

**TESTIMONY OF COLLIN O'MARA
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AND ENVIRONMENTAL CONTROL
BEFORE
THE U.S. SENATE COMMITTEE ON HOMELAND SECURITY
AND GOVERNMENT AFFAIRS
HEARING ON EXTREME WEATHER EVENTS:
THE COSTS OF NOT BEING PREPARED**

FEBRUARY 12, 2014

Chairman Carper, Members of the Committee, thank you for inviting me to testify before you today. As the lowest-lying state and among the most vulnerable to extreme storms, sea level rise, and other climate impacts, Delaware strongly supports the efforts of Chairman Carper and focus of this Committee on the costs and consequences of not being prepared for extreme weather events.

The conversation that we are having today about improving resiliency is critical to states and communities across the country and could help save tens of billions of dollars annually. As we have seen from recent events across the nation, we are staggeringly unprepared for extreme weather events. In recent years, Delaware has been affected by extreme storms including Irene and Sandy, inland and coastal flooding, and droughts and heat waves—all of which have impacted our citizens, economy, and have disrupted critical infrastructure and services.

In Delaware, we know that protective measures work and prove the old adage that an ounce of prevention is worth a pound of cure. Nourished beaches help protect Delaware's multi-billion tourism economy at a cost of well less than 1% of the value of the assets that they are defending. Areas with healthy wetlands or other natural defenses suffer a fraction of the damage compared to communities without. Communities exceeding National Flood Insurance Program requirements are significantly better equipped to face storm events.

As we speak, Delaware is taking a wide range of proactive measures at the local level to increase resilience and preparedness to the impacts of extreme storms. These actions will reduce damage at a fraction of the cost compared to rebuilding after the fact. We have adopted a three-prong approach that we believe can serve as a model for any community looking to improve their resiliency:

1. Start with Sound Science and Economics: Strategically improving resilience requires that any state, community, or tribe clearly assess vulnerabilities and stressors. To this end, Delaware has conducted some of the most comprehensive assessments of our vulnerabilities in the nation:
 - Extensive analysis of floodplain vulnerabilities: As a result of growing challenges from inland and coastal flooding, Governor Markell signed legislation establishing a Drainage and Floodplain Advisory Committee, which was charged with developing recommendations for common-sense standards to mitigate flood damage to public

infrastructure, natural resources, and private property. Specifically, the committee focused on minimizing the flooding of water supply and sanitary sewage disposal systems, maintaining natural drainage, reducing financial and emergency response burdens imposed on the state, local community, its governmental units and its residents, by discouraging unwise design and construction of buildings in areas subject to flooding, reducing prolonged business interruptions and damage to public facilities and other utilities, and ensuring greater accountability by those who build in and occupy special flood hazard areas should assume responsibility for their actions. As part of this effort, the committee identified the importance of updating floodplain maps in partnership with FEMA to ensure that current information drives decision-making.

- **Sea Level Rise:** A few years ago, we established an Advisory Committee to help plan for sea level rise. The committee was composed of members from a wide variety of interest groups including state agencies, local governments, citizen organization, business organization, and environmental organization. The goal of the committee was to assess Delaware's vulnerability to current and future inundation problems that may be exacerbated by sea level rise and to develop a set of recommendations for state agencies, local governments, businesses and citizens to enable them to adapt programs, policies, business practices and make informed decisions. The final report analyzes more than 75 types of assets, including public safety, infrastructure, societal, economic and natural resource, to determine the level of vulnerability under three different inundation scenarios. Sixteen statewide resources ranked as being of high concern, including protective beaches/dunes and coastal impoundments, evacuation routes, heavy industrial areas including the Port of Wilmington, public drinking supply wells and other water infrastructure, and protected lands, all of which are at-risk for some level of increased permanent inundation.
- **Climate Change Impact Assessment:** In addition to the extensive analysis of Sea Level Rise, we gathered Delaware's leading scientists and practitioners to form a Climate Change Steering Committee, which has produced a report to localize the science and the anticipated impacts on five key sectors: public health, water resources, agriculture, ecosystems and wildlife, and infrastructure. The Assessment serves as a tool to guide our actions with the best available science and is helping state agencies and local governments understand the short-term effects of climate change – such as extreme heat waves, intense rainfall events, and increased storm surge – as well as long-term impacts from sea level rise, longer growing seasons, and milder winters.
- **Bay Beaches Economic Analysis:** The Delaware Bay Beach Working Group is evaluating a range of management options for the Bay Beaches, including engineered beach nourishment, strategic retreat, and no-action. The group completed a highly detailed cost-benefit analysis to understand where the benefits accrue (public versus private benefit) and help determine the appropriate level of public investment and local cost-share.

- Economic Analysis of the Contribution of the Coastal Economy: A 2012 economic report by the University of Delaware stated that the total economic contributions of coast-related activity to the State of Delaware include \$6.9 billion added to total industry production, 59,000 additional jobs, and \$711 million of additional local, state and federal taxes.
2. Invest Strategically with Preference for Natural Systems: With scientific and economic analyses in hand, it is critical to triage existing infrastructural deficiencies and invest in priority areas to improve the resiliency of defenses against flooding and storm surge. Delaware has placed particular focus on accelerating the use of natural infrastructure to improve our resiliency, particularly in coastal areas, low-income communities, for critical industries and areas with hazardous materials. Numerous projects are currently underway or recently completed across the state, ranging from large wetland restoration projects in South Wilmington and the Inland Bays; beach nourishment along the Delaware Bay and Ocean Coast in partnership with USACE, and Living Shoreline projects in the Inlands Bays and the tributaries of the Delaware Bayshore. To deliver these projects, we have worked closely with the Department of Interior, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, National Oceanic and Atmospheric Administration, local governments, and conservation partners including The Nature Conservancy, Partnership for the Delaware Estuary and the Center for the Inland Bays, Delaware Nature Society and Delaware Wildlands.

In addition, we continue to strengthen existing or failing infrastructure including dams, dikes/levees, and coastal impoundments, as well as modernize stormwater infrastructure and drainage projects—nearly entirely at state expense.

3. Build in Resiliency Going Forward: In addition, we are updating fundamental policies to ensure that future development and redevelopment are much more resilient:
- Modernized Stormwater Regulations: Our agency recently promulgated significant updates to the state’s stormwater regulations. Unlike the previous rigidly prescriptive program, the updated regulations establish clear performance standards but allow developers and engineers to comply with the standards in the most cost-effective manner for a particular site. This provides much greater flexibility, while achieving better results.
 - Floodplain and drainage standards: Through the Drainage and Floodplain Advisory Committee, the State provided all local governments with actionable recommendations for improving drainage codes and floodplain standards, as well as model ordinances for adoption. We are currently working one-on-one with local governments to implement the updated standards.
 - Executive Order 41 “Preparing Delaware for Emerging Climate Impacts and Seizing Economic Opportunities from Reducing Emissions”: EO41 directs state agencies to improve resiliency by recognizing the risks of flooding and sea level rise, developing

implementable strategies for adaptation and preparedness to temperature and precipitation fluctuations, and setting goals for greenhouse gas reductions.

As a result of these proactive efforts, President Obama asked our Governor, my boss Jack Markell, to serve on his Task Force on Climate Preparedness and Resilience. The Task Force is comprised of Governors, Mayors, and Tribal leaders, who are charged with making recommendations about how federal agencies can help communities nationwide improve their resilience to the impacts of climate change. The Task Force recently convened for the first time and is setting up four subcommittees to develop specific recommendations about storm response and recovery, natural resources, built infrastructure, and public health. Based upon our experience in Delaware, we have been asked to lead the Natural Resources Subcommittee and Task Force Co-Chairs Nancy Sutley, Chair of the Council on Environmental Quality, and David Agnew, Director of Intergovernmental Affairs, have visited Delaware to see firsthand our natural infrastructure efforts to alleviate flooding in the Southbridge neighborhood in the City of Wilmington through a comprehensive wetland restoration project.

Through all of these experiences, including working closely with our strong federal partners, we offer a few recommendations for the Committee's consideration:

- Build resiliency standards into all federal investments and funding: Improving preparedness for extreme storms does not require a new bureaucracy, but rather should be incorporated into all relevant existing programs and funding mechanisms. Grant programs that support infrastructure, such as U.S. Department of Transportation's Federal Highways matching funds, the Clean Water and Drinking Water State Revolving Funds administered by the Environmental Protection Agency, and the Department of Housing and Urban Development's Community Development Block Grant, could all readily incorporate improved storm resiliency into project design and implementation as requirements for funding and project approval. Federal funds should no longer support projects that are insufficiently resilient to withstand predictable storm events—it's just throwing good money after bad. In addition, federal facilities should lead by example and model best practices resiliency, just as Delaware is working to do through the implementation of Governor Markell's EO 41.
- Invest in protection today to save money on response tomorrow: The U.S. Army Corps of Engineers will spend more money on storm response through the Hurricane Sandy Supplemental Appropriation than was spent in the previous fifty years combined on protection projects (\$5 billion versus an average \$100 million annual appropriation). Our experience in Delaware suggests that for every \$1 invested in shore protection we are getting at least \$10 in storm protection value not including the added value of the dunes to environmental, recreation and jobs sectors of the economy. The protection projects nationally cost a fraction of the value of the assets they protect and prevent billions of dollars in FEMA claims annually, yet these budget lines continue to be decreased, while payouts for storm response soar beyond FEMA budget allocations. Budgets are tight, but investments that could save billions of dollars in avoided costs must score better during the budget and appropriations processes.

Part of the disconnect stems from the way in which costs and benefits are calculated in the budgeting process. Investment in resiliency measures most often return value far beyond what is accounted for by the agencies in their budget requests. We have a perfect opportunity right now, as agencies are working with local governments to repair and rebuild the areas damaged by Hurricane Sandy there, to quantify the economic savings realized where well-built and maintained coastal defenses were in place and protected communities—and to compare that data to the impacts in communities, which suffered significant damages from storm surge and waves, because there were no defenses or dune systems did not hold. Quantifying this savings due to beaches, dunes, and other natural systems that held would greatly help inform future investment decisions.

- Break the Disaster-Rebuild-Disaster cycle: Severe storms create opportunities to rebuild using improved designs or by relocating to less vulnerable locations. Greater emphasis needs to be placed on rebuilding smarter, rather than just rebuilding quickly without any long-term reduction in vulnerability. We have worked with the Georgetown Climate Center on several common-sense recommendations to this effect and we are supportive of the thoughtful work of the Hurricane Sandy Rebuilding Task Force. While FEMA's public assistance programs have provisions in the Stafford Act to enable damaged facilities to be rebuilt to higher standards, these opportunities are often squandered in the rush to provide assistance as quickly as possible. Further, the National Flood Insurance Program (NFIP) claims adjustment process contributes to this problem as well by rushing to pay claims as quickly as possible, increasing the likelihood that property owners will repair in an unsafe manner, even in instances where buildings have been substantially damaged triggering mandatory elevation requirements.
- Prioritize comprehensive protection projects: Significant opportunities exist to deliver USACE-led protection projects more cost effectively and save taxpayers millions of dollars annually. We strongly believe in maximizing the beneficial reuse of material dredged from navigational channels to address beach, wetland, and island erosion/losses by employing the Regional Sediment Management (RSM) practices. Often these integrated projects do not meet the USACE "lowest-cost test" for evaluating projects because the project benefits cross business lines and avoided costs are often unaccounted. As a result, two projects, for example a navigation project and an adjacent coastal protection project, may cost significantly more when completed individually, compared to a combined comprehensive project which may have cost 10-20% more than either individual stand-alone project but could have saved significant tax dollars if integrated together. Delaware is executing two such comprehensive projects right now in Bowers Beach and in our Inland Bays (Pepper Creek) that are producing cost-savings of 40-60% compared to the normal stove-piped way that the USACE traditionally does business.
- Ensure sound science is the foundation of decision-making: NFIP flood studies and flood risk maps remain a key part of community resiliency programs, yet fall short of depicting true risk. These models and maps are used in land use planning, building design and flood mitigation projects yet they omit critical risk factors. Future flood levels in coastal areas with rising sea levels are not shown. Future flood levels in riverine floodplains in areas with

watershed changes which are causing increased runoff are not shown. Barrier Island impacts such as erosion, breaching or inlet formation during severe storms are not considered and lead to underestimates of flood levels in back bays. More robust modelling approaches are available, but are not being used in FEMA's mapping programs. Higher locally-mandated construction standards are a way to offset these mapping deficiencies, but as long as FEMA's flood mapping products are used to communicate risk, and do not reflect known increases in risk, they may actually contribute to increased vulnerability of future development.

- Continue modernizing key policies: NFIP Floodplain Management Regulations have been used nationwide by communities for local floodplain regulations. The NFIP Regulations are widely considered to be an insufficient standard for flood-prone communities to remain sustainable, and for the flood insurance program to remain financially stable (subsidized flood insurance premiums are also a contributing factor). NFIP floodplain Regulations have not been changed since 1989 and should be modernized, especially in light of my earlier point that floodplain maps often reflect a relatively low standard of flood risk. Updating these standards will require FEMA and the states to provide more technical assistance to local governments. In the absence of such an effort, some states such as Delaware, and many communities, will continue to develop and implement higher standards, but far too many will continue to regulate their floodplains only to the minimum national standards, leading to increasing expensive vulnerability which we cannot afford at any level of government.
- Prioritize natural infrastructure: Delaware's experiences show that natural infrastructure, especially nourished beaches, living shorelines, and healthy wetlands, can effectively mitigating a range of storm damage. They also have the added benefit of improving water quality, providing recreational amenities, and supporting wildlife and fishery habitat. Federal programs should prioritize natural infrastructure solutions wherever practicable and recognize the cost-effectiveness of utilizing natural infrastructure to provide co-benefits in other areas. We have been working closely with The Nature Conservancy and other conservation partners to implement several projects that we believe could serve as national models.
- Stop rewarding communities that fail to prepare: Some states and local governments have spent significant local resources to improve the resiliency of their communities, while others spend virtually nothing despite their ability to invest (low-income and environmental justice communities should be considered separately). When a disaster hits, the communities that have used their own resources (and as a result suffer less damage) are effectively penalized through the nearly full reimbursement of damages for the unprepared communities, which is effectively a large subsidy for less responsible communities. Delaware continues to be frustrated by the determination that states that received FEMA Public Assistance grants after Sandy (and not Individual Assistance grants) were ineligible for any Community Development Block Grant funding from the Sandy Supplemental, despite the state's prior strategic investments being the primary reason for submitting fewer claims compared to other jurisdictions. This policy disincentives states and localities to use local resources to improve resiliency proactively and encourages states to overestimate damages—both of which place more burden on the federal government in an area where there should be greater local accountability.

- Ensure that public expenditures produce a public benefit: Investment of limited resources for resiliency should be focused upon infrastructure that has the largest public benefit, rather than subsidizing private property or activities. Those who benefit the most from public investment in resiliency efforts should contribute proportionally to the project costs, taking into account the ability of a community to pay. For example, Delaware is using economic analyses to determine the appropriate cost-share ratio for local protection projects that do not qualify for federal assistance.
- Focus early on hazardous sites: Much attention on storm resilience focuses on coastal communities and residential impacts, but some of the most potentially destructive impacts will likely result from the inundation or washout of legacy-contaminated sites. Delaware has begun giving greater prioritization to the remediation of these sites, but we have run into problems when trying to access FEMA funds to acquire and demolish unsafe, flood-prone properties when the sites have underlying contamination. These sites are deemed ineligible for demolition grants for federal liability reasons, yet they pose a much greater health risk than other sites that are just bricks and mortar. For another example, the US military has had a long-standing presence along our coastlines to protect the homeland. Some past practices have resulted in the creation of contaminated sites in areas particularly vulnerable to coastal storms and sea level rise, yet these sites are often treated no differently in calculating risk and thus priority for remediation whether they are located along a major water-body or completely landlocked.
- Ensure local involvement in projects: Given the site-specific nature of resiliency work, it is critical that broad public participation informs local decisions. Avoid unnecessarily prescriptive adaptation actions and empower decisions to be made at the local level.

We thank the Committee for holding today's hearing on reducing costs by improving preparedness for extreme storms. Nearly sixteen months after Sandy and with the recovery well underway, now is the time to update the underlying policies and funding mechanisms that will significantly mitigate damage from future storms.

I look forward to your questions.