Testimony of Shari T. Wilson, Secretary
Maryland Department of the Environment

Before

The Senate Committee on Environment and Public Works

The Clean Energy Jobs and American Power Act (S. 1733)

Wednesday, October 28, 2009

Chairman Boxer, Ranking Member Inhofe and honorable members of the Committee, thank you for the opportunity to share Maryland's perspective on the need for climate change adaptation and the critical importance of developing a national adaptation strategy.

Adaptation describes how we prepare for the impacts of climate change and how we mitigate the impacts we are experiencing, and will continue to experience. To date, efforts to adapt for climate change across our Country lack cohesion. There are no clear roles, and no clear responsibilities at the federal, state or local level. We lack the necessary data and resources to comprehensively and efficiently prioritize adaptation activities. At the same time, as states are demonstrating, we certainly have the knowledge, the tools and tremendous public health, economic and environment benefits to gain by adapting and mitigating the effects of climate change. The Clean Energy Jobs and American Power Act, at last, provides the path forward. This legislation defines the needed structure – clarification of responsibilities, the framework for necessary planning and action, and the outline for collection of data and funding – to get this important work underway in a smart, efficient and effective way.

As is the case with greenhouse gas emission reductions, States have not waited for federal action. To reduce greenhouse gas emissions, the ten States in the Regional Greenhouse Gas Initiative moved forward to develop, and are now successfully operating, a market based regional cap and trade program to reduce emissions from the electricity generating sector. Likewise, to adapt to climate change, many States have

moved forward to develop plans and strategies to adapt to climate change and are now implementing those plans. Maryland's own Climate Action Plan, initiated by an Executive Order issued by Governor O'Malley, details Maryland's need for adaptation strategies, prioritization of data collection, assessments and implementation, much like the provisions of Subtitle C of this Act.

Impacts of Climate Change in Maryland

Climate Change is already impacting Maryland. With over 3,000 miles of coastline, more than California, we have already experienced one foot of sea level rise. Increasing sea levels have the potential to cause profound changes in Maryland's environment, natural resources and economy. The magnitude of the impact will depend not only on our ability to reduce future global carbon dioxide emissions, but on our ability to successfully implement adaptation strategies at the federal, state and local levels. A national adaptation strategy and significant federal funding for coordinated state and federal adaptation programs are critical to mitigating the effects of climate change.

The impact of climate change in Maryland will manifest itself in many different ways. Rising temperatures, changes in precipitation patterns and more frequent and severe storms will affect the State's water resources, our agriculture and forestry sectors, our aquatic and terrestrial ecosystems, our land use, our infrastructure and the health of our citizens.

As a coastal state with one of the world's largest and most complex estuarine systems, rising sea levels and increased storm severity present Maryland with a unique set of challenges. Our 3,000 miles of shoreline equates to many vulnerable low-lying coastal areas. The Chesapeake Bay area is ranked as the third most vulnerable region in the nation to the impact of sea level rise. In addition to the sea level rise of one foot already experienced, Maryland projects that during this century, sea levels could rise an additional 2.7 to 3.4 feet, submerging existing tidal marshes and inundating low-lying

areas. Rising sea levels will increase Maryland's vulnerability to storm events, shoreline erosion and salt water intrusion into our groundwater aquifers.

Maryland has thousands of miles of developed waterfront property along its coast, including many historic settlements such as Smith Island. The State's coastal areas and barrier islands contain billions of dollars worth of public and private investments that are threatened by rising sea levels and increased storm surge. Currently our state is losing approximately 580 acres per year to shoreline erosion. Thirteen Chesapeake Bay islands once mapped on nautical charts have already disappeared beneath the water's surface. In a 2008 report, the National Wildlife Federation estimated that approximately 400,000 acres of land on the Chesapeake's Eastern Shore could gradually be submerged. The Federation projects that by the end of the century, the Bay region will lose more than 161,000 acres of brackish marsh, 69% of its estuarine beaches, 58% of its ocean beaches and more than 50% of its tidal marshes. The loss of tidal wetlands and marshes will mean loss of critical habitat for many species of birds, fish and plants and a decline in the populations that are dependent on them.

As Maryland and the other Bay states implement aggressive measures to accelerate restoration of the Bay, we are concerned that rising sea levels and changes in precipitation patterns will impede our efforts to restore water quality. For example, reversing the loss of underwater grasses is critical to the Bay restoration effort. Rising sea levels and increased shoreline erosion will adversely impact submerged aquatic vegetation through reduced light penetration as a result of increased water depth and suspended sediments. An increase in total precipitation and storm intensity could lead to increased stream flows, more sediment erosion, turbidity and nutrient pollution with corresponding adverse impacts on aquatic vegetation and marine life. The Chesapeake Bay Program's Scientific and Technical Advisory Committee report, *Climate Change and the Chesapeake Bay* and the Executive Order 13508, Draft Section 202(d) Report, *Chesapeake Bay Watershed Climate Change Impact,* both address the impacts of climate change on the Bay and collectively recommend the need for action on adaptation planning at the regional, state and national level.

Rising sea levels, storm surges, increased frequency and intensity of storm events and drought conditions all have the potential to significantly impact our drinking water supply and our drinking and wastewater infrastructure. This legislation specifically acknowledges this risk and addresses the impact on infrastructure.

In the State's metropolitan areas, surface water is the primary source of drinking water. An increase in the frequency and intensity of storms can degrade surface water quality by causing additional sediment erosion and runoff, which increases turbidity levels and makes the raw water more difficult to treat using conventional methods. In addition, the higher levels of sediment can reduce the effectiveness of water treatment filters in removing microbial pathogens.

More intense storms are likely to compromise the efficacy of wastewater treatment technology and they can cause more sewer overflows in municipal systems with combined sewer/stormwater systems, resulting in increased discharges of untreated sewage into surface waters. Combined sewer overflows degrade water quality and threaten downstream drinking water systems.

On Maryland's Eastern Shore and in the rural coastal areas of the State where groundwater is the primary source of drinking water, rising sea levels can increase the rate of saltwater intrusion into underground aquifers, jeopardizing the suitability of the aquifers for drinking water. There is evidence that salt water intrusion is already occurring on the Eastern Shore. Rising sea levels and more severe storm surges could infiltrate septic systems and drainage fields located in coastal low-lying areas, causing further contamination of groundwater aquifers. More frequent and longer lasting droughts could reduce water levels in the State's reservoirs, necessitating more frequent water use restrictions. These impacts will further challenge the State in our current efforts to develop a long-term strategy to manage our water resources for future generations. The *Clean Energy Jobs and American Power Act* not only provides funding for research to develop a better understanding of how climate change will impact our

water supply resources and infrastructure and how we can protect these essential resources, but also reserves funding for projects to adapt our drinking and wastewater infrastructure to the effects of climate change. Similarly, it is just plain common sense to implement the "Watersense" program outlined by this Act. It is incumbent upon us all to promote water conservation to the greatest extent possible. Even in a State like Maryland, where traditionally water supply has been abundant, the recent decade has brought droughts and a clear need for better data and assessment of groundwater supplies. If this is a need in Maryland, we can be assured that it is a much more dire need in other parts of the Country.

As regional warming increases, ecosystems and species that require lower temperatures and specific forest systems will face shrinking habitat, and if unable to migrate, possible local extinction. Some forest types such as hemlock, mountain ash, sugar maple, and butternut could disappear from the State altogether. Increasing temperatures may have significant effects on the ability of plant species to regenerate as the result of a shift in the timing of budding, flowering and pollination. Climate change is expected to result in an increase in non-native and invasive species.

Rising air and water temperatures will adversely impact plant and animal species that are sensitive to subtle changes in temperature. For example, an increase in Bay water temperature could reduce populations of striped bass and other cooler water species.

The projected increase in the number of short, medium and long-term droughts in the Northeast will affect our forestry and agricultural sectors. Prolonged droughts could significantly impact our ground and surface drinking water supplies.

These kinds of impacts, and many others, are likely to be experienced to differing degrees by all states. The *Clean Energy, Jobs and American Power Act* specifically addresses the impact of sea level rise on agriculture and forestry, providing much needed mechanisms to mitigate the impacts on these resources and enable us, as a country, to better prepare for those impacts.

Maryland's Adaptation Plan

Maryland's Climate Action Plan, a comprehensive strategy for reducing State-wide greenhouse gas emissions and adapting to its consequences, recommends 18 specific adaptation legislative, policy, and planning actions to reduce the impact to existing built environments and future growth and development, protect human health, safety and welfare and protect and restore the State's forests, wetlands and beaches. The recommended strategies focus on assessing and protecting existing vulnerable infrastructure, assessing the need for changes to the State's building codes to protect future development and incorporating adaptation strategies into state and local government land use and other comprehensive planning programs. Likewise, this proposed Act specifically addresses the need to update and improve building codes, provide for the necessary assessment, data collection and mapping to integrate climate change adaptation into a range of state and local planning and programming.

Implementation of the State's adaptation strategy is well underway. In 2008, Maryland passed two pieces of key legislation called for in the strategy: The Living Shoreline Protection Act and amendments to the Chesapeake and Coastal Bays Critical Area Act. Living shorelines, or soft shorelines, are a smarter way to protect shoreline from erosion in the face of increased flooding and sea level rise while providing greater habitat benefits. In fact, living shoreline projects are underway throughout Maryland's portion of the Bay. Maryland's critical area law provides additional protections for conservation and development in areas within 1,000 feet of Maryland's shoreline. Both initiatives will reduce Maryland's vulnerability over time and protect natural resources from the impacts of sea level rise by restoring natural shoreline buffers such as grasses and wetlands and limiting new growth in vulnerable areas.

Effective adaptation necessitates a careful review of policies to ensure they are consistent with protecting vulnerable areas. For example, Maryland's Climate Action Plan addresses

insurance, flood protection, health assessment needs and agricultural preservation issues. These aspects of adaptation raise local, state and federal policy issues and a federal framework is needed to comprehensively shift to an effective adaptation strategy. The legislation addresses this need, for example, through its requirement for development of a National Strategic Action Plan to address the impacts of climate change on public health, and through its provisions requiring the federal adaptation plan to establish programs to address flooding impacts.

More recently, Maryland's Climate Change Commission has initiated development of a second phase of adaptation planning focused on addressing the impacts of increasing temperature, changes in precipitation patterns and increased storm frequency and intensity on our water resources, agriculture and forestry sectors, aquatic and terrestrial ecosystems, human health, transportation systems and land use. Our goal is to produce adaptation strategies for each of these sectors by June 2010. These actions would be far more efficient and effective if coordinated with a national strategy as called for in the proposed legislation.

The Import of a National Strategy

States and local governments are at the front lines of planning for climate change. These efforts though are in significant need of action at the national level.

First, effective adaptation needs a clear national strategy. This strategy should integrate a national approach to natural resource adaptation based on effective coordination among state and federal agencies. In the Chesapeake Bay region alone, at least three separate climate change adaptation strategies have been produced in the last year and half – all by different governmental organizations and all calling for enhanced intergovernmental coordination. Maryland supports the provisions of the bill that establish a Natural Resources Climate Change Adaptation Panel, provide for development of a national adaptation strategy in close collaboration with the states and require that strategy to include specific mechanisms for ensuring coordination and communication between the federal and state natural resource agencies. Prioritizing actions is the most efficient way

to begin to address the wide ranging impacts of climate change and is also fundamental in Maryland's Climate Action Plan implementation process.

Second, if the Country is to successfully address adaptation, dedicated funding is necessary for effective state adaptation plans. In addition to funding provided through the Natural Resources Climate Change Adaptation Account, funding specifically targeted to protection of the Chesapeake Bay and other estuarine systems through the Coastal and Great Lakes Adaptation Program acknowledges the need to address rising sea levels, accelerated shoreline erosion, salt water intrusion and other impacts that are unique to the coastal states.

Finally, the key role of states in climate change adaptation planning, including the valuable research contribution of state academic institutions, must be clearly established and supported by federal programs. We support provisions of this legislation that recognize the importance of a strong state/federal partnership in the development of climate change science reflected in requirements for the establishment of the National Climate Change and Wildlife Science Center to work in collaboration with state agencies and the representation of state interests on the national Science Advisory Board to be established by the Departments of Commerce and Interior. Provisions of the bill establishing the National Wildlife Habitat and Corridors Information Program are designed to facilitate collaborative efforts to develop a GIS database of fish and wildlife habitat corridors and mechanisms to support joint federal/state research, mapping and planning.

In conclusion, a collaborative relationship between the federal and state government agencies with responsibility for developing and implementing a national adaptation strategy is essential if we as a nation are to be successful in understanding and adapting to climate change. The *Clean Energy Jobs and American Power Act* establishes the foundation for a strong federal/state partnership and the development of a cohesive national adaptation strategy.

Thank you very much for your consideration of Maryland's testimony today.