Foster Love

Watch Hill

Cost Benefit Analysis of Coastal Resilience Methods

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Motivation for the project

To determine the most cost-effective and efficient strategy for Watch Hill to combat the threats of climate change:

- In an economic lens, the cost effectiveness of strategies hold a lot of weight.
- Making sure stakeholders are getting the biggest bang for their buck.
- Stakeholders need to see where benefits and costs are coming from to be able to come up with the most cost effective alternative .

Motivation for the project



Why we chose to conduct a Cost Benefit Analysis:

- A CBA provides a framework for analyzing data in a logical and consistent way;
- It yields a quantitative measure of the net benefit of an investment, allowing direct comparisons of dissimilar projects;
- It also encourages clear thinking about the estimated worth of a proposal relative to what would happen in the absence of the project (i.e., doing nothing) a difference that can be viewed as the value added;
- Alternatives can be ranked in terms of maximizing net present value

Project Goal

The goal is to determine which coastal resilience method is the most costeffective for the Watch Hill community by conducting a Cost Benefit Analysis of three various methods.

Grey Infrastructure



Retreat



ource: Wall Street Journal

Green Infrastructure



Source: Northeast Regional Ocean Council

Methodology - Grey Infrastructure



Costs

- 1. Current Seawall Removal
- 2. Materials, Labor and
 - Construction costs of new Seawall
- 3. Yearly Maintenance

Benefits

- 1. Tourism Revenue
- 2. Avoided Damages from a 100year storm event

Methodology-Grey Infrastructure



Seawall Properties

- 1. Seawall along Watch Hill Cove near entrance to Napatree Conservation area.
- 2. Length= 0.34 Miles
- 3. Height= 9.8 ft tall, 12 in. thickness

Seawall Visualization





Methodology - Green Infrastructure

- This alternative consists of working with natural coastal features (i.e., dunes, seagrass, salt pools) to improve flood-risk mitigation for the scenarios;
 - 3-feet of sea level rise and
 - a **100-year storm event**



Methodology - Green Infrastructure

Costs:

- Salt marsh restoration
- Seagrass restoration
- Dune restoration

Benefits:

- Reduced impact of inundation
- Recreational benefits
- Existence value of habitat/species
- Carbon offset



Methodology - Retreat

Costs:

- Structural Relocation
- New Site Preparation
- New Site Utilities
- Old Site Restoration
- Permitting
- Lost Revenue Larkin Parking Lot

Benefits:

- Value of saving structures
- Value of saving businesses/coastal tourism
- Aesthetics
- Historical Value of Ninigret
- Opportunity of lower flood insurance
- Save Ningret Statue



Structural Relocation #1

Bay Street and Fort Road:

Retail and Residential Condominiums

Stormtools Comparison



3'SLR: Light Blue shaded area

Bay St. Shops

Structural Relocation #2

Northern Bay Street:

Retail and Residential Condominiums

Ninigret Statue



Stormtools Comparison



3'SLR: Light Blue shaded area

Bay St, Sunset Ave, and Wauwi Ave Fork





Structural Relocation #3

100 Year Storm Scenario

- Sunset Ave & Waters Edge Rd
- Residential Housing

So where will we put these buildings?



Larkin Parking Lot

.1 miles from location #1 .3 miles from location #2

Owned by Watch hill Fire District

.89 acres

Conclusion

Net Present Values of Three Alternatives



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Thank you!