Coastal Capacity, Knowledge, and Commitment
The Challenge of Planning to be a Resilient Great Lakes Coastal Community

Richard K. Norton
Urban and Regional Planning Program
University of Michigan

RAE-CSO Annual Conference
Long Beach, CA
December 12, 2018
Michigan’s GL Coastal Communities Touch 1 of MI’s 4.5 Great Lakes
There are a lot of them in Michigan

### MI’s Great Lakes Jurisdictions

(Directly Touching a Lake)

<table>
<thead>
<tr>
<th>Type</th>
<th>Total</th>
<th>Great Lakes</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Village</td>
<td>262</td>
<td>24</td>
<td>9%</td>
</tr>
<tr>
<td>City</td>
<td>273</td>
<td>44</td>
<td>16%</td>
</tr>
<tr>
<td>Twp</td>
<td>1,241</td>
<td>183</td>
<td>15%</td>
</tr>
<tr>
<td>County</td>
<td>83</td>
<td>41</td>
<td>49%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,859</strong></td>
<td><strong>292</strong></td>
<td><strong>16%</strong></td>
</tr>
</tbody>
</table>

---

[Map of Michigan with highlighted areas showing Great Lakes jurisdictions.]

---

[University of Michigan logo and text: Taubman College of Architecture and Urban Planning.]
Submerged Land:
Always owned by the State

Upland:
Owned in Fee

Dry Beach

Wet Beach

Submerged Land:
Always owned by the State

Ordinary High Water Mark?

"Public Trust Beach"
-- Right of public use
-- Duty to not impair

Non-Tidal Great Lakes Beach

Scientific / Legal Challenges

Police Power

Public Trust

Private Property Rights
Scientific and Legal Uncertainties

Two Ordinary High Water Marks:

1. “natural” (beach walking)
2. “elevation” (regulatory)

*Glass v Goeckel (MI S Ct 2005)*
“The point on the bank or shore up to which the presence and action of the water is so continuous as to leave a distinct mark either by erosion, destruction of terrestrial vegetation, or other easily recognized characteristic.”

“Public Trust Beach”
Scientific & Legal Uncertainties

Two Ordinary High Water Marks:

1. “natural” (beach walking)
2. “elevation” (regulatory)

MI GLSLA (1955)
Elevation-based mark set by statute for Lake Michigan and Huron at 580.5 ft. (IGLD 1985)

For activities requiring a state permit
St Joseph

03

future scenario:
under past conditions
Plan = Documented Public Policy Argument

Community Master Plan = Public document that...

- Analyzes current / anticipated community *conditions (facts)*
- Documents community *goals* for the foreseeable future
- Analyzes and develops *policies* for advancing those goals given conditions
- *Communicates* coherently and usefully to residents, public officials, and courts

Implemented through a *development management program*: 

- Land use regulations (zoning, subdivision)
- Public policies (infrastructure)
- Public education and outreach

Taubman College
architecture + urban planning
University of Michigan
Plan = Documented Public Policy Argument

Plan Quality:
- Presentation; articulation of facts, goals, & policies
- Fact base
- Analyses (land suitability, infrastructure capacity)
- Implementation provisions
- Use of public participation
- PLUS Special analyses/provisions – coastal areas

Policy Focus:
- Vital urban centers
- Conserved rural areas
- Water quality / quantity management
- Coastal area management
Systematic Study of MI GL Coastal Localities (UP and LP)

- 139 randomly selected localities (44% of all coastal/riverine)
- As of 2016, only ~ 2/3rds appear to be planning
- Content analysis of master plans 2004-2007 (n=60)
- Survey of local officials 2008 (n=37)
- Demographic data (US Census)
- Full data for 32 localities
- Participatory Action Research (PAR) case-study work with state officials and 6 communities 2014-2017
Overlooking the Coast: Describing

Plan Quality:
25 / 60 plans (42%) provide *no* analysis of coastal regions

Policy Focus:
44 / 60 plans (73%) have *no* coastal management policies
Overlooking the Coast: Explaining Why Not

• Infrequency of problems (lake level fluctuations)
• Local reliance on state/federal governments
• Insurance/disaster relief indemnification
• Political push-back
  (i.e., lack of commitment)

Plus

• Lack of detailed knowledge about dynamics
• Lack of technical capacity to plan
• Frequent turnover of key public officials
  (i.e., lack of sustained knowledge & capacity)
Overlooking the Coast: Testing Variation

Capacity
- Financial
- Technical

Knowledge
- Procedural
- Substantive

Commitment
- Procedural
- Substantive

Plan Quality (plus coastal)

Plan Policy (coastal)
Overlooking the Coast: Explaining Variation

**Capacity**
- Financial
- Technical

**Knowledge**
- Procedural
- Substantive

**Commitment**
- Procedural
- Substantive

**Plan Quality**
- + Planning staff
- + LU activity

**Plan Policy** (coastal)
- + House values
- + Planning staff
- - Consultants
# Planning for GL Coastal Community Resilience

(see [http://resilientgreatlakescoast.org/](http://resilientgreatlakescoast.org/))

## Addressing Uncertainty: Scenario-Based Planning

<table>
<thead>
<tr>
<th>Climate Future Mgt Option</th>
<th>“Lucky” ↓ Lake / ↓ Stormy</th>
<th>“Expected” ~ Lake / ~ Stormy</th>
<th>“Perfect Storm” ↑ Lake / ↑ Stormy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Conditions</strong></td>
<td>Lucky / Current</td>
<td>Expected / Current</td>
<td>Uh-Oh / Current</td>
</tr>
<tr>
<td><strong>Future Buildout: Current Zoning</strong></td>
<td>Lucky / Buildout</td>
<td>Expected / Buildout</td>
<td>Uh-Oh / Buildout</td>
</tr>
<tr>
<td><strong>Future Buildout: Adopt BMPs</strong></td>
<td>Lucky / BMPs</td>
<td>Expected / BMPs</td>
<td>Uh-Oh / BMPs</td>
</tr>
</tbody>
</table>

For Each Scenario, Analyze Potential Impacts On:

- Land use (acreage, critical facilities, structures at risk)
- Fiscal (economic values of developed land at risk)
- Environmental / social wellbeing (wetlands, other natural features, cultural features)
Planning for GL Coastal Community Resilience (see http://resilientgreatlakescoast.org/)

Figure 5. Updated extent of potential flooding and/or high-energy waves under “Lucky,” “Expected,” and “Perfect Storm” climate future conditions for the City of Grand Haven North Shore district.

Figure 9. Approximate Location of a 60-year Erosion Line in the North Shore District.

- 25 Feet from Lot Line
- Footprints
- North Shore
- Updated Lucky
- Updated Expected
- Updated Perfect Storm

Source: CNES/Airbus DS, USDA, USGS/Earth Resources Observation and Science (EROS) Center

60 year Erosion Line
Estimated 583 ft
IGLD Zone of Active Erosion
25 Feet from Lot Line
Footprints
North Shore
Planning for Great Lakes Coastal Community Resilience (see http://www.resilientmichigan.org/workshops2017.asp)

“Coastal Navigator Training”

WORKSHOP ONE: INTRODUCTION TO COASTAL DYNAMICS AND RESILIENCY

Wednesday, October 25, 6:00pm to 7:30pm

Featured Presentations:

Resilient Michigan Overview (video)
Harry Burkholder, Executive Director
Land Information Access Association (LIAA)

Historical and Projected Future Climatic Trends in the Great Lakes Region (video)
Dr. Jeffrey Andresen, State Climatologist
Michigan State University

Great Lakes Coastal Dynamics (video)
Dr. Guy Meadows, Director
Great Lakes Research Center at Michigan Technological University

What Makes a Great Lakes Coastal Community “Resilient,” and How to Plan for One? (video)
Dr. Richard Norton, Professor
University of Michigan
Coastal Navigator Training Workshops

Integrated Training Workshops in Northwest LP

- 3 workshops November/December 2018
- Before / After Survey
- 4 Questions (w/ multiple options)
  - Reasons localities not managing shorelands?
  - Activities that might enhance local management?
  - Protect the natural beach or beach house?
  - State lead or local lead?

67 Responses

<table>
<thead>
<tr>
<th>Local Admin</th>
<th>Local Elected</th>
<th>Local Comm’n</th>
<th>Planning Consultant</th>
<th>Resident SL Prop Ownr</th>
<th>Res Not SL Prop Ownr</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>7</td>
<td>20</td>
<td>1</td>
<td>39</td>
<td>15</td>
<td>8</td>
</tr>
</tbody>
</table>
Coastal Navigator Training Workshops

Before Perception: Localities Not Managing Shoreland Because:

- LOs lack K hazards
- POs lack K hazards
- LOs lack K authorities
- Limited legal capacity
- Limited tech capacity
- Limited $ capacity
- Not a problem
- Not a priority
- MDEQ/USACE protect
- LOs fear pushback
- LOs fear lost revenues

Strongly Disagree                                   Neutral / DK                                       Strongly Agree
Coastal Navigator Training Workshops

Before & After Perceptions: Localities Not Managing Shoreland Because:

- *** p<0.00
- ** p<0.01
- * p<0.05

- LOs lack K hazards
- POs lack K hazards
- LOs lack K authorities
- Limited legal capacity
- Limited tech capacity
- Limited $ capacity
- Not a problem
- Not a priority
- MDEQ/USACE protect
- LOs fear pushback
- LOs fear lost revenues

Strongly Disagree | Neutral / DK | Strongly Agree
Coastal Navigator Training Workshops

Before Perception: This would enhance local management:

- Training on coastal dynamics
- Training planning process
- More state tech assist/data
- More state funding
- More local zoning
- NGO support
- Citizen lobbying

Strongly Disagree  Neutral / DK  Strongly Agree
Coastal Navigator Training Workshops

Before & After: This would enhance local management:

- Training on coastal dynamics: *** p<0.00
- Training planning process: ***
- More state tech assist/data
- More state funding: ***
- More local zoning: ***
- NGO support: ***
- Citizen lobbying: ***

Strongly Disagree Neutral / DK Strongly Agree
Coastal Navigator Training Workshops

Question: What should we protect most?

Natural Beach

Beach House

Strong Preference for Beach: -2
Neutral: -1
Strong preference for House: 1

BEFORE: -0.7
AFTER: -1.09
CHANGE: P < 0.00
Coastal Navigator Training Workshops

Question: Which level of government should lead?

Strong State Lead / Role

Strong Preference for **State**
-2

Neutral
-1

Strong Local Lead / Role

Strong preference for **Local**

-2

Neutral
-1

Strong preference for **Local**

1

2

BEFORE:

0.05

AFTER:

0.31

CHANGE:

**P < 0.00**
Questions?