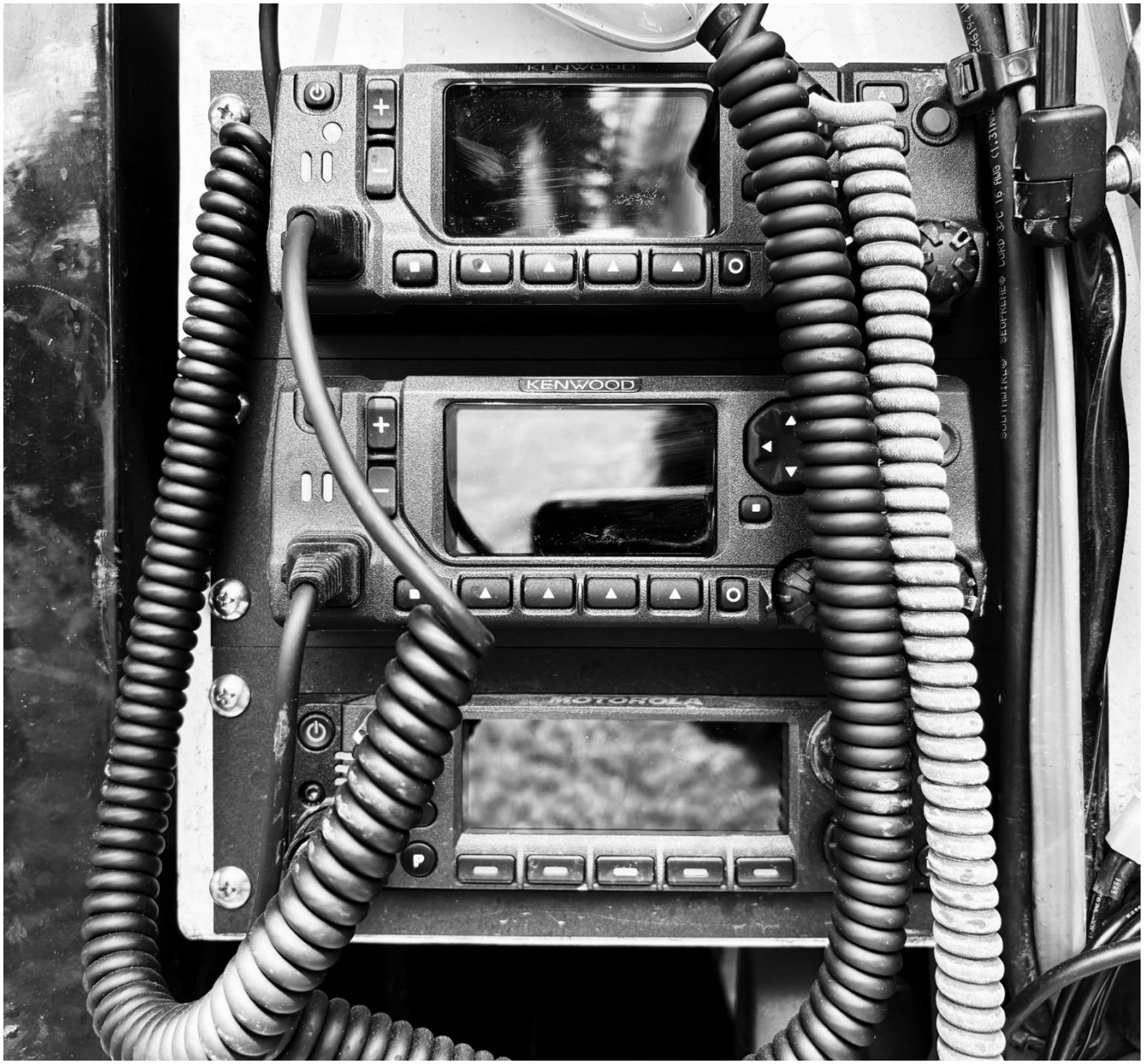

CHAPTER 6

MITIGATION GOALS & ACTIONS

MITIGATION GOALS & ACTIONS

Natural and human-caused hazards that threaten communities cannot always be prevented, but proactive planning and mitigation activities can significantly reduce their impact. This chapter outlines the mitigation framework for the Central Shenandoah Hazard Mitigation Plan, structured around two complementary levels of action: regional and local.

Regional goals and actions were developed through collaborative discussions with the CSHMP Steering Committee, drawing on the committee's collective expertise and understanding of regional hazards and vulnerabilities. Local actions were identified through individual meetings with each of the 25 participating localities and special districts, reflecting the unique needs and priorities of individual communities.

TYPES OF MITIGATION ACTIONS

All mitigation actions, both regional and local, are organized into four categories: local planning and regulations; structure and infrastructure projects; natural systems protection; and education and awareness programs. These categories align with the Federal Emergency Management Agency (FEMA) typology for hazard mitigation planning, providing a comprehensive, standardized approach for organizing and implementing risk reduction strategies across the planning region.



Local Planning and Regulations

These actions include government authorities, policies, or codes that influence the way land and buildings are developed. Examples include, but are not limited to, zoning ordinances, development review processes, building codes, participation in the NFIP Community Rating System (CRS) program, and capital improvement programs.



Structure and Infrastructure Projects

These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. Examples include, but are not limited to, acquisitions and elevations of structures in flood-prone areas, underground utilities, floodwalls, structural retrofits, and safe rooms.



Natural Systems Protection / Nature-based Solutions

This type of action can include green infrastructure and low-impact development, nature-based solutions, Engineering with Nature, and bioengineering to incorporate natural features or processes into the built environment. Examples include, but are not limited to, stream restorations, land conservation, and forest management.



Education and Awareness Programs

These types of actions keep residents informed about potential natural disasters. Many of these types of actions are eligible for funding through the FEMA HMA program. Examples include, but are not limited to, radio or television spots, social media outreach, websites with maps and information, real estate disclosure, and outreach materials.

REGIONAL VISION STATEMENT

The Central Shenandoah region envisions a resilient future built on collaborative planning, innovative solutions, and sustainable practices. By proactively addressing natural and human-caused hazards, we not only aim to protect our residents, businesses, and visitors but also to preserve the region's natural beauty, agricultural heritage, and economic vitality for generations to come.

GOAL #1	**ECONOMIC RESILIENCE AND PROTECTION** Bolster the regional economy by reducing the impact of natural and man-made hazards on major economic sectors, commercial centers, industrial facilities, and critical business infrastructure.

GOAL #2	**HOUSING AND NEIGHBORHOOD PROTECTION** Protect residential properties and prioritize the safety of vulnerable neighborhoods and housing populations.

GOAL #3	**ENVIRONMENTAL STEWARDSHIP AND NATURAL HAZARD MITIGATION** Restore and enhance the hazard-mitigation function of natural systems while protecting environmental resources that reduce community risk.

GOAL #4	**RESILIENT PUBLIC INFRASTRUCTURE** Ensure communities have high-quality, resilient infrastructure that reduces risk and maintains essential services, prior to, during, and after hazard events.

GOAL #5	**PUBLIC HEALTH AND SAFETY ENHANCEMENT** Promote public health and safety by reducing hazard-related risks to community well-being, public infrastructure, resilience, and ensuring effective emergency response capabilities.

GOAL #6	**COLLABORATION AND INNOVATION** Collaborate across jurisdictions and sectors to efficiently and cost-effectively improve the lives of residents through innovative infrastructure improvements and hazard mitigation approaches.

REGIONAL GOAL #1: ECONOMIC RESILIENCE AND PROTECTION

Bolster the regional economy by reducing the impact of natural and man-made hazards on major economic sectors, commercial centers, industrial facilities, and critical business infrastructure.

ACTIONS

TYPE	ACTION
Local Planning and Regulations	1.1. Incorporate, as appropriate, natural hazard considerations in commercial, industrial, and agricultural land use development regulations.
	1.2. Coordinate with VDACS on implementing procedures to address infectious disease outbreaks among poultry.
Structure and Infrastructure Projects	1.3. Seek opportunities to support the preservation and hardening of historic and cultural assets in the region, particularly structures in hazard-prone areas.
	1.4. Pursue opportunities to floodproof and retrofit commercial buildings where acquisition, elevation, and relocation are not feasible.
	1.5. Improve stormwater management systems within central business districts, main streets, and commercial/industrial centers.
	1.6. Work with local animal welfare organizations to provide emergency sheltering for livestock. Consider cooperative agreements or working with local stables and fairgrounds.
Natural Systems Protection	1.7. Incentivize practices that generate economic and natural co-benefits when financially feasible for landowners, such as agricultural best management practices (BMPs).
Education and Awareness	1.8. Support opportunities to educate local business and industry about mitigation measures to protect their structures and inventory during a disaster.
	1.9. Partner with chambers of commerce or other trusted economic organizations to share information and resources about reducing the impact of hazards on economic-related operations and structures.

REGIONAL GOAL #2: HOUSING AND NEIGHBORHOOD PROTECTION

Protect residential properties and prioritize the safety of vulnerable neighborhoods and housing populations.

ACTIONS

TYPE	ACTION
Local Planning and Regulations	2.1. Incorporate natural hazard considerations in residential land use development regulations.
	2.2. Limit new residential development in the floodplain and other flood prone areas through zoning ordinances.
	2.3. Support building codes and zoning ordinances that require fire-resistant construction materials, defensible space standards, and adequate emergency access routes for new residential development in wildland-urban interface areas.
	2.4. Identify special populations that are particularly vulnerable and may require additional services during disasters, including low- to moderate-income households, non-English speaking households, assisted living centers, and facilities that serve people with special needs.
Structure and Infrastructure Projects	2.5. Elevate, relocate, and/or floodproof flood-prone houses to protect private residential structures and reduce future damages.
	2.6. Consider opportunities for residential buyout and elevation projects of identified structures most at risk of repetitive flooding.
	2.7 Improve and maintain stormwater management systems within residential areas.
	2.8. Work with local animal welfare organizations to provide emergency sheltering and/or care for household pets.
Natural Systems Protection	2.9. Incentivize practices that protect private property and restore natural systems, such as best management practices or conservation efforts.
	2.10. Encourage corrective measures recommended by a professional site analysis to protect homes located in known karst and landslide areas.
Education and Awareness	2.11. Support opportunities to educate households of individual or neighborhood-scale mitigation actions, such as household disaster preparedness planning or Firewise certification for woodland neighborhoods.
	2.12. Promote educational information and programs to help residents located in the flood plain to understand their flood risk and insurance options.

REGIONAL GOAL #3: ENVIRONMENTAL STEWARDSHIP AND NATURAL HAZARD MITIGATION

Restore and enhance the hazard-mitigation function of natural systems while protecting environmental resources that reduce community risk.

ACTIONS

TYPE	ACTION
Local Planning and Regulations	3.1. Implement zoning tools that steer development away from hazardous areas or natural areas deserving preservation. Include Department of Forestry personnel in subdivision review for new development in woodland-urban interface areas.
	3.2. Provide for tax incentives, donated easements, and other approaches that can assist in preserving land in the floodplain and other environmentally sensitive areas for agricultural, environmental, recreational, or educational uses.
	3.3. Conduct proactive planning to develop wildfire mitigation strategies and projects that address vulnerabilities in the Wildland Urban Interface.
	3.4. Encourage Building Codes and Zoning Regulations that support wildfire mitigation in the wildland-urban interface (WUI) and other woodland areas.
	3.5. Increase awareness of the National Flood Insurance Program (NFIP) and the Community Rating System (CRS).
Structure and Infrastructure Projects	3.6. Implement projects identified in local plans and studies that promote nature-based solutions or environmental co-benefits.
	3.7. Consider obtaining maintenance and access easements from property owners for annual maintenance work.
Natural Systems Protection	3.8. Consider opportunities to acquire undeveloped portions of the floodplain to prohibit future development and preserve as open space.
	3.9. Coordinate regional water supply planning including groundwater protection, alternative source development, and drought contingency measures to ensure long-term water security across communities.
	3.10. Pursue stream remediation projects using site-specific design approaches that account for natural channel characteristics, flood dynamics, and floodplain configuration to restore natural flood capacity and reduce erosion damage.
Education and Awareness	3.11. Support opportunities to educate citizens about the hazard-mitigation function of natural systems and best practices.

REGIONAL GOAL #4: RESILIENT PUBLIC INFRASTRUCTURE

Ensure communities have high-quality, resilient infrastructure that reduces risk and maintains essential services, prior to, during, and after hazard events.

ACTIONS

TYPE	ACTION
Local Planning and Regulations	4.1. Limit public infrastructure expansion, such as roads and water/sewer service, into hazard-prone areas.
	4.2. Conduct planning and studies for the implementation of stormwater and flood mitigation projects at the watershed level when applicable
	4.3. Develop regular maintenance programs and standard operation procedures for stormwater, roads, dams, and vegetation.
	4.4. Ensure local emergency shelters are identified in and supported by EOPs.
	4.5. Build-out local and regional procedures for debris management.
	4.6. Develop a regional energy supply plan that identifies critical infrastructure, assess vulnerabilities, and establishes protocols for maintaining power to essential facilities.
	4.7. Maintain an inventory of dams including hazard classification, ownership information, downstream inundation zones, and populations at risk.
Structure and Infrastructure Projects	4.8. Bolster critical facilities with hardening measures, such as installing back-up generators or wind/flood-proofing structures.
	4.9. Support stormwater projects that improve ditching, replace inadequate and undersized culverts, enlarge bridge openings, and install drainage piping to minimize flooding while ensuring downstream impacts are analyzed.
	4.10. Encourage routine maintenance of stormwater management conveyances with special emphasis placed on culverts where there are repeated problems.
	4.11. Improve all-hazard monitoring on critical facilities (e.g., water level gauges on dams, cybersecurity on public works, etc.).
	4.12. Continue to find innovative systems and partnerships (such as local amateur radio operators) to address emergency communication challenges from the NRQZ.
	4.13. Harden electrical distribution infrastructure by undergrounding power lines in high-risk areas, upgrading substations, and elevating controls in flood-prone areas.
Natural Systems Protection	4.14. Implement nature-based projects identified in local stormwater capital improvement plans, TMDL action plans, or flood resilience plans as applicable.
Education and Awareness	4.15. Support opportunities to inform property owners of best practices for protecting neighborhood infrastructure, such as enhancing riparian buffers along stormwater conveyances, or participating in the Firewise Communities certification program.
	4.16. Increase public awareness of high-hazard dams and dam inundation impacts.

REGIONAL GOAL #5: PUBLIC HEALTH AND SAFETY ENHANCEMENT

Promote public health and safety by reducing hazard-related risks to community well-being, public infrastructure, resilience, and ensuring effective emergency response capabilities.

ACTIONS

TYPE	ACTION
Local Planning and Regulations	5.1. Improve data collection on hazardous events and public awareness of/accessibility to that information as appropriate. Consider utilizing drones, as feasible, for post-incidents assessments.
	5.2. Develop resources or tools for local emergency management to use to identify and keep track of vulnerable populations in the community.
	5.3. Incorporate community health needs into local long-range planning documents.
	5.4. Support the development and maintenance of Emergency Operations Plans, Continuity of Operations Plans, and Hazardous Material plans in each locality.
	5.5. Assist with the development of Emergency Action Plans for vulnerable populations to hazards, such as mobile home parks, apartment complexes, assisted living facilities, and elderly or remote populations.
Structure and Infrastructure Projects	5.6. Ensure emergency shelters are well-equipped, supported by back-up generators or alternative power sources and connected to state and national support orgs.
	5.7. In the event of a disease outbreak, be prepared to establish and support hubs for medical care and distribution and food and water distribution as necessary.
	5.8. Develop a regional or subregional flooding model that predicts flood events and provides early warning notifications to emergency officials and the public.
Education and Awareness	5.9. Support accessibility and inclusion programs that educate individuals with access and functional needs about disaster preparedness, train first responders on inclusive emergency response practices, and ensure emergency shelters and operations plans accommodate disabilities, medical conditions, and communication barriers across all phases of emergency management.
	5.10. Consider participating in the National Weather Service's Storm Ready program, which assists communities with safety, planning, education, and communication programs needed to save lives and property during weather-related disasters.
	5.11. Support Community Emergency Response Teams (CERT), which educate citizens and volunteers about preparedness, response, and mitigation measures.
	5.12. Promote and inform communities about existing volunteer programs, educational groups, and opportunities to get involved in disaster preparedness.
	5.13. Provide training and appropriate equipment/tools for local emergency responders to respond to all hazards.

REGIONAL GOAL #6: COLLABORATION AND INNOVATION

Collaborate across jurisdictions and sectors to efficiently and cost-effectively improve the lives of residents through innovative infrastructure improvements and hazard mitigation approaches.

ACTIONS

TYPE	ACTION
Local Planning and Regulations	6.1. Continue to convene and encourage participation in Local Emergency Planning Committees (LEPCs), which are open to a variety of stakeholders.
	6.2. Develop, maintain and implement regional plans that support all-hazard mitigation, such as water supply plans, wildfire protection plans, and flood resilience plans.
	6.3. Seek opportunities to collect or improve regional and local data, particularly related to regional assets, vulnerable populations, and hazards.
	6.4. Promote inter-agency coordination for wildfire response in the areas of daily communication, training, and especially pre-planning.
	6.5. Ensure that all localities have digitized FIRM maps.
Structure and Infrastructure Projects	6.6. Improve systems that monitor, forecast, and provide early warning notifications for severe weather, hazard events, and emergencies.
	6.7. Pursue cybersecurity infrastructure investments to ensure critical data, facilities, and control systems are protected.
	6.8. Implement projects at a regional or subregional scale to maximize resources and find the most cost-effective solutions.
	6.9. Capitalize on the Chesapeake Bay Watershed Improvement Plan to support stormwater runoff projects throughout the region.
Natural Systems Protection	6.10. Seek opportunities to participate in projects, plans, studies, and forums that consider nature-based delineations and constraints rather than political boundaries.
Education and Awareness	6.11. Support opportunities and participate in multi-departmental, multi-jurisdictional, or multi-sector training or forums related to hazard mitigation or disaster preparedness.
	6.12. Consider utilizing resources or programs available through Federal and State partners, such as FEMA's Cooperating Technical Partners (CTP) program or Community Rating System (CRS).
	6.13. Encourage learning opportunities of best practices and challenges across the Region.

LOCAL MITIGATION ACTIONS

To update the local mitigation actions, the CSPDC met individually with participating localities and special districts to review existing strategies, clarify project statuses, and develop new actions. After meeting with each entity, the CSPDC revised the action language and returned it to attendees for further review.

The result is a local mitigation action table for each participating locality and special district, organized by sub-area: Bath-Highland Area, Staunton-Augusta-Waynesboro Area, Harrisonburg-Rockingham Area, and Lexington-Rockbridge-Buena Vista Area. The tables include the following information:

- **Regional Goal:** Each local action corresponds to at least one of the six overarching regional goals determined by the CSHMP Steering Committee.
- **Type of Mitigation Action:** Each action is categorized by one of the four types: local planning and regulations; structure and infrastructure projects; natural systems protection; and education and awareness programs.
- **Natural Hazard and/or Man-made Threat:** Each action is intended to address one or more hazards that affect the region.
- **Time Frame:** Each action is categorized by an implementation duration, including Short (0-3 yrs), Medium (5 yrs), Long (5+ years), or on a regular basis (e.g., annually, bi-monthly).
- **Priority Level:** Actions are prioritized as high, medium, or low at each participating locality's or special district's discretion.
- **Potential Funding Sources:** Funding sources are identified where known and appropriate. For a comprehensive list of potential funding sources, refer to Appendix J – Potential Funding Sources.

For more information about this process, refer to Chapter 2: Planning Process and Appendix I – Status of Previous Mitigation Actions.

PRIORITIZATION METHODS

At the local level, each participating jurisdiction and special district prioritized their specific mitigation actions based on local needs and capacity. Local prioritization was primarily determined by each jurisdiction's discretion, with consideration given to several key factors including:

- Project cost – estimated financial requirements and availability of funding
- Staff capacity – available personnel and technical expertise to implement the action
- Timeline – expected duration from initiation to completion

While all mitigation actions move a community toward greater resilience, this prioritization approach ensures that jurisdictions can focus their limited resources on actions that are most feasible and will create the greatest beneficial impact for their communities.