FY2027 OPERATING BUDGET TESTIMONY

House Appropriations Committee
Education and Economic Development Subcommittee
Delegate Stephanie M. Smith, Chair
February 11, 2026

Senate Budget and Taxation Committee
Education, Business, and Administration Subcommittee
Senator Nancy J. King, Chair
February 12, 2026

Testimony by Dr. Fernando Miralles-Wilhelm, 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 continues to value higher education and the critical role it plays in supporting and growing our state's economy. 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 toward advancing knowledge and innovation to solve the big environmental challenges facing Maryland and the world.

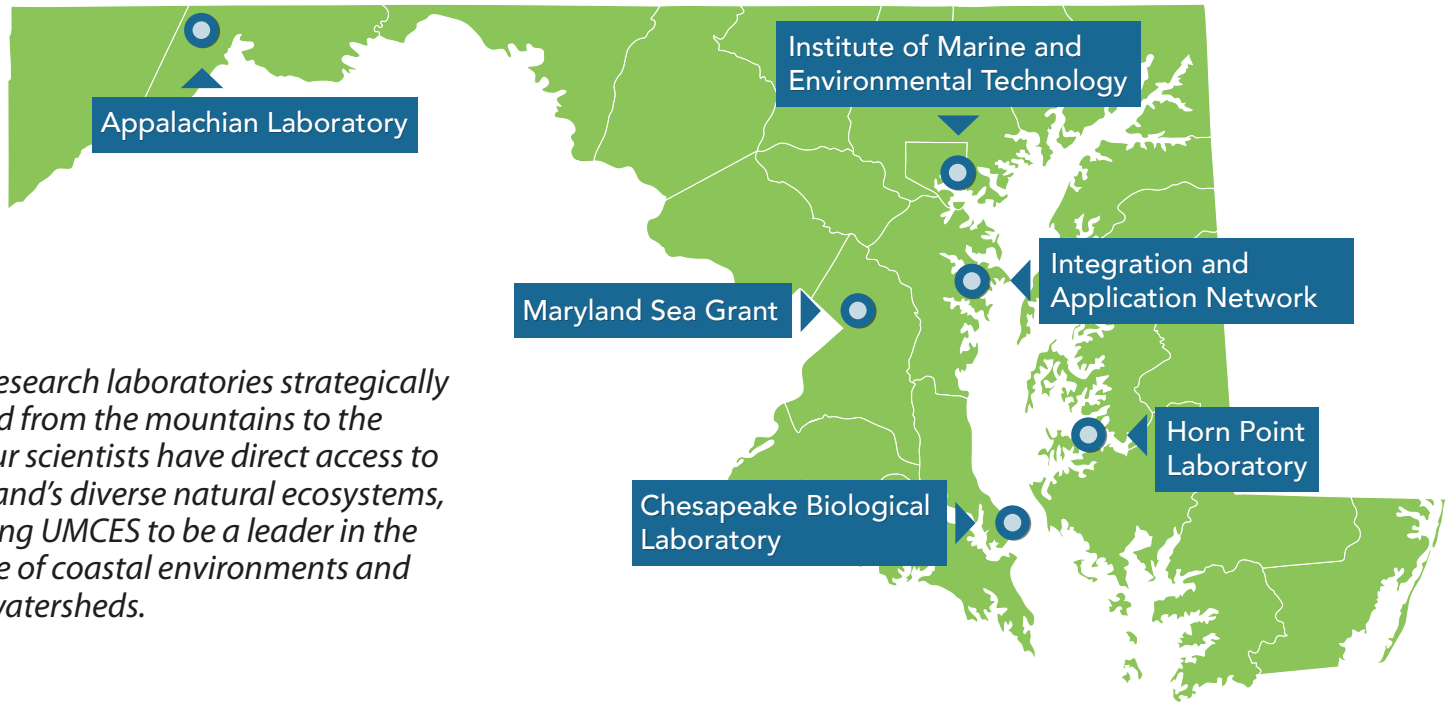
We have been at the forefront of environmental stewardship for over 100 years and remain focused on working on environmental solutions with multiple stakeholders to meet the unprecedented challenges of the 21st century.

We continue to track the health of the Chesapeake Bay through the monitoring of dead zones, underwater grasses, and oysters and other fisheries as well as 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. UMCES serves on the Maryland Commission on Climate Change and Chairs the Science and Technical Workgroup. We are assisting the efforts to meet Maryland's commitment to greenhouse gas reductions and focus on understanding the impacts of climate change and how to adapt, locally and globally.

Bird Communities Are Shifting
Just a few weeks ago, UMCES scientists led a published study that recently found that changes in songbirds' abundance and migration timing—often a consequence of climate change and habitat disturbances—**are causing dramatic shifts in which bird species are commonly seen together during migration**. By showing how species-level processes can change an entire community, this research encourages a multi-species approach to understanding and conserving migratory birds.

Alternative Sources to Mining
In an effort to reduce carbon emissions and environmental impacts of mining, a multi-institutional research group led by UMCES (including MICA and Salisbury University), has received a prestigious NSF Convergence Accelerator award to **develop and prototype a new biomanufacturing process** for making precipitated calcium carbonate from plant-based compounds. These products are used in the nutraceutical industry that support human health.

Salt Contamination as a Global Threat
Salt contamination is emerging global threat posed to water supplies in tidal rivers. This study highlights how a combination of climate change impacts—prolonged drought and rapid sea-level rise—along with localized human activities, are intensifying the increase in salt in freshwater sources. In the **Mid-Atlantic, nearly $100 million in agricultural activity is at risk. Nationally, over $1 trillion** in infrastructure investments are needed in drinking and wastewater systems.

Hometown Comparison of Future Climates
The impacts of climate change are being felt all over the world, but how will it impact how your hometown feels? UMCES scientists developed an app called Future Urban Climates to match the **expected future climate in each city with the current climate of another location**. If you happen to live in Annapolis you would need to travel to Louisiana to experience what Annapolis is expected to feel like by 2080. Really hot and humid summers and no snow in winter. By 2080 Helsinki, Finland would feel like Hungary today.

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 through research, education, and public service.

Chesapeake Bay Science

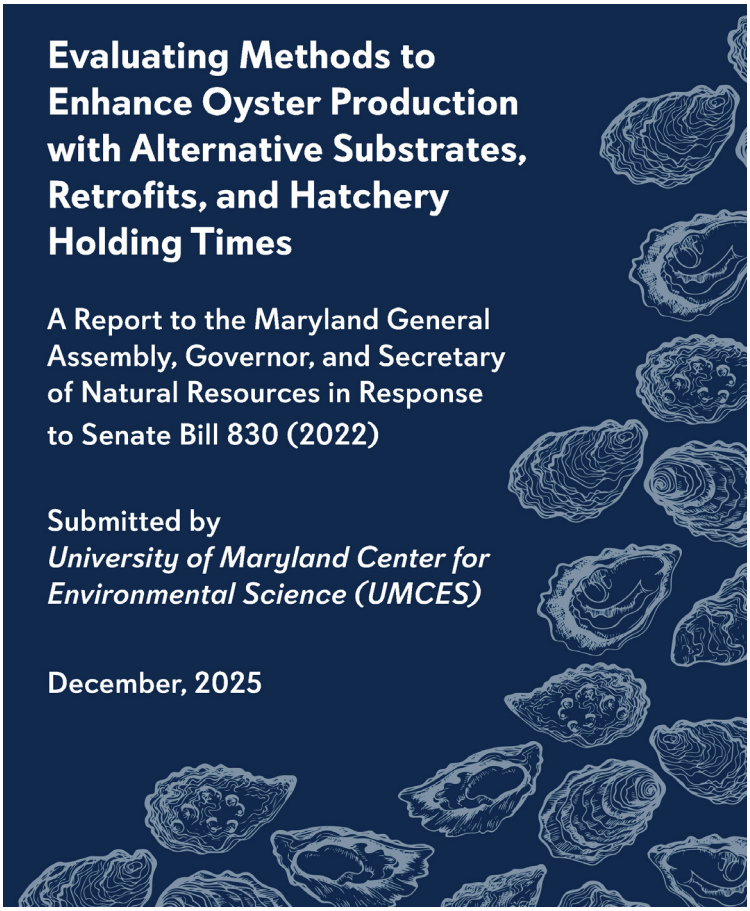
As trusted scientific advisors to state and national leaders, our scientists provide unbiased research to inform public policy and support the science behind environmental initiatives in Maryland, including a healthy bay, abundant fisheries, and clean water. We continue to track the health of the Chesapeake 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.

National Recognition
The 2025 Coastal and Estuarine Research Federation (CERF), Achievement Award for Organizational Coastal Stewardship has been awarded to UMCES. The award **recognizes UMCES' 100-year legacy of advancing scientific knowledge, public education, and management solutions** in support of coastal and estuarine health worldwide. CERF is the preeminent international coastal science organization.

Oysters
If there is one thing everyone agrees upon it is that the Chesapeake Bay needs more oysters.

UMCES is a key partner in oyster restoration efforts and is helping Maryland meet its commitment to restore five oyster tributaries in the Chesapeake Bay. These **oyster restoration projects—among the largest in the world—have been highly successful at helping bring back oyster populations**, building habitat and supporting economic growth in the Chesapeake Bay. There has been a four-fold increase in oyster harvest since restoration began.

In 2022, a legislative bill passed (SB830/HB1228) and went into law that commissioned UMCES to study oyster spat, shells, and substrate. **Fresh oyster shell is in short supply and alternatives such as other shells and stones can be an effective**. Retrofitting hardened shorelines with oysters is an opportunity for habitat enhancement and shoreline protection.



Reducing Pollution from Oyster Aquaculture
Research by a graduate student, Michael Kalinowski, has shown that bioelectrochemical tools can reduce sulfide accumulation in oyster aquaculture sediment. Sulfide is toxic to aquatic life. As oyster aquaculture expands and intensifies, the buildup of sediment sulfide from oyster production may limit the ecosystem benefits of oyster farming. These tools represent a proactive approach to managing sediment toxicity before it can cause significant harm.

Chesapeake Bay Science

Report Card
UMCES' flagship Chesapeake Bay and Watershed Report Card, developed in collaboration with local stakeholders, is a proven tool for measuring the latest available data and communicating social, environmental, and economic health to inspire action. Despite a slight decrease in 2025, **the Bay continues to show long-term improvement compared to past decades**. Six regions are trending upwards along with most indicators.

UMCES Scientist Commissioned as an "Admiral of the Chesapeake"
Governor Wes Moore commissioned UMCES Professor Thomas Miller as the 111th Admiral of the Chesapeake Bay. Dr. Miller has played a key role in **developing the modern scientific understanding and management of Maryland's recreational and commercial fisheries**. His research focused on how Maryland and Virginia can better cooperate to manage the Chesapeake Bay's blue crab fishery using scientific surveys and data.

Regional Collaboration for Drones in Marsh Research
Maryland Sea Grant facilitated workshops and published a networking resource to encourage collaboration between researchers in the marsh monitoring with drones. **Using drones in research and monitoring can reduce labor and collect data in hard-to-access areas like marshes and shorelines**. There is significant interest in using drone technologies in marsh monitoring projects around the Chesapeake and coastal bays, as well as start-up guidance for researchers.

Bird Conservation in Appalachia
UMCES, in partnership with the American Bird Conservancy, received a $1.1M award from NSF and the Paul G. Allen Family Foundation. This Joint Venture will **apply big data to conservation planning for the benefit of birds and people** in the Appalachian Mountains. The researchers will use remote sensing and interpretable machine learning to characterize aspects of forests and landscape structure that provide habitat for birds during migration through the Appalachian Mountains.

Graduate & Continuing Education, Diversity & Inclusion

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 conduct research alongside UMCES scientists through the nationally eminent Marine Estuarine Environmental Sciences graduate program. Additionally, UMCES has been expanding other educational offerings including new graduate programs, expanding certificate programs and badges.

Inspiring Leaders for Over a Decade

For over a decade the Ratcliffe Environmental Entrepreneur Fellow (REEF) program has been inspiring graduate students, post-docs and research assistants to learn how to **integrate entrepreneurship and science**. This program includes meet-and-greets with business leaders, provides lessons on topics including intellectual property, and hosts a pitch competition enabling Fellows to cultivate their business skills as a means of transitioning ideas into commercial markets.

Inaugural Graduates FSU-UMCES Program

UMCES and Frostburg State University began offering an innovative joint Master in Environmental Management in Sustainability in 2024. 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. The first students graduated out of this program in 2025.

Marine Debris Program Engages Hundreds of Students

Maryland Sea Grant's Raising Awareness of Marine Pollution in Underserved Populations (RAMP-UP), uses the topic of marine debris to increase awareness about environmental degradation. The **program enhances literacy about marine debris through education efforts**, including education programs at two Historically Black Colleges and Universities (UMES and Hampton University) and informal education with youth summer programs, outreach and educational events.

Continuing Education

More than 15,000 learners in 172 countries have enrolled in UMCES Professional Certificate courses, including Environmental Project Management, **supporting the regional restoration workforce**. UMCES also offers 15 digital credentials, such as Aquaculture Operations. Additionally, two MSDE-approved K–12 teacher courses have served over 100 educators. These expert-led programs strengthen the workforce and support sustainable, resilient communities.

Advances in Philanthropy

Endowed Professorship and MEIF Match
UMCES received a landmark $1 million donation from longtime supporters Brian Hochheimer and Marjorie Wax (second major gift). This gift has established the Thomas Miller Endowed Professorship (aforementioned Admiral). Dr. Miller led the UMCES' Chesapeake Biological Laboratory and is an international leader in fisheries science. This Professorship will focus on recruiting emerging faculty in environmental science. It is being matched with a Maryland E-Nnovation Initiative Fund grant (MEIF).

Philanthropic Investor Networks Are Growing
First established at the Institute of Marine and Environmental Science (IMET) these two visionary donor groups now provide annual funding of early-stage environmental research both at IMET and UMCES Appalachian Laboratory, where the return on investment is the potential for discovery and exponential impact of success. These gifts have enabled scientists to answer key questions and obtain critical proof-of-concept results that can leverage support from traditional funding agencies.

Impact of Federal Budget Cuts

The President of UMCES should comment on the impact the canceled federal grants and contract, rescoping awards, and new compliance requirements have had on research and the pace of the awarding of new contracts and grants.

However, the most significant impact is the wobble in the federal partnership particularly in the Chesapeake Bay Program and Oyster Restoration. In the fall we received the news from NOAA , a key funding partner, that we were likely to receive a 50% grant cut to our UMCES' Horn Point Laboratory Oyster Hatchery this year with the possibility of zero funding in out years. Now that the Federal Budget has been set, we are hopeful the funds will be restored as well. We are working diligently to plug the funding gap.

UMCES has lost several or received significant reductions federal awards and contracts from multiple agencies. To-date this accounts for approximately a 10% reduction of grants and contracts. What is also troubling are the programs that have been entirely rescinded such as NSF's Belmont Forum, in which UMCES was particularly successful with international partners.

DLS Recommendations

The University of Maryland Center for Environmental Science (UMCES) enthusiastically concurs with the DLS recommendations and requests APPROVAL of the Governor's FY2027 budget for the University System of Maryland and UMCES as submitted.