Winning Public Support for Addressing Climate Change

By Lawrence Susskind and Evan Paul

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A beach house on Chesapeake Bay's Holland Island, which is slowly disappearing due to erosion, land subsidence and sea level rise.

With 4,300 miles of coastline, most of Maryland sits within miles of the Atlantic Ocean or the Chesapeake Bay—and a third of the state lies between the two bodies of water. With sea levels rising, storms growing in power, and patterns of rainfall and summer temperatures changing, residents have already seen the resulting ill effects: coastal areas are losing large chunks of land to erosion, endangered species and habitats are threatened, and farmers fear that saltwater intrusion into

agricultural land along the coast will ruin productivity. Each year, the edge of the water creeps closer to homes and businesses.

While many people around the world are grappling with how to reduce greenhouse gas emissions over the next 50 years, those living in coastal areas like Maryland are pushing hard now to find immediate ways to cope with the current effects of climate change before their communities are destroyed.

In early 2007, Maryland's governor, Martin O'Malley, signed an executive order establishing the Maryland Commission on Climate Change, which was charged with developing a state Climate Action Plan. The Plan, one of the first of its kind in the country, not only addressed how to reduce Maryland's greenhouse gas emissions but also offered some initial thoughts on how to adapt to the effects of climate change. However, Maryland's commission and action plan were only the state's first steps on these issues. Tough questions like who should make what sacrifices, and how they should be paid for, are multimillion-dollar decisions that weren't yet addressed and rarely engender consensus. When interests clash around these kinds of trade-offs, public officials are often inclined to let the issue in question slide, and a stalemate ensues. Even in cases where parties want to find agreement, they often don't know how.

At MIT, we are experimenting with using gaming to help coastal communities address the risks of climate change and broker local agreements. The Maryland governor's office (and the state's commissioners of environment and agriculture) invited the Consensus Building Institute (CBI), a nonprofit mediation firm in Cambridge, Massachusetts, founded by Professor Susskind, and the MIT-USGS Science Impact Collaborative (MUSIC) to help stakeholders learn how to negotiate tough agreements related to climate change adaptation. Would a game that engaged large numbers of people who have conflicting interests make it possible to build a political constituency for action? Could a game really be the way to save these communities from the drastic effects of climate change? We believe our experience working with Maryland has found some promising results and may be instructive to others working to engage their communities in adaptation planning.

Twenty-six other states have created Climate Action Plans. However, most states have focused on policy changes that state governments are able to implement themselves, like setting energy efficiency standards or increasing a state's use of renewable energy. Only a few states have included changes requiring cities and counties to take action, which is one of the strengths of the Maryland plan.

The state's Commission on Climate Change recommended a range of community-level climate adaptation strategies such as reducing risks to the built environment, protecting the state's natural resource–based industries (e.g., farming and fishing), and strengthening coastal forests and wetlands as natural defenses against future storm surges. Its report also emphasized the need for state-level research and environmental monitoring.

Making such changes requires support from a diverse set of local actors. In Maryland, as elsewhere, there is conflict between state and local governments about who will control local development. Municipal officials bristle at state efforts to supersede local land-use regulation in the name of environmental protection or "smart growth." For a state to act, local fears need to be addressed so that resistance to state-imposed mandates can be overcome. Farmers, for example, may fear that new land-use restrictions might be imposed or that their right to use their land might be diminished. Insurers may try to control planning efforts to gain support for higher fees to insure coastal properties.

Many of the commission's proposed solutions to protect Maryland's coastal cities have previously been debated and rejected. Protective sea walls, for example, are incredibly expensive and impractical given the length of the state's coastline. Buildings in flood-prone areas could be redesigned to allow water to flow underneath them, but

many owners might oppose having their homes, shops, and factories rebuilt. City planners could try to rebuild or move existing bridges, roads, communication towers, power plants, water-pumping and sewage-treatment facilities so they wouldn't be destroyed by storm surges, but that too would be incredibly expensive. Planners might be able to induce some landowners to swap locations, moving coastal agriculture and other businesses inland. At the very least, local governments could halt further construction in flood-prone areas, but people waiting to build would be outraged. All of these steps are controversial—they involve spending a lot of tax revenue, telling people what they can and can't do with their property, and ignoring some risks entirely because all possible solutions are just too expensive or intrusive. And yet, as we argue, the water will keep rising.

One seemingly simple solution would be for the state or federal government to mandate local climate change adaptation planning, but even this is not a silver bullet. Unless all actors are onboard, cities and county officials will submit meaningless documents just to make sure higher authorities leave them alone. They won't produce an actual agreement among relevant political stakeholders because they don't know how. And,

even when the state offers grants to help communities figure out how to adapt to climate change, most cities and towns will say, "no thanks." Local jurisdictions are afraid of raising a complex problem that they can't solve, and they don't want to give the state a greater hand in telling them what to do.

When it comes to implementing complex change, all of the key stakeholders must at some point work together. While Maryland had the political will to form a commission and an initial plan, it didn't yet have a strategy to bring the various parties together to work through inevitable problems with adopting and implementing adaptation strategies. That's where we came in.

With support from the National Oceanographic and Atmospheric Administration (NOAA), we developed a multi-stakeholder negotiation game focused on climate adaptation in coastal communities. The purpose of the role-play simulation was to introduce local officials and citizen stakeholders to some of the choices they will need to make over the next few years given climate change. By engaging large numbers of people with conflicting interests in this short but powerful educational exercise, we thought it might be possible to build a political constituency for action. In the process of developing and running this

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Subcategory 1: Remove from harms way

1. Ban the building of new primary dwellings and prohibit the expansion of footprints on existing developed lots within the 100-year tidal floodplain.

2. Incorporate elements into the county's comprehensive plan that address and accommodate for sea level rise and an increased storm surge vulnerability zone. This could include provisions such as overlay zones, tiered zoning with increasingly strict regulations within areas of vulnerability, increased buffers in areas of vulnerability, etc.

3. Establish a transferable development rights (TDR) system to encourage swapping of land in coastal areas vulnerable to sea level rise and storm surge for inland parcels.

4. Develop a timeline and strategic plan to move or abandon existing infrastructure in areas subject to more frequent storm surge and damage due to sea level rise inundation.

5. Require mandatory disclosure statements about property's vulnerability to sea-level rise in all real estate transactions.

6. Establish and fund a buy-out program for the purchase of repetitive loss properties within the 100 year floodplain.

Subcategory 2: Protect in place

7. Require a 2-foot freeboard elevation above the FEMA requirements for all new and existing buildings in the 100-year tidal floodplain.

8. Develop an Infrastructure Improvement Plan that establishes timelines for raising roads and bridges, higher volume stormwater management, etc. based on vulnerability to sea level rise.

9. Provide tax rebates on investments in adaptation measures for homeowners and small business owners in at risk areas (e.g. elevating houses, upgrading well water and septic systems).

10. Create a comprehensive local adaptation plan.

11. Enhance federal flood insurance by contributing to a state insurance pool for homeowners and small businesses located in areas vulnerable to sea level rise and storm surge.

CATEGORY 2: Water & Wastewater Infrastructure

Subcategory 1: Increase supply

12. Use water banks/pools, and water markets to facilitate the reallocation of water resources.

13. Develop advanced wastewater treatment capacity for water reuse ("gray water").

14. Build a desalination plant to provide additional drinking water.

Subcategory 2: Decrease demand

15. Increase billing rates for water from $400/yr avg per household to $800/yr avg per household; use additional revenue to fund water efficiency measures.

16. Provide financial incentives (e.g., tax breaks, rebates) for switching to more efficient water technologies (e.g. manufacturing processes and appliances).

17. Include information on climate change impacts to water supplies and how residents can reduce water use in utility bill inserts, newsletters, web sites, and local newspapers.

18. Update drought management plans and/or water resources elements in the comprehensive plans to recognize changing conditions.

19. Require farmers to install high efficiency water delivery systems for irrigated agriculture.

CATEGORY 3: Protecting Wetlands and Wildlife

Subcategory 1: Protect existing assets

20. Expand critical area buffers to include land with historically tidal-influenced soils (i.e. hydric soils).

21. Create a county-level map showing areas that if protected, would provide suitable habitat over the long term for the maximum number of the county's terrestrial and wetland plant and animal species and natural communities.

22. Increase monitoring of existing wetlands and conservation areas to track changes in water levels, species composition and abundance.

Subcategory 2: Intervene to improve resiliency

23. Purchase ecological buffers, at market rate, to allow for inland preservation and migration of wetlands, salt marshes, and other natural flood control systems.

24. Target land preservation efforts for wetland and coastal systems that create wildlife corridors and artificial wetlands to enable species to move to higher elevation and latitudes.

CATEGORY 4: Farm and Forestland Preservation

Subcategory 1: Protect existing farm and forest assets

25. Modify agricultural practices to reflect increasing variability in historic weather patterns (e.g. change planting season, plant drought resistant crops, etc.).

26. Commission a state-supported study to determine the net present value for ecosystem services (e.g. pollination, water filtration, erosion control, carbon capture, etc) in the county to incorporate this value into future planning.

27. Increase monitoring and assistance for existing conservation easement landowners to ensure effective conservation is taking place on these lands.

Subcategory 2: Intervene to improve farm and forest resiliency

28. Provide tax rebates for farmers who use conservation and adaptation practices on land they own / rent / lease

29. Cut crop subsidies to farmers whose crops face repetitive loss damage from flooding

30. Require forested buffers on agricultural lands to improve resilience of adjacent waterways and wetlands.

31. Assess forested areas at risk of being lost and identify reforestation sites outside the sea level rise risk zone.

32. Develop a county tree canopy plan to increase tree coverage

CATEGORY 5: Public Education

Subcategory 1: Community Education

33. Publish an annual report highlighting local climate adaptation measures taken by local residents and businesses and measuring progress of locally defined climate adaptation goals.

34. Create a coast smart street or business program to recognize and promote local achievements in implementing adaptation strategies

35. Create citizen emergency preparedness teams to encourage readiness for the next major storm (e.g. people who will help their neighbors identify evacuation routes, shelters, etc.)

36. Create climate change information sessions for local governments to learn what they can do to promote climate adaptation planning.

37. Organize community workshops and forums to educate the general public about climate risks

Subcategory 2: Youth Education

38. Create a new school curriculum to introduce and reinforce understanding of climate change risks

39. Have schools adopt a section of shoreline at risk to climate change to study and work to protect (like an adopt-a-highway program)

Evan Thomas Paul

The coast-smart risk management scorecard.

game statewide in Maryland, elected and appointed officials could also learn a lot more about local reactions to various adaptation measures.

The role-play simulation that CBI and MIT designed is not a computer game. It is a kind of theater exercise in which people are assigned roles, given the background information they need to play a certain part, and asked to jump into something that looks like an improv skit.

To prepare for the game, Nathan Lemphers and Evan Paul, two MUSIC research fellows, interviewed local stakeholders in Maryland to gauge reactions to different options and to identify the likely costs and benefits associated with each possible adaptation policy. The tensions the

team identified were similar to those that arise in other planning and policy-making contexts—how to strike the right balance between individual choice and collective decision making, how to select between incentives and mandates, and what emphasis to place on present versus future concerns. In the Maryland case, these tensions were complicated by both the scientific complexity of the ecological systems involved as well as the uncertainty of when and how these systems might respond to changing climatic conditions. Localities are ill equipped to fully assess these issues on their own.

Lemphers and Paul collaborated with the staff at the Maryland Department of Natural Resources (DNR) and the members of the state's

Coastal Watershed Advisory Council (many of whom had served on the climate adaptation working group for the Climate Action Plan). Lemphers and Paul also worked closely with the MUSIC program and CBI to develop the background narrative for the game, refine the scorecard of policy options, and prepare confidential instructions for each game player. In addition, they wrote instructions for the person who would facilitate the negotiations called for in each game. The game was tested in Cambridge and Maryland in the spring of 2009, and revisions were made to ensure that it aligned as closely as possible with the situation in Maryland.

The game that was developed is set in a fictional county on the Chesapeake Bay side of Maryland. The nine roles established in the game are a county commissioner, a county planner, a developer, a chamber of commerce president, an environmental advocate, a state agency biologist, an emergency manager, the head of the farmers' association, and the head of a local residents' association. Each player receives confidential instructions (based on interviews with real people in those everyday roles) so that they can stay in character. A mediator facilitates each negotiation, and he or she has specific instructions.

In the game, the goal of the negotiation is to agree on a set of adaptation policies for the county, chosen from the policy scorecard. The group has to achieve a minimum "effectiveness score" without exceeding a maximum cost in order to qualify for various state subsidies. Each of the players can only support certain policies. With the help of the mediator, the players have two hours to work through the different categories on the policy scorecard, and at least eight out of the nine players must agree to a final package for it to be acceptable. A unanimous agreement is preferred but not required.
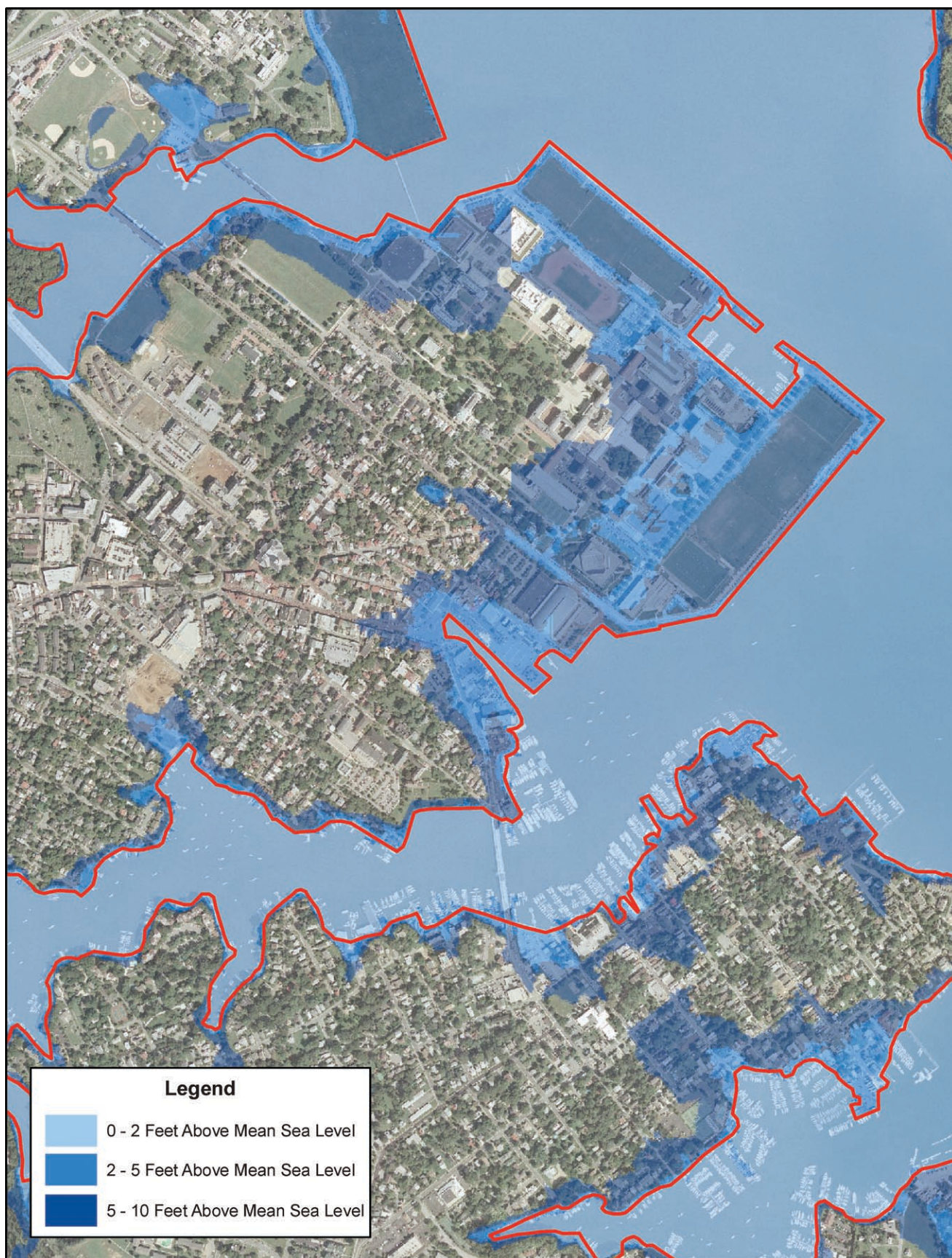
The existing shoreline of Annapolis, Maryland, outlined here in red, is adjacent to low-lying areas that may be vulnerable to sea level rise and storm surge.

Legend

0 - 2 Feet Above Mean Sea Level

2 - 5 Feet Above Mean Sea Level

5 - 10 Feet Above Mean Sea Level

On April 27, 2009, in Annapolis, more than 130 coastal stakeholders played the game, including real-life mayors, county commissioners, environmental advocates, emergency managers, business leaders, developers, and Maryland state officials. Maryland's Mediation and Conflict Resolution Office (MACRO) recruited nearly 30 professional mediators to work with the groups of players. The secretary of Maryland's Department of Natural Resources and the mayor of Annapolis kicked off the event, and several news outlets filmed the participants playing the game (the television coverage by WJZ, the local CBS affiliate, is one example; see http://wjz.com/local/sea.level.2.995688.html).

In the game, players in the different roles went through tough negotiations to balance interests to protect real estate values, support the local economy, make sure that agriculture and basic ecoservices weren't depleted, and preserve the historic character of local towns—all within strict budget limitations. In real life, even when a professional mediator leads a group, it is very difficult to reach unanimous agreement. When the game was played in Annapolis, almost all of the 16 tables of players were able to get eight of nine people in their group to reach agreement, with a couple tables achieving a full consensus.

When the game was over, participants said that the experience helped them understand the policy choices they face and an approach that could help them navigate these choices. Given the diversity of perspectives at their tables—both in real life and in the game—participants also came away with a clear sense that collaborative decision making, though

difficult, was possible. Professional mediation made a clear difference to them. Most of the tables were able to reach agreement in the time allotted, although a few were not.

After playing, many participants wanted to take the game back to their organizations and use it to engage their members and fellow residents. CBI and the Maryland Department of Natural Resources have been providing the technical and logistical support that local organizations will need to run the game themselves (game resources will be posted to the Building Coast-Smart Communities Website, http://maryland.coastsmart.org). At the Annapolis event, the state DNR also announced a grant program to support climate adaptation planning in coastal communities; cities and towns that want to play the game can apply.

The game itself is also available free of charge at the Building Coast-Smart Communities Website (http://maryland.coastsmart.org). We encourage coastal communities in Maryland and across the country to use it as a tool to raise awareness about the risks localities face from climate change and the adaptation measures they can take to protect themselves.

In addition to its new grant program, the Maryland DNR is also offering technical assistance to communities that decide to develop adaptation plans. To do this at the necessary scale, the Maryland legislature will probably have to appropriate additional funds.

Getting coastal communities to adapt to the risks associated with climate change won't be easy. In each city and town, there are those who believe that more immediate problems should always take priority over less certain risks. As with other kinds of

natural disasters, like earthquakes or hurricanes, it usually takes a cataclysmic event to get the attention of those who have not yet been affected and to motivate them to take preemptive measures.

But we have hopes that dialogue and consensus-based approaches will be used in the critical first steps on adaptation. Many of the people present that day in the spring of 2009 have taken the game back to their communities to help their fellow residents understand how they might all respond effectively to the short-term climate change risks they face together. It is only a matter of time before one of Maryland's coastal communities decides that it needs to undertake a similar consensus-building process on adaptation for real. ⓢ

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