
# FY2025 OPERATING BUDGET TESTIMONY

Senate Budget and Taxation Committee
Education, Business, and Administration Subcommittee
Nancy J. King, Chair
February 1, 2024

House Appropriations Committee
Education and Economic Development Subcommittee
Stephanie M. Smith, Chair
February 5, 2024

Testimony by Dr. William Dennison, Interim President
University of Maryland Center for Environmental Science

University of Maryland
CENTER FOR ENVIRONMENTAL SCIENCE

# Introduction

To the Chair and Members of the Subcommittee, thank you for allowing me to appear at this hearing in support of the Operating Budget request for the **University of Maryland Center for Environmental Science** (UMCES).

Approving the Governor's budget will send an important message that Maryland values higher education. In UMCES' case, it highlights our important efforts in workforce development, innovation, and knowledge transfer in the environmental sciences, particularly associated with the Chesapeake Bay restoration efforts.

**UMCES has a unique role in the University System of Maryland and the State of Maryland to advance knowledge and innovation to solve the big environmental challenges facing Maryland and the world.**

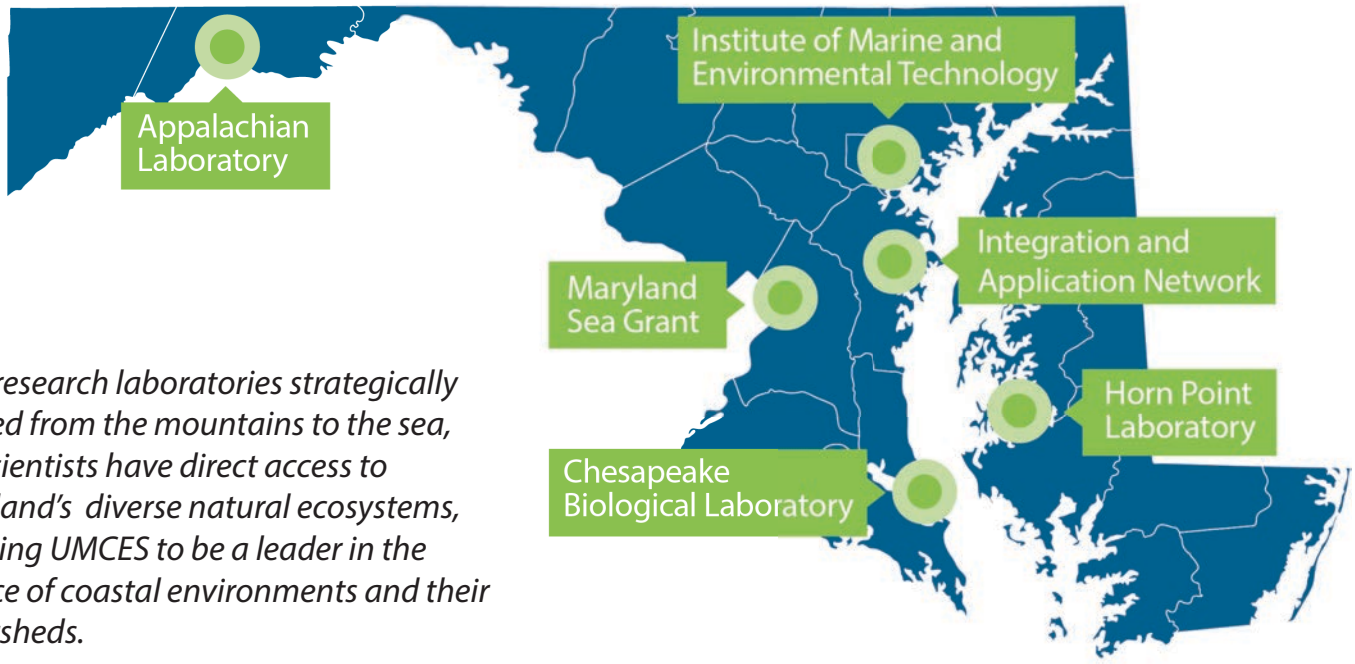
We have been at the forefront of environmental stewardship for nearly 100 years and remain focused on working on environmental solutions with multiple stakeholders to meet the unprecedented challenges of the 21st century.

We continue to track the health of the Chesapeake Bay through the monitoring of dead zones, underwater grasses, and striped bass and the release of our annual report card to promote accountability in the Bay restoration effort.

As the urgency of the climate crisis has grown, so has our role in helping Maryland identify, develop, and employ measures to reduce greenhouse gas emissions and vulnerability to climate impacts. We also lead the development of sea-level rise projections for the State.

UMCES is committed to producing the next generation of environmental scientists who are not only prepared to meet the world's environmental challenges but also reflect the demographic and socio-economic diversity of the population of Maryland and the United States.

The following highlights are a few of our long-term commitments on behalf of Maryland.




*With research laboratories strategically located from the mountains to the sea, our scientists have direct access to Maryland's diverse natural ecosystems, enabling UMCES to be a leader in the science of coastal environments and their watersheds.*

# Impacts of Climate Change

It is the mission of the University of Maryland Center for Environmental Science to assist Maryland's agencies in detecting and predicting environmental changes. We are motivated by the 28th U.N. Climate Change Conference of the Parties (COP28) and Maryland's commitment to greenhouse gas reductions to focus on supporting understanding climate change impacts and how to adapt, locally and globally.

**Clean Energy and Agriculture**
UMCES is leading the new **Global Nitrogen Innovation Center for Clean Energy and the Environment**, an international effort to address the opportunities and challenges of an emerging technology, "green ammonia", that will provide clean energy and support food production while mitigating climate change. This is a multi-institution project funded by the National Science Foundation .

**Sea-Level Rise**
The **Maryland Sea-Level Rise Projections** report, prepared by a panel of scientific experts gathered by UMCES every five years, predicts the impact of sea-level rise in Maryland decades into the future. The latest report finds that sea level along Maryland's shores will very likely rise a foot by 2050.

**Mitigating Climate Change**
Researchers are exploring how existing infrastructure such as **wastewater treatment plants could be used to help mitigate global warming**. Oceans absorb about a third of carbon dioxide generated by human activity, but they are becoming more acidic as a result. The new project is part of a national initiative to support research for new ocean-based climate solutions through the National Oceanic Atmospheric Administration (NOAA.)

A grant from the U.S. Department of Energy will help researchers understand **how microalgae can be used to reduce carbon dioxide emissions**. This novel technology uses algae to capture greenhouse gas emitted from power plants, wastewater treatment plants, and cement factories before it enters the atmosphere. The outcome will be a scalable and deployable system in which the algae sequester carbon from flue gases.

**MISSION:**
**The University of Maryland Center for Environmental Science has a unique statutory mandate to conduct a comprehensive scientific program and apply predictive ecology for the improvement and preservation of Maryland's physical environment. This mission is accomplished**

# Chesapeake Bay Science

As trusted scientific advisors to state and national leaders, our scientists provide unbiased research to inform public policy and support the science behind environmental initiatives in Maryland, including a healthy bay, abundant fisheries, and clean water. We continue to track the health of the Chesapeake Bay through monitoring of dead zones, ocean acidification, underwater grasses, and striped bass and release an annual environmental **report card** to promote accountability in the Bay restoration effort.

**Oysters**

Oysters are an important component of the living ecosystem of the Chesapeake Bay and its tributaries. They help protect shorelines from erosion and are important on both an ecological and an economic level. As one of the largest on the East Coast, UMCES' **Horn Point Oyster Hatchery** produces a variety of oyster larvae for use in oyster research, oyster restoration, and educational projects.

**A record 1.7 billion new juvenile oysters were planted** on sanctuary and public oyster reefs in the Chesapeake Bay in 2023, surpassing Maryland's planting goal and setting a new annual record. The vast majority of these oysters came from UMCES' oyster hatchery. Over 1.5 billion oyster larvae were sold to support aquaculture and the public fishery.

As part of the UMCES mission to provide unbiased science to aid policymakers in the management of the environment, a nearly $1 million federal award will allow our experts to **study oysters' ability to protect shorelines and improve the habitat of the Bay** bottom while recovering overall oyster populations.

**Water Quality**

A $1 million gift established the Anthropogenic Changes in Estuarine Systems Initiative to study chemicals in waterways that could have harmful impacts on environmental and human health. The largest individual donation to date recognizes UMCES' long-standing tradition of working on **chemicals of environmental concern**.

**Report Card**

UMCES released its 16th annual report card on the Chesapeake Bay and its watershed, an essential tool for federal and state agencies to monitor progress on the restoration of the Chesapeake Bay. The **overall Bay health score improved in the past two years**.

**Chesapeake Global Collaboratory**

More than 150 leaders in science, industry, government, and nonprofits gathered at Baltimore's Inner Harbor to discuss how to harness the **power of big data and new technologies to accelerate solutions to the most complex environmental challenges**.

The Chesapeake Global Collaboratory, a 'think-do-innovate tank' led by UMCES, will bring a new generation of tools, voices, and approaches to environmental research. We have secured funds from the National Science Foundation and a private foundation to kick-start this initiative.

# Graduate & Continuing Education, Diversity & Inclusion

The University of Maryland Center for Environmental Science is committed to training the next generation of environmental scientists who are not only prepared the meet the world's environmental challenges but also reflect the demographic and socio-economic diversity of Maryland and the nation.

**Leaders of Tomorrow**
As Maryland's graduate university for the environment, UMCES trains the **next generation of environmental scientists**, business leaders, policymakers, natural resource managers, and educators. Every year, close to 100 graduate students study and work alongside UMCES scientists through the nationally eminent Marine Estuarine Environmental Sciences graduate program. In 2023, 27 students received advanced degrees.

An unprecedented number of students go on to prestigious **Knauss Fellowships** with federal agencies each year.

UMCES and Frostburg State University (FSU) began offering an innovative joint **Master in Environmental Management in Sustainability**. This degree leverages the environmental studies expertise of UMCES and the diverse student body of FSU to prepare leaders who can address 21st century sustainability challenges in the academic, government, nonprofit and private sectors.

**Continuing Education**
Over 11,000 students have enrolled in UMCES **edX Professional Certificate Courses**, online continuing education taught by UMCES experts to strengthen the regional workforce and help build sustainable and resilient communities with over 172 countries and regions participating.

We are currently offering and continuing to develop courses for K-12 teachers to meet their MSDE requirements.

**Diversity, Equity, and Inclusion**
UMCES is committed to making environmental sciences more diverse, equitable, and inclusive, and is a key partner with the University of Maryland Eastern Shore's **NOAA Living Marine Resources Cooperative Science Center** at the Institute of Marine and Environmental Technology that trains students from underrepresented communities across the country.

We provide the scientific foundation behind tracking progress in Bay health and restoration and support the Chesapeake Bay Program's commitment to **advance environmental and public health protection for all**. Last year, UMCES included an integrated environmental justice index in the report card for the first time.

# DLS Recommendations

The University of Maryland Center for Environmental Science (UMCES) concurs with the DLS recommendations and requests APPROVAL of the Governor's FY2025 budget for the University System of Maryland and UMCES as submitted.