

SUSTAINABLE SMALL HARBORS

Tools and Tactics: Phase 2



MICHU-23-502





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1.0 PROJECT OVERVIEW



SUSTAINABLE SMALL HARBORS





1.1 PROJECT PURPOSE AND BACKGROUND

NEED FOR THE PROJECT

In the original phase of the Sustainable Small Harbors project, conducted 2014-2017, the goal was to develop long-term, sustainable strategies that would enable Michigan's Great Lakes coastal communities to maximize the benefits of their harbor facilities in the face of challenges such as extreme water level variation and uncertainty surrounding future state and federal support for harbor maintenance. More specifically, this project was concerned with the sustainability of Michigan's small, shallower, primarily recreational harbors, as opposed to deeper, cargo-handling ports. While the historically low water levels of the 2000-2013 period initially motivated this project, its scope addresses other potential future scenarios, such as higher-than-normal water levels,

increased storm volatility, flooding, erosion, and other disruptive, climate-related threats to small harbor viability.

Dramatic water level fluctuations spanning a range of up to six feet on Lake Michigan and Lake Huron in the last three decades alone — have severely challenged recreational boating infrastructure in Michigan's harbor communities. Additionally, diminished federal funding for non-commercial, recreational harbors has further complicated harbor maintenance programs for coastal communities in Michigan and the rest of the Great Lakes. With direct and indirect boater spending almost entirely dependent upon their harbors' navigability, Michigan's coastal communities rely heavily on adequate dredging in low-water periods and strong, resilient coastal

protection during high-water periods. Federal funding for dredging projects has grown scarce in recent years, leaving communities with few alternatives for keeping their harbors open for boating traffic. Without sufficient harbor upkeep, communities are faced with declining revenues and suffering economies.

PROJECT RESPONSE

The Michigan Sustainable Small Harbors Strategic Flowchart describes a process for communities working to achieve a more sustainable future. The flowchart consists of four basic elements — Inventory, Visioning/Planning, Value Capture, and Implementation — that can be approached in a nearly sequential fashion. Each of the four elements has three levels: Highly Recommended, Recommended, and Additional Resources.

GUIDEBOOK UPDATES

The original Sustainable Small Harbors Project was conducted during a period of historic low water levels which influenced the strategies incorporated into the Guidebook. Shortly after publication, Great Lakes water levels rebounded to near historic highs which drastically impacted the thought process of resiliency for small harbors. As such, there was a need to update the Guidebook with considerations for variable water levels and a focus on resilience and adaptive management of waterfront assets.

In addition, through early application of the tools, there was a recognition that additional resources were needed and available. Therefore, the Guidebook and Toolkit have also been updated to include emerging resiliency tools, strategies for implementation, a discussion of environmental justice (EJ) and diversity, equity and inclusion (DEI), and more in-depth discussions of engineeringwith-nature (EWN), climate change, decarbonization, and new innovations in electrification.

The four communities from the original project were interviewed for the updated Guidebook to gain insight into the utility of the project and any progress made since the first draft. Lessons learned from this community engagement are also included in the updates (see *Phase One Community Updates*), along with new case studies throughout the Guidebook reflecting the updated topics.

LESSONS LEARNED FROM PHASE I

There were several important and universal lessons learned during the development of the first Guidebook and the associated community visioning sessions. First, it is critical to have supported and robust community visioning sessions as part of the harbor / waterfront sustainability planning process. Communities that tried to expedite the planning process were not as effective in developing and implementing harbor / waterfront sustainability plans.

Also, during the planning process a community should align all their existing plans including Community Master Plan, Parks & Recreation Plan, DDA Plan, and Harbor Plan. These plans are typically on a five-year cycle and it's important to make sure the plans, and associated resources, are properly aligned with each other. Unfortunately, some communities are tempted to update the "date" on the plans for expediency without performing an actual review and are left with plans that have conflicting future land use scenarios.

During the visioning and planning sessions, it is important to focus on the "visitor" experience. Communities need to ask themselves whether their waterfront is inviting, authentic, and accessible to visitors (see *Section 1.5 – Attributes of a Sustainable Harbor*). Typically, a community that offers a positive visitor experience will also be a place where residents want to live, work and play. Finally, during the planning phase, it is important to identify all historical impediments to sustainability. This could include physical impediments, such as legacy industry or aging harbor infrastructure, or emotional impediments such as an attachment to land use for purposes that aren't productive for the future.

A community needs to identify local champions that can assist with sustainability plan development and implementation and empower those champions. The most successful communities had a defined champion, and that champion did not have to be an elected official. During Phase I, local champions included appointed managers and local business owners in addition to elected mayors. The one thing they had in common was a deep connection to the community and a commitment towards its future.

For example, in the Village of Ontonagon the Sustainable Small Harbors community engagement was championed by a local downtown business owner and commercial airline pilot who did not hold an elected or appointed position within the community. He was a volunteer who facilitated the process.

Champions need the support of an implementation team. It is a significant effort to put together a harbor/waterfront sustainability plan and no one person can shoulder that burden alone. In Rogers City that support came from a group called "SuperPos", now called Team Rogers City, which is a group of community members that meets to discuss and coordinate the positive momentum within the city and provide a boost to local events and businesses. The team has collectively visited other communities to bring best practices back to Rogers City.

Finally, it's critical to identify regional partnerships and leverage those relationships. Many of the communities featured in this guidebook participate in Michigan Economic Development Corporation (MEDC) programs like the Redevelopment Ready Communities (RRC) program and the Michigan Main Streets (MMS) program. Each community has worked with Michigan Sea Grant through the Sustainable Small Harbors project as well. These regional partners help provide technical assistance to communities along with training and other resources. Section 1.3 Regional Scope and Context includes a list containing many of these regional partnering opportunities.

As obvious as this might sound, it's necessary to always remember the end goal of value capture (see *Section 5.2.4 Value Capture*). Value capture can be a complicated process and goes beyond simple financial transactions. By reflecting on value during the implementation process (i.e., ask yourself what value does this action add to the community?), a community has a much better chance of achieving their sustainability goals.

FUTURE DIRECTIONS

The ultimate goal of the Sustainable Small Harbors project is to enable communities to develop long-term, sustainable strategies to maximize the benefits of their harbor facilities to the community, in the face of uncertain environmental conditions and funding sources. As such, the tools and tactics available will continue to evolve over time.

Moving forward, the project team and our partners hope to:

- Reach coastal city / village managers who are new to coastal issues and opportunities,
- Leverage partnerships with existing institutions to assist with needs where resources allow,
- Encourage networking of what works and what doesn't for coastal community decision makers and harbor managers,
- And encourage coastal community innovation and quality improvements.

Partners such as Michigan Department of Environment, Great Lakes, and Energy, Michigan Department of Natural Resources, Michigan Economic Development Corporation, Michigan Sea Grant, and others will remain important sources of information, innovation, networking opportunities and funding opportunities.

1.3 REGIONAL SCOPE AND CONTEXT: FIT WITH OTHER COASTAL EFFORTS

The Sustainable Small Harbors project has been unique in its focus on public harbors as assets to Michigan's coastal communities. Several related and complementary efforts to improve coastal resilience are also in progress. Some of these are described below.

SUMMARY OF SELECTED INITIATIVES AND PROGRAMS

Resilient Michigan: This planning assistance program is led by Land Information Access Association (LIAA, *liaa.org*) in partnership with the Michigan Coastal Zone Program, Michigan Municipal League, Michigan Townships Association, Michigan Chapter of the American Planning Association, Michigan Technological University, and University of Michigan Taubman College of Architecture and Urban Planning. The project supports community planning efforts "that lead to the adoption of significant revisions to existing master plans to promote community resilience in the face of rapid economic changes and increasing climate variability." The program provides a full range of professional planning and technical support services to participating communities. These services can include any manner of municipal planning processes that have a direct impact on community resilience, from a baseline sustainability assessment to working with master plans, zoning ordinances, hazard mitigation plans, waterfront and harbor plans, transportation

plans, downtown plans, brownfield redevelopment, or other activities intended to improve coastal resilience.

resilientmichigan.org

Catalyst Communities: A program through the Michigan Department of Environment, Great Lakes, and Energy. The Catalyst Communities Initiative is a comprehensive program to provide education, training, planning and technical resources to local governments as they work toward their sustainability goals. This program offers an array of resources on various environmental, social, and economic topics to help communities across Michigan make a just transition to decarbonization. The Catalyst Communities Initiative aims to provide a range of options to meet communities wherever they are, regardless of geography, population size, or pre-existing knowledge.

michigan.gov/egle/outreach/catalystcommunities

Increasing Resilience at Harbors and Marinas: Michigan Sea Grant led this project in 2014 with support from the Great Lakes Integrated Assessments and Sciences Center to assist marina and harbor operators in sector-specific problem identification, decision-making, and planning related to climate change adaptation. Resources include identification of harbor-specific climate risks and best practices for infrastructure, dredging, planning, and financing.

michiganseagrant.org/topics/boatingharbors-and-marinas/resilientmarinas **MIPlace:** MIplace.org is the Michigan Economic Development Council's community development website. MiPlace offers multiple different programs to support the growth of vibrant, diverse, and resilient communities, including Michigan Main Street (MMS), Michigan Community Revitalization Program (MCRP), Redevelopment Ready Communities Certification (RRC) (see below), and others.

miplace.org/programs

Redevelopment Ready Communities:

The Michigan Economic Development Corporation (MEDC) administers this voluntary, no-cost certification program promoting effective redevelopment strategies through a set of best practices. Waterfront best practices and a toolkit for waterfront communities are provided.

miplace.org/communities

Michigan State University: The Land Policy Institute, in collaboration with the MIplaceTM Partnership Initiative have released the *Placemaking as an Economic Development Tool* that addresses housing, transportation, historic preservation, downtown, and green space components, as well as efforts to encourage business development. This initiative was started to assist communities in developing their "sense of place" – the qualities of a given community that inspire people to want to live, work, and play there.

canr.msu.edu/resources/ pmedtguidebook

The MSU School of Planning, Design, and Construction hosts the National Charrette Institute (NCI). The NCI is an educator, facilitator and leader in radical collaboration for strategic action. The NCI mission is to transform the way people work together by building capacity for collaboration. The NCI works by teaching and training on the NCI process, providing on-going support throughout the project planning process, and by facilitating the collaborative design process for organizations that are creating and implementing strategic plans.

canr.msu.edu/nci

RELEVANT STATE PROGRAMS

MDNR Waterways Grant

Program: MDNR Waterways Program Grants provide funding for engineering studies and infrastructure improvements. Michigan grant-in-aid harbors and public boating access sites managed by local units of government (city, village, township and county) and state colleges and universities are eligible to apply. As of April 2015, harbor communities applying for public funding through the Waterways Grant Program must specifically address their harbor in their five-year recreation plan. The recreation plans are reviewed by MDNR Michigan Natural Resources Trust Fund staff.

michigan.gov/dnr/buy-and-apply/ grants/rec/waterways

Michigan Coastal Zone Program:

Established in 1978, the Michigan Coastal Management Program (MCMP) is committed to providing substantial technical assistance and strategic grant funding to assist in coastal communities' ability to understand risks, and options to mitigate coastal hazards; create healthy habitats that provide for human use and enjoyment; support coastal eco-tourism opportunities while ensuring for safe public access; and support resilient and sustainable coastal economies. As connectors and collaborators, the MCMP advances the research on a changing climate, resilient planning methods, and seeks balanced approaches to sustainable coastline.

michigan.gov/egle/about/ Organization/Water-Resources/ coastal-management

Michigan's Resilient Coast: The

Michigan Coastal Management Program (MCMP) is building the Pathway to Resilience to enhance community preparedness and promote resiliency to mitigate the impacts of coastal hazards through increased knowledge of the risks, wise planning and zoning, and capacity building. The goal is for communities to be equipped with planning and data tools to effectively plan for growth and change; install practices and policies that protect, preserve, restore, enhance, and wisely develop coastal areas; and create networks for the collective impact of effective coastal management. As part of this effort the Resilient Coastal Communities Planning Guide was published in May 2023. The Guide provides guidance for Michigan's coastal community decision-makers to improve resilience to hazards along Michigan's Great Lakes coast.

michigan.gov/egle/about/ organization/water-resources/ coastal-management/michigansresilient-coast

1.4 CONNECTING PEOPLE TO PLACE — BUILDING CONNECTEDNESS AND OPPORTUNITY



Sense of Place

"Sense of place" is a term that reflects the emotion or perception felt by a person when visiting a certain space. It is our relationship with a place. It embodies our experiences, activities, memories of the past, and perhaps hopes for the future. The physical form of a place, its function, and what happens within it all support this relationship. A location with a strong sense of place exhibits a unique identity and character of its own that both residents and visitors can identify with and appreciate. A strong sense of place engenders affection and commitment from local residents, while serving as a magnet that attracts visitors and new residents.

At its core, sustainability is about community and a sense of place. People need to feel connected to their community and see opportunities for an economically, socially, and environmentally sustainable future. Communities with high-quality "places" provide opportunities for individuals and families to live, work, play, and learn. The places need to include diverse housing, transportation, recreation, and educational enrichment offerings.

INTERCONNECTEDNESS OF PLACEMAKING, ZONING, AND GOVERNANCE

Communities — large and small that provide a range of amenities are better positioned for economic growth. For an illustration of the relationship between business, talent, and place, see Figure 1: Business-Talent-Place Triangle. This important cycle does not develop quickly or by accident. High-quality places are formed through numerous

Definition of Placemaking

Placemaking is the process of creating quality places where people want to live, work, play, shop, learn, and visit.

Placemaking is a simple concept — people choose to live in walkable, mixed-use places that offer the amenities, resources, and social and professional networks and opportunities to support thriving lifestyles.

Young and creative people today are the most mobile of any generation, ever. Many will move to another city without a job, and then find or create a job after they've moved.

Quality places are essential to attracting and retaining talented workers, and where they concentrate, jobs are also plentiful. *Place matters and quality places matter most of all!*

Source: The Land Policy Institute (LPI) at Michigan State University's *Placemaking as an Economic Development Tool Guidebook.*

community and governmental decisions and are most often the result of public-private partnerships. For more information, see the Michigan State University Land

Figure 1: Business-Talent-Place Triangle. Source: Content from the Michigan Sense of Place Council. Figure reinterpreted by Michigan Sea Grant, originally by the Land Policy Institute (LPI) at Michigan State University, 2014



Policy Institute report: *Placemaking as an Economic Development Tool* (*canr.msu.edu/nci/resources*).

The public sector needs to design, build, and maintain infrastructure, including waterfront access, community recreation centers, and attractive and safe downtowns and parks. The private sector needs to create spaces for social interactions, shopping, and economic opportunity.

PLANNING

Placemaking starts with community visioning (see *Phase 1 Guidebook Section 2*, or visit *michiganseagrant. org/topics/resilient-coastalcommunities/sustainable-smallharbors/communities*) where local stakeholders identify and leverage local assets. Once those elements are clearly articulated, they need to be integrated into local and regional plans. In many communities, elected officials may be the primary channel for implementing a community vision. When visions are developed with public participation, there is stronger trust and transparency within a community. Having a clear vision for the waterfront may simultaneously protect important aspects of the waterfront while enabling desired forms of development to stimulate economic activity.

For example, in a community where form-based code is established (e.g., building requirements for height and view lines), a potential developer knows the requirement and can move more efficiently than if faced with a lengthy review process. Including form-based code elements in local zoning regulations can help developers focus on conformity with the community vision and not strictly on "zoned use." For example, Marquette, MI, uses formbased code to protect its historic downtown while also developing the waterfront. Additional opportunities for a community to implement the vision include adoption of goals in a recreation plan, capital improvements plan, and downtown development authority plan.



What is Green Infrastructure?

"Green infrastructure uses vegetation, soils, and natural processes to manage water and create healthier urban environments. Green infrastructure refers to the patchwork of natural areas that provides habitat, flood protection, cleaner air, and cleaner water. At the scale of a neighborhood or site, green infrastructure refers to stormwater management systems that mimic nature by soaking up and storing water."

Source: United States Environmental Protection Agency

GREEN INFRASTRUCTURE

The use of green infrastructure presents another unique set of placemaking opportunities that can be leveraged for economic, social, and environmental gain. Green infrastructure installations create natural areas that can provide social and environmental value, and installations near waterfront spaces can also be major economic drivers. By improving visual and physical access to natural systems, in addition to drawing attention to working waterfront elements, a community can double the value of the space.

1.5 ATTRIBUTES OF A SUSTAINABLE HARBOR

In the process of engaging small harbor communities, several characteristics of sustainable harbors were brought to light. Many of these features link back to the concept of placemaking, as introduced in Section 1.4 "Connecting people to place — building connectedness and opportunity." For an illustrated summary of these features, see Figure 2: Visitor Attractions.



Figure 2: Components of a robust, potentially sustainable harbor. Source: Michigan Sea Grant

2.0 ENVIRONMENTAL CONSIDERATIONS



SUSTAINABLE SMALL HARBORS Water levels in the Great Lakes have always been dynamic – fluctuating over different timescales from hours to seasons, decades, and millennia. Lake levels along the coast can change in response to:

- evaporation,
- precipitation,
- wind,
- storm events,
- ice,
- river flows,
- groundwater flows, and
- climate factors.

The long-term lake level records show high and low water periods varying by 6-8 ft and lasting years, decades, or centuries (Figure 1). Scientists have used geologic features deposited along the coasts to reconstruct a history of Lake Michigan-Huron water levels over the past 4,700 years. The records reveal a general rise and fall cycle that lasts about 120-200 years. Instrumental records collected over the past 150 years indicate another rise and fall cycle of 26 to 38 years that occurs within the longer cycle.

Every year the lakes see a typical seasonal water level change of 12-18 inches between winter and summer. Storm events can lead to pressure differences and winds that can push water across the lake causing seiches. For example, a summer storm in 1995 led to a four-foot water level rise in some areas along Lake Huron, and a corresponding four-foot water level drop in others. At the eastern end of Lake Erie, seiches can raise water levels by up to eight feet. A one to two-foot rise is more typical along open coastlines, and a two to five-foot rise is more typical in bays.

Michigan's Great Lakes Shorelines Throughout Time

This GIS based webtool incorporates aerial oblique imagery of shorelines as well as feature lines depicting changing shoreline features over time. The project is being developed at the Great Lakes Research Center at Michigan Technological University in cooperation with the University of Michigan.

Source: Great Lakes Research Center at Michigan Technological University Michigan's Great Lake Shorelines Throughout Time (*mtu.edu*)

The geology of the Great Lakes region also affects lake levels. Postglacial or isostatic rebound is the process by which land masses rise after the loss of the immense weight of glaciers on the landscape. This process is happening throughout the Great Lakes region, at different rates in different places, with some areas even seeing subsidence. This means that in addition to the lake levels fluctuating, the land elevation itself is changing, leading to changes in slope and the lake-land interface.

Ultimately, each lake has its own unique characteristics and response to environmental conditions. When lake levels vary much above or below the long-term average there can be significant negative impacts to coastal communities, harbors/marinas, infrastructure, and ecosystems.



Low Water Levels in Grand Traverse Bay. Michigan Sea Grant, 2013

In addition to the existing water level variability, there is the uncertainty of how climate change may affect weather conditions and lake levels in the Great Lakes region. *The bad news: we don't know exactly how things will change. The good news: we don't need to know exactly.*

We don't need to know exactly how lake levels will change because we know they will continue to fluctuate up and down, as they have in the past. This means planning needs to be focused on adaptability to changing conditions.

Periods of low water levels tend to be associated with:

- Access issues at marinas, harbors, and shipping channels
- Changes in navigation hazards
- Decreased freight capacity for commercial shipping
- Increased dredging
- Stranded docks and boat ramps
- Increased coastal vegetation and spread of invasive species
- Concerns with water intake levels for hydropower generation, water supplies, and manufacturing
- Changes in fish population and distribution

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High Water Levels flood Fishtown docks and shanties in Leland, July 2020. Photo from Fishtown Preservation Society

Periods of high-water levels tend to be associated with:

- Flooding on shorelines and along rivers which flow into the lakes
- Flooded docks, harbors, marinas, and boat ramps
- Flooding of homes, roads, and other infrastructure
- Shoreline erosion
- Loss of shoreline vegetation/ habitat

Planning for fluctuating water levels means preparing coastal communities and infrastructure to be resilient to both high and low lake conditions. Soft or natural shoreline engineering utilizes natural features such as vegetation to stabilize slopes and shorelines and facilitates interaction between the shoreline and lake, allowing for natural adaptations to changing conditions.



This image shows what can happen when homes are constructed during periods of low lake levels, without consideration for past conditions. This home was constructed in 2008, relatively far from the shoreline at the time. In 2015, the house was moved back because of rising lake levels.

Source: Planning Analysis: Introduction - Resilient Great Lakes Coast

Floating docks can move up and down with water levels, maintaining access for boaters and marina operators. Policy and planning efforts can also be used to guide development away from vulnerable areas and establish shoreline setbacks that are informed by past lake level extremes to prevent homes and infrastructure from being built too close to the lakes. Communities can also develop drought contingency plans and strategies to prepare for navigation and dredging needs under low water conditions. Developing contingency plans and reserve funding for extremes can allow a community to adjust more quickly when the inevitable extreme occurs.



Figure 1: Timeline of Monthly Water Levels in Lake Michigan-Huron from 1918-2023.

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SEDIMENT TRANSPORT

The Great Lakes' dynamic coastal environment makes dredging a necessity for harbor access. Nearshore sediment transport, also known as littoral transport, is the movement of sand in the nearshore zone by waves, currents, and other processes. The sediment can be transported both parallel (longshore) and perpendicular (cross-shore) to the shoreline. This mechanism is responsible for the formation of evolving coastline features such as beaches, dunes, bars, accretion fillets, and longshore spits. When considering the nearshore system, sediment can be either lost (erosion) or gained (accretion) depending on the wind, waves, currents, and human interaction (Figure 1 - Pentwater).

Sources of sediment in the nearshore zone include sediment moving from adjacent longshore areas, onshore from smaller beach-generating waves, or from backshore areas such as dunes. Sediment can be lost from the nearshore zone from larger storm waves (moving sediment offshore) or through dredging. Typically, longterm erosion of a coastal zone occurs in response to rising water levels, storm waves, and instability in slope soils caused by rising groundwater levels and surface water runoff. Resistance to long-term erosion is based on either natural or humaninfluenced shore protection.

The dominant direction of sediment transport in the Great Lakes varies depending on location, prevailing wind directions, and material

availability (Figure 2 - sediment motion in Great Lakes). If longshore sediment transport is interrupted by a manmade structure, such as a jetty or breakwater, then sediment will accrete on the updrift side and erode farther down on the downdrift side. However, since sediment can move in both directions alongshore, a smaller accretionary fillet can form on the downdrift side in the area protected from the erosive waves. Longshore sediment motion and sediment flowing from rivers can cause the need for dredging to keep harbor entrances free from sand bars and spits. The frequency of the required dredging depends on the volume of longshore sediment transport and lake levels, which fluctuate seasonally and annually.



Figure 1: Pentwater materials budget for the littoral zone.

Figure 2: Sediment motion in Great Lakes.



FUNDING AND REGULATORY FRAMEWORKS

By David Knight

For Michigan's small harbor communities on the Great Lakes, new challenges are emerging to complicate the function of harbor maintenance. Not only have some historically reliable government funding sources become sporadic, but climate models also project dramatic swings in water levels and increased storm volatility, both of which significantly impact Great Lakes harbor viability.

Chief among recent policy concerns is a shift by the U.S. Army Corps of Engineers (USACE) away from its historical role of dredging and maintaining navigation infrastructure in non-commercial harbors. Michigan has 46 federally authorized Great Lakes recreational harbors. Most of these were built and maintained by the federal government for waterborne transportation of freight and passenger travel.

While the commercial navigation component for most small harbors has been replaced with recreational boating, maintaining safe and reliable Michigan's small harbor communities rely heavily on the direct and indirect economic benefits of recreational boating, which are estimated to be in the range of \$10.2 billion (as of 2023) annually and support almost 59,000 jobs in the state.

navigability is still critical. Michigan's small harbor communities rely heavily on the direct and indirect economic benefits of recreational boating, which are estimated to be in the range of \$10.2 billion annually and support almost 59,000 jobs in the state.

Loss or impairment of harbor access, even for limited periods, can result in significant economic hardship, especially given the relatively short boating season on the Great Lakes. Small harbor communities also serve as harbors of refuge in severe weather events, thus playing a role in protection of human health and safety.

In recent years, budget constraints in the USACE operation and maintenance budget have resulted in de-prioritization of recreational, shallow draft harbors, as well as low-use commercial ports handling less than one million tons of freight annually. Between fiscal years 2011 and 2016, only seven recreational harbor dredging projects on the entire Great Lakes were budgeted by USACE. Compounding the hardship has been the elimination by Congress of earmarks in spending bills, a tool historically used by federal legislators to fund harbor maintenance projects in their respective districts.

The State of Michigan, more than any other Great Lakes state, has helped maintain small harbors through the Department of Natural Resources Michigan Waterways Fund and through emergency dredging assistance during extreme low-water periods. The Waterways Fund is available to the federally authorized small harbors, plus another 40 state grant-in-aid harbors and harbors of refuge. It is funded primarily through boater registrations and the state gas tax, and it makes about \$5 million available annually for harbor maintenance work.

Programs also have been initiated — most notably by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and the Michigan State University Institute

for Water Research — to identify and mitigate upstream river-borne sedimentation to preemptively reduce downstream dredging needs.

Grassroots advocacy efforts on behalf of recreational harbors, such as the Great Lakes Small Harbors Coalition established in 2008, have helped build awareness, particularly at the federal level, of the needs of recreational harbors. These efforts were buoyed by enactment of the Water Resource Reform and Development Act of 2014, which establishes annual target appropriations levels for increased spending of funds from the Harbor Maintenance Trust Fund (HMTF) leading to full use by 2025. In recent years, the HMTF has generated up to \$2 billion annually with less than half of that going to actual harbor maintenance. But there remains little assurance that small harbors will enjoy the potential "rising tide" of federal dollars without additional legislated direction such as a set-aside program.

Until and unless the federal funding returns, many Great Lakes small harbors are being compelled to explore new options to support the maintenance dredging needed to keep them viable. These include state assistance, such as the \$21 million emergency dredging program offered by the state of Michigan in the water level crisis of 2011. Coastal communities also have benefited from privately funded contracting; city, county, and other municipal general funds; and locally administered user fees.

For federally authorized small harbors interested in augmenting the USACE dredging program with contributed funds to support dredging of their harbors, two alternatives are available:



- 1) Enacting an agreement to provide funding to USACE, which would execute the dredging project, including design, contractor acquisition, and dredging quality assurance; or
- 2) Obtaining a 10-year permit from USACE for the community to carry out the dredging with its own resources after securing all necessary permits and approvals from the state.

Some Great Lakes small harbors, including at least two in Canada, have explored acquiring and operating their own dredging equipment in partnership. This may help spread the significant costs while ensuring an ongoing, self-sustaining solution to dredging needs, both for regular maintenance and for emergency situations of storm-induced shoaling. See Section 4.4 "Buying a Dredge Case Study" for information about one such venture in Leland, MI.

One innovative approach taking shape in New York State involves a "Regional Dredging Management Plan" (RDMP) in which six county governments and two municipalities along Lake Ontario's south coast would collectively operate a dredging program to maintain some 19 small harbors within their purview. The idea was originally proposed in 2000 by Dr. Frank Sciremamanno, an engineering professor at the Rochester Institute of Technology and a member of the International St. Lawrence River Board of Control and the International Lake Ontario-St. Lawrence River Study Board of the US-Canadian International Joint Commission. The concept was updated in 2014.

Sciremamanno proposes a notfor-profit corporation that "would allow for a focus by the organization solely on the dredging program, would provide bonding capabilities, would allow some sharing and/or donation of equipment from the participating counties, would allow seamless funding by governments, and would allow for control of the program by the participating counties through combined incorporation and representation on the corporate Board of Directors."

For more information see Section 4.5 - Lake Ontario Dredging Case Study. Many of the attributes associated with popular and sustainable harbor communities – such as ample green space, safety, cleanliness, visual and physical access to the harbor, waterfront, and parks, healthy ecosystems, and a waterfront and infrastructure that are resilient to changing water levels – are supported by the application of nature-based solutions or "engineering with nature."

The multiple benefits provided by green infrastructure or nature-based solutions are being recognized throughout coastal communities including marine coastal communities, freshwater communities on the Great Lakes. and on inland lakes and rivers. Nature-based solutions can help to mitigate coastal hazards by protecting shorelines, reducing erosion, providing flood storage, and filtering pollutants, amongst other services. They can also provide the added benefits of wildlife habitat, recreational space and aesthetic

Engineering with Nature (EWN)

Engineering with Nature is defined as "the intentional alignment of natural and engineering processes to efficiently and sustainably deliver economic, environmental, and social benefits through collaboration."

Source: U.S. Army Corps of Engineers, ewn.erdc.dren.mil

appeal, and can be more adaptable to changing conditions than traditional gray or hard infrastructure. Frequently, nature-based solutions can be provided at a lower cost than traditional gray infrastructure and may be more resilient to storm events.

NATURE-BASED SHORELINES

Nature-based shorelines are designed using or mimicking natural features such as vegetation, dunes, and grading to stabilize coastlines and protect against erosion and flooding. Nature-based shorelines can be coupled with traditional structures such as seawalls and breakwaters. These designs are also sometimes referred to as natural or living shorelines -the NOAA defines a living shoreline as "a protected, stabilized coastal edge made of natural materials such as plants, sand, or rock. Unlike a concrete seawall or other hard structure, which impede the growth of plants and animals, living shorelines grow over time."

Nature-based shoreline techniques along the Great Lakes include vegetation, beach nourishment, slope stabilization, edging, and sills. Oftentimes these techniques are implemented in combination to maximize benefits, such as in ecologically-enhanced hard armoring.



Nature-Based Shoreline (Nature-Based Shoreline: Options for the Great Lakes Coasts, 2021, University of Wisconsin Sea Grant Institute)



Vegetation Design (Nature-Based Shoreline: Options for the Great Lakes Coasts, 2021, University of Wisconsin Sea Grant Institute)

Challenges faced by nature-based shorelines along the Great Lakes include high wave energy, ice, permitting concerns, highly altered (armored) shorelines, and the capacity of contractors and engineers for designing and constructing these relatively new techniques. Different features or techniques may or may not be permittable in different Great Lakes states.

The NOAA Office for Coastal Management's Digital Coast knowledge hub offers an introductory training module "Nature- Based Solutions for Coastal Hazards: The Basics" designed to help communities to:

- Document the coastal hazards affecting their community,
- Identify the ecosystem services that mitigate the impacts of those hazards,
- Understand the green infrastructure practices that can provide those ecosystem services,
- Explore how other communities are implementing green infrastructure and nature-based design, and
- Find additional training resources.

(Nature-Based Solutions for Coastal Hazards: The Basics (*noaa.gov*)

ENGINEERING WITH NATURE IN THE GREAT LAKES REGION

The EWN initiative was started by the U.S. Army Corp of Engineers in 2010 as a new tactic to capitalize on the value of natural systems and integrate them with engineering methods to achieve project goals. Engineering with nature can enhance a variety of water resources projects from ecosystem restoration and flood mitigation, to dredging.

Improving the resiliency of the Great Lakes coastline using the EWN approach can support



Layered Benefits of Living Shorelines (NOAA Office of Coastal Management)

Engineering with Nature (EWN) Critical Elements

Projects incorporating the EWN approach should include the following critical elements:

- Using science and engineering to produce operational efficiencies
- Using natural processes to maximize benefits
- Increasing the value provided by projects to include social, environmental, and economic benefits
- Using collaborative processes to organize, engage, and focus interests, stakeholders, and partners

Source: (Engineering with Nature: An Atlas, 2018, U.S. Army Corp of Engineers)

natural ecosystems, be more aesthetically appealing, reduce project maintenance costs, and diminish unintended negative outcomes relative to traditional "hard engineering" practices. The U.S. Army Corp of Engineers is working to develop guidance specifically for the Great Lakes region. *The Great Lakes Natural And Nature-Based Features Playbook* will be published on the EWN website when it is completed.

GREEN STORMWATER INFRASTRUCTURE

While restoring coastal wetlands and incorporating living shorelines can be important opportunities for designing with nature, green stormwater infrastructure - such as rain gardens and bioswales- which provide detention and treatment of stormwater prior to entering rivers and lakes, is another aspect of naturebased design.

The use of green stormwater infrastructure presents another unique set of placemaking opportunities that can be leveraged for economic, social, and environmental gain. Green stormwater infrastructure installations create natural areas that can provide social and environmental value, and installations near waterfront spaces can also be economic drivers by improving the visitor experience and improving local water quality.

Additional resources are provided in the toolkit flow chart which communities can use to begin considering or incorporating green stormwater infrastructure and nature-based shoreline solutions into their local planning efforts and harbor or waterfront design.

RECOMMENDED RESOURCES

Michigan EGLE Shoreline Protection

michigan.gov/egle/about/organization/ water-resources/inland-lakes-andstreams/shoreline-protection

State of Michigan webpage with information on shoreline protection, Story Map, best management practice (BMP) fact sheets, illustrations, permitting information and links to the Michigan Natural Shoreline Partnership with additional resources.

Nature Based Shoreline Options for the Great Lakes Coasts, (2021), University of Wisconsin.

publications.aqua.wisc.edu/product/ nature-based-shoreline-options-forthe-great-lakes-coasts The guide describes different types of nature-based shoreline techniques and case studies suitable for the Great Lakes. Includes a glossary of coastal terminology.

Building Community Resilience with Nature-Based Solutions – A Guide for Local Communities, (2021), FEMA.

fema.gov/sites/default/files/ documents/fema_riskmap-naturebased-solutions-guide_2021.pdf

The primary goal of this guide is to help communities identify and engage the staff and resources that can be used to implement naturebased solutions to build resilience to natural hazards, which may be exacerbated by climate change.

USACE Engineering with Nature

ewn.erdc.dren.mil

EWN homepage including tabs for News, Implementation, Resources, Research, and other Nature Based Solutions information and links. Includes educational materials, short courses and publications. The website will also be home to *The Great Lakes Natural And Nature-Based Features Playbook* when it is published.

Nature-Based Solutions for Coastal Hazards: The Basics – NOAA Digital Coast

coast.noaa.gov/digitalcoast/training/ nbs-basics.html

60-minute interactive NOAA digital coast module. Learn an approach for identifying your community's coastal hazard issues, ecosystem services that can reduce hazard impacts, and green infrastructure practices that can provide those services. Develop the beginnings of a community green infrastructure plan.

2.3.1 ENGINEERING WITH NATURE CASE STUDY

Samuel Myers Park in Racine, Wisconsin sits on seven acres along the shores of Lake Michigan in an urban residential area. The park was dedicated in 1984, including an upland park area, beach and boat launch, adjacent to a long breakwater that was connected to land in the 1970's. Subsequent changes in hydrology altered local sediment transport patterns which caused erosion along areas to the southwest of the park and deposition of sand and sediment along the park beach and boat launch area.



Samuel Myers Park pre-restoration, photo courtesy of Google Earth

In the 1990's swimming was banned due to high bacteria levels. These high levels were confirmed by further testing in 2007. Possible sources of high bacteria were considered to be gulls, geese, dogs, direct stormwater pipe outlets, and surface stormwater runoff. Additional issues at the park included stagnant water adjacent to the breakwater, algal blooms, the water's edge migrating a significant distance from the boat launch, invasive species taking over the site, and direct stormwater runoff to the site impacting water quality. A cooperative effort was launched to restore the park with partners including the City of Racine, Friends of Samuel Myers Park, Root-Pike Watershed Initiative Network, Lakeside Curative Services, and the Ozaukee Washington Land Trust. Goals were to:

- Reduce direct stormwater runoff,
- Prevent stagnation along the breakwater,
- Maintain beach sands,
- Remove and manage invasive species,
- Restore coastal habitat and encourage native fauna,
- Improve public access, and
- Create recreational amenities, including an off-shore swim zone and canoe/kayak launch.

Preliminary engineering plans were completed in 2013 and included a living shoreline with rain gardens and bioswales, removal of invasive species and installing native vegetation, using natural dune features to capture surface runoff and restoration of a wetland area, dune area, upland, and dry prairie ecosystem. These components were intended to improve water quality by reducing stormwater runoff that was bringing bacteria, nutrients and debris to the beach, as well as to increase habitat and ecological function. The plans also included improving access and community amenities including walking paths, canoe/kayak launch, a picnic area, and benches.

The project involved planting over 1,000 native trees, forbs, shrubs, reeds, sedges, and other wetland plants to create a 15,646 square foot constructed wetland to retain,

infiltrate and clean surface water runoff and reduce non-point source pollution. The constructed wetland features over 90 species of plants and holds over 200,000 gallons of water during storm events. With help from the Great Lakes Community Conservation Corps over 20,000 dune grass plants were planted to restore the west dune area. The Conservation Corps also helped to create additional rain gardens upland of the constructed wetland, planted with over 20 different plant species, which intercept five acres of the park's drainage area. Shade, biodiversity, and habitat are increased at the site by 350 newly planted trees. The trees are mostly native species, with some more southerly species planted to accommodate potential long-term changes in climate. The trees also help to infiltrate and filter stormwater across the site.

Cordwalk paths were chosen for the beach and dune areas to encourage visitors to stay on the path. The cordwalk allows water to infiltrate underneath, and it can be raised or lowered to accommodate changes in water level or sand deposition. Planks or segments can be individually replaced as needed, making maintenance easier as well.



Cordwalk pathway and constructed wetland at Samuel Myers Park. Photo courtesy of the Wisconsin Coastal Guide



Samuel Myers Park post-restoration. Photo courtesy of the Wisconsin Coastal Guide

Twenty-three different funding sources were utilized to support initial research, planning and construction including federal, state, local and private sources. A second grant from the Great Lakes Restoration Initiative was used as a seed fund for private grants which were then used to secure additional federal funding. The project also made use of in-kind donations of work and materials, such as dredge material from the local yacht club.

Learn more about Samuel Myers Park and other beach resilience projects around Racine at

storymaps.arcgis.com/ stories/8746fbbb4a954d699 f58872e28ad30e7

Visit the Great Lakes Restoration Initiative webpage for more information on projects and funding around the Great Lakes region.

glri.us/projects

Lessons Learned

Utilize a phased approach to project components to continue adding value to the project with each phase while considering construction needs and availability of funding. This allowed the city to move forward with several smaller funding opportunities rather than have the project depend on receiving a single, large grant.

Incorporate multiple functions into the initial site design (e.g. public access, habitat restoration, climate resiliency, stormwater management) to allow you to leverage multiple funding sources at the same time.

The order in which funds are acquired is important. The city pursued non-federal funds first before applying to federal opportunities that require match. Having the non-federal match secured opened the number of federal opportunities that the city could apply for.

Source: Wisconsin Coastal Resilience wicoastalresilience.org/6433-2

2.3.2 GREEN INFRASTRUCTURE CASE STUDY

Northport is a village of fewer than 1,000 people at the tip of the Leelanau peninsula, with a small marina at Northport Harbor on Lake Michigan. Being located on a hillside, the developed area of the town drains without treatment entirely toward the beach and marina and ultimately into Grand Traverse Bay. The Village and The Watershed Center Grand Traverse Bay (TWC) worked together on a plan to reduce stormwater flows, and accompanying sediment, nutrient, and pathogen inputs to the bay.

In 2011 TWC created a Stormwater Action Plan for the Village. In 2013 using EGLE Nonpoint Source Program funding, TWC and the Village installed their first green infrastructure practice. The Smith Avenue storm drain outlet at the south end of the village was severely eroding and filling the adjacent wetland with sediment. A three-step sediment forebay was installed at the outlet to dissipate the water's energy and capture sediment in a forebay before discharging to the wetland. The project represented an annual reduction of 3 tons in sediment load and 7 pounds of phosphorous.

In 2016, TWC received a grant from the EPA Great Lakes Restoration Initiative to install a series of green infrastructure measures along one of the downtown's main streets. The project included extensive community and stakeholder engagement to match Village desires and capacity with required stormwater management goals. The project included a redesign of the main street downtown with street trees, tree box filters, and multiple underground infiltration trenches. Catch basins along the curb capture stormwater flowing down the hill and channel it into tree boxes, where the trees filter and utilize the water. The tree box filters are connected under the sidewalks with stone reservoirs and pipes to increase efficiency. This project represented an annual pollutant load reduction of over 1 ton of sediment, 4 pounds of phosphorous, 24 pounds of nitrogen, and 1,875,500 gallons of stormwater. As a bonus, a local business installed their own underground infiltration system to keep their parking lot runoff from overloading the new street practices. The system has performed well over the past 5 years with minimal maintenance.

In 2020, TWC helped complete a stormwater analysis for the Village as part of a Michigan Department of Environment, Great Lakes, and Energy (EGLE) grant that the Village was awarded to develop a Stormwater Asset Management Plan. The analysis showed that the drainage area including the school and parking lot, which drain down a steep hill, represented the second largest input to the Main Street storm drain. This drain empties directly into Northport Bay near the public beach and marina. Swim advisories for elevated bacterial levels have been posted at the beach, likely linked to the storm drain outlet.

Based on the success of earlier projects, additional grant funding from the EPA's GLRI Program has led to the installation of an underground infiltration system beneath the school parking lot and planned rain gardens in the Village right-of-way in order



Tree box filters with stone storage underneath, downtown Northport. Photo: Don Carpenter

to capture and filter a portion of the street runoff heading downhill towards the beach. These projects represent over 66,000 gallons in stormwater reduction and will reduce associated pollutant and sediment loads.

In 2023, with funding from a DNR Waterways grant, the Village also installed additional rain gardens at the marina park and a rock-lined infiltration swale running the length of the marina parking lot. The grant project also included rebuilding the boat launch and raising the parking lot, which was frequently inundated during periods of high water levels.

In conclusion, the Village and TWC have worked collaboratively with industry partners to plan, design, and implement numerous green stormwater infrastructure practices in the public right-of-way that manage over 2.5 million gallons of stormwater annually, prevent polluted runoff from entering the bay, and provide beautification to downtown public and waterfront spaces.

2.4 CLIMATE AND RESILIENCY

Resilient Communities

Resilient coastal communities along the Great Lakes are considered those that are prepared "to absorb and adapt to changes in Great Lakes water levels, coastal storms and floods; to manage social and environmental changes; and to build a better and more reliable local economy."

Source: Michigan's Resilient Coast, 2023, EGLE.

Long term shifts in temperature, weather patterns, and lake levels, are becoming increasingly variable due to climate change and coastal communities are particularly vulnerable to the impacts. As noted in *Section 2.1 Dynamic Water Levels*, water levels in the Great Lakes have always been variable, and coastal storms have always been present but the rate of variability and the intensity of storms is increasing.

In order to adapt to changes and remain resilient, it is important to plan ahead and take advantage of the numerous tools and resources that have been created to help coastal communities along the Great Lakes to address coastal hazards and climate change impacts such as flooding, shoreline erosion, and lake-level fluctuations.

Part of adaptability and resilience is incorporating planning and design choices which keep the greatest range of options open for the future – this might mean placing hard infrastructure such as parking lots and buildings further back from the water and conserving more open space, or using a natural shoreline vegetation design that can adapt to changing water levels instead of a hardened sheetpile or riprap wall, which stays in one place and is optimized for one set of conditions.

Another aspect of climate change resilience is being able to assure continuity of power, water, and other services in the face of changing conditions or emergency events. This may involve diversifying the sources of energy and electricity available to the community, incorporating solar panels or other independent power generation for marinas and community facilities, and identifying vulnerabilities in infrastructure, transportation routes, and supply chains.

Decarbonization is both the reduction in energy demand and conversion to energy sources that sustainably reduce the emissions of carbon dioxide (CO_2) . Decarbonizing community energy usage can both promote energy independence and resilience and reduce the community's contribution to climate change.

RESILIENCE RESOURCES

Pathway to Resilience (Michigan's Resilient Coast, 2023, EGLE)

The Michigan Coastal Management Program (MCMP) developed a set of steps for coastal communities to become more resilient. The goal of the MCMP's steps is to provide the necessary tools for communities to implement practices that protect and preserve coastal development and plan appropriately for new development that will withstand lake level fluctuations and an increased frequency and intensity of storms. The recommended steps are:

- Participate in an MCMP Coastal Leadership Academy training. Contact Ronda Wuycheck *WuycheckR@Michigan.gov* 517-420-5921 for more information
- Conduct a vulnerability assessment to identify gaps and recommendations.
- Update a community Master Plan with a Resilient Chapter that is formally adopted via Michigan law.
- Adopt resilient policies and ordinances such as setbacks and no-build zones adopted via Michigan law.
- Install nature-based alternatives that respect riparian rights and protect the Public Trust.

Building Community Resilience with Nature-Based Solutions – A Guide for Local Communities

(FEMA RiskMAP, 2021, fema. gov/sites/default/files/documents/ fema_riskmap-nature-basedsolutions-guide_2021.pdf)

The key goal of this guide is to help communities identify and engage the staff and resources that can be used to implement nature-based solutions to build resilience to natural hazards. Some local communities may use this guide to learn about nature-based solutions and weigh their value for the community. Others may be ready to move from planning to action. The guide includes six sections, and users can jump in at any point, depending on their current knowledge base and interests.



A flooded park next to a marina. Michigan Sea Grant.

Great Lakes Coastal Resilience

Planning Guide (NOAA Digital Coast partnership, 2021, *greatlakesresilience-floodscience.hub. arcgis.com*)

The Great Lakes Coastal Resilience Planning Guide provides resources for communities to prepare for hazards and climate change via land use planning, infrastructure, policymaking, and natural resources management. The Guidebook highlights case studies that demonstrate best practices, tested strategies, and specific solutions that have been implemented in Great Lakes communities.

Resilient Great Lakes Coast

(University of Michigan, 2023, *resilientgreatlakescoast.org*)

The Resilient Great Lakes Coast Program is a multi-disciplinary research initiative focused on identifying science-based solutions for Michigan coastal communities to become more resilient to coastal flooding. From this recent and ongoing work a set of methods was created to help local planners evaluate shoreland dynamics, fiscal impacts, environmental vulnerabilities, high risk areas, and land use impacts due to coastal flooding. The website offers sample reports illustrating proposed techniques including: low impact development, minimum setbacks for development along shorelines, policy options for high risk flood areas, and

The Resilience Cycle (Coastal Community Resilience Indicators and Rating Systems, 2015, NOAA Office for Coastal Management)



new requirements for stormwater management.

U.S. Climate Resilience Toolkit (2022, *toolkit.climate.gov/regions/great-lakes*)

The U.S. Climate Resilience Toolkit is a website with tools and guidance on climate-related risks and opportunities to help communities take steps to become more resilient. The importance of active community participation in decision-making is highlighted with assessment of climate risk and vulnerabilities informing planning and implementation. The toolkit provides several pages of resources that are specific to the Great Lakes.

Michigan Green Communities (2022, *migreencommunities.com*)

Michigan Green Communities is a statewide network of local government staff and officials that collaborate with one another, through peer learning and information sharing, to promote innovative sustainability solutions at the local, regional, and state level. The annual Michigan Green Communities Challenge is a key part of the program and allows participants to track and benchmark their sustainability progress.

Redevelopment Ready Communities Resiliency Toolkit (2022,

miplace.org/49f274/contentassets/ 7a5508e122e64680bbcb0a18b5fe58c9/ resiliency-guide-2022.pdf)

This toolkit is grounded in strategies to minimize the effects of negative economic impact through preparation and easing recovery from the spectrum of shocks and stresses. It focuses on strategies for four key areas – Place, People, Infrastructure, and Economy. The toolkit provides a step-wise self-assessment chart to help communities get started.

2.4.1 DECARBONIZATION

Energy efficiency and renewable energy are critical components of reducing human contributions to climate change, as well as preparing the community to be economically sustainable and able to provide services and amenities despite potential disruptions or rising costs.

Communities can incorporate sustainable energy management with decarbonization initiatives to improve their resiliency. The term decarbonization refers to both the reduction in energy demand and the conversion to energy sources that sustainably reduce the emissions of carbon dioxide (CO2). Decarbonization involves energy efficiency and conservation measures, production of low carbon electricity, and fuel switching from high to low carbon energy carriers. Energy transitions benefit communities by:

- Reducing utility costs for municipalities and individuals
- Increasing energy security and affordability
- Advancing environmental equity
- Increasing energy system resilience
- Creating local assets and new job opportunities
- Reducing greenhouse gas emissions for an improved future climate

As communities work to lower their greenhouse gas emissions and implement cleaner, renewable energy, levels of other harmful pollutants fall as well, and communities can see improvements in air quality, water quality and public health outcomes – including reduced sick days, lost wages, and healthcare costs. This is especially true in communities that have been historically impacted by pollution and environmental justice concerns.

Incorporating renewable energy into marinas can help meet energy needs and reduce costs. Marinas are often good places for solar panels due to the lack of tree cover or tall buildings, and some marinas have been able to generate all of their electricity needs from solar or wind, including supplying charging stations for boats and cars. New advances include solar docks and roofing materials.

DECARBONIZATION RESOURCES

Catalyst Communities

The Catalyst Communities Initiative is a comprehensive initiative to provide education, training, planning and technical resources to local public officials as they prepare for climate impacts on emergency response and public health. This program aims to provide a range of options to meet communities wherever they are, regardless of geography, population size, or pre-existing knowledge.

Source: EGLE, 2023.

Michigan Catalyst Communities

(EGLE michigan.gov/egle/outreach/ catalyst-communities)

As part of the Michigan Catalyst Communities Initiative, resources and tools are provided to guide a just transition to decarbonization. Resources and tools are divided among seven categories:

#1 BENCHMARK AND TRACK

Defining your municipality's energy use will allow for identification of areas for improvement. Energy use can be benchmarked against municipalities with similar buildings, and energy audits can find opportunities for reduction in energy demand.

#2 FUND ENERGY EFFICIENCY AND RENEWABLE ENERGY

Establishing financing tools and grants to lower the cost burden and encourage energy efficiency and renewable energy projects in both the public and private sectors.

#3 RENEWABLE ENERGY DEPLOYMENT

Implement renewable energy solutions in public buildings and spaces. These could include solar hot water systems, community solar, wind, biomass, hydroelectric, and geothermal energy.

#4 ENERGY EFFICIENCY IMPROVEMENTS

Opportunities for improved energy efficiency in public buildings identified in energy audits should be implemented to improve sustainability and save public dollars. Improvements in low-income, public housing should be prioritized.

#5 EFFICIENT STREET LIGHTING

Take inventory of public lighting – parking lot lighting, street lighting, traffic signals. Next, develop a plan to replace lighting fixtures with energy efficient bulbs, such as LEDs.

#6 COMMUNITY ENERGY USE

Create a community energy project, such as a community solar garden, to educate and encourage renewable alternatives. Provide opportunities for industrial, commercial, and residential individuals to reduce their energy costs when they implement their own renewable energy projects.

#7 FLEET MANAGEMENT

Take inventory of governmentowned fleets and associated fuel use. Next, develop strategies for reducing fleet emissions, such as transitioning to more efficient or electric vehicles and tactics to reduce miles traveled.

Opportunities to decarbonize could include:

- Installing solar panel projects on government buildings, parking lots, or harbor infrastructure
- Installing marina charging stations for boats and cars (see 2.4.2 Energy Innovation and Electrification)
- Utilizing heat pumps or geothermal energy for heating and cooling
- Updating codes and zoning ordinances to encourage energy efficiency and allow renewable energy infrastructure
- Establishing local government

policies or goals for procuring a certain portion of energy needs from renewable sources

• Providing job training on renewable energy and energy efficiency technologies and electric charging infrastructure

MiNextCities

(EGLE minextcities.org)

MiNextCities is another program within the Catalyst Communities Initiative. This program is working to engage "cities and towns statewide to identify and deploy tailored smart city solutions that enhance quality of life, attract talent and business, improve infrastructure, reduce emissions, and reinvent our places." The three-year program will develop, design, and drive input for an ultimate smart city roadmap that will provide a consistent process small to midsized Michigan cities can use to craft successful, sustainable solutions that are customized to meet their unique needs. Three pilot cities began the process in 2022 - Dearborn, Flint, and Marquette.

US EPA - SmartGrowth Self-Assessment for Rural Communities

(EPA epa.gov/smartgrowth/ smart-growth-self-assessment-ruralcommunities)

The Smart Growth Self-Assessment for Rural Communities was developed as part of EPA's Smart Growth Implementation Assistance project. The document is a compilation of strategies that communities can use to evaluate their existing policies to create healthy, environmentally resilient, and economically robust places. The assessment is organized by 11 common "goal areas," and helps communities identify gaps in their policies, plans, codes, and zoning regulations by asking a series of "Yes" or "No" questions.

The 11 focus areas are:

- 1. Revitalize Village and Town Centers
- 2. Strengthen the Local Economy
- 3. Engage and Connect Community Members
- 4. Improve Health and Promote Active Living
- 5. Protect Natural Habitats and Ecosystems
- 6. Support Productive Agriculture for a Variety of Markets
- 7. Meet Housing Needs for Different Ages and Incomes
- 8. Preserve Historic and Natural Resources
- 9. Provide Transportation Choices
- 10. Invest in Efficient Public Infrastructure Systems and Operations
- 11. Use Energy Efficiently and Provide Renewable Energy

The final two focus area assessments are particularly applicable to Resilience and Decarbonization and can be completed independently of the other sections.

Charging Forward: A Toolkit for Planning and Funding Rural Electric Mobility Infrastructure

(USDOT, transportation.gov/sites/ dot.gov/files/2022-01/Charging-Forward_A-Toolkit-for-Planningand-Funding-Rural-Electric-Mobility-Infrastructure_Feb2022.pdf), 2022)

This toolkit is intended for a variety of rural stakeholders. The toolkit focuses on infrastructure for lightduty electric passenger vehicles (such as sedans, sport utility vehicles, and pickup trucks), but also addresses

funding opportunities and planning considerations for other types of electric vehicles, including transit and school buses, medium- and heavy-duty vehicles, and agricultural equipment such as tractors.

National Renewable Energy Laboratory (NREL), Accelerating Clean Energy at Scales (ACES) (*nrel*.

gov/state-local-tribal/aces.html)

As a Department of Energy research lab, NREL offers unbiased modeling and analysis capabilities for communities to advance their energy and technology plans. NREL has helped over 2,000 communities, tribes, utilities, and businesses progress toward their clean energy goals by providing assistance to develop and assess energy system options as well as assistance for workforce development. Visit the ACES website for more information on partnerships and community case studies.

Michigan Healthy Climate Plan

(michigan.gov/egle/-/media/Project/ Websites/egle/Documents/Offices/ OCE/MI-Healthy-Climate-Plan.pdf)

The Michigan Healthy Climate Plan lays out action items and strategies to achieve Michigan's goals to reduce greenhouse gas emissions 28% below 2005 levels by 2025, 52% below by 2030, and to achieve economy-wide carbon neutrality by 2050.

The plan provides actions and recommended steps that can be taken at all community levels to decarbonize and describes various state programs and funding efforts. It is a worthwhile resource to review during the local planning process. Key programs include Charge Up Michigan and the Energy Transition Impact Project (ETIP). **Charge Up Michigan:** The Charge Up Michigan Program aims to build the infrastructure for fast charging stations in the state of Michigan. (EGLE) and partners (electric utilities and applicant) provide funding for qualified Direct Current Fast Chargers for Electric Vehicles charging equipment, site preparation, equipment installation, networking fees and signage.

The grant funding is focused on specific predetermined locations, but a number of these areas include or are near small harbor communities. Through this program "the State has already invested more than \$45 million in charging infrastructure and will spend millions more in the coming years thanks to the recent and forthcoming influx of additional federal resources. By expanding funding through the Charge Up Michigan program and partnering with utilities and the private sector, Michigan will deploy enough charging infrastructure to support two million electric vehicles on Michigan roads by 2030."

(Sources: EGLE MI Healthy Climate Plan, 2022, and EGLE Charge Up Michigan Program website)

Direct Current Fast Charger Electric Vehicle Infrastructure Plan (2022, EGLE)



Energy Transition Impact Project (ETIP): ETIP is designed to identify communities that will be impacted by the changes to the mix of energy production facilities in Michigan. The program works directly with those communities and workers to minimize impacts from a facility closure, including the loss of employment, property tax revenues, and related community services. Comprehensive transition strategies are developed to reposition communities for future economic development, high-paying jobs, new infrastructure investments, housing improvements, and other needs identified by local leaders and residents.

Port of Detroit Decarbonization

The Detroit/Wayne County Port Authority has initiated a decarbonization project designed to assess current emissions and develop a plan for port operations to reach net zero by 2040, with associated air quality improvements. Various options are being considered including electrification of equipment, use of vegetable oil-based fuels, and generating renewable electricity, among others. The final plan will be publicly available as an interactive map, where one can view current emissions by terminal and scroll projected emissions by year as the carbon reduction measures come into effect. Learn more at Port of Detroit Decarbonization - Tunley Engineering (tunleyengineering.com)

2.4.2 ENERGY INNOVATION AND ELECTRIFICATION

Marina operations and boat fueling/propulsion are sectors with great opportunities to reduce carbon emissions and incorporate innovation and sustainability. The electric boat market is growing every year with some analysts predicting the global electric boat market will more than double to \$7.8 billion by 2028. Innovative electric and hybrid boats and personal watercraft are hitting the markets, as well as solar floating dock systems, wind turbines incorporated into breakwalls, and solar lighting options. As boat owners move towards electric models to address their environmental concerns, maintenance and fuel costs, and get quieter rides, they will also seek out marinas and harbors that offer electric charging capabilities. Michigan is at the forefront of this movement with a marine charging network currently being implemented in northern Michigan.

Marinas can also lower their energy costs, reduce their own carbon emissions, and become more energy independent and resilient by incorporating renewable energy generation into their plans or renovations. For example, Zecco Marina in Wareham, Massachusetts installed a 491 solar panel system in 2017 that provides 100% of the facility's electrical needs, including providing shore power for slips. The project cost \$384,000 to install but federal tax incentives included a 30% tax credit worth \$115,000. It's estimated that the project will pay for itself in 4 and half years and save the marina over \$640,000 over 25 years, or \$29,000/year. In 2017 Newport

Harbor in Rhode Island installed the first autonomous floating microgrid dock that uses solar power to recharge electric-propulsion boats. Straits State Harbor in Mackinaw City, Michigan unveiled eight wind turbines in 2009, which provide 60% of the marina's energy needs, along with energy efficiency measures such as motion and lumen detectors in marina buildings, and accessibility improvements. The project was funded through the Michigan State Waterways Fund, a restricted fund derived from boat registration fees and a portion of the Michigan marine fuel tax for the construction, operation and maintenance of recreational boating facilities, harbors and inland waterways.

Other marinas/harbors utilizing renewable energy include Torresen Marine in Muskegon and Eldean Shipyard in Macatawa. Both facilities installed solar arrays on the rooftops of large boat storage buildings. Eldean Shipyard first installed a 66 kWh solar array in 2014. This installation reduced greenhouse gases and saved the equivalent of 486,000 lbs of coal or 737 barrels of oil. The system saved enough money on electricity costs that it paid for itself, and by 2020 Eldean reported that the system would provide free, clean energy for the remainder of its useful life. Eldean opted to add a second solar installation in 2020 which produces an additional 97 kWh of clean energy for the shipyard and marina.

Lake Michigan EV Tour Circuit

In 2022, Michigan, Indiana, Illinois, and Wisconsin signed the Lake Michigan EV Circuit Tour memorandum of understanding. This agreement commits the states to working together to coordinate and establish regional EV charging infrastructure around the 1,100 miles of drivable Lake Michigan shoreline throughout the 4 states. The goal is to provide safe and reliable charging infrastructure for long distance driving in the region, to reduce range anxiety, and to promote tourism and ecorecreation in the Great Lakes. Funding opportunities exist for implementing charging stations along the identified route.

Source: EGLE, 2022. michigan.gov/ egle/about/organization/materialsmanagement/energy/rfps-loans/ lake-michigan-circuit



Source: U.S. Department of Energy Alternative Fueling Station Locator



MICHIGAN PIONEERS MARINE EV CHARGING NETWORK

Plans for northern lakeshore corridor reflect electric boat market arowth

By Charlie Tyson, Michigan Economic Development Corporation, and Warren Call, Traverse Connect

nnovators and state agencies are partnering in northern Michigan to establish the first freshwater electric boat charging network in the U.S. Their target is a busy stretch of Great Lakes coastline from Frankfort on Lake Michigan to Mackinac Island in Lake Huron – with a high concentration of marinas and harbors and primed to be an early adopter for e-boats.

Elk Rapids and Northport marinas have installed AQUA superPower rapid chargers, and plans are underway for chargers at marinas in Traverse City, Bay Harbor, Charlevoix, and on Torch Lake.

Water is a fast-growing frontier for vehicle electrification. MarketWatch expects the electric boat market to expand to \$18 billion in 2027, up from \$8.31 billion in 2021. Electric boats can be powered by inboard or outboard motors. Like electric vehicles on land, they are ecofriendly and do not burn fossil fuels. That's important with Michigan focused on reducing greenhouse gas emissions through initiatives such as

neutral economy by 2050. According to the National Marine Manufacturers Association, Michigan has more than 806,000 registered basis, and recreational boating brings in an estimated \$7.4 billion a year to the state's economy, supporting 31,000 jobs and 1.458 businesses. But only recently have efforts zeroed in on the dockside charging networks required to

the MI Healthy Climate Plan for a prosperous carbon-

navigate the boating sector toward renewable energy. Momentum is building across the recreation market for electric vehicles, boats, and more, yet our national infrastructure is not set up to support the growing consumer demand or business technological advancements. There are also challenges that new technologies bring that require public-private coordination and partnerebia.

coordination and partnerships.

In the case of Michigan's e-boat charging network, the partners supporting this effort include the Michigan

(Above) Electricity-driven boats power up at Elk Rapids Marina, part of a new network of charging stations being installed along the Great Lakes shoreline in northwest Lower Michigan. Photo courtesy of Elk Rapids Marina.

2022 State of the Great Lakes Report

Department of Natural Resources (DNR): the Michigan Department of Natural Resources (DNR): the Michigan Economic Development Corporation (MEDC) and its Office of Future Mobility and Electrification (OFME); the Michigan Department of Environment, Great Lakes, and Energy (EGLE): the Michigan Department of Transportation (MDOT); and Traverse Connect, the lead economic development articipations for the Cared Traverse and more provided to the Cared Traverse and traverse to the Cared Traverse to the Cared Traverse and traverse to the Cared Traverse to the Cared Traverse and traverse to the Cared Traverse to the traverse to the traverse to the Cared Traverse to the traverse to the traverse to the Cared Traverse to the t development organization for the Grand Traverse region.

MEDC's most recent strategic plan calls for developing MEDC's most recent strategic plan calls for developing auto manufacturing, e-mobility, and electrification as strategic industries. It also highlights outdoor recreation as a statewide strength, championing the business development case where e-mobility and outdoor recreation meet. Traverse Connect is working closely with MEDC and others to attract new enterprises at the for front of e-mobility tech, provide them with a test bed for new technologies, and help them network, navigate state infrastructure, and select locations.

Electrifying change is ramping up on land, too, with progress continuing toward a multistate Lake Michigan EV Circuit Tour. In August, Gov. Gretchen Whitmer announced Circuit four, in August, Gox, Gretchen Whitmer announced a collaboration with her counterparts in Indiana, Illinois, and Wisconsin to build and maintain the network of electric vehicle chargers spanning over 1,100 miles of drivable shoreline around Lake Michigan. These efforts will contribute toward a connected land and water EV charging corridor in northern Michigan and beyond.



Elk Rapids and Northport marinas have installed rapid chargers for electric watercraft as part of a planned / charging corridor stretching from Frankfort to Mackinac Island

CHARGING UP

In fall 2021, Michigan Technological iversity's Great Lakes Research Cent DockTech, Lilypad, and the Mackinac Economic Alliance received a total of 7,997 in grants from OFME and EGLI nort new water-based mobility solution

2022 State of the Great Lakes Report

This article by Charlie Tyson of the Michigan Economic Development Corp. and Warren Call of Traverse Connect originally was published as part of the Michigan Department of the Environment, Great Lakes, and Energy's 2022 Michigan State of the Great Lakes Report (PDF)

Additional developments in maritime sustainability and electrification include state and federal funding to upgrade the Beaver Island Ferry to be more efficient, reliable, and environmentally friendly, and the first-time conversion of a Mackinac Island passenger ferry to zeroemissions electric power by the Mackinac Island Ferry Co.

In May of 2023 the Michigan Department of Environment, Great Lakes, and Energy (EGLE) announced the Fresh Coast Maritime Challenge funding opportunity. The Challenge establishes a dedicated grant program that offers companies the opportunity to apply for assistance that will support the decarbonization and electrification of both marinas and watercraft across the state. The program is designed to offer commercial enterprises of all sizes a sustainable, cost-effective and efficient means of transitioning watercraft from diesel to electric power. The program aims to grow a network of shore-side charging facilities for clean-fueled marine vessels and electric passenger vehicles operating on the Great Lakes.

The Fresh Coast Maritime Challenge Grant Program is managed through the Michigan Economic Development Corporation's (MEDC's) Office of Future Mobility and Electrification (OFME). Additional partners for the initiative include Traverse Connect, EGLE, the Office of Outdoor Recreation

Industry, the Michigan Department of Transportation (MDOT), and the Michigan Department of Natural Resources (DNR).

3.0 SOCIAL CONSIDERATIONS



SUSTAINABLE SMALL HARBORS

3.1 COMMUNITY ENGAGEMENT PROCESSES



Figure 1: Phases of the National Charrette Institute planning process. Source: National Charrette Institute.

A design charrette is distinguished from other community-engaged planning processes by the engagement of a design team that is tasked with developing images of conceptualized visions. The opportunity for participants to see drawn and digital images of design alternatives provides a distinct richness to the process. This facilitated community visioning process is designed to solicit recommendations from community members that help develop a longterm vision for the environmental, social, and economic sustainability of the community waterfront.

The NCI Charrette System uses a three-phase, holistic, collaborative planning process during which a multiple-day design charrette is held as the central event (Figure 1). A single-day visit at the beginning of the project introduces the process and a single-day visit at the end of the process conveys project outcomes.

An initial meeting is generally dedicated to project introduction and preliminary community discussion of assets, weaknesses, barriers, and connections. The design charrette, usually a three-day event, is generally comprised of as many as three public events, technical meetings, feedback



loops, and iterative design work. The final visit is often scheduled to coincide with a council or other local government meeting where delivery of a refined preferred alternative, including additional design renderings to illustrate the preferred alternative, can occur for the public and decision-makers.

A final report is generally prepared for the community and may be published to record the planning process and details of the preferred alternative. Additionally, communityspecific economic analysis reports can be developed to evaluate specific economic impacts of different waterfront scenarios.

Future Sustainable Small Harbor community visioning efforts could explore variations on this schedule to meet community needs, while still leaving time to reflect on design elements and unite the community around a common vision.

CHARRETTE WITH THREE COMMUNITY VISITS



INITIAL VISIONING MEETING 1 DAY

- a. Assets
- b. Weaknesses
- c. Barriers
- d. Connections



DESIGN CHARRETTE 3 DAYS

- a. Public Input Workshop
- b. Open House: Selecting A Preferred Option
- c. Public "Work in Progress" Session



FINAL PRESENTATION 1 DAY

Presentation to City/ Village Council

- a. Updated graphics
- b. Final Report



Figure 2: The 1-3-1 structure for charrette community visits allows for careful information gathering, an extended public workshop, and a final presentation of results.



SUSTAINABLE SMALL HARBORS

3.2 PHASE ONE COMMUNITY UPDATES

AU GRES

COMMUNITY BACKGROUND

The City of Au Gres is located along the Au Gres River, approximately two miles upstream from the outlet to Saginaw Bay in Lake Huron. In early years, Au Gres was considered a logging community; however, as that industry faded, a new focus for natural resources tourism now provides economic activity. The city has been known unofficially as "The Perch Capital" and is also a highly regarded portal to Saginaw Bay's walleye fishery and duck hunting. The Au Gres River carries a heavy sediment load that influences channel depth and the channel was dredged in 2014 with funding assistance from the State of Michigan. The initial Sustainable Small Harbors project conducted a community design charette in Au Gres in 2015.

COMMUNITY UPDATES 2015-2023

The centerpiece of the Sustainable Small Harbors visioning process in Au Gres was the site of the former MDNR Au Gres State Harbor. At the time of the visioning, MDNR was in the process of transferring ownership of the property to the city and much of the infrastructure was in disrepair and overgrown.

The site, now called Riverside Park, in the heart of Au Gres became a focus for revitalization for the city once they acquired ownership.

The city rejuvenated the park and reopened it after significant repairs and improvements. Funding



2015 Conceptual site plan for the preferred alternative for "Au Gres 2035."

contributions from many matching partners helped the city accomplish almost everything envisioned for the park. Partnership with the Saginaw Chippewa Indian tribe was used to fund park building refurbishment and spurred the initial revitalization efforts. The tribe awarded a \$50,000 grant to the city for the site. The partnership has also led to tribe-assisted funding for other projects including design of a new pavilion and other potential city improvements.

A focus on diligent maintenance of a clean and functional site has played a strong role in bringing new life into the Riverside Park site. The city has worked since acquisition of the harbor to improve the site in achievable steps. Breaking the Riverside Park improvements into smaller steps allowed the city and community partners to tackle components as funding was available. Many of the smaller improvements were made possible due to grants from the Arenac Community Funds. The site has developed with multi-use attractions to draw both local families and visitors. Regular programming of events, a farmer's market, and a playgroup have made the park a hub of activity. One of the most recent additions was a splash pad funded by a \$75,000 grant from Bay Area Community Foundation as a match alongside other community organizations. Connections to the community include a new bike trail that extends from the Au Gres City Park down Main Street all the way to the mouth of the Au Gres River and the Au Gres State Boat Access Site.

The community also draws in many fishermen with its prime location for walleye and perch fishing. To capture this revenue source, Au Gres has included a state-of-the-art fish cleaning station within Riverside Park. Free daily boat mooring is allowed for up to 6 hours and there are overnight docking options available. Fishermen can come to the community and stay at the city campground or other lodging while mooring their boat at Riverside Park. The addition of a barrier-free fishing pier and kayak launch provide additional ways for people to engage with the natural amenities of the site.



Riverside Park Splash Pad. Photo Courtesy of Google Maps/Ashley Cain



Photo Courtesy of Randall Hyman, Huron Pines

Steps toward a more sustainable environment have also been taken by the community. Working with the Huron Pines organization, Au Gres received grants from the Bay Area Community Foundation and Saginaw Watershed Initiative Network to conduct a stormwater assessment in 2017. The Huron Pines project documented existing stormwater infrastructure and engaged the community with education efforts. Huron Pines and Au Gres-Sims School worked together to install a rain garden at Riverside Park in 2020 and have since added two additional rain gardens/bioswales to capture road runoff along East Michigan Avenue. The pledge and progress is kept forefront in leaders' minds by the required quarterly review of the road map and annual revisions.

NEW DIRECTIONS

With the added draw of Riverside Park, the city has experienced more activity within the City of Au Gres Riverfront Campground as well. The campground has expanded occupancy over time and has gone from around four seasonal sites in 2016 to 35 fully-booked seasonal sites in 2023. There are an additional 74 sites for short-term camping reservations as well. Plans for expansion include up to 30 new seasonal sites and larger sites to accommodate longer camper sizes and campers with boat trailers. The campground has also added two

mini-cabins as options for campers and plan to add 4-6 more.

The city further built their partnership with Huron Pines in 2022 when the City of Au Gres became the first city to take the Lake Huron Forever Pledge, a commitment to manage stormwater runoff, invasive species and chemical hazards. The pledge contains an actionable list in the Lake Huron Forever Road Map for the community to improve its stormwater quality.

LESSONS LEARNED

The City noted that the success of the Riverside Park renovation was accomplished by breaking the overall vision into smaller phases, which could be more easily funded. Each phase is built on the one before, rather than attempting one large project with many moving parts and a large "all or nothing" type of grant funding application, which often come with high match requirements.

The Au Gres case study highlights the utility of engaging in longterm community visioning and implementation programs with established organizations – in this case the Lake Huron Forever Pledge. Participation in this program has helped the community to develop a long-term plan that is continually monitored and updated.

Lake Huron Forever Pledge

The City of Au Gres knows that a healthy Lake Huron means a healthy, strong and vibrant future for our community. As a result, we are committed to keeping the protection of Lake Huron at the forefront of our planning, decision making and resource allocation.

Our community well-being and economic prosperity are tied to Lake Huron. We understand that access to healthy natural resources like fresh air, clean water and public land improve the health and wellness of our entire community.

- We hereby pledge to create, implement and update a Lake Huron Forever Community Road Map.
- We promise to serve as an example of how to proactively protect Lake Huron by sharing our work with other Lake Huron communities.
- We will allocate resources (time, money, people) to understanding emerging needs and opportunities in order to protect Lake Huron forever.
- We will commit to and encourage all community organizations and residents to take their own actions to protect Lake Huron, forever.
- We will give back to Lake Huron by examining management practices across municipal departments to identify ways to improve efforts to protect land and water resources.
- We will share our pledge with neighboring community leaders, as well as state, provincial and federal representatives to generate more conversation and positive action for Lake Huron and Lake Huron communities.

Source: LakeHuronForever.org
NEW BALTIMORE

COMMUNITY BACKGROUND

The City of New Baltimore is located on the north coastline of Lake St. Clair, at the western edge of Anchor Bay. Incorporated as a village in 1867 and as a city in 1931, New Baltimore initially served as a getaway for urban Detroiters for many years due to the inter-urban railroad. The city also had a robust shipping trade thanks to its location on Lake St. Clair. While New Baltimore has since seen a decline in tourism, it is increasingly serving as an outlying community for Detroit. New Baltimore has seen significant demographic changes over the last 25 years. From 2000 to 2010, the New Baltimore population rose 63.2 percent, outpacing the Macomb County population growth rate of 6.7 percent.

The initial Sustainable Small Harbors project conducted a community design charette in New Baltimore in 2016. During the community engagement process, the team learned about the city's longstanding discussion and debate about introducing a public harbor and access point to the waterfront.

"New Baltimore 2035" was the final future vision of the community based on the charrette design process. The preferred alternative included public acquisition of the private Schmid Marina as a public access point with a boat launch, downtown redevelopment, and a harbor inserted downtown on Front Street.

COMMUNITY UPDATES 2016-2023

Since the Sustainable Small Harbors engagement process,



Rendering from "New Baltimore 2035" Visioning Charette.

New Baltimore has begun participating in Michigan Economic Development Corporation (MEDC) Redevelopment Ready Communities (RRC) program and is classified as an Engaged Community. The DDA has worked to invigorate the downtown and bring improvements to Walter and Mary Burke Park - including plans for pavilion enhancements, breakwall extension, and a dock project. The park is a key connection between downtown and the water.

The Parks and Recreation department has been relocated from its downtown location to the Aquatic Center and the downtown property has been sold by the city. The property, along with adjacent city-owned lots, is slated for redevelopment as a mixed-use development and the rest of downtown has been growing - with an increase in the number of businesses and activity.

Unfortunately, despite receiving a grant for acquisition, the former Schmid Marina in New Baltimore has remained privately owned and the city has pursued other routes to increase the space and protection for visiting boaters. Instead, efforts to increase boater access have been implemented with additional free dockage at the Walter and Mary Burke Park downtown. A DNR Waterways Program grant was awarded to the city for planning efforts related to expanding the boat docks and extending the pier at Walter and Mary Burke Park. The city will receive \$15,000 in state funding, and the local match will be subsidized by the New Baltimore Downtown Development Authority.

NEW DIRECTIONS

Faced with problems of shoreline instability and erosion (as much as 50 ft of shoreline lost since 1999), New Baltimore is participating in the Sea Grant Association of State Flood Plain Managers (ASFPM) coastal resiliency planning project. New Baltimore is in a highly developed area and a majority of the shoreline is sheet-pile wall with occasional pockets of rip rap. At Ruedisale Point Park New Baltimore took the threat of erosion and loss of land and turned it into an opportunity. They secured a USFS grant in 2021 for wave attenuation, fish habitat, softened shoreline construction and shoreline restoration. The city has applied to the Michigan Coastal Management Program Coastal Habitat Restoration and Ecosystem Land Conservation grant program for additional work at Walter and Mary Burke Park including shoreline naturalization,

wildlife habitat restoration and erosion protection.

A thriving downtown has also been encouraged by programming. The arts have been a long-standing attraction to New Baltimore with the Art on the Bay annual event, so in 2019, the city formed an Arts and Culture Commission. The group is focused on planning and encouraging artistic events to enhance the community -including musical, visual, literary, culinary, and performing arts events. The committee has created and encouraged many new events including a sidewalk chalk event (Chalk-it-Up), mobile murals throughout the summer, and an event to paint murals on 20 park picnic tables (Paint the Tables), among others. Community championed events like a weekly drum circle in Walter and Mary Burke Park are adding to the momentum.

Building further on the community's artistic identity, New Baltimore

added new wayfinding signs in 2021. The signage is unique for having MDOT approval of a local artist's design. The approval by MDOT to add wayfinding signage allowed New Baltimore to add signs along M-29, which is a major transportation connection to the downtown. Signage was sponsored by the Art on the Bay committee. Wayfinding is also important to this community as it relates to Anchor Bay. The city's iconic water tower was dismantled in 2015 due to disuse and high maintenance costs. It had served as a land marker visible from far out on the bay. To replace the icon the New Baltimore Lions Club and community donations funded a 160 ft flagpole, the tallest in Michigan at the time of construction.

LESSONS LEARNED

New Baltimore is a good example of regional collaboration for community improvements. Participation in Michigan Sea Grant's ASFPM coastal resiliency planning project has brought solutions to New Baltimore's eroding shoreline. The project has helped educate city staff and start the collaboration process towards beneficial outcomes for both the environment and local residents.

Community champions are also a good lesson from New Baltimore. One group that has been a champion for a thriving New Baltimore is the city's Arts and Culture commission. They built on already popular events like Art on the Bay to create more events that enhance the lives of residents and attract additional visitors. These events have contributed to an inviting and active downtown that is desirable for businesses and development. In turn, the additional development and businesses have attracted more people and income for the community. Each of these things builds on the others and enhances the community's social and economic sustainability.

ONTONAGON

COMMUNITY BACKGROUND

The Village of Ontonagon is located at the mouth of the Ontonagon River, on the shore of Lake Superior in the Western Upper Peninsula. The village and township have historically depended on the extractive industries of mining, forestry and agriculture to drive their economy. As such, the local economy has undergone a pattern of booms and busts related to copper and wood markets. The last local copper mine closed in 1995, the shipbuilding operation closed in 1998 (but recently reopened), and the paper mill closed in 2010. The paper mill was razed in 2011. Visitation to the community is further challenged by having the MDOT highway bypass the downtown and the primary marina being on the opposite bank of the river and inaccessible from downtown. As such, the community has connectivity issues in addition to economic concerns.

In 2015 the Sustainable Small Harbors Project hosted a visioning and design charette process with the community and leaders in Ontonagon to assess challenges and



2016 Conceptual site plan for the preferred alternative for "Ontonagon 2035."

opportunities related to the economic and environmental sustainability of their waterfront. The project developed and evaluated three

different conceptual plans for the waterfront area and a "preferred alternative" was delivered to the community in January 2016. The final community concept was entitled "Ontonagon 2035."

COMMUNITY UPDATES 2016-2023

In 2016 the Village of Ontonagon Downtown Development Authority (DDA) was reestablished as a direct result of the Sustainable Small Harbors engagement process. In 2018 the DDA was further invigorated when the village was named a Rising Tide Community, which is a Michigan state program that provides communities with assistance and tools they need to develop a sustainable economic framework. As part of these efforts, the DDA plan was updated for the next 30 years and the Tax Increment Financing (TIF) district was expanded.

At the time of the Sustainable Small Harbors engagement process, Ontonagon's large shipyard was underutilized for years and many in the community saw the facility as a wasted space and blocking the view of Lake Superior from downtown. Through the visioning process many new uses of the site were envisioned but being privately held, the facility remained industrial.

Hope for reuse of the shipyard for industry grew in 2016 as Lake Shore Systems, Inc (now part of Trident Maritime Systems) purchased the property and began the process of bringing employment to Ontonagon. Starting with just a few full-time employees in Ontonagon, the facility has expanded over time and now has multiple shifts of workers.

NEW DIRECTIONS

Since the Sustainable Small Harbors engagement process there have been many changes in Ontonagon, including new leadership. Improvements have continued in the community and with the leadership of a new village manager, the community has focused on breaking larger community goals into small tasks to tackle larger challenges. The most notable of these large challenges is extensive village debt to the Municipal Employees' Retirement System of Michigan for employee retirement pensions from the former Ontonagon Memorial Hospital. While there is still much funding needed, in 2023 Ontonagon has secured \$3.1 million dollars from the Michigan Enhancement Grant and another \$1,952,964 was awarded to the Village by the Protecting Michigan Pension Grant Program to directly pay towards the pension debt which would allow the Village to undertake other community projects. The Village is actively pursuing other grants for this debt as well as funding for other improvements.

One of the grants Ontonagon received is a Department of Natural Resources and Environmental Protection Agency grant for Rose Island improvements that included a new footbridge and culvert removal near the Rose Island Channel. Rose Island is located on the Ontonagon River in the heart of the village and is a mix of private property and park. The public visioning from the Sustainable Small Harbors project included improved public connections to the island with an extended boardwalk.

In addition to grant funding, the Village of Ontonagon has undergone significant planning

efforts to increase organization, management of assets, and financial documentation. This attention to detail and management of assets helped the Village marina become profitable after years of financial losses. Training staff to keep diligent records and maintaining documentation of all transactions was the first step towards identifying areas to improve financially. The organization within the Village is closely tied with its progress within Michigan Economic Development Corporation's Redevelopment Ready Communities (RRC) program and it is currently classified as a RRC engaged community. The Michigan Economic Development Corporation's Redevelopment Ready Communities program has assisted with funding within the community and contributed to the 2023 updated Master Plan to replace Ontonagon's 2007 Master Plan. The plan supports sustainable community development and represents a vision supported by citizen and stakeholder involvement in planning.

LESSONS LEARNED

Significant turnover can occur within local government organizations, especially in small communities where there may be fewer representatives or officers, and institutional knowledge can be lost when one person departs or leadership changes hands. The present Ontonagon village manager was unfamiliar with the "Ontonagon 2035" community vision when interviewed for this community update. This emphasizes the importance of community "champions" who are involved members of the community, dedicated to championing the process and vision and working

with government and community organizations over time and across different leadership cohorts. These community champions can keep the community vision/ideas on the agenda when other issues, such as financial concerns and debt, arise which can push redevelopment goals to the background. Despite the fact that the "Ontonagon 2035" conceptual plan was unfamiliar to current leadership, elements of the plan – such as improvements at Rose Island, pursuing Redevelopment Ready Communities Certification and grant opportunities, and improving the financial management of the Village marina, have continued to progress. This also highlights the utility of engaging in long-term community visioning and implementation programs with established organizations such as MEDC, which can provide some continuity in the face of changing leadership roles.

ROGERS CITY

COMMUNITY BACKGROUND

Rogers City is located in Presque Isle County on the shore of Lake Huron. The city lies approximately halfway between its relatively larger neighbors Cheboygan, 40 miles to the north, and Alpena, 37 miles to the south. The state-designated Heritage Route U.S. 23 connects the region's Lake Huron waterfront communities. On the shores of Lake Huron, Rogers City provides an opportunity to visit the Great Lakes in a less populous area.

Rogers City has experienced population loss over the past decade, linked to shifting family size across society, loss of jobs in the area's mining and shipping industries, and an increasing proportion of seasonal or part-time residents. Presque Isle County's population also declined, but less so over the same period.

The initial Sustainable Small Harbors project conducted a community design charette in Rogers City in 2016-2017.

COMMUNITY UPDATES 2017-2023

Since the Sustainable Small Harbors engagement process, Rogers City

has made steady progress towards developing and maintaining a sustainable community. Streamlining has been a theme for the city as it has reorganized part-time and seasonal staff to now support both a full-time city manager and a dedicated full-time harbormaster. The city has redistributed responsibilities as necessary to fully utilize these roles while encouraging community development.

One driving impact of the community's efforts is the Michigan Economic Development Corporation (MEDC) Redevelopment Ready Communities (RRC) certification which the city was awarded in 2021. This designation is based on community efforts to improve municipality assets and streamline processes for prospective investment and development.

Rogers City also became a Michigan Main Street Select Level community in 2021. A Select Level community requires a five-year commitment to the Main Street program and offers specialized training and assistance. To support those efforts Rogers City now has a Main Street Director and the Downtown Development Authority has incorporated a Main Street board as well as a Brownfield



2017 Conceptual site plan for the preferred alternative for "Rogers City 2035."

Development board into their operations. This has allowed the city to coordinate its various goals into one development plan and prioritize actions under one board.

Rogers City continues to work towards building on the vision generated during the Sustainable Small Harbors engagement process. The city continues to expand its programmed events which currently include a strong summer concert series, two art walks, the Rogers City Nautical Festival, farmer's market, parades, and more. Planning efforts have stayed focused on creating a sustainable economic, environmental, and social future.



Rogers City Marina. Photo Courtesy of: Michigan Sea Grant.

Working with Huron Pines, plans were developed to reduce the amount of impervious area downtown and treat runoff with green infrastructure. In 2023, Rogers City began work to reduce road widths and construct bioretention for a downtown block with funding from the National Fish and Wildlife Foundation.

The city has focused on improving its city marina to increase amenities and cater to boaters looking for a home port. Along with the dedicated harbormaster, the marina now also has a website and Facebook page to help connect with boaters. Boater mobility has improved with a new minivan shuttle, bicycles, and golf cart.

Marina services have expanded with the acquisition of a hydraulic sling load trailer funded by a \$60,000 Department of Natural Resources Waterways grant from the state commission and a United States Department of Agriculture Rural Development grant. The lift can take boats up to 48 feet in length out of the water for storage or service. It has allowed the marina to partner with private industry to provide boat mechanic services and to expand services to include power-washing and shrink-wrapping. Winter boat storage has grown from eight boats to 60 boats. The increase in services has also increased the seasonal slip occupancy and marina revenue.

NEW DIRECTIONS

Building from the vision for complete streets introduced during the Sustainable Small Harbors engagement process, Rogers City is working on funding for improvements to Michigan Avenue to provide a pedestrian connection from the marina to downtown with greenspace and a pedestrian trail.

The city is working towards grants or other funding for a true travel lift to move boats in and out of the water in a way that is more resilient, in order to prepare for years with low water levels. They also are making plans to attract more recreational boaters and become less reliant on the quality of Lake Huron's fishery and fishing boats.

In 2021, Rogers City received a \$185,000 Michigan Natural Resources Trust Fund to update the pavilion at Lakeside Park and add new playground equipment to replace the old equipment that was deemed unsafe. MDNR is currently reviewing the plans, and construction should tentatively begin next year.

Planning at the harbor also includes a vision for reimagining the Rogers City marina facilities. In 2023 the city hired an architecture company to renovate the marina welcome center into a facility for both the community and boaters. The city is now working on funding those improvements.

LESSONS LEARNED

The Rogers City case study underlines the benefits of participating in long-term community visioning and implementation programs with established organizations. Partnering with MEDC for the RRC program and Michigan Main Streets has brought technical training and advice that the community has been able to act upon. Partnering with Huron Pines allowed the city to make resiliency improvements in the downtown and get assistance with funding.

Rogers City also focused significant effort on improvements to the marina which brought added value for boaters and increased revenue for the city, starting a positive feedback cycle that will allow the marina and city to grow as a tourist destination, a business destination, and a desirable community to live in.

SUSTAINABLE SMALL HARBORS

3.3 SOCIAL SUSTAINABILITY AND DIVERSITY, EQUITY, AND INCLUSION STRATEGIES

Social sustainability works in conjunction with environmental and economic sustainability in building resilient communities. A community is a social environment in addition to a physical environment and is defined as much by its people as its location. Hence social sustainability is a critical component of a community's wellbeing, longevity, and resilience to changing conditions.

Social Sustainability

"A process for creating sustainable, successful places that promote wellbeing, by understanding what people need from the places they live and work. Social sustainability combines design of the physical realm with design of the social world – infrastructure to support social and cultural life, social amenities, systems for citizen engagement and space for people and places to evolve."

Source: Social Life (2012) Design for Social Sustainability

Communities need to attract and retain people from a range of backgrounds, ages, and interests if they are to succeed in being places that people want to visit, work, and live in the long term. Planning for social success and sustainability can help to mitigate or prevent future negative social issues such as crime, anti-social behavior, poverty, insufficient housing, poor health outcomes, a bad reputation for the community, and ultimately a declining population.

The Egan Review, a U.K. government commissioned research paper on the components necessary for creating sustainable communities, identified seven core necessary components:

- **Governance:** Effective, inclusive participation, representation and leadership.
- Social and Cultural: Vibrant, harmonious and inclusive communities.
- Housing and the Built Environment: A quality built and natural environment.
- Economy: A flourishing and diverse local economy.
- Environmental: Providing places for people to live in an environmentally-friendly way.
- Services: A full range of appropriate, accessible public, private, community and voluntary services.
- Transport and Connectivity: Good transport services and communication linking people to jobs, schools, health and other services.

Social and cultural factors are called out specifically because of their importance in building cohesive and vibrant, attractive localities whose residents have a strong connection to place and community. Six areas comprise the most important social and cultural factors:

- a sense of community identity and belonging;
- tolerance, respect and engagement with people from different cultures, backgrounds and beliefs;
- friendly, co-operative and helpful behavior in neighborhoods;
- opportunities for cultural, leisure, community, sport and other activities;
- low levels of crime and anti-social behavior with visible, effective and community-friendly policing; and
- opportunities for all people to be socially included and have similar life opportunities.

This is why one of the most important steps towards social sustainability involves knowing the residents, neighborhoods, and populations that make up your community and engaging all of them

Sustainable Communities

"Sustainable communities meet the diverse needs of existing and future residents, their children and other users, contribute to a high quality of life and provide opportunity and choice. They achieve this in ways that make effective use of natural resources, enhance the environment, promote social cohesion and inclusion and strengthen economic prosperity."

Source: The Egan Review (2004) London. Office of the Deputy Prime Minister.

in the planning and governance process. This is accomplished by incorporating environmental justice and diversity, equity, and inclusion strategies into growth and development planning.

Environmental Justice

Environmental Justice is defined as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."

Source: United States Environmental Protection Agency (U.S. EPA)

These strategies work to achieve the goal of creating sustainable, inclusive communities which have access to jobs, schools, parks, shopping, transportation, affordable housing, healthy environments, and other desirable amenities for all residents. Fostering dialogue and relationships between community groups, government agencies, nonprofits, and private partners is crucial to understanding and incorporating community needs and values into decision-making with the long-term goal of social sustainability. It does so in three ways: creating more inclusive societies, enhancing the empowerment of citizens, and fostering more resilient and peaceful communities where residents are more actively involved in and supportive of the community and one another.

Frequently this process may involve conducting community assessments

and collecting data or survey responses from residents about their perceptions of the community, current conditions, and needs. In order to engage as much of the community as possible outreach should be conducted in multiple formats (online, mail fliers, radio announcements, posters posted in the community), and may need to be communicated in multiple languages. Outreach to the community can be extended and strengthened by engaging neighborhood and community groups, tribal entities, schools, and faith-based organizations.

Diversity, Equity, and Inclusion (DEI)

"DEI is a term used to describe policies and programs that promote the representation and participation of different groups of individuals. DEI encompasses people of different ages, races, ethnicities, abilities, disabilities, genders, religions, cultures and sexual orientations. It also covers people with diverse backgrounds, experiences, skills and expertise.

Diversity, equity and inclusion are three different but interconnected concepts. They work together to create an environment of respect and fairness. It involves initiatives promoting...equal access, opportunity, employment and sense of belonging..."

Source: TechTarget www.techtarget. com/searchhrsoftware/definition/ diversity-equity-and-inclusion-DEI?Offer=abt_pubpro_AI-Insider

U.S. EPA'S SEVEN ELEMENT GUIDE

CREATING EQUITABLE, HEALTHY, AND SUSTAINABLE COMMUNITIES: Strategies for Advancing Smart Growth, Environmental Justice, and Equitable Development, 2013

The U.S. EPA has identified seven core elements to guide a community towards sustainability and inclusivity.

#1 FACILITATE MEANINGFUL COMMUNITY ENGAGEMENT IN PLANNING AND LAND USE DECISIONS

Community engagement can be achieved through community planning and visioning workshops, multilingual outreach, and community surveys.

#2 PROMOTE PUBLIC HEALTH AND A CLEAN AND SAFE ENVIRONMENT

A community with clean air, water, and land can be achieved through cleanup and reuse of brownfields and Superfund sites; zoning and planning to reduce residential exposure to health or environmental risks stemming from industrial facilities; and providing incentives for green construction practices and green infrastructure. Promoting green building and infrastructure can reduce water and energy costs, which may be significant for low-income families, as well as reducing exposure to some conventional toxins and pollutants.

#3 STRENGTHEN EXISTING COMMUNITIES

Investment in reusing vacant or abandoned properties, revitalizing commercial corridors, and fixing existing infrastructure can benefit disadvantaged residents in these areas through job creation and better access to amenities and transportation while reviving the community's culture, heritage, and social character.

#4 PROVIDE HOUSING CHOICES

Preserving affordable housing and creating new affordable housing is key to minimizing displacement of low-income populations within the community. Low-Income Housing Tax Credits, deed restrictions, and inclusionary zoning are a few tactics that can support this element.

#5 PROVIDE TRANSPORTATION OPTIONS

Public transit, bike paths, sidewalks, and safe street design improve mobility within a community and access to jobs and amenities, especially for residents who do not own cars.

#6 IMPROVE ACCESS TO OPPORTUNITIES AND DAILY NECESSITIES

Community planning should evaluate and improve the distribution of amenities to ensure residents, regardless of race, ethnicity, or economic status, have access to employment opportunities, schools, grocery stores, health clinics, and parks and green space.

#7 PRESERVE AND BUILD ON FEATURES THAT MAKE A COMMUNITY DISTINCTIVE

Community identity can be preserved though historic preservation of buildings and cultural features as well as through design guidelines and building codes that require new developments to incorporate physical

Just Transition

The Intergovernmental Panel on Climate Change (IPCC) defines a just transition as: "A set of principles, processes and practices that aim to ensure that no people, workers, places, sectors, countries or regions are left behind in the transition from a high-carbon to a low carbon economy."

Source: IPCC, 2022. Climate Change 2022: Mitigation of Climate Change (*ipcc.ch*)

The Just Transition Alliance defines a just transition as "...a principle, a process and a practice. The principle of just transition is that a healthy economy and a clean environment can and should co-exist. The process for achieving this vision should be a fair one that should not cost workers or community residents their health, environment, jobs, or economic assets."

Source: Just Transition Alliance, 2023. Just Transition Principles - Just Transition Alliance (*jtalliance.org*)

aspects of the existing neighborhood character.

These steps outline a framework which can be applied in any community to work towards equity and sustainability. However, the specific demographics, conditions and needs will vary and solutions must ultimately be tailored to each unique locality and its people.

ENVIRONMENTAL JUSTICE AND JUST TRANSITION

The Michigan Healthy Climate Plan describes how climate action is also an opportunity to address equity and environmental justice, stating, "... Michigan should be a place where everyone, no matter their zip code or what is in their wallet, should have the opportunity to thrive - to meet their basic needs, enjoy the dignity of good work, and live in a healthy community with access to affordable housing, water, heat, power, and transportation." As communities plan for sustainability, decarbonization, and resilience they should ensure that all members of the community

are included in the process and share in the benefits, that all populations, especially vulnerable populations are protected from climate hazards, and do not bear an unequal burden in pollution, flood risk and damage, or other risks and costs.

Additional information can be found in the following resources:

Michigan Dept. of Civil Rights – Diversity, Equity and Inclusion

michigan.gov/mdcr/divisions/dei

State webpage with links to racial equity toolkit and other resources for achieving improved diversity, equity, and inclusion outcomes.

Michigan Office of Environmental Justice Public Advocate

michigan.gov/egle/about/organization/ environmental-justice

The Office was created by Governor Whitmer's Executive Order 2019-06 to serve as an external and internal advocate and catalyst for ensuring Environmental Justice throughout the state. The Office works collaboratively

across state government to advance Environmental Justice and equity in Michigan, as well as addressing Environmental Justice concerns and complaints.

Michigan Municipal League – Diversity, Equity and Inclusion

mml.org/resources-research/dei

Articles, webinars, relevant legislation, and resources on the topics of Diversity, Equity, and Inclusion, geared towards municipal leaders and policymakers.

Creating Equitable, Healthy, and Sustainable Communities: Strategies for Advancing Smart Growth, Environmental Justice, and Equitable Development, (2013). USEPA.

epa.gov/sites/default/files/2014-01/ documents/equitable-developmentreport-508-011713b.pdf

This publication identifies strategies that bring together smart growth, environmental justice, and equitable development principles which community based organizations, local and regional decisionmakers, developers, and others can use to build healthy, sustainable, and inclusive communities.

The Egan Review: Skills for sustainable communities, London (2004). Office of the Deputy Prime Minister.

ihbc.org.uk/recent_papers/docs/ Egan%20Review%20Skills%20for%20 sustainable%20Communities.pdf

This report defines sustainable communities, the necessary components, means of delivering the components, skills needed and metrics for analysis and assessment. Summarizes lessons learned from previous new housing and community developments.

Design for Social Sustainability,

(2012). Social Life.CO

social-life.co/media/files/DESIGN_ FOR_SOCIAL_SUSTAINABILITY_3. pdf

This paper sets out how to plan, design and develop successful and socially sustainable communities. The ideas and examples are drawn from a large-scale review of evidence about what makes communities flourish, with practical examples and approaches from new settlements around the world.

DEIJ in Action: A Diversity, Equity, Inclusion, and Justice Guide for the Chesapeake Bay Watershed, (2019). Chesapeake Bay Trust.

cbtrust.org/wp-content/uploads/CB-Watershed-DEIJ-Guide_May-2019.pdf

The guide concludes with a stepby-step process for individual organizations to develop a DEIJ Action Plan building from the recommendations and strategies in the guide. Each step in the process is described in detail, including tools and templates.

Engaging Socially Vulnerable Communities and Communicating About Climate Change, (2022). The

National Academies of Sciences, Engineering, and Medicine.

nap.nationalacademies.org/ resource/26734/interactive

Key strategies for communicating about risk, promoting adaptation, and engaging socially vulnerable communities.

Dibaginjigaadeg Anishinaabe Ezhitwaad - A Tribal Climate Adaptation Menu, (2020).

forestadaptation.org/tribal-climateadaptation-menu

Many climate adaptation planning tools fail to address the unique needs, values and cultures of indigenous communities. This Tribal Climate Adaptation Menu, which was developed by a diverse group of collaborators representing tribal, academic, intertribal and government entities in Minnesota, Wisconsin and Michigan, provides a framework to integrate indigenous and traditional knowledge, culture, language and history into the climate adaptation planning process. This Tribal Climate Adaptation Menu may be useful in bridging communication barriers for non-tribal persons or organizations interested in indigenous approaches to climate adaptation and the needs and values of tribal communities.

Equity Guide for Green Stormwater Infrastructure Practitioners, (2022). The Green Infrastructure Leadership

The Green Infrastructure Leadership Exchange.

giexchange.org/wp-content/ uploads/2022/05/Equity-Guide-for-GSI-Practitioners_March-2022.pdf

A resource developed by and for green infrastructure program managers. It offers an action and evaluation roadmap that defines:

- 1. our industry's shared long-term equity goals,
- 2. best practices that will move the needle, and
- 3. sample metrics that help us track progress toward those goals over time.

It also offers a variety of tools to support practitioners in customizing community informed equity work plans and evaluation plans to local contexts.

3.4 TWIN CITIES SUSTAINABLE SMALL HARBOR CASE STUDY



INTRODUCTION

The twin cities of Benton Harbor and St. Joseph sit in the southwest corner of Michigan on the Lake Michigan shoreline at the mouth of the St. Joseph River. Although the Twin Cities are geographically close and share a harbor, they are unique communities with individual needs.

Benton Harbor is classified as an underserved community where residents have been historically underserved, marginalized, and adversely affected by persistent racism, poverty and inequality. Benton Harbor is one of the poorest communities in the United States with a per capita income of \$11,969 and 45% of persons living below the poverty level. The median household income in Benton Harbor is \$20,157.

This is in stark contrast to its neighboring "twin" city St. Joseph which has a median per capita income of \$43,250 and 8% of persons living below the poverty level.

The Twin Cities also exhibit a pattern of racial segregation common in many American cities, with Benton Harbor's population being 85% people of color and St. Joseph's population being 86% white. However, these communities share a common asset – the St. Joseph River mouth harbor and associated waterfront. While there has been some waterfront development over the years, overall, the transition from industrial use to other uses has been sporadic and much of the land is unutilized or underutilized.

To address this situation, the City of Benton Harbor hired Andrews University and Southwest Michigan Planning Commission in 2015 to complete an analysis called the "Twin Cities Harbor Study" that evaluated key assets and opportunities for the future of the harbor. The development and revitalization potential highlighted in the study inspired a group of leaders from local governments, business, industry, and planners to form an organization called the Harbor Conservancy to implement the ideas in the study and address harbor related issues. However, the Harbor Conservancy struggled to motivate action and attention toward advancing revitalization opportunities as well as addressing dredging and governance issues.

In 2018, the Harbor Conservancy partnered with the Office of the Great Lakes (OGL), Michigan Sea Grant, Small Harbor Sustainability Initiative partners, and other stakeholders to apply the Small Harbors Sustainability Process and best practices to St. Joseph Charter Township and the cities of St. Joseph and Benton Harbor. The OGL provided funding to support the Twin Cities Sustainable Harbor Revitalization Project utilizing the tools & tactics found in the Sustainable Small Harbors Guidebook (2017 version).

The goal of the Twin Cities Sustainable Harbor Revitalization Project was to facilitate the development of a harbor sustainability plan for the local communities of Benton Harbor, St. Joseph, and St. Joseph Township that maximizes the benefits of their combined harbor and waterfront assets. A critical component of this project was to make sure all voices were heard during the process, with diversity, equity, and inclusion (DEI) at the forefront of decisions given the disparity in the socioeconomics of the communities. To that end, a very robust communications and community engagement plan was developed that included:

• Co-creation of the engagement process with community leadership and hiring a local community outreach company to assist in implementation;

- Area tours with community leadership to evaluate assets;
- Presentations at commission meetings and stakeholder groups;
- Regular social media communications (Facebook and webpage);
- Articles in the local newspaper and interviews on local radio;
- Focus groups based on communities of common interest (neighborhood associations, commercial, recreational, environmental, young professionals and ministries); and
- Joint technical meetings including Park & Recreation Commissions, Planning Commissions, Zoning Boards, and Downtown Development Authority and local businesses.

The engagement plan lasted approximately 20 months and is

shown in Figure 1. At the heart of the engagement plan was the design charrette. To authentically develop a shared vision for the future, it was important to capture the thoughts of all residents and stakeholders, but especially those in Benton Harbor. To inform Benton Harbor residents, the project team hired a local communication firm to assist with notification of meetings. This included posting notification flyers at local public spaces (such as the library and community centers) and placing flyers on doors in harbor adjacent neighborhood districts. The team also met with City council members and local ministerial leadership so they could inform their membership. The charrette was held at a community and workforce development center in Benton Harbor to provide easy access for residents and facilitate



SUSTAINABLE SMALL HARBORS

TOOLS & TACTICS GUIDEBOOK

Figure 1: Community Engagement Timeline

Twin Cities Harbor Vision: 2040



Figure 2: Twin Cities "2040" Harbor Vision (V5)

their participation in the process. In addition, free transportation was provided by the City of Benton Harbor for residents to attend. Residents were able to schedule door-to-door service for all charrette meetings. Overall, these efforts led to good diverse participation.

TWIN CITIES VISION FOR 2040

This robust approach led to the creation of evolving versions of the harbor vision with Version 5 presented in January 2020 (see Figure 2). The vision calls for significant redevelopment along the waterfront including interconnected paths, park space, and preserved natural areas which align with the themes that emerged during the public engagement process. These include:

- Development
 - Business and Job Growth
 - Diverse and Affordable Housing
 - Cultural Amenities
 - Grocery/Market (Food Security)
- Transportation & Connectivity
 - Public Transit
 - Multi-modal (walking, biking, etc.) Options
 - Waterfront Accessible
- Environmental Preservation
- Parks and Recreation
- Collaborative Governance
 - Communication
 - Coordination
 - Transparency

This final theme, collaborative governance of the shared asset, led to the establishment of the St. Joseph River Harbor Authority.

CO-JURISDICTIONAL MANAGEMENT

A working group that included representation from all three communities collaborated with the project team to hold a governance retreat to further advance the results of the Twin Cities Sustainable Harbor Revitalization Project. The working group clearly defined revitalization concerns and priorities for the future of the St. Joseph River Harbor and adjacent waterfront. The working group also explored the legal

Co-Governance Models

Joint Planning Advisory Board

- Advisory body bound by existing planning and zoning
- No mechanisms for financing projects
- Least power/authority; completely advisory

Legal Framework: Joint Municipal Planning Act, PA 226 of 2003

Figure 3: Co-governance Models

frameworks for multi-jurisdictional collaboration and co-governance models that would allow communities that share a harbor asset to work collaboratively (Figure 3). Ultimately, the working group drafted a resolution for the establishment of the St. Joseph River Harbor Governing Body. This Body would consist of 13 people - four from each jurisdiction and an independent chair. Membership was as follows:

- Chief Elected Official (i.e., Mayor or Supervisor)
- Highest Level Staff Member (i.e., City or Township Manager)
- Member At Large (drawn from Planning Commission, DDA, Harbor Master, etc.)
- Alternate (drawn from Planning Commission, DDA, Harbor Master, etc.)
- Independent Chair and Administrator

Joint Planning Commission

- Commission with the power to enforce planning and zoning decisions
- No mechanisms for financing projects
- More power/authority, but limited to planning and zoning

Legal Framework: Joint Municipal Planning Act, PA 226 of 2003

Harbor Authority/Agency

- Authority with the power to adopt/approve development plans, own property, and enter into contractual agreements
- Finance projects with grants, bonds, and assessments
- Amount of power/authority is broad and flexible; can have advisory components

Legal Framework: Urban Cooperation Act, PA 7 of 1967

The resolution was passed unanimously by all three jurisdictions. The three communities ultimately agreed to form the St. Joseph River Harbor Authority through a PA 7 Agreement with the support of Berrien County.

FUTURE

One of the tributaries of the Paw Paw River that flows into the harbor area is Ox Creek. Ox Creek has significant contamination concerns, but also great potential for restoration and revitalization given its location in the heart of the St Joseph River Harbor area. The collaboration between Benton Harbor and state and local partners has in part led to the success of Benton Harbor in receiving state and federal funding to advance restoration and revitalization of Ox Creek. As of October of 2023, over \$7.2 million has been secured towards the revitalization of Ox Creek.

Simultaneously, in 2023, EGLE awarded the City of Benton Harbor a \$315,000 High Water Grant to address impacts from high water and severe weather along the St. Joseph River in the city. This project will build on the in-process Benton Harbor Master Plan and the Twin Cities Sustainable Harbor Strategy 2040 Vision to sustainably address flooding and stormwater runoff through nature-based solutions.

SUSTAINABLE SMALL HARBORS

4.0 ECONOMIC CONSIDERATIONS



SUSTAINABLE SMALL HARBORS

4.1 CHARACTERIZING ECONOMIC SUSTAINABILITY OF SMALL HARBORS

For this project, "economic sustainability" was characterized as the ability of small harbors to self-fund their continued operation and maintenance costs in the face of decreased federal funding. Many small harbors are not financially viable in the sense that direct revenues no longer cover costs. Faced with this situation, harbor operators have a set of potential responses.

These include:

- Reducing operations,
- Seeking additional external funding,
- Increasing fees,
- Increasing taxes, and
- Undertaking activities that increase revenues relative to costs.

Operators could choose one or more of these potential responses, each having implications for the harbor and community. Reducing dredging can affect accessibility. Securing additional external funding is challenging as it may require operators to substantially demonstrate how useful those expenditures would be. Increasing slip fees can have an uncertain impact on revenues. Tax increases to local property owners and businesses require local political support and are typically unpopular. Finally, undertaking activities that increase revenues relative to costs (such as harbor infrastructure improvements) can be complex and expensive.

When faced with this situation, the community needs to consider the overall value the harbor brings to their community. Small harbors can be economically complex. Many small harbors and their communities are symbiotic; desirable harbors lead to more visits and expenditures in both harbors and harbor towns. As a result, undertaking any of the activities previously described can impact outcomes for both entities.

In Figure. 4.1, the community owned and/or operated harbor and adjacent waterfront is depicted as the center of the diagram and the metaphorical center of the community. The waterfront/harbor



provides a sense of place and "value" to both residents and visitors alike through quality-of-life amenities.

Visitors contribute actual value to the community through dollars spent during their visit by boating, eating in restaurants, sleeping in guest accommodations, and shopping in stores (with many of the businesses being locally owned and/ or operated). Likewise, residents contribute value to the community through similar means as the visitors (boating, shopping, etc.), but also through ownership of houses, cars, and boats that can contribute to the local economy through taxes and maintenance expenses.

The local business owners provide revenues to the municipality through taxes, and fees. In situations where the local community owns and operates the harbor and waterfront amenities, they also receive funds through direct sales of goods and fees for parking or slip rentals.

The final piece of the diagram are the expenses owed by the municipality for operation and maintenance of the harbor and adjacent infrastructure. The harbor incurs normal operating expenses, including salaries, utilities, and routine maintenance and may also incur periodic dredging or infrastructure replacement expenses. If a community doesn't maintain its harbor/waterfront, the value to the residents and businesses will decrease which in turn can affect revenue streams. Simplistically, the goal of an economically sustainable harbor is to have revenues exceed expenses, but a community needs to be cognizant of the overall value the waterfront/ harbor provides and potentially broader revenue streams when evaluating expenditures. A vibrant harbor can draw additional visitors, residents and businesses as well as affect property values.

During Phase 1 of the Sustainable Small Harbor Project, a complex economic simulation model was developed to analyze potential economic outcomes of different community improvement scenarios or sustainability strategies at four case study harbors (AuGres, New Baltimore, Ontonagon, and Pentwater). The modeled improvements were products of the charrette process employed at those communities. The economic analysis reports for the case study communities are available on the project website as examples of how economic simulation modeling can be employed by communities in support of alternative analysis.

4.2 FINANCIAL INSTRUMENTS, PROGRAMS AND STRATEGIES TO SUPPORT LONG TERM SUSTAINABILITY

The project team recognizes that funding 20-year waterfront visions can be expensive. Furthermore, it is imperative for communities to identify and implement mechanisms of capture to ensure that values accrued from community revitalization efforts are, in part, retained by the community in order to fund needed harbor maintenance and dredging.

INCORPORATING THE VISION IN PLANNING DOCUMENTS

To facilitate adoption and eventual implementation of the suggested 20-year vision, it is imperative to incorporate the vision elements in planning documents. This effectively uses any existing planning framework to ensure the vision is not abandoned. For example, state statute requires Michigan communities to review their master plan every five years. Using this cycle to incorporate vision elements will ensure general acknowledgment of the waterfront as a unique component of the community and will set the stage for subsequent planning efforts.

Having a clear vision for the waterfront may simultaneously protect important aspects of the waterfront while enabling desired forms of development that stimulate economic activity. For example, in a community where form-based code is established (e.g., building requirements for height and view lines), a potential developer knows the requirement and can move more efficiently than if faced with a lengthy review process. This advance permission is often perceived to add value to a property.

Additional opportunities for a community to tie in the 20-year vision include adoption of goals in a recreation plan, capital improvements plan, and downtown development authority plan. Planning resources may also include water or land trail plans, hazard mitigation plans, habitat or park plans, and more.

Example Funding Opportunity

The Michigan Economic Development Corporation (MEDC) and Michigan State Housing Development Authority (MSHDA) have combined efforts to provide a "Public Spaces Community Places" funding opportunity to leverage citizen fundraising with public dollars to fund placemaking efforts. Local projects meeting fundraising goals can receive a matching grant from MEDC/MSHDA of up to \$50,000. Communities, non-profits, and other business entities can submit projects. Qualifying projects include:

- Public plaza and green space development,
- Access to public amenities,
- Farmers markets, community kitchens, pop-up retail and incubator spaces,
- Alley rehabilitation, and
- Any other place-based (or public space improvement) project.

Source: Michigan Economic Development Corporation *miplace.org/programs/public-spacescommunity-places*

Master Plans

Statute requires local governments in Michigan to assess their current master plan every five years in order to decide if the plan needs to be updated. A master plan is prepared by the municipality's planning commission or consultant and is a policy document outlining the community's vision for the future. It should be the basis for, or influence, the community's future environmental protection, economic development, zoning, and other regulatory ordinances.

Source: Kurt H. Schindler, Michigan State University Extension *msue.anr.msu.edu/news/ most_local_governments_need_to_update_their_master_plan*

FUNDING STRATEGIES FOR MUNICIPAL MARINAS

Communities will need to explore financing opportunities from the local, state, and/or federal government, including grants or loans supported through general fund revenue, bonds, or indirectly through taxes. Foundation funding and "crowd-sourcing" are also options. Additionally, several State agencies are well suited to assist coastal communities. For example, the Coastal Zone Management (CZM) Program in the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Office of the Great Lakes offers grant funds annually for creative projects that further the following objectives:

- Protect and restore healthy coastal ecosystems, including fish and wildlife habitat,
- Create and enhance public access to the Great Lakes and coastal resources,
- Preserve historic maritime structures,
- Revitalize urban waterfronts,
- Minimize loss of life and property in areas vulnerable to coastal hazards, including erosion, floods, and dangerous currents,
- Promote stewardship of coastal resources, and
- Protect coastal water quality.

Source: Michigan Department of Environment, Great Lakes, and Energy *michigan.gov/egle/ about/Organization/Water-Resources/ coastal-management*

The Michigan Department of Natural Resources (MDNR) administers a suite of recreation grant programs, including grants available from the Michigan Natural Resources Trust Fund, Land and Water Conservation Fund, and Recreation Passport. Grants for boating infrastructure, boat pump-outs, aquatic invasive species management, trails, and more are also available.

Source: Michigan Department of Natural Resources *michigan.gov/dnr/buy-and-apply/ grants*

The MDNR Waterways Program also administers a grant competition. Waterways Program grants are funded through the Michigan State Waterways Fund from state marine fuel tax and water craft registrations. The Waterways Program is overseen by the MDNR Parks and Recreation Division. Harbor grant applications for the Waterways program require:

- A Recreation Harbor/Marina
 Facilities Five-Year Recreation Plan,
 which must include: a description
 of how the community intends to
 address recreational plan elements
 like facility size, marketing plans,
 dredging needs, frequency of
 dredging cycles, dredging volume,
 disposal location, infrastructure
 replacement schedules, annual
 maintenance schedules, and
 replacement or habilitation
 schedules of large investments like
 docks, buildings, etc.,
- The last three years of harbor logs, and
- The last three years of financial summaries for the harbor.

Source: Michigan Department of Natural Resources *michigan.gov/dnr/buy-and-apply/* grants

An example of a five-year recreation plan that focuses on waterfront recreation strategies can be found on the Sustainable Small Harbors project website; see: *sustainablesmallharbors. org*

To provide additional guidance on potential funding opportunities, an

inventory of potential grant and loan opportunities was developed. See: *Michigan Grant And Loan Funding Opportunities* (XLS)

VALUE CAPTURE

Once revitalization efforts are in place, communities must close the loop by capturing new economic value. This ensures funds are available to maintain the features that make waterfront communities unique. Efforts to capture value include:

- Marine investment fund,
- Tax strategies, such as
- Implementing a water resources tax increment financing authority (TIFA),
- Increasing the tax base,
- Offering tax incentives to reward the type of development the community seeks, or
- Fee structure for public facilities.

A marine investment fund is a mechanism wherein non-marine users pay to help offset working waterfront infrastructure improvements. The National Working Waterfront Network (*nationalworkingwaterfronts.com*) developed a case study for the Sustainable Working Waterfronts Toolkit that features a community using this mechanism:

"In 2010, amendments to the [Portland, Maine] zoning code established a 'non-marine use overlay zone' along Commercial Street that allows compatible non-marine uses (no residential or hotels). Projects within the overlay zone must meet performance standards to facilitate marine uses on the piers and must contribute to a marine investment fund to support infrastructure improvements in the central waterfront. Outside of the overlay zone, ground floors must maintain 55

percent marine use, while 45 percent is allowed for compatible non-marine uses. These non-marine uses must still meet performance standards related to facilitating marine uses. When seeking tenants, pier owners must provide first option to water dependent uses (marine uses) at reasonable rates before leasing to non-marine uses."

Source: Sustainable Working Waterfronts Toolkit (nationalworkingwaterfronts.com/ portfolio_page/case-study-portland-mainebalancing-maritime-uses-and-waterfrontdiversification-through-municipal-zoningportland-maine) and the City of Portland, Maine, Planning and Urban Development Department.

For more information on establishing an overlay zone to fund a marine investment fund, read the full case study: Portland, Maine: Balancing Maritime Uses and Waterfront Diversification Through Municipal Zoning. See: *nationalworkingwaterfronts.com/ portfolio_page/case-study-portlandmaine-balancing-maritime-uses-andwaterfront-diversification-throughmunicipal-zoning-portland-maine*

Another mechanism to capture value is tax increment financing (TIF) that is specific to water resources. Tax increment financing is a public financing method that is used as a subsidy for redevelopment, infrastructure, and other community-improvement projects. Through the use of a TIF, municipalities typically divert future property tax revenue increases from a defined area or district toward an economic development project or public improvement project in the community. While communities can establish a TIF to be administered by existing authorities, it is also possible to establish a new authority that focuses on the waterfront: a water resources tax increment financing authority. A tax increment finance authority (TIFA) is a local agency authorized to guide use of funds accrued through the TIF; the agency may perform some of the same tasks as a government agency (e.g., buying or selling property, issuing bonds for public improvement projects). Establishing a TIF requires designation of a district boundary, specific plans, and cost estimates for improvement projects. If an agency is being established, permission from the State Tax Commission is required. It is important to note that tax increment financing does not directly increase property taxes, but serves to capture and redirect

Definition of Tax Increment Financing

Tax increment financing (TIF) is a financing technique used by local governments for development projects which uses future gains in taxes to cover the costs of current improvements. Tax increment financing allows local governments to use all or a portion of the taxes generated by new development within a designated TIF District to pay for improvement costs of that development. A TIF is designed to work as follows: as development occurs in the TIF District, tax revenue increases, and the increased tax revenue is used by the local government to pay off loans or bonds and to finance further redevelopment activities. The "increment" is the annual increase in tax revenue from the base year when the TIF was established.

Source: National Working Waterfront Network

a portion of currently paid and future taxes for a specific purpose. The annual, incremental increase in taxes is therefore not remitted to the local city or government agency, so a contingency for those revenues may be required.

For more information on the use of TIF for value capture at the waterfront, see the National Working Waterfront Network's report: *The Tiff Over TIF: Extending Tax Increment Financing to Municipal Maritime Infrastructure. See: nationalworkingwaterfronts.com/ municipal-tax-increment-financing*

For an example of a community that has established a water resource improvement TIFA, see the Saugatuck Douglas Harbor Plan website at: *douglasmi.gov/ wp-content/uploads/2017/06/ DouglasWaterfrontMasterPlan.pdf*

MARKETING STRATEGIES

The local chamber of commerce, downtown development authority, regional development agency, planning commission, and other existing groups with shared interest in bringing more people to a particular community could be vital partners in developing marketing strategies. Many visions for the future will serve both residents and visitors. The purpose of a marketing campaign can be to attract new residents, repeat visitors, or people making their first trip to the harbor community.

CROSS-MARKETING

Visitors to the harbor and waterfront arrive from both land and water, so marketing efforts should be targeted accordingly. To reach new visitors from the region, consider targeted

advertisements. For example, one case study community identified a neighboring inland community within a day's drive that could send new visitors. The inland community was assessed for perceived spending potential and feasibility of attracting single-day or overnight visitors. The harbor community's chamber of commerce then undertook a seasonal marketing campaign by placing advertisements in the inland community's weekly newspaper to attract new visitors.

To target boaters, a community's harbor and an updated roster of amenities should be listed on popular boating websites such as Active Captain and Marina Life. For more information, see Section 5.2.4 "Value Capture."

Also, communities should seek out opportunities to engage in regional marketing efforts such as Heritage Route 23 and collaborations with local institutions to increase visitor awareness. Examples include maritime museums, bike trails, marine sanctuaries, lighthouses, and federal research stations.

COMMUNITY CHAMPIONS

Sports teams often have booster clubs. Several communities have found this volunteer support model useful at the community scale. Such a voluntary group may include representatives from existing community development groups, such as a chamber of commerce, and could extend to include city or village staff, key influencers, and motivated volunteers.

This approach to identifying and convening a group of key individuals to lead marketing and promotion efforts has been helpful in Boyne

Local Allies

An integral component of ensuring sustainability is identifying collaborators that will stand by efforts to improve social, environmental, and economic sustainability. To this end, efforts to gain allies include:

- Seeking out public-private partnerships to facilitate access to a wide range of funding sources,
- Establishing non-profit organizations in support of working waterfronts to improve access to funding sources and reap tax benefits, and
- Creating new or using existing trade associations in support of working waterfront initiatives.

City, Michigan. The area chamber of commerce reported:

"Team Boyne is a voluntary" group of members of the business community, nonprofits and leading organizations interested in promoting entrepreneurship and development. It is a welcoming environment where new and existing businesses can get confidential support and guidance from the rest of the Boyne *City community. Team Boyne brings* community leaders together on a monthly basis for some very important networking. It isn't uncommon to have 25-30 people sitting around the table, each sharing what is new or important with their organization, as well as what they are hearing on the street. This way, everyone has a good, general understanding of where the community is going and any items that might need to be addressed. This process helps avoid surprises and circumvent parties working at cross purposes. It has been amazing how guards have come down and real dialogs have developed."

Source: Boyne Area Chamber of Commerce.

For more information and advice on this approach, see the full article, "Proper Prior Partnerships Prevent Pitifully Poor Performance: Boyne City's Team Boyne Experience," in the November/December 2016 issue of *The Review* (pgs 36-37). Available at: *mml.org/resources/publications/mmr/ issues/nov-dec2016/review-nov-dec-*2016-web.pdf

PLACEMAKING

As introduced in Section 1.2 "Connecting people to place — building connectedness and opportunity," "placemaking" is a term for efforts to develop and celebrate all that makes a community unique and livable. The State of Michigan has adopted and promoted this approach through the MIplace initiative (*miplace.org/resources*). The initiative identifies several key components of effective placemaking: housing, transportation, historic preservation, green space, talent, and entrepreneurship.

The Michigan Main Street program provides technical assistance to downtown businesses to help them revitalize and preserve their traditional commercial districts. For more information on the Michigan Economic Development Corporation's Michigan Main Street Program, see: *miplace.org/programs/ michigan-main-street*



An initial step in adopting a placemaking approach for a community is completing the Michigan State University Land Policy Institute's Placemaking Assessment Tool. The tool is listed in this guidebook as a Highly Recommended action in Section 5.2.3 "Visioning/Planning." The tool helps communities develop quality places to live, work, and play that are attractive and functional. The LPI Placemaking Assessment Tool helps a community to:

- Understand the scope of what might be involved in different types of placemaking and which is the right one for their community,
- Think about placemaking in the context of larger efforts of strategic planning for the community and region,

- Determine their capacity to do effective placemaking at the present time, and
- Determine what to do to become more effective in the future.

To access the Michigan State University Land Policy Institute's Placemaking Assessment Tool, see: *canr.msu.edu/resources/placemaking_ assessment_tool*

4.3 STRATEGIES FOR SELF-SUFFICIENCY: A SOUTH HAVEN CASE STUDY



As Michigan's Great Lakes recreational harbors look to a future of reduced reliance on federal support for harbor maintenance, some have already explored longterm management strategies aimed at developing a more self-sustainable economic approach. South Haven is a good example of such a community.

Located at the mouth of the Black River on Michigan's southwest coast, South Haven is typical of many Michigan small harbors. It was established in the mid-1800s for the lumber trade, and the harbor was improved in the early 20th century to handle more diverse waterborne freight and passenger steamships. By the 1960s and 70s, however, industrial activity on the waterfront had been phased out and the transition had begun to a harbor devoted exclusively to recreational boating, charter fishing, and other tourism-related activity.

Today, the South Haven harbor supports some 1,200 seasonal and transient boat slips accessed by about 3,100 feet of federally authorized channel and protected by over 4,300 feet of navigation structure, including breakwaters, piers, and revetments. South Haven also invested heavily in public access, including extensive river walk infrastructure linking the downtown to the harbor, marinas, piers, and beaches. This linkage is key for economic development.

Historically, the federal channel was dredged by the U.S. Army Corps of Engineers at a frequency of every three to four years to clear both river initiated sediment loading and littoral drift of sand across the Lake Michigan pier heads. South Haven's most recent maintenance dredging project in 2013 removed a total of 22,262 cubic yards of material at a cost of about \$520,000.

While that project was largely supported by federal dollars as part of the Hurricane Sandy relief fund and by a State of Michigan emergency dredging grant, the city is not counting on such assistance being available on any regular basis going forward. Its current strategy is to establish a maintenance dredging program supported primarily by the city's marina operations and by the South Haven Downtown Development Authority (DDA), while continuing to access state and federal assistance when available. This strategy is outlined in the River and Harbor Recreation Plan Amendment (February 23, 2015) to the City of South Haven Recreation Plan. A copy of this plan is available on the project website.

The financial objective is to be able to fund major dredging projects as necessary and to provide resources, as available, for other harbor-related capital improvement projects. The River and Harbor Recreation Plan includes a five-year capital improvement and operation plan that projects expenses through Fiscal Year 2019. This allows the community to anticipate revenue requirements.

To support this five-year strategy, the city aims to maintain a \$1 million balance among three funds designated for harbor operation and maintenance. Those three funds are the Marina Fund, the Black River Park Fund, and



the River Maintenance Fund. The Marina Fund generates revenue from seasonal and transient docks operated by the city at three municipal marina facilities (Northside, Southside, and Turning Basin) downriver from the Dykman Avenue bascule bridge. The Black River Park Fund is supported by seasonal and transient dock rentals at that facility upriver from the bridge and generates additional revenue from boat launching fees (both seasonal permits and daily fees) and parking fees at the boat launch.

In Fiscal Year 2016, the Marina and Black River Park funds generated a net revenue of \$253,533, representing about a 65/35 split between seasonal and transient boaters. Six percent of the net revenue produced by those two funds then goes to a third fund, the River Maintenance Fund, which is earmarked specifically for maintenance dredging. The River Maintenance Fund also includes the DDA's annual contribution, which totaled \$10,000 in 2016. An additional contributor to the fund in recent years has been the Michigan Maritime Museum located in the harbor's Turning Basin marina sector. Assured navigation access via a specially maintained 12-foot-deep channel is critical to the museum,

which owns and operates the historic replica tall ship Friends Good Will as a principle revenue source. At the end of Fiscal Year 2016, the River Maintenance Fund showed a balance of \$120,979. The Marina and Black River Park funds had balances of \$673,034 and \$268,078 respectively for a total balance of \$1,062,091 (above their target goal). As such, they are prepared for future dredging and operational costs planned for the next five years. It should be noted that, in 2013, the city funds operated at a deficit, so this process of financial sustainability was developed over a three-year period through planning and financial decisions regarding their waterfront resources.

During periods of extremely low water levels, South Haven has explored other approaches to support critical dredging needs, including establishment in 2005-2006 of a waterfront special assessment district that generated funds for emergency dredging. While special assessments for future crisis situations have not been ruled out, city management has learned not to extend multi-year pay options. There is no guarantee that water levels will recover over a certain period of time, thus creating a possible scenario of going back to special assessment district property owners for another assessment with all the requisite hearings and due diligence — before the first one is completed. The city's plan going forward is therefore 12-month special assessment payoff periods only.

The vagaries of weather and climate that necessitate flexibility and advance planning from a monetary standpoint also apply to regulatory readiness for small harbors. Channels can take years to silt in, but storm events can close a harbor overnight. As an extra measure of preparedness, a private engineering firm is on retainer to make sure that South Haven has all state and federal dredging permits kept current at all times so that, in emergency situations, critical time is not lost in having to apply for or renew applicable permits.

Finally, a collaborative approach has helped build more public awareness in South Haven of the importance of a reliably navigable harbor. By engaging the DDA and the Maritime Museum as harbor maintenance partners, the City has broadened community involvement and made it easier to marshal support in times of critical need.

4.4 BUYING A DREDGE: THE ULTIMATE IN HARBOR MAINTENANCE SELF-SUSTAINABILITY

By David L. Knight

Michigan's small harbors are not alone in the challenges they face to keep their harbors dredged despite diminished federal assistance in recent years. Shallow draft, recreational harbors throughout the Great Lakes — and even along United States seacoasts — are facing similar pressure as the U.S. Army Corps of Engineers (USACE) continues to reduce its dredging obligations for all but the busiest deep draft cargo ports.

Seeing little hope for change in USACE policy, and with congressional earmarks long since eliminated as a work-around option, a group of seven shallow draft ports on Oregon's Pacific Coast decided in 2014 to take matters into their own hands. The Oregon South Coast Ports Coalition was formed through an intergovernmental agreement to "address common problems and issues, and agree to act together whenever possible when contracting for goods and services." Not only was the issue of federal funding at play, but the ports' remote locations on Oregon's southern coastline also added to the cost and scheduling difficulty associated with bringing in dredging contractors.

Though the coalition never incorporated formally, wanting to avoid creation of another bureaucratic entity, its collective voice spoke loudly enough to the Oregon state legislature and governor to persuade them to buy a dredge for the coalition members' use. Using



New Ellicott Dredge in Bandon, OR. Source: dredgingtoday.com

some \$900,000 from state lottery revenue, an Ellicott 360 SL swinging ladder portable dredge was purchased at a cost of \$650,000, along with a 24-foot push boat and 3,000 feet of dredge pipe. The coalition members were responsible for deploying and operating the equipment, and several of the member communities sent crews to be trained on the equipment. Member harbors were also responsible for having appropriate permits for the dredging and management of the dredged material.

In October 2014, the dredge was mobilized for the first time at the port of Bandon, a community of about 3,000 people located at the mouth of the Coquille River. Having missed a critical dredging window two years previously due to the aforementioned scheduling and funding problems, the harbor's launch ramp and mooring areas were almost unusable from accumulated siltation. During the permitted dredging window between October and February, the dredge removed about 31,000 cubic feet of material from the launch and boat basin at an estimated cost of \$3.35 per cubic yard (\$3.51 with depreciation of the barge included). The community's total outlay, after some reimbursements from the state, was a little over \$120,000. It is projected that Bandon's harbor will not have to be dredged again for six years (an average financial outlay of \$20,000/year).

Of all the strategies available to Michigan's recreational harbors looking to keep their channels dredged in the post-USACE era, buying a dredge has rarely been considered seriously. The daunting capital cost, plus operational expenses, training, state and federal permits, liability, and a myriad of other issues all work against a small-harbor community going into the dredging business for itself. One small harbor, though, decided to take on all the challenges and is forging ahead with just such a plan.



Fishtown, Leland, MI. Source: Michigan Sea Grant

Leland Township Harbor, on the windward coast of the Leelanau Peninsula, requires removal of about 17,000 cubic feet of drifted sediment annually to keep its harbor navigable. In addition to being the home port for recreational, tribal fishing, and ferry service vessels to North and South Manitou islands, it is the only harbor of refuge for an 80-mile stretch of Lake Michigan coastline. Until recent years, the harbor was dredged annually by USACE. With the de-prioritization by USACE of all shallow draft harbors starting about ten years ago, as well as the elimination of congressional earmarks, Leland has had to seek other ways to remain open, including relying on emergency, one-time funding from the State of Michigan in 2013 and dipping into its own limited resources.

Leland finally went without dredging in 2016 and — even with abovenormal Lake Michigan water levels at the time — faced closure and imminent loss of the 2017 boating season, not to speak of its long-term viability as a harbor. With cash reserves of \$300,000 on hand and few options left, township officials decided to purchase a \$500,000 eight-foot cutter head, hydraulic dredge manufactured by the DSC corporation in Greenbush, Michigan, and immediately embarked on a local fundraising campaign to generate the \$200,000 difference to avoid the cost of borrowing.

As of March 2017, the fundraising goal had been met, the down payment made, the dredge ordered, training arranged, and a dredging schedule set to accommodate an early spring dredging window. Leland Harbor Commission staff anticipates annual operating costs of about \$34,000 and a steep operational learning curve — not the least of which will involve compliance with rigorous oversight by the Michigan Department of Environment, Great Lakes, and Energy. But ongoing challenges notwithstanding, for the time being at least, Leland Harbor has its fate in its own hands.

4.5 CASE STUDY: LAKE ONTARIO REGIONAL DREDGING MANAGEMENT PLAN

One innovative approach taking shape in New York state involves a "Regional Dredging Management Plan" (RDMP) in which multiple counties and municipalities along Lake Ontario's south coast would collectively operate a dredging program. The idea was originally proposed in 2000 by Dr. Frank Sciremamanno, an engineering professor at the Rochester Institute of Technology and a member of the International St. Lawrence River Board of Control and the International Lake Ontario-St. Lawrence River Study Board of the US-Canadian International Joint Commission. A group of six counties and two municipalities collaborated to fund and commission an engineering study on the feasibility and recommended structure of a shared dredging program. The study resulted in a Regional Dredging Management Plan which was used as a basis for funding proposals. In 2019 the Regional Dredging Project was selected by the Lake Ontario Resiliency and Economic Development Initiative (REDI) for funding.

The REDI initiative is a multi-agency task force covering eight counties which was established to develop plans for making Lake Ontario and St. Lawrence River waterfronts more resilient while strengthening local economies. The RDMP report identified that recreational boating within the study area supported over 1,350 jobs, and generated \$94 million annually in economic activity – with nearly \$3.8 million in sales tax revenue to the local counties and an



The initial 19 harbors identified in the RDMP. Source: Regional Dredging Management Plan Update Final Report *lre-ops.usace.army.mil/OandM/GLDT/SmallHarborResources/ RDMPUpdateFinalReport.pdf*

additional \$3.8 million in sales tax to New York State.

The REDI Regional Dredging Management Project multi-agency team included the New York Office of General Services, NY Department of State, NY Department of Environmental Conservation, and New York Power Authority, with support from the U.S. Army Corps of Engineers. The project was funded with an initial \$15 million. The REDI project used three phases to lay the technical and permitting foundation for the dredging projects, implement dredging projects at 20 harbor navigation channels, and then transition the program to the local communities to manage on their own.

The ultimate goal of the project was to aid the local communities in developing and implementing a long-term plan for operation, maintenance, and funding for their recreational navigation channels, while they established an organizational entity to take over after the initial funding period. This structure also allowed New York state to implement the first round of dredging, including establishing the technical and permitting foundation for the program.

The initial six counties involved signed a memorandum of understanding to form The Lake Ontario Regional Dredging and Maintenance Council in 2019 to take over the dredging operations for 19 harbors. Orleans County is the lead agency for the council and administers the plan, as well as preparing the Inter-Mutual Agreements (IMA) with county governments under which the Council operates. The Council's dredging plan proposes annual funding shares from each member

county. Shares would be based either on a proportional share of dredge volume or a proportional share of sales tax generated. Funding options could also include a surcharge added to the state boat registration fee. The plan also sets a schedule and target volume for dredging each harbor.

Once all eight counties along the south shore of Lake Ontario have executed their IMA (or declined), the Council will issue a Request for Proposals to contract a dredging company to perform the required dredging work on a scheduled basis so that all harbors remain "open for business."

For additional information as well as sample agreements and resolutions see USACE Small Harbors Shared Dredging Resources: *lre.usace. army.mil/Missions/Great-Lakes-Information/Great-Lakes-Dredging-Team/Small-Harbor-Resources*

Lake Ontario RDMP Summary

- The local governments along Lake Ontario recognized the need to take maintenance action on their harbors and understood that they needed to develop their own plan and funding.
- A group of counties and municipalities collaborated to find funding and commission an engineering study.
- The study resulted in a recommended organizational structure and Regional Dredging Management Plan which was used as a basis for funding proposals.
- In 2019 the Regional Dredging Project was selected by the Lake Ontario Resiliency and Economic Development Initiative (REDI) for funding.
- The REDI project used three phases to lay the technical and permitting foundation for the dredging projects, implement dredging projects at 20 harbor navigation channels, and then transitioning the program to the local communities to manage on their own.
- Over 75% of the dredged sediment was beneficially reused in a variety of ways including beach renourishment, littoral placement, and general fill.
- The initial six counties involved signed a memorandum of understanding to form The Lake Ontario Regional Dredging and Maintenance Council to take over dredging operations.
- Once all eight counties along the south shore of Lake Ontario have executed their IMA (or declined), the Council will issue a Request for
- Proposals to contract a dredging company to perform the required dredging work on a scheduled basis so that all harbors remain "open for business."

5.0 TOOLS & TACTICS



SUSTAINABLE SMALL HARBORS

5.1 FLOWCHART

The Michigan Sustainable Small Harbors Strategic Flowchart describes a process for communities working to achieve a more sustainable future. The flowchart consists of four basic elements — Inventory, Visioning/Planning, Value Capture, and Implementation - that can be approached in a nearly sequential fashion. Each of the four elements has three levels: Highly Recommended, Recommended, and Additional Resources. The Highly Recommended level lists actions that are essential for a community working to create a sustainability plan. The Recommended level includes resources the project team and case study communities identified as being helpful. The last level, Additional

Resources, contains resources that a community should consider reading or processes they might want to undertake depending on community capacity.

Completion of the flowchart will not make a community "sustainable," but it does establish a long-term plan toward sustainability and prepare communities for applying for grant funding to implement the plan.

A community should start by designating a person to guide the community through the entire process (process manager) and to coordinate engagement of the right people at the right time. Depending on the community, the process manager could be the mayor, manager, planner, or a key citizen appointee (assuming they have enough authority or respect to elicit the necessary participation). This role can be shared between two or three individuals — such was the case in two of the case study communities — but a single point of contact is preferred. Once the process manager or process management team has been identified, they should begin guiding the community through the flowchart starting with the Inventory element.

Overall, the flowchart is likely a 6- to 12-month process, depending on community capacity and level of engagement in the individual elements.

SMALL

Michigan Sustainable Small Harbors Strategic Flowchart

COMMUNITY WATERFRONT Conduct a facilitated community visioning meeting Complet expense vs. income balance sheet Form implementation team and identify task leaders • Identify community capacity and possible participants/leaders • Collect existing data and documents: • Collect existing data and documents: • Complet three years of harbor financial summaries • Initiate a Michigan Economic Development Program • Identify harbor marketing opportunities • Development Program • Existing tourist information • Complet three years of harbor financial summaries • Complet three years of harbor logs • Marine investment fund • Evaluate value capture options: • Community master plan • Recent planning or improvement plan • Collect existing data and documents: • Collect existing data and documents: • Determine water level variances • Determine your community's waterfront and downtow Walk Score • Determine your community's waterfront and downtow Walk Score • Deterwine fund • Apply to applicable grant programs • Data Regional plan(s) • USACE biging waterfront photos • Deterwine fund • Review Michigan Community' waterfronts resources • Apply to applicable grant programs	INVENTORY			VISIONING/PLANNING	VALUE CAPTURE	IMPLEMENTATION
 Land use data Visit the USACE Great Lakes Dredging Taam website Collect existing data and documents: Organizational/leadership charts of the community Employment and related census data Aerial photos, maps, and GIS Great Lakes Climate and Demographic Atlas Feview Additional Resources in Section 5.2.1 Inventory - Community Review Additional Resources in Section 5.2.1 Inventory - Community Review Additional Resources in Section 5.2.3 Visioning/Planning Review Additional Resources in Section 5.2.3 Visioning/Planning Review Additional Resources in Section 5.2.3 Visioning/Planning 	ADDITIONAL RESOURCES RECOMMENDED RECOMMENDED	COMMUNITY	WATERFRONT Collect marina statistics (boats berthed or launched, slip demand, etc.): Compile three years of harbor logs Determine water level variances Assess local sediment dynamics Collect existing data and documents: USACE jurisdiction and federal dredging USACE oblique waterfront photos Visit the USACE Great Lakes Dredging Team website Complete Nature-Based Solutions for Coastal Hazards - the Basics training module Track Great Lakes Region: Quarterly Climate Impacts and Outlook reports Bead Clean Marina Program Dredging Best Practices Read Clean Marina Program Dredging Best Practices Review Additional Resources in Section 5.2.2 Inventory - Waterfront	 Conduct a facilitated community visioning meeting Initiate a Michigan Economic Development Corporation (MEDC) community development program Watch and Read resources from EGLE – Michigan's Resilient Coast Program Complete Land Policy Institute (LPI) Placemaking Assessment Tool Engage in local, county, and regional planning efforts Determine your community's waterfront and downtown Walk Score Review Michigan Coastal Community Working Waterfronts resources Review Sustainable Working Waterfronts Teoson Prioritize natural solutions Conduct a National Charrette Institute (NCI) Charrette Review Materfronts Read Michigan Catalyst Communities (MCC) Resources and Program Review Materian Planning Association – Michigan Chapter Master Plans - Resilient Waterfronts Read Michigan Catalyst Communities (MCC) Resources and Program Review Additional Resources in Section 5.2.3 Visioning/Planning 	 Complete expense vs. income balance sheet Identify harbor marketing opportunities Evaluate value capture options: Marine investment fund Water resource tax increment financing (TIF) Fee structures for public facilities Public/private partnerships Crowdfunding Michigan - Invest on Main Street Review grant funding opportunities and requirements Review Sustainable Working Waterfronts Toolkit — Financing and Economics sections Review Additional Resources in Section 5.2.4 Value Capture 	 Form implementation team and identify task leaders Develop or update existing plans with focus on the waterfront Community master plan Five-year recreation plan Waterfront operations and maintenance plan Zoning and ordinance Capital improvement plan Ennergency response plan Apply to applicable grant programs Pursue Redevelopment Ready Communities critification Craste a dynamic water level plan Engage with the Michigan Green Communities the Michigan Green Communities and consider completing the Green Communities Review resources and contacts at Michigan SGLE Shoreline Protection / Michigan SGLE Shoreline Protection / Michigan Statue Program (NPS-RTCA) Review Additional Resources in Section 5.2.5 Implementation

Figure 1: The Michigan Sustainable Small Harbors Strategic Flowchart describes a process for communities working to achieve a more sustainable future. Source: Sustainable Small Harbors

5.2 REFERENCES AND TACTICS

What follows is a detailed list of references and tactics contained within the strategic flowchart. Each listed item has an item description and a place to make notes on actions taken. Where applicable, a link to an online resource is provided.

5.2.1 INVENTORY COMMUNITY



5.2.1 INVENTORY – COMMUNITY

The Inventory element calls for the compilation of existing community data and documents. This element contains two separate checklists: one for community documents and one for documents that have a waterfront emphasis. Both columns should be completed simultaneously. It is critical that a community first assess what work has already been done and what local information is available. In many cases, these documents are going to be readily available but could be significantly out of date. For example, in two of the case study communities, master plans were available but were out of date (more than five years old).

The Community Inventory element of the flowchart is necessary for a community to launch the process. This information is used in every remaining element. The first task is to identify community capacity and key stakeholders. These are the individuals necessary for successful implementation of the process and are not only elected officials. For the case study communities, the community leaders included hired consultants, engaged citizenry, and city staff, in addition to elected officials and executive officers. With regards to documents gathered, a review of existing master plans can inform the community visioning process by building off of what has already been completed or, more commonly, identifying gaps in the planning process that need to be filled during the Visioning/Planning element. Information on zoning, public spaces, community infrastructure, demographics, economics, and tourism will all be used to inform the Visioning/Planning element and set the stage for successful value capture.

HIGHLY RECOMMENDED

Identify community capacity and possible participants/leaders

Identify people in the community that could help attain the goal of becoming a sustainable harbor. This may include harbor committees, local development organizations, community leaders, etc.

Document name / Comments: _

Collect existing data and documents:

Economic information

Collect economic information that is available in your area. Economic information may include harbor and community budgets, funding mechanisms, grants received, etc.

Document name / Comments:___

Existing tourist information (fliers, magazines, etc.) and wayfinding signage

Collect existing tourist information and take note of the signage in your community. Observe if signage is sufficient for navigating through your community and guiding visitors toward important areas. Are there welcome signs? Does your harbor/waterfront access have signage?

Document name / Comments:__

Recent planning or improvement grants received

Collect any recent planning or improvement grants submitted or received. These documents will have information that will assist with the Visioning/Planning element.

Document name / Comments:_

Community master plan

Collect your community's current master plan and determine if there are any fixed plans to update the plan. A master plan is a policy document outlining a community's vision for the future. It should be the basis for — or an influence on — the community's future environmental protection, economic development, zoning, and other regulatory ordinances. In Michigan, statute requires local governments to assess their current master plan every five years in order to decide if the plan needs to be updated.

Document name / Comments:____

Zoning maps

Collect your community's zoning maps, especially those that include your harbor, downtown, and adjacent land areas. Keep these accessible for future visioning and planning efforts. Zoning ordinances are one way to formalize and implement components of a community master plan.

Document name / Comments:____

HIGHLY RECOMMENDED

Capital improvement plan

Collect your community's most recent capital improvement plan (CIP). Keep this accessible for future visioning and planning efforts. A capital improvement plan is a short-range plan, usually four to ten years, which identifies capital projects and equipment purchases, provides a planning schedule, and identifies options for financing the plan.

Document name / Comments:_

Parks and recreation plan

Collect your community's most recent parks and recreation plan. Keep this accessible for future visioning and planning efforts.

Document name / Comments:____

Regional plan(s)

Collect your community's most recent regional plan(s). For example, explore the Michigan Association of Regions resources to see what is available for your region.

miregions.com

Document name / Comments:_____

Land use data

To better understand the impacts of land use and other management decisions, reviewing maps that document land cover (forests, development, wetlands, etc.) and how it has changed is essential. Land cover information may be available from your local planning department or agency. The NOAA Office for Coastal Management provides land use resources through Digital Coast.

Digital Coast: coast.noaa.gov/digitalcoast

Land Cover Atlas: coast.noaa.gov/digitalcoast/tools/lca.html

Document name / Comments:____

RECOMMENDED

Collect existing data and documents:

Organizational/leadership charts of the community

Collect organizational/leadership charts for your community. This may help with contacting relevant people and identifying potential task leaders.

Document name / Comments:_

Employment and related census data

Collect your community's most recent census data from online sources or your community's management offices. Census data help during planning efforts to identify trends in economy, population, etc. This information also can be used to compare local, state, and regional statistics.

datausa.io

Document name / Comments:

Aerial photos, maps, and GIS

Collect available aerial photos, maps, and geographic information system (GIS) files for your community. Aerial photos can be obtained from Google Earth or other sources. Your community offices may have aerial photos, maps, or GIS data that will be useful during visioning and planning. *google.com/earth*

Document name / Comments:_

User feedback and surveys

Collect your community's user feedback reports and surveys. Communities often survey residents when updating recreation or master plans.

Document name / Comments:_

Great Lakes Climate and Demographic Atlas

Collect community demographic data and review current and projected climate trends for your area. (*15 minutes - climate, economic and population data summary by county*)

graham.umich.edu/glaac/great-lakes-atlas

Document name / Comments:

FEMA Resilience Analysis & Planning Tool (RAPT)

RAPT is a free GIS web map with over 100 pre-loaded data layers and easy to use analysis tools. RAPT supports emergency management decisions for outreach, planning, mitigation, response and recovery. The tool provides community-based data that can be used for planning and also to support grant applications. (*30 – 60 minutes - climate, natural hazard, economic, social, and population data*)

experience.arcgis.com/experience/618796a76ff54ebe8bbdb677096d49ed/?views=View

Document name / Comments:_

ADDITIONAL RESOURCES

Great Lakes Climate Change Maps

This resource provides additional climate change data with easy to read maps of various climate parameters such as rainfall, days over a certain temperature, average temperature etc. *(15 minutes – climate trend data summary)*

glisa.umich.edu/great-lakes-regional-climate-change-maps

Document name / Comments: _

EPA's Environmental Justice Screening and Mapping Tool

EJScreen users choose a geographic area; the tool then provides demographic, socioeconomic, pollution source, health disparity, critical service gap, and environmental information for that area. (30 – 60 minutes - environmental, economic, social, and population data)

ejscreen.epa.gov/mapper

Document name / Comments:

EGLE MiEJScreen Environmental Justice Web Map

This resource provides a map based screening tool of various environmental, health, and socioeconomic indicators to measure relative risk factors in communities. Based on over 25 parameters a MIEJScreen composite score can be generated. *(30 minutes - environmental, economic, social, and population data)*

egle.maps.arcgis.com/apps/webappviewer/index.html?id=b100011f137945138a52a35ec6d8676f

Document name / Comments: _
5.2.2 INVENTORY WATERFRONT



5.2.2 INVENTORY – WATERFRONT

The second half of the Inventory element is directly related to the waterfront and harbor aspects of the community. The required information includes municipal harbor statistics and an evaluation of environmental conditions, including historical water level variation and sediment dynamics. The municipal harbor statistics are useful for the Visioning/Planning element and are required as part of the Michigan DNR Recreation Grant Programs, which are featured in the Value Capture and Implementation elements. Evaluating existing environmental conditions will aid a community in formulating capital improvement plans and better planning for dredging cycles.

The project team also highly recommends communities complete the Michigan Clean Marina Program self-assessment checklist, a list of environmental best practices for marinas and harbors that, if completed, will contribute to a sustainability plan. Finally, there are several documents regarding harbor resiliency and best practices that are recommended for community leadership review, both for inspiration and for future planning purposes. These documents are a compilation of resources that other communities have used to plan for a more sustainable future.

HIGHLY RECOMMENDED

□ Collect marina statistics (boats berthed or launched, slip demand, etc.):

Compile three years of harbor financial summaries

Collect three years of municipal harbor financial summaries, both for the broader balance sheet and for submitting for MDNR grants.

Document name / Comments:__

Compile three years of harbor logs

Collect three years of harbor logs (boats berthed or launched, slip demand, etc.) that demonstrate harbor use based on watercraft type, length of stay, etc.

Document name / Comments:___

Complete the Clean Marina self-assessment checklist

The Michigan Clean Marina Program is a voluntary certification-based program for marina and boatyard operators to pledge to maintain and improve Michigan's waterways by reducing or eliminating releases of harmful substances and phasing out practices that can damage aquatic environments. Best practices address petroleum control, sewage handling, stormwater management, and other issues that impact water quality. A self-assessment checklist provides an overview of the mandatory and recommended best management practices required for certification. Note: pursuing certification is suggested in the Implementation element.

michigancleanmarina.org/michigan-clean-marina-program/get-certified-recertified/why-certify

HIGHLY RECOMMENDED

Determine water level variances

Use U.S. Army Corps of Engineers (USACE) historical water level data to determine the range of water levels that harbor and waterfront infrastructure could be exposed to during its life. This will aid in operations and management plans.

- □ **Great Lakes Lake Level Viewer NOAA:** A visualization tool about changing lake levels. *coast.noaa.gov/digitalcoast/tools/llv.html*
- □ Water Level Bulletins and Forecasts U.S. Army Corps of Engineers: Historic, current and predicted water levels.

lre.usace.army.mil/Missions/GreatLakesInformation/GreatLakesWaterLevels.aspx

□ **Great Lakes Water Level Dashboard** — **NOAA:** View current, historical, and projected water levels.

glerl.noaa.gov/data/dashboard/GLWLD.html

- □ **Great Lakes Hydro-Climate Dashboard NOAA:** Includes data on drivers behind water levels. *glerl.noaa.gov/data/dashboard/GLHCD.html*
- □ **Michigan's Great Lakes Shorelines Throughout Time** This GIS based webtool incorporates aerial oblique imagery of shorelines as well as feature lines depicting changing shoreline features over time.

https://portal1-geo.sabu.mtu.edu/mtuarcgis/apps/sites/#/czmp

Document name / Comments:

Assess local sediment dynamics

Document the local sources of sediment and primary transport mechanisms using Section 2.2 "Dredging in the Great Lakes" as a guide. This will assist the community in better planning for dredging and maintenance and, in some cases, could lead to strategies for alleviating sediment deposition through preventative measures. Case studies from around the Great Lakes can be found at:

healthyportfutures.com

□ Consider contacting a local engineering firm to consult on local sediment dynamics and areas of concern.

RECOMMENDED

Collect existing data and documents:

U.S. Army Corps of Engineers jurisdiction and federal dredging

Determine who has dredging jurisdiction for your harbor and harbor entrance, as well as the extent of U.S. Army Corps of Engineers boundaries. Collect dredging logs to assess the amount and frequency of dredging for operations and maintenance planning purposes.

lre.usace.army.mil/Missions/Great-Lakes-Information/Coastal-Program/Regional-Sediment-Management

lre.usace.army.mil/Missions/Great-Lakes-Information/Coastal-Program/Coastal-Engineering-Services

Document name / Comments:_

□ U.S. Army Corps of Engineers oblique waterfront photos

The U.S. Army Corps of Engineers has high-resolution oblique photos of Great Lakes shorelines available online. The photos are useful for waterfront planning.

coast.noaa.gov/digitalcoast/data/oblique.html

Document name / Comments:_

USACE Great Lakes Dredging Team

Explore the resources available from the Great Lakes Dredging Team (GLDT). GLDT provides a forum for the exchange of information regarding best practices, lessons learned, innovative solutions, and sustainable approaches to dredging and dredge material management throughout the Great Lakes region.

lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Dredging-Team/Small-Harbor-Resources/

RECOMMENDED

Complete:

Nature-Based Solutions for Coastal Hazards: The Basics

Learn an approach for identifying your community's coastal hazard issues, ecosystem services that can reduce hazard impacts, and green infrastructure practices that can provide those services. Develop the beginnings of a community green infrastructure plan, from NOAA Digital Coast.

(60 minutes - interactive training module)

coast.noaa.gov/digitalcoast/training/nbs-basics.html

Document name / Comments:_

Track Great Lakes Region: Quarterly Climate Impacts and Outlook reports

U.S. and Canadian organizations in the Great Lakes region contribute to the publication of these quarterly reports, which include a snapshot of information on temperature, precipitation, water levels, ice cover, and impacts to agriculture, transportation, wildlife, coastal erosion, recreation, and tourism. (*15-30 minutes, quarterly*)

toolkit.climate.gov/tool/great-lakes-region-quarterly-climate-impacts-and-outlook

Document name / Comments:_

Clean Marina Program Dredging Best Practices

The *Dredging Best Practices* document contains information about dredging from the Clean Marina Program, including how to determine jurisdiction, what you need to get started, permits, funding, and more. (15-30 minutes)

michiganseagrant.org/wp-content/blogs.dir/1/files/2012/05/15-702-CMP-Dredging-Practices.pdf

Document name / Comments:_

Clean Marina Program Infrastructure Best Practices

The *Infrastructure Best Practices* document contains information from the Clean Marina Program regarding infrastructure risks and adaptations to changes in climate and wear. The document provides information on how to evaluate infrastructure and steps for maintaining marina grounds and multiple types of shoreline infrastructure. (*15-30 minutes*)

michiganseagrant.org/wp-content/blogs.dir/1/files/2012/05/15-703-Infrastructure-Best-Practices.pdf

ADDITIONAL RESOURCES

Evaluate harbor resilience

Read *Reinforcing our Waterfronts: Increased Resilience at Marinas and Harbors.* This document summarizes climate-related risks and impacts for marina and harbor owners and the best management practices to prepare for these risks. Risks addressed include fluctuating water levels, storm frequency and intensity, and changes in precipitation and temperature. The document also includes tools and resources for assessing and preparing for risks.

michiganseagrant.org/wp-content/blogs.dir/1/files/2012/05/14-728-Increase-Resilience-at-Marinas-and-Harbors.pdf

Document name / Comments:

Collect National Oceanic and Atmospheric Administration and Federal Emergency Management Agency flood mapping

The Federal Emergency Management Agency (FEMA) website is one of the many places to find flood data. Determine the areas of your waterfront that are susceptible to flooding according to the National Oceanic and Atmospheric Administration (NOAA) and FEMA using this site.

msc.fema.gov/portal

Document name / Comments: ____

Review dynamic waterfront plan (if exists)

If your community has a dynamic waterfront plan, review for completeness and accuracy. If the plan is out of date or does not exist, consider drafting a waterfront plan as part of your community planning efforts. Additional information will be provided in the Implementation element.

Document name / Comments:

Review hazard response plan (if exists)

If your community has a hazard response plan, review for completeness and accuracy. If the plan is out of date or does not exist, consider drafting one as part of your community planning efforts. Additional information will be provided in the Implementation element.

Document name / Comments:

\square Read:

□ Achieving Hazard-Resilient Coastal & Waterfront Smart Growth

This report from the National Oceanic and Atmospheric Administration and U.S. Environmental Protection Agency discusses the opportunities and challenges for coastal growth. It includes siting, design, plans, policies, engagement, communication, and education for coastal hazard resilience

coastalsmartgrowth.noaa.gov/pdf/hazard_resilience.pdf

Document name / Comments:_

SUSTAINABLE SMALL HARBORS TOOLS & TACTICS GUIDEBOOK

ADDITIONAL RESOURCES

National Working Waterfronts Executive Summary

This summary of the *National Sustainable Working Waterfronts Toolkit* contains information and tools for policy and regulation, financing, planning, zoning, taxation, community engagement, mapping, land conservation, and more. The executive summary includes key findings and recommendations for working waterfronts and a brief overview of the available tools.

nationalworkingwaterfronts.com/toolkit

Document name / Comments:_

Great Lakes Nearshore and Coastal Systems

This booklet briefly describes natural processes that take place along Great Lakes coasts and contains advice on bluff stabilization, runoff and groundwater control, and shoreline protection. It discusses the coastal environment and how coastal investments, including homes, developments, industrial buildings, and recreational facilities, can be protected. It is written for coastal property owners, potential owners, and those involved in related banking, insurance, realty, appraisal, and development industries.

glisa.umich.edu/media/files/NCA/MTIT_Coastal.pdf

Document name / Comments:_

Living on the Coast: Protecting Investments in Shore Property on the Great Lakes

This report discusses long-term changes in Great Lakes water levels, increased storm magnitude and frequency, the impact of increasing intensity of storm events (changes in ice cover, temperature, evaporation, algal blooms, etc.), erosion, and other environmental changes.

toolkit.climate.gov/reports/living-coast-protecting-investments-shore-property-great-lakes

Document name / Comments:_

□ Explore:

Great Lakes Coastal Wetlands Decision Support Tool

This mapping tool shows wetland areas within the Michigan Great Lakes coast which can be filtered or mapped with concurrent information on public lands ownership, type of wetland, invasive phragmites occurrence, land use type, hydrologic disconnections, and oblique aerial photos. Designed as a planning tool to prioritize wetlands for conservation or restoration, but can also be used by communities in their community inventory and to inform visioning/planning efforts. (30 minutes)

coast.noaa.gov/digitalcoast/tools/cwpt.html

5.2.3 VISIONING/ PLANNING



5.2.3 VISIONING/PLANNING

The second element on the flowchart is Visioning/Planning. To implement a sustainable plan, the community must be involved in the planning process. A community-involved planning process is required as part of the Michigan DNR Recreation Grant Program and is critical for the social component of a sustainable future. The project team recommends the community complete the Land Policy Institute's (LPI) Placemaking Assessment Tool, initiate the Michigan Economic Development Corporation (MEDC) Redevelopment Ready Community certification process, and determine their Walk Score using an online calculator. All of these tools are meant to initiate the Vision/Planning element.

Next, the community is ready to determine the appropriate level of community engagement and planning. For inspiration and future planning purposes, the community planning team and additional key community members should read the Sustainable Small Harbors case study community profiles in Section 2 of this guidebook. Additional detail is available in the full charrette reports and economic analysis reports, which are uploaded on the project website.

Community engagement in visioning for the waterfront is a key factor in the Sustainable Small Harbors project approach. At a minimum, a community should conduct a facilitated community visioning meeting focused on the waterfront. This meeting should be at least two hours long and should involve planning professionals. If a recent community planning process has not been initiated, it is recommended that the community conduct a National Charrette Institute (NCI) design charrette process or comparable multi-day planning event. The NCI Charrette is an iterative rapid design process involving public interaction. A scaled version of the NCI Charrette Process was used for the four case study communities with extremely positive outcomes. For more information, see the four case study charrette reports:

sustainablesmallharbors.org/topics/resilient-coastal-communities/sustainable-smallharbors/communities

Finally, if a community does not have a dynamic water level plan, a hazard response plan, or a capital improvements plan, they should initiate the process of creating these plans, since they are important for implementing a long-term small harbor sustainability plan. For more information on these plans, see the Implementation element.

HIGHLY RECOMMENDED

Conduct a facilitated community visioning meeting

Typically, a professional from outside the community is brought in to facilitate a public meeting focused on community visioning. This engagement process may entail one or multiple meetings that include discussion about visions for the future, positives and negatives about the community, strengths and weaknesses, and types of future development within the community. It may even include one or more designers to help the community visually represent their ideas. A more in-depth option is the National Charrette Institute's charrette process (see listing in Recommended section).

Document name / Comments: ____

 Initiate a Michigan Economic Development Corporation (MEDC) community development program:

Visit the Michigan Economic Development Corporation website and review the available community development programs including:

- Redevelopment Ready Communities Certification (RRC) a no-cost certification program designed to promote effective redevelopment strategies through a set of best practices which attract and retain businesses.
- □ **Michigan Main Street (MMS)** a program which assists communities in revitalizing and preserving their traditional/historical commercial districts.
- Michigan Community Revitalization Program (MCRP) this program promotes community revitalization through the provision of grants, loans or other economic assistance for eligible projects located on properties that are either contaminated (facility), blighted, functionally obsolete or historic resources.
- □ **Revitalization and Placemaking Program (RAP)** a program which provides access to gap financing for place-based infrastructure development, real estate rehabilitation and development, and public space improvements. Eligible applicants are individuals or entities working to rehabilitate vacant, underutilized, blighted and historic structures and the development of permanent place-based infrastructure associated with traditional downtowns, social-zones, outdoor dining and placed-based public spaces.

Contact MEDC to help determine which program may be best for your community and goals.

(More than 1 day, long term resource/goal)

MiPlace.org/Programs

HIGHLY RECOMMENDED

Complete Land Policy Institute (LPI) Placemaking Assessment Tool

This site contains the Land Policy Institute's placemaking tool to help communities develop quality places to live, work, and play that are attractive and functional. The LPI Placemaking Assessment Tool was discussed in Section 4.2 "Financial instruments, programs, and strategies to support long-term sustainability."

The tool is divided into five parts:

- 1. Information and Background
- 2. Short Assessment for Standard, Creative, and Tactical Placemaking
- 3. Strategic Placemaking Assessment
- 4. Improving Your Community's Chances for Effective Placemaking
- 5. Additional Resources

canr.msu.edu/resources/placemaking_assessment_tool

Document name / Comments:

D Engage in local, county, and regional planning efforts

Contact your county planning and economic development corporation or organization. Form a relationship with them to find out if they can help with planning efforts and economic development efforts. Also explore regional planning efforts through the Michigan Association of Planning Regions. Michigan has fourteen regional planning agencies that serve a variety of federal, state, and local programs while providing planning support.

miregions.com

Document name / Comments:

D Michigan's Resilient Coast, EGLE

Watch the 6-part Building Coastal Resilience video series. Review the available resources, training opportunities, and contacts from Michigan Coastal Management Program (MCMP), Coastal Leadership Academy and others. Read the **Resilient Coastal Communities Planning Guide**, a 32-page planning guide designed specifically for coastal communities in Michigan. (*1-2 hours, 6-part video series, each video ~10 minutes long, additional resource pages and links*)

michigan.gov/egle/about/organization/water-resources/coastal-management/michigans-resilient-coast

RECOMMENDED

Determine your community's waterfront and downtown Walk Score

The Walk Score website provides a quick analysis of how walkable a specific location is. Use the addresses of your city center, town offices, and waterfront sites to assess the walkability and connectivity of your community. The site generates a score of 0-100 for walkability, transit friendliness, or bike friendliness based on distance to amenities, services, and programs.

An increased Walk Score is often associated with social and economic benefits to a community. Communities in Michigan with very high Walk Scores include several prominent waterfront communities including Traverse City, Holland, and Grand Haven. By completing the online Walk Score calculator, a community can benchmark the score with those from other communities.

walkscore.com

Document name / Comments: _

Review Michigan Coastal Community Working Waterfronts resources

The Coastal Community Working Waterfronts report, with 11 case studies, was compiled to describe national and state trends related to working waterfronts, identify uses that occupy coastal land, highlight how communities are supporting and planning for their working waterfronts, and increase awareness of the importance of protecting water-dependent uses and public access to the Great Lakes.

The site contains case studies and a report on vibrant working waterfronts around Michigan. The report contains information about the economics, land use, best practices, and recommendations associated with Michigan's working waterfronts.

michiganseagrant.org/topics/resilient-coastal-communities/vibrant-waterfront-communities-case-studies

Direct link to Recommendations: michiganseagrant.org/wp-content/uploads/2018/10/13-719-Recommendations-Working-Waterfronts-Case-Study.pdf

Document name / Comments:_

Review Sustainable Working Waterfronts Toolkit

The Sustainable Working Waterfronts Toolkit, developed by the National Working Waterfronts Network, includes information and tools for policy and regulation, financing, planning, zoning, taxation, community engagement, mapping, land conservation, and more. This link is to the financing section, which contains methods and sources of financial support.

nationalworkingwaterfronts.com/toolkit

RECOMMENDED

Review Smart Growth for Coastal & Waterfront Communities report

This report was written by the National Oceanic and Atmospheric Administration, U.S. Environmental Protection Agency, International City/County Management Association, and Rhode Island Sea Grant. It describes 10 elements of sustainable development in coastal and waterfront communities.

coastalsmartgrowth.noaa.gov/report.html

Document name / Comments:__

Review American Planning Association - Michigan Chapter Master Plans -Resilient Waterfronts

Review the resources in the portal to help inform your community's Master Plan. This information portal is designed to help communities plan for, protect, and preserve their waterfronts. It gives an overview of the basics of Master Planning and Zoning, including the process, potential partners, roles of different officials and boards, and how to get help, and includes resources on a variety of topics that will be useful for waterfront communities, ranging from how to plan for a waterfront in a Master Plan, to what type of creative zoning can help protect sensitive areas, to more specific topics like how to build a "green street" or the value of creating a lake board. (*More than 1 day, long term resource/goal*)

planningmi.org/aws/MAP/pt/sp/community-resiliency

Document name / Comments:_

Read Michigan's Statewide Comprehensive Outdoor Recreation Plan

Review Michigan's Statewide Comprehensive Outdoor Recreation Plan. This is a five-year strategic plan, required to access certain federal grants, that shapes investment by the state of Michigan and local communities in priority outdoor recreation infrastructure, land acquisition and programming. It is designed to evaluate ongoing and emerging outdoor recreation trends, needs and issues, and to establish priority strategies for achieving outdoor recreation goals. (*1-2 hours, 58 page document*)

michigan.gov/dnr/-/media/Project/Websites/dnr/Documents/managing/SCORP2023/SCORP_2023-27.pdf Document name / Comments:

Explore Michigan Catalyst Communities (MCC)

Review resources available from the Catalyst Communities Initiative. MCC is a comprehensive resource hub that provides education, training, planning and technical resources to local public officials as they work towards their sustainability goals. A program within the Catalyst Communities Initiative is MiNextCities (*minextcities.org*). This three-year program will develop, design, and drive input for an ultimate smart city roadmap, using 3 pilot cities. This roadmap will provide a consistent process small to midsized Michigan cities can use to craft successful, sustainable solutions that are customized to meet their unique needs. (*1-2 hours, review resource links and programs*)

michigan.gov/egle/outreach/catalyst-communities

Document name / Comments:____

SUSTAINABLE SMALL HARBORS TOOLS & TACTICS GUIDEBOOK

RECOMMENDED

 Review Creating Equitable, Healthy, and Sustainable Communities: Strategies for Advancing Smart Growth, Environmental Justice, and Equitable Development

Review strategies presented in this publication that bring together smart growth, environmental justice, and equitable development principles which community-based organizations, local and regional decisionmakers, developers, and others can use to build healthy, sustainable, and inclusive communities. (*1-2 hours, 88 page document*)

epa.gov/sites/default/files/2014-01/documents/equitable-development-report-508-011713b.pdf

Document name / Comments:__

Prioritize natural solutions

In conducting cyclical planning efforts, ensure that you prioritize environmental sustainability by seeking natural solutions to reduce risk and prolong the life of coastal infrastructure. Incorporating natural solutions in your planning efforts can improve the livability and economic stability of your community.

A variety of tools are available to support this effort:

□ **Coastal Flood Exposure Mapper** — Use this tool to see where your community assets, including natural resources, are most vulnerable to coastal flooding, and use this information to start conversations about local risk reduction strategies.

coast.noaa.gov/digitalcoast/tools/flood-exposure.html

□ **Green Infrastructure Mapping Guide** — Use this guide to develop a GIS work plan to prioritize green infrastructure for coastal resilience.

coast.noaa.gov/digitalcoast/training/gi-mapping.html

□ A Guide to Assessing Green Infrastructure Costs and Benefits for Flood Reduction — Discover this six-step process for analyzing green infrastructure techniques for flood reduction and their respective costs and benefits.

coast.noaa.gov/digitalcoast/training/gi-cost-benefit.html

□ **Michigan EGLE Shoreline Protection / Michigan Natural Shoreline Partnership** – Use this resource to explore options for natural shoreline protection and examples in Michigan, as well as permitting resources and engineer and contractor lists.

michigan.gov/egle/about/organization/water-resources/inland-lakes-and-streams/shoreline-protection

USACE Engineering with Nature Website – Review News, Implementation, Resources, Research, and other Nature Based Solutions information and links. Includes educational materials, short courses and publications. Will be home to The Great Lakes Natural And Nature-Based Features Playbook when it is published.

ewn.erdc.dren.mil

RECOMMENDED

□ **Nature Based Shoreline Options for the Great Lakes Coasts** - The guide describes different types of nature-based shoreline techniques and case studies suitable for the Great Lakes. Includes a glossary of coastal terminology.

publications.aqua.wisc.edu/product/nature-based-shoreline-options-for-the-great-lakes-coasts

Building Community Resilience with Nature-Based Solutions – A Guide for Local Communities

 Use this guide to help your community identify and engage the staff and resources that can be used to implement nature-based solutions to build resilience to natural hazards, which may be exacerbated by climate change.

fema.gov/sites/default/files/documents/fema_riskmap-nature-based-solutions-guide_2021.pdf

Document name / Comments:

Conduct a National Charrette Institute (NCI) charrette

This site contains information about the National Charrette Institute (NCI) accelerated design process (charrette) which is a multiple-day, collaborative design workshop with the public. It also has a database of NCI-accredited facilitators who can help your community conduct a charrette.

canr.msu.edu/nci

ADDITIONAL RESOURCES

Review case study community charrette reports, community profiles, and economic analysis reports

Explore the products and processes used in the original Sustainable Small Harbor case study and proof-of-concept communities: Au Gres, New Baltimore, Ontonagon, Pentwater, Rogers City, and St. Ignace. Full charrette reports, economic analysis reports, and community profiles are available for Au Gres, New Baltimore, Ontonagon, and Pentwater. Community profiles are available in Section 2 of the original guidebook. The charrette reports and economic reports are available on the project webpage.

michiganseagrant.org/topics/resilient-coastal-communities/sustainable-small-harbors/communities

Document name / Comments: _

Read Land Policy Institute (LPI) Building More Livable Communities: Corridor Design Portfolio

The Michigan State University Land Policy Institute developed guidelines for community development. Themes include livability, governance, environment, community, and economy.

landpolicy.msu.edu/resources/mmpgs_corridor_design_portfolio

Document name / Comments: ____

Read Land Policy Institute (LPI) Placemaking as an Economic Development Tool: A Placemaking Guidebook

The Placemaking Guidebook seeks to assist neighborhoods and communities with quickly reshaping their thinking and acting on how effective placemaking can greatly enhance community and economic development. This publication includes the research that supports placemaking, identifies the elements (good form, public engagement, planning processes of placemaking and the regulatory tools) to achieve it, and then takes a deep dive into each of the four types of placemaking. To request an electronic copy of the report, contact the Land Policy Institute (see link below for an "Order Book" link).

canr.msu.edu/resources/pmedtguidebook

Document name / Comments: _

Complete Coastal Community Planning and Development Training

NOAA Digital Coast provides a two-part training, the first of which is available online and can be completed independently of the second component; the second requires an in-person workshop. Resources include videos on development patterns and tools for influencing growth.

coast.noaa.gov/digitalcoast/training/resources/planning-development-workshop.html

ADDITIONAL RESOURCES

Review Equity Guide for Green Stormwater Infrastructure Practitioners

This guide was developed by and for green infrastructure program managers. It offers an action and evaluation roadmap that defines: the industry's shared long-term equity goals, best practices that will move the needle, and sample metrics to help you track progress toward those goals over time. It also offers a variety of tools to support practitioners in customizing community informed equity work plans and evaluation plans to local contexts. (2+ hours, 142 page document)

giexchange.org/wp-content/uploads/2022/05/Equity-Guide-for-GSI-Practitioners_March-2022.pdf

Document name / Comments: _

D Review Master Planning for Tourism in Michigan

Review the guide which was created to help elected and appointed municipal leaders and their professional staff understand how to incorporate community-driven tourism into their master plans. It also provides guidance on how to work with tourism industry professionals to plan for tourism that supports the community's economy and quality of life while protecting and enhancing the unique cultural and natural assets that attract these visitors. Master Planning for Tourism in Michigan is a tool that will help communities identify their unique tourism assets; find ways to balance economic opportunity with quality of life; and protect their valuable assets from being loved to death. *(2 hours, 118 page document)*

planningmi.org

Document name / Comments:

Read DEIJ in Action: A Diversity, Equity, Inclusion, and Justice Guide for the Chesapeake Bay Watershed

This resource describes the DEIJ plan that was developed for the Chesapeake Bay Watershed, and concludes with a step-by-step process for individual organizations to develop a DEIJ Action Plan building from the recommendations and strategies in the guide. Each step in the process is described in detail, including tools and templates. (*1-2 hours, 62 page document, long term goal to develop DEIJ plan*)

cbtrust.org/wp-content/uploads/CB-Watershed-DEIJ-Guide_May-2019.pdf

ADDITIONAL RESOURCES

Complete an assessment from the Coastal Community Resilience Indicators and Rating Systems

A wide range of indicators, metrics, and rating systems are available to local communities and organizations to assess resilience to coastal hazards (e.g., storms, precipitation, coastal flooding, and sea-level rise). The National Oceanic and Atmospheric Administration (NOAA) wrote this report to help local planners sort through and find the resources for benchmarking resilience (setting a baseline) and tracking (monitoring) progress that are most appropriate for their community's needs. This report provides key information about tools and resources (e.g., guidance documents, approaches, frameworks) to help community planners easily digest the information and find those that are best suited for assessing their current level of resilience, thereby improving coastal resilience monitoring across the nation. Includes profile pages for various assessment tools to assess community resilience to coastal hazards and climate change, which can be used to help guide future efforts to increase resilience. (*2+ hours, review resources and training opportunities*)

coast.noaa.gov/data/digitalcoast/pdf/resilience-indicators.pdf

Document name / Comments: _

Explore the U.S. Climate Resilience Toolkit

Explore the different tools and resources for building climate resilience from various federal resources. Including Ready-to-Fund Resilience Toolkit - Adaptation Professionals and Accelerating Decarbonization of the U.S. Energy System. (2+ hours, review resources and training opportunities)

toolkit.climate.gov

Document name / Comments: _

Review the Great Lakes Coastal Resilience Planning Guide

The Guide shows how coastal communities are using science-based information to address coastal hazards such as flooding, shore erosion, and lake-level fluctuations. This new online resource connects people with the tools and data needed to consider natural hazards and climate change in local planning efforts. Includes case studies and arc storymap of project locations. (60 minutes)

greatlakesresilience-floodscience.hub.arcgis.com/pages/about

Document name / Comments:

Explore Michigan Municipal League - Building Community Wealth

This website provides resources and articles on community wealth building as strategies that build community and individual assets, creating resilient and adaptable systems to address social and economic needs. The League works with partners to provide thought leadership, training, advocacy, resources, and best practices to build community wealth. *(30-60 minutes, review resources and links)*

mml.org/resources-research/cwb

Document name / Comments: _

SUSTAINABLE SMALL HARBORS TOOLS & TACTICS GUIDEBOOK

ADDITIONAL RESOURCES

Review Michigan Municipal League - Diversity, Equity, and Inclusion

MML website will be posting webinars, updates on relevant legislation, and other content, as well as links to policy guides and toolkits from organizations around the state and country. Additionally, MML is collecting policies from its members that address discrimination, police misconduct, or racial inequity—please share your own policies as examples for others to draw on. (30-60 minutes, review resources and links)

mml.org/dei

Document name / Comments: _

Review Dibaginjigaadeg Anishinaabe Ezhitwaad -A Tribal Climate Adaptation Menu

Many climate adaptation planning tools fail to address the unique needs, values and cultures of indigenous communities. This Tribal Climate Adaptation Menu, which was developed by a diverse group of collaborators representing tribal, academic, intertribal and government entities in Minnesota, Wisconsin and Michigan, provides a framework to integrate indigenous and traditional knowledge, culture, language and history into the climate adaptation planning process. Primarily developed for the use of indigenous communities, tribal natural resource agencies and their non-indigenous partners, this resource may be useful in bridging communication barriers for non-tribal persons or organizations interested in indigenous approaches to climate adaptation and the needs and values of tribal communities. (*1 hour, 52 page document*)

forestadaptation.org/tribal-climate-adaptation-menu

Document name / Comments: _

Read Design for Social Sustainability

The report identifies the local services and support that are essential for creating flourishing and socially sustainable communities, like community workers, temporary community spaces and opportunities for residents to get involved in shaping the places they live. (*1 hour, 58 page document*)

social-life.co/media/files/DESIGN_FOR_SOCIAL_SUSTAINABILITY_3.pdf

Document name / Comments: _

Review Michigan EGLE Office of the Environmental Justice Public Advocate

The Office was created by Governor Whitmer's Executive Order 2019-06 to serve as an external and internal advocate and catalyst for ensuring Environmental Justice throughout the state. The Office works collaboratively across state government to advance Environmental Justice and equity in Michigan, as well as addressing Environmental Justice concerns and complaints. (30-60 minutes, review resources and links)

michigan.gov/egle/about/organization/environmental-justice

Document name / Comments: _____

SUSTAINABLE SMALL HARBORS

5.2.4 VALUE CAPTURE



5.2.4 VALUE CAPTURE

The third element is Value Capture, which evolves from the Visioning/Planning element. This element establishes future economic sustainability and determines revenues required for long-term harbor maintenance. The first step is assembling municipal harbor documents, which are part of the Michigan Department of Natural Resources (MDNR) Recreation Grant program and are necessary for the completion of an income versus expenses balance sheet suggested in this element. A community needs to evaluate three years of expenses and revenues as part of determining a future economic sustainability plan. The MDNR Waterways Program indicates that a good example of a Five-Year Recreation Plan, featuring an income vs. expenses balance sheet, was provided by the City of South Haven.

See: michiganseagrant.org/wp-content/uploads/2019/02/ CityofSouthHavenRecPlanAmendment.pdf

Community leaders should explore value capture alternatives that leverage investment in municipal waterfront spaces. This includes reviewing the finance and economic sections of the *Sustainable Working Waterfronts Toolkit* and exploring which value capture options lend themselves to implementing the vision established in the previous element. There are also resources available to identify grant requirements for funding specific components of the community vision. Depending on the complexity of a future vision and community capacity, the community may want to hire a consultant to assist with value capture and subsequent implementation. For example, two of the four case study communities hired professional grant writers to assist in obtaining funding for projects. More information about various funding strategies and opportunities can be found in Section 4.2 "Financial instruments, programs, and strategies to support long-term sustainability."

As part of case study development, a professional economist was retained to evaluate the economic impact of community-specific waterfront strategies. More information about the economic assessment can be found in Section 4 "Economic Considerations." A community might consider hiring an economist to evaluate which vision components would theoretically bring the most economic value to a community as part of implementation. Finally, the project team recommends that community leaders review several documents on planning, financing, and economic placemaking best practices, both for inspiration and for future value capture alternatives that could be part of the Implementation element.

HIGHLY RECOMMENDED

 Complete expense vs. income balance sheet for the marina/harbor, including lifecycle assessment, operations and maintenance, capital improvements, dredging, and administration

The community should develop an expense vs. income balance sheet for municipal marina and/or waterfront amenities based on lifecycle cost analysis (LCA), operations and maintenance (O/M), capital improvements, dredging, and administration. This exercise will determine how much revenue the harbor/ community will need to generate for these amenities to function in the long-term.

Document name / Comments: _

Identify harbor marketing opportunities

Outreach and marketing efforts can bring more people to the harbor, which will improve visitation to the harbor and community. Work with your regional development agency or regional planning commission (as described in Section 3) to get the word out about your harbor. Remember, visitors and residents come to the harbor from both land and water, so target marketing efforts accordingly. For example, ensure that your harbor is listed on popular boating websites such as Active Captain and Marina Life.

activecaptain.com marinalife.com Document name / Comments: ____

> SUSTAINABLE SMALL HARBORS TOOLS & TACTICS GUIDEBOOK

HIGHLY RECOMMENDED

Evaluate value capture options

Marine investment fund

The community should consider establishing a marine investment fund to finance harbor operations through various revenue streams. For more information on establishing an overlay zone to fund a marine investment fund, read the Sustainable Working Waterfront Toolkit's *Case Study Portland, Maine: Balancing Maritime Uses and Waterfront Diversification Through Municipal Zoning*

nationalworkingwaterfronts.com/portfolio_page/case-study-portland-maine-balancing-maritime-uses-and-waterfront-diversification-through-municipal-zoning-portland-maine

□ Water resource tax increment financing (TIF)

The community should consider establishing tax increment financing (TIF) and a tax increment financing authority (TIFA) to finance waterfront improvement and harbor operations through tax capture. National Working Waterfront Network report: *The Tiff Over TIF: Extending Tax Increment Financing to Municipal Maritime Infrastructure*

nationalworkingwaterfronts.com/wp-content/uploads/2019/04/EDA_App_G_TheTiffOverTIF.pdf

For an example of a community that has established a water resource improvement TIFA, see the Saugatuck Douglas Harbor Plan website.

douglasmi.gov/wp-content/uploads/2017/06/DouglasWaterfrontMasterPlan.pdf

— Fee structures for public facilities

The community should evaluate its user fee-based structure for maintaining public facilities.

Public/private partnerships

The community should evaluate public/private partnerships for enhanced revenue streams associated with waterfront amenities.

Crowdfunding Michigan - Invest on Main Street

The community should review the examples and resources regarding the use of crowdfunding to fund redevelopment, business ventures, and community amenities in the state of Michigan.

crowdfundingmi.com

Document name / Comments:_

Review grant funding opportunities and requirements

Refer to the Sustainable Small Harbors inventory of potential grant and loan funding opportunities. This list contains possible funding sources and grant opportunities for waterfront communities. Additionally, explore federal grants such as U.S. Department of Agriculture rural development grants and Great Lakes Restoration Initiative grants. Also, reach out to local and community foundations.

michiganseagrant.org/wp-content/uploads/2019/02/SSH-grant-loan-table_additions_10-26-17.pdf

Document name / Comments: _

SUSTAINABLE SMALL HARBORS TOOLS & TACTICS GUIDEBOOK

RECOMMENDED

Review MIplace Resources section

The MIplace site includes a suite of information about placemaking. The Resources section hosts a set of tools to encourage creating, improving, and maintaining quality places in Michigan. Tools include loan and grant opportunities, resources, services, and techniques for waterfronts, downtowns, and other specific locations.

miplace.org/resources

Document name / Comments:

Review Sustainable Working Waterfronts Toolkit — Financing and Economics sections

This site contains the National Working Waterfronts Network's *Sustainable Working Waterfronts Toolkit*, which has information and tools for policy and regulation, financing, planning, zoning, taxation, community engagement, mapping, land conservation and more.

□ **Financing section** — In addition to the different sources of support (state, federal, trade associations, and foundations) this section identifies tools to address the issues facing working waterfronts. These include: grants, loans, loan guarantees, dedicated revenue, tax incentives, and technical/planning assistance.

nationalworkingwaterfronts.com/financing

□ **Economics section** — The economics section contains background information from waterfront economic analysis around the country, trends, and resources.

nationalworkingwaterfronts.com/economics

ADDITIONAL RESOURCES

Consider advanced (professional) economic modeling

A community might consider hiring a professional economist to model different visioning scenarios to prioritize investment and plan improvements.

Document name / Comments:

Read water trails economic data resources

This National Parks Service site has economic studies of water trail implementation and grant opportunities. The resources can help communities with waterways — especially rivers — develop trails.

nps.gov/ncrc/portals/rivers/projpg/watertrails.htm

Document name / Comments:

Read the Clean Marina Program *Planning and Financing Best Practices*

The Clean Marina Program Planning and Financing document lists best practices for marina adaptive planning.

michiganseagrant.org/wp-content/blogs.dir/1/files/2012/05/15-701-Planning-and-Financing-Best-Practices.pdf

5.2.5 IMPLEMENTATION



5.2.5 IMPLEMENTATION

The final element is Implementation. This flowchart is designed to help communities develop small harbor sustainability plans. However, it is up to the communities to take the next step and implement their plans. This is also when the various plans that have been either created, updated, or are in the process of being updated should be synchronized.

The key here is to finalize an implementation committee and identify specific task leaders. It is likely that a majority of the implementation committee is already in place as part of the Vision/Planning and Value Capture elements. However, this is an opportunity to formalize the committee and draft action plans for specific objectives. In all four case study communities and the two proof-of-concept communities, the community leadership team — which became the implementation team — was a mixture of elected officials, municipal staff, and key private stakeholders. In two of the case study communities, this committee was formal and in place before the project began. In the other two case study communities, the community leadership team was more ad hoc but evolved to be more formal through the process.

The Implementation element is a continuation of the Vision/Planning element and the Value Capture element. Completion of this element helps a community determine which grants to apply for, and it creates a mechanism for value capture for the required long-term operation and maintenance of waterfront assets. The final element also includes contacting regional or state agencies that can assist in implementation efforts. There are significant resources available for waterfront communities that are organized and proactive.

IMPLEMENTATION

HIGHLY RECOMMENDED

D Form implementation team and identify task leaders

The implementation team may include participation from the mayor/manager/council chair, harbor master, downtown development authority (DDA), chamber of commerce, public/private enterprise, grant writing consultant, community planner, university extension staff, other state agency staff, or consultants. These people should be engaged to determine how they will be involved during the implementation stages. Developing a work plan may help the team ensure that goals are accomplished on a set timeline and tasks are assigned appropriately.

Document name / Comments:

Develop or update existing plans with focus on the waterfront

Through the processes recommended in this guidebook, new plans may have been generated. Review the new and old plans and synchronize them for future use.

Update:

- □ Community master plan
- □ Five-year recreation plan (see example on project webpage: *michiganseagrant.org/wp-content/ uploads/2019/02/CityofSouthHavenRecPlanAmendment.pdf*)
- □ Waterfront operations and maintenance plan
- □ Zoning and ordinance
- □ Capital improvement plan
- □ Emergency response plan

IMPLEMENTATION

RECOMMENDED

Apply to applicable grant programs

Pursue the grants or loans that were deemed appropriate for your community, as identified in Section 5.2.4 "Value Capture." Many grant applications require communities to exhibit prior community engagement and updated planning documents, making all investments in completing the recommendations in this guidebook foundational for a strong grant application. For example, as previously noted, to qualify for one of the popular Michigan Natural Resources Trust Fund grants, an updated five-year recreation plan is required.

Document name / Comments: _

Pursue Redevelopment Ready Communities certification

The Redevelopment Ready Communities (RRC) program, hosted by the Michigan Economic Development Corporation, was introduced in the Visioning/Planning element. Certification in the RRC program formally recognizes communities for being proactive and business-friendly. Certified communities clearly signal they have effective development practices such as well-defined development procedures, a community-supported vision, an open and predictable review process, and compelling sites for developers to locate their latest projects.

michiganbusiness.org/community/development-assistance/#rrc

Document name / Comments:

Pursue Clean Marina certification

The Michigan Clean Marina Program was introduced in Section 5.2.2 "Inventory — Waterfront." In order to receive certification as a Michigan Clean Marina, participants need to complete a 10-step process, including training, a self-evaluation checklist, and a site visit; fees apply. Certified marinas strive for continuous improvement in daily environmental stewardship practices.

michigancleanmarina.org

Document name / Comments: ____

Create a dynamic water level plan

Through this process, your community may have determined if a dynamic waterfront plan is important. The plan should address the average, high, and low situations determined in Section 5.2.2 "Inventory — Waterfront." Varying water levels can impact dredging requirements, dock accessibility, and other waterfront amenities. This can be a component of your Waterfront Operations and Maintenance Plan.

RECOMMENDED

Engage with the Michigan Green Communities network and consider completing the Green Communities Challenge

Michigan Green Communities is a statewide network of local government staff and officials that collaborate with one another, through peer learning and information sharing, to promote innovative sustainability solutions at the local, regional, and state level. The annual Michigan Green Communities Challenge is a key part of the program and allows participants to track and benchmark their sustainability progress. (*1-2 hours to review website and resources, long term goal to implement Green Communities Challenge*)

migreencommunities.com

Document name / Comments:

Review resources and contacts at Michigan EGLE Shoreline Protection / Michigan Natural Shoreline Partnership

Use this resource to explore options for natural shoreline protection and examples in Michigan, as well as permitting resources and engineer and contractor lists. (*1-2 hours, review resources and links*)

michigan.gov/egle/about/organization/water-resources/inland-lakes-and-streams/shoreline-protection

Document name / Comments:

Consider engaging with The National Park Service – Rivers, Trails, and Conservation Assistance program (NPS-RTCA)

This federal program supports locally-led conservation and outdoor recreation projects across the United States. NPS-RTCA assists communities and public land managers in developing or restoring parks, conservation areas, rivers, and wildlife habitats, as well as creating outdoor recreation opportunities and programs by providing collaborative professional services. This service does not provide financial assistance or monetary grants. Through an application process, community groups, nonprofit organizations, tribal governments, national parks, and local, state and federal agencies can apply for NPS-RTCA technical assistance.

nps.gov/orgs/rtca/index.htm

IMPLEMENTATION

ADDITIONAL RESOURCES

Create a directory of contacts for important agencies for engagement and implementation

Develop a directory of contacts for important agencies that may be able to assist with engagement and implementation. In some cases, members of these groups will already be part of your local implementation team. The directory may include, but is not limited to:

- D Michigan Department of Natural Resources (MDNR) (Waterways Program, Harbor Coordinator)
- □ Michigan Department of Environment, Great Lakes, and Energy (EGLE) (Office of the Great Lakes, Coastal Zone Program)
- □ Michigan Economic Development Corporation (MEDC) (regional Community Assistance Team representative)
- D Michigan Department of Transportation (MDOT)
- □ Michigan State Housing Development Authority (MSHDA)
- Michigan Sea Grant
- D Michigan State University Extension
- Regional Council of Government (COG) and economic development agency/commission (see Section 5.2.3 "Visioning/Planning")
- □ Local community foundations
- □ U.S. Army Corps of Engineers

Document name / Comments: _

Read Essential Smart Growth Fixes for Climate Adaptation and Resilience

This guide presents eleven "essential fixes" that address the most common barriers local governments face in implementing smart growth strategies. Topics include mixing land uses, changing parking requirements, modernizing street standards, managing stormwater, and adopting smart annexation policies. Identifies local zoning code topics that are essential to creating the building blocks of smart growth. The section on "Adapting to Flooding and Extreme Precipitation" is very applicable for waterfront communities. EPA provides several other Smart Growth guides as well. (2+ hours, 94 page document with links)

epa.gov/sites/default/files/2017-01/documents/smart_growth_fixes_climate_adaptation_resilience.pdf

Review Charging Forward: A Toolkit for Planning and Funding Rural Electric Mobility Infrastructure

This toolkit is intended for a variety of rural stakeholders and focuses on infrastructure for lightduty electric passenger vehicles (such as sedans, sport utility vehicles, and pickup trucks), but also addresses funding opportunities and planning considerations for other types of electric vehicles, including transit and school buses, medium- and heavy-duty vehicles, and agricultural equipment such as tractors.

transportation.gov/sites/dot.gov/files/2022-01/Charging-Forward_A-Toolkit-for-Planning-and-Funding-Rural-Electric-Mobility-Infrastructure_Feb2022.pdf

Document name / Comments: _

Read Engaging Socially Vulnerable Communities and Communicating About Climate Change

This interactive web page provides strategies to communicate about climate change, foster community resilience, and build a bridge between decision makers and constituents. (20-30 minutes, website)

nap.nationalacademies.org/resource/26734/interactive