

Marine Planning

- TNC has developed marine spatial plans for 12 years in 15+ regions in US, Caribbean, S. America & Asia-Pacific – plans & data made widely available & published in peer review journals
- TNC developing marine multi-objective approaches - account for conservation, coastal hazard, fishery & energy objectives (e.g., <http://marineplanning.org>)
- Has developed interactive decision support for including climate factors into planning (www.coastalresilience.org)
- Developed Best Practices for MSP advice (http://www.nature.org/initiatives/marine/files/msp_best_practices.pdf)

MarinePlanning.org



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Marine Zoning

▼ Venezuela
Energy Development

■ Assessing Biodiversity

■ Assessing Energy
Development

▼ Planning for Multiple
Objectives

■ Case 1: PDVSA

■ Summary

► USA Gulf of Mexico
Coastal Hazards

► USA West Coast
Fisheries

► USA Pacific NW
Land-Sea Integration

► Resources

PLANNING FOR MULTIPLE OBJECTIVES

Balancing Oil Development with Biodiversity Protection

In anticipation of the plan of the potential risks to V Nature Conservancy and Science at Simón Bolívar U conservation of marine bi used by the energy indus identified for conservation

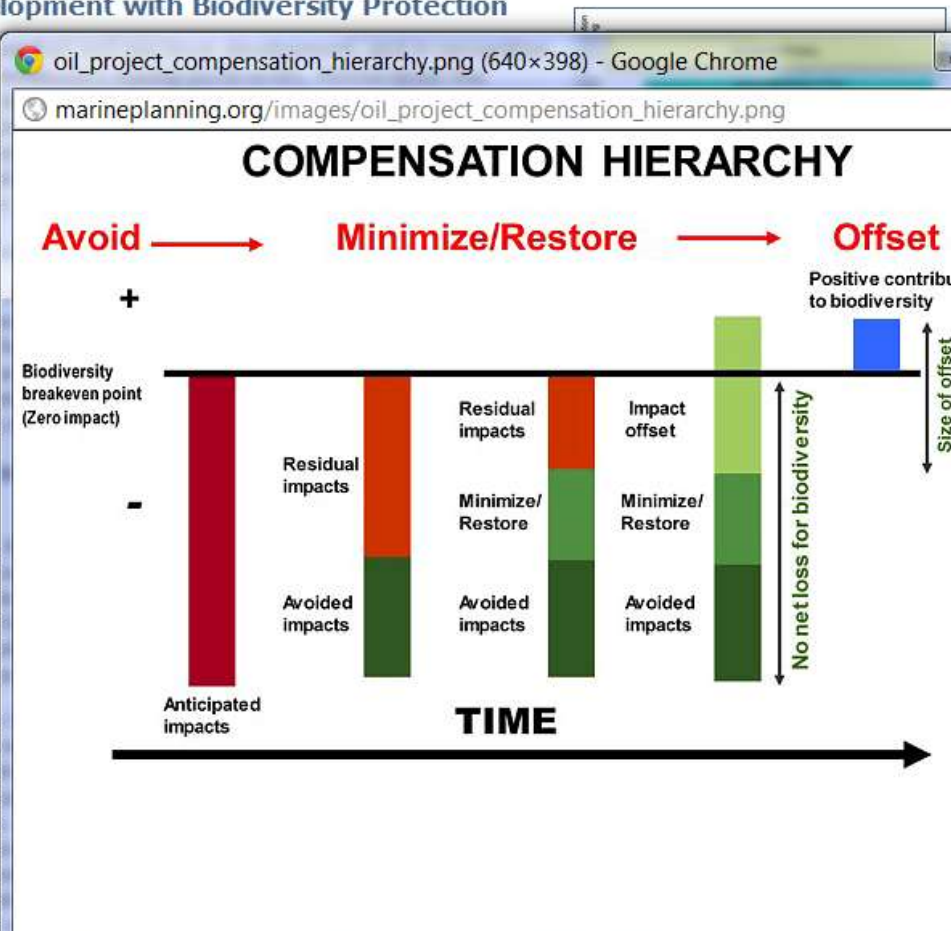
Science-Based Co

This study of priorities for involved more than 30 Ve use expertise. The study The Nature Conservancy Energy and Biodiversity I and energy firms to make

Environmental Sta and Gas Lessee

Through this partnership, proposed a set of conser to be incorporated into the lease, and they identified addition to government e PDVSA will include these

In Venezuela, The Nature used a compensation hie — as a framework for add and gas development pro option is to **avoid** impacts then environmental pract impacts, and ecological re minimization, and restora net environmental impact



Marine Spatial Planning

- Marine spatial planning (MSP) is a process to develop a blueprint for area-based management that accounts for multiple management objectives
- Three examples
 - Washington (State legislation)
 - Mid-Atlantic (Regional Council)
 - New York/Connecticut (local planning)



Marine Planning

Practical approaches to ocean and coastal decision-making






Washington Marine Planner

washington.marineplanning.org

My Shapes

Shared With Me



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New Multi-Objective Scenario

Step 1 of 4

Choose 1 or more Objective from the following categories. *

Renewable Energy ([Hide Objectives](#))

☒ Tidal Energy

☐ Wave Energy

☐ Wind Energy

Conservation ([Hide Objectives](#))

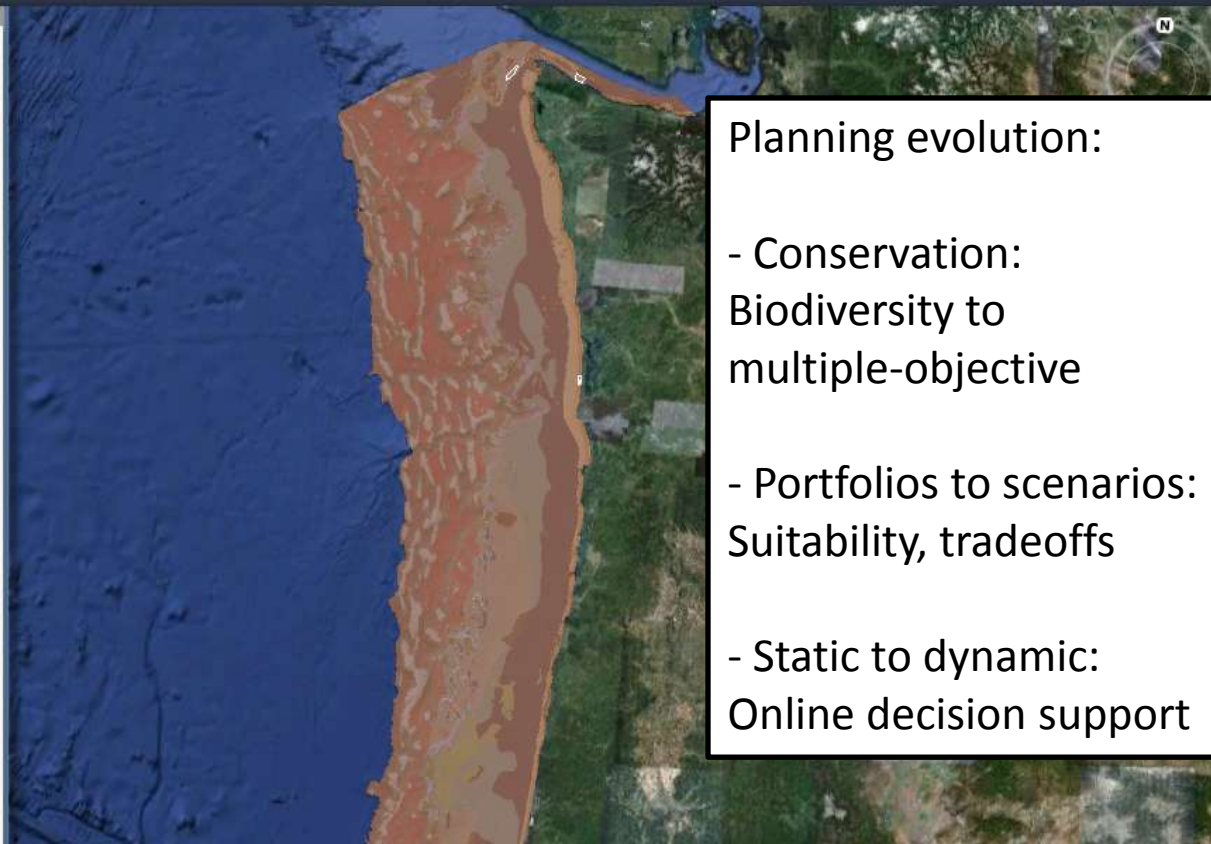
☐ Offshore Conservation

☒ Nearshore Conservation

☐ Water Column Conservation

Cancel

Next >



Planning evolution:

- Conservation:
Biodiversity to
multiple-objective
- Portfolios to scenarios:
Suitability, tradeoffs
- Static to dynamic:
Online decision support

Shoreline Master Plan characterization

My Shapes

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SMP CharacterizationShoreline Master Plan - Willapa

AttributessReports

Instructions:Beach ErosionShoreline UsePublic Access

Aquaculture

Land Use ?

Undeveloped	Residential	
5.09 sq miles	0.15 sq miles	
Manufacturing	Transportation	Trade
0.00 sq miles	0.03 sq miles	0.00 sq miles
Services	Cultural	
0.01 sq miles	0.04 sq miles	

Marine Infrastructure ?

Number of Structures by Type ?

Boat Ramp (1)
Breakwater/Riprap (3)
Bridge (9)
Buoy and Float (3)
Causeway (8)
Clustered Pilings (1)
Landfill (1)
Large dock (30)
Small dock (7)
Support (1)
Unknown (1)

Nearest Public Access Site ?

City Of South Bend Boat Haven (0.0 miles)



Trade off analysis

Conservation and Energy objectives

My Shapes **Shared With Me**

Tradeoff Collection **Examination of Tradeoffs**

Attributes **Multi-Objective Tradeoffs**

Introduction Chart Table

The multi-objective tradeoffs reports help you compare the conservation and renewable energy scores for your shapes.

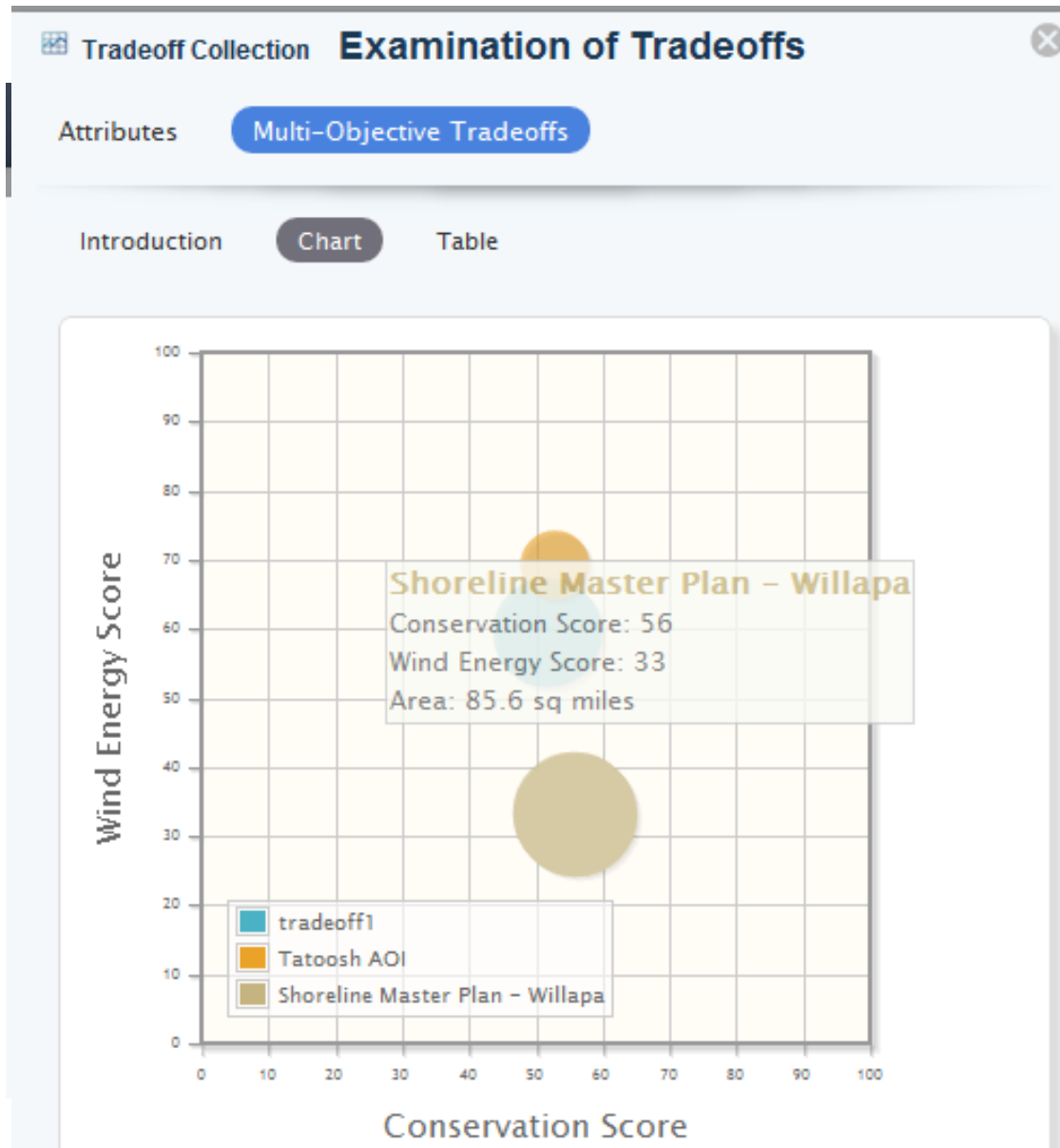
Select the shapes you would like to include in the report:

Areas of Interest:	SMP Characterization Sites:
tradeoff1 <input checked="" type="checkbox"/>	smp1 <input type="checkbox"/>
Tatoosh AOI <input checked="" type="checkbox"/>	Shoreline Master Plan - Willapa <input checked="" type="checkbox"/>
tradeoff2 <input type="checkbox"/>	

[How were my shapes scored?](#)

Trade off analysis

Conservation and Energy objectives



DATA

ACTIVE



SEARCH

Administrative

Fishing

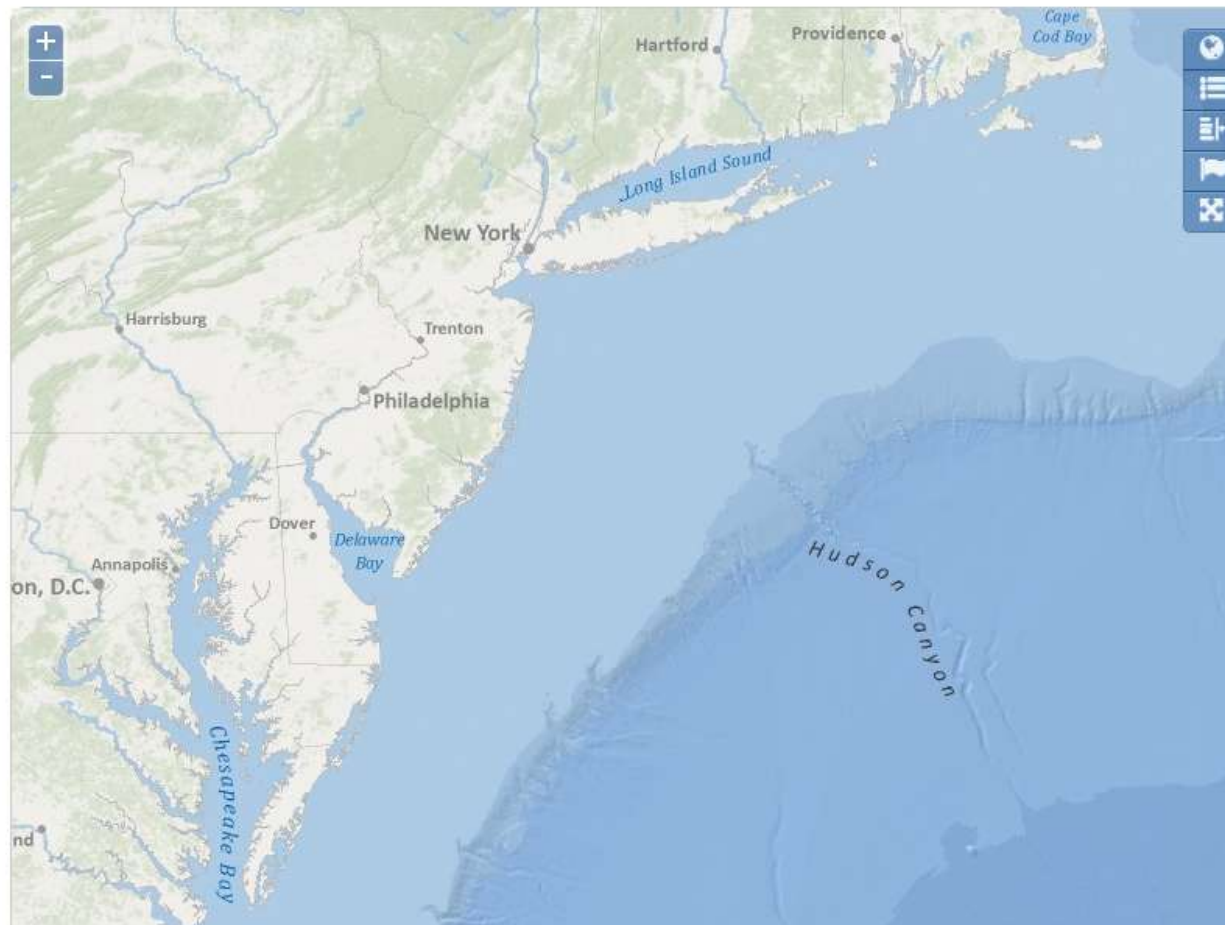
Marine Life

Maritime

Recreation

Renewable Energy

Security



Visualizing coastal impacts,
planning wisely for the future, and
making smart choices today



coastalresilience.org

Incorporating coastal hazards into
planning for climate adaptation



Decision Support



Geographies

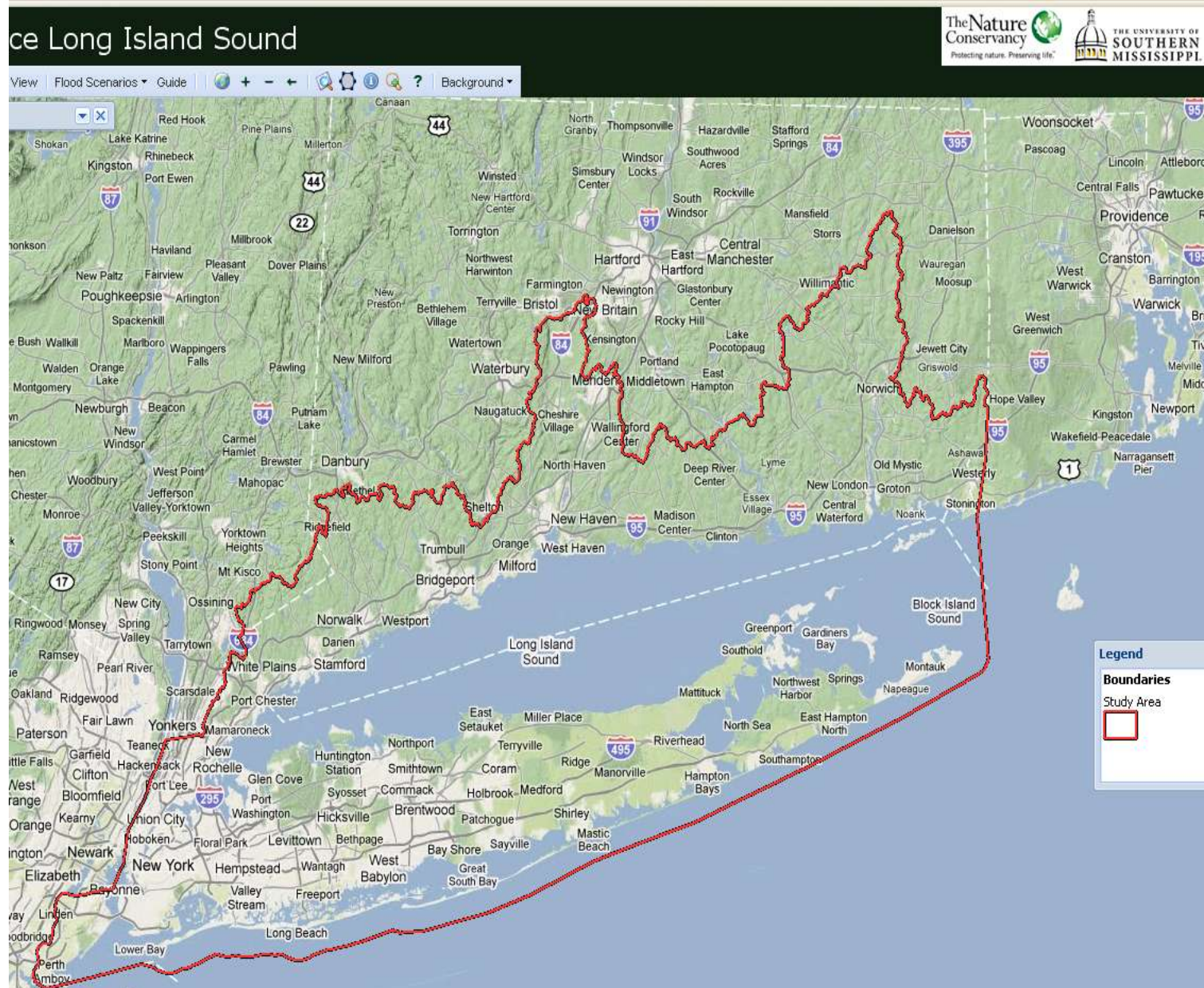


nature.org

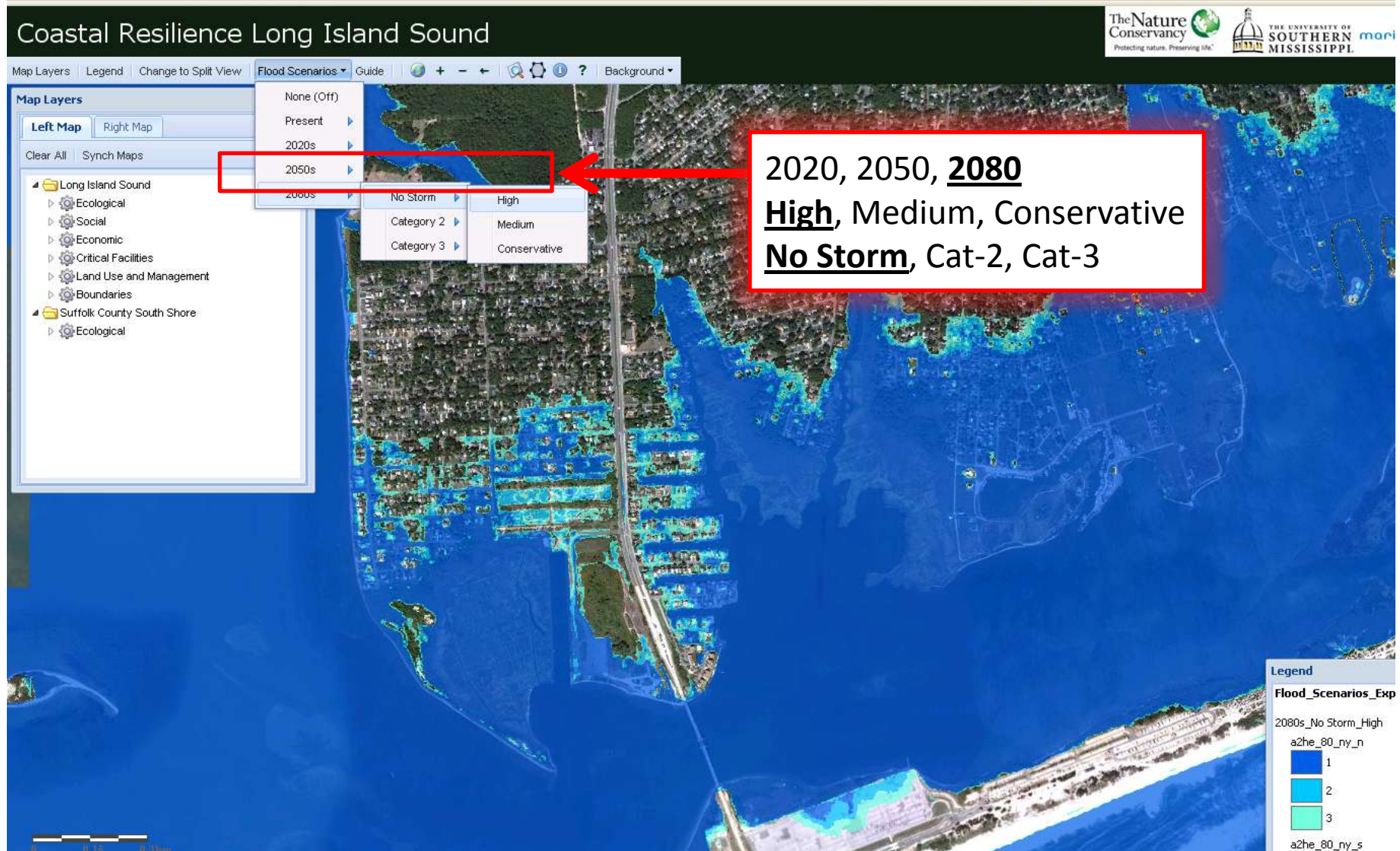


Solutions

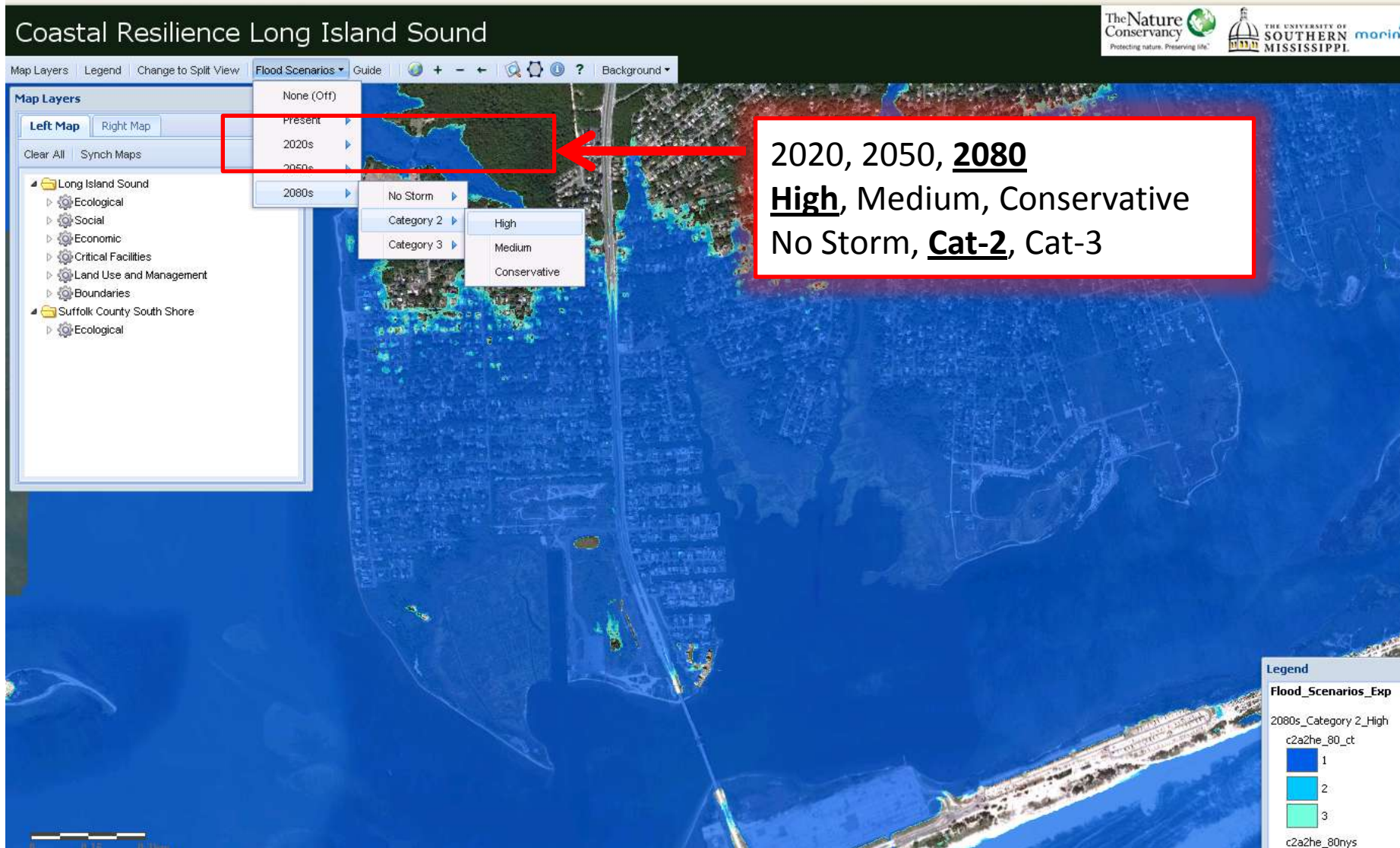
Coastal Resilience: Long Island Sound



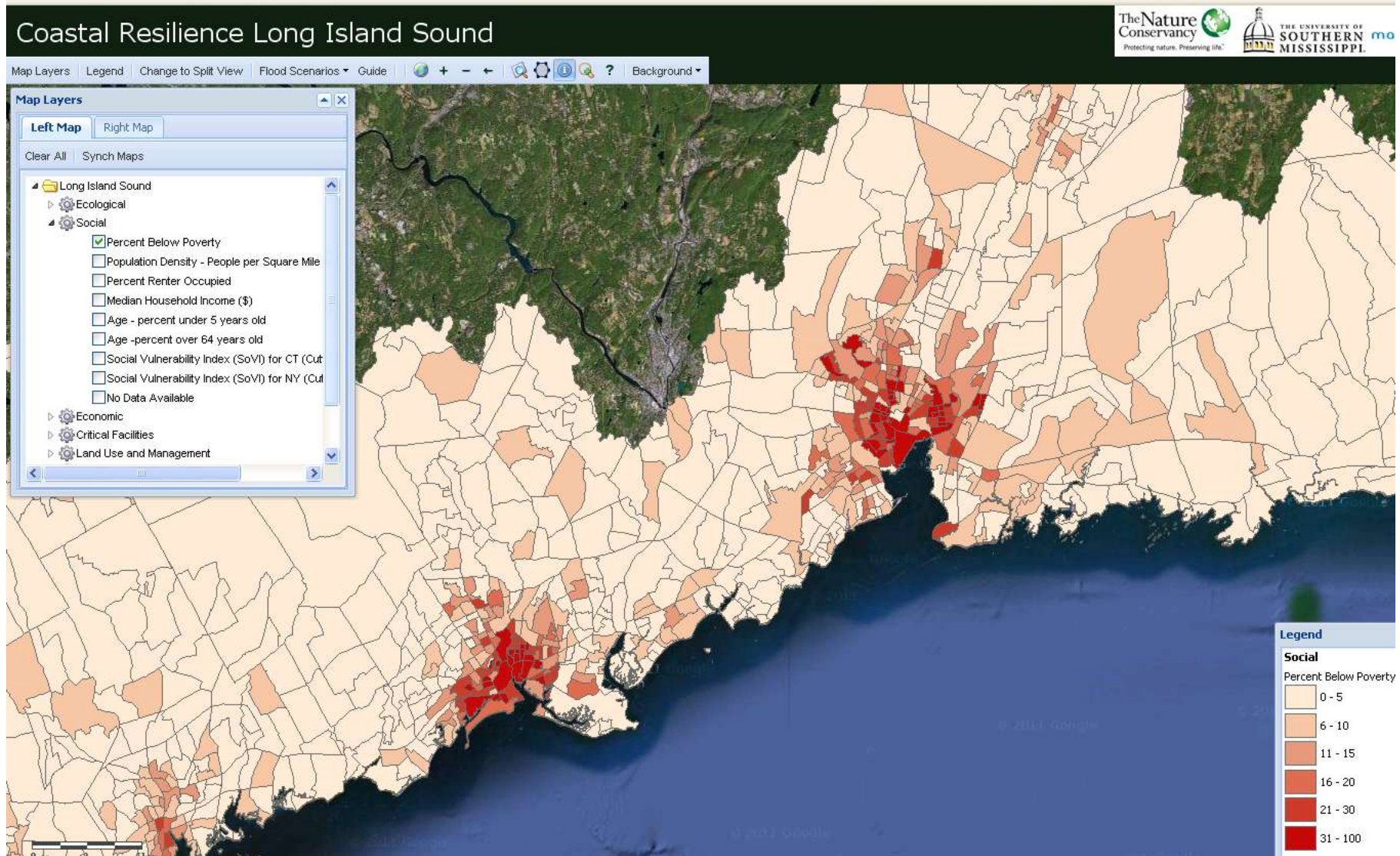
sea-level rise and storm surge scenarios



sea-level rise and storm surge scenarios



social vulnerability and risk



economic vulnerability and risk

Coastal Resilience Long Island Sound



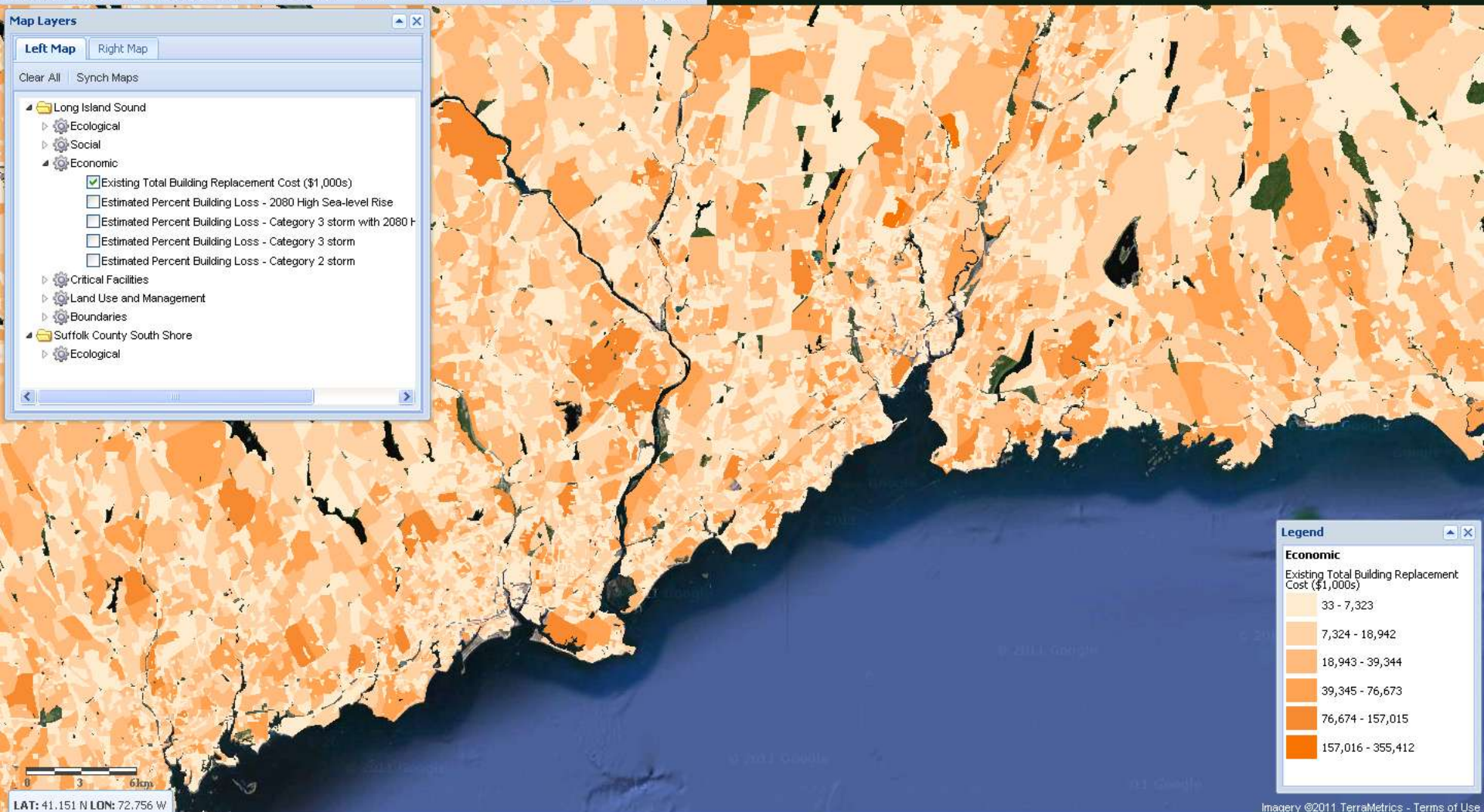
Map Layers Legend Change to Split View Flood Scenarios Guide Background

Map Layers

Left Map Right Map

Clear All Synch Maps

- Long Island Sound
 - Ecological
 - Social
 - Economic
 - ☒ Existing Total Building Replacement Cost (\$1,000s)
 - ☐ Estimated Percent Building Loss - 2080 High Sea-level Rise
 - ☐ Estimated Percent Building Loss - Category 3 storm with 2080 H
 - ☐ Estimated Percent Building Loss - Category 3 storm
 - ☐ Estimated Percent Building Loss - Category 2 storm
 - Critical Facilities
 - Land Use and Management
 - Boundaries
- Suffolk County South Shore
 - Ecological



Legend

Economic

Existing Total Building Replacement Cost (\$1,000s)

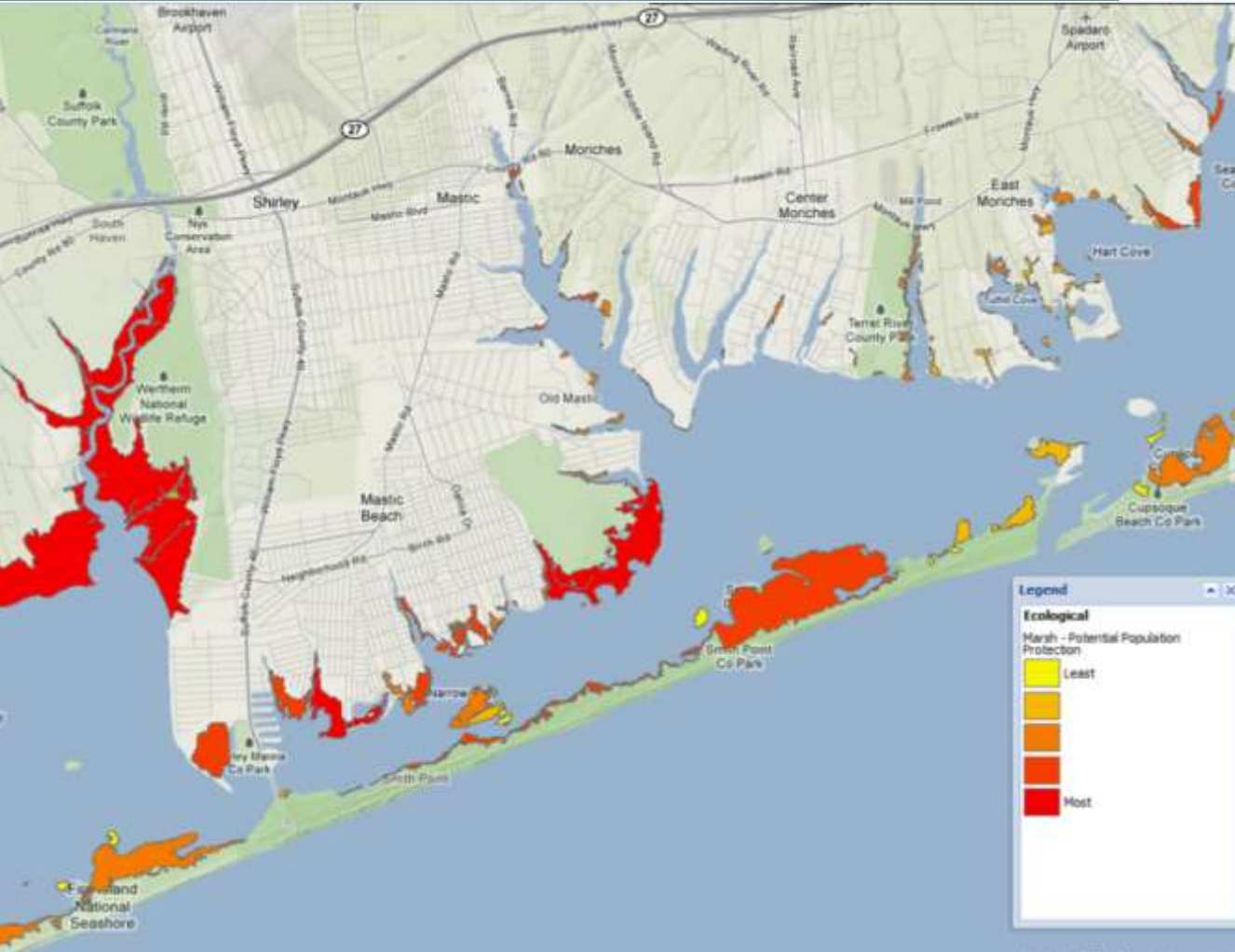
33 - 7,323
7,324 - 18,942
18,943 - 39,344
39,345 - 76,673
76,674 - 157,015
157,016 - 355,412

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conservation of ecosystem services

Coastal Resilience Long Island Sound

Map Layers Legend Change to



The Nature Conservancy
Protecting nature. Preserving life.

THE UNIVERSITY OF
SOUTHERN
MISSISSIPPI



“advancement zones” and “protective capacity”