



Evaluating Preferences for Adaptation Choices Affecting Near-Coastal Residents

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Proposal Rationale:

Connecticut coastal residents lack incentives and information to better consider the public value of coastal ecosystem-assets and human-built assets. Human effort to protect built assets in response to increasing coastal flooding and storms can put natural assets at risk, thereby risking nature's contribution to the well-being of nearby communities.

This research will develop a model to enable citizens and community leaders to better understand the values of community residents broadly and to identify which good things people are more willing to give up in order to sustain other good things flowing from built or natural assets.

CIRCA Benefits:

This project addresses the Connecticut Institute for Resilience and Climate Adaptation's (CIRCA) core focus areas:

- Critical Infrastructure Resilience
- Coastal and Inland Flooding
- Sea Level Rise

Hypotheses:

People are willing to pay (WTP) more to support actions for coastal resilience if:

- Action does not adversely affect natural assets or the flow of coastal ecosystem services;
- Action offers a high probability for success;
- Action benefits neighborhoods and communities represented by lower income or socioeconomic opportunity;
- Coastal landowners benefiting from projects support projects designed to offset losses from ecosystem services of beaches, salt marshes, or tidal flats;
- Coastal residents benefiting from defensive adaptations bear a larger share of costs;
- Public support for adaptation stimulates voluntary changes by owners of coastal buildings.

Attributes for Creating Scenario Choices

Attribute Category	Attribute Levels
Landowner or decision-maker at level of proposed action; identifies human built assets	<ul style="list-style-type: none"> • Residential owner: high value • Residential owner: low value • Owner undeveloped coastal land • Municipal manager • Regional manager • Business community
Coastal geomorphological context or complications	<ul style="list-style-type: none"> • Beach (sand or rocky) • Salt marsh • River/riparian/estuarine • Bluffs or rocky headlands
Outcomes: Public trust resources (includes offsetting restoration, probability of success)	<ul style="list-style-type: none"> • Change in extent of beaches, salt marshes, tidal flats • Change in fishery productivity • Change in wildlife • Change in ecosystem health
Outcomes: human well-being	<ul style="list-style-type: none"> • Availability of public access (or new access) • Change in passive or active recreation potential • Change in business/tourism potential • Change in scenic aspects
Adaptation actions, including design life	<ul style="list-style-type: none"> • Armoring (seawalls) • Living shoreline (mixed strategy with natural components) • Explicit retreat; facilitates shoreline migration • No action (implicit retreat or delay of action)
Policy dimensions	<ul style="list-style-type: none"> • Cost to local residents' households • Cost share from other communities or state • Regulatory imposition directing landowner choice • Voluntary or incentive stimuli choice

Sample Choice Question (preliminary draft):

Your town is considering the following plans to mitigate the effects of, or adapt to sea level rise and shoreline flooding. Please consider their various tradeoffs and check the box for the scenario you MOST prefer.

	Take No Action	Plan A: Living Shoreline and House Relocation	Plan B: Repair Existing Seawall and House Relocation
	 Flooded Developed Dry Land Beach Inland fresh marsh Regularly-flooded marsh Marsh that floods following storms Transitional Salt Marsh (between dry land & water)	 Flooded Developed Dry Land Beach Inland fresh marsh Regularly-flooded marsh Marsh that floods following storms Transitional Salt Marsh (between dry land & water)	 Flooded Developed Dry Land Beach Inland fresh marsh Regularly-flooded marsh Marsh that floods following storms Transitional Salt Marsh (between dry land & water)
Impacts		Impacts	Impacts
Land Composition	<ul style="list-style-type: none"> -50% area public sandy beach -25% area private sandy beach -50% area developed, dry land +25% area salt marsh 	<ul style="list-style-type: none"> -25% area public sandy beach -10% area private sandy beach -25% area developed, dry land +50% area salt marsh 	<ul style="list-style-type: none"> -10% area public, sandy beach -10% area private, sandy beach -10% developed dry land +25% area salt marsh
Native Habitat	<ul style="list-style-type: none"> -20% high quality native bird habitat -50% high quality fish habitat -50% high quality shellfish habitat 	<ul style="list-style-type: none"> -50% high quality native bird habitat +10% high quality fish habitat +25% high quality shellfish habitat 	<ul style="list-style-type: none"> +20% high quality native bird habitat -25% high quality fish habitat -50% of high quality shellfish habitat
Human Built Assets	<ul style="list-style-type: none"> 1/50 high-value homes will be flooded after a storm 1/100 low-value homes will get flooded after a storm 1/9 local business will get flooded after a storm 	<ul style="list-style-type: none"> 1/100 high-value homes will be flooded after a storm 1/100 low-value homes will get flooded after a storm 1/25 local businesses will get flooded after a storm 	<ul style="list-style-type: none"> 1/75 high-value homes will be flooded after a storm 1/100 low-value homes will get flooded after a storm 1/50 local business will get flooded after a storm
Infrastructure	<ul style="list-style-type: none"> +50% probability major access roadway will be flooded and closed for more than one day 	<ul style="list-style-type: none"> +10% probability major roadway will be flooded and closed for more than one day after a storm 	<ul style="list-style-type: none"> +25% probability major access roadway will be flooded and closed for more than one day
Cost	\$0 for your household	\$50 for your household	\$60 for your household
	I would vote for this plan <input type="checkbox"/>	I would vote for this plan <input type="checkbox"/>	I would vote for this plan <input type="checkbox"/>