



PLANNING AND FINANCING BEST PRACTICES

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Being prepared through adaptation planning can reduce your marina's exposure to risks and hazards. Planning can help you get ready for an uncertain future, and will help your business remain flexible when faced with environmental, economic and social changes. Plans developed specifically for your marina will ensure you are prepared to protect your investments and those of your patrons. Such efforts provide an opportunity to assess current goals, strategies and operating procedures in the context of increasingly variable environmental conditions.

On a larger scale, communities can engage in climate adaptation planning to set a shared strategy to physically adapt to environmental changes that will likely include fluctuating water levels and increased frequency and intensity of storms. Shared planning efforts provide an opportunity to pool resources toward the pursuit of a shared vision.

In this section you will explore how your facility can engage in community adaptation planning, create facility-specific plans and explore financing options for applying adaptations.

BEST MANAGEMENT PRACTICES

- Represent your facility in community planning
- Develop a hazard mitigation plan
- Estimate costs of adaptation
- Explore financing options

REPRESENT YOUR FACILITY IN COMMUNITY PLANNING

Comprehensive planning and climate adaptation planning are types of community planning that both serve to garner support for a shared waterfront vision, safeguard economic interests and increase community preparedness. By engaging in these planning exercises you can show local decision-makers that your facility is an important part of the waterfront.

COMPREHENSIVE OR MASTER PLANNING

A comprehensive plan (or master plan) allows for coordinated decision-making in community land use. A successful planning process is dependent on the input of stakeholders and landowners. Although decision-making authority resides with governmental bodies, marina and harbor operators and other waterfront stakeholders can raise issues of concern and offer potential solutions by actively participating in planning processes.

To be effective, comprehensive or master plans must be coupled with enforceable land use policies, such as zoning ordinances, building codes, permits and licenses. Zoning ordinances, for example, may impose requirements that preserve water-based use and increase resilience to changing environmental conditions.

Also, be aware of public trust issues. Lower lake levels may increase shore area and the receding of the water can affect the location of property lines.

Marina and harbors should be aware of the potential impact on property ownership and regulation. Contact your state agency for more information on this issue.

For more information on local government authority to zone and manage growth, and how marinas and harbors can potentially benefit from that planning, see: *Policy and Planning for Coastal Communities webpage* — www.miseagrant.umich.edu/explore/coastal-communities/policy-planning-coastal-communities

CLIMATE ADAPTATION PLANNING

Climate adaptation planning is used to develop and apply plans to reduce the impacts and consequences of climate change and climate variability. There are a variety of approaches to climate adaption planning.

“We need to bring foresight into the thinking about where we build and how we build so that we can deal with climate-related changes in precipitation, extreme heat events and flooding that will allow those to be viable communities for our descendants.”

— *Jim Schwab, Manager of the Hazards Planning Research Center at American Planning Association (Source: Great Lakes Water Level Changes: Addressing Risks and Impacts on Coastal Assets video, The Nature Conservancy)*

Some communities create a dedicated climate adaptation plan — a document describing strategies for how to address impacts of climate change — while others focus on existing goals, adding the lens of climate variability to assess implications for stated goals, objectives and strategies. If such large-scale efforts are not a good fit for your community, you could focus on a specific project to ensure that environmental variability is addressed in a proactive way. Even without a dedicated adaptation planning process, your community (or your facility) can do a broad assessment of what fluctuating environmental conditions will mean for existing goals, objectives and strategies.

Though the planning effort may be initiated at the regional or community scale, there are opportunities for individuals to engage. For example, you could participate in public meetings and workshops to provide input and represent your facility’s issues.

Basic Steps for Climate Adaption Planning:

- Step 1 – Initiate Planning Process: 1) scope out level of effort and responsibility; 2) assess resources needs and availability; 3) assemble planning team and establish responsibilities; and 4) educate, engage and involve stakeholders.
- Step 2 – Conduct Vulnerability Assessment: 1) identify climate change phenomena; 2) identify climate change impacts and consequences; 3) assess physical characteristics and exposure; 4) consider adaptive capacities; 5) develop scenarios and simulate change; and 6) summarize vulnerability and identify focus areas.
- Step 3 – Identify Adaptation Strategy: 1) set goals; 2) identify actions; 3) evaluate, select and prioritize actions; and 5) write action plans.
- Step 4 – Implement and Maintain Plan: 1) adopt the plan; 2) implement the plan; 3) integrate plan into other state planning efforts and programs; 4) track, evaluate and communicate plan progress; and 5) update the plan.

For details on how to implement these steps, see: *Adapting to Climate Change: A Planning Guide for State Coastal Managers* (NOAA) — greatlakesresilience.org/sites/default/files/library_bestpractices_2010_OCRM_AdaptingtoClimateChangeAPlanningGuideforStateCoastalManagers.pdf

To engage in climate adaptation planning:

- Participate in community climate adaptation planning exercises, as available. Check with your municipality to see if there are plans to conduct a climate change vulnerability assessment or to develop a climate action plan or preparedness plan; if yes see how you can get involved to ensure that your waterfront is accounted for in this plan.
- Consider ways to reduce risk and plan for how to recover after hazard events when making long-term infrastructure and land-use decision.
- Take time to identify and voice needed measures to improve resilience to increased storm intensity, fluctuating lake levels and other environmental changes. This includes investing time and resources in planning to build support, clarifying goals and looking to the future.

Resources:

- *Adapting to Climate Change: A Planning Guide for State Coastal Managers Great Lakes Supplement* (NOAA). A companion to the guide described above, including detail on climate trends and potential climate change impacts and consequences affecting the Great Lakes region, local examples and recommendations specific to our region — coastalmanagement.noaa.gov/climate/docs/adaptationgreatlakes.pdf
- *Great Lakes Coastal Resilience Planning Guide* (NOAA). Resources for mapping, analyzing, reporting, and visualizing specific coastal hazards — www.greatlakesresilience.org
- *Coastal County Snapshots* (NOAA). Website that turns complex data into easy-to-understand stories, complete with charts and graphs. Users select a coastal county of interest and the website does the rest, providing information that can help communities become more resilient to coastal hazards — www.coast.noaa.gov/snapshots

THE CLIMATE ADAPTATION COMMUNITY

If you are looking for camaraderie in the journey toward climate adaptation, visit these hubs for online support:

- *Climate Adaptation Collaboratory*. Online, interactive resource where you can share information, tools, ideas and experiences for collaborative research and decision-making — adapt.nd.edu
- *Climate Adaptation Knowledge Exchange (CAKE)*. Web-based community developing a shared knowledge base for managing natural and built systems in the face of rapid climate change. The site hosts an online community of practitioners and offers explanation of data tools available from other sites — www.cakex.org
- *Great Lakes Climate*. Website hosted by Ohio State University Climate Change Outreach Team offering a curated and annotated collection of Great Lakes climate change resources to help educators, government officials, community planners and the public adapt to and mitigate the impacts of climate change in the Great Lakes — climategreatlakes.com

- *What Could Changing Great Lakes Water Levels Mean for our Coastal Communities? A Case for Climate-adapted Planning Approaches* (NOAA). Case study to motivate and empower coastal communities to engage in climate-adapted planning and decision-making — www.nature.org/ourinitiatives/regions/northamerica/areas/greatlakes/explore/great-lakes-lake-levels-case-study.pdf

■ Sea Grant webpages:

- *Michigan Sea Grant: Climate and Weather* — www.miseagrant.umich.edu/explore/climate-weather-and-the-great-lakes
- *Ohio Sea Grant Climate Webinar Series* — changingclimate.osu.edu
- *Wisconsin Sea Grant: Climate Change* — www.seagrants.wisc.edu/home/Topics/ClimateChange.aspx

DEVELOP A HAZARD MITIGATION PLAN

A similar approach to recognizing and reducing risk from climate impacts is development of a hazard mitigation plan. This plan may be similar to a climate adaptation plan, but framed in operational terms. With increasingly intense storms, flooding and storm surges may also come an increase in damage to real property along waterfronts. Developing a hazard mitigation plan can set you up to be prepared and will also create a suite of potential responses specific to your marina or harbor (e.g., beach erosion, damage to infrastructure) should a hazardous situation arise.

Some coastal counties have hazard mitigation plans, which may be approved by the state emergency response agency. Mitigation plans form the foundation for a community's long-term strategy to reduce disaster losses and to break the cycle of disaster damage, reconstruction and repeated damage. The planning process is as important as the plan itself. It creates a framework for risk-based decision making to reduce damages to lives, property and the economy from future disasters.

Benefits of mitigation planning include:

- Identifying cost effective actions for risk reduction that are agreed upon by stakeholders and the public.
- Focusing resources on the greatest risks and vulnerabilities.
- Building partnerships by involving people, organizations and businesses.
- Increasing education and awareness of hazards and risk.
- Communicating priorities to state and federal officials.
- Aligning risk reduction with other community objectives.

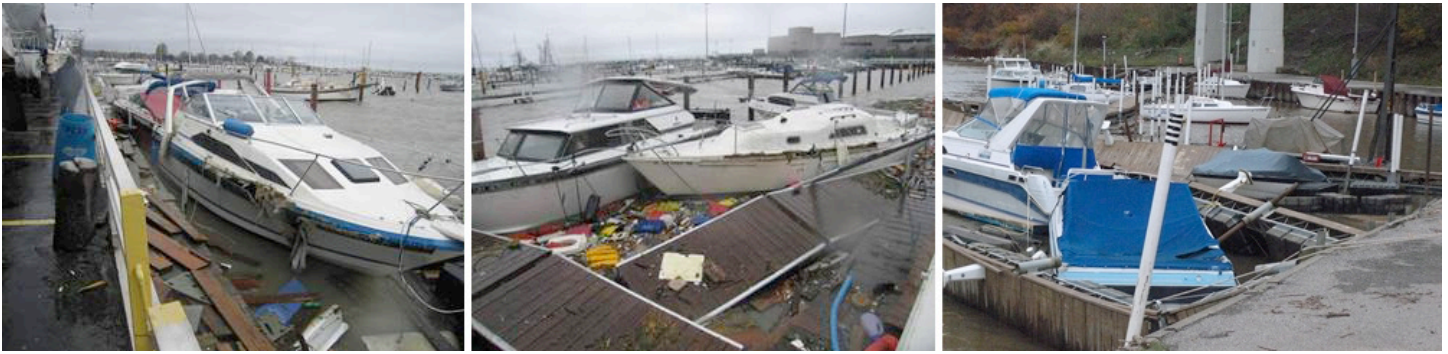
Source: FEMA

Resources:

- *Multi-Hazard Mitigation Planning* (FEMA). Resources for hazard mitigation planning, including overview of recommended process, related laws and regulations, resources, training opportunities and contacts for additional assistance. Hazards addressed include general

(multi-hazard), hurricane, flood, wildfire and earthquake — www.fema.gov/multi-hazard-mitigation-planning

- *National Flood Insurance Program: Flood Hazard Mapping*. FEMA identifies flood hazards, assesses flood risks and partners with states and communities to provide accurate flood hazard and risk data to guide them to mitigation actions. Flood Hazard Mapping is an important part of the National Flood Insurance Program (NFIP), as it is the basis of the NFIP regulations and flood insurance requirements — www.fema.gov/national-flood-insurance-program-flood-hazard-mapping
- *Emergency Preparedness* (U.S. Small Business Administration). Resources that can help develop an emergency preparedness and disaster relief plan — www.sba.gov/category/navigation-structure/starting-managing-business/managing-business/running-business/emergency-preparedness-and-disaster
- *Start Your Disaster Recovery Plan Today Webinar* (PrepareMyBusiness.org). U.S. Small Business Alliance and Agility Recovery are working together to encourage all small businesses to have a disaster recovery plan in place. Additional topics covered in archived webinars — vimeo.com/103366956



Hurricane Sandy damage at a Lake Erie marina. The storm path delivered gale force winds over 45 mph and caused damage to marinas and breakwaters, also increasing sediment loads to harbors and channels. (Source: Ohio Sea Grant)

ESTIMATE COSTS OF ADAPTATION

Typical operating costs for marinas and harbors may be increased in responding to extreme water level variability and increased storm frequency and intensity. Both rising and falling water levels can impact infrastructure stability and strength, and require additional dredging of harbor navigation channels and interior facility slips. Increased storm frequency and intensity

may increase channel silting and sedimentation, compounding dredging problems. Each of these impacts is costly to address.

To increase readiness, it is helpful to understand potential costs of repair or replacement of infrastructure and of increased dredging. Resources are available to assist operators in estimating the costs of repair or replacement of infrastructure and of dredging activity.

Resources:

- *Economic Valuation of Port Infrastructure* (Great Lakes Coastal Resilience Planning Guide) — Introduction to the Great Lakes Port & Harbor: Infrastructure Matrix & Dredging Cost Estimate Tool, developed by Wisconsin and Minnesota Sea Grant. This case study will help communities appraise the current value of their navigational and port infrastructure, allowing

FUNDING OPPORTUNITIES	
RESOURCE	DESCRIPTION
NOAA Compiled List of Funding Opportunities (PDF) – www.adapt.nd.edu/resources/1322	Climate funding opportunities. Document provides a snapshot of currently available (2014) climate-related funding opportunities.
<i>Sustainable Working Waterfronts Toolkit: Financing</i> • Website: www.wateraccessus.com/financing.cfm • Video tutorial: www.wateraccessus.com/video/Finance.mp4	Inventory of summarized information about financing tools that effectively address working waterfront and waterway issues. Also new tools. Includes links to learn more about each program or benefit and video tutorial on how to search the inventory of financing tools.
<i>Adapting to Climate Change: A Planning Guide for State Coastal Managers – Appendix A: Potential Federal Funding Sources</i> (PDF) – www.regions.noaa.gov/great-lakes/wp-content/uploads/2012/09/04a-AppendixA_FundingSources.pdf	Summary of federal funding sources and programs that may provide funding indirectly or directly for activities that support climate change adaptation.
<i>Great Lakes Coastal Resilience Planning Guide: Funding Opportunities</i> (website) – www.greatlakesresilience.org/events-and-funding	Events and funding sources related to coastal resilience and natural hazard issues throughout the Great Lakes Basin. Listed funding sources and opportunities range from research to on-the-ground implementations in support of local and county issues.
State-specific Programs	State funding may be available for preliminary engineering studies and infrastructure improvements. For example, see Michigan Waterways Program Grants (Michigan Department of Natural Resources) – www.michigan.gov/dnr/0,4570,7-153-58225_37985-124962--,00.html#design

Note, these lists are not comprehensive, and availability of funds may vary from one year to the next.

them to project the potential costs of maintaining or replacing these resources in the face of changing water levels and storm conditions caused by climate variation — www.greatlakesresilience.org/case-studies/infrastructure/economic-valuation-port-infrastructure

- *Great Lakes Port & Harbor: Infrastructure & Dredging Cost Estimate Matrix Tool and Duluth, MN/Superior, WI and Toledo, OH Case Studies* — Downloadable case studies of the cost estimate tool — climategreatlakes.com/wp-content/uploads/2013/10/15-Great-Lakes-Port-Matrix-Tool-and-Case-Studies.pdf

EXPLORE FINANCING OPTIONS

To fund adaptation and sustainability efforts for waterfront operations, explore financing opportunities from the local, state or federal government including grants or loans supported through general fund revenue, bonds or indirectly through taxes.

- Work at the local level to establish a Water Resources Tax Improvement Finance Authority or marine investment fund in which non-marine users pay to help offset working waterfront infrastructure improvements. For more information see: *Case Study – Portland, Maine: Balancing Maritime Uses and Waterfront Diversification Through Municipal Zoning* (Sustainable Working Waterfronts Toolkit) — www.wateraccessus.com/case_study.cfm?ID=32

- Seek out public/private partnerships to facilitate access to a wide range of funding sources.
- Establish non-profit organizations in support of working waterfronts to improve access to funding sources and reap tax benefits.
- Use innovative approaches for cost savings (e.g., energy reduction through increased efficiency, used oil recycling, and other practices promoted in this Classroom).
- Create new and use existing trade associations in support of working waterfront initiatives.
- Offer tax incentives to reward the type of development you seek.

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Sources: 2014 National Climate Assessment, Great Lakes Integrated Sciences and Assessments Center, International Upper Great Lakes Study, NOAA Great Lakes Environmental Research Laboratory, University of Wisconsin Sea Grant Institute, Michigan Clean Marina Program, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, National Working Waterfronts Network, The Nature Conservancy and others.