will be broadly available through numerous sources of outreach and community participation in local governance will be informed, thoughtful and transparent.

a. Evaluate and expand the use of local access video, cable, and digital internet streaming video to broaden public access to meetings.
b. Improve the posting of City Council, Planning Commission, and other Board minutes as both unapproved drafts and final versions.
c. Work with local schools to expand curriculum on local governmental processes.
d. Improve the City's website to enable online forms of filing.
e. Expand the use of digital media for report delivery.
f. Improve communications among elected officials, appointed officials and City staff to promote understanding of mutual roles.
g. Improve feedback of mechanisms for citizens and visitors to provide more timely and robust input regarding issues and concerns.

Goal 15. Grand Haven will be a leader in West Michigan in working with other units of government, state agencies, schools and special authorities to manage growth and to plan and deliver services to the residents and businesses of the area in the most efficient and transparent manner possible.

a. Work with neighboring communities to form a Joint Planning Committee to improve inter-local coordination and communication and to consider common planning strategies and issues of

sustainability, in a regional context.
b. Cooperate with other area communities in the evaluation and implementation of any feasible joint approach to service delivery.
c. Collaborate with local units of government to buy locally to achieve a balance between the least dollar cost and the smallest carbon footprint to meet governmental needs.
d. Consider how new policies advance the basic need deficiencies outlined through the assessments from the Greater Ottawa County United Way.

Goal 16. The City of Grand Haven will have a modern, efficient and effective governmental structure established through an updated City Charter.

a. Continually monitor this living document and periodically evaluate weaknesses and either amend or rewrite the Charter as necessary.

RESILIENCY

Goal 17. The City will be a resource and educator for Grand Haven residents on the importance of developing and maintaining a resilient community.

a. Coordinate with Grand Haven Public Schools to incorporate resilient and environmental education curriculum as well as volunteer opportunities for community projects that support the resiliency efforts.
b. Develop a best management practices plan to provide educational information to homeowners living within sensitive landscapes (i.e. native vegetation, shoreline stabilization, erosion prevention, etc.).

Goal 18. Grand Haven will be prepared for natural disasters.

a. Identify and review emergency preparedness plans.
b. Identify existing and potential new locations for emergency shelters.
c. Establish a network of organizations and resources to assist with post-emergency efforts.
d. Enhance existing and establish redundant public emergency communication systems.

Goal 19. All residents will have access to affordable, locally-sourced foods.

a. Enhance current site of the Farmer's Market with electricity, refrigeration, and additional vendor and parking spaces.
b. Encourage daily destinations such as grocery stores to accommodate bicyclists and pedestrians in their site plans.
c. Support and promote convenient access to local food sources such as roadside stands, edible landscaping, and front yard gardens.
d. Expand the market for local food sources in schools and area businesses.
e. Partner with local restaurants and grocers to expand and advertise the use of fresh and healthy

foods.

f. Research the viability of "Urban/Residential/Backyard Farming" and amend ordinances accordingly.

g. Support the use and development of community gardens and establish regulations to promote them.

Goal 20. Residents will have access to resources to live an active and healthy lifestyle.

a. Foster a culture of bicycling and walking.

b. Support local groups focusing on healthy lifestyle activities.

c. Identify fixed routes for marathons in coordination with neighboring communities.

d. When appropriate, require a Health Impact Assessment (HIA) for new Planned Development projects.

e. Consider allowing sidewalk gardens in neighborhoods and in parks and other public spaces by expanding the list of what is acceptable to grow in the City right-of-way and parkway. This could mean rewriting landscaping requirements in all districts to allow non-standard planting and edible planting with certain reasonable restrictions.

Goal 21. The sensitive natural landscapes that distinguish the Grand Haven landscape will be protected as context-sensitive development will be carefully permitted.

a. Identify and address "at risk" landscapes (i.e. wetlands, Critical Dune Areas, High Risk Erosion Areas, floodplains).

b. Develop and implement shoreline protection standards.

c. Establish a pilot program for the use of native vegetation in order to stabilize sensitive landscapes.

d. Review opportunities for flood mitigation along the lakeshore.

e. Consider creating share parking or other parking arrangements to encourage walkability in certain sub areas or districts. This could be integrated with a mid-term evaluation of zoning ordinance amendments.

CHAPTER 13. FUTURE LAND USE

The City of Grand Haven Master Plan establishes general patterns of land use to guide growth and development for the next twenty to twenty-five years. This Plan constitutes a practical and integrated approach to foster inviting, sustainable and efficient patterns of development and redevelopment that preserve the distinct personality of key neighborhoods and natural features while accommodating new investment and emerging economic trends.

The residents of Grand Haven understand the value of the community's unique neighborhoods. At the same time, there is a recognition that, as this plan is written, the City, the state and the regional economy are caught up in a process of transformation that will likely impact land use, redevelopment and investment well into the future. Residents are not content, however, to react to change as it eventually materializes. Rather, there is a strong desire to proactively strengthen neighborhoods despite economic challenges and to improve the community's prospects for renewed vitality.

The overall purpose of the future land use plan is to guide development and redevelopment in logical and viable patterns while offering fair, and in some cases, value-enhancing opportunities where reasonable and appropriate. Since the City is virtually fully developed, this future land use plan also seeks to protect much of the existing developed pattern by encouraging complementary redevelopment. Above all, this Plan recognizes the City's precious natural assets and the community's responsibility to protect them for future generations.

The following paragraphs describe the future land use designations as illustrated on Map 13.1. Each Future Land Use designation is intended to generally describe the distinctive character of an area and a suite of land uses. In addition, each is broadly defined intentionally to permit the community to refine the ultimate land use regulatory structure through zoning and carefully-tailored building form and placement standards. It should be noted that the future land use designations on Map 13.1 are meant to be seen as general with indistinct edges, in most cases. Along the margins, where two or more designations adjoin, either land use class may be appropriate. The Zoning Plan in Chapter 14 is designed to aid landowners and local officials in applying the Plan's guidance in development and zoning decision-making.

Natural areas near the Grand River

FUTURE LAND USE DESCRIPTIONS

NATURAL AREA AND OPEN SPACE

Grand Haven is blessed with abundant natural features, primarily associated with its location at the mouth of the Grand River on the Lake Michigan shoreline. Although the City's working harbor has been important to the community's development, serving commercial, industrial and recreational needs, parts of the shoreline remains largely unspoiled. In addition, the City is home to Grand Haven

State Park, which, together with the municipal beach, offers residents and visitors a very inviting Lake Michigan beach. Beyond the water resources, the City is also home to a broad area of freshwater sand dune formations. Most of these dunes are forested with significant development, especially facing the Lake. Yet the inland portions of the wooded dunes have been preserved either in public park land, cemetery or in private reserves for the enjoyment of local residents. Finally, the City includes several pockets of unspoiled natural areas, most associated with native wetlands or Grand River tributaries identified through the recent sensitive areas overlay analysis.

Natural Area and Open Space lands are a vital element of the City's identity and the quality of life enjoyed by local residents. An over-arching focus of this Plan is to preserve such features so that future generations may continue to enjoy the benefits of a well-preserved natural environment. The lands designated as Natural Area and Open Space Preserve represent 707 acres, or about 19% of total land area in the City. The vast majority of that area falls within the Kitchel-Lindquist Dune Preserve, the State Park or the City's Parks (Mulligan's Hollow and Duncan Woods) or Lake Forest Cemetery and development pressure in these areas is unlikely. With much of the Natural Area and Open Space designation in public or quasi-public ownership, efforts should be directed to protect and provide for additional public stewardship. This would include efforts to protect the fragile slopes and forest cover, low impact hiking trail development and habitat protection for native species.

Public lands incorporated in the City's parks system, while not subject to commercial development, will be managed for open space preservation and recreation in accord with the Parks and Recreation Plan, as it is adapted from time to time. The lands not in public ownership may experience very low-density development integrated with the key natural features and the provisions of the Sensitive Area Overlay should be carefully observed to ensure the perpetual protection of key natural features.

LOW TO MODERATE DENSITY RESIDENTIAL

This is the broadest future land use district covering about 1,283 acres, or about 34.4% of the City's land area. The purpose of this designation is to provide a range of neighborhoods for the residents of the community. The predominate land use will be single-family residences formed either as detached (freestanding) buildings or smaller attached buildings (generally less than 2 or 3 units per building) arranged in walkable and attractive neighborhoods with residential densities of up to five dwellings per acre. In addition, this land use may support compatible institutional uses, such as schools, churches and neighborhood parks to serve the area's residents.

Although this area is the largest of the future land use designations, there are some particular attributes of parts of the City that should be recognized and respected within the context of the future land use designation. The following paragraphs discuss three distinct portions of the Low to Moderate Density Residential district.

DUNES NEIGHBORHOODS AND NORTH SHORE NEIGHBORHOOD

Along and immediately inland of the Lake Michigan shoreline are several neighborhoods characterized

by high-value views of water and natural features. These neighborhoods are made up almost exclusively of single-family detached dwellings.

South of the river, the neighborhoods are set back from the water and are located in the dunes and woodland areas behind the dunes, with higher densities, small and varied lots, and eclectic building forms derived from a long history as a resort-oriented neighborhood. The waterfront is entirely publicly-owned land. These neighborhoods have direct access to the commercial centers, State and local parks, and principal tourist destinations in the City. In contrast, north of the river the North Shore neighborhood has lower density, a linear neighborhood layout, flat beach terrain with limited public access, on-site wastewater systems versus public sewers, no direct access to the Downtown, and is largely a stable neighborhood of long-term residents.

These neighborhoods are generally fully developed and future development is likely to be in the form of expansions, remodeling, demolition and new construction. Given the resort nature of some of the properties in these neighborhoods, conflicts have occurred between year-round and seasonal or vacation occupants. The overall character of these areas are residential; conversion of homes to seasonal or vacation rentals to cater to the City's tourist industry has been common. The extent to which such conversions may commercialize and destabilize them as family-oriented neighborhoods of long-term residents, and the tolerance of each neighborhood for greater numbers of seasonal rentals in the future, should be individually examined for each neighborhood. With appropriate regulatory standards conflicts can be minimized while the overall residential aspects of these areas are protected with densities of four or fewer dwellings per acre.

Dunes Neighborhood

EARLY- TO MID-CENTURY SINGLE FAMILY

There are several neighborhoods of primarily single family residential development in the City constructed largely before WWII. Housing types range from very large Queen Anne and Victorians found immediately south of the downtown area, to pre-war colonials and "dutch colonials" found to the south of Franklin on both sides of US-31, to mid-century single-story ranches found further south. While the style of the homes varies significantly from north to south, this entire area is predominately made up of single-family detached units. In some areas, the original single-family structure has been partitioned into two or more units and a few neighborhoods include duplex structures. But the predominate character of the area is that of a single-family neighborhood intended for long-term family occupancy.

The pattern is well established and this Plan seeks to preserve it. The emphasis should be on the stabilization and preservation of this character, even while some redevelopment may be anticipated. Overall densities should not exceed five dwellings per acre, although some pockets of greater densities may be appropriate where additional amenities and/or open space are provided. In addition, this area may appropriately include such institutional uses as schools, parks and churches.

As the population of the City matures and as there is greater demand for housing near the core, it is likely that parts of this area will see increasing demand for accessory dwellings, such as "granny flats"

Old Town Area redevelopment opportunity

and some of the larger buildings may be divided into multiple units. In addition, like the lakeshore and dune area, those neighborhoods near the downtown or resort amenities may find increasing demand for seasonal and vacation rental use. These changes could threaten the viability of these areas if not carefully managed to preserve identity of the area as a neighborhood geared for family life with consistent and complementary development styles and residential densities. But with effective regulation, this shift can occur giving new vitality to the established uses in a manner that is in keeping with the community's personality.

OLD TOWN AREA

This area lies immediately north of the downtown and is contained by redevelopment to the north and west and the Centertown commercial area to the east. It is characterized generally by pre-war single-family detached homes on small lots. However, as it abuts more intense commercial and redevelopment areas on all sides, portions of the area may experience greater pressures to convert to a mixed use or commercial uses. This may be welcomed in some areas that abut commercial or mixed uses or with significant traffic, but other segments of the area are better dedicated to the low to moderate density residential character that predominates today. Some neighborhood scale commercial or mixed-use redevelopment or adaptive reuse may be contemplated, generally along arterial or collector streets, but measures should be incorporated to buffer the effects of these uses on the neighboring residential area.

In the areas of the community where the Low to Moderate Density Residential designation abuts certain Traditional Neighborhood Mixed Use areas, this Plan seeks to establish smooth transitions. This may be accomplished through landscaped buffers where the transition from residential to commercial uses is abrupt, or through low-intensity transitional uses such as offices or institutional uses along the margins. In addition, it is possible that some such transitions will necessitate zoning adjustments along the margins. The Zoning Plan contemplates careful and modest expansions of more intense zoning districts into the residential areas where effective buffering or transitions can be provided and where necessary to allow for viable commercial or office use expansions.

MODERATE TO HIGH DENSITY RESIDENTIAL

This future land use designation is intended to address existing areas of higher density residential development, consisting primarily of multiple-unit or manufactured housing unit developments at densities of more than five dwellings per acre. These may be rental or condominium forms designed for high amenity living for singles, seniors, couples and young families. A modest area of about 183 acres, or about 4.9% of the City's land area is included in this designation. Although this plan recognizes these existing, single-purpose developments, it does not anticipate any expansion of this form, except as may be incorporated into an area of Redevelopment, as described below. Higher density residential development is more appropriately planned as a part of mixed use neighborhoods that offer residents nearby services, shopping, entertainment and employment opportunities.

DOWNTOWN

The central business district of the City and its urban waterfront make up this future land use designation. This is the activity, entertainment and commercial core of the community and is more fully described in the Downtown Vision Plan and the Waterfront Strategic Plan summarized in Chapter 11 and more fully set forth in those plan documents which are incorporated in this Master Plan reference.

Downtown Grand Haven

The Downtown is established as an urban shopping, entertainment, professional service, residential and civic use environment for residents and visitors. The area will be characterized by an urban form that is scaled for convenient and safe pedestrian access and designed to take advantage of outdoor informal gathering places. An active, year-round street-level environment will encourage shopping, dining and entertainment with landscaped common spaces and amenities to promote social interaction. Uses fronting the sidewalk should be limited to retailing, dining and entertainment and personal services while upper floors should accommodate professional offices, residential and hospitality uses.

Portions of the commercial core of the area have undergone redevelopment and additional redevelopment is anticipated, in keeping with this land use designation.

The waterfront area currently serves primarily as public space and as outlined in the Waterfront Strategic Plan this would continue and expand. Development on the river side of Harbor Avenue should be limited to preserve as much public access to the water and to protect public views to the water whenever possible.

The eastern portion of this designation also forms the civic core of the community, including City and County government offices, courts, central park, Post Office, the library and community center. Grand Haven is the county seat of Ottawa County and the substantial presence of administrative and judicial offices as well as other public institutions helps to strengthen this land use designation as the cultural core of the community. Such uses are to be encouraged and strengthened as the redevelopment of the downtown proceeds.

The easterly portion of the designation also transitions into the Centertown sub-area. The Downtown and Centertown share many characteristics in terms of the emphasis in land uses on services and retailing. However, each has a unique personality that should be respected. As indicated in the Centertown sub-area plan (see Appendix A), some streetscape and signage elements from the downtown should be extended into Centertown to create a more uniform aesthetic in the region. However, in such other respects as land uses, residential density, building form and design standards, each area should be treated according to their own distinctive character.

TRADITIONAL NEIGHBORHOOD MIXED USE

This future land use plan embraces the established patterns that characterize Grand Haven. Many of the City's neighborhoods include a broad range of land uses arranged in a traditional urban

neighborhood form. This is not only desirable; it is also a highly functional pattern. However, while all areas share the mixed-use characteristic, each is unique in its own right and this future land use designation seeks to treat them uniformly while honoring their distinctive features and challenges.

CENTERTOWN

Centertown

This is a densely-developed portion of the urban core of Grand Haven within walking distance of the downtown, the waterfront and the Grand Landing redevelopment area. The Centertown sub-area plan in Appendix A provides greater detail on the eastern portion of this area's challenges and a series of recommended strategies to address them. Immediately to the north and west is an area made up largely of older single- and multiple-unit residential units ranging in quality. As indicated above, the area's proximity to the downtown and the waterfront gives these residential properties unique value and many have been renovated. The street system in this neighborhood forms a very efficient and walkable grid that supports pedestrian activity and interaction. An extensive range of land uses is contemplated with an emphasis on stabilizing and strengthening nearby residential neighborhoods through renovation and rehabilitation while encouraging additional retail and office uses in Centertown as outlined in Appendix A.

North of Jackson and adjoining the Grand Landing planned development, is a four-block area of older, but stable housing. This plan seeks to preserve the residential character of the interior portions of this neighborhood while recognizing that some structures may shift toward more intense uses. Along Jackson Street, this trend is already apparent and, with limitations may be accommodated. This might include higher density residential uses, personal services and even some retail. However, care must be taken to prevent automobile-oriented commercial and retail from encroaching on the otherwise stable residential character and to avoid the development in this area of uses that unnecessarily compete with established commercial areas in the Centertown, Grand Landing or Downtown areas.

Land use policies should be centered on the reuse of existing structures whenever possible to preserve and enhance the character of the area. When new construction is proposed, it should follow the building placement and form standards of the existing structures to faithfully renew and extend the traditional patterns of this area. This vicinity also includes a potential redevelopment area, known as the Stanco property located between Jackson, Fulton, First and Second Streets. This site, while reflected in the Traditional Neighborhood Mixed Use designation, will likely be redeveloped in the context of a planned development with many of the aspects of a traditional neighborhood. Given its proximity to the waterfront and the downtown, a relatively intense pattern is desirable, but in the context and scale of a traditional urban neighborhood.

WASHINGTON SQUARE AND ADJACENT NEIGHBORHOODS

East of the US-31 corridor, this traditional neighborhood mixed use area is centered on the Washington Square sub-area. In addition to that sub-area, the focus extends slightly about two blocks to the west along Madison and to the east about two blocks along Fulton. These Eastown residential neighborhoods help protect the unique identity of Washington Square by creating a buffer between it and the largely

"big box" commercial uses along Jackson and with impinging industrial and redevelopment uses likely to the east. As indicated in the Washington Square sub-area plan (see Appendix A), it will be important to preserve the identity of the Washington Square neighborhood as a node of neighborhood commerce and to retain viable residential neighborhoods to bracket it from other areas. The residential areas along Madison and Fulton help to achieve this. However, it is also recognized that in some instances the boundaries of the sub-areas may be regarded as somewhat indistinct and this Plan contemplates appropriately scaled expansions of some commercial or service uses into adjoining residential properties if necessary to achieve a viable redevelopment and/or to provide effective buffers.

THE ROBBINS ROAD CORRIDOR

The Robbins Road Corridor also includes a limited amount of Mixed Use as defined in the sub-area plan in Chapter 11. This area is actually located beyond the City limits in Grand Haven Charter Township, but is reflected in this plan as a part of the joint inter-community planning effort. Much of this area is vacant land currently and, over the life of this Plan, may develop through a series of planned, new urban developments to include a mix of residential, office and low-intensity commercial uses. As such, this area will include many of the characteristics of traditional urban neighborhoods, but in a suburban setting.

Washington Square Neighborhood

MIXED USE REDEVELOPMENT

NORTH BEECHTREE

This includes the former industrial area occupied by the Eagle-Ottawa Tannery and the former Challenge Machine property. The future land uses are more fully described in the North Beechtree Sub-Area Plan in Appendix A which describes an ambitious proposal to clear some of the site for new uses and to renovate other portions to result in a comprehensively planned campus of new and existing buildings that will house educational, office, retail, service and residential land uses.

In 2010, the City began to invest in improvements to Beechtree in an effort to attract development to this underutilized area of the City. In 2015, plans were announced that the Challenge Machine building would be repurposed into professional office space. The redevelopment project would also include the creation of a greenspace and parking lot. Plans for a new R.V. campground were also announced for this area of the City in 2015.

These redevelopments will require a concentrated public-private effort and its form will be dictated by a combination of market forces, public investment, and private entrepreneurship. As such, the Planned Development mechanism in the Zoning Ordinance is likely to be employed for some or all of this development.

GRAND LANDING

This unique redevelopment area was founded on a joint public-private effort to clear and redevelop a former brownfield location adjoining the south channel of the Grand River, immediately west of US-31.

Over a period of years, the City of Grand Haven assembled a redevelopment parcel over twenty-acres in area. Eventually private proposals were sought to use brownfield incentives for its redevelopment as a planned mixed use development and the privately-developed "Grand Landing" project is the result. As such, the future land uses are essentially defined by the plan. Portions of the project have already been realized. Luxury and loft-style condominiums (with two-story residences), and ground floor retail and nearby restaurants has already been developed. In 2015, a planned development amendment was approved to make room for 168 apartments, three new restaurants, and a 125-room hotel.

Grand Landing

The entire site is (and will be) configured so that most surface parking will be screened from view from the surrounding streets by buildings. In addition, an extensive network of walkways will encourage pedestrian activity within the site and connections to regional trails and sidewalks will allow residents to walk along the river channel and into the downtown to work, shop, dine or to take advantage of the public recreation areas within the downtown.

SERVICE/RESIDENTIAL

The Service/Residential future land use designation is intended to provide for professional and personal services and areas including higher-density development in the City. Located primarily along the Beechtree corridor and the Beacon Avenue corridor, this area is comprised of about 49.8 acres, or about 1.3% of the City's total land area. This designation recognizes the character of these two corridors both of which carry significant traffic volumes, while continuing to accommodate some residential land uses.

SOUTHERN BEECHTREE

The southern portion of the Beechtree corridor includes a mix of multiple-unit development, institutional and office uses. It also abuts the industrial land uses that extend to the east along Marion and Eaton Streets. Along the west side of the corridor, Grand Haven Area Public Schools have a dominant presence with the administrative office, bus facility and playgrounds associated with Griffin Elementary School to the west. Interspersed with office uses are a number of well-kept single-family residences. These residential properties may be expected to face pressure to convert to uses that can take advantage of the Beechtree traffic. Commercial uses should be directed to the retail and auto service areas to the north, but personal service uses or office use as well as higher density residential uses may be appropriate in this vicinity. Care must be taken in accommodating the conversion of some of these properties to higher intensity uses to assure that those uses are effectively buffered with landscaping from remaining residential uses and from the established neighborhoods on either side of the corridor.

MIDTOWN US-31 CORRIDOR

This is a relatively narrow strip of Service/Residential land use along either side of the roadway extending from Franklin on the north to Woodlawn on the south. This six-block strip has good exposure to US-31 traffic, but it directly abuts viable low to moderate density residential neighborhoods. As a

consequence intense commercial uses in this area would not be appropriate and less intense uses such as professional offices will need to be effectively buffered with landscaping and contained. This will enable these properties to exploit the US-31 frontage without undermining the residential aspects of neighboring properties. To accomplish this and to recognize the very constrained depth of these parcels, some limited expansion of low intensity uses, such as professional offices may be contemplated extending westerly to the railroad and industrial uses. However, large footprint development and higher-intensity development should be avoided and development plans should include measures to buffer impacts on adjoining residential areas.

SERVICE/COMMERCIAL

The Service/Commercial future land use designation is intended to provide for employment and goods and services to serve the broader Grand Haven community. This area is comprised of about 283.3 acres, or about 7.6% of the City's total land area. This designation is found in several areas of the community and each has its own particular set of characteristics. The following paragraphs present desired vision and intent for each area.

SOUTH US-31 CORRIDOR

Extending south along US-31 from Park Street, this area is characterized by larger land uses and a conventional suburban pattern. However, it is also impacted by the Southwest Business Corridor sub-area plan for the west side of the roadway. That plan is described more fully in Appendix A, but it includes guidelines for stronger roadway landscaping, improved inter-connectivity and some adaptive reuse of existing uses. This area includes the largest commercial parcels in the City, some of which are devoted to auto sales facilities. It is likely that some of these uses will be replaced by other commercial development over the life of this plan and the guidelines of the sub-area plan should be used to achieve an attractive and viable reuse of these sites. While new investment in commercial land uses may be welcomed in this area, the form of such development should feature high quality finishes and landscaping, including outdoor gathering spaces, an inviting mix of uses and linear buildings form to mask large footprint structures. In addition, inter-connections between uses should be maintained and strengthened as outlined in the Southwest Business Corridor sub-area plan.

Unlike some other future land use designations, the margins of the Service/Commercial use south of Park Street should be regarded as relatively rigidly defined. This is because the westerly boundary is the railroad and a fairly steep change in elevation that would make a westerly expansion virtually impossible. To the east, the Service/Commercial uses transition from moderate to high density residential and then from low to moderate residential. This is an appropriate configuration that will be observed throughout the life of this plan.

US-31 AND JACKSON

This area of the City is characterized by recently developed new, and redeveloped suburban-scale shopping and commercial plazas including free-standing and multi-tenant buildings. The development

Marina/Waterfront Areas

is designed to accommodate auto-dependent shoppers and is generally isolated from the remainder of the community by high-volume traffic on US-31 and Jackson Street. To the east between Jackson Street and the River, uses shift to marina and marine services in keeping with the access to the river. This pattern is relatively stable and not likely to change significantly over the life of this plan. Immediately southeast of this area is an industrial and heavy commercial area, including the City's Department of Public Works. These uses are viable and will help to contain any expansion of the Service/Commercial uses to the east or south.

THE BEECHTREE CORRIDOR

This largely commercial corridor extends along Beechtree Street from Fulton to Park and is more specifically described in the Beechtree Sub-Area plan in Appendix A. To the south, from approximately Park to Robbins Road on the west side of the road, the corridor is comprised of a mix of modest-scale office and institutional uses interspersed with multiple-unit and single-family dwellings and is called out in the Service/Residential future land use designation below.

This corridor carries about 12,000 vehicles per day and serves as a vital north-south connector along the eastern portion of the City. As such, the mix of uses is appropriate although many of the commercial uses are constrained by relatively shallow parcels, especially in the northern portion of the area. Some pressure to allow expansion of commercial uses into single-family areas may be expected. This will need to be carefully managed and the sub-area plan calls for limited expansions of the commercial uses with inclusion of private service drives, hedge rows, or other physical separation to buffer the two uses and help protect adjoining neighborhoods.

As indicated in the Beechtree Sub-Area plan, there is a greater predominance of retail and auto-service uses in the northerly portion of the corridor and that pattern should be retained. On the other hand, tendencies to allow those more intense uses to expand to the south of Park should be resisted. To the south of Park, there is a significant residential character especially along the western frontage and this should be protected from encroachment by commercial uses.

MARINA AND WATERFRONT AREAS

The future land use map identifies four areas of the City as Service/Commercial which have a distinctly marine-orientation. Land uses in these areas, while commercial in nature, will clearly be dependent on their proximity and access to the Grand River channel. These include marinas, boat service and storage businesses, charter boat operations and related uses.

WEST ROBBINS ROAD

As more fully described in the Robbins Road Corridor sub-area plan in Appendix A, an area extending to the east along Robbins Road from the intersection with US-31 is planned as "regional commercial" which equates to the Service/Commercial future land use designation. This area falls in both the City of Grand Haven and in Grand Haven Township and is characterized by suburban-scale commercial

development. The sub-area plan calls for measures to improve access, interconnectivity, traffic flow and building form and design.

INDUSTRIAL

This designation includes areas of the City that are committed to manufacturing, processing, storage and transportation uses. A total of 850 acres, or about 22.8% of the City's land area is planned for industrial uses. These may include some vehicle service facilities and other support functions, but the primary objective of the designation is to provide areas for job-generating manufacturing, assembly, research and development uses, as well as contractor facilities and uses that may involve outdoor storage or yard operations.

The largest portion of this designation is found to the north and south of the municipal airport in the southeast portion of the City. It is characterized by larger lots and some available land to accommodate new industrial investment. The presence of the airport in this vicinity creates some limitations on the intensity and especially on the height of uses in this area, but it also may provide some advantages for any aviation-oriented businesses interested in a location in the area.

At the opposite end of the City on Harbor Island is the Board of Light & Power coal-fired power plant. This Plan recognizes this use and appropriately plans for its continued operation in this location which offers access to Great Lakes shipping for coal delivery and freshwater for cooling and steam production. In addition, the relative close proximity of the plant to the downtown area is being explored as an opportunity to provide a sidewalk snow-melt system using waste heat from the plant. Despite the presence of this industrial use, this area also includes the Linear Park along the south channel of the Grand River. This is not inappropriate and, makes good use of this publicly-owned site.

In addition, there is growing recognition that the prevailing winds off Lake Michigan may offer a further clean energy resource and these industrial lands may see development to exploit this resource provided impacts on nearby development can be mitigated.

Adjoining the east side of the Beechtree corridor sub-area is an established industrial area. This area is characterized by smaller parcels and some of the existing structures may be nearing the end of their useful lives. Over the life of this plan, redevelopment is anticipated and desired in this area. This may entail consolidation of parcels, removal and reconstruction of some structures and potentially new public and private investment. This process may also entail a shift in land uses from manufacturing, assembly and storage to services, contractor facilities, data facilities or research and development facilities. Any combination of such uses may strengthen this area and should be encouraged.

Adjoining the North Beechtree sub-area to the west is a relatively confined area of mixed industrial, heavy commercial and service uses. This area also includes the City's Department of Public Works facility. This area shares some of the characteristics of the western portion of the North Beechtree sub-area, and likely future uses may complement those in the sub-area. In addition, it is relatively confined by a stable residential area to the south and by new commercial development to the west and north.

Immediately south of the North Beechtree sub-area is the City's Wastewater Treatment facility. This is included in a small area of industrial future land use as a single-purpose use.

A relatively small and isolated pocket of industrial uses exists immediately south of the downtown along the railroad. The area is confined by existing residential development with minimal prospects for expansion. Potential uses in this area may include contractor's facilities with outdoor storage, warehousing and mini-storage or an incubator facility for small-scale manufacturing or assembly operations. While the existing structures may be nearing obsolescence, they offer some potential for employment and this site may eventually transition to non-industrial uses.

Finally, a portion of the Southwest Business Corridor sub-area plan recognizes the industrial characteristics of that area and this future land use plan preserves those characteristics. While more detail on this area is provided in that sub-area plan (see Appendix A), modest-scale industrial, auto service, contractor operations and related facilities should continue and be encouraged in this area. This area also extends south of Robbins Road to include two existing manufacturing and office uses that abut the railroad.

CHAPTER 14. ZONING PLAN

The table at the end of this chapter outlines an approach to guide zoning decisions under this Master Plan. It identifies zoning districts that are supported by and compatible with each of the above future land use designations. It also presents potentially compatible zoning districts and suggests some guidance for use by the Planning Commission, the City Council and the public in considering compatibility.

To use this table, the reader must begin with the future land use designation in Column #1. Column #2 lists zoning districts that are frequently, but not always, compatible with that future land use designation. A request to rezone land to a supporting and compatible zoning district is also listed in Column #2 and could be regarded as consistent with this Master Plan if the intent statement of the proposed zoning district and the land uses it would allow (either as permitted or as special uses) are directly supportive of the policies in this Plan. Of course, this also assumes that the other rezoning standards outlined below can be met.

Column #3 lists zoning districts that may be compatible with the future land use designation under certain circumstances and Column #4 suggests some standards the Planning Commission and City Council should consider in reaching a decision on a particular request when considering a potentially compatible rezoning.

These standards are meant as a point of beginning in a rezoning decision, but they should not be regarded as the only factors to be considered. There may be extenuating circumstances that could apply to any rezoning request and the reader is cautioned to pay attention to existing and potential land use conflicts and to changing conditions that could impact a rezoning decision. Typically a rezoning request must be considered in light of all of the following standards:

1. Consistency with the Master Plan and future land use plan. As indicated, the following Zoning Plan will be helpful in this regard, but needs to be applied in the context of this entire plan, not in isolation.
2. Reasonable use for the property as currently zoned. Property owners are entitled to expect that a reasonable use may be found for their property but it is not necessarily reasonable to expect any use desired if it conflicts with broader public objectives.
3. More appropriate locations. Whether there are other, more appropriate, locations in the community for the proposed zoning. This involves an analysis of the existing land uses, the zoning ordinance and the future land use plan, to evaluate whether the community has already provided appropriately for a particular class of uses.
4. Potential detrimental effects of a proposed change in zoning on adjoining and surrounding land uses.

The Zoning Districts established in the City of Grand Haven Zoning Ordinance and their general descriptions and statements of intent are as follows. These descriptions may be used to cross-reference to the references in the Zoning Plan on the following pages.

THE SFR, SINGLE-FAMILY RESIDENTIAL DISTRICT

This district is intended to provide for relatively low-density single-family residential neighborhoods, which predominantly serve families with children. Neighborhoods will be quiet and free of unrelated traffic, though limited, low-impact residentially related land uses may be permitted as described below. Residential streets will be scaled for compatibility between pedestrians and automobiles; and will be lined with attractive landscaping. Except where topographic or other environmental constraints preclude such connectivity, streets within the SFR District should be interconnected, although both curvilinear and grid patterns are encouraged, some cul-de-sac and collector patterns may be developed.

THE MDR, MODERATE DENSITY RESIDENTIAL DISTRICT

This district is intended to provide for moderate density single-family residential neighborhoods, with two-family dwellings being permitted along key street segments. Neighborhoods shall be quiet and free of unrelated traffic, though limited, low-impact residentially related land uses may be permitted as described below. Streets within the MDR District shall be interconnected.

THE MFR, MULTIPLE FAMILY RESIDENTIAL DISTRICT

This district is intended to provide housing opportunities in the form of multi-unit dwellings. These types of dwellings typically provide common open space, and provide housing options with certain accessory uses such as parks, laundry facilities, workout facilities, and garages, among others. Multiple family residential districts provide housing for all types of individuals, including the elderly, singles, and families. All multiple family residential districts shall be well integrated with the surrounding community, functioning as a transitional zone between single-family residential uses and commercial districts. Building size and form shall be compatible to the size and form of neighboring districts and adjacent buildings, so as to enhance the available housing options of local residents without disrupting the continuity and character of the existing neighborhood. Lighting and sign standards shall also remain consistent with those in residential districts, so as to create a seamless transition from one district to the next.

THE DR, DUNE RESIDENTIAL DISTRICT

This district is characterized by steep topographical slopes, sandy soils, and a variety of single-family architectural styles. The greatest natural resources within these neighborhoods are the views of Lake Michigan, sensitive sand dunes and woodland areas. The intent of this district is to preserve the character of the neighborhoods and resources of the dunes for the enjoyment of residents and visitors alike. Development in this district should be scaled primarily for relatively densely-formed single-family neighborhoods with some multi-unit facilities carefully sited to be consistent in look and performance with a single-family area.

New development and improvements or renovations in this district shall be consistent with the current character of the respective communities as well as respectful to the views historically enjoyed by property owners. Due to the small size and irregular shape of many lots in the Dune Residential districts, building siting standards are intended to take advantage of limited space through flexible building envelopes, while protecting sensitive dune areas and view corridor sight lines, to as reasonable and extent as possible.

Protecting dunes and views of Lake Michigan without sacrificing the integrity of the neighborhood will be more important than rigid site design standards, such as deep setbacks, building height or style requirements. Nevertheless, new development and improvements shall be generally consistent with and in keeping with the current character of the community.

THE NS, NORTH SHORE DISTRICT

This district is intended to respect the unique natural setting of the northern side of the Grand River channel and the Lake Michigan shoreline adjoining the Kitchel-Lindquist Dunes Natural Preserve. The locale, while sensitive, is ideal for low-density single-family residential neighborhoods, which predominantly serve families with and without children. Neighborhoods will be quiet and free of unrelated traffic, though limited, low-impact residentially related land uses may be permitted as described below. The area is not likely to be served with public wastewater service, so densities will be low. Except where topographic or other environmental constraints preclude such connectivity, streets within the NS District should be interconnected.

THE S, SOUTHSIDE DISTRICT

This district exhibits many of the City's finest examples of historic residential architecture including Italianate and Queen Anne styles. As such, these structures, when located on major transit routes, such as on Franklin, are appropriate for low impact, non-residential uses such as small-scale retail, office and bed and breakfast facilities. Carriage houses provide additional space for residential and small-scale retail, office and bed and breakfast facilities, and shall be encouraged to remain. Maintaining historic structures is the intent of this district by allowing for adaptive reuse from residential to small scale commercial and office uses.

This district is generally bounded on the north by the south side of Franklin, Howard to the south, Harbor to the west and Beacon to the east. Ensuring the stability of the neighborhood is paramount. The Southside district shall be zoned for single-family detached residential dwellings conforming to the existing and predominant land use. Office, commercial, or retail uses shall only be permitted along key street segments such as Franklin and 5th, 6th, 7th Streets. All new infill and redevelopment along key street segments shall be constructed to resemble the historic architectural styles through the use of selected building materials, building elements, and building placement standards, which characterize the Southside District.

THE E, EASTOWN DISTRICT

This district is characterized by a predominance of single-family dwellings of a historic, pre- and immediately post- WW II character. Within walking distance to Washington Square, the Eastown District is a neighborhood accessible to services, parks, and schools. Most homes have front porches extending into the front yard setback, street trees, and garages. Alley access is provided on several blocks of the Eastown District. The primary intent of this district is to foster and maintain a neighborhood consisting largely of single-family detached homes arranged in a traditional grid street pattern with modest setbacks and strong pedestrian orientation.

THE OT, OLD TOWN DISTRICT

This district serves as a gateway to the City's Central Business District. With a mix of land uses, the Old Town district will provide residential uses, as well as service oriented commercial business along primary transit routes. Generally bounded by Beacon to the east, the Grand River to the north, Harbor to the west and Fulton to the south, the Old Town district transitions from medium intensity uses along major corridors, to a modest residential neighborhood consisting of single-family detached residential dwellings with front porches, pitched roofs and narrow lots. The Old Town district will continue to provide housing opportunities for all income levels, helping to sustain small retail nodes and the Central Business District.

Walkability, connectivity and historic integrity are key attributes of the Old Town area. Flanked by the Central Business District and US-31, the Old Town district may experience pressure to convert its single family residential and small-scale commercial nodes to multi-family and large scale commercial. Instead, the Old Town district will be a place for maintaining modest single family detached residential, and for nurturing small-scale businesses, such as personal service establishments, cafes, and offices. In Old Town, sidewalks and the boardwalk will provide safe and convenient non-motorized connections to other parts of the City. Development in this district should be scaled primarily for relatively densely formed single-family neighborhoods with some multi-unit facilities carefully sited to be consistent in appearance and performance with a single-family area.

THE NMU, NEIGHBORHOOD MIXED USE DISTRICT

This district offers pedestrian-oriented, mixed use buildings with plentiful windows featuring large window openings and architecture that embrace the City's history. The convenience of nearby services and institutional uses creates an appealing sense of community and establishes the NMU District areas as neighborhood destinations. An appropriate mix of uses will generate low-impact retail and commercial activity at the street level, while providing for offices and residential dwellings in the upper stories. The form of development in the NMU District is well established and is embraced by the City of Grand Haven. As such, this district will ensure the health, safety, general welfare, and sense of place and community of Washington Square and Centertown by regulating the form of development and its relationship with the existing respective neighborhoods.

THE OS, OFFICE SERVICE DISTRICT

The intent of the OS, Office-Service District is to support office uses along transit routes, while providing a transition from residential to higher intensity uses. Where single-family detached dwellings exist in the Office-service District, adaptive reuse of these dwellings for office-service uses is encouraged. Where new development occurs, it will be compatible with residential neighborhoods using building height limitations, setbacks, and lot coverage standards. The transition from residential to office-service uses is marked by landscape buffers including berms, or evergreen screening. Lighting, signage, and parking lots shall be designed to have a minimum impact on residential uses.

THE CB, CENTRAL BUSINESS DISTRICT

This district will serve as the primary identity for the City of Grand Haven. It will serve as a healthy social and economic environment for year-round residents, visitors, and tourists. The Central Business District will be a pedestrian oriented place with active street life, healthy retail, and common space for community gatherings and waterfront activities. It will be friendly and charming, a place where people of all ages gather for social, shopping, and recreational reasons. Street level activities will focus on restaurants and shopping while the upper stories of downtown will provide a diverse range of office space and urban-style housing, accommodating a broad range of residences. As outlined in the Downtown Vision Plan, all public areas within the CB district shall be considered central locations of social and public activity, year-round. All buildings within the district shall contribute to creating a relatively continuous street wall to create a pedestrian oriented sense of enclosure and place. Building heights and signage may vary from one property to the next; however a general consistency shall be retained in order to create a continuous sense of character within the district. Sidewalks, pedestrian pathways, and parking areas shall give particular attention to streetscape/landscape continuity and lighting.

THE C, COMMERCIAL DISTRICT

The intent of the C, Commercial District is to serve the needs of the West Michigan region. This includes establishments, which although they serve primarily a surrounding neighborhood, could also serve a larger trade or service area. This district tends to generate more traffic since most users will arrive at these commercial businesses in an automobile and typically park once. Existing lots within this district are large enough to accommodate large-scale retailers, requiring extensive parking, and sometimes including shopping centers with smaller developable retail pads and attached commercial developments. Office-service uses are compatible with the purpose of the district as long as adequate and convenient automobile parking can be provided for both the office and the retail merchandising activity.

THE B, BEECHTREE DISTRICT

This district accommodates light industrial uses and service commercial uses in an automobile oriented environment. The B district will develop as a vibrant corridor providing an eclectic mix of retail sales, office buildings, and light-industrial facilities. The purpose and intent of the B District is to

foster the enhancement, accessibility, and function of businesses, which meet the service needs of the surrounding residential and industrial areas.

THE WF, WATERFRONT DISTRICT

This district is intended to provide for open space in the form of parks or other general land preserves along lake or river shorelines with the intent of preserving and maintaining natural characteristics of those areas. Marinas and marina related accessory uses shall be permitted, as well as restaurants so long as dimensional and natural feature protection standards are met. Overall, this district is intended to support water related development, and to provide ample opportunities for public access with a balance of recreational and retail opportunities along the waterfront.

THE WF-2 WATERFRONT DISTRICT

This district is intended to provide for the positive redevelopment of the east side of Harbor Drive from Howard to First Street. This district lies at the foot of the downtown and spans an area that is utilized for community festivals, recreation, viewing the Musical Fountain, and appreciating the view of the Grand River channel all the way out to the Grand Haven lighthouse. Harbor Drive is the main point of entry for the State Park and City Beach, and development along this road is visible from the water. Therefore, this district defines the impression of Grand Haven for residents and visitors alike.

The Old Town and Southside neighborhoods adjoin the WF-2 District. These neighborhoods are locally designated Historical Districts and are among the first areas settled in Grand Haven. The WF-2 District must therefore provide a context sensitive transition between the activities on the waterfront and the immediately adjacent residential neighborhoods. The Waterfront Strategic Plan outlines a comprehensive vision for this key portion of the community and will be used as guidance by the Planning Commission and property owners in evaluating design and redevelopment proposals.

It is recognized that the public sight lines of the City are a shared resource of relatively fixed supply and thus must be regulated in a manner that reasonably balances the use afforded to private property owners with the rights of the general public. New development within the WF-2 District will require designs that provide special consideration for public site lines. While recognizing the desire of those owning property to capitalize on its value, especially property near or on the waterfront, this Article also seeks to assure that the uses of such property and the size, quality, character, dimensions, of the structures built on that property positively enhance the essential character of the community.

THE CC, CIVIC CENTER DISTRICT

This district is intended to form the institutional and governmental core of the community, specifically intended to accommodate the concentration of municipal and public facilities in the Hilltop area of the City. This district will be comprised of governmental offices and general office buildings, parks and places of public assembly and will be non-commercial in nature. Structures in the district will generally be larger iconic forms, built around a government square, with good sidewalk exposure, yet formed to

accommodate automobile access as the regional governmental center. Plazas, parks and outdoor spaces will create an efficient yet inviting space for the civic activities of the community.

THE TI, TRANSITIONAL INDUSTRIAL DISTRICT

This district is intended to allow a mix of commercial, service commercial and light industrial activities, which can be compatible with some non-industrial uses such as live/work facilities and entertainment uses. The TI district will include good accessibility to safely accommodate pedestrian and bicycle traffic with automobiles and commercial vehicles. This district is intended to allow for the transition from traditional industrial uses to commercial, retail, residential and some live/work uses.

THE I, INDUSTRIAL DISTRICT

This district is intended to accommodate commercial uses unsuited to other districts, as well as wholesale activities, warehouses, and manufacturing and assembly operations whose external, physical effects are restricted to the area of the district and are well-matched to the surrounding uses. The I District is intended to permit, along with any specified uses, the manufacturing, compounding, processing, packaging, assembly, or treatment of finished or semi-finished products from previously prepared material. It is further intended that activities involving the processing of raw material be entirely enclosed and that all uses conform to the performance standards of this Ordinance. Uses within the I District will generally be employment generators.

It is the intent of this district to provide sufficient space for current or future needs for manufacturing and wholesaling or related uses while preserving the general character of the community.

SPECIALIZED DISTRICTS

The zoning ordinance provides for a Planned Development district pursuant to Section 503 of the Michigan Zoning Enabling Act. This district is founded on specific plan of development or redevelopment and may include a broad range of uses and design provisions. In addition, the ordinance provides for a Sensitive Area Overlay to apply to areas specifically defined as having unique features that may require protection from the impacts of development.

#1 → #2 → #3 → #4

Determine the Future Land Use Category that applies to the site	Zoning districts that may be supported if the district intent statement and permitted uses are compatible with the policies of the future land use category	Zoning districts that may potentially be supported under the limited circumstances outlined in column 4	Factors and Features for Evaluation of Potentially Compatible Zoning Districts
Natural Area/Open Space	Only districts that directly support the protection of sensitive areas, natural features and the related policies of this future land use designation		Provided provisions of any public ownership restrictions and/or the requirements of the Sensitive Area Overlay are observed to protect important natural features
Low to Moderate Density Residential Low to Moderate Density Residential (cont'd)	Single Family Residential Moderate Density Residential	Dune Residential Eastown Southside Old Town North Shore	These are specialized zoning districts that are intended to be coordinated with unique natural features and/or particular locations as outlined in the statements of intent for the district. Areas planned as Low to Moderate Density Residential that also share the features or location of those specialized zoning districts may be appropriate for rezoning.
		Neighborhood Mixed Use Beechtree	If adjoining neighborhood-scale mixed use patterns and if proposed for development that will respect existing patterns at densities of less than 5 units per acre or offer services that will serve neighborhood residents and include effective buffer or transitions to protect remaining single family developments
		Office Service	If adjoining office or services uses along Beacon north of Park, or along Beechtree, south of Waverly and if proposed for development that will respect existing patterns at densities of less than 5 units per acre or offer services that will serve neighborhood residents and include effective buffer or transitions to protect remaining single family developments
		Multiple Family Residential	If adjoining higher density residential area and uses and if effective buffer or transitions are included to protect nearby single family developments

#1 → #2 → #3 → #4

Determine the Future Land Use Category that applies to the site	Zoning districts that may be supported if the district intent statement and permitted uses are compatible with the policies of the future land use category	Zoning districts that may potentially be supported under the limited circumstances outlined in column 4	Factors and Features for Evaluation of Potentially Compatible Zoning Districts
Moderate to High Density Residential	Multiple Family Residential	Single Family Residential Moderate Density Residential North Shore	If adjoining existing moderate to high density residential and proposed for development or redevelopment that will respect existing patterns and densities.
Traditional Neighborhood Mixed Use	Single Family Residential Moderate Density Residential Neighborhood Mixed Use	Beechtree	If located within the planning boundaries of the Beechtree corridor sub area plan.
		Old Town Eastown Civic Center	These are specialized zoning districts that are intended to be coordinated with unique characteristics and/or particular locations as outlined in the statements of intent for the district. Areas planned as Traditional Neighborhood Mixed Use that also share the features or location of those specialized zoning districts may be appropriate for rezoning.
Service / Commercial	Commercial Office Service	Waterfront	If located adjoining the waterfront and adjacent to other areas zoned WF or WF-2
Service/Residential	Office Service	Multiple Family Residential	Along the Beechtree Corridor, south of Park if adjoining existing patterns of higher-density residential development and is sufficient area is available to adequately screen and buffer nearby residential uses.

#1 → #2 → #3 → #4

Determine the Future Land Use Category that applies to the site	Zoning districts that may be supported if the district intent statement and permitted uses are compatible with the policies of the future land use category	Zoning districts that may potentially be supported under the limited circumstances outlined in column 4	Factors and Features for Evaluation of Potentially Compatible Zoning Districts
Downtown	Central Business District Civic Center	Multiple Family Residential	Existing areas of MFR zoning in the Downtown future land use district may be appropriately expanded at similar densitites and building forms. However, other zoning districts may be more congruous with mixed-use urban patterns and could also accomodate MFR uses.
		Southside Waterfront Waterfront-2	These are specialized zoning districts that are intended to be coordinated with unique characteristics and/or particular locations as outlined in the statements of intent for the district. Areas planned as Downtown that also share the features or location of those specialized zoning districts may be appropriate for rezoning.
Industrial	Industrial Transitional Industrial	Office Service	If proposed expansion represents a logical extension of an office – service area.
		Commercial	If proposed expansion represents a logical extension of an existing commercial district with frontage on Beacon, Jackson or Ferry.
		Neighborhood Mixed Use	If proposed expansion represents a logical extension of an neighborhood mixed use area on Ferry.
Mixed Use Redevelopment	Planned Development	Mixed Use Redevelopment sites are likely to be undertaken as Planned Development projects which will define the land uses, building form and regulatory standards. However, as the overall plan for a Mixed Use Redevelopment site is established, other zoning districts may be appropriate if consistent with the overall redevelopment plan and if measures to mitigate any off-site impacts can be addressed.	

CHAPTER 15. IMPLEMENTATION STRATEGIES

For a Master Plan to truly impact growth and development, it must be followed and carried out. The following strategies are established to implement the goals, objectives and land use recommendations of this Plan. These strategies may be regarded as initial implementation efforts and it is recognized that long-range policies in this plan may require other, multi-faceted efforts to carry it out.

These strategies also recognize that, while the City of Grand Haven may need to initiate some strategies, it must also have the support and cooperation of a broad range of other participants to fully carry out most strategies. These other participants may include private land owners, neighboring jurisdictions, and county or state agencies. When appropriate, implementation measures may include new or amended ordinances, policies or operational procedures. Typically, these measures are within the scope of the City's authority, while others may require support and cooperation. Some may be undertaken with little cost or effort while others may imply sizable investment.

Nevertheless, all of these strategies, and the others implied in the text are important as they contribute individual elements that will help build the overall vision of Grand Haven expressed in this Plan.

IMMEDIATE ZONING ORDINANCE AMENDMENTS

The Zoning Ordinance is the primary implementation mechanism for this Plan. In 2007, the City undertook a comprehensive revision of the Zoning Ordinance and that effort included many policies that are directly supported by this plan. In a few instances, however, this plan expands on the direction established in the Zoning Ordinance revision and the following adjustments may be regarded as further refinement of some of those policies which have become apparent through the planning process.

This strategy contemplates refinements and adoption of at least the following six amendments (in no particular order).

IMMEDIATE AMENDMENT A:

Adjust the transitional industrial as it applies to the SW Business Corridor and to the North Beechtree Redevelopment Area to accommodate uses consistent with those sub-area plans. While it is possible that redevelopment in either area may be undertaken through the Planned Development mechanism, property owners are also able to apply the "by right" and "special land uses" in these districts. A few may not be appropriate in one district but could be appropriate in the other. For example, warehousing, is a relatively low-intensity use that could undermine the objectives of North Beechtree. But warehousing could be appropriate for the SW Business Corridor.

IMMEDIATE AMENDMENT B:

Strengthen Beacon cross-access and landscaping standards in keeping with the SW business corridor sub-area plan. Cross-access provisions address the inter-connectivity between uses on the busy Beacon

corridor. In some places, access between uses is not possible without re-entering traffic on Beacon. The Zoning Ordinance may be adjusted to require and/or encourage interconnectivity as new development or renovation occurs.

In addition, the SW Business Corridor sub-area plan celebrates the green aspect of the Beacon median, but suggests that some of the lawn areas on the west side of the street could be improved with low profile plantings to screen parking lots, without inhibiting the visibility of the businesses. Landscape standards along this corridor should be evaluated in keeping with this strategy and adjusted as appropriate.

IMMEDIATE AMENDMENT C:

Establish maximum building footprint, architectural standards or use standards for NMU district to protect Centertown from intrusive, out-of-character large scale uses. This strategy emerged as part of the Centertown sub-area plan and a concern that the neighborhood could be negatively impacted by "franchise architecture" or uses that are inappropriately out of scale with the surrounding patterns.

IMMEDIATE AMENDMENT D:

Add Senior Assisted Living Facilities as a special use on key streets in the Office Service zoning district and establish Robbins Road, west of Beacon as a key street. The SW Business Corridor plan recognizes the potential of the southerly portion of that neighborhood adjoining Robbins Road for an assisted living facility. This area is zoned Office Service and office uses are also appropriate. The ordinance includes standards to treat Senior Assisted Living as a special land use and, if they were permitted in the Office Service district but limited to Key Street Segments, it would enable the potential development on this site, provided that the segment of Robbins Road from Beacon to about 1,000 feet west is designated as a Key Street.

IMMEDIATE AMENDMENT E:

Evaluate the frontage on Beacon between Fulton and Franklin which is currently zoned Commercial to determine whether these parcels should be zoned Neighborhood Mixed Use or whether this stretch of Beacon should be designated a Key Street. This area is reflected in the future land use plan as falling in the Traditional Neighborhood Mixed Use area and many of the uses permitted in the Commercial district could support that future vision. However, a few of the special land uses (i.e., Motel, Open Air Business, Sexually Oriented Business) may not be appropriate in this location. Further, this area is constrained by the small parcels that front Beacon and the relatively shallow depth. These lot sizes are more in keeping with the Traditional Neighborhood Mixed Use and, the more compatible zoning district would be Neighborhood Mixed Use. In addition, the Neighborhood Mixed Use district includes much more explicit site and building placement standards and building form standards that are intended to foster and maintain a traditional mixed use neighborhood as opposed to the lesser standards of the auto-oriented Commercial district. An important consideration in this analysis will be the extent of any nonconforming properties or uses that might be created if the zoning were changed.

IMMEDIATE AMENDMENT F:

Evaluate the addition of Mixed Use Development and Personal Services Business as special uses on Key Streets in the Old Town zoning district. This suggestion follows the recognition in the future land use chapter relative to the Traditional Neighborhood Mixed Use area north of Jackson and the potential that some of the properties that front Jackson may seek more intense uses. Since Jackson is already designated as a Key Street, the addition of these two relatively low-intensity uses on Key Streets in Old Town would enable existing properties to convert to slightly more intense activity. This would also affect properties on the other Key Streets in Old Town and it will necessitate drafting special use review standards for Personal Service Businesses.

SUPPORTED GOALS AND OBJECTIVES

This strategy will put in place important zoning tools that address key policies in the Plan. Some are supported in general and others, like 2f, 7a are directly supported by this strategy.

Key agencies and officials:	Planner, Planning Commission and City Council
Desired outcome:	Greater consistency between zoning standards and policies in the Plan
Resources required:	Staff time
Timeframe:	Short term, completion in less than 12 months

MID-TERM EVALUATION OF ZONING ORDINANCE AMENDMENTS

Evaluate possible zoning ordinance refinements for feasibility and effectiveness. Like the first set of adjustments, this strategy recognizes the primacy of the Zoning Ordinance in plan implementation. The following listing of potential amendments are drawn from the goals and objectives, the sub-area plans and the future land use descriptions. These are important to the plan, but may require further study, refinement and adjustment prior to implementation. As such, they are contemplated as mid-term adjustments.

MID-TERM AMENDMENT A

Prepare a Centertown design pattern book and incorporate by reference into general provisions. The purpose of this strategy would be to work with a group of local stakeholders to refine realistic and useful development and design standards for the Centertown area. These will preserve the area's existing unique personality while creating some visual and character connections with the downtown. Such a pattern book may be incorporated by reference into the Zoning Ordinance or it may be used as merely a guidance document.

MID-TERM AMENDMENT B:

Develop density or other incentives to encourage a mix of housing types in most residential districts. This strategy recognizes that the City may need to be more proactive in assuring that the local housing

stock includes options for all segments of the population – ranging from young singles to the elderly. In some cases increased density may be an appropriate device to enable affordable development and/or vibrant neighborhoods and the City should evaluate whether certain zoning standards may be adjusted to permit or incentivize higher densities in some areas.

MID-TERM AMENDMENT C:

Evaluate the Planned Development (PD) language to identify ways to expand its use in fostering mixed use developments. The Planned Development provisions are primarily intended to permit flexibility in the application of zoning standards where a demonstrated benefit to the community that will result from such flexibility. In some instances this may involve a mix of uses while in other cases the flexibility may be limited to adjustments in dimensional standards. There is much evidence that a mix of uses creates a more vibrant and interesting urban environment and the PD standards may be evaluated to provide incentives to achieve this greater mix.

MID-TERM AMENDMENT D:

Evaluate the market and regulatory standards for small boutique hotels and identify ways to encourage their expansion in appropriate areas through regulatory adjustments. The hospitality and tourism aspects of the local economy are well appreciated and understood. However, there is little support for large-scale, resort oriented hotel development and the limited tourism season suggests that smaller-scale or boutique operations may be a better fit. This strategy will include working with local businesspersons in the hospitality industry to gain a better understanding of development and operational constraints and potential adjustments the City may make in its regulatory framework to aid such businesses.

MID-TERM AMENDMENT E:

Develop design standards, or a design pattern book for the Robbins Road Corridor in conjunction with Grand Haven Charter Township and incorporate by reference into the General Provisions of the Zoning Ordinance. This strategy calls for the formation of a task force of local stakeholders to work with the City and Township in characterizing the appropriate patterns of development and building form and to memorialize related standards in the respective zoning ordinances.

MID-TERM AMENDMENT F:

Evaluate and adjust standards for on-site wind and solar energy to further encourage their use. With increasing emphasis on renewable energy, energy independence, and reduction of "greenhouse gasses" this strategy will examine the existing standards that regulate solar and wind energy systems with the objective of encouraging such systems whenever possible.

MID-TERM AMENDMENT G:

Evaluate and develop stronger standards for low impact development forms in the City. Low impact development standards relate primarily to stormwater management, natural feature protection and

energy efficiency. The site and building standards of the Zoning Ordinance will be evaluated to identify areas where adjustments could be made which will reduce the impact of development on surface water and groundwater and on natural areas.

SUPPORTED GOALS AND OBJECTIVES

This strategy will also put in place important zoning tools that address key policies in the Plan. Some are directly supported by this strategy, including 1a, 1b, 2f, 2h, 9a, 11b, 12a, 13c, and 15a.

Key agencies and officials:	Planner, potentially consultants, Planning Commission and City Council
Desired outcome:	Greater consistency between zoning standards and policies in the Plan
Resources required:	Staff time and potential consulting fees
Timeframe:	Short to intermediate term, completion in 12 to 36 months

REFINE AND IMPLEMENT SUB AREA PLAN RECOMMENDATIONS

Each of the six sub-area plans identifies a number of policy and design elements and they also include general and specific implementation recommendations. Most, if not all, of the strategies are presented in summary form and require further thought and evaluation prior to implementation. While each area is different, the implementation process to be followed can be summarized as outlined below. The goal will be to evaluate the implementation strategies of each plan and refine the implementation process, as appropriate. In general, these activities will include:

SUB-AREA PLAN RECOMMENDATION A:

Develop a work plan for each neighborhood and general strategy outline. This may be accomplished by the staff and it will involve outlining specific work steps, any resources needed to carry them out and the individuals, stakeholders or agencies that need to be involved.

SUB-AREA PLAN RECOMMENDATION B:

Form a work group (constituent base) for each area. In most instances, the proposed changes will impact existing land uses and businesses. If there is not already in place an existing constituent working group (i.e., such as a neighborhood association), one should be formed to assure that the outcome of the sub-area plan is as responsive as possible to the objectives of the Master Plan and to local desires.

SUB-AREA PLAN RECOMMENDATION C:

Expand and refine the work plan with the work group. Before implementation can occur, the working

group will need to embrace the work plan and this may entail further adjustment and refinement of the steps identified in Sub-Area Plan Recommendation A.

SUB-AREA PLAN RECOMMENDATION D:

Identify and secure the needed resources to implement the planning process.

SUB-AREA PLAN RECOMMENDATION E:

Begin implementation as appropriate.

GOALS OR OBJECTIVES SUPPORTED

This directly supports the key policy elements of each sub-area plan.

Key agencies and officials:	Planner, potentially consultants, neighborhood representatives, Planning Commission and City Council.
Desired outcome:	Implementation of the plan design and policies and implementation strategies of each sub-area plan.
Resources required:	Staff time, potential consulting fees and additional expenditures as outlined in each sub-area plan.
Timeframe:	Intermediate to long term, completion in 36 to 72 months.