Institutionalizing Climate Consideration into Governmental Decision-Making

National Adaptation Forum - April 24th, 2019

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Maryland Department of Natural Resources
Climate Change Impacts in Maryland

Storm surge in the resort town of Ocean City, Maryland during Super Storm Sandy.
Drought, flooding, and extreme weather are some of the main causes of failed crops and all of these issues are associated with climate change. On Maryland’s eastern shore, saltwater intrusion is turning some farms into barren fields.
Climate Change Impacts in Maryland

Headstones like those shown here on Wroten, Island in Dorchester County, Maryland and elsewhere on the lower Eastern Shore are at risk of being submerge.
Ghost” pines, dead from salt water intrusion, line the marsh-upland edges in southern Dorchester County, Maryland.
In 1950, a group of people, dressed in attire from the early 20th century, posed for a photo on a small speck of land, all that remained of Sharps Island. It once measured as much as 700 acres and was home to a hotel and farms.
Increasing water temperatures in the Chesapeake Bay, which reduces suitable habitat for blue crab and oysters.
Summertime extreme heat and precipitation events increased the risk of hospitalization for asthma in Maryland by 22% and 11%, respectively.
Climate Change Impacts in Maryland

Nuisance flooding impacting businesses and tourism in Maryland’s State Capital.
Erosion threatens homes in Calvert County, Maryland.
Flash flooding turns historic Main Street into a raging river with water reaching past the first floor of buildings and sweeping cars down the road in the Baltimore suburb of Ellicott City, Maryland.
Heat stress can cause a decline in milk production, Fredrick County, Maryland.
Forest productivity in terms of timber produced is likely to decline late in the century under the higher emissions scenario as a result of heat stress, drought, and climate-related disturbances such as fires and storms.
Climate change impacts threaten tourism through reduced opportunities for winter sports, Garrett County, Maryland.
Maryland’s Climate Response

Creating a Climate for Change

Engaging and Enabling

Implementing and Sustaining
Creating the Culture for Change

Establish the Policy…

Taking action to address both the drivers and consequences of climate change...

Maryland Addresses Climate Change — A Brief History

- 2004: Renewable Portfolio Standard (20%)
- 2006: Healthy Air Act Maryland joins Regional Greenhouse Gas Initiative
- 2008: Climate Action Plan
- 2010: Climate Change and Coast Smart Executive Order
- 2012: Coast Smart Council Statute
- 2014: Greenhouse Gas Emissions Reduction Act extended
- 2016: Coast Smart Council Act amended
- 2018: Renewable Portfolio Standard (25%)

- 2005: Clean Cars Act Commission on Climate Change Executive Order
- 2007: Greenhouse Gas Emissions Reduction Act (GGRA)
- 2009: Updating Maryland’s Sea-Level Rise Projections
- 2011: Commission on Climate Change Act
- 2013: GGRA Update
- 2015: Renewable Portfolio Standard (25%)
MD’s Climate Change Commission...

- Created to advise the Governor and the General Assembly on addressing the impact of climate change, and how to mitigate its effects and prepare for its consequences.

- Charged with developing an action plan and firm timetable for mitigation and adaptation.

- As a result of the work of more than 100 stakeholders and experts, produced a climate action plan.
Engaging and Enabling

Attention, Accountability and Transparency…
### Engaging and Enabling

### Attention, Accountability and Transparency...

#### Bay and Aquatic Ecosystems, continued

<table>
<thead>
<tr>
<th>Priority Recommendations</th>
<th>Lead Agency</th>
<th>Key Partners</th>
<th>Priority</th>
<th>Timeframe</th>
<th>Potential Cost</th>
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</thead>
<tbody>
<tr>
<td><strong>Restore critical bay and aquatic habitats to enhance resilience.</strong></td>
<td>DNR</td>
<td>USACE, USGS, USFWS, NOAA, EPA, CBE NGOs</td>
<td>high</td>
<td>long-term</td>
<td>high</td>
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<tr>
<td>Proactively pursue, design, and construct habitat restoration projects to enhance the resilience of bay and aquatic ecosystems.</td>
<td>DNR</td>
<td>USGS, EPA, CBF, USFWS</td>
<td>medium</td>
<td>short-term</td>
<td>low</td>
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<td>Conduct an audit of state-owned lands to identify habitat restoration potential for enhancing ecosystem resilience and increasing on-site carbon sequestration.</td>
<td>DNR</td>
<td>USGS, EPA, CBF, USFWS</td>
<td>high</td>
<td>short-term</td>
<td>high</td>
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<tr>
<td>Increase on-the-ground implementation of existing stream restoration practices.</td>
<td>DNR</td>
<td>USGS, EPA, CBF, USFWS</td>
<td>high</td>
<td>short-term</td>
<td>high</td>
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<td><strong>Reduce existing stressors.</strong></td>
<td>DNR</td>
<td>MDE, USFWS, NOAA</td>
<td>high</td>
<td>ongoing</td>
<td>high</td>
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<td>Remove barriers to habitat connectivity.</td>
<td>DNR, MDE</td>
<td>MDP</td>
<td>high</td>
<td>ongoing</td>
<td>high</td>
</tr>
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<td>Reduce impervious surface cover.</td>
<td>DNR</td>
<td>MDA, MD Invasive Species Council, USFWS</td>
<td>high</td>
<td>ongoing</td>
<td>medium</td>
</tr>
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<td>Prepare for new or expanding ranges of invasive species.</td>
<td>DNR</td>
<td>MDA, MD Invasive Species Council, USFWS</td>
<td>high</td>
<td>ongoing</td>
<td>medium</td>
</tr>
<tr>
<td><strong>Foster a collective response to climate change.</strong></td>
<td>DNR</td>
<td>MDE, UMD, NOAA, USGS, EPA, Penn State, USFWS</td>
<td>medium</td>
<td>ongoing in Coastal Plain</td>
<td>medium</td>
</tr>
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<td>Adjust bay and watershed restoration priorities in light of a changing climate.</td>
<td>DNR</td>
<td>USFWS, NOAA, NGOs</td>
<td>high</td>
<td>short-term</td>
<td>low</td>
</tr>
<tr>
<td>Integrate both adaptation and mitigation reduction strategies into natural resource management plans and programs.</td>
<td>DNR</td>
<td>USFWS, NOAA, NGOs</td>
<td>high</td>
<td>long-term</td>
<td>medium</td>
</tr>
<tr>
<td>Revise fishery and wildlife management to build climate resilient safeguards.</td>
<td>DNR</td>
<td>UMD, NOAA, USGS, EPA, NGOs</td>
<td>high</td>
<td>short-term</td>
<td>low</td>
</tr>
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<td>Increase collaboration among federal, state, regional, and local climate change adaptation partners.</td>
<td>DNR</td>
<td>UMD, NOAA, USGS, EPA, NGOs</td>
<td>high</td>
<td>short-term</td>
<td>low</td>
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Median projections of relative sea-level rise at Baltimore through 2200 under the three greenhouse gas emissions pathways.
Implementing and Sustaining

Research, Data Gathering and Planning...

Maryland Department of Transportation’s Climate Change Vulnerability Viewer.
Implementing and Sustaining Leadership by Example...

Assateague State Park Visitor Center, Worcester County, Maryland
Implementing and Sustaining

Integrate across State Policies…

Chesapeake Bay Total Maximum Daily Load

What would it take to achieve this 1.4-million-pound reduction?

Preliminary Climate Change Target: 43.6 M lbs
Implementing and Sustaining

Adjust and Adapt Programs…

Muddy Creek Floodplain restoration project in Anne Arundel County, Maryland.
Implementing and Sustaining Maryland’s Climate Leadership Academy

Maryland’s Climate Leadership Academy

- Established to advance the capacity of state and local government agencies, infrastructure organizations and businesses to develop and implement aggressive climate change initiatives.

- The Academy will provide important continuing education and executive training that will help ensure state goals are achieved and policies effectively implemented.

Workforce Development…
Implementing and Sustaining

Ensuring that Maryland has a Climate Smart Workforce
Implementing and Sustaining

Cohort Learning Across Organizations

State Agencies  Local Governments

Infrastructure  Private Sector

Maryland Climate Academy
Supporting a Diverse set of Decision-making Audiences

Certified Climate Change Professional® (CC-P)®
- 3 workshops (6 months)
- Online & in-person training
- Up to 3 concurrent cohorts

ACCO/Maryland Certificate Programs
- Clean Energy Procurement & Financing
- Climate Leadership & Entrepreneurship

Primers & Stand-Alone Workshops
- Climate Change & Maryland Primer

Online Toolkit
- Micro-modules including regional climate scenarios, regional energy-water-food nexus, state/local policy
Implementing and Sustaining

An Evolving Vision

Training:
- State Agencies
- Local Government
- Infrastructure
- Online & In-Person
- Cohort

Dedicated Support:
- Research
- Scenario Modeling
- Analyses
- Consulting
- Staffing Resource
- Facilitating
- Collaboration

Laboratory:
- Multi-disciplinary solutions
- Experimental projects
- Creative approaches
- Aggregated solutions
The Chesapeake and Coastal Service
Thank You

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