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Catalog of State Adaptation Actions

Future Built Environment & Infrastructure

A catalog of state-level, vulnerability-reducing adaptation actions and policy options.

Key to Future Rankings of Options in the Tables that Follow:

Potential Adaptive Capacity Increase <u>1/</u>	Potential Cost or Cost Savings <u>1/</u>
High (H): Able to reduce significantly climate risks associated with the highest impact magnitudes	High (H): Cost-benefit ratio in excess of 1.5
Medium (M): Able to significantly reduce climate risks associated with the medium impact magnitudes	Medium (M): Cost-benefit ratio between 1.0 and 1.5
Low (L): Able to significantly reduce climate risks associated with the lowest impact magnitudes	Low (L): Cost-benefit ratio less than 1.0
Uncertain (U): Not able to estimate at this time	Uncertain (U): Not able to estimate at this time
<u>1/</u> Several measures may overlap in terms of vulnerability reduction and/or cost impacts. Estimates assume measures would be implemented independently from other measures.	

Definition of “Priorities for Analysis”:

- **High:** High priority options will be analyzed first.
- **Medium:** Medium priority options will be analyzed next, time and resources permitting.
- **Low:** Low priority options will be analyzed last, time and resources permitting.

Notation of Options:

- **Options marked in bold an asterisk (*)** indicate some of the related state actions that are approved or underway, as described further in the companion options description document. TWG members are encouraged to provide information on other relevant actions.

Future Built Environment & Infrastructure Adaptation Options

Option No.	Adaptation Policy Option	Flexibility	Capital intensity	Adaptive capacity	Level of consensus	Notes
1	(Managed) Retreat (understood as taking out what is currently in place)					
1.1	Site industrial systems away from areas vulnerable to changes in sea level rise and associated hazards					
1.2	New building codes, design standards including setback zones and phased-out or no development in areas exposed to sea level rise and associated hazards					
1.3	Relocation of threatened structures					Possible policy mechanisms: Develop rolling easement program; Develop rolling buffer program; Creating upland buffers
1.4	Develop and use insurance policies to drive and support retreat activities					
1.5	Guide future development out of areas vulnerable to sea level rise and associated hazards					
1.6	End permitting of new homes in areas vulnerable to sea level rise and associated hazards					
1.7	Develop a strategy for managing the retreat of (Small and large) ports and associated infrastructure, such as rail and roads					
1.8	Develop a strategy to assure long-term public access to water					
1.9	Buy out unused properties in areas vulnerable to sea level rise and associated hazards					
1.10	Develop retreat strategies for the management of existing structures or conditions that may become submerged hazards to navigation or public health (e.g. effluent outfalls, water intakes, septic fields, rockwalls, docks, and piers)					
1.11	Develop strategies to address situations of changing ingress/egress					

Option No.	Adaptation Policy Option	Flexibility	Capital intensity	Adaptive capacity	Level of consensus	Notes
	to structures as support for access roads in areas vulnerable to sea level rise and associated hazards is withdrawn					
2	Avoid (placing people and property at risk)					
2.1	Minimization of paved surfaces and use of trees to reduce flooding					
2.2	Require that counties act on comprehensive planning requirements					
2.3	Integrate critical area planning requirements with comprehensive planning laws, including emergency planning and infrastructure planning requirements					
2.4	Strengthen existing critical area planning and implement requirements to address SLR and associated coastal hazards					
2.5	Develop a strategy to regularly update floodplain maps					
2.6	Application of hard structural options (such as dikes, levees, floodwalls, and saltwater intrusion barriers) and soft structural options such as dune restoration and creation Wetland restoration, creation, periodic beach nourishment, temporary barriers and other options					
3	Accommodate					Consider resilience and redundancy in policy
3.1	Storm-surge early warning system and adequate response, evacuation plan					
3.2	Hazard insurance					* Cross cutting issue
3.3	Modification of land use, agricultural , and landscape practices including aquaculture, saline-resistant crops, depending on location and purpose					
3.4	Strict regulation of hazard zones					
3.5	Raise shoreline structures					
3.6	Create standards for floating piers					
3.7	Establish a mechanism to evaluate and					

Option No.	Adaptation Policy Option	Flexibility	Capital intensity	Adaptive capacity	Level of consensus	Notes
	recommend new design standards for structures (and placement of mechanical and electrical equipment) that may be vulnerable to SLR and associated hazards					
3.8	Design industrial systems to reduce vulnerability to future sea level rise and associated hazards					
3.9	Institute new hazard-resistant building codes and design standards to reduce vulnerability of structures to future sea level rise and associated hazards					
3.10	Establish a coordinating mechanism to assure that local governments act in concert with the state to reduce future impacts from SLR and associated hazards					
3.11	Synchronize future design with emergency planning infrastructure requirements					
4	Research and Data needs					
4.1	Investigate opportunities and innovations with potential to benefit the economy, public services, and business sectors					
4.2	Create inventory of infrastructure vulnerable to future SLR and associated hazards					
4.3	Create on-line mapping capability for multiple audiences including local governments					Process already well along
4.4	Create visualization tool for SLR and associated hazards					Google Earth?
4.5	Surveillance and monitoring of sea-level rise					
4.6	Investigate potential and limitations of eminent domain, vesting, grandfathering, and amortizing strategies to support retreat activities					
4.7	Assess financial impact of property					

Option No.	Adaptation Policy Option	Flexibility	Capital intensity	Adaptive capacity	Level of consensus	Notes
	value changes					
4.8	Investigate consequences of application of hard structural options (such as dikes, levees, floodwalls, and saltwater intrusion barriers) and soft structural options such as dune restoration and creation Wetland restoration, creation, periodic beach nourishment, temporary barriers and other options					
4.9	Evaluate the potential risks and opportunities to a ferry system (incl. public transportation and emergency planning)					
4.10	Research to update guidance on landscaping, including a climate zone map					
5	Capacity Building and Training					
5.1	Establish structured capacity building and training for key adaptation sectors including building trades, infrastructure, finance and insurance, landscapers and others					
5.2	Establish structured training and vocational support for trades and others involved in implementation of new design standards					
5.3	Establish structured capacity buildings and training for public servants					
5.4	Integrate climate change and adaptation issues into advanced training in university, community college, and technical training programs					