# NextGen Adaptation Plan
# Focus and Sector Group Priorities and Milestones

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## Justice, Equity, Diversity and Inclusion

## "Resource Ready" Priorities

1. **Priority 1:** Build equitable representation into governance.
    a. Short Term (0-2 years) step(s) =
        i. Define "equitable representation" with assistance from the Maryland Commission on Climate Change's (MCCC) Climate Justice Work Group and/or glossary and propose what that looks like in governance.
        ii. Increase government transparency by creating an annual report of state employee demographics.
        iii. Begin to improve equity in hiring procedures across state agencies by conducting a needs assessment for the current process of promoting job listings and recruiting for positions. Promote diversity in the workforce by targeting advertising for job announcements, continually reassessing job requirements and modifying civil service laws.
        iv. Expand pathways to entering careers in environmental governance.
            1. Build support for recognizing interdisciplinary qualifications, climate certificate programs and climate work embedded in alternative fields (e.g. finance, accounting, wastewater) as acceptable experience for job requirements.
            2. Establish a pipeline program for actively engaging more Black, Indigenous, People of Color (BIPOC) in these pathways. For example, improve and renew partnerships with fellowship and internship programs.
        v. Hire staff who specialize in climate and equity work to assist agencies to embed Justice, Equity, Diversity and Inclusion (JEDI) into programs and policies.
        vi. Work with the Department of Budget and Management (DBM) with assistance from the Department of Commerce (Commerce) and Department of Labor (Labor) to develop a state best practices hiring guide. Develop guidance for agencies to think about where they do their career outreach. Include best practices, resources and how to expand their reach.
        vii. Actively invest in career development opportunities such as youth outreach for climate adaptation career opportunities, training pipelines and instituting an apprenticeship program that does not require higher education degrees and prioritizes direct experience for entry-level positions.
            1. Task the MCCC Just Transition Working Group with assisting the transition into climate ready career development opportunities with an equity lens.
    b. Mid Term (2-5 years) step(s) =
        i. Incorporate equity and transparency processes within state programs and policies.
            1. Continue to regularly assess and publish findings of diversity and inclusion at all levels of state agencies, boards and commissions, and actively seek to increase representation from underserved communities.
            2. Administer an anonymous survey (potentially hiring an outside

consulting group) to regularly assess the culture of state agencies to ensure the work environment is culturally competent and supportive of BIPOC staff. This will help with retention of diverse staff.

c. Long Term (5+ years) step(s) =
    i. The Commission on Environmental Justice and Sustainable Communities (CEJSC) or other multi-agency task force works to develop a strategy to shift culture with the goal of removing systemic racism.
    ii. All agency Human Resources offices (HR) should connect this with training for state agency leaders and staff to improve core competencies around the intersection of climate change and JEDI.

2. **Priority 2:** Ensure that state agencies are aligned in centering the environment and climate impacts and streamline coordination and collaboration between state and local governments.
    a. Short Term (0-2 years) step(s) =
        i. State agencies work with partners and local jurisdictions - perhaps through the Maryland Capacity Network - to identify and map underserved and overburdened communities threatened by climate change and the associated capacity needs to support community-driven adaptation action.
        ii. Hire a consultant to begin development of a "language map" that acts as a glossary to define language used for things such as grants, mapping, etc. that should have consistency across agencies. Be sure to differentiate between this and a "glossary" of terms.
        iii. The Adaptation and Resiliency Working Group (ARWG) works with the MCCC and Governor's office to develop and issue an Executive Order committing to ambitious adaptation-related JEDI goals based on the Justice 40 initiative. ARWG member agencies identify specific steps to continue meaningful progress, including where goals are applied (e.g. which programs and policies) and how they are supported (i.e. not solely relying upon grant funding, and where state funds are applied via regulatory programs).
        iv. Assist in the review and promotion of the MCCC Climate Justice Equity Toolkit.
            1. Work with the MCCC Climate Justice Steering Committee to build a glossary of agreed-upon definitions for common terms that will be used as guidelines across agencies.
        v. Revisit the Health in All Policies Task Force recommendations. Embed equity into this to ensure accountability. Then advance Legislation, health and equity in all policies, to make this an intrinsic aspect of all agencies.
    b. Mid Term (2-5 years) step(s) =
        i. Maryland, the ARWG and the Climate Justice Steering Committee work collectively to develop and/or re-commit to statewide actions and policies highlighting and elevating JEDI and climate adaptation. This may include:
            1. Creating a governor's cabinet-level position or an authority that advances collaboration and redefines structure around JEDI and adaptation;
            2. Drafting language for legislative action that set Justice 40 goals;
            3. Agency-specific statements and commitments about ways that communication, engagement and investments will advance actionable

steps.

ii. Form a permanent JEDI, environmental justice (EJ) and/or climate justice (CJ) subgroup of ARWG to work with CJ and coordinate this effort.

iii. Work with the MCCC Education, Communication and Outreach Workgroup (ECO) on promotion and implementation of the Equity Toolkit to ensure it is being used widely and applied correctly.

c. Long Term (5+ years) step(s) =

i. Develop training for state agency leaders and staff to improve core competencies around the intersection of climate change and JEDI. Create a shared culture and responsibility for centering underserved communities in adaptation and resilience initiatives.

ii. Implement the Equity Tool across all agencies.

3. **Priority 3:** Develop and implement a comprehensive communications and engagement strategy that resonates with residents and aligns with community needs.

a. Short Term (0-2 years) step(s) =

i. Establish an equitable engagement task force to develop a comprehensive communications plan. The task force should be made up of organizations led by and serving people of color (POC), community-based organizations and organizations that prioritize JEDI.

1. Work with MCCC ECO and CJ groups to assess communications needs within residential communities.

a. Understand the local organizations, communities, government and trusted figures.

b. Create additional capacity at the state or agency level with collaboration from University partners to do outreach, interviews and focus group discussions to assess priorities and community needs.

c. Schedule regular listening sessions with underserved communities targeted by the Maryland EJ screening tool that go beyond engaging local governments into action.

ii. All agencies should work to schedule regular engagement events that are not only work related to establish a presence in the community.

iii. When planning community meetings or sessions, provide assistance such as childcare and travel reimbursement to reduce barriers for participation.

iv. Identify capacity and time constraints for state agency implementation of deep engagement and how partnerships might be able to address limitations.

b. Mid Term (2-5 years) step(s) =

i. Conduct a comprehensive inventory of state agencies capacity and approach to outreach and communications and assess outcomes of community engagement for best practices. Employ locals to participate and conduct this assessment.

ii. Develop a more coordinated approach to outreach and engagement by building community profiles for vulnerable groups that contains information about identified priorities, vulnerabilities, needs and established community organizations to be shared statewide.

c. Long Term (5+ years) step(s) =

i. Compile a best practices document using the above inventory that includes a minimum standard of communications with communities and guidance on

coordinating and tracking interactions with community partners to ensure they are not further burdened. Cite case studies as examples for what has worked in the past.

ii. Create a shared platform across agencies to track communications with communities. For example, noting when agencies have been involved in discussions, received funding, permitting, etc. With the goal of lessening the communication burden on communities and ensuring state coordination and transparency.

## "Investment Needed" Priorities

1. **Priority 1:** Identify patterns and legacies of structural disinvestment in underserved and overburdened communities to produce guidance and technical assistance for state agencies and local governments to remove obstacles to accessing resources.
    a. Short Term (0-2 years) step(s) =
        i. To identify burdens, develop a decision support tool to help agencies and departments assess and deploy existing JEDI tools that already identify patterns and legacies of structural disinvestment and obstacles to access for underserved and overburdened communities.
        ii. Use the Supporting Equitable Access to Funding for Adaptation Resources initiative (SEAFARE) to identify barriers to funding (see Resource Ready, Priority 1) and begin to develop legislative wording to address equity issues across state agencies.
        iii. Identify the government programs related to climate adaptation across sectors and within each, identify potential burdens, lack of alignment and potential for cumulative impacts.
    b. Mid Term (2-5 years) step(s) =
        i. In consultation with affected communities, evaluate burdens and cumulative impacts and identify potential solutions (see Resource Ready Priority 3).
            1. Work within individual communities to define those burdens and cumulative impacts.
            2. Include health as a major indicator (e.g. tools like the Maryland Department of Health Environmental Public Health Tracking Portal).
    c. Long Term (5+ years) step(s) =
        i. Develop guidance and deliver technical assistance and resources to address structural disinvestments.

2. **Priority 2:** Improve decision-making processes for climate adaptation funding programs to prioritize investment in underserved and overburdened communities.
    a. Short Term (0-2 years) step(s) =
        i. Develop an equitable investment strategy with extensive public input, in order to ensure a prioritization process that is fair, transparent and based on shared community goals.
            1. Include an evaluation scorecard with criteria and processes for prioritizing expenditures that heavily weights JEDI considerations in the

decision-making process for grant programs, capital projects, technical assistance initiatives and other aspects of State funding allocation.
2. This should be an ongoing community engagement process; create milestones and transparency for ensuring this is happening moving forward.
3. Ensure that funding is actually getting into the hands of the community and not just into the consultants, engineers, etc.

ii. Perform a comprehensive review of where state funds are going that includes an investments/economic impact assessment, assess geographic spread of investments, identifies and prioritizes under invested communities and what are the long-term impacts of those investments.
1. Transparency in decision making will help. It is one thing to develop a scoring rubric but another to publicize how the rubric was applied in individual investment decisions.

b. Mid Term (2-5 years) step(s) =
i. Roll out equitable investment strategy and ensure all state agencies are evaluating projects and programs based on adaptation and equity scoring criteria.
ii. Continue comprehensive reviews of state fund allocations at periodic intervals (suggested every 5 years) to build transparency.
iii. Draft legislation to require vulnerability assessments beyond Federal Emergency Management Agency (FEMA) requirements, including a review of potential cumulative impacts on residents, for all proposed projects over an explicit threshold (dollar or percent) established by the agency or jurisdiction.
1. Environmental impact assessments that determine the social and environmental impacts on residents.

c. Long Term (5+ years) step(s) =
i. Consider reparations to address the historical inequities of investment that have adaptation-related implications across all sectors (e.g. development in flood-vulnerable locations, access to health services).
ii. Review Maryland Environmental Policy Act (MEPA) regulations and revise the recommendations to include climate adaptation. Encourage and/or require state agencies to adopt MEPA recommendations.

3. **Priority 3:** Commit resources to develop working relationships, information exchange and trust between agencies and underserved and overburdened communities affected by climate.
a. Short Term (0-2 years) step(s) =
i. Collaborate with the CEJSC and the Governor's Office of Community Initiatives on outreach planning and implementation.
1. Strategies for engaging communities prior to department/ agency project planning.
2. Longer-project timeline to co-develop project concept design through community engagement project development.

ii. Outreach by State and locals to identified communities to start relationship-building.
1. Dedicate staff to serve as liaisons between agencies and communities.

Track staff involvement so communities do not feel burdened by multiple points of contact.

iii. Contract with organizations led by and serving BIPOC (e.g., minority-based enterprises), community-based organizations (CBOs) and organizations that prioritize JEDI to conduct outreach and engagement efforts.

iv. Develop and adopt policies that address procurement and reimbursement practices that allow the state to directly fund community liaisons and CBOs without going through other third parties (i.e. Non-Governmental Organizations [NGOs], universities, etc.). Incorporate into the Inter-Agency Funding Coordination scope of work.

b. Mid Term (2-5 years) step(s) =
   i. Create a work session framework for regular meetings with communities to identify their climate adaptation needs and how State/Locals can assist.
   ii. Establish a community liaison program that compensates community members for serving as representatives in local/state government projects (especially in unincorporated communities).

c. Long Term (5+ years) step(s) =
   i. Continue to commit to relationships with communities through staff turnover by tracking relationships across and within agencies in a shared log.

## Local Government and State Service Delivery

## "Resource Ready" Priorities

1. **Priority 1:** The ARWG provides a web-based toolkit of capacity-building tools, resources, grant opportunities and training to assist local partners. This toolkit will Include resources from state and federal governments as well as from NGOs and private grant-making organizations.
    a. Short Term (0-2 years) step(s) =
        i. Maryland Department of Emergency Management (MDEM) will lead an interagency process to create a toolkit of grants, program support and technical assistance that exist across the state to assist local partners that identifies capability gaps. The tool will include data collected by MDEM and the ARWG Local Capacity Building Workgroup. MDEM will share the toolkit with the ARWG and state agency partners for review. The toolkit should:
            1. Address specific climate impacts (e.g. including sea level rise, coastal storms, salinization, increasing temperatures and changing precipitation patterns) and identify resources and funding opportunities to aid in adaptation actions in local communities.
            2. Review the data and analyses collected through the Maryland Department of Natural Resources (MDNR) Chesapeake and Coastal Service need assessment of local government staff to determine if results are applicable.
            3. Incorporate the results from the Supporting Equitable Access to Funding for Adaptation Resources initiative (SEAFARE).
        ii. Through identified networks provide outreach and training on the toolkit for local government and peer audiences.
    b. Mid Term (2-5 years) step(s) =
        i. The Chesapeake and Coastal Service will conduct an evaluation of the gaps and effectiveness of the toolkits and provide recommendations to MDEM on revisions and updates. For specific impacts identify specific tools and determine how they are used and provide instructions and/or case studies on the platforms.
        ii. Evaluate the need for integrating the toolkit into a central adaptation hub that serves cross-government coordination.
    c. Long Term (5+ years) step(s) =
        i. Review specific tools identified in the toolkit every three years and update recommendations, instructions and case studies to ensure it is current and relevant.

2. **Priority 2:** Initiate a strong educational outreach campaign to build local support for bold, sustained, equitable climate adaptation action. Consider focusing messages on the cost of inaction in terms of health, fiscal impacts and local economy and jobs using local examples, visualization and trusted messengers.
    a. Short Term (0-2 years) step(s) =

i. With support from the ARWG and other MCCC workgroups, the ECO Workgroup should develop and lead. The development of this outreach campaign should consider, at minimum:
    1. Identify the goals of the outreach campaign
    2. Definition and key messages with agreement across agencies of bold, sustained, equitable climate adaptations are for different regions/sectors of Maryland. This should consider messaging around the cost of inaction
    3. Identify how the campaign will be conducted
    4. Determine the metrics by which progress is measured
ii. Launch the outreach campaign (Year 2).
iii. The MCCC and ARWG will work to ensure that the campaign is distributed throughout the state of Maryland across partner networks. Partner with the Maryland Resiliency Partnership to ensure coordination at the state level through intentional social media postings, outreach and engagement and in person sessions. Identify and train trusted messengers such as community liaisons, schools, churches, NGOs to spread messages through passive and active engagement.

b. Mid Term (2-5 years) step(s) =
    i. Determine if the campaign is building support for adaptation action through evaluation of the metrics, i.e., is the campaign reaching the intended audience and if not develop a different strategy for outreach based on the evaluation data.

c. Long Term (5+ years) step(s) =
    i. Review communications tools, visualizations and messages every 3-5 years and update to reflect new data, information and climate impacts.

## "Investment Needed" Priorities

1. **Priority 1:** Work with local governments to develop regional scale resilience plans that address the needs of vulnerable and underserved communities and prioritize adaptation actions.
    a. Short Term (0-2 years) step(s) =
        i. Create regional impact statements for the identified communities that quantify present and near term (2050) changes.
            1. This could include an analysis of sea level rise, drought, salinization, extreme heat and precipitation-induced flooding. Identify gaps.
        ii. Identify how state and local governments are addressing those impacts for each region identified in various planning initiatives.
            1. Identify capacity needs and opportunities.
            2. Identify immediate next steps leading to implementation of adaptation projects.
    b. Mid Term (2-5 years) step(s) =
        i. Identify priority projects for each region and identify a lead agency to work with the community to go from planning to implementation.
        ii. Catalog projects and outcomes.

c. Long Term (5+ years) step(s) =
    i. Refresh the list of priority projects on an annual basis. Set a new list of priority projects to implement.
    ii. Use adaptive management to assess changes in climate vulnerability and ensure that adaptation solutions remain flexible to meet community needs.
        1. State agencies will identify best practices to respond to a changing environment.

2. **Priority 2:** Employ multiple means of increasing technical support to local governments, including regional partnerships and a local resilience capacity assistance service.
    a. Short Term (0-2 years) step(s) =
        i. State agencies evaluate current technical assistance and staff capacity that already exist that provide assistance to local governments. Identify gaps in service delivery and staffing capacity at the agency level.
        ii. Key agencies determine lead role identification and support agencies and how to assign or coordinate activities, including any roles with partners.
        iii. Identify technical support needs and employ the appropriate mechanism for service delivery and identify gaps.
        iv. Assess which local jurisdictions have adopted higher regulatory standards that address climate impacts that go beyond minimum (e.g. National Flood Insurance Program requirements or CoastSmart standards) and provide technical assistance to those local jurisdictions interested in implementing higher regulatory standards.
    b. Mid Term (2-5 years) step(s) =
        i. To expand service delivery, state agencies partner with community organizations beyond environmental groups to provide technical assistance and extend outreach.
        ii. Address gaps in service delivery for establishing a broader service delivery network.
        iii. Assess which communities have leadership positions responsible for oversight of the climate adaptation plan and strategy alignment and implementation to inform the technical assistance network.
    c. Long Term (5+ years) step(s) =
        i. Review service delivery impacts every 5 years and make updates to the service delivery network.

3. **Priority 3:** Align existing state funding and programs to deliver climate adaptation and build community resilience prioritizing underserved and overburdened communities to receive assistance.
    a. Short Term (0-2 years) step(s) =
        i. State agencies will identify and catalog funding and programs that build resilience.
        ii. Determine criteria to identify underserved and overburdened communities across state agencies.
        iii. Identify communities that have not received funding and understand

community specific reasons why this has occurred.

iv. Identify barriers and solutions in distributing funding to underserved and overburdened communities through state funding programs.
    1. Utilize SEAFARE recommendations in this analysis.
    2. Across state agencies revise funding solicitations to clearly identify and establish criteria to prioritize the communities identified in 3.a.ii.
    3. Focus capacity building efforts or technical assistance partners in these priority communities to enable application to these solicitations.

b. Mid Term (2-5 years) step(s) =
    i. Key agencies will assess and adjust funding and programs to better serve underserved and overburdened communities to propel on the ground projects.
    ii. Funding agencies will review applications and target technical assistance to diversify future applicants.
        1. Continually assess funding mechanisms to identify barriers for underserved and overburden communities.

c. Long Term (5+ years) step(s) =
    i. Develop a statewide grant portal that facilitates an equitable distribution of funding and reduces barriers for applicants.
        1. Update and maintain the portal and analyze the impact of completed projects within underserved and overburdened communities.
    ii. Provide technical and financial resources to assist throughout the grant cycle.
    iii. Develop a case study on Maryland's holistic approach to climate adaptation using specific communities as examples of interdisciplinary, systems thinking, adaptive management climate projects.

## Climate Jobs and Training

## "Resource Ready" Priorities

1. **Priority 1:** New Industry Development: Continue, refine and expand grant programs and accelerator programs to reflect industry needs for adaptation and increased resilience.
    a. Short Term (0-2 years) step(s) =
        i. Define the scope of industries and job types that are part of an adaptation economy. Of those industries and job types, identify which have gaps, which have the potential for job creation and which have needs where the use of state incentives and regulations to secure and expand those opportunities within Maryland.
            1. This identification process should include, at minimum, the following industries: cultural and eco-tourism; outdoor restoration economies; energy production; manufacturing; food service; agriculture; fisheries; wood and timber. Specific examples may include:
                a. Agriculture: agroforestry, incorporating trees and shrubs into pasture and crop land
                b. Energy production: increase decentralized energy distribution
                c. Restoration: green and blue infrastructure project installation
                d. Climate educators
            2. This identification process should be linked to the Investment-needed Priority 2 action related to an economic analysis of adaptation-related economic sectors.
        ii. Refine research and development focused requests for proposals (RFPs) to include an adaptation track targeting products and techniques that provide climate resilience within the industries identified above. Leverage or build upon existing federal research initiatives (e.g. Small Business Innovation Research), academic and private climate change-oriented research and development activities and restoration funding that contributes to job creation (such as the Advanced Research Projects Agency-Energy and Chesapeake and Atlantic Coastal Bays Trust Fund) to connect industry needs to RFP requirements.
    b. Mid Term (2-5 years) step(s) =
        i. Continue and expand State funding into grant initiatives that provide mutual benefits to job creation and climate adaptation. For example, green and blue restoration projects installed through grant initiatives (e.g. Chesapeake and Atlantic Coastal Bays Trust Fund; Resiliency through Restoration; MD Clean Commerce Act/Bay Restoration Fund; Maryland Department of Agriculture [MDA] Soil Health Program) contribute to job creation and increase resilience to flooding and other climate impacts.
        ii. Support adaptation technology implementation and pilots by designing grants and low-interest or no-interest loans for climate adaptation related businesses. Maryland Agricultural & Resource-Based Industry Development Corporation's (MARBIDCO) loans and grants to new farmers and existing farm businesses

looking to expand their production may serve as a model for this program Examples include blue catfish and aquaculture.

iii. Expand eligibility within grants and loans that provide funding to Maryland businesses for climate adaptation-related technologies, products and techniques (e.g. Manufacturing 4.0 Grant Program). Eligible technologies should include existing climate resilience products and techniques as well as emerging technologies that are identified in the short-term step above.

c. Long Term (5+ years) step(s) =
   i. For new industries operational in the 5+ year timeframe, the state will work to ensure that the industry and the infrastructure that supports it are designed, built and maintained in a resilient manner to avoid, minimize or mitigate climate impacts. For example, Maryland could apply CoastSmart criteria to ensure that offshore wind and electric vehicle manufacturing facilities and the infrastructure that supports them.

2. **Priority 2**: Mid-Career Retraining: connect job seekers and Maryland companies with state grants and training resources with targeted engagement to underserved and overburdened communities. Success in implementing this goal will be measured by increased state and local financial investment in early education and middle career training programs to foster and build increased worker participation in these training programs over time (e.g. Commercial Driver's License operators shift from coal-fired power plants to adaptation industries).
   a. Short Term (0-2 years) step(s) =
      i. The ARWG compiles an inventory of existing education and training programs already available and identifies gaps and opportunities for program expansion.
      ii. Labor, in coordination with the ARWG, pursues an EARN grant that gathers partners to define training class objectives on a sector-specific basis and assemble class participants around integrating resilience into various industries. A component of the EARN grant will consider geographically-specific needs and the program will recruit underserved and overburdened community members to participate.
         1. Sector-specific elements of the EARN grant may include: fisheries, water treatment, outdoor restoration economy, wood and timber industries
         2. Geographically-specific elements of the EARN grant will include: WorWic Community College programs for offshore wind, and the Frostburg State University campus-scale, micro-grid Resilience Maryland project
         3. Curriculum considerations for the EARN grant will include: notations about where educational curriculum matches the state workforce training needs, and where curriculum updates may be needed to ensure education and training programs match state workforce training needs
      iii. Maryland State Department of Education (MSDE), MDNR and other relevant state agencies continue to expand investments in high school climate curriculum so the workforce is inspired and educated on climate issues and can build a workforce to meet adaptation industry needs.
         1. For example, education programs underway in Baltimore City Public

Schools, with funding from Maryland Energy Administration (MEA), integrate offshore wind into curriculum and other opportunities to build a workforce for clean-energy economies.

iv. Labor will connect adaptation industry opportunities into upskilling partnerships within underserved and overburdened communities, utilizing networks such the American Job Centers and Chambers of Commerce.

v. Maryland will incorporate the recommendations from the Chesapeake Bay Program's Workforce Action Team Multi-Year Strategy to implement the climate adaptation outcome within the Chesapeake Bay Agreement.

b. Mid Term (2-5 years) step(s) =

i. Expand the scopes of work for existing workforce capacity building programs for underserved and overburdened communities to incorporate additional climate adaptation-focused outcomes into various economies.

1. Sector-specific capacity program updates will include adaptation strategies for economies such as: wood and timber, fisheries and outdoor recreation.

ii. The CoastSmart Council will integrate climate adaptation and resilience into engineering standards when providing training to state agencies, local governments and engineering firms. This will include working with MEA on microgrid energy resilience; Maryland Department of Transportation's (MDOT) design of roads and airports; Maryland Department of the Environment (MDE) when developing plans and designs for stormwater management, drinking water production, dam construction, wastewater treatment and its associated infrastructure.

c. Long Term (5+ years) step(s) =

i. The ARWG coordinates an interagency team that seeks additional financial resources to support program needs in order to increase the number of participants to help meet workforce development goals.

ii. Maryland will target and track sustained enrollment in re-training program participation and continue to re-evaluate adaptation career and re-training needs based on evolving state goals and climate impacts.

3. **Priority 3:** Early-Career Training: Continue investing in early career training programs that enhance adaptation and incorporate climate resilience into K-12, higher educational and professional curriculum requirements. Success in implementing this goal will be measured by increased state and local financial investment in early career training programs and revised curricula that enhance climate resilience.

a. Short Term (0-2 years) step(s) =

i. MSDE, MDNR and other relevant state agencies continue to invest in high school climate curriculum so the workforce is inspired and educated on climate issues and ready to enter career fields in resilient industries. The ARWG will connect with the Maryland Environmental Literacy Advisory Network to highlight existing job opportunities within the restoration economy and climate change sectors by incorporating these career examples into materials for K-12, higher educational, and professional curriculum. Curriculum content will be amended as needed to ensure materials match the workforce industry needs.

ii. Labor and the ARWG, following the completion of the resilient industry EARN grant review, connects with the Chesapeake Conservation and Climate Corps Program to expand adaptation-related skills in paid service placements.
iii. MDNR and MSDE continue to incorporate climate content into Project Green Classrooms with an additional focus on issues of environmental justice.
iv. The ARWG will work with the Department of Service and Civic Innovation to integrate climate adaptation and resilience training into the Maryland service-year program.
v. Maryland will incorporate the recommendations from the Chesapeake Bay Program's Workforce Action Team Multi-Year Strategy to implement the climate adaptation outcome within the Chesapeake Bay Agreement.
vi. Initiate coordination with the University System of Maryland to update curriculum with enhanced material on climate change and climate change career/restoration career opportunities.
    1. Partnership for Action Learning in Sustainability (PALS)
    2. iCare
    3. University of Maryland (UMD) Right Now - climate change experts
    4. Socio-Environmental Synthesis Center
    5. Orsted financial commitment to higher-ed STEM education

b. Mid Term (2-5 years) step(s) =
    i. Labor, in coordination with the ARWG, expands opportunities within, and develops content for, youth apprenticeship programs to focus on skills and industries that enhance adaptation and resilience. For example, State parks and State Highway Administration utilized the Maryland Youth Apprenticeship and Training Program to incorporate skills training that provides climate adaptation and resilience benefits. To expand this opportunity, MDNR and Labor will identify funding sources to establish and sustain youth apprenticeship programs at more state parks and forests.
    ii. The ARWG, along with the MSDE and the University System of Maryland, will conduct outreach about resilience-related careers and professional development opportunities with high schools, higher-ed career counseling centers, county workforce and job fair staff, and American Jobs Centers to establish a workforce pipeline.
c. Long Term (5+ years) step(s) =
    i. To ensure that development and redevelopment planning incorporates future resilient industry infrastructure needs, the ARWG, Maryland Department of Planning (MDP), MDOT and Commerce provide guidance to local governments and regional planning partnerships on how to integrate climate related job needs within regional Comprehensive Economic Development Strategy (CEDS) and ways to advance climate-related job needs through grant and technical support programs. During implementation, the Climate Jobs and Training focus group should connect with the Protecting Critical Infrastructure sector group and the Local Government Action and State Service Delivery focus group.

## "Investment Needed" Priorities

1. **Priority 1:** Training/education for entry level, mid-career job seekers and existing employees to connect them with state-level resources, grants and training opportunities focused on climate adaptation. Success will be measured by increased worker participation in these training programs over time.
    a. Short Term (0-2 years) step(s) =
        i. **Early career:** Initiate outreach with Chambers of Commerce, community organizations and major employers to connect job seekers to training resources, and identify employers who will hire these job seekers upon training completion.
        ii. **Mid-career:** Initiate outreach with Chambers of Commerce, industry organizations and major employers to connect job seekers to retraining resources.
        iii. MDNR will partner with the Maryland Entrepreneur Hub and integrate adaptation objectives into keywords, search terms and filters.
        iv. Labor will host events to bring together businesses and qualified job seekers to provide a platform for the workforce to meet and learn about opportunities that are available at companies in the region, build their networks and connect with hiring Maryland companies.
        v. Labor will establish an adaptation-related job fair through the American Job Centers located throughout the state. Other state agencies will integrate adaptation-related career messaging into their recruitment activities.
    b. Mid Term (2-5 years) step(s) =
        i. The state provides its own workforce with training opportunities to ensure that policies, investments and work comprehensively incorporate climate adaptation across all service delivery areas.
        ii. **Early career:** Develop a Youth Apprenticeship network of opportunities to get high school students interested and engaged in adaptation-related occupations.
        iii. **Mid-career:** Develop professional development opportunities across industries for workers to build knowledge and skills in adaptation-related occupations. Provide education and training to employees about climate impacts that affect their occupation.
        iv. Utilizing the Maryland Entrepreneur Hub, identify employers who will hire these early job seekers upon retraining completion.
    c. Long Term (5+ years) step(s) =
        i. -

2. **Priority 2:** Target a "No Net Job Loss" goal where various economic sectors (e.g. manufacturing, forestry, food service, agriculture, fisheries, energy production, etc.) emerge or pivot to support climate adaptation. Success will be measured by average positive job growth, particularly for adaptation-related jobs through 2030.
    a. Short Term (0-2 years) step(s) =
        i. Issue a request for proposals then develop a contract and scope of work to complete a state-level strategic economic analysis of the potential for job losses and adaptation-related gains resulting from direct climate impacts in Maryland. The analysis should:

1. Identify demographic groups, regions and economic sectors that may present more opportunity or need more government support for adaptation management strategies.
2. Assess potential opportunities to bolster local, regional and sustainable economies.
3. Incorporate equity for underserved and overburdened communities by proposing options for achieving equitable distribution of job growth and income increases throughout the state's regions, across all education levels, and including underserved populations.
4. Frame results to convey the importance of climate adaptation for future economic growth, workforce development and competitiveness.
5. Consider building upon the modeling analysis by Hsiang et al.[1] with a Maryland-specific focus and expanded consideration of demographics and additional economic sectors.
6. During development, the Climate Jobs and Training focus group should connect with all of the sector and focus groups to ensure that there is a comprehensive review of adaptation-related industry and job needs.

ii. Conduct outreach by hosting targeted webinars and meetings to communicate analysis results to localities and businesses. Outreach will help localities and businesses prioritize their efforts to mitigate potential jobs losses due to climate change and incorporate future needs into long-term planning.

b. Mid Term (2-5 years) step(s) =
   i. Develop and share guidance for government partners on how to integrate climate-related job needs within regional CEDS and other land-use plans and ways to advance climate-related job needs through grant and technical support programs.
   ii. State agencies with technical assistance positions that support climate adaptation will pursue opportunities to increase the number of positions while retaining staff to provide continuity and build trust with communities and landowners. For example, foresters working with private landowners to implement forest buffers.
c. Long Term (5+ years) step(s) =
   i. -

[1] https://www.science.org/doi/pdf/10.1126/science.aal4369; https://www.journals.uchicago.edu/doi/10.1093/reep/rez021

## Water Resources

## "Resource Ready" Priorities

1. **Priority 1:** Water Quality: Through routine evaluations integrate emerging research and monitoring results into policies, programs and permits to improve Maryland's response to the impacts of climate change on water resource quality. During evaluations identify gaps to inform upcoming research and monitoring, creating a feedback loop.
    a. Short Term (0-2 years) step(s) =
        i. The ARWG partners with the MCCC's Science and Technical Workgroup (STWG) to increase communication of emerging science for integration into policy and program changes. Communicate research findings with state agency staff and leadership (via MCCC) on a topic-by-topic basis to help integrate research results into programs, regulations and policies.
            1. Create a research repository to inform policy and program changes. Evaluate the repository on an annual basis, identifying gaps to determine new priority research needs to inform effective policy, regulatory, and programmatic change.
            2. Coordinate with institutes of higher education to pursue research needs. Seek new partnerships, as well as expand the scope of existing partnerships, with Historically Black Colleges and Universities (HBCUs) to implement research projects.
                a. Existing partnership examples: University of Maryland Partnership for Action Learning in Sustainability (PALS) program that connects agency staff with UMD students to create tangible deliverables that help us achieve our sustainability and resilience goals while helping students get work and portfolio experience; the Strengthening the Mid-Atlantic Region for Tomorrow program that increases competitiveness and capabilities in pursuing federal and state contract and grants for the purpose of research and development, education and workforce development.
            3. Actively track research that is already in progress and communicate with researchers to learn about their work and its implications.
                a. Example: Evaluate the Pooled Monitoring Forum results and provide adaptation focused feedback on its subsequent request for proposal development.
        ii. Monitor Climate Impacts on Water Quality: MDNR's Chesapeake and Coastal Service unit and the Resource Assessment Service unit, in consultation with the Maryland Water Monitoring Council, will work to determine the ideal suite of climate variables to be measured in Maryland associated with climate adaptation for water resources, as well as determine the cost and staff capacity requirements. Existing programs to consult include citizen science and government sponsored programs such as the tidal shoreline monitoring through Resiliency through Restoration, RiverKeepers monitoring programs, Swimguide in Coastal Bays, data from Maryland's National Estuarine Research Reserve

(NERR), Eyes on the Bay, UMD's agricultural monitoring for soil health and Healthy Watersheds Goal Implementation Team recommendations.

iii. Advancing Stormwater Resiliency in Maryland (A-StoRM) Environmental Site Design: MDE updates State stormwater environmental site design regulation and design manual to account for climate change precipitation. Follow-on steps are included in subsequent mid-term milestones.

iv. A-StoRM Stormwater Quantity Management Planning: MDE conducts research and engagement with interested and impacted parties to develop options for stormwater quantity management requirements, while documenting the process and outcomes.

v. MS4 Permits: Develop State Highway Administration Phase 1 MS4 permit as a model for phase 1 local municipality and county permits; MDE coordinates with interested and impacted parties including ARWG to build resilience within the permit. Policy for quantity control as climate resilience over exclusively water quality through crediting incentives.

vi. Erosion and Sediment Control Standards and Specifications**:** By November 2023, MDE will develop a plan and identify resources needed for revising the Standards and Specifications. (See SB471)

vii. Water-Related Permit Reviews for Climate: By July 2024 conduct screening level climate adaptation reviews for 60 percent of all MDE Water and Science Administration permit categories. Propose readily possible changes to permit analyses and templates for interested and impact parties review. Recommend studies and new authorities needed to enable other changes to permit templates in the future. By December 2024 conduct screening level climate adaptation reviews for 95 percent.

b. Mid Term (2-5 years) step(s) =

i. Erosion Control: MDE will revise Erosion and Sediment control Standards and Specifications handbook to reflect climate resilience.

ii. Phase 1 MS4 Rewrite: MDE will utilize the State Highway Administration Phase 1 permit as a template for including resiliency into additional phase 1 permits.

iii. Adjust land use management practices to account for the recommendations from the ARWG's saltwater intrusion working group report.

iv. Use climate monitoring results to inform the regular analysis of adaptation progress.

v. Monitoring Funding: Based on the parameters identified in the short-term milestone, identify funding sources to collect additional climate related data. Incorporate into the Inter-agency Coordination funding group scope.

c. Long Term (5+ years) step(s) =

i. MDNR will incorporate climate variables into the Statewide monitoring strategy.

ii. Water-Related Permits: MDE Water and Science Administration will update regulatory approval templates (internal guidance) to incorporate climate change and resiliency. The term "approval" is shorthand for all regulatory instruments including individual and general discharge permits, water appropriations permits, various construction permits, plan approvals, licenses and certifications. Note that some of these cover water hazards and water supply issues. Include equity considerations in the process and products.

iii. Chesapeake Bay Watershed Implementation Plan Updates: The Council on the Chesapeake and Coastal Bays Watershed will update the Chesapeake Bay

Watershed Implementation Plan (WIP) and milestones to account for increased loads and best management practices (BMPs) for performance losses from climate change.

2. **Priority 2:** Water Hazards: Facilitate/Refine statewide and local climate vulnerability assessments, starting with the most disadvantaged communities that are marginalized, underserved and overburdened. Incorporate future climate change scenarios into state and local hazard mitigation and action plans. Assessments should consider water-related hazards as well as drought, and make connections to non-water-related stressors. Prioritize resilience-building actions to mitigate water-based hazards while integrating multiple goals.
    a. Short Term (0-2 years) step(s) =
        i. MDNR and its Chesapeake and Coastal Service will map disadvantaged communities that are marginalized, underserved and overburdened and overlay it with climate vulnerabilities.
        ii. MDNR and its Chesapeake and Coastal Service provides sea level rise trainings, guidance documentation on the introduction of sea level rise and sea level rise visualizations to more easily communicate flooding risk.
        iii. Identify a state-owned website to provide water hazard updates as new data is available. One potential website could be the Maryland Resilience Partnership.
        iv. Dam Safety:
            1. Maryland's Probable Maximum Precipitation (PMP): Develop updated PMP information, to include a future climate projection, for use in dam design standards.
            2. Dam Removal Guidance Development: Develop updated guidance on technical, financial and regulatory aspects of dam removal. This will help expedite the process thereby reducing risks associated with extreme rainfall and additional stress on the dams due to climate change.
            3. Inundation Area Mapping: Develop dam inundation area maps. The GIS layer will be created for all high and significant hazard dams in Maryland for use by local planning and emergency management agencies, MDEM and the public. This work is linked to the infrastructure sector. MDE to lead.
            4. Habitat Enhancement: MDNR will identify sites for dam removal that would provide fish passage and apply for federal funding to remove those dams and other stream barriers, restoring aquatic ecosystems.
        v. Watershed Flood Pilot Study - Impact Analyses: Conduct watershed flood analyses to assess flood impacts and identify mitigation options using model(s) developed as part of a pilot study.
        vi. A-StoRM Stormwater Quantity Management: Initiate a working group focused on Federal, State and local coordination around authorities for managing runoff to prevent or minimize impacts of higher intensity rain events including lot-to-lot flooding.
        vii. Living Shoreline Enhancement: MDE and MDNR will develop a strategy for increasing the length of living shorelines statewide by 15 percent over the baseline 2015-2023 data.

viii. Water Regulatory Inspections**:** Implement climate change vulnerability screening and targeting for compliance inspections. By June 2024 screen all facilities for climate change risk using an assessment tool like the Coast Smart Climate-Ready Action Boundary and develop inspection guidelines and risk mitigation guidance. MDE to lead.

ix. Water Regulatory Compliance: By June 2024 develop a procedure using a risk assessment tool (from MDE, National Oceanic and Atmospheric Administration, MDNR) to rate the climate change impact risks of facilities referred to the Office of the Attorney General for formal enforcement actions. Identify climate resilience actions in agreements or orders for the most at risk facilities. MDE to lead.

b. Mid Term (2-5 years) step(s) =

i. MDNR and its Chesapeake and Coastal Service will implement climate adaptation projects with communities vulnerable to the impacts of climate change, including flooding and other water hazards, by utilizing existing funding programs such as Resiliency through Restoration and the Chesapeake and Atlantic Coastal Bays Trust Fund. When siting and designing projects, MDNR and its Chesapeake and Coastal Service will provide opportunities for community members to share their experience and vision for their communities and co-create the strategies to be pursued.

ii. Initiate a pilot study to develop efficient watershed flood analyses and mitigation plan methodologies.

iii. The State reviews Comprehensive Plans to provide guidance and recommendations back to local entities. Direct resources at plans that will focus on the most underserved and overburdened populations first.

iv. Work with MDEM to develop tools and training to assist local governments in integrating climate resilience considerations into local hazard mitigation plans, which should consider and identify water quality and other co-benefits in addition to flood mitigation, including the use of non-gray options and conservation easements in hazard mitigation strategies. Provide opportunities for community members to share their experience and vision for their communities and co-create the strategies to be pursued. Direct resources at plans that will focus on the most underserved and overburdened populations first.

v. Dam Safety - Earthen Spillway Design Criteria**:** Based on PMP results (short-term milestone), develop updated earthen spillway design criteria. This will help ensure their resilience under more frequent and intense rainfall patterns associated with climate change.

vi. A-StoRM Stormwater Quantity Management Planning: Enhance stormwater volume control regulations and associated updates to BMP and conveyance system design criteria. Incorporate the recommendations from the federal, state and local interested and impacted parties through technical and regulatory advisory groups. MDE to lead.

vii. Living Shoreline Enhancement: MDE and MDNR will implement the strategy developed during the short-term milestone of increasing the length of living shorelines statewide by 15 percent over the baseline 2015-2023 data.

viii. Water Regulatory Inspections: Implement climate change vulnerability screening and targeting for compliance inspections: By July 2025, increase

inspections in risk areas by 20 percent. By December 2025, revise inspection guidelines. MDE to lead.

ix. Integrate recommendations from the Environmental Public Health Tracking Program regarding vibrio, harmful algal blooms, fish consumption and mosquitos into state and local hazard mitigation plans.

c. Long Term (5+ years) step(s) =

i. Develop technical guidance and educational standards for integrating climate adaptation into public works programs that are identified within the Climate Jobs and Training focus group milestones:

1. The initiative will provide methods for evaluating vulnerability and standards of practice to improve resilience of water management infrastructure including bridges and culverts, stormwater systems, wastewater collection and treatment works, and drinking water treatment and distribution systems.
2. Methods will include optimal use of green infrastructure and nature based solutions as a complement to gray infrastructure.

ii. Identify and distribute funds to remediate mold and mildew within low income communities.

1. Enhance FEMA's remediation funding for local communities that prioritizes low income and low access to health care.
2. Work with County health officers to deliver funding.

iii. A-StoRM Implementation and Adaptive Management: Implement the updated stormwater quantity control regulations and design manual via various interested and impact parties training processes. Identify and document changes to include in future refinements of the regulations.

3. **Priority 3: Inter-Agency Funding Coordination:** Establish a multi-agency task force within ARWG to coordinate funding resources to support the water sector's goals, working in collaboration with other ARWG sector groups, to expedite the process and identify mutual opportunities. Manage funds to create a robust project portfolio when securing federal planning and capital funds. Prioritize projects, facilitate technical support for proposal development, fund administration and project management in disadvantaged communities that are marginalized, underserved, and overburdened, with preference for grants, as opposed to loans.

a. Short Term (0-2 years) step(s) =

i. Establish the Inter-Agency Funding Coordination working group. Develop the working group's charge (better leverage and communicate related funding programs to maximize their impact; determine how disadvantaged communities that are marginalized, underserved and overburdened will be prioritized and supported), solicit or assign members, and launch the group. Determine how to track and communicate progress.

1. This working group will coordinate with the ARWG Capacity Building working group when developing their charge.
2. Private entities will be invited to participate.

ii. Identify and dedicate one or two federal grant specialists who can facilitate the development and implementation of federal grant applications.

iii. Develop a pipeline of projects, prioritizing projects in disadvantaged communities that are marginalized, underserved and overburdened cataloged by funding amount, location, best management practice and partners.
    1. Include future projects proposed within the Supplemental Environmental Project library.

b. Mid Term (2-5 years) step(s) =
    i. Identify and pursue funding available for climate-related data monitoring and analytical support.
    ii. Specifically consider how to utilize the recommendations in the Capacity Building Organizations-Capacity Building Initiative (CBO-CBI) lessons learned report.
    iii. Long-term Water Resources Planning: This group will work to secure the funds needed by the state water supply program to implement measures identified by the Wolman Commission for preventing any future water supply problems and establishing a sound science-based understanding of the state's water resources, like the coastal plain aquifer system.
    iv. Drought Monitoring and Response Plan Implementation: This group will work to identify funding for additional groundwater well monitoring for water availability and drought assessment.
    v. Communicate the importance of continued federal investment.

## "Investment Needed" Priorities

1. **Priority 1:** Water Supply: Proactively adjust water supply management practices and programs to account for climate change impacts to both water supply availability and source water quality. Address risks due to drought, heat-induced increases in water demand, sea level rise, storm surges, flooding and severe weather. Ensure adequate state staffing levels to manage these risks by supporting local hazard management planning, focusing on historically underserved communities.
    a. Short Term (0-2 years) step(s) =
        i. Increase the State Water Supply Program's Capacity - Staffing: Ensure Maryland's Water Supply Program has adequate staffing to take proactive measures to help community water supply systems build resilience to climate change stresses.
        ii. Increase the State Water Supply Program's Capacity to manage Water Appropriation and Use Permits - Funding.
        iii. Oversee Public Water Treatment Plant Operations - Funding.
        iv. Establish an Indirect Potable Reuse Pilot Program: Develop permitting that enables indirect potable reuse of municipal wastewater effluent via a pilot program (implement SB407). By December 2024, the MDE Water Supply Program will provide a status report to the Governor's Office on a pilot program to permit indirect potable reuse of reclaimed water (treated municipal treatment plant effluent). This pilot program is intended, among other goals, to establish technical and administrative procedures for developing alternative

water sources that build drought resilience.

v. Drought Monitoring and Response Plan Review: Conduct a review of the State Drought Monitoring and Response Plan. Include an assessment of the groundwater monitoring well network and recommend enhancements.

vi. Algal Bloom Monitoring and Response: Enhance current algal bloom monitoring operations and evaluate water system adaptation capacities, such as the potential for water intake relocation, incorporation of additional treatment for algal bloom toxins and expanded storage capacity. Partner with the University of Maryland Center for Environmental Science (UMCES) to incorporate recommendations identified from their partnership with Mote Marine Laboratory.

vii. Water Supply and Society: Evaluate the socio-economic aspects of water supply management including identifying local water access problems and the intersection with equity and environmental justice issues. The ARWG and CEJSC to co-lead.

viii. Water Audit Program Development: Develop updated guidance on methods and tools to be used by community water supply system utilities for water accounting. More precise water accounting will better inform options for controlling water losses and conservation thereby making water systems more efficient and resilient to climate change impacts.

ix. Water Infrastructure Climate Resilience Assessment (WICRA) initiative: A voluntary cost-share technical assistance program using methods like EPA-CREATE to identify cost effective climate adaptation projects for local water supply and wastewater infrastructure. Integrate the WICRA initiative with critical infrastructure sector group; legislation to initiate; needs funding as mid-term milestone (develop). MDE to lead.

b. Mid Term (2-5 years) step(s) =

i. Long-term Water Resources Planning: Secure the funds needed by the state water supply program to implement measures identified by the Wolman Commission for preventing any future water supply problems and establishing a sound science-based understanding of the state's water resources, like the coastal plain aquifer system. Incorporate this scope into the InterAgency Funding Coordination working group tasks.

ii. Drought Monitoring and Response Plan Implementation: Identify funding for additional groundwater well monitoring for water availability and drought assessment. Incorporate into the InterAgency Funding Coordination working group tasks.

iii. Clean Drinking Water Access: If and where safe and reliable drinking water is inaccessible to residents, develop and employ interventions, including State administrative penalty and enforcement authority.

iv. Source Water Protection: Seek State legislation and revised regulations that require local jurisdictions to assess and protect source waters and provide financial and technical assistance should be provided to help them do so. MDE to lead.

v. The sustainability of key coastal water sources to account for sea level rise and saltwater intrusion impacts should be evaluated and mitigation actions implemented. Potential climate threats to community surface water supply source quality that might warrant avoidance measures or enhanced water

treatment processes should be evaluated, as should drought-vulnerable community supply systems so that corrective action plans can be developed.

vi. Private Water Water Wells: Continue research initiated in past investigations that identified areas with large concentrations of individual wells under the influence of surface water, which are at risk of contamination. Initiate actions for cases that can be remedied by the creation of public supply systems, including grouping smaller systems.

c. Long Term (5+ years) step(s) =

i. The ARWG and Maryland Department of Health (MDH) will evaluate water supply policies, programs and projects utilizing the Maryland Health Impact Assessment (HIA) toolkit.

## Human Health

## "Resource Ready" Priorities

1. **Priority 1:** Improve the availability, quality and access to green spaces in at least three communities, utilizing available health data and expertise at the state and local level to support green space programming.
   *Identified lead/co-leads:* MDNR (Park Equity), Project Green Classrooms, Program Open Space staff (expertise), MDH, specifically expertise from the EPHT portal and health communication, someone from MCCC-CJ group, or other identified expert on community engagement, outreach and partnership building.
   a. Short Term (0-2 years) step(s) =
      i. Using the Park Equity Mapper, create a list of communities (informed by the data layers in the mapper) prioritized for health informed greenspace improvement (July 2025).
         1. Health data = violence and injury prevention.
      ii. Identify partners working in the prioritized communities to understand existing capacity for greenspace implementation (December 2025).
      iii. Begin holding listening sessions and targeted engagement meetings with community members, leaders and partners to understand specific health and greenspace needs to inform pilot program development (December 2025).
      iv. Identify available and needed funding for greenspace enhancement and expansion projects (December 2025).
   b. Mid Term (2-5 years) step(s) =
      i. Continue holding listening sessions and targeted engagement meetings with community members, leaders and partners to understand specific health and greenspace needs to inform pilot program development (December 2026).
      ii. Identify:
         1. Locations for greenspace enhancement or expansion (informed by community needs and wants, the Environmental Public Health Tracking Portal [EPHT] and other health priority areas as identified by MDH), within the prioritized communities (December 2026);
         2. Funding needs for the communities (December 2026)
      iii. As soon as possible, begin moving forward on developing specific approaches, securing funding and implementing the approach in prioritized communities (move to implementation on at least two communities by December 2026).
      iv. Develop evaluation protocol for community engagement and green space enhancement and expansion programming (December 2026).
   c. Long Term (5+ years) step(s) =
      i. Move to implementation on at least five communities by December 2029.
      ii. Deploy evaluation protocol in communities with implemented programming (December 31, 2034).
      iii. Use findings to write a white paper on the initiative including (December 31, 2035):
         1. Approach to community identification
         2. Community engagement and partnership including location and

program specific determinations
3. Process and outcomes of the implementation of developed plans

2. **Priority 2:** Establish the Maryland Department of Health as a full member of the Maryland Commission on Climate Change
    a. Short Term (0-2 years) step(s) =
        i. Develop and submit proposal brief formally requesting the Health Department be added to the MCCC as a full member (August 2024).
        ii. Chair of the ARWG brings the legislative ask to the membership for a vote of approval to submit to the MCCC as a priority recommendation from the ARWG.
            1. Submit to MCCC as a formal recommendation.
    b. Mid Term (2-5 years) step(s) =
        i. -
    c. Long Term (5+ years) step(s) =
        i. -

3. **Priority 3:** MDH creates an expanded surveillance program through the State's Environmental Public Health Tracking (EPHT) Program to display data on direct and indirect health impacts attributable to climate change.
    a. Short Term (0-2 years) step(s) =
        i. Compose a Technical Advisory Committee (TAC) of partners across the state that can inform the development, deployment and utilization of the EPHT Program (ongoing, meet twice a year).
        ii. Launch the updated EPHT Tracking Portal (December 31, 2023) – *complete as of July 2023*
        iii. MDH works with the MCCC ECO Working Group to host at least one webinar to demo the EPHT tracking site, and highlight how to use the data to inform programs and decision making. (December 31, 2025)
        iv. Deploy Public Health Actions, informed by the data in the EPHT and partner needs. Complete 3 Public Health Actions annually, starting in 2025.
    b. Mid Term (2-5 years) step(s) =
        i. Continue to hold regular (bi-annual) TAC meetings (ongoing).
        ii. Deploy Public Health Actions, informed by the data in the EPHT and partner needs. Complete 3 Public Health Actions annually (ongoing).
        iii. Working with the ARWG and the TAC (led by MDH), identify additional data needs (e.g. sources, utilization, or access) for enhanced integration of climate and health considerations into programming across the state.
            1. Integrate the EPHT portal (utilization of the portal itself, or the data within the portal), into at least one additional state agency protocol annually, beginning in 2025.
        iv. Secure another round of funding for the continuation of the EPHT portal. (December 31, 2030)
    c. Long Term (5+ years) step(s) =
        i. Ongoing milestones will be dependent on the needs of the state, MDH and TAC as identified and included in the new proposal for continued support (1.b.iv.).

## "Investment Needed" Priorities

1. **Priority 1:** MDH partners with a university to produce an update to the Maryland Climate and Health Profile Report (CHPR), with planned updates to the report every 5 years. The CHPR should include: (Mid Term, initially December 31, 2030 [assuming 5 year funding program], Long Term recurring CHPR every 5 years)
    a. Short Term (0-2 years) step(s) =
        i. Explore potential university and MDH partnerships to identify who has capacity and interest to be lead on this strategy. (April 1, 2025).
        ii. Secure funding to complete the CHPR. (December 31, 2025)
    b. Mid Term (2-5 years) step(s) =
        i. MDH and University partners should establish a steering or technical advisory committee to review and refine the proposed scope (see b-e below), to ensure alignment with known needs around climate and health. CHPR should be expanded beyond the 2016 CHPR Scope which only included assessment of the health outcome data, to be more holistic in its representation of the climate and health profile of Maryland (funding, technical assistance, programmatic, research, health data impacts, etc.). (July 1, 2026)
        ii. Conduct a quantitative analysis on climate and health impacts on Maryland's populations including but not limited to: car accidents during extreme weather events, myocardial infarction and other cardiovascular events, heat stress and strokes, hospital and extreme dehydration visits during and following extreme weather events, Lyme disease rates and other health outcomes of interest as identified. (dependent on workplan in funding application)
        iii. Assess the existing policy and programming around the state addressing climate and health considerations. This should include policy (health in all policies, occupational health and safety, operational, and other policy arenas as identified), research (university and federal partners), programmatic and educational efforts by state agencies, local governments, community groups and nonprofits. Assessment will provide the state with critical information to understand how best to address and reduce the health burden associated with climate impacts. (dependent on workplan in funding application)
        iv. Develop best practices for integrating climate and equity considerations into a Health Impact Assessment (HIA) process. (dependent on workplan in funding application)
        v. Evaluate existing climate and health education and communication capacity in the state to inform the development of best practices for integrating climate and health considerations into efforts by state agencies, local governments, non-profits, schools, community groups and others as identified. This evaluation should outline gaps in education and outreach efforts, identifying communities, or programs that need additional support for integrating climate and health considerations. (dependent on workplan in funding application)
        vi. Disseminate CHPR and relevant information within to partners around the state to support integration of health and the climate and health in all policies approach. (dependent on workplan in funding application)

c. Long Term (5+ years) step(s) =
    i. -

## Working Lands and Natural Resources-Based Economies

## "Resource Ready" Priorities

1. **Priority 1:** Within three years, form a plan for addressing land retention and aquatic habitat changes that is equitable, inclusive of interests and addresses issues of all affected farmers, foresters, landowners and watermen in the state. Build on existing climate adaptation and natural resource planning initiatives and programs, and expand partnerships with social services and economic development interests.
    a. Short Term (0-2 years) step(s) =
        i. Identify key agencies and interested parties to participate in the planning process and assign a coordination lead. MDP initiates the process with support from MDNR and MDA.
        ii. Identify scope of the plan and the target audience. The plan will take a landscape approach to maintaining the resource lands and management actions that support resources-based industries and maintain a resilient supply chain. The purpose of the plan is to coordinate implementation actions across existing and novel initiatives and programs to achieve these outcomes.
            1. The following focus areas should be considered for inclusion: Ensuring fair community access to working lands and industries while maintaining ecosystem functions; Landscape-level conservation planning; Workforce development; Coordinating economic development.
        iii. Key agencies identify a process for robust interested and impacted parties involvement and outreach that incorporates resource maps and risk analysis tools.
        iv. Key agencies engage with local governments and community partners to identify priority issues and preferred pathways. Work with connector groups to address equity priorities.
            1. Assess local and community assets and needs for maintaining resource-based industries.
            2. For example, summarize existing resource-based industry reports (e.g. BEACON) by county and identify any new measures needed to address equity for job types, wages, etc.
        v. Involve the scientific and development communities in the planning process.
    b. Mid Term (2-5 years) step(s) =
        i. Key agencies produce the plan with regular interested and impacted parties engagement.
        ii. Build on multidisciplinary expertise, local involvement and results from ongoing funded research on climate vulnerability to craft goals and actions. Envision what types of land and aquatic uses will be included.
        iii. Conduct outreach on plan drafting and respond to public comments.
    c. Long Term (5+ years) step(s) =
        i. Assess how the plan is being utilized in conjunction with other land and aquatic conservation initiatives.
        ii. Make adjustments if and where necessary based on assessment and feedback

from the broader working lands community.

2. **Priority 2:** Explore opportunities to develop new markets emerging for agriculture, forestry and fisheries as a result of climate impacts and saltwater intrusion. Consider recreation as a non-traditional market.
    a. Short Term (0-2 years) step(s) =
        i. MDP assists state agencies in working with local governments to develop guidance materials for zoning and land planning. These materials should:
            1. Include consolidated messaging on the benefits of adopting new technology, creating carbon-positive product lines and reducing environmental impacts for natural resources lands and waterfronts.
            2. Raise awareness of planning and zoning needs for resource-based industries to achieve these benefits.
            3. Provide detailed natural resource and resource-based industry data to 1) build understanding of and support for existing and emerging markets for these industries, and 2) inform comprehensive and small area planning.
        ii. MDA develops policies that support diverse producer types in partnership with industry professionals. State agencies engage with industry partners to assess existing successes and adjust programs to address unmet needs.
        iii. MDNR forestry implements an economic adjustment strategy with regional analysis of assets and opportunities that incorporates analysis of ecosystem services.
        iv. MDNR fisheries removes legal and cultural bottlenecks to bring new markets online, such as invasive species and aquaculture. These initiatives may require developing and expanding pilot programs and surveys.
    b. Mid Term (2-5 years) step(s) =
        i. Establish industry-specific metrics and conduct progress evaluations to identify unmet needs. Use these assessments to develop BMPs for utilizing new resources.
        ii. Match funding opportunities and market-based policies to these identified needs for further progress.
    c. Long Term (5+ years) step(s) =
        i. State agencies establish policies and/or regulations that facilitate long-term acceptance of resource utilization and collaborate with industry partners to build widespread support for BMPs.
            1. Agricultural producers develop a more diverse working lands model.
            2. Build a network of demonstration areas for agroforestry and agrotourism.
            3. Watermen and/or landowners leverage invasive species and aquaculture as alternatives to the wild-caught market.

3. **Priority 3:** Farmers across the state increase their adoption of soil health and conservation practices beyond annual cover cropping and conservation tillage to improve soil health, sequester carbon and help meet goals outlined in the Greenhouse Gas Reduction Act.
    a. Short Term (0-2 years) step(s) =
        i. Expand pilot programs to include techniques development and outreach for peer-to-peer farmer education.
        ii. Coordinate across departments while building on Healthy Soils Program priorities.
        iii. Develop a whole farm perspective rather than managing individual fields.
            1. Incorporate planning tools (ex: remote sensing imagery, drone imagery, landscape scale prioritization such as Nature's Network).
            2. Incentivize preferred practices in cost-share and technical assistance (multi-species cover crops, alley cropping, silvopasture).
        iv. Engage with interested and impacted parties and develop demonstration projects for agroforestry as a strategy for improving soil health.
        v. Use results and recommendations from Phase I of the Hughes Center climate vulnerability study to inform BMPs related to adaptation and meeting GGRA goals (ex: crop selection, saltwater intrusion).
    b. Mid Term (2-5 years) step(s) =
        i. Identify and improve models and/or metrics to quantify whole farm conservation and restoration outcomes.
        ii. Evolve policies and programs to advance adoption of soil health practices with quantified benefits, where tools exist, with focus on continued adoption of practices within farm operation to observe outcomes.
        iii. Engage with the scientific community to establish peer-reviewed metrics for tracking success.
    c. Long Term (5+ years) step(s) =
        i. Utilize previously established metrics to re-evaluate the farm landscape and adjust programs and metrics according to changing crop regimes and farm types.
        ii. Direct outreach towards previously unengaged landowners to increase use of conservation practices.

## "Investment Needed" Priorities

1. **Priority 1:** Adopt Climate Smart agriculture and forestry statewide by utilizing ecosystem marketplaces where appropriate.
    a. Short Term (0-2 years) step(s) =
        i. Expand the scope of state lands resiliency plans. Assess the potential for a regional approach, and regular coordination among local jurisdictions pursuing coastal and climate resiliency, with state, federal, NGO and private sector input.
        ii. Determine how the state can or should be involved in facilitating ecosystem

marketplaces, including authorities established by the Conservation Finance Act. Possible avenues include:
    1. Aggregating projects or consolidating programs for landowner participation;
    2. Establishing public land roles as buffer pools or insurance for larger ecosystem markets.

b. Mid Term (2-5 years) step(s) =
    i. Evaluate missing gaps in program authorities, financial instruments, or processing and marketing capacity and identify pathways to establish needed policies and programs.
    ii. Develop guidance on when it is appropriate to engage in ecosystem markets. Consider regulatory requirements and interface with Maryland's conservation history.
        1. Outline how landowners can qualify for specific programs.
        2. Improve recognition for existing Climate Smart and conservation practices.
    iii. Perform scoping on the potential for Climate Smart fisheries and aquaculture practices.

c. Long Term (5+ years) step(s) =
    i. Develop market drivers for climate smart products by promoting awareness and demand.
    ii. Improve coordination between industries for end use of products.

2. **Priority 2:** State agencies expand partnerships and research to explore and implement ways to make farming, forestry and fishing more attractive to youth and others and eliminate structural barriers to increase the diversity of resources-based industries in Maryland.
    a. Short Term (0-2 years) step(s) =
        i. Evaluate existing state and partner programs and certificates related to industry workforce and identify needs for implementation and expansion.
            1. Coordinate staff capacity and funding opportunities for program expansion.
            2. Evaluate regulations and legislation to identify legal barriers to program expansion.
            3. Initiate the investigation of potential avenues for program expansion with incentives for a more diverse user base.
        ii. State agencies set the expectation and requirement for distributing program application materials in multiple languages.
            1. Determine where those services can be provided for state agencies.
            2. Assess which languages are prevalent in local communities.
    b. Mid Term (2-5 years) step(s) =
        i. Leverage educational opportunities to train young people and help them transition into permanent job positions. Identify opportunities to integrate internships, apprenticeships and service years.
            1. Examples: conservation corps, americorps, beginner farmers
            2. Involve state employees in training programs.

ii. Develop and expand programs to engage with industry professionals.
    1. Identify opportunities for business grants or low/no interest loans to cover startup costs.
    2. Create opportunities for industry participants to have mentorship.
iii. Establish training for utilizing ecotourism to supplement natural resources-based businesses.
iv. Diversify broader markets and products.

c. Long Term (5+ years) step(s) =
    i. Conduct program evaluations. Based on the results, make adjustments to existing programs or create new ones.

3. **Priority 3:** Encourage innovation and adoption of new technologies to enable farmers, foresters, landowners and watermen to increase sustainability and resiliency of operations.
    a. Short Term (0-2 years) step(s) =
        i. Organize pilot programs to evaluate the effectiveness of new technologies. For example, MDNR conducts research for use of new fisheries technologies on vessels, fishing gear and aquaculture prior to scoping regulatory authority for implementation.
        ii. Improve the flexibility for farmers and foresters to participate in innovative programs by exploring financing options.
    b. Mid Term (2-5 years) step(s) =
        i. Set up a strategy for continuing data collection after pilot programs end. Engage the scientific community and industry participants to develop metrics for tracking the effectiveness of new technologies over time. For example:
            1. Using its existing authority, MDNR utilizes data to update fisheries regulations.
            2. MDA and MDNR track United States Department of Agriculture efforts to better define protocols for measuring climate smart agriculture and forestry (CSAF) outcomes.
        ii. Improve industry access to a wider range of raw materials. Identify and, if possible, remove policies and legal barriers that inhibit utilization of new materials. Utilize data from pilot programs and studies to support these changes. For example:
            1. Work with MDE to develop clean heat standards and create markets for lower quality wood, including the State Wood Energy Team. Expand the use and awareness of MEA Grants and other funding sources.
            2. Build awareness on the benefits of mass timber by establishing or expanding a pilot program for utilizing mass timber in state green building guidance. Develop a certification or classification that would allow alternative wood types (ex: tulip poplar), to be used for mass timber.
    c. Long Term (5+ years) step(s) =
        i. Explore public-friendly ways to discuss pilot programs and their efficacy.
        ii. Provide support for flexibility, access to funding and interest in measuring what the impacts of the new practices are over time. Establish consensus between

the scientific and industry communities.

## Natural Resources and Ecosystems

## "Resource Ready" Priorities

1. **Priority 1:** Update and prioritize conservation and restoration targets (e.g. Targeted Ecological Areas, oyster reefs, endangered and listed species). Set numeric goals to address significant vulnerabilities or changes and facilitate natural resource and ecosystem climate migration by utilizing the latest information and climate science about habitat vulnerability and migration and species shifts.
    a. Short Term (0-2 years) step(s) =
        i. **Land Conservation and Habitat:** Establish conservation targets for different habitat types. For example, TEAs in perpetual resilience easements, construction of oyster reefs, surface water quality standards designated uses and creation or protection of wetland migration corridors. These targets should include:
            1. Annual and cumulative metrics;
            2. Habitat-specific parameters and methodologies to measure progress;
            3. Explanation of the natural resource and ecosystem benefits of the targets (e.g. wetland migration and loss acreage, habitat refugia, flood storage)
        ii. **Habitat Restoration:** Develop or re-design management and restoration plans and projects that reflect anticipated future conditions and include climate adaptation measures consistent with established restoration goals and programs.
        iii. **Aquatic Conservation and Habitat; Habitat Restoration:** Strengthen program and project linkages at the land-water interface.
            1. Increase upland and aquatic habitat connectivity (e.g. paired nearshore-upland restoration projects, opportunities for fishing and boating access to aquatic spaces).
            2. Identify sustained strategies for staff capacity and funding that provide support for identifying and advancing projects that advance natural resource adaptation goals.
        iv. **Interested and Impacted Parties Engagement:** Increase community and partner buy-in for and understanding of landscape conservation and restoration actions that provide adaptation benefits by collaborating on messaging and engagement strategies.
            1. Utilize existing networks, advisory groups and community partnerships.
            2. Expand capacity and implement resilient conservation and restoration projects in underserved communities.
            3. Consider existing or new roles for community-based participation (e.g. watermen, coastal communities and those who rely on natural resources for sustenance and income).
    b. Mid Term (2-5 years) step(s) =

i. **Land Conservation and Habitat:** Perform an evaluation of metric-based targets and project performance; adjust policies, management and restoration plans; and communicate how and why projects provide resilience benefits.

ii. **Habitat Restoration:** Institutionalize adaptive management by building on MDNR's pre- and post-construction monitoring protocols to develop guidance for resilient restoration, including considerations during project planning, permitting and management.

iii. **Aquatic Conservation and Habitat; Habitat Restoration:** Develop a habitat and resource-specific system for quantifying nearshore-upland conservation progress that can be used to develop long-term targets. For example, fisheries outcomes could be addressed by:

1. Mapping existing and restored fish habitat (e.g. Submerged aquatic vegetation, oyster reefs, marshes) and cross-reference those areas with seasonal fish usage.
2. Establishing fish habitat goals for various life cycle stages.

iv. **Aquatic Conservation and Habitat:** Establish programs and partnerships that allow private property owners to undertake nearshore conservation and management actions that both protect properties and advance state habitat migration goals.

c. Long Term (5+ years) step(s) =

i. **Evaluate progress** of 0-2 and 2-5 year actions and investments and reassess the climate science and monitoring that could drive program and project updates.

1. **Land Conservation and Habitat:** Support and/or adjust the expansion of existing conserved lands to more inland or higher elevation areas, allowing for the migration of habitats and access opportunities.
2. **Habitat Restoration:** Support the transition of repetitive loss properties to community open space in areas that could facilitate habitat migration.
3. **Aquatic Conservation and Habitat:** Update existing or develop new policies, plans and projects that strengthen the ability of resources in the aquatic nearshore and Critical Area to adjust to climate-related bay water quality impacts and reach a new baseline.

2. **Priority 2:** Develop adaptation implementation plans and policies for resource management issues that would benefit from inter-agency coordination to accelerate adaptation (e.g. wetland migration, dredged material management, upland wildlife habitat management).

a. Short Term (0-2 years) step(s) =

i. Key agencies and organizations involved in resource management issues tied to adaptation goals coordinate to compile agency-specific activities and priorities. Agencies clearly identify which actions are programmatic and/or regulatory.

ii. Key agencies and organizations involved in these resource management issues determine how to assign or coordinate activities, including any roles with partners.

1. In assigning or coordinating activities, create a budget structure for resilient project implementation, then secure and align funding to

advance those plans.
    2. In assigning or coordinating activities, identify institutional barriers and limitations in staff capacity or legal requirements.
  iii. Following the development of coordination structures, the ARWG creates a structure for regular communication and accountability.

b. Mid Term (2-5 years) step(s) =
  i. The ARWG and key agencies and organizations involved in resource management issues tied to adaptation goals:
    1. Check in on progress related to the processes developed in year 0-2;
    2. Identify funding, legislative or policy needs.

c. Long Term (5+ years) step(s) =
  i. Establish and/or enact new rules and regulations that overcome barriers and facilitate coordination for climate adaptation programs.

3. **Priority 3:** Support and utilize capacity building or circuit-riders for small communities that do not have staff to apply for grants or manage projects.
   a. Short Term (0-2 years) step(s) =
     i. Identify and prioritize workforce upskilling and retraining needs for NRE-related topics and practices. Identify specific funding needs.
     ii. Key agencies and organizations assess opportunities to expand and leverage programs, technical assistance, capacity programs, networks and funding sources.
     iii. Build capacity in small and underserved communities by providing training and education on Natural Resources and Ecosystems-related topics and practices.
     iv. Identify specific funding and collaboration needs that exist between state identified targets and local government land use planning tools.
   b. Mid Term (2-5 years) step(s) =
     i. Develop a circuit rider and/or regional specialist position that focuses on natural resource- and climate-focused topics.
     ii. ARWG facilitates discussions about how to sustain community relationships and capacity support.
   c. Long Term (5+ years) step(s) =
     i. Secure the Natural Resources and Ecosystems-related circuit-rider and/or regional specialist position as a permanent or self-sustaining program.

## "Investment Needed" Priorities

1. **Priority 1:** Develop resource-specific data, tools and protocols that allow resource managers across the state to more cohesively understand, plan for and respond to changing conditions and impacts, including more quickly addressing invasive species concerns.
   a. Short Term (0-2 years) step(s) =
     i. Raise awareness and utilization of MDNR's "Planning for Climate Change on Public Lands" website and "Climate Change Adaptation and Resilience Planning

Guide" template to better understand, plan for and respond to the impacts of climate change on local and state lands.

ii. MDNR expands the public land planning guide template to develop approaches for adaptation in aquatic habitats.

iii. Identify resource- or risk-specific resilience needs, including any funding and regulatory changes, that identify potential climate impacts. These needs may include:
    1. Data or visualization of climate impacts;
    2. Monitoring (e.g. tracking saltwater intrusion and invasive species);
    3. Chesapeake Bay indicators (temperature, water quality, pH)

iv. MDNR develops a climate resilience and restoration hub for resource managers that consolidates resource resilience materials into an interdisciplinary package that addresses multiple factors (e.g. Sea-level rise, saltwater intrusion, warming temperatures, precipitation changes, invasive species, water quality, etc.). Resource managers can use these materials to educate themselves on climate risks and vulnerabilities and determine how to address them.
    1. Guidance should distinguish between the different applications of various tools. For example, the MyCoast Maryland tool may document occurrences of flooding on the landscape and increase understanding of what areas are flooding, how often and to what extent. Wetland migration data may provide landscape-scale projections of habitat shifts.

v. Key agencies and organizations develop an interagency Wetland Adaptation Strategy for Maryland, considering projections of wetland loss/migration and other climate impacts for both coastal and inland wetlands from now until 2100. The strategy should Include suggestions for state policies that are likely to minimize wetland loss and allow wetlands to adapt to climate impacts.

b. Mid Term (2-5 years) step(s) =

i. Resource management agencies identify a set of steps for protecting the adaptive potential of resources and climate-vulnerable communities against multiple and compounding impacts of climate change. Proposed steps should consider the data and tools (e.g. MyCoast reports) and monitoring technologies (e.g. drone surveys of invasive species) available to track and project change over time.

ii. Develop training materials that include case studies for how to utilize the guidance and tools package to address the needs identified in the short term milestones. These materials should reflect interdisciplinary management goals.

iii. The Critical Area program disseminates the interdisciplinary tools package[2] to local program partners for implementation on locally-owned and private lands.

iv. Further integrate ecosystem service values into the prioritization process for land acquisition. MDNR will update the accounting for ecosystem service framework and develop associated communication materials and engagement opportunities that focus on how ecosystems convey benefits to communities.

c. Long Term (5+ years) step(s) =

i. Monitor and respond to new and emerging climate threats. These may be new or worsening diseases or invasive species, intensifying storm events, drought or

[2] Investment needed priority 1, a. iv.

increasing numbers of extreme heat events.

2. **Priority 2:** Identify and incorporate new natural resource and ecosystem focus areas into comprehensive, hazard mitigation, nuisance flood and other local planning documents to afford more protection.
    a. Short Term (0-2 years) step(s) =
        i. State agencies work with local governments to review local planning documents and processes and develop consolidated messaging for natural resource and ecosystem resilience that would be applicable to and could be tailored for all plan types.
            1. State agencies continue partnerships such as the CBO-CBI initiative to develop an understanding of how different communities interact with natural resources and ecosystems and what their needs may be and how that can be integrated into land planning. (e.g. Defensores de la Cuentas)
        ii. State agencies identify strategies and actions for supporting the work of climate-vulnerable and underserved communities to incorporate natural resource and ecosystem focus areas into planning. For example:
            1. Comprehensive Plans: Incorporate focus areas into sensitive areas and resilience elements, or include them in green infrastructure plans.
            2. Nuisance Flood Plans: Map previously funded flooding projects and use that information to identify project gaps and ongoing concerns.
        iii. The Critical Area Program, MDNR, MDE and other agencies explore ways to enable wetland migration to occur. Identify which actions require legislative changes to be addressed in the mid- and long-term. For example, in the Critical Area Program, steps may need to be taken to assess:
            1. The need for making changes to existing structures, such as limited fill in areas to prolong structural integrity and allow other areas to convert to wetlands;
            2. The need for implementing conservation easements in exchange for tax breaks, or allowing some fill for the life of the owner(s), with tax or other incentives during this time followed by the property being transferred to the local jurisdiction or the state, or developing transfer of development rights (TDR) programs with incentives to attract participants.
    b. Mid Term (2-5 years) step(s) =
        i. Implement identified legislative changes.
        ii. Key agencies consolidate mapping and planning resources and develop guidance for (1) applying these tools and resources consistently across plan types and (2) how managers, private landowners and restoration practitioners should use these tools.
        iii. Leverage new and increased funding sources to work with and support climate-vulnerable communities in the utilization of planning tools to develop and implement local adaptation plans that integrate guidance for NRE focus areas.
        iv. The Critical Area Program, MDNR, MDE and other agencies work with local jurisdictions to explore ways to enable wetland migration on local and privately-

owned properties. Identify which actions require legislative changes to be addressed in the mid- and long-term. For example, the Critical Area Program may work with jurisdictions that have Critical Area programs to assess:

1. The need for making changes to existing structures, such as limited fill in areas to prolong structural integrity and other areas to convert to wetlands, and ensure that structural practices in the Buffer above Mean High Water does not impede wetland migration or the MDE Living Shorelines Act;
2. The need for implementing conservation easements in exchange for tax breaks, or allowing some fill for the life of the owner(s), with tax or other incentives during this time followed by the property being transferred to the local jurisdiction or the state, or developing transfer of development rights (TDR) programs with incentives to attract participants.

v. Advance NRE-related resilience goals on public lands and at the local level through various land use plans by creating a process and timeline that reflects how open space confers risk reduction benefits to both natural resources and community. This work may include focusing on connections such as utilizing Nuisance Flood Plans to move natural infrastructure projects from the planning to implementation phase.

c. Long Term (5+ years) step(s) =
   i. Conduct a comprehensive analysis of the ways local planning documents have assisted in expanding adaptation strategies across ecosystems and jurisdictions.
   ii. Ensure collaboration at the local, county, and state level to incorporate climate adaptation considerations across plan types.

3. **Priority 3:** Foster community support for natural resource adaptation by emphasizing the benefits of natural spaces through open spaces, public access and recreation.
   a. Short Term (0-2 years) step(s) =
      i. MDNR's Office of Outdoor Recreation works with local public land managers to:
         1. Evaluate which outdoor recreation economies, land units and sites are vulnerable to climate impacts;
         2. Identify messaging opportunities about how recreational public lands provide resilience benefits.
      ii. Engage the MDNR's R3 (Recruitment, Retention and Reactivation) team and Outdoor Recreation office to explore ways to incorporate adaptation messaging in work with recreational communities and industry partnerships.
         1. Identify opportunities to make aquatic spaces accessible for individuals who are not industry professionals.
         2. Integrate applied climate science in fishing, hunting and other recreational uses.
      iii. Establish and maintain partnerships with interested community partners, family and student groups and neighborhood associations to develop an understanding of how different communities interact with NRE and what opportunities exist for conserving and restoring NRE to reduce climate risks.
      iv. MDNR expands the "Planning for Climate Change on Public Lands" website to include communications materials for local, county and state land managers

about how NRE and open space build climate resilience.

v. The Critical Area Program will publish “Public Pathways” guidance that emphasizes both the importance of public access to the water while balancing the impacts to natural resources and future wetland migration.

b. Mid Term (2-5 years) step(s) =
   i. Develop funding approaches for supporting community relationships and capacity partnership over the long term. Identify community leaders and organizations and provide them with resources for community outreach and engagement about how NRE and open space build climate resilience (e.g. La Academia model by Defensores de la Cuentas).
   ii. Key agencies continue efforts and investments outlined in the Short Term steps (e.g. MDNR’s Outdoor Recreation Office and R3, community advisory groups, etc.) to foster continued dialogue. Key agencies accelerate efforts to implement climate adaptation strategies and capital projects and integrate messaging into these efforts.
   iii. The Critical Area Program will prioritize and/or incentivize public access in the Critical Area for underserved communities (i.e. potentially via regulatory/statute change) and work to incorporate Environmental Justice into State or Local agency projects that require Critical Area Commission approval.
c. Long Term (5+ years) step(s) =
   i. Maintain a self-sustaining network of local organizations that works together to achieve community resilience and promote stewardship of natural resources and open space – for example, expanding and maintaining MDNR’s Es Mi Parque.
   ii. Use data from tools, project monitoring and models to analyze and communicate how investments in open space and natural infrastructure projects are providing resilience benefits, including flood reduction.

## Protecting Critical Infrastructure

## "Resource Ready" Priorities

1. **Priority 1:** Within two years, establish a definition for how to evaluate infrastructure types for criticality and identify critical infrastructure within agencies or organizations.
    a. Short Term (0-2 years) step(s) =
        i. Develop definition guidance for evaluation of infrastructure types and what interested and impacted parties (organizations, agencies, etc.) should be using this approach (June 30, 2025).
            1. Share draft guidance and approach with pertinent interested and impacted parties for feedback, spring 2025. Suggested approach: develop the ARWG meeting agenda around review and invite additional interested and impacted parties.
            2. Partners in process: local governments, asset managers at state agencies, federal partners, JEDI group (i.e. ARWG NextGen or MCCC consider infrastructure impact on vulnerable communities and the emphasis on it for identifying critical assets or infrastructure types), industry representation (e.g. organizations like the National Association of State Energy Officials provide a holistic perspective of how everyone is looking at infrastructure, etc.), entities utilizing the Asset Management Adaptation Plan (AMAP) process for decision making (e.g. Washington Suburban Sanitary Commission).
        ii. Review and reaffirm the identified list of 16 infrastructure types from original NextGen Adaptation Plan Development. (December 31, 2025)
            1. Infrastructure encompasses multiple asset classes.
    b. Mid Term (2-5 years) step(s) =
        i. -
    c. Long Term (5+ years) step(s) =
        i. -

2. **Priority 2:** Determine necessary elements to incorporate in the Decision Support Toolbox (DST) including equity analysis, risk identification and tolerance, and costs to minimize risk and resiliency measures. Develop guidance for use of the DST for end users within two years.
    a. Short Term (0-2 years) step(s) =
        i. With ARWG or MDEM's Office of Resilience as lead, compile a portfolio of efforts, tools and data that informs Decision Support Toolbox (DST) development. (July 1, 2025)
        ii. Develop a needs statement for a critical infrastructure specific DST. Statement may end up being that no critical infrastructure-specific DST needs to be developed due to sufficient support from existing tools and resources. Submit the final needs statement to the ARWG. (December 31, 2025)
    b. Mid Term (2-5 years) step(s) = If necessary, dependent on results of 2.d.ii above.
        i. Provide a summary of the portfolio of efforts that includes identification of decision support provided (evaluation, prioritization, etc.) Develop a 2 year

action plan that outlines steps necessary to develop a critical infrastructure-specific DST. (July 1, 2026)

ii. Complete the DST (based on action plan developed in 2.e.i, and present at an ARWG working group meeting. Include a "how to" guide for utilization of the DST and plans for ongoing maintenance or updates. (December 31, 2027)

c. Long Term (5+ years) step(s) =
   i. -

3. **Priority 3:** Within four years, compile and publish a comprehensive critical infrastructure inventory with ownership identified.
   a. Short Term (0-2 years) step(s) =
      i. Through an ARWG working group, with MDEM's Office of Resilience, and other identified key interested and impacted parties, evaluate and determine if a critical infrastructure inventory is necessary and effective to achieve the intended goal of a statewide integrated critical infrastructure plan that capitalizes on synergies, ensures redundancies and protects infrastructure across Maryland in the face of climate change impacts. (December 31, 2025)
      ii. Develop an Action Plan or alternative approach to identifying critical infrastructure in Maryland to inform planning. (December 31, 2025)
   b. Mid Term (2-5 years) step(s) =
      i. Complete inventory of critical infrastructure based on definition developed under Priority 1. (July 1, 2026)
      ii. Develop a scoring system for and then evaluate all critical infrastructure in the inventory for geographic, social, economic and demographic vulnerabilities. (December 31, 2026)
         1. Work with the ARWG JEDI team, MCCC Climate Justice Work Group and other equity and environmental and/or CJ experts to ensure development of the scoring system aligns with values and Maryland's unique characteristics.
         2. Even if the inventory is not determined to be the best course of action, this step should move forward as a tool to inform vulnerability assessment of critical assets. It can be provided to owners and operators of critical assets to inform their decision making.
      iii. Provide the inventory with relevant vulnerability scores for the assets to the AMAP Team to inform the development of the AMAP in Maryland. (December 31, 2026)
      iv. Set up a process to either regularly (annually or bi-annually), or continuously update the inventory with information on state owned assets. Process should include a plan to reassess assets for their vulnerability at least once every 3 years. (December 31, 2026 for plan of action, December 31, 2029 for updated assessment of assets in the inventory)
   c. Long Term (5+ years) step(s) =
      i. Update to assessment of assets in the inventory (either performed by asset owners, or if state-wide lead identified by their office). (December 31, 2032)

## “Investment Needed” Priorities

1. **Priority 1:** Select, test and apply an AMAP Framework to be used statewide to inform planning studies, capital improvement programs, systems risk assessment and management and flexibility to maximize infrastructure life cycles.
    a. Short Term (0-2 years) step(s) =
        i. Draft a detailed scope for the development of a State-wide AMAP. Include identification and summary of existing state agency planning documents and processes that should inform the AMAP. Scope should include the identified list of critical infrastructure asset owners (based on definition developed under Resource Ready Priority 1. Scope should also include an orders-of-magnitude cost estimate, and identification of potential funding avenues to support the completion of an AMAP for the state. Lead partner to be identified. (December 31, 2025)
    b. Mid Term (2-5 years) step(s) =
        i. Secure funding and technical assistance support to develop and pilot an AMAP approach in Maryland. Plan for AMAP pilot and request for funding needs to be informed by the status of Resource Ready Priorities 1 (Critical Infrastructure definition), 2 (Decision Support Toolbox), and 3 (Critical Infrastructure inventory) (December 31, 2026), as well as needs to complete the remaining components of the AMAP (proposed components listed below).
            1. Geo-referenced asset inventory
            2. Condition assessment
            3. Vulnerability Assessment
            4. Level of Service
            5. Likelihood of failure
            6. Risk Exposure / Risk Register
            7. Prioritization Optimization
            8. Long-term Funding Strategies
            9. Key Performance Indicators
        ii. Deployment of AMAP Pilot (January 1, 2027 – December 31, 2030).
    c. Long Term (5+ years) step(s) =
        i. Integration of AMAP and functional components into standard operating procedures at the state level to ensure alignment with and sustainability of critical infrastructure management.
            1. Specific details like measurable outcomes will need to be identified later as the AMAP is developed, piloted and refined. At minimum, the reference to the AMAP planning document, and incorporation of the definition, vulnerability assessment process, and prioritization optimization is integrated into decision making in state agency operations for all agencies with critical infrastructure (per definition in Resource Ready Priority 1).

2. **Priority 2:** Within seven years, outline a plan for integrating the AMAP framework into their capital improvement planning and resiliency-based programs
    d. Short Term (0-2 years) step(s) =
        i. -
    e. Mid Term (2-5 years) step(s) =
        i. If scope and funding allows, include local government(s) representatives in the development and pilot of the AMAP to ensure better alignment with and easier adoption of an AMAP approach at the local level (align with milestones under Investment Needed Priority 1, above).
    f. Long Term (5+ years) step(s) =
        i. Following the completion of the AMAP pilot, establish a local government working group to review the definition, approach and lessons learned to inform the implementation of an AMAP approach and systematic critical infrastructure perspective into the local government order of operations. (within 2 years of the completion of AMAP, estimated December 31, 2035)