The Maryland Department of Natural Resources

Subject: **Building Resilience to Climate Change**
Policy Number: 2010:11
Effective Date: October 15, 2010

Approved: _____ **Date:** 10-12-10

I. Preamble

Maryland's people, natural resources, public lands, and public investments are increasingly vulnerable to the effects of climate change. The Department of Natural Resources has the lead role among State agencies in advancing the scientific understanding of Maryland's vulnerability to climate change, and in advocating for sound planning to avoid or minimize the anticipated effects of climate change. Through implementation of this policy, the Department will guide its own actions, and will lead by example, encouraging our sister agencies and local government leaders to plan for and to mitigate the effects of climate change.

II. Purpose

The purpose of this policy is to provide direction and guidance regarding the Department's investments in and management of land, resources and assets in the face of climate change.

III. Scope

This policy applies Department-wide.

IV. Definitions

Adaptation: Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or optimizes environmental benefits.

Climate Change Impacts: The likely physiographic effects of a changing climate, including a rise in relative sea level; increasing air temperature; changes in precipitation patterns; changes in air and ocean chemistry; increased shoreline erosion; changes in coastal storm intensity; and shifts in species abundance and/or distribution.

Ecosystem Resilience: The ability of natural or human systems or communities to withstand or recover from the impacts of climate change.

Mitigation: Actions taken to reduce the drivers of climate change, including strategies to reduce greenhouse gas sources and emissions (e.g., energy demand) and enhancing greenhouse gas sinks (e.g., carbon sequestration).

Vulnerability: The degree to which a system is susceptible to or unable to cope with adverse effects of climate change.

V. Policy

It is the policy of the Maryland Department of Natural Resources to make sound investments in land and facilities and to manage its assets and natural resources so as to better understand, mitigate and adapt to climate change.

VI. Office for a Sustainable Future

The Department's Office for a Sustainable Future will work with respective Departmental units to provide technical guidance and assistance in developing practices and procedures to implement this policy.

VII. Practices, Procedures and Implementation

A. *New Land Investments*

Practice: The Department shall proactively seek the protection of lands that enhance the resilience of bay, aquatic and terrestrial ecosystems and/or mitigate the impacts of climate change through on-site carbon sequestration.

Procedure: DNR's Land Acquisition and Planning Unit shall review all proposed land acquisitions and conservation easements to: (1) assess potential impacts of climate change and sea level rise; and (2) identify landscape or site-level characteristics that support ecosystem resilience. Limitations on future use of the site and opportunities to increase resiliency and/or mitigate adverse impacts shall be considered in combination with other existing land conservation evaluation criteria.

Implementation Guidance: The Department shall develop specific land conservation-climate change evaluation criteria within 12 months of the effective date of this policy.

B. *Facility/Infrastructure Siting and Design*

Practice: The Department shall site, design and construct facilities and infrastructure so as to reduce greenhouse gas emissions and avoid or minimize anticipated climate change impacts.

Procedure: DNR's Engineering & Construction Division shall assess all proposed construction projects on DNR-owned lands, including new or retrofitted facilities

and/or infrastructure, to determine vulnerability to the impacts of climate change and sea level rise. The following sea level rise projections shall be used to assess project site vulnerability over temporal and spatial scales: 1- 1.3 feet by 2050 and 2.7 – 3.4 feet by 2100[1]. Design adjustments and/or siting and location alternatives to reduce greenhouse gas emissions and avoid or minimize impact over the anticipated life span of the investment shall be evaluated and incorporated into project planning and construction design.

Implementation Guidance: The Department shall develop specific climate change-siting and design criteria for facilities and infrastructure on DNR-owned lands within 12 months of the effective date of this policy.

C. *Habitat Restoration*

Practice: The Department shall proactively pursue, design and construct habitat restoration projects to enhance the resilience of bay, aquatic and terrestrial ecosystems to the impacts of climate change and/or increase on-site carbon sequestration.

Procedure: DNR units that engage in habitat restoration projects shall address and incorporate factors associated with climate change during project planning and design processes, including maintenance and monitoring needs.

Implementation Guidance: DNR's Watershed Services Unit shall compile a compendium of best management practices for habitat restoration project design and shall conduct a GIS-based audit of DNR-owned lands to identify habitat restoration potential for enhancing ecosystem resilience and/or increasing on-site carbon sequestration, within 12 months of the effective date of this policy.

D. *Government Operations*

Practice: The Department shall conduct its operations in furtherance of the greenhouse gas and energy efficiency and reduction goals established under the Greenhouse Gas Reduction Act of 2009, the EmPOWER Maryland Program (2008) and Maryland's Renewable Portfolio Standard (2004, 2007, 2008, 2010).

Procedure: The Office for a Sustainable Future shall maintain an accounting of the Department's overall resource consumption, including waste discharge and greenhouse gas emissions produced through electricity usage, fuel consumption and vehicle emissions. The Department shall implement reduction strategies to reduce and/or offset overall resource consumption.

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[1] These sea level rise projections may be adjusted in the future in accordance with updated projections and modeling by the Intergovernmental Panel on Climate Change, as well as guidance issued by the Scientific and Technical Working Group of the Maryland Climate Change Commission.

Implementation Guidance: The Department shall establish greenhouse gas and energy reduction and efficiency goals and develop a reduction strategy within 12 months of the effective date of this policy. The feasibility of achieving carbon neutrality shall be considered during development of the reduction strategy. Performance goals and benchmarks established through the Maryland Environmental Footprint Initiative shall guide goal development and implementation of reduction practices.

E. ***Research, Monitoring and Assessment***

Practice: The Department shall conduct a comprehensive long-term Chesapeake and Coastal Bays tidal and non-tidal watershed monitoring and assessment program to enhance the science needed to better understand, mitigate and adapt to climate change.

Procedure: DNR's Resource Assessment and Watershed Service Units shall integrate, align and maintain programs that monitor and assess water quality, habitat and living resources in order to increase our capacity to better understand the long-term impacts of climate change and inform our investments and resource management.

Implementation Guidance: The Scientific and Technical Assessment and the Phase I and II Adaptation Strategies of the Maryland Climate Action Plan shall be used as implementation guidance for this procedure. Beginning in 2012, and continuing on a bi-yearly basis, the Department shall assess gaps in knowledge or information and identify and prioritize new research, monitoring and analysis efforts to fulfill needs.

F. ***Resource Planning***

Practice: The Department shall assess the impacts of climate change to the land and aquatic resources it manages and develop and integrate both adaptation and mitigation reduction strategies into natural resource management plans and programs.

Procedure: The Department will integrate consideration of climate change during the development of new or updated resource management assessments and strategic planning documents, including the Green Infrastructure Assessment, Wildlife Action Plan, Coastal Zone Management Program, Coastal and Estuarine Land Conservation Plan, Forest Resource Assessment and Strategy, Forest Stewardship Plans, Fisheries Management Plans, Land-Unit Plans, Tributary Strategies, Watershed Implementation Plans and Capital Improvement Budget Programming.

Implementation Guidance: The Scientific and Technical Assessment and the Phase I and II Adaptation Strategies of the Maryland Climate Action Plan shall be used as implementation guidance for this procedure.

G. *Advocacy*

Practice: The Department shall incorporate this policy into its communications and advocacy roles to inform the public and other agencies about the need for planning and mitigation of the effects of climate change. The Department shall encourage others, especially sister state agencies, to make sound investments in land and facilities, and to manage those facilities and natural resources with an understanding of, and planning for, the effects of climate change.

Procedure: The Secretary, or his or her designee, serving as a member of authorized boards and commissions (i.e., Critical Area Commission, Wildlife Advisory Commission, Sustainable Forest Council, Sustainable Growth Commission, etc.) shall advocate for the advancement of climate change science, mitigation strategies and adaptation practices. Additionally, the Environmental Review Unit, in its capacity to conduct reviews and provide comment on environmental permits, planning and development projects, local comprehensive plans and federal actions shall screen projects to assess potential impacts associated with climate change and sea level rise and identify opportunities to increase resiliency and avoid or mitigate adverse impacts.

Implementation Guidance: The Environmental Review Unit shall develop climate change screening criteria and a compendium of recommended best management practices within 12 months of the effective date of this policy. In the interim, the Scientific and Technical Assessment and the Phase I and II Adaptation Strategies of the Maryland Climate Action Plan shall be used as implementation guidance.

VIII. References

Maryland Commission on Climate Change (2008). Maryland Climate Action Plan. Maryland Department of Environment. Baltimore, MD.

Maryland Greenhouse Gas Reduction Act (2009)

EmPOWER Maryland Energy Efficiency Act (2008)

Maryland Renewable Portfolio Standard (2004, 2007, 2008, 2010)