Agency Climate Implementation Plan

Maryland Department of Emergency Management

November 1, 2024

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DEPARTMENT OF
EMERGENCY MANAGEMENT

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Department of Emergency Management Climate Implementation Plan required by Executive Order, "Leadership by State Government: Implementing Maryland's Climate Pollution Reduction Plan"

In accordance with Governor Moore's Executive Order 01.01.2024.19, "Leadership by State Government: Implementing Maryland's Climate Pollution Reduction Plan," the Maryland Department of Emergency Management affirms its commitment to:

- Work to address climate change and ensure a just transition to a clean economy;
- Advance environmental justice by working to address the disproportionate impacts of climate change for underserved and overburdened communities, including the application of Justice40 goals, initiatives, and funding;
- Equitably implement all existing laws, regulations, and policies related to climate change, incorporating robust community and stakeholder engagement; and
- Continue to maximize federal funding opportunities on climate.

The Maryland Department of Emergency Management hereby submits its own Climate Implementation Plan (CIP) to demonstrate its commitment to a whole-of-government approach to addressing climate change and fully implementing Maryland's Climate Pollution Reduction Plan.

Cover photo: Frederick Road, City of Baltimore, 2018.

Part 1: Agency Actions Under the Climate Pollution Reduction Plan

Maryland's Climate Pollution Reduction Plan calls on the Maryland Department of Emergency Management to:

> *Apply for federal funding - Under the leadership and coordination of the Governor's Federal Office, all agencies will apply for federal funding to implement actions that support the achievement of this plan. State agencies will work closely with local governments, nonprofits, and community-based organizations to ensure Maryland is competitive for federal climate action implementation funds and to build capacity for local-level implementation. State agencies will offer support to Maryland's businesses and private sector to ensure they are competitive for historic federal investments.*

Please note: Other agency actions may be derived from the Climate Pollution Reduction Plan and explained in agency Climate Implementation Plans (e.g., policies related to sustainable/smart growth planning, commitments towards carbon sequestration on the state's natural and working lands and actions that align agency mission with sector specific decarbonization strategies).

Part 2: Recommending Actions to Address Climate Change

State law (MD Code, Environment, § 2-1305) requires that each State agency shall review its planning, regulatory, and fiscal programs to identify and recommend actions to more fully integrate the consideration of Maryland's greenhouse gas reduction goal and the impacts of climate change. The review shall include the consideration of (i) sea level rise; (ii) storm surges and flooding; (iii) increased precipitation and temperature; and (iv) extreme weather events. Furthermore, each State agency shall identify and recommend specific policy, planning, regulatory, and fiscal changes to existing programs that do not currently support the State's greenhouse gas reduction efforts or address climate change.

In compliance with the law, the **Maryland Department of Emergency Management** (MDEM) is taking or recommending the following actions to more fully integrate the consideration of Maryland's greenhouse gas reduction goal and the impacts of climate change.

Context

MDEM administers planning and fiscal programs across all phases of disasters – prevention, mitigation, preparedness, response, and recovery – and works to build community resilience. Many of the disasters that affect Maryland are caused or exacerbated by climate change, as rising seas, increased precipitation, extreme temperatures, and other impacts put stress on communities.

Upon review, the majority of MDEM's current climate actions are geared toward reducing climate impacts. In some instances, these actions also support greenhouse gas reduction goals, as with nature-based solutions supported by hazard mitigation grants. However, there are opportunities to further support multi-benefit projects and better integrate hazard mitigation and resilience with greenhouse gas reduction.

Current Actions to Address the Impacts of Climate Change

Many of MDEM's core programs help address the impacts of climate change, as described below.

- **Data Collection and Utilization:**
  - Hiring Meteorological Hazards Analyst: MDEM is hiring a full-time meteorological hazards analyst to provide guidance on weather-related projects and activations. This role will improve preparedness for extreme weather events and reduce risks to vulnerable populations. This is critical, as climate change causes more extreme weather events.
  - Gathering Real-Time Data Through the Mesonet Project: The Maryland Mesonet project gathers real-time meteorological data, which helps enhance situational awareness during weather events. By utilizing advanced data, MDEM can better respond to disasters and support climate adaptation efforts.

- **Planning and Strategy:**
  - Incorporating Climate Resilience into State Hazard Mitigation Plan 2026 Update: The Disaster Risk Reduction Directorate within MDEM is working on the 2026 update of the State Hazard Mitigation Plan, which will incorporate the latest climate resilience strategies. This ensures that long-term hazard plans address key risks such as sea level rise, climate-driven flooding, and other extreme weather driven by climate change.
  - Maryland Office of Resilience Strategy: The Maryland Office of Resilience is leading the development of a statewide resilience strategy, coordinating efforts across agencies to address climate-driven hazards, among others. This will ensure alignment across state agencies and reinforce the state's resilience efforts. As part of the process, the Maryland Office of Resilience is referencing the Climate Pollution Reduction Plan and will reference Climate Implementation Plans.
  - Consequence Management Emergency Plans: MDEM is updating weather-related emergency plans (such as the Winter Storm and Hurricane Annexes) to reflect the increased intensity and impacts of extreme weather events. Updates to the Threat and Hazard Identification and Risk Assessment (THIRA) and State Preparedness Reports (SPR) will place a stronger emphasis on weather-related scenarios, improving readiness for climate-related events.

    - 9-1-1 Board: The 9-1-1 Board is improving coordination between the Maryland Joint Operations Center (MJOC) and Public Safety Answering Points (PSAPs) during significant weather events. This will help streamline communication and improve response times during weather emergencies, including those caused or exacerbated by climate change.

- **Projects and Technical Assistance:**
    - Resilience Toolkit: The Resilience Toolkit, which launched in September 2024, provides a centralized platform for Marylanders to access resilience resources, funding opportunities, and data. It is designed to improve public access to resilience tools, especially in underserved communities. While the scope is broader than climate resilience, climate resilience resources make up a significant portion of the tool.
    - Hazard Mitigation and Resilience Projects: The Disaster Risk Reduction Directorate within MDEM provides funding for projects that reduce hazard risk through federal programs such as the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Assistance and the Resilient Maryland Revolving Loan Fund. These programs fund local government efforts to reduce risks associated with climate impacts, including flooding, sea level rise, and extreme weather. MDEM's support for these projects focuses on leveraging available funding to reduce climate-related risks across the state. Projects are described in more detail in Part 4.

Current Actions to Meet Maryland's Greenhouse Gas Reduction Goals

MDEM is contributing to Maryland's efforts to reduce greenhouse gas emissions by focusing on energy efficiency, conservation, and carbon sequestration, in alignment with the state's climate strategy.

- **Supporting Nature-Based Solutions:** The Disaster Risk Reduction Directorate within MDEM integrates nature-based solutions into its hazard mitigation efforts. These initiatives reduce climate risks while also contributing to carbon sequestration, supporting the state's broader sustainability goals While these hazard mitigation projects primarily focus on reducing risks from flooding, erosion, and extreme weather, they have additional benefits that align with Maryland's long-term goals for climate resilience, greenhouse gas reduction, and carbon sequestration. These benefits include:
    - Storing carbon in natural ecosystems (especially wetlands and forests),
    - Reducing the energy demand for infrastructure (such as flood control systems), and
    - Supporting ecosystem health, which aligns with Maryland's broader climate goals.
- **Project Types Include:**
    - Stream Restoration: Restoring natural vegetation along stream banks and wetlands not only helps control flooding and erosion but also captures and stores carbon in the plants and soil, acting as a natural carbon sink. By improving natural water flow and

reducing reliance on energy-intensive flood control structures, these projects can indirectly help lower greenhouse gas emissions.
    - Shoreline Erosion Projects: Using natural buffers like marshes or dunes to stabilize shorelines not only reduces the impact of storms and erosion but also stores carbon in plants and sediment (particularly in coastal wetlands). These natural solutions can replace or reduce the need for hard infrastructure (e.g., seawalls), which often requires significant energy to build and maintain, resulting in lower emissions.
    - Flood Mitigation: Restoring wetlands and floodplains helps absorb floodwaters, reducing damage and risk. These areas are also highly effective at storing carbon in their soils, contributing to long-term climate benefits. Implementing green infrastructure (e.g., rain gardens, permeable surfaces) in flood-prone areas can reduce the need for energy-intensive stormwater systems, which helps cut greenhouse gas emissions.
    - Property Acquisitions: Acquisitions can contribute to greenhouse gas reduction if the acquired land is restored to its natural state (e.g., wetlands, forests), which can act as carbon sinks. If left undeveloped, these areas help prevent urban sprawl and the associated greenhouse gas emissions from construction, transportation, and utilities. This could make property acquisitions more relevant to the CIP if managed as part of a broader conservation strategy.
- **Exploring Electric or Hybrid vehicles:** The Consequence Management Directorate is exploring transitioning to electric or hybrid vehicles for Liaison Officers and Senior Staff, along with installing energy-saving equipment and EV charging stations at key state facilities to improve sustainability.

Future Recommendations

- **Data Collection and Utilization:**
    - Expanded Data and Technical Assistance: The Disaster Risk Reduction Directorate recommends expanding outreach and technical assistance to communities engaged in climate-related hazard mitigation projects. This would help vulnerable and underserved communities better prepare for future climate events, using improved access to real-time data and forecast information.

- **Planning and Strategy:**
    - State Disaster Recovery Fund: The Disaster Risk Reduction Directorate proposes establishing a State Disaster Recovery Fund to incentivize resilience and mitigation during infrastructure repairs. This approach ensures that recovery efforts prioritize long-term resilience.
    - Coordinating Place-Based Resilience: The Maryland Office of Resilience suggests establishing a coordinated, cross-agency effort to advance **place-based resilience projects**, focusing on multi-benefit projects in overburdened, underserved, or

otherwise low-capacity communities. To do this effectively, the Maryland Office of Resilience would maintain a pipeline of community resilience projects that need funding and develop a regular process to discuss those projects with other funding agencies.
    - Building Local Capacity for Resilience: The Maryland Office of Resilience also suggests supporting the formation of **resilience authorities**, which will empower local jurisdictions to manage climate risks more effectively and strengthen resilience efforts in areas most affected by climate change. This could take the form of technical assistance.
    - Hiring a Response Planner: The Consequence Management Directorate proposes hiring a Response Planner to focus on preparing Maryland for hurricanes, winter storms, and other severe weather threats, including drought and flooding, all of which are exacerbated by climate change.

- **Projects and Technical Assistance:**
    - 9-1-1 Board Alert Mapping System: The 9-1-1 Board plans to implement a county-level alert mapping system to streamline communication between PSAPs, MJOC, and local communities during emergency events. This system will enhance public safety by improving real-time emergency communication and ensuring faster response times.
    - Technical Assistance That Integrates Climate Resilience with Greenhouse Gas Reduction: The Maryland Office of Resilience recommends providing tools and assistance to local governments and community-based organizations to help them apply for federal funding for resilience projects. This technical assistance is crucial for ensuring Maryland communities can access federal climate action implementation funds. While the Maryland Office of Resilience is doing this on a small scale, it will be critical to expand these efforts with a focus on multi-benefit projects that reduce greenhouse gas emissions while building resilience, particularly in disadvantaged communities. These projects will integrate greenhouse gas reduction with broader climate adaptation initiatives, ensuring both environmental and social benefits.

- **Climate-Smart Procurement:** Our agency will work with the Department of General Services on items related to climate-smart operations, buildings, and procurement.
    - MDEM will assess any procurement needs to support climate-smart action.
    - MDEM's entire procurement function has been moved to DGS so progress is dependent upon DGS ability and processes.

- **Maximizing Funding:** Our agency will work with the Department of Budget and Management to help maximize external funding opportunities to address climate in Maryland.

- **Vehicles and Buildings:** Our agency will help Maryland State government to lead by example by improving our vehicles and buildings.
    - Our agency will evaluate how quickly our vehicles can be transitioned to zero-emission vehicles.
        - Our agency will analyze where charging infrastructure could be added to support the transition to electric vehicles.
        - Our agency will identify vehicles that meet any special needs or standards for our agency's vehicles.
    - In support of the State's 5 Million Trees Initiative, our agency will evaluate areas with opportunities to plant trees, especially urban and underserved areas where urban heat island effect is most prominent.

- **Supporting Transportation Demand Management:** Our agency will work with the Maryland Department of Transportation to do our part in transportation demand management.
    - Our agency will connect with MDOT to receive and disseminate materials that help state employees understand the alternative transportation options available to them which align with the State's goal of reducing vehicle miles traveled and harmful air pollution.

- **Continued Partnership with the Maryland Department of the Environment:** As this Climate Implementation Plan is implemented, our agency will continue to work with the Maryland Department of the Environment (MDE) to address climate change with Maryland's whole of government approach.
    - Our agency will stay in communication with MDE to monitor and track progress.
    - In compliance with the Climate Solutions Now Act of 2022, our agency will continue to make climate a key consideration in our long-term planning of policy and the agency's operations.
        - To achieve this and communicate effectively about progress, MDEM will leverage our participation in the Maryland Commission on Climate Change (including the Adaptation and Resiliency Work Group), the Governor's Subcabinet on Climate, and the Sustainable Growth Subcabinet.

Part 3: Considering Greenhouse Gas Emissions Reductions and Impacts on Disproportionately Affected Communities

State law (MD Code, Environment, § 2-1305) requires that each State agency, when conducting long-term planning, developing policy, and drafting regulations, shall take into consideration: (1) the likely climate impact of the agency's decisions relative to Maryland's greenhouse gas emissions reduction goals; and (2) the likely impact of the agency's decisions on disproportionately affected communities identified according to the methodology adopted under § 1-702 of the Environment

article. Furthermore, Governor Moore's Executive Order 01.01.2024.19 requires each agency to report on how the agency will advance environmental justice by working to address the disproportionate impacts of climate change for underserved and overburdened communities.

In compliance with the law and Executive Order 01.01.2024.19, **Maryland Department of Emergency Management** is taking the following steps to meet these requirements.

Summary of Efforts

MDEM advances environmental justice and addresses the disproportionate impacts of climate change on underserved and overburdened communities in 4 key ways:

- **Embedding DEI principles within MDEM**: Within MDEM, the Office of Diversity, Equity, and Inclusion coordinates many of the department's internal and external DEI efforts. This office trains and educates MDEM's staff so that they can more effectively serve underserved and overburdened communities.
- **Centering Environmental Justice in Resilience Strategy and Programs**: The newly created Maryland Office of Resilience is a coordinating entity tasked with centering environmental justice in the state's resilience efforts, including the creation of a state resilience strategy,
- **Ensuring that Hazard Mitigation Programs Incorporate Equity**: The Disaster Risk Reduction Directorate administers several federal funding and technical assistance programs, applying an equity lens and prioritizing communities with social risk factors.
- **Supporting local capacity building**: MDEM provides support so that local jurisdictions can plan for climate-related weather emergencies.

See below for more detail on the goals, objectives, and actions associated with each of the above.

Embedding DEI principles within MDEM

Goal: The Office of Diversity, Equity, and Inclusion will provide department-wide training on equity and justice-related concepts to increase awareness and capacity-building of MDEM employees, so that they can better incorporate concepts in their day-to-day work and decision-making.

Centering Environmental Justice in Resilience Strategy and Programs

Goal: The Maryland Office of Resilience will promote equity and advance environmental justice by embedding equity and justice concepts into its programs and practices, including the statewide resilience strategy.

- **Objective:** Prioritize resilience investments, projects, resources, and support for underserved and overburdened communities.
    - Action: Make "Equity and Justice" a focus area that underpins the state resilience strategy.

    - Action: Engage state agency officials charged with environmental justice, such as Environmental Justice Officers, in the strategy process.

- **Objective:** Use a data-driven approach to understand the needs and challenges of underserved and overburdened communities to achieve equitable resilience outcomes. This could leverage various equity tools such as (not limited to) MDE's EJ Screening Tool, the Climate and Environmental Justice Screening Tool (CEJST), Social Vulnerability Index (SVI), and the EPA Environmental Justice Screening and Mapping Tool (EJSCREEN).
    - Action: Meet with communities and CBOs that represent underserved or overburdened communities to understand their needs. Review notes from related efforts undertaken by other agencies.
    - Action: Incorporate content on equitable community engagement annually, into regional workshops, co-developed and presented by subject matter experts. This initiative aims to foster the prioritization of investments in underserved and overburdened communities.

Ensuring that Hazard Mitigation Incorporates Equity

Goal: The Disaster Risk Reduction Directorate will integrate DEI principles across its portfolio.

- **Objective:** Advance equity in the Hazard Mitigation Grant Program (HMGP), Building Resilient Infrastructure and Communities (BRIC) Flood Mitigation Assistance (FMA) program, and the Resilient Maryland Revolving Loan Fund program (RLF).
    - Action: Develop an outreach plan to jurisdictions with a high vulnerability that have not had mitigation projects.
    - Action: Utilize an equity analysis tool to evaluate Hazard Mitigation programs to identify unanticipated adverse impacts and remedy inequities if discovered.
    - Action: Prioritize projects in communities that have multiple high social risk factors in addition to natural hazard risk.
    - Action: Ensure FEMA technical assistance is provided in recovery and mitigation to communities with low capacity and high risk.
    - *Please see Part 4 for an in-depth discussion of MDEM's support in the communities of Crisfield, Rising Sun, and Federalsburg.*

Supporting Local Capacity Building

- Action: Consequence Management provides planning assistance to help local jurisdictions create weather annexes to their local Emergency Operations Plans (EOPs). This reduces the barrier for local governments to plan for climate-related emergencies.

Part 4: Resources for Implementation

Implementing Maryland's Climate Pollution Reduction Plan

This section describes MDEM's steps, time, and resources needed to implement all required actions in Maryland's Climate Pollution Reduction Plan that are within the agency's purview (part 1 above), including top priorities for the upcoming year.

> ***Action item: Apply for federal funding*** *- Under the leadership and coordination of the Governor's Federal Office, all agencies will apply for federal funding to implement actions that support the achievement of this plan. State agencies will work closely with local governments, nonprofits, and community-based organizations to ensure Maryland is competitive for federal climate action implementation funds and to build capacity for local-level implementation. State agencies will offer support to Maryland's businesses and private sector to ensure they are competitive for historic federal investments.*

To implement the actions outlined in the plan, MDEM will collaborate with local governments, nonprofits, and community-based organizations, ensuring that Maryland remains competitive for federal climate action implementation funds. This effort will involve coordination across state agencies to build capacity for local-level implementation and support businesses and private sector entities in securing federal investments. While MDEM's efforts primarily focus on reducing the impacts of climate change, in many cases these projects offer dual benefits in reducing greenhouse gas emissions.

Top Priority Actions for 2025 to Increase Funding for Climate Action

- **Continue to identify and steward FEMA BRIC and FMA projects:** In the next year, MDEM's priority is continued support for the following communities. Both projects below have been selected for further review, meaning that they have been successful in the application process, but will require additional steps and support from MDEM. FEMA has identified all these projects as primarily benefiting Environmental Justice communities. While these projects are a priority, given the federal funding timeline, it might take more than a single calendar year for the communities to receive reimbursement.
    - **City of Crisfield:** MDEM has helped the City of Crisfield apply for $34 million in FEMA BRIC funding for the Southern Crisfield Flood Mitigation Project. This project utilizes nature-based solutions and other measures to address flooding. Using the MDE EJ Screening Tool, Crisfield is in the 65th percentile of environmental justice communities in the state.
    - **Town of Rising Sun:** MDEM has helped the Town of Rising Sun apply for ~$5 million in FEMA BRIC funding for two projects that would reduce flooding, in part through nature-based solutions. These projects involve buying out mobile home residents that experience repeated flooding and providing relocation assistance, as well as decommissioning a sludge storage lagoon and restoring a stream.

- **Support FEMA BRIC Direct Technical Assistance to help low-capacity communities develop projects**: MDEM is currently supporting Federalsburg with FEMA Direct Technical Assistance. This effort will help Federalsburg scope project ideas that address climate impacts and could receive federal funding in the future. Federalsburg is in a census tract in the 83rd percentile of environmental justice communities in the state.
- **Build capacity for outreach and project identification** under available Hazard Mitigation Assistance Funding Programs, including the FEMA BRIC and FMA programs
- **Establish a statewide hazard mitigation activity tracking tool by July of 2025**: This will enable MDEM to identify the climate adaptation and resilience projects that have already been included in local hazard mitigation plans, effectively creating a "pipeline" of climate adaptation projects locally that would be eligible for funding.
    - *Please note that this is a KPI through the State Performance Plan*
- **Expand the Resilience Toolkit and circulate it to local stakeholders:** The Maryland Office of Resilience has developed a Resilience Toolkit, which aggregates information about funding programs and other resources at the state and federal level, as well as from philanthropic organizations. This tool is designed to help local governments, businesses, and nonprofits better navigate the complex resilience funding landscape and will hopefully accelerate climate resilience funding. The following steps are priorities for FY25
    - Launch Phase 1 of the Resilience Toolkit (complete)
    - Launch Phase 2 of the Resilience Toolkit
    - Circulate the toolkit broadly and show users how to navigate it
- **Develop an application for federal funding to expand technical assistance through the Maryland Office of Resilience:** The Maryland Office of Resilience is considering applying for federal funding through the FEMA BRIC program or other federal grant programs to establish a technical assistance program, which would help local governments scope climate and other resilience projects and ultimately apply for funding. Where possible, it would be ideal to provide technical assistance that integrates greenhouse gas reduction with hazard resilience. In the upcoming calendar year, the goal would be to develop and submit an application, though receipt of funding would occur in later years.

Ongoing Actions to Increase Funding for Climate Action - 2026 and Beyond

- **Continue collaboration with partners to identify additional opportunities to expand the Mesonet network**: This network provides vital real-time weather data that can inform preparedness and response to disasters caused by climate change.
- **Expand training for application of Mesonet data to local decision making** for long term climate resilience.
- **Apply to the FEMA HMGP Program (if available) to increase climate resilience of communities**: Because HMGP is only available after a disaster declaration, this step is dependent on funding availability.

- **Coordinate with other agencies on climate-related federal applications**: MDEM has already had some successes on this front and would seek to expand in future years. As one example, the Maryland Office of Resilience is providing in-kind support to a ~$950,000 military installation resilience grant led by the Department of Commerce and funded by the U.S. Department of Defense Office of Local Defense and Community Cooperation (OLDCC).
- **Establish a coordinated, cross-agency effort to advance place-based resilience projects**, focusing on multi-benefit projects in overburdened, underserved, or otherwise low-capacity communities. To do this effectively, the Maryland Office of Resilience would maintain a pipeline of community resilience projects that need funding and develop a regular process to discuss those projects with other funding agencies. While it is possible to advance this goal with current resources, additional staff support for the Maryland Office of Resilience would make this effort more successful.
- **Identify and collaborate with environmental justice experts on funding** through MDEM's Office of Diversity, Equity, and Inclusion.
- **Partner with local environmental justice organizations in the non-governmental sector** to enhance the competitiveness of federal applications. MDEM's Office of Diversity, Equity, and Inclusion plays a key role in this work, while other entities within MDEM provide support, including the Maryland Office of Resilience and the Whole Community Integration Branch.

Implementing this Climate Implementation Plan

Current Funding Outlook

MDEM's current funding comes from state appropriations as well as FEMA. MDEM must utilize and redirect available funding to accomplish the actions outlined in the Climate Implementation Plan. Departments within MDEM provided an overview of current funding sources, potential gaps, and additional resources required to meet the goals described.

- **Maryland Office of Resilience**: Currently funded through state appropriations.
- **Disaster Risk Reduction Directorate**: Currently utilizes the Resilient Maryland Revolving Loan Fund and FEMA Hazard Mitigation Assistance Grants. However, Flood Mitigation Assistance Grants require state-provided matching funds, which will be a challenge due to limited personnel and resources allocated to these efforts.
- **Consequence Management Directorate**: Existing planning staff can support the expansion of local Emergency Operations Plans (EOPs), but no additional funding is available to accomplish the broader goals outlined in the Climate Implementation Plan.

Gaps and Challenges

- **Overall:** MDEM's funding sources are geared toward climate adaptation and resilience, as opposed to specific resources for greenhouse gas reduction. While this is logical based on

MDEM's mission, it means that MDEM must find ways to incorporate greenhouse gas reduction goals within broader projects.

- **Maryland Office of Resilience**:
  - Maryland Office of Resilience needs personnel to identify potential funding sources and assist communities in their applications.
  - Through conversations with communities, the Maryland Office of Resilience has also identified a need for funding to support community participation in resilience projects, including honoraria for community members attending meetings.
  - Communities have identified specific funding gaps, such as a lack of funding for pre-development engineering studies and for property acquisition. The Maryland Office of Resilience continues to identify these specific funding gaps and needs.
- **Disaster Risk Reduction Directorate**: Disaster Risk Reduction's main gap relates to the requirement for matching funds for large projects, particularly under the FEMA FMA program. With only two general-funded positions, scaling up these efforts remains a challenge.

Future Funding

To support a wide range of local climate projects, additional sources of funding and financing could be tapped:

- **Local financing capacity**: Explore innovative local financing options, such as resilience authorities and green banks, to support climate and resilience projects. MDEM's role through the Maryland Office of Resilience could be providing technical assistance to jurisdictions that wish to establish such mechanisms.
- **Philanthropic support**: Build relationships with national, regional, and local philanthropic organizations to support resilience projects. These partnerships could help fill funding gaps, particularly for small projects or those requiring additional match funding.
- **Cross-agency coordination on funding**: Though better coordination of climate and resilience funding, the State could make our current climate dollars go further.

Part 5: Outcomes from Implementation

Increased Public Safety and Reduced Disaster Damages

MDEM's efforts, as described throughout this report, can save lives and prevent injuries during disasters, while also protecting property and reducing disaster damages. Through climate-informed data, planning, and response efforts, MDEM will more effectively respond to natural hazards that are worsened by climate change, which could prevent loss of life. Research has demonstrated that hazard mitigation and resilience projects can prevent deaths and nonfatal injuries.[1] Research has also

[1] National Institute of Building Sciences, "Natural Hazard Mitigation Saves," 2019.

shown that for every $1 spent on hazard mitigation and resilience measures, $4-11 are saved in avoided future losses.[2]

Health Benefits

By supporting climate projects in local communities, as described in Part 4, MDEM will create health benefits in several ways. First, in places like Crisfield, where climate-driven flooding can impede access to healthcare facilities, hazard mitigation projects that reduce flooding can improve health outcomes. Second, hazard mitigation and resilience projects often include nature-based solutions, which have demonstrated benefits for physical and mental health. And finally, certain hazard mitigation projects, such as the project to decommission a sludge lagoon in the Town of Rising Sun, prevent hazards that would cause adverse health outcomes. The project in the Town of Rising Sun will reduce the risk of a sludge lagoon overtopping its berm during a flood, which could cause harmful bacteria and viruses to escape via wastewater.

Job Creation

MDEM is helping communities draw down federal grant dollars for climate action, and with a portion of that funding, local governments can fund new positions. Research has shown that investments in climate resilience projects create jobs. For example, for every $1 million invested in flood-resilient infrastructure, up to 40 jobs can be created[3]. MDEM is exploring other opportunities for job creation.

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https://www.nibs.org/files/pdfs/NIBS_MMC_MitigationSaves_2019.pdf

[2] Ibid.

[3] American Flood Coalition and Johns Hopkins 21st Century Cities Initiative, "The Local Economic Impact of Flood-Resilient Infrastructure Projects", 2020. https://assets.floodcoalition.org/2020/12/d5f501c65174d5402f4aff96e8103387-AFC-JHU-economic-impact-of-flood-resilient-infrastructure.pdf?Policy=eyJTdGF0ZW1lbnQiOlt7IlJlc291cmNlIjoiaHR0cHM6XC9cL2Fzc2V0cy5mbG9vZGNvYWxpdGlvbi5vcmdcLzIwMjBcLzEyXC9kNWY1MDFjNjUxNzRkNTQwMmY0YWZmOTZlODEwMzM4Ny1BRkMtSkhVLWVjb25vbWljLWltcGFjdC1vZi1mbG9vZC1yZXNpbGllbnQtaW5mcmFzdHJ1Y3R1cmUucGRmIiwiQ29uZGl0aW9uIjp7IkRhdGVMZXNzVGhhbiI6eyJBV1M6RXBvY2hUaW1lIjoxNjA3NDcxNDkwfX19XX0_&Signature=hoZFVIlZ5yCAPwmDoZPZ/jit2abxaHfRLg7NQmHXHZiwqw1z16/JlMi5df/hn-GhBwTr7TwCq4c5t6batBgudeXDR/g3pAFYb59nGAJL78W1hZM3x96CuoYxUw4AK-b0dkOJ//zdpgFSuJVpScYWQuIEoXfS1WnIzbbSUxewey6RyM2j3zVUgnJ6fe0qcUL3k49amg-Y4U8OSAb-BVzRGLaK0D7LZ819G-BcqWn16uESoO87//WOw5LPW1WeMQaa8/64TgyG2eObhVVuGObqhcwvMbhl/wrvQt4xEao75loC039huDRIy8XzJo-lxuXw20nEjEQFQhZzXcmotNkV7Q__&Key-Pair-Id=APKAI3SZN3YHQNRWCD2Q

Energy Costs

Energy cost reduction is not a primary outcome of MDEM's actions within the climate implementation plan, although it would be a secondary outcome for some of the nature-based projects supported by MDEM. For instance, by supporting nature-based solutions to flooding, MDEM is lowering costs associated with building and operating more energy-intensive flood control structures.

Additional Outcomes

- Increased capacity for underserved, overburdened, or low-capacity communities to scope climate projects and apply for funding
- Greater number of grant applications submitted by underserved, overburdened, or low-capacity communities
- Better integration of climate change in emergency management planning and projects