

Executive Summary
A Model Sea-Level Rise Overlay Zone
For Maryland Local Governments

Expert Review Report – November 2011

1. Introduction: Statement of Problem

With over 3,000 miles of coastline, Maryland is extremely vulnerable to the impacts of sea-level rise (SLR). Even a modest rise in sea levels will cause dramatic impacts to development and natural resources along the state's shoreline. Physical impacts include the inundation of low-lying shorelines, the exacerbation of erosion, and damage from increasing extreme weather events.

Local governments face tough legal and policy questions when developing and carrying out plans to adapt to these impacts. In order to implement coastal adaptation measures, local governments must navigate overlapping and sometimes conflicting state and federal laws, which were often designed without consideration of a changing climate. As we discovered in Maryland, state laws may frustrate or prohibit localities from implementing certain adaptive measures. Existing laws often leave little room for local governments to flexibly balance the competing demands on coastal resources – economic development and environmental preservation.

In addition to legal barriers, local governments face tough policy questions when deciding on the best adaptation options for their community. Communities must consider the economic and political feasibility of implementing new regulations, and the administrative and technical capacity of their staff to enforce new regulations. Different communities have different risks, different states of development, and different adaptation goals. For example in Maryland, densely developed, historic cities like Annapolis will have limited options to retreat from the coasts and are more likely to use coastal armoring to protect development. Meanwhile, Ann Arundel County, with over 530 miles of less developed, more rural coastline, will face fewer physical barriers to retreat, but economic constraints and environmental concerns may limit the viability of hard protection. Maryland serves as an example to all coastal states—in order to develop an effective adaptation strategy policymakers will have to consider the specific socio-economic, geographic and political characteristics of their communities and tailor their regulatory responses to meet unique local needs.

2. Solution: Adaptation through Zoning

Despite the challenges, local governments have broad powers to prepare their communities for SLR using zoning. The purpose of this project was to develop a model sea-level rise ordinance to help local governments use land-use regulations to adapt. The model was designed to provide local governments with flexible mechanisms by which they can tailor regulations to meet the needs of their community and its particular vulnerabilities.

The model ordinance (Appendix A) employs two strategies for helping local governments adapt floodplain regulations to the increased threats posed by SLR. First, the ordinance extends the boundaries of the regulated floodplain to protect development that will become increasingly vulnerable to impacts as SLR drives flooding further inland. Second, the ordinance designates two floodplain sub-districts where special regulations are imposed; each designed to effectuate the community's adaptation goals for different areas.

- The Floodplain Conservation District (FCD) is designed to protect natural resources and provide for the gradual relocation of development in highly vulnerable areas. The FCD could include highly vulnerable areas that have sensitive natural resources and that are unsuitable for hard-shoreline protection. The following tools are employed in the FCD to effectuate these purposes:
 - *Downzone*: limit development and redevelopment to low-density/low-intensity uses (such as agricultural, recreational, or open space).
 - *Increase setbacks*: require that structures be setback on the lot as far landward or upland on a site as feasible (“maximum practicable setbacks”).
 - *Limit the size and height of structures*: permit only smaller structures that will be more easily relocated, will put fewer people at risk, and will minimize the economic consequences of floods.
 - *Restrict rebuilding*: prohibit redevelopment of storm-damaged structures in highly vulnerable areas or prohibit redevelopment of repetitive loss structures.
- The Floodplain Accommodation District (FAD) is designed to allow for continued development while requiring that structures be sited and built to be more resilient to impacts. The FAD may include areas with intense to moderate existing development, some ecologically sensitive resources, and limited viability for hard-shoreline armoring. Tools employed in the FAD include:
 - *Downzone*: limit new development of critical facilities or require that more intense uses obtain a special use permits.
 - *Increase setbacks*: apply erosion-based or tiered setbacks for waterfront properties.
 - *Increased freeboard*: require additional freeboard consistent with estimates for projected SLR (2.7 to 3.4 feet in Maryland).
 - *Limit building size and densities allowances*: consider requiring smaller, less dense development than would be allowed by the base zoning.

Originally, this model also proposed the creation of a “protection subdistrict” where local governments could designate, in advance, areas where they will allow hard armoring of the shoreline. However, Maryland’s Living Shorelines Protection Act preempts local regulation of shoreline armoring. Because jurisdictions in other states may not face similar constraints, the model includes provisions that other jurisdictions could use to regulate shoreline armoring (provisions which were ruled out as infeasible for Maryland local governments).

In drafting the model, we focused on drafting the special *development standards* for new construction and redevelopment in areas vulnerable to SLR (described above). However, when implementing these tools, local governments will also need to weigh different community-specific tradeoffs to decide on:

- Issues of design: where to apply the tools, how to draw the boundaries for each subdistrict, and what uses to permit in each subdistrict; and
- Administrative provisions: how to integrate new SLR regulations into the general administrative provisions of the zoning ordinance, such as whether to require developers to consider SLR in site plans; how to phase out existing uses and structures that do not comply with new SLR regulations (i.e., nonconformities); and how to administer variances within each subdistrict.

3. Analysis: Testing the Ordinance

Models, however, are only as useful as the real-life changes they help to promote. Therefore, after completing a draft of the model ordinance, we tested the model in Maryland in order to identify any legal or policy barriers to implementation.

Legal: Each tool was tested against federal and state laws to determine whether localities can legally implement a tool:

- **Authority:** Local governments are creations of the state and, as a result, can only exercise those powers delegated to them by their state legislatures. In Maryland, local governments likely have sufficient authority to use zoning powers to address SLR. Maryland is a home rule jurisdiction, meaning the state has delegated broad powers to its local governments to regulate for public health, safety and welfare. Because SLR clearly poses clear public threats, local governments have the authority to use land-use regulations to mitigate potential impacts. However, as discussed below, other state laws may preempt or limit local authority to implement specific tools, such as prohibiting hard-shoreline armoring and rebuilding after storm events.
- **Consistency with federal laws:** Although land-use regulation is typically a local concern, local governments must ensure that regulations comply with overlapping federal regulations. We analyzed each tool for consistency with the following federal statutes.

To participate in the **National Flood Insurance Program (NFIP)**, Maryland local governments must impose minimum regulations on development in floodplains. Although NFIP minimum requirements will be insufficient in addressing SLR, local governments must nonetheless comply with the Program in order to maintain their community's eligibility for federal flood insurance. To do so, the model ordinance proposes that local governments use existing flood zones delineated on NFIP floodplain maps (FIRMs) to determine where to impose new regulatory requirements. Under the NFIP, local governments must regulate development in A-zones (the "100-year floodplain," areas that have a 1 percent chance of flooding based upon historic data), and V-zones (areas of the 100-year floodplain that are also subject to wave action). Floodplain maps also designate X-zones (the so called "500-year floodplain" that has between a 0.2 percent to 1 percent annual risk of flooding), but the NFIP does not require that these areas be regulated. While NFIP flood zones are only designated based upon *historic* flooding, they document scientifically-verifiable risk and can be used, in combination with SLR studies, to justify enhanced regulations. The model proposes that local governments augment regulations in the floodplain in two ways. First, it proposes that localities extend minimum floodplain regulations to the 500-year floodplain (X-zones (shaded)). Second, in the regulated floodplain (A-zones and V-zones), the model proposes that local governments impose special enhanced regulations based upon the community's adaptation goals for certain areas (accommodation or retreat, discussed above). By following existing floodplain boundaries, local governments can maintain compliance with the NFIP while enhancing regulations to increase their community's resilience to SLR, in a legally justifiable manner.

The **Americans with Disabilities Act's (ADA)** accessibility requirements could conflict with building elevation requirements proposed in the model. Although residential structures and many small businesses are exempted from ADA accessibility requirements, numerous businesses and government facilities that are open to the public are not exempt. NFIP minimum regulations only require that residential structures be elevated, however, any new regulations that require non-residential buildings to be elevated (such as critical facilities) may pose substantial burdens on these businesses that must comply with the ADA. ADA rules apply to both new construction and alterations to existing facilities covered by the Act; generally, alterations to existing facilities cannot make the building less accessible. To maintain accessibility, the ADA could require that elevators or ramps be installed, unless the structures qualify for an exemption. Therefore, policymakers may want to consider regulatory alternatives to elevation requirements for some structures, such as floodproofing options or possibly even relocating critical facilities out of the floodplain.

- **Consistency with state law:** Local governments must also ensure that new regulations comply with myriad state laws. In the case of SLR regulations, state law may pose the biggest obstacle to local implementation. In Maryland, the following state laws may prohibit or limit the ability of local

governments to implement specific tools, such as limitations on hard-shoreline armoring, rebuilding restrictions, and downzoning.

The **Maryland Living Shoreline Protection Act**, enacted in 2008, removes local control over shoreline armoring and delegates permitting authority to the Maryland Department of Environment (MDE). The Act will affect armoring decisions in two important ways: It establishes a preference for soft – or living – shoreline protection; landowners who wish to construct hard armoring will have to show that living shorelines are not viable for their property on a case-to-case basis. It also establishes a streamline process for permitting hard-shoreline armoring; the MDE is directed to map areas that are infeasible for living shorelines. As a result, local governments may want to coordinate with MDE on implementation of the Act because armoring decisions will be a critical component of their adaptation strategy.

The **Critical Areas Act (CAA)** provides both opportunities and barriers to adaptation. Local governments could use Critical Area development designations (Intensely Developed Areas, Limited Development Areas, and Resource Conservation Areas) to inform where they draw the boundary lines for each SLR subdistrict. Through these designations, the Critical Areas Commission and local governments have already determined the state of existing development and the natural resources present in the area. The Critical Areas buffer also presents an opportunity for adaptation; the buffer establishes a rolling setback that will protect development from flood impacts and provide space for ecosystems to migrate upland as sea levels rise. However, the Act could present a barrier. The Act includes grandfathering provisions that require local governments to allow for the continuation of uses that pre-date the Act, unless the use is “abandoned”. This may limit the ability of localities to restrict redevelopment of storm-damaged structures or downzone grandfathered structures in vulnerable areas.

Historic preservation requirements may also limit adaptation options in communities with many historic structures. Historic preservation is primarily administered at a local level in Maryland. Although there are state and federal laws that encourage historic preservation, these laws do not limit the alteration or demolition of private property. Instead, pursuant to state delegation, local governments can regulate historic properties through the creation of Historic Area Overlay Zones where a Historic Preservation Commission (HCP) is appointed to review and approve changes to historic properties. HCPs review changes based upon considerations of the structure’s architectural significance and other aesthetic factors. It is unclear whether HCPs consider a structure’s risk of flooding when approving exterior changes. Historic preservation requirements may conflict with or make it more expensive to elevate or retrofit historic structures to protect against flood damage. Additionally, rebuilding restrictions may not be feasible in historic districts because such policies will conflict with state and local goals to preserve these cultural resources.

- **Consistency with constitutional laws:** The primary concern that most local governments have when enacting new regulations is that they will be sued for violating constitutional protections of property rights. Both the United States and Maryland Constitutions prohibit regulatory actions that (i) “take” private property without just compensation (5th Amendments “takings”) and (ii) are arbitrary or unreasonable (substantive due process).

Takings law prohibits government regulations that “go too far”—regulations that effectively expropriate private property without the payment of just compensation. SLR regulations would likely be analyzed under one of two takings test: First, a regulation that deprives a property owner of all economically beneficial use is a taking *per se*, and requires compensation unless the government can show that the use would have otherwise been prohibited at common law (e.g., as a

public nuisance). Second, if a regulation does not constitute a *per se* taking, the court weighs three factors to determine whether the regulation nonetheless works a compensable taking: (i) the economic impact of the regulation, (ii) the character of the government action, and (iii) the reasonable investment-backed expectations of the landowner. Even though many of the issues raised by SLR regulations are novel and have not yet been specifically addressed by any court, local governments should not be overly circumspect in regulating to mitigate SLR impacts. While affected property owners often raise takings challenges to new regulations, these challenges are rarely successful. Maryland courts have upheld carefully tailored regulations that serve important public purposes, such as preventing public health impacts from septic, and where the regulation allows for some residual economic use of regulated lands. Additionally, laws that provide sufficient notice of regulatory changes and give property owners time to adjust their investment decisions based upon new regulatory restrictions have a much higher chance of overcoming a constitutional challenge.

Substantive due process requirements of the Constitution also prohibit irrational and unreasonable regulations. Thus, new SLR regulations must be rationally related to a legitimate public purpose. By using existing flood zone designations, new SLR regulations are likely to survive a substantive due process challenge. NFIP floodplain maps establish that these areas are at historic risk of flooding. Additionally, vulnerability assessments demonstrate that these areas will be subject to increasing impacts as sea levels rise over the next century, thus justifying enhanced regulation in these areas.

- **Integration:** Local governments must also ensure that each tool integrates with existing zoning frameworks. Land-use and floodplain regulations tend to differ significantly by jurisdiction. Therefore, policymakers will need to ensure that definitions are used consistently, that development standards in the SLR subdistricts are consistent with (or more restrictive than) the standards required by the other applicable zones, and that new regulations integrate with the general administrative provisions within the zoning ordinance. For a discussion of integration issues presented in each test jurisdiction see Appendix B.

Policy: In the testing phase, we also analyzed the policy considerations that local governments will need to weigh when determining whether they *should* implement a particular tool. There is no one-size-fits-all approach to adaptation because communities have widely different terrain, including different states of development, resources at risk (e.g., critical facilities, natural resources), potential for armoring, perception and sensitivities to risk, among other things. As a result, policies that may be politically untenable in one community may be well received in another. To help local governments assess which tools best fit their community, we provide a framework to help policymakers analyze each tool for potential policy barriers to implementation:

- **Costs/Benefits:** How much will it cost to implement a measure and what economic benefits will be achieved?
- **Political:** Will a measure face political opposition?
- **Administrative/Technical:** Does the local government have sufficient technical and administrative capacity and training to implement a measure?

4. Conclusions: Next Steps and Lessons Learned

Our next steps are to work with state, local and federal experts to determine the viability of implementing this model or certain provisions of this model on the ground in Maryland. Through this process we hope to explore the policy and technical questions that were beyond the expertise of the authors, but that will be necessary to address before new regulations can be enacted. We also hope that the methodology we used to create this model ordinance will serve as a case study that other jurisdictions can replicate when planning adaptive measures in their own communities.

From this project we learned that although local governments face many challenges, they also have a lot of options to address SLR.

- Local governments in many flood-prone communities have experimented and developed cutting-edge land-use tools to mitigate flood hazards. These policies can be borrowed and adapted in other jurisdictions to cope with SLR.
- Federal law will not prevent local adaptation efforts, but federal programs could be redesigned to better support local efforts and specifically address climate threats.
- Although courts have yet to weigh in on the issue, it is likely that local governments can carefully craft land-use regulations to address the substantial public harms threatened by SLR in order to avoid takings liability.
- State laws will likely pose the most significant barrier to adaptation. State laws tend to vary significantly between states, they apply different mechanisms to regulate different vulnerable areas (beaches, coastal wetlands, floodplains), and they may include some antiquated policies that could hinder or prohibit local adaptation efforts (such as grandfathering provisions that allow for the continuation of nonconforming uses). Therefore, a comprehensive review of state coastal laws may be required to ensure that adaptive policies conform to state legal requirements.