LESSONS LEARNED FROM DEVELOPING AN ECOSYSTEM SERVICES FRAMEWORK FOR POST-HURRICANE SANDY RECOVERY AND RESILIENCY PLANNING ON LONG ISLAND, NY

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Hurricane Sandy Impacts – Long Island

Hurricane Sandy, 2\textsuperscript{nd} costliest weather event in US History

65+ Billion in damages

95,534 damaged or destroyed buildings in on Long Island

118,000 individuals/households in need of housing assistance on Long Island
Interagency Cooperation and Directives

Interagency EPA/FEMA Memorandum of Agreement - 2010
  Coordination of activities between EPA's Smart Growth Program and FEMA's long-term disaster recovery and hazard mitigation planning programs

New York State Cleaner, Greener Communities Program - 2011
  Regional sustainability plans in 10 regions of the state; local sustainability plans being developed

National Disaster Recovery Framework - 2011
  Allows federal agencies to more closely collaborate in support of local disaster recovery
National Disaster Recovery Framework

Defines roles and responsibilities – Establishes Recovery Support Functions

Promotes the establishment of post-disaster organizations to manage recovery

Promotes a deliberate and transparent process that provides well-coordinated support to the Community

Offers strong, focused recovery leadership at the State and Tribal level, supported by strong Federal recovery leadership
Interagency Cooperation and Directives

New York State Community Risk & Resiliency Act - 2014
   Incorporates sea level rise, flooding and storm surge into state funding and permitting

OMB Memo: Incorporating Ecosystem Services into Federal Decision Making - 2015
   Directs federal agencies to incorporate ecosystem services into planning and decision making

Interagency EPA/FEMA Memorandum of Agreement Update - 2016
   Coordination of activities between EPA's Smart Growth Program and FEMA's long-term disaster recovery and hazard mitigation planning programs
Organizational Structure

[Image of logos representing various organizations involved in the Smart Growth Resiliency Partnership for Long Island.]
Organizational Structure

- Direct Land Use TA
- Health Impacts Assessment
- Ecosystem Service Assessment
- GIS Scenario Planning
Organizational Structure

Ecosystem Services Assessment  Disaster Recovery  Project Specific Partners

*The Nature Conservancy*  *Stony Brook University*  *ORISE*  *Consensus Building Institute*

**Project Steering Committee**  EPA R2, FEMA, NYS

**Biophysical Modeling Group**  (Tech Team)  EPA ORD/ORISE, TNC, SUNY Stony Brook, NYS

**Valuation Group**  EPA ORD/ORISE, TNC, SUNY Stony Brook, NYS

**Community Engagement**  FEMA, EPA R2, NYS
Ecosystem Services Assessment Framework

- Adopted the framework from the National Ecosystems Services Guidebook (FRMES)

1. **Intended Action** (policy, plan, project)
2. **Ecosystem** (measured by ecological indicators)
3. **Ecosystem Service Supply** (measured by benefit relevant indicator)
4. **Societal Benefit** (Measured by Reference Evaluation)
Defining Keys to Project Success

- Definitive partner buy-in
- Outcome-based consensus building
- Develop and deploy adaptive management
- Produce local economic values for coastal ecosystem services that can be used to inform recovery planning and potentially be incorporated to local Benefit/Cost
Challenges to the Collaborative Approach

• Timelines

• Funding

• Priority Alignment

• Finding Suitable Local Project
Role of the Facilitator

Facilitator:

Independent Voice

Provide structure for decision making

Hold partners accountable to deadlines

Mediates if needed
Developing Relationship with Local Partners

How do we approach integration of ES into decision making when partners may not be familiar with this concept?

• Stop talking about Ecosystem Services

• We are the experts – We need to commit to a limited set of outcomes and have the community and local decision makers prioritize
  • Allows us to:
    • Scope Study
    • Set Priorities
    • Allocate Resources (Survey Funding, Focus Groups, etc.)
Now Steps

• Apply FEG-CS to ID potential beneficiaries within a spatially explicit framework

• Compile existing data sources (US Census, NOAA NMFS, NYS Parks Data, etc.) to ID actual beneficiaries
<table>
<thead>
<tr>
<th>Land Portion Only (total sq. meters)</th>
<th>Area (sq. m)</th>
<th>Area (%)</th>
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</thead>
<tbody>
<tr>
<td>24,672,232.08</td>
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<table>
<thead>
<tr>
<th>Data Sets</th>
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<tbody>
<tr>
<td>NLCD (2011)</td>
<td></td>
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<tr>
<td>Deciduous Forest</td>
<td>142,314.78</td>
<td>0.58%</td>
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<tr>
<td>Developed, High Intensity</td>
<td>3,495,030.46</td>
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<td>Developed, Low Intensity</td>
<td>6,036,419.26</td>
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<tr>
<td>Developed, Medium Intensity</td>
<td>9,559,070.18</td>
<td>38.74%</td>
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<tr>
<td>Developed, Open Space</td>
<td>3,857,038.35</td>
<td>15.63%</td>
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<tr>
<td><strong>Total:</strong></td>
<td><strong>93.01%</strong></td>
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| Emergent Herbaceous Wetlands | 677,159.77 | 2.74% |
| Evergreen Forest | 8,797.23 | 0.04% |
| Herbaceous | 15,642.91 | 0.06% |
| Mixed Forest | 106,309.08 | 0.43% |
| Open Water | 273,630.16 | 1.11% |
| Shrub/Scrub | 105,813.66 | 0.43% |
| Woody Wetlands | 268,109.79 | 1.09% |
| **Total:** | **24,545,335.59** | **98.91%** |

<table>
<thead>
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<th>Marine Portion Only (total sq. meters)</th>
<th>Area (sq. m)</th>
<th>Area (%)</th>
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<td>21,034,905.20</td>
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<tr>
<th>NWI</th>
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<tr>
<td>Seagrass</td>
<td>365,848.33</td>
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<td>Aquatic Beds</td>
<td>75,383.85</td>
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<tr>
<td>Estuarine and Marine Deep water</td>
<td>10,687,910.86</td>
<td>50.81%</td>
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<tr>
<td>Estuarine and Marine Wetland</td>
<td>9,550,744.01</td>
<td>45.40%</td>
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<tr>
<td>Freshwater Emergent Wetland</td>
<td>10,667.18</td>
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<tr>
<td>Freshwater Forested/Shrub Wetland</td>
<td>28,873.95</td>
<td>0.14%</td>
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<td>Freshwater Ponds</td>
<td>7,659.68</td>
<td>0.04%</td>
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<td><strong>Total:</strong></td>
<td><strong>20,727,087.86</strong></td>
<td><strong>98.54%</strong></td>
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| NHD | Stream/ River | Total Length of Rivers (meters) | 39,227.6 |
Next Steps

• Partner with Suffolk County Communities

• FEMA HM – BCA

• More Stakeholder Engagements