

Webinar on Creating Resilient Watershed Regions to Meet the Challenges of a Changing Risk Landscape

September 24, 2026

Summary

The webinar addressed the importance of creating resilient watershed regions to meet the challenges of a changing risk landscape, described the drivers behind those challenges, and overviewed a Watershed Risk and Resilience Playbook with guidance, tools, and resources for stakeholders to use to achieve that objective.

Webinar Presenters:

- *Edward Hecker, Co-Chair of the National Hazard Mitigation Association Public Policy and Advocacy Committee and former Chief of Emergency Management and Director of Contingency Operations and Homeland Security for the U.S. Army Corps of Engineers;*
- *Steve Cauffman, Foresight Consulting, LLC and former Chief, Resilience Services Branch, U.S. DHS, CISA;*
- *Dr. Paula Scalingi, Executive Director of the Institute for Innovating Security and Resilience, Chair of the Nationwide Regional Risk and Resilience Collaborative (NR3C), and Adjunct Associate Professor at Georgetown University*

Why We Need Resilient Watershed Regions in an Era of Escalating Risks

Ed Hecker opened the webinar with background on the Playbook's development, noting that it is a key outcome of a program launched in 2023 by the U.S. Army Corps of Engineers to address water resources, interdependent infrastructures, and community risks and resilience within regional watershed systems in partnership with resilience practitioners and experts from government, the public sector, non-profit organizations, and academic institutions. He pointed out that the Playbook leverages, integrates, and advances resilience knowledge and capabilities developed over the past 25 years to provide a holistic approach and process to improve the resilience of watershed regions and the communities and supporting infrastructures within them.

Hecker provided the rationale behind the need for resilient watershed regions, pointing out that everyone lives in a watershed, which encompasses all of the cross-sector lifelines and activities that enable a region to thrive in terms of community health, environment and economic development. Communities are dependent on the services provided by the critical infrastructure and water resources within a watershed typically are not fully aware of their shared vulnerabilities and risks. Defining and managing multi-hazard risks that cross different services or sectors is more important than ever given the changing risk landscape. Whether natural or manmade, these events can cause widespread, prolonged impacts to communities and their supporting interdependent infrastructures

Drivers behind the changing risk landscape. Hecker described the interrelated factors driving these escalating risks. Over the past two decades, there has been an *unprecedented increase in global temperatures, sea level rise, and altered weather patterns* that have resulted in increased severity and frequency of coastal and riverine storm and rainfall weather patterns, as well as

significant increases in heat drought, and wildfires. The costs attributed to a combination of both weather and climate impacts have escalated over recent decades with growth of populations across the US and supporting built environments and interdependent infrastructures. New and aging existing infrastructure built in hazardous zones have exacerbated the risks. Some aging infrastructure require repairs and maintenance. its original purpose has changed, or is more critical as demands for services and performance rise.

At the same time, *technological advances* in electronics, computing, and other digital technologies are tightening interconnectivity of operating systems that drive critical infrastructure functions and services and can impact supply chains that support watershed regions, making them increasing vulnerable to natural and manmade hazards, including physical and cyberattacks. Understanding these interconnections, their vulnerabilities, and risks under different scenarios, is fundamental to creating resilient watershed regions. This requires a “systems of systems” approach to assessing interdependencies that involves identification, mapping, and analysis of the relationships among systems, sectors, and external factors that influence each other. Of particular concern are water management infrastructures, such as dams, levees, and water/wastewater treatment systems, and related transportation and energy systems.

Hecker lastly pointed out that *societal changes* have escalated multi-hazard regional risks. As examples he cited expansion of people and infrastructure into rural and undeveloped wildland-urban interface areas historically prone to wildfires and vulnerable to periodic flooding, as well as increased exposure to, and transmission of existing and emerging diseases affecting humans, animals, and agriculture that could trigger widespread health impacts and future pandemics, especially during and after major disaster events. Particularly affected are small low-resource communities in rural areas across the nation that may lack sufficient staff and financial resources to devote to prevention, preparedness, and mitigation actions, and also may not be easily accessible to first responders, requiring mutual assistance from neighboring regions or states.

What makes a watershed region resilient. Hecker said watershed region is resilient if its decisionmakers and key stakeholders can anticipate/adapt to changing conditions, limit impacts, and recover rapidly from adverse events. This includes sufficient investment in the resiliency of critical infrastructure already in place and serving as lifelines to communities, and the ability to rapidly restore high-priority energy, healthcare, communications, transportation, and other essential services, and also assure that recovery operations can effectively restore damaged housing and other structures, utilities, roads, bridges, and other critical infrastructure as expeditiously as possible. He noted that the Watershed Risk and Resilience Playbook prescribes a continuous holistic approach and process encompassing preparedness, pre-and post-event mitigation, response and recovery/restoration, and which includes protection and prevention. This approach requires broad stakeholder collaboration. Such collaboration is essential for cross-sector information-sharing to illuminate dependencies and interdependencies and how they can cause under different scenarios cascading impacts, determine resilience improvement actions and how they will be implemented, including securing necessary investments, and undertake the identified mitigation and other risk reduction action.

Operationalizing the Holistic Approach with the Watershed Regional Risk and Resilience Playbook

Steve Cauffman walked webinar participants through the Playbook’s customizable seven-step process that has selected tools and resources to reduce all-hazards risks and improve the

resilience of watershed regions. He said the Playbook is intended for use by public, private sector, and nonprofit organizations, and includes an instruction set that can be used to set up an artificial intelligence assistant for using the Playbook. These instructions can be used with any AI platform and have been tested in ChatGPT, Google Gemini, and Anthropic Claude. They have been designed to use the information in the Playbook and the referenced resources to guide users through a watershed regional risk and resilience planning effort. The Playbook and the AI assistant instruction set are available on the NR3C website at <https://nr3c.org/resources-1>. Cauffman pointed out that the Playbook identifies 15 broad focus areas and corresponding needs and capabilities that can be examined across the resilience mission space using the seven-step process to determine risk reduction and other resilience improvement actions.

The seven-step process. Cauffman said the process is based on previous work on community resilience planning and infrastructure resilience planning, and that Playbook users may want to consult some of these other guides and frameworks referenced in the Playbook resources.

Step 1 focuses on laying the foundation for the regional risk and resilience initiative. It entails recruiting a facilitating entity (for example, a nonprofit, consultant, or university) to conduct outreach, help engage key stakeholders, and provide administrative and other support. Next, it is important to create a core team of representatives across key cross-sector and discipline organizations to provide guidance and oversight. The core team will be critical to developing the plan based on input from stakeholders and representatives of the community or region. The most important part of this step is convening a multi-stakeholder coalition of representatives from all levels of government, critical infrastructure owners and operators, private sector, nonprofit organizations, and others who have roles, responsibilities, or vested interests in improving watershed regional resilience. Broad engagement is necessary to understand priorities and ensure that the resulting plan is responsive to the needs and goals of the region.

Step 2 involves characterizing regional infrastructures and designing the assessment. This step begins with determining the geographic scope of the region for the assessment. Next is to identify and characterize the infrastructures and essential service providers, including high-level dependencies and interdependencies. The next action is to identify the threats or hazards that are of concern and that require assessment and then to determine what tools, data acquisition, and analysis methods will be employed. Stakeholder workshops, tabletop exercises, and other resources may be employed to elicit knowledge to develop an understanding of regional infrastructure and essential services.

Step 3 involves the identification and collection of data and analysis to determine how the threats and hazards might affect infrastructure by identifying possible damage and disruption and potential impacts to dependent or interdependent infrastructure. A gap analysis of existing regional plans, procedures, capabilities, resources, and policies can help ascertain what can be leveraged and which areas might require attention. This task can be labor and resource intensive and should be tailored to the available staff, funding and technical expertise; the Playbook offers ideas for accomplishing this step.

Step 4 uses the results from Step 3 to examine the vulnerabilities to the threats and hazards of concern and the potential consequences that can result and identifies possible actions to reduce risk and improve resilience. Depending on available resources, this step can be accomplished using workshops, tabletop exercises, publicly available hazard risk modeling and analytical tools, and other technical expertise to evaluate interdependencies-related risks and possible solutions.

Step 5 brings together the data and information from the previous steps to identify resilience challenges and gaps, and propose mitigation or other risk reduction actions that are validated with the stakeholder coalition. Once validated, these become the foundation of a regional risk reduction Action Strategy of short-, medium-, and longer-term projects and activities that move the region to a posture of greater resilience. Step 5 also includes the development of an Implementation Plan that describes how each project and activity would be managed, conducted, and monitored with arrangements for cost-sharing, including financial and in-kind contributions. The Implementation Plan also addresses how to enable continuous improvement through adding needs and actions as new lessons are learned from future watershed region events and exercises.

Step 6 involves identifying and securing resources to carry out the implementation plan and potential funding sources that could include federal and other grant programs, capital investments, and other resources. The Playbook includes links to some of these resources.

Step 7 focuses on monitoring and sustainment of the Initiative and building a resilient watershed region over time as conditions change. The Action Strategy provides a framework for evaluating progress made and allows for addition of new actions to improve resilience. Periodic workshops, exercises, and regional risk assessments are useful to assess resilience improvements. Resilience metrics can be useful to gauge progress. Sharing assessment outcomes and lessons learned both within the region and with other regions is essential to leveraging knowledge and best practices.

Additional Playbook Guidance

Facilitating information sharing. *Dr. Paula Scalingi* noted that in addition to laying out the seven-step regional resilience process, the Playbook provides a range of additional guidance on key needs and challenges to operationalize it. Multi-jurisdiction, cross-sector, and discipline information-sharing is one of the most important of these key needs. Information is needed by government, businesses, infrastructures, and non-profits to assess and reduce risk, provide situational awareness, and facilitate response and recovery. At the same time, there are longstanding constraints to information sharing posed by sensitive and proprietary data and organizational and bureaucratic silos. The Playbook offers guidance on how these barriers can be overcome through using publicly available data and keeping information shared in regional tabletop exercises and risk assessments to the minimum necessary to characterize community and regional infrastructures, determine disruption impacts, and identify and prioritize interdependencies-related risks.

Low-resource communities. *Dr. Scalingi* said the Playbook also offers guidance on how to enable jurisdictions that lack the knowledge, staff, and financial resources to improve resilience. These low-resource jurisdictions comprise much of the Nation. These range from rural agricultural, mountain, and coastal communities to tribal and urban economically disadvantaged communities. Many county governments have limited personnel dedicated to emergency management. The Playbook addresses how these low-resource jurisdictions can be included in broader watershed regional resilience initiatives or, alternatively, how they can undertake their own “lite” version of the seven-step process to identify high-level priority risk mitigation actions using in-kind volunteer expertise from local stakeholders, colleges, and non-profit organizations and scenario-based workshops and tabletop exercises.

Generating political will and societal support. The Playbook also provides ideas including some demonstrated best practices focusing on outreach and training of elected and private sector

leaders and the general public. This is especially important to sustain a Regional Risk and Resilience Initiative and secure investments and public support for improvement activities and projects in the Action Strategy.

“Ask the Expert” feature in the Playbook. Dr. Scalingi pointed webinar participants to a special “Ask the Expert” section at the end of the Playbook listing Task Group volunteers willing to provide this assistance with their contact information and their respective areas of expertise.

Benefits of the holistic approach and resource requirements for an Initiative and typical timeframes. *Dr. Scalingi* pointed to demonstrated benefits of the holistic approach and process in the Playbook in enabling the building of trusted relationships and collaboration necessary to assess regional multi-hazards risks and develop an ongoing roadmap to resilience to meet the challenges of the changing risk landscape. She said the cost and timeframe for an Initiative from organizing it through developing a basic Action Strategy and Implementation Plan can be less than a year or extend out many months depending on the desired focus, scope, and available resources of the Initiative’s organizers and any potential sponsors, and their creativity and flexibility in identifying and taking advantage of available free resources. She gave examples from her experience in organizing these initiatives of a six-month, “no frills” no-cost effort to a 18 month initiative supported by a federal grant. She underscored the importance of in-kind support from infrastructures, universities, businesses, and non-profits that can contribute expertise, data, GIS and analysis capabilities, free venues for meetings, facilitation services, and box lunches and other amenities for events.

Lastly, regarding the cost of undertaking an Implementation Plan, to keep costs low, the initial focus can be on short-term “quick win,” projects, such as updating plans and improving existing capabilities, that can be accomplished relatively quickly depending on availability of staff and budgets. Long-term actions, such as hardening, relocating, or siting and constructing new infrastructure can be deferred pending securing the necessary investments.

Dr. Scalingi concluded the webinar presentation by noting that the Playbook and supporting information plus the webinar can be found on the NR3C website on the Resources page at <https://nr3c.org/resources-1>.

Questions and General Discussion

Presenters and participants discussed potential organizers and available resources for Regional Risk and Resilience Initiatives. Examples provided included councils of government, federal agencies, chambers of commerce, universities, and the USACE Silver Jackets. Hecker said that NHMA is developing a white paper on greater state involvement in the HMGP program and working with the Silver Jackets and USACE to explore the program's future direction. On how to deal with disparate regional stakeholder organizations with their own risk assessments, Dr. Scalingi suggested a collaborative approach involving engagement of key people from these different entities to integrate information and conduct a gap analysis. In response to participant interest in the NR3C’s Regional Infrastructure Interdependencies Workgroup, she invited those interested to join. The webinar concluded with an announcement of a follow-on webinar “Removing the Flood Surprise” to be held October 7 at 1:00 PM Eastern time, with registration details to follow via email.