Resilience and Flood Hazard Planning Workshop
Applying CHARM and No Adverse Impact

New Smyrna Beach, Florida
Brannon Center
October 12, 2018
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker/Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00</td>
<td>Introductions, Overview &amp; No Adverse Impact Approach</td>
<td>Jeff Stone, GISP, CFM – Sr. Research Manager, Association of State Floodplain Managers</td>
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<tr>
<td>9:30</td>
<td>Flood Resilience Planning in New Smyrna Beach</td>
<td>Amye King, AICP – Planning Director, New Smyrna Beach</td>
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<tr>
<td>9:45</td>
<td>Regional Resilience Planning</td>
<td>Tara McCue, AICP - Director of Planning and Community Development, East Central Florida Regional Planning Council</td>
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<tr>
<td>10:00</td>
<td>The Law’s the Limit: Sea-Level Rise Adaptation and Local Government</td>
<td>Thomas Ruppert, Esquire – Coastal Planning Specialist, Florida Sea Grant</td>
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<td>10:50</td>
<td>Break</td>
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<tr>
<td>11:10</td>
<td>Peril of Flood &amp; Post-Disaster Redevelopment Plans</td>
<td>Jerry Murphy, JD, AICP, CFM – Resilient Communities Initiative, University of Florida</td>
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<tr>
<td>Noon</td>
<td>Lunch</td>
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<tr>
<td>12:45 PM</td>
<td>Community, Health and Resource Management (CHARM) Overview</td>
<td>Steven Mikulencak, AICP – Planning Program Leader, Texas Community Watershed Partners, Texas A&amp;M AgriLife Extension</td>
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<tr>
<td>1:00</td>
<td>CHARM Scenario Planning</td>
<td>Group breakout exercises &amp; discussion</td>
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<tr>
<td>3:50</td>
<td>Closing Remarks, Additional Resources and Workshop Evaluation</td>
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<tr>
<td>4:00 PM</td>
<td>Adjourn</td>
<td></td>
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Reduce the losses, costs, and human suffering caused by flooding and...

Protect the natural and beneficial functions of floodplains without impacting the property rights of others.
Digital Coast Partnership
- NOAA, APA, CSO, NACo, NERRA, NSGIC, TNC, ULI

American Planning Association (APA)
- Planning Information Exchange (PIE) Webinars
- PAS Reports – Subdivision Design, Capital Infrastructure Planning

Florida Floodplain Management Association
- Training, committees & resources
Flooding Costs – Direct Impacts

Average Annual Flood Damages in the United States

- #1 natural hazard in U.S.
- $7.96 billion annual average in last 30 years
  - And then there was Sandy, Harvey, Irma, Maria, Florence, Michael
- More than 50% of properties in high-risk areas do not have flood insurance
- 25% of flood claims outside SFHA
- “Over 90% of urban flooding damage claims from 2007 to 2014 were outside the mapped floodplain…” (ILDNR, 2015)

Source: NOAA NWS, Hydrologic Information Center (www.nws.noaa.gov/hic/).
Roughly 40 to 60 percent of small businesses never reopen their doors following a disaster and another 25% fail within one year (FEMA).

Similar statistics from the Small Business Administration indicate that over 90 percent of businesses fail within two years after being struck by a disaster.
Map the Nation

ASFPM estimate for adequate flood mapping for the nation
- $4.5 billion to $7.5 billion

Annual maintenance
- $116 million to $275 million

Nation has invested
- $4.3 billion

Taxpayer benefit
- $2 for every $1 invested in flood mapping (FEMA, 1997)
Federal Grants Provide $6 Benefit for Each $1 Invested

<table>
<thead>
<tr>
<th>Peril</th>
<th>Federally Funded</th>
<th>Beyond Code Requirements</th>
</tr>
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<tbody>
<tr>
<td>Riverine Flood</td>
<td>7:1</td>
<td>5:1</td>
</tr>
<tr>
<td>Hurricane Surge</td>
<td>Too few grants</td>
<td>7:1</td>
</tr>
<tr>
<td>Wind</td>
<td>5:1</td>
<td>5:1</td>
</tr>
<tr>
<td>Earthquake</td>
<td>3:1</td>
<td>4:1</td>
</tr>
<tr>
<td>Wildland-Urban Interface Fire</td>
<td>3:1</td>
<td>4:1</td>
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National Benefit-Cost Ratio Per Peril

Overall Hazard Benefit-Cost Ratio: 6:1

For Hurricane Surge, Designing to Exceed 2015 Codes Provides $7 Benefit for Each $1 Invested

<table>
<thead>
<tr>
<th>State</th>
<th>First Floor Height above BFE up to IEMax</th>
<th>BCR</th>
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<tbody>
<tr>
<td>Texas</td>
<td>+2 to 8</td>
<td>20.2  to 9.1</td>
</tr>
<tr>
<td>Louisiana</td>
<td>+2 to 10</td>
<td>11.3  to 4.8</td>
</tr>
<tr>
<td>Mississippi</td>
<td>+2 to 10</td>
<td>27.6  to 10.1</td>
</tr>
<tr>
<td>Alabama</td>
<td>+2 to 10</td>
<td>31.1  to 11.7</td>
</tr>
<tr>
<td>Florida</td>
<td>+2 to 10</td>
<td>21.1  to 8.4</td>
</tr>
<tr>
<td>Georgia</td>
<td>+2 to 6</td>
<td>6.7   to 3.8</td>
</tr>
<tr>
<td>South Carolina</td>
<td>+2 to 10</td>
<td>11.8  to 5.0</td>
</tr>
<tr>
<td>North Carolina</td>
<td>+2 to 10</td>
<td>12.6  to 5.2</td>
</tr>
<tr>
<td>Virginia</td>
<td>+2 to 6</td>
<td>6.7   to 3.8</td>
</tr>
<tr>
<td>Delaware</td>
<td>+2 to 6</td>
<td>6.7   to 3.8</td>
</tr>
<tr>
<td>Maryland</td>
<td>+2 to 6</td>
<td>6.7   to 3.8</td>
</tr>
<tr>
<td>New Jersey</td>
<td>+2 to 6</td>
<td>6.7   to 3.8</td>
</tr>
<tr>
<td>New York</td>
<td>+2 to 6</td>
<td>6.7   to 3.8</td>
</tr>
<tr>
<td>Connecticut</td>
<td>+2 to 6</td>
<td>6.7   to 3.8</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>+2 to 6</td>
<td>6.7   to 3.8</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>+2 to 6</td>
<td>6.9   to 3.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>16.9</strong> to 7**</td>
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Table 2. BCRs for various heights above BFE for new coastal V-zone buildings up to the point where the incremental benefit remains cost-effective.

Benefit: $82 billion

- 65% – Property: $53.0
- 12% – Additional living expenses & sheltering: $10.0
- 11% – Insurance: $9.0
- 6% – Casualties & PTSD: $5.0
- 6% – Indirect business interruption: $5.0

Cost: $11.5 billion

Figure 1. Contribution to benefit from federally funded riverine flood grants.
No Adverse Impact (NAI) is an approach that ensures that the action of any community or property owner, public or private, does not adversely impact the property and rights of others.
The true strength of the No Adverse Impact approach is that it encourages local decision making to ensure that future development impacts will be identified, considered on a watershed-wide basis and mitigated.

It is a truly comprehensive strategy for reducing flood losses and costs.
NAI Approach Leads to a Process

- Legal foundation
- Understandable
- Palatable to Community as a Whole
- Working around the Nation
- Non-Adversarial
  - Not Pro Development
  - Not Anti Development
NAI How-To Guides

NAI Building Blocks

1. Hazard ID & Mapping ........ Published
2. Education and Outreach .... Published
3. Planning ...................... Published
4. Mitigation .................... Published
5. Infrastructure ................. Published
6. Regulations ................... Published
7. Emergency Services ......... Underway
Hazard Identification

**Basic**
Flood Insurance Rate Map

**Better**
Fill in the Gaps
NAI

- Higher Mapping Standards
- Natural & Beneficial Functions
  - Identify Sensitive Resources
- Future Conditions
- Information Sharing
Collier County Builds from Existing State Policy to Protect Open Space

422.c. Natural Functions Open Space (NFOS) & 512.c. Natural Floodplain Functions Plan (NFP)

In 2002, County citizens approved by referendum a green space acquisition program called Conservation Collier

- Allowed the county to tax residents $2.5 million dollars over 10 years to purchase conservation lands and green space.
- Approved a $75 million limited tax general obligation bond to buy lands. Nearly 60% of the voters supported the initiative.
- In 2006, nearly 82% of the voters approved another referendum for additional taxes to support the program

The Conservation Collier program accrued more than 4,084 acres in 19 locations

Bringing it all together

Integrating NAI and CHARM

- Legal foundation
- Complete hazard identification
- Natural & Beneficial Functions
- Future Conditions
- Information Sharing
- Collaboration
Thank you

Please, complete an evaluation

All materials will be posted on our website

(Link will be emailed)

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Flood Science Center
Association of State Floodplain Managers
jeff@floods.org

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