

Testimony of Jeanne Herb
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Thank you very much for the invitation to join you today. My name is Jeanne Herb and I am an Associate Director at a center of research and practice at the Rutgers Bloustein School. I am also an affiliate in the Rutgers Climate Institute and a senior member of the Rutgers Coastal Risk and Resilience team. Additionally, I co-facilitate the New Jersey Climate Adaptation Alliance, a network of New Jersey thought leaders who have been collaborating for more 8 years to enhance climate adaptation and resilience in New Jersey. Similar to Professors Kopp and Robinson, my comments today are personal and not representative of the university nor any partnerships or programs in which I am involved.

I would like to give you a brief overview of the implications of the science Drs. Kopp and Robinson presented as well as considerations for public policy. My comments come from my experience working with a collaborative team of university faculty and staff that has been engaged in efforts to integrate climate science into public policy, conducting vulnerability assessments and developing tools to assist state and local decision-makers, and providing “hands on” technical assistance to communities and policy-makers.

I will first outline some thoughts on “what’s at stake” as a result of the climate projections provided by my colleagues. Next, I will discuss what we have learned from reviewing current practice at the state and local level as well as from listening to coastal stakeholders. Finally, I will wrap up by offering some thoughts on opportunities to enhance the protection and resilience of people, places and assets in our coastal zone.

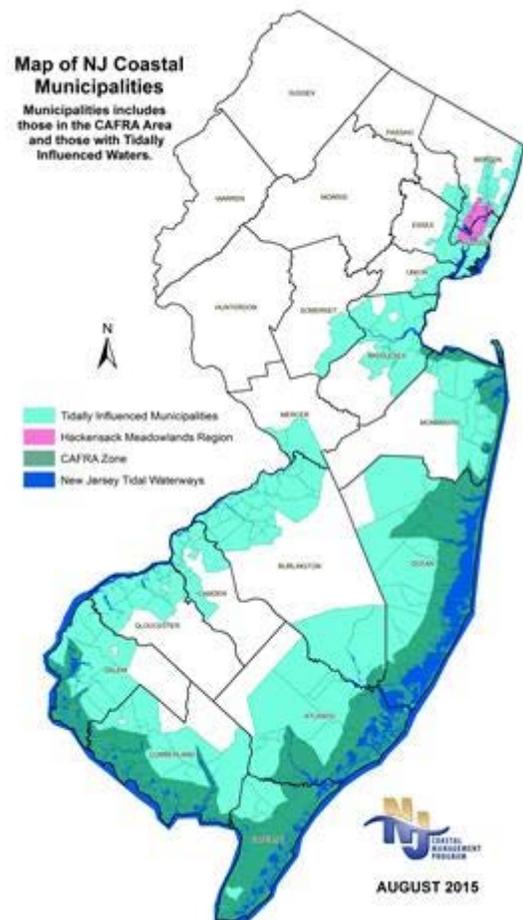
Before we talk about "what's at stake," I'd like to make sure we are all on the same page regarding what we mean by New Jersey's coastal zone. I grew up taking family day trips in my dad's wood-paneled station wagon to Sandy Hook and, for the past 30 years, my very large extended family has descended upon the same 19th century Victorian house about a block from the ocean on Long Beach Island. Yes, we all love our “Jersey shore” but, to make our state more resilient, we must reach far past "the shore." New Jersey's coastal zone extends from the Hudson River to the Raritan Bay and continues along the Atlantic coast to Cape May Point where it stretches northward to Trenton. This coastal boundary includes approximately 1,800 miles of tidal coastline and extends inland as far as 16 miles including tidally influenced waters such as parts of the Raritan and Delaware Rivers. The coastal zone contains ports that support

both global trade and local fisherpeople, a diverse mix of industrial uses and urban parks, natural wetlands and marshes, wildlife, historic and cultural resources, and tourist attractions. You can find these assets located in urban coastal communities, like my hometown of West New York, large cities like Camden and Newark, the national historic landmark of Cape May City, and the breathtaking communities along the Delaware Bayshore that serve as habitat for 100 species of birds, rich agricultural lands and generations of fishermen and women.

I want to reiterate two points made by Dr. Kopp: first, rising sea levels will make all types of coastal flooding worse in the future, not just flooding associated with extreme weather events. More and more, in our work with communities, we hear about the routine impacts of “sunny day flooding” and its incredible disturbance on day-to-day life in our coastal communities. We hear coastal residents in Brick and Toms River say that every time it rains and every time there is a high tide, roads are flooded and residents cannot get to work or get their kids to school on time. Second, I want to underscore Dr. Kopp’s comments that, in addition to considering the height of sea level rise, it is critically important to also consider the rate at which sea level is rising. Rate is especially important when we think about protecting coastal wetlands and marshes that hold back floods. Natural systems like wetlands and marshes can, over time, adapt to changing environmental conditions but that adaptive process becomes harder and harder as sea level rises at ever accelerating rates, not giving the wetlands and marshes time to naturally adjust.

What’s at stake?

I want to take few minutes to frame Dr. Kopp’s middle-of-the-road sea-level rise scenario of 1.4 feet between 2000 and 2050. As Dr. Kopp mentioned, that scenario translates into water levels 3 feet above the high tide line. We can expect those levels, which are now currently the



1-in-10-year flood to become the 1-in-2-year flood by 2050, an annual flood by 2062, and the daily high tide level in 2100.

What does those 3 feet translate into? Just to put it in perspective, if you think about the two coastal storms we had just earlier in the month, we can see from the Atlantic City and Sandy Hook tide gauges that water levels reached just below 3 feet at Atlantic City and did reach 3 feet at some points at Sandy Hook. So, just in our very recent memory we can all recall the disruption that coastal residents, families, and local officials had to deal with over a period of several days.

At 3 feet of water, we can estimate that¹:

- Approximately 91,000 residents that live in coastal areas can expect some amount of exposure to flooding; that includes more than 51,000 residents who are considered *socially vulnerable*. Social vulnerability refers to populations that are less able to ‘bounce back’ from a natural disaster, including individuals with limited mobility, financial resources or English proficiency. In analysis conducted for the New Jersey Climate Adaptation Alliance, we estimate that 70% of the population residing in the 100-year floodplain have characteristics of being socially vulnerable.
- At 3 feet of water, almost 900 miles of roadways and 33 miles of rail lines are likely to flood; and
- 70 medical facilities and 15 schools may be in harm’s way from flooding; as will 5 superfund sites and 15 operating facilities regulated under the Toxics Release Inventory.

What have we learned?

Over the past several years, we have taken the time to review current practice for how sea level rise projections are integrated in state and local decision-making in New Jersey. What we found is that there is no uniform approach in New Jersey for addressing coastal climate change impacts at the current time both across state agencies as well as from the state level to local governments.

¹ <http://sealevel.climatecentral.org/>

- We found that, as of October 2016, only approximately 20 municipalities have more stringent building elevation ordinances than State requirements and that less than 30 have joined the national Community Rating System.
- We found that state regulatory programs have not systematically integrated future sea level rise projections into their decision-making nor in their guidance to local governments.
- For the few cases where state programs consider impacts from sea-level rise and changes in coastal storms, it appears to be as a result of requirements by the federal government, such as when to do so is a condition of federally-funded projects and programs (e.g., under Federal Hurricane Sandy appropriations or grants tied to Federally-approved State Hazard Mitigation Planning). This is particularly noteworthy in light of the current federal efforts to eliminate requirements that had been previously adopted. Just last week, there were news reports that FEMA eliminated use of the term ‘climate change’ as part of its strategic planning for natural disasters.

We have also taken the time to talk with coastal stakeholders including residents, local officials, municipal professionals and emergency managers. Our goal was to better understand their perspectives on sea level rise and New Jersey’s changing coast, as well as to understand their needs to increase the resilience of their communities. **In general, what we heard is that local coastal decision-makers have a pressing need for clear and consistent and science-based standards and guidance to inform local coastal resilience planning.**

- Some pointed to inconsistent and sometimes conflicting guidance from multiple State and Federal agencies regarding the climate projections to inform their local planning. More specifically, the municipal practitioners indicated a need for clear and consistent guidance on sea-level rise projections between and within State agencies that, ideally, is also consistent with guidelines from professional associations such as engineering design standards. We heard that, in addition to science-informed guidance, coastal communities need technical assistance to apply climate data and science to their resilience planning efforts. We heard that it is unrealistic to expect local planners, engineers, mayors, and residents to be able to assimilate and apply the types of

complex, science-informed planning scenarios that Drs. Kopp and Robinson talked about.

- We heard that receiving consistent guidance at the local level on projected climate and environmental conditions will benefit state decision-making as well. That guidance can take many forms but, in general, what we heard was that it should aid local decision-making but also consistently inform state level planning including emergency management, energy, water supply, development and redevelopment, transportation as well as in decisions associated with investments of billions of dollars of public monies in infrastructure.
- We heard that there is a serious need at the local level to coordinate and increase capacity associated with disaster response and preparedness. Part of that capacity building includes better understanding how state agencies will be respond during natural disasters. For example, we heard that if the state adopted emergency rules now that would be evoked natural disasters such as rules on emergency permitting, it would give local officials not only the opportunity to comment on them to ensure their practicality, but to also become well-versed in them so they are not learning them during the disaster event.
- From practitioners working with coastal communities to increase resilience,
 - We heard that the emphasis on home elevations may lead to a false sense of security and could reduce the number of families that evacuate during an extreme weather event;
 - We also heard that residents and community leaders are unsure of how the state views the future of that community. Is mine a community that would benefit from a large investment in nature-based flood hazard protections through property buy-outs, land stewardship and land acquisition? Is mine a community where the state hopes to invest in revitalization of working waterfronts? Is mine a community where significant investment in economic development, such as Urban Enterprise Zones in Jersey City, is being encouraged despite being prone to flood hazards? Is mine a community where multiple state agencies intend to

support, or not support, infrastructure investment such as in transportation and energy?

- We heard that, knowing the answers to these questions, would inform local community planning. We also heard that knowing the answers to these questions would also inform decision-making of property owners. As part of Health Impact Assessment we did in Mystic Island, we heard residents say that they would have considered selling out their flood prone property immediately after Sandy except that different funding to elevate their homes was available first so, once they made the decision to elevate, they were less inclined to negotiate for a property buy-out.

In general, the theme of what we heard from coastal practitioners and officials is the need for more proactive, science-informed guidance from the state to ensure consistency in planning at the state and local levels throughout the coastal zone.

What are our opportunities to enhance coastal resilience?

The good news is that we have begun to work with some partners to integrate the science-informed projections Drs. Kopp and Robinson have outlined. For example, the science is informing the development of a NOAA-funded, 15-town regional resilience planning effort in the Two Rivers region in northern Monmouth County. It also informed the development of a joint land use study between Monmouth County and Naval Weapons Station Earle. Our Rutgers team has briefed the New Jersey DEP's Science Advisory Panel to assist it in understanding how the science can inform water planning in the agency. The not-so-good news is that these examples, while admirable, are neither systematic nor long-lasting. Our opportunity is to follow the lead of other states (such as New York, Maryland, and California) that have articulated science-informed projections for climate change hazards, such as sea level rise, to inform planning and decision-making at the state and local levels. Let me be clear. No one is saying that the state should adopt draconian standards for sea level rise in the future and create mandatory and prescriptive requirements for local governments. Rather, what we have heard is the need for the state to act to provide science-informed guidance that can be used consistently across the board at the state level and down to the local levels.

Articulating consistent, science-informed guidance about future climate trends can provide important information to assist with local planning. But it also has the added value of allowing for the consistent integration in state level planning and decision-making. New Jersey's opportunity is to take advantage of the science that is available to us to move away from a paradigm of planning based on current or historic conditions to, instead, plan for future conditions. Opportunities to do so include policy examples such as planning associated with water supply, development and redevelopment, energy and transportation, property buy-outs and open space protection, and investment of billions of dollars of public monies in infrastructure.

Another opportunity that has been discussed is to convene the New Jersey Coastal and Ocean Protection Council pursuant to NJSA 13:19-36 (PL 2007, c.288, s.4) which is statutorily authorized but never assembled. An approach could be to use the Council to advise on the development of an ecosystem-based and climate science-informed Shore Protection Master Plan that would serve to guide coastal management policy in light of changing climate conditions. Given that the last Shore Protection Master Plan was issued in 1981, and given that New Jersey's coastal zone has changed significantly since then, and given that the science regarding changing coastal conditions is so much more available to us now, it would seem that such an initiative is needed. A comprehensive plan could not only consider coastal impacts of climate change but other pressing issues facing our coast such as: changes in the historic and cultural character of our coastal zone, threats to wildlife habitat, revitalization of working waterfronts, protection of the state's fisheries from coastal impacts, challenges associated with aging infrastructure, expansion of impervious surfaces and development, and the need to identify how to bring energy generated by offshore wind to the shore in ways that are compatible with other coastal uses.

A fourth opportunity is to advance partnerships among coastal decision-makers, scientists, planners, residents and others. The partnership that we have formed within the university has brought together climate scientists, coastal experts, ecologists, planners, policy analysts and "hands on" community technical assistance providers. One thing lesson that we have learned is that the science is only as effective as the support and technical assistance that

goes with it. For that reason, we have spent considerable effort working closely with coastal communities to assist them in assessing their vulnerabilities and considering ways in which they can integrate science-informed climate projections into their planning and decision-making. The analyses I drew from today, along with many other resources, including videos, reports and decision support tools, are publicly available through the New Jersey Climate Adaptation Alliance website. As part of the ongoing work of the [New Jersey Climate Adaptation Alliance](#), we hope to continue our work with scientists including Drs. Kopp and Robinson in the future to develop similar science-informed projections on other changing climate conditions such as inland flood hazards, temperature and precipitation in order to inform state as well as local community planning efforts. Our intent has been to build an “all hazards” initiative to expand our work with coastal communities as well as to work with communities on other changing climate hazards. We welcome a partnership with the state to advance these efforts further.

By using the science available to us, we can begin to plan communities that are greener, healthier, equitable, more resilient and more prosperous. We have the opportunity to identify those populations that are most vulnerable and ensure that our planning addresses the needs of those populations as well as communities that are overburdened with other environmental stressors. We have the opportunity to consider ways in which nature-based strategies can not only help reduce flood risks but also sequester carbon emissions and contribute to the greening of our communities.

The opportunities that I am outlining today are not tremendously expensive solutions. Rather, they are focused on switching existing policies and procedures from operating from assumptions based on historic environmental conditions to considering future conditions based on changing climate conditions. Our communities already do comprehensive planning. Our state agencies already do long term planning for transportation, water supply, energy, open space protection and investment of public monies in infrastructure. The suggestions outlined today respond to what we learned from reviewing current practice and from engaging local community officials and practitioners, namely to practice prudence and use the science available to us today to transform existing efforts to ones that consider future conditions.

I am a Jersey girl through-and-through. Born and raised in Hudson county, I graduated from the state university, raised my daughters here and am proud to do work that I think makes our state safer and stronger. I have no doubts that we can tackle these challenges moving forward. We have the science, the skills, and stamina to ensure that our people, places and assets are better prepared for changing climate conditions. Our team stands ready to support the state in doing so.

Resources:

- <http://njadapt.rutgers.edu>
- www.njadapt.org
- <http://climatechange.rutgers.edu/>
- <http://www.njfloodmapper.org/>