



NOAA

Coastal Resilience Resources

Climate Resilience Webinar Series

U.S. Department of Housing and Urban Development

Disclaimer

- This presentation is intended to provide communities and states with the tools and information to help in climate resilience planning and activities.
- Information presented in this webinar is independent of the Notice of Funding Availability (NOFA) for the National Disaster Resilience Competition (NDRC). While we expect that this information will be useful to interested communities and eligible applicants, *it should not be construed as the definitive word on any singular approach to resilience.*
- All NOFA NDRC questions should be sent to: resilientrecovery@hud.gov

Presenter

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 - *Kateryna Wowk, Senior Social Scientist*
- *Organization*
 - *Name, Title*

Agenda

1. Overview
2. NOAA Coastal Resilience
3. Focus on Natural Infrastructure
4. NOAA Tools and Resources
5. Research Needs
6. Questions

Coastal Resilience



The Coastal Resilience approach includes four critical elements:

- **Assess Risk and Vulnerability** to coastal hazards through community input and tools that include alternative scenarios for current and future storms and sea level rise
- **Identify Solutions** for reducing vulnerability that focus on collaborative efforts across social, economic, and ecological systems
- **Take Action** help communities develop and implement solutions
- **Measure Effectiveness** of efforts to reduce disaster risks and apply ecosystem-based adaptation

<http://coast.noaa.gov/digitalcoast/tools/coastalresilience>



Green (Natural) Infrastructure and Gray (Built) Infrastructure

Salt Marsh



Coral



Mangrove



Oyster



Dunes



Sea Wall



Sea Wall and Riprap



Levee



Dike



Natural infrastructure provides protection

Factors that impact amount of coastal protection benefits:

- Depth and Crest Height (for reefs)
- Vegetation density and stiffness, and plant biomass production (for vegetated ecosystems)
- Ecosystem area and continuity (i.e., not separated by open water)
- Even narrow bands of wetlands or coral reefs can significantly reduce wave heights

Sutton-Grier et al. 2015



Additional Coastal Ecosystem Services

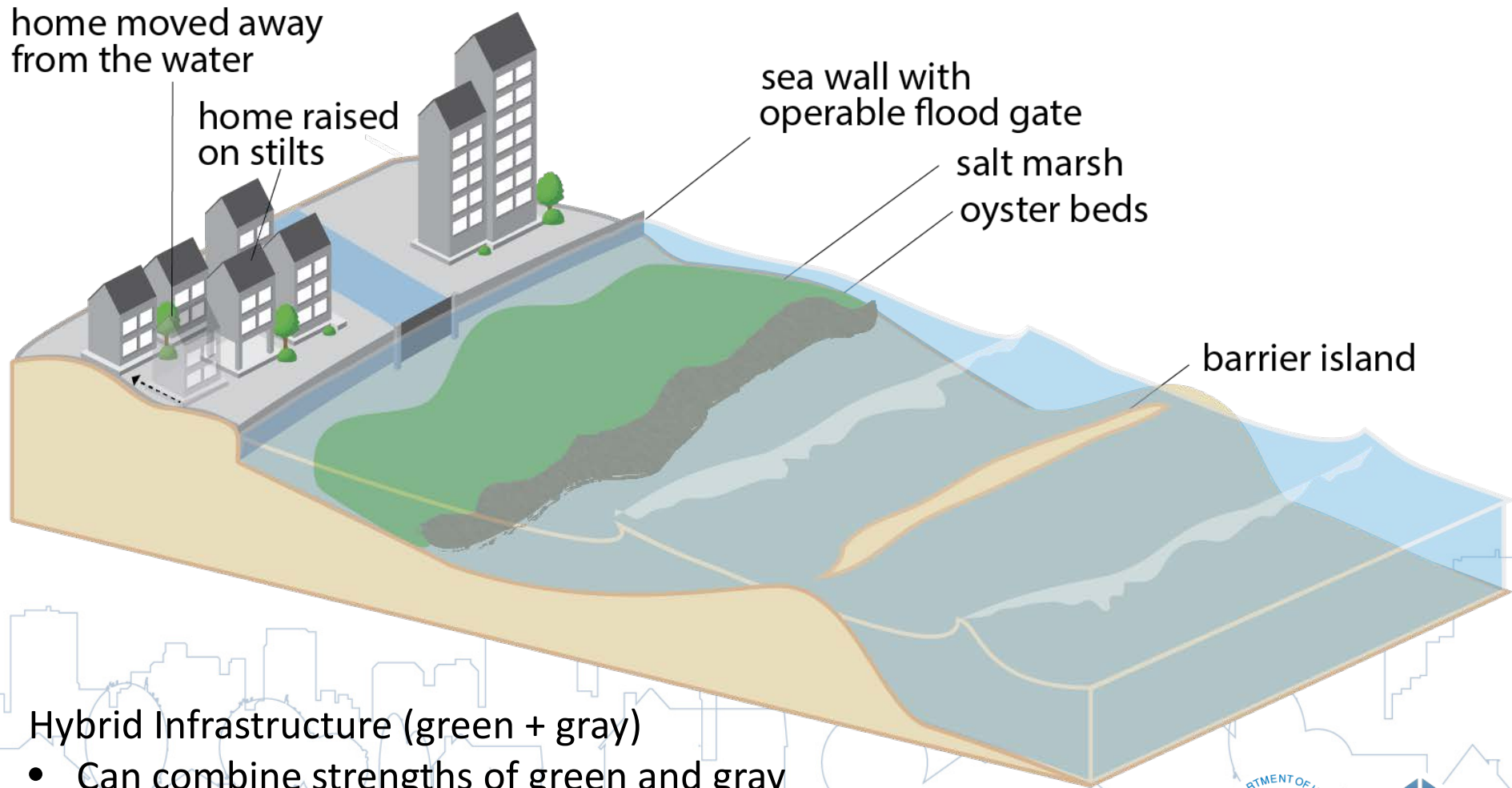


Examples of additional benefits:

- Fisheries (recreational and commercial)
- Recreation & tourism
- Water filtration
- Cultural services
- Habitat for other species
- Carbon sequestration & storage



Hybrid Approach



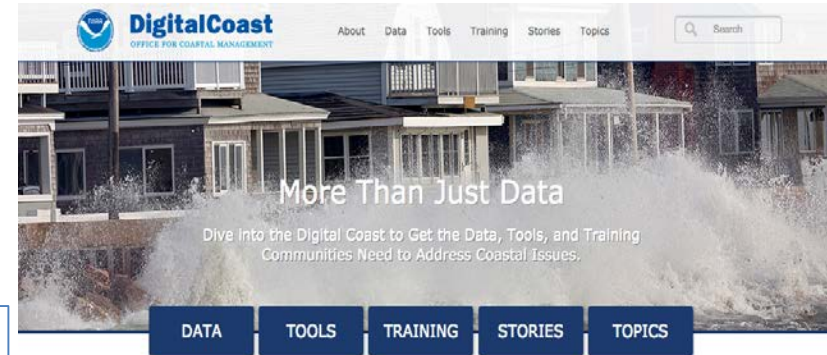
Hybrid Infrastructure (green + gray)

- Can combine strengths of green and gray
- Can use gray to protect green as it establishes
- Can mimic natural design with gray construction



NOAA Tools and Resources






- NOAA Grants
- Experts and training
- Data and information
- Projects
- Partners
- Digital Coast



Data Checklist

Economics of Green Infrastructure

ASSESSMENT STEPS

	 STEP 1: Define the Flooding Problem	 STEP 2: Assess Flooding Scenarios without Green Infrastructure	 STEP 3: Identify How a Flood Reduction Target Can Be Met with Green Infrastructure	 STEP 4: Assess Flooding Scenarios with Green Infrastructure	 STEP 5: Estimate Benefits and Costs	 STEP 6: Identify and Communicate the Desired Green Infrastructure Strategy
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This matrix provides a list of data used to conduct two pilot projects in the Great Lakes assessing the costs and benefits of using green infrastructure to reduce flooding impacts. These data are the best available from national, state, and municipal data sources and models. They are suitable for watershed-scale studies. Work with your local GIS analyst to discuss the data available for your assessment.

Learn more about each assessment step in the "Guide for Assessing Green Infrastructure Costs and Benefits for Flood Reduction," www.coast.noaa.gov/pubs/gi-cost-benefit.pdf

Land Data

Land Use, Current	✓	✓	✓	✓	★	★
Land Use, Future	✓	✓	✓	✓	★	★
Land Cover, Current	★	✓	✓	✓	★	★
Land Cover, Historical	★		★			★
Digital Elevation Models (DEMs)	★	✓	★	✓		

Weather and Climate Data

Precipitation, Current	★	✓		✓		★
Climate, Current	★	✓	★	✓		★
Precipitation, Future		✓		✓		★
Climate, Future		✓	★	✓		★

Hydrology Data

Historic Flood Locations	✓		★		★	★
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Research Needs - White House Task Force

Coastal Green Infrastructure and Ecosystem Services

ECOSYSTEM-SERVICE ASSESSMENT: RESEARCH NEEDS FOR COASTAL GREEN INFRASTRUCTURE

PRODUCT OF THE
Committee on Environment, Natural
Resources, and Sustainability

OF THE
NATIONAL SCIENCE AND TECHNOLOGY COUNCIL



August 2015

- Report recommends areas for prioritized Federal research to support integration of coastal green infrastructure into risk reduction, climate-resilience planning, and decision making.
- Useful reference for planners and decision makers when considering factors that should be taken into account when considering if, when, and how to integrate these approaches.



Questions?



Thank you!

For more info: katya.wowk@noaa.gov

Sutton-Grier et al. 2015. Future of our coasts: The potential for natural and hybrid infrastructure to enhance the resilience of our coastal communities, economies and ecosystems. Environmental Science & Policy.

