Maryland Resiliency Partnership - Analysis & Updates to Flood Risk, Vulnerability & Mitigation Tools

Status: Submitted to recipient

Scope of work

The project Scope of Work (SOW) identifies the eligible activity, describes what will be accomplished and explains how the mitigation activity will be implemented. The mitigation activity must be described in sufficient detail to verify the cost estimate. All activities for which funding is requested must be identified in the SOW prior to the close of the application period. FEMA has different requirements for project, planning and management cost SOWs.

Subapplication title (include type of activity and location)	**Maryland Resiliency Partnership - Analysis & Updates to Flood Risk, Vulnerability & Mitigation Tools**

Activities

Primary activity type	**Feasibility, engineering and design studies**
Secondary activity type (Optional)	**Partnerships**
Secondary sub-activity type	**Create informational portal**
Tertiary activity type (Optional)	**Codes and standards**
Tertiary sub-activity type	**Technical assistance and training of new codes**
Geographic areas description	**Statewide**

Community lifelines

Primary community lifeline	**Safety and security**
Primary sub-community lifeline	**Community safety**
Secondary community lifeline (optional)	**Communications**
Secondary sub-community lifeline	**Alerts, warnings, and messages**
Tertiary community lifeline (optional)	**Transportation**

Tertiary sub-community lifeline	**Highway/roadway/motor vehicle**

Hazard sources

Primary hazard source	**Flooding**
Secondary hazard source (optional)	**Severe storm**
Tertiary hazard source (optional)	**Infrastructure failure**
Is this a phased project?	**Yes**
Are you doing construction in this project?	**No**
Population affected	**75**
Detail/description of stated percentage	**Maryland is impacted by water and all transportation routes cross water courses. The size, safety, and operation of these water crossings is dependent on having up to date data (including rainfall) for planning, design, and construction. Most Marylanders use transportation systems to travel for work, and/or recreation. These transportation systems also serve to provide fire, safety, and health services across the state.**
Provide a clear and detailed description of your proposed activity	**This proposed project would provide the tools and resources that are crucial to not only the state, but also to its local governments, in developing and implementing the most effective HMPs and FMP's. As the climate changes, we need to adjust the approach we use to plan for, and respond to, climate-related hazards. The changing climate also necessitates that we update our existing tools and develop new ones to help us meet this challenge. The main outcome of this proposal, if funded, would be a robust toolkit of resources that would help the state and its local governments understand their climate vulnerabilities. This toolkit would include: ● A Probable Maximum Precipitation (PMP) study ● Maryland Department of Transportation-State Highway Administration Climate Change Vulnerability Viewer (CCVV) updates ● Statewide Atlas 14 updates ● Read-only Integration of real-time USGS Stream Gauge Data and Provide Funding for Existing Gauges that are being defunded by USGS ● Continuation and expansion of the MyCoast Flood Documentation Platform by the Department of Natural Resources ● The suite of tools will be hosted on the Maryland**

	Resiliency Partnership (MRP) website. The MRP is a collaboration of public and private partners that leverage funding, personnel and projects to support efforts that integrate hazard mitigation, floodplain management, and climate resiliency within the state of Maryland. ● MDOT Overall Grant Management: The State relies on all the aspects of this grant and coordinates these resources and needs across all levels of State and local government. Coordinating the data collected, tasks performed, and projects completed at varying stages is a necessary part of this effort.
How will the mitigation activity be implemented?	**This proposal was prepared by a partnership of four Maryland state agencies (MDOT, MDE, DNR and MES), each of which is active in the MRP. As the lead agency for the proposal, MDOT will be responsible for all administrative duties associated with managing the funding, as well as overseeing the implementation of the work. Each of the agencies would be in charge of a different components of the toolkit development, detailed as follows: ● MDE - PMP study ● MDOT - Statewide Atlas 14 ● MDOT - USGS Stream Gauge updates ● MDOT - Climate Change Vulnerability Viewer (CCVV) updates ● DNR - MyCoast Maryland ● MDE - Maryland Resiliency Partnership (MRP) website updates ● MDOT - Overall Grant Management The multi-agency approach outlined in this proposal presents enormous potential in terms of how the outcomes of the project would be disseminated to local partners. Each of the agencies involved intersects with local governments in diverse ways and through different relationships. The state has many efforts through which agencies are working together to tackle climate adaptation and mitigation planning. Funding this proposed project would be the next step in fully integrating climate work across agencies to provide the most robust assistance to local partners.**
Describe how the project is technically feasible and will be effective in reducing the risk by reducing or eliminating damage to property and/or loss of life in the project area. Please include engineering design parameters and references to the following: preliminary schematic or engineering drawings/design; applicable building codes; engineering practices and/or best practices; level of protection (e.g., life safety, 100-yr flood protection with freeboard, 100-yr wind design, etc.):	**Climate change is a “threat multiplier” that needs to be addressed across many aspects of hazard preparedness. This understanding is imperative for the state and local partners to develop and implement the most current, comprehensive, and impactful HMPs. The data and tools that will be updated by this grant will be applied in ways that improve the life/safety of the population through flood warning systems, evacuation route planning, and products that will communicate risk, and will be used to develop mitigation projects that will not only protect vulnerable populations, but will also**

improve quality of life by increasing the resiliency of buildings and infrastructure. The products generated by this grant will allow Marylanders to better prepare for potential flood events and will allow State agencies to ensure that emergency preparedness, NFIP updates, and flood risk awareness and outreach is maximized statewide and, particularly in underserved communities. Additional information is provided as follows: Sub Task1: MDE PMP Updates: MDE utilizes Probable Maximum Precipitation for planning, design, and analysis of dams including high, medium and low hazard facilities statewide. Many of these structures are reaching the end of their design life and were designed and constructed based on rainfall estimates that have been updated several times since. The State needs to update the design standards again to better evaluate the associated risks related to these structures. Sub Task 2: Atlas 14 updates: provide data inputs that inform our infrastructure life cycle planning decisions in Maryland. The NOAA Atlas 14 contains precipitation frequency estimates for the United States, including updated information on rainfall intensity, duration, and frequency (IDF Curves). If awarded, funding would be transferred by MDOT to the National Weather Service, which updates the Atlas 14 stations in multi-state batches, and is preparing to do the next batch update insert here about timing. MDE would administer the funding for the PMP add details here. Sub Task 3: MDOT Continuation of Stream Gauge Data Collection: USGS recently notified State Agencies that approximately 16 of the 125 stream gauges were being discontinued. State Agencies rely on these gauges and the data generated from them for many design, planning, and safety related issues. Reducing or eliminating gauges would hamper the State's ability to provide continued services throughout the diverse regions of the State. Sub Task 4: CCVV updates: The CCVV "Viewer" provides agency and public users with high resolution interactive mapping information to assess multiple flood related climate change impacts on infrastructure throughout the State of Maryland. For example, a segment of road can be analyzed for potential inundation from SLR, storm-surge, high tide, nuisance flooding, or recent hurricanes; stream gauge data can be related to repetitive flood events; or climate change impacts on coastal wetlands, communities, or ports can be analyzed. Baseline data in the Viewer needs to be

updated from 2015 to 2020 to maximize tool usefulness. If awarded, funding would be used to replace 2015 data with latest LIDAR data, sea level rise (SLR) scenarios, and DFIRM inundation mapping. Sub Task 5: MyCoast Maryland: The MyCoast Documentation Platform (www.mycoast.org/md) is a tool that documents nuisance, precipitation-based flooding and coastal storm surge and damage throughout the state and generates reports that includes photo documentation of flooding and links the tidal/riverine gauges and weather data at the time the photo was taken. The reports collected can be analyzed at state and by local jurisdictions to better understand where impacts are happening; under what conditions and how often. This data can be used to identify community hotspots and elevate those areas to an action level so that flood impacts can be mitigated both at a state and local scale. The data collected also has the potential to verify the outputs of other tools being used throughout the state (Real Time Weather and CCVV Network) by collecting data from actual flood events. Through this project we will work with specific communities to enhance reporting throughout the community; analyze the reports; identify hotspots and facilitate a local response on appropriate mechanisms to mitigate the impacts including funding sources. Sub Task 6: MRP website updates: The existing Maryland Resiliency Partnership Resource website (https://resiliencypartnership.com/) relaunch will move the site to an out of the-box ESRI ArcGIS HUB-based format in Maryland Department of Information Technology ESRI enterprise system, allowing multi-agency collaboration to update relevant content. ESRI's ArcGIS HUB is a cloud-based engagement platform that is designed to allow for more frequent updates to site content which will foster a more dynamic and immersive level of engagement focused on disseminating and communicating information on risk, mitigation, and resiliency to state agencies and local government. The site will be a launching point for: the tools updated under this grant; a database of grants that state agencies, local governments, and nonprofits can use to identify funding opportunities for a variety of hazard mitigation, stormwater management, and floodplain management planning and projects; information on training and outreach, in addition to upcoming conferences, webinars and user groups that will

	provide continuing education credits for certifications and any other information or data from Partners that supports natural hazard and climate resiliency. The tools being developed under this grant will be included as links to the appropriate state agency website to promote public use. For example, local governments looking to analyze and address pluvial flooding can consume the data from the Probable Maximum Precipitation and MyCoast Reports in one location, rather than having to access multiple websites. Gathering the tools developed under this grant and existing tools into a single Toolbox, supported by outreach, education, and technical information from the network of state agencies and nonprofit partners that comprise the MRP will make the HUB a one-stop shop for preparedness, mitigation, and vulnerability analysis. Also supporting the HUB will be a shared calendar for outreach and training events. This will allow Partners to coordinate on events. A grants database will also reside on the HUB. The database is searchable based on key words and includes 300 federal, state, and nonprofit grant opportunities as well as foundation grants. All Partners will be able to update the HUB which will keep content "fresh" and relevant and eliminate the funnel effect of a single agency responsible for providing time and funding to support the site and update the content. Migration within the State system will also eliminate the need for domain fees and will place the site behind the State's firewall, improving the safety and security of the site. Sub Task 7: MDOT Overall Grant Management: The State relies on all the aspects of this grant and coordinates these resources and needs across all levels of State and local government. Coordinating the data collected, tasks performed, and projects completed at varying stages is a necessary part of this effort.
Who will manage and complete the mitigation activity?	**Maryland Department of Transportation**
Will the project address the hazards identified and what risks will remain from all hazards after project implementation (residual risk)?	**Yes, the data used by the State will be updated to reflect current climate changes to inform all Agencies and local governments of necessary regulation changes and design standards. The project will enable the State to evaluate and prioritize designs, systems, tools, and regulations already in place. Updates to both the Atlas 14 and the PMP Depth Grid, and the Climate Change Vulnerability Viewer will ensure that design decisions are based on more current data inputs and are reflecting real-world situations. Flooding,**

	severe storms, and existing dam/levee failures will remain, but this project will help with shortening the response and corrective action timeframes.
When will the mitigation activity take place?	**The more severe under designs can be identified and prioritized for updates pending funding availability, future upgrades, disaster response, or construction projects.**
Explain why this project is the best alternative. What alternatives were considered to address the risk and why was the proposed activity considered the best alternative?	**Current updates are made on a case by case basis. The age, design, or local / State needs are addressed as funding arises. Coordination and consideration of projects that are out of date are disjointed depending on which Agency or Government has the funding and the type of project needed. Updating the data and project needs will allow any State or local Government to more efficiently plan and design water resource related projects.**
Please identify the entity that will perform any long-term maintenance and provide a maintenance, schedule and cost information. The subapplicant or owner of the area to be mitigated is responsible for maintenance (including costs of long-term care) after the project is completed?	**Each Agency identified will maintain and update any data related to their specific tasks. The data will be shared in one central hub for all Agencies and Governments to utilize.**
Additional comments (optional)	**Aside from the direct support of the Statewide Hazard Mitigation Plan, this proposed project supports key ongoing initiatives, including: • Coast Smart Construction Program • Critical Area Commission • FHWA Resiliency Planning Requirements • Nuisance Flood Plans (local) • Protecting Critical Infrastructure**

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
MRP Reference Materials.docx	11/20/2020	mmartin@mdot.maryland.gov	Scope of Work Attachments	This file provides hyperlinks to proposed updates to the MRP Website	

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