State of Iowa

Iowa Comprehensive Emergency Plan

Part B: Iowa Hazard Mitigation Plan

September 2023

State of Iowa Hazard Mitigation Plan
Chapter 5: Hazard Mitigation Strategy

5. Hazard Mitigation Strategy

The State Hazard Mitigation Strategy is the heart of the *Iowa Hazard Mitigation Plan*. It details what mitigation actions we want to accomplish and how we intend to do it. The strategy is guided by goals, which are found in section 5.1. Section 5.2, the Comprehensive State Hazard Mitigation Program, describes all the mitigation capabilities of the State of Iowa. Essentially, this section describes the tools the State has to bring about mitigation actions throughout Iowa. Section 5.3 explains some of the obstacles and challenges the State faces in its comprehensive hazard mitigation program.

With an understanding of the state's mitigation capabilities and mitigation strategies of local governments in Iowa, plus an understanding of the hazard risks from section 3, hazard mitigation actions for the state can be considered and outlined. Sections 5.4 and 5.5 designate the mitigation actions the State Hazard Mitigation Team (SHMT) decided to include in the State's hazard mitigation strategy for the next five years. Section 5.4 describes which actions that were in the 2018 plan that the SHMT decided to continue with for the next 5 years and how they have been amended, and which ones will no longer be actions and why. Section 5.4 also provides a brief status update on the 2018 actions. Section 5.5 introduces new mitigation actions to the strategy. It also describes how each action is tied to one or more of the goals, and what funding or agency may be available for assistance with each action. Ranking and prioritization of the mitigation actions is covered in Section 5.6. The next chapter of the plan, Monitoring, Review and Maintenance Process (chapter 6), discusses another important component of an effective hazard mitigation strategy, and that is tracking progress and assessing effectiveness of the actions.

5.1. Goals and Objectives

As part of the planning process, the SHMT provided guidance on the development of the goals for the update of the *Iowa Hazard Mitigation Plan*. They reviewed the 2018 goals and objectives. The objectives also served as categories for the different hazard mitigation actions that were decided upon in 2018. Review of the previous goals and objectives revealed that they were somewhat redundant: the objectives were just different ways to state the goals. The SHMT explored different options for new goals that would combine the best of the old goals and objectives so that the extraneous objectives could simply be eliminated.

After several meetings and consideration from both the SHMT and the Iowa Silver Jackets, the two teams eventually came to consensus on the following vision statement and goals for the *Iowa Hazard Mitigation* Plan:

> **Vision -** Despite trends of increasing frequency and intensity of hazards in Iowa, the impacts of natural hazards will decrease in the state allowing Iowans to enjoy improved health, safety, and quality of life. Injuries, deaths, property losses, economic costs and environmental damage from disasters will be minimized as Iowa citizens implement measures to build more resilient and disaster-resistant communities.
>
> **Goals -** This vision will be realized through striving to achieve the following goals:
>
> 1. Through comprehensive and collaborative planning and analysis, develop processes and regulations that reduce hazard risks, and provide resources to local

jurisdictions so they can develop and update plans and regulations to mitigate hazard impacts.

2. Construct new or improved structures and infrastructure, including natural infrastructure, and employ practices that reduce hazard risks while also preserving or restoring the functions of natural systems.
3. Expand public awareness and intergovernmental communication so that Iowa citizens and communities have knowledge to mitigate hazard impacts and become more resilient.
4. Through planning, improved warning systems, and redundancy, increase capabilities to ensure government operations, response and recovery are not significantly disrupted by disaster events.

Goals one and three align directly with two of the four mitigation action types described in FEMA's *Local Mitigation Planning Handbook* (May 2023). Goal two incorporates two of the mitigation action types. The types of mitigation actions described in the *Handbook* are:

Type of Mitigation Action (from *Local Mitigation Planning Handbook)*	**Aligns with this goal(s) of *Iowa Hazard Mitigation Plan***
Local plans and regulations	1
Structure and infrastructure projects	2
Education and awareness programs	3
Natural systems protection	2

The fourth goal does not align exactly with the mitigation action types. This goal continues, in an amended form, what was stated in objective five in the 2018 *Plan.* That objective stated:

> Promote continuity of emergency services for all hazards and disaster events.

That objective addressed the desire of the SHMT and HSEMD to maintain the ability to provide emergency services despite disaster events. When changing that into the new Goal 4, it was altered slightly, as seen in the list of goals above, to focus on the key components of warning systems and redundancy. A typical mitigation action related to this objective would include acquiring and installing generators and other backup power equipment to ensure essential and emergency services can continue. These new goals provide direction for the formation of the mitigation strategy actions.

5.2. State Comprehensive Hazard Mitigation Program

The State of Iowa has a comprehensive state hazard mitigation program with a broad range of initiatives and activities sponsored by various State agencies. The State's mitigation program integrates FEMA and other federal programs as well as several nonprofit and local initiatives. Together, all these programs and activities help the state become more resilient in the face of future hazard events.

Every one of the 20 hazards outlined in the risk assessment are targeted by half a dozen or more activities or programs of State agencies. Brief descriptions of these programs or activities are found in the chart in section 5.2.1. This chart summarizes the several programs that advance mitigation efforts in the state, and includes information about which hazards are addressed by each program or activity. Many of these programs existed at the time of the last hazard mitigation plan update and are fairly well known and

understood. However, several programs have been recently created or implemented. Section 5.2.2 contains a more in-depth look at the State's administration of several key FEMA programs that the State utilizes to create an effective mitigation program. Section 5.2.3 provides more detail on non-FEMA programs and initiatives that are key to the State's hazard mitigation capabilities. Section 5.2.4 recaps programs and initiatives of the State that provide mitigation training and capability building at both the state and local level.

5.2.1. Summary Table of Mitigation-related Programs in Iowa

Agency Acronym	**Agency Name** (State, Federal, or Nonprofit)	**Program Name** Description Hazards Targeted
DNR	Iowa Department of Natural Resources (State)	**County Conservation REAP Competitive Grant** 40% of the REAP funds that go to County Conservation are awarded on a competitive basis as grants to counties for conservation projects. Competition for these grants is extremely keen. REAP County Grant applications are due annually on August 15. **Hazards**: Flash Flood, River Flooding
	Website: https://www.iowadnr.gov/Environmental-Protection/Land-Quality/Dam-Safety	
DNR	Iowa Department of Natural Resources (State)	**Dam Safety Program** DNR staff review and approve the construction of new dams, maintain an inventory of existing dams that meet minimum size criteria and periodically inspect certain dams. Currently there are approximately 3,800 dams on the state's dam inventory. **Hazards**: Dam/Levee Failure, River Flooding
	Website: https://www.iowadnr.gov/Environmental-Protection/Land-Quality/Dam-Safety	
DNR	Iowa Department of Natural Resources (State)	**Drinking Water Area-wide Optimization Program (AWOP)** AWOP is a strategy for targeting groups of higher risk systems for state assistance in order to maximize the public health protection that water treatment plants provide. **Hazards:** Infrastructure Failure
	Website: https://www.asdwa.org/area-wide-optimization-program-awop/	
DNR	Iowa Department of Natural Resources (State)	**Drinking Water SRL** drinking water state revolving fund (SRF) program makes loans to drinking water systems for design and construction to ensure public health protection the the provision of safe drinking water. IDNR has established priorities for the SRF, and will publish them each year in its Intended Use Plan (IUP) (off-site). The IUP includes the proposed uses of the moneys and describes how each project will be managed. **Hazards:** Drought, Infrastructure Failure
	Website: https://homelandsecurity.iowa.gov/grants-overview/grants/#HMA	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
DNR	Iowa Department of Natural Resources (State)	**Hazardous Substance Spill Reporting** The State of Iowa requires any person manufacturing, storing, handling, transporting, or disposing of a hazardous substance to notify the department and local law enforcement of the occurrence of a hazardous condition. The notification should be made as soon as possible but not later than six hours after the onset or discovery of the hazardous condition. Local law enforcement is also required by Iowa Code to report a "Hazardous Condition" to the department within 6 hours. Environmental Emergency Reporting Hotline Number is 515-725-8694 **Hazards**: Hazardous Materials
	Website: https://www.iowadnr.gov/Environmental-Protection/Land-Quality/Emergency-Planning-EPCRA/Spill-Reporting	
DNR	Iowa Department of Natural Resources (State)	**Land Recycling Program** The Land Recycling Program (LRP) allows owners or other stakeholders of a property to voluntarily assess and implement remedial actions at a site that is contaminated or is perceived to be contaminated. The assessment of the property must address the severity of the contamination problems and the risks associated with the contamination. The Department will provide a No Further Action Certificate for the site following assessment and implementation of appropriate cleanup activities and/or other remedies to assure the protection of public health and the environment. This certificate shall provide limited liability protection from further regulatory action relative to the problem(s) addressed. **Hazards**: Hazardous Materials
	Website: http://www.iowadnr.gov/Environmental-Protection/Land-Quality/Contaminated-Sites/Land-Recycling-Program-LRP	
DNR	Iowa Department of Natural Resources (State)	**DNR Foresters, Conservation, and Recreation Division** State Foresters provide forestry assistance to private landowners, help sustainably manage our state forests, operate the State Forest Nursery at costs of production, and protect, utilize and enhance the state's forest resources for today and tomorrow. Forestry services include the State Forest Nursery, forest health, urban forestry, landowner assistance, fire management and prescribed fire, educational opportunities, Iowa's wood industry and logging and fall color reporting. **Hazards**: Animal/Crop/Plant Disease, Grass/Wild Fire, Landslide, River Flooding, Severe Winter Storm, Tornado/Windstorm
	Website: https://www.iowadnr.gov/Conservation/Forestry	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
DNR	Iowa Department of Natural Resources (State)	**Water Quality Bureau** **Description**: The Water Quality Bureau is responsible for a diverse group of surface and groundwater programs. Many of the programs are based upon federal law administered by the US EPA. In these cases the federal government has delegated program responsibility to the DNR. In each case, permits and review of technical proposals are supplemented by assistance from staff to help local governments, businesses and individuals meet the requirements of state and federal law. Often, there is overlap between the Bureau's efforts to deal with water quality with efforts of others to deal with water quantity problems (aka "flooding"), and therefore they are partners in flood mitigation. **Hazards**: Drought, Infrastructure Failure
	Website: https://www.iowadnr.gov/Environmental-Protection/Water-Quality	
DNR	Iowa Department of Natural Resources (State)	**Water Supply Engineering (WSE) Section and the Water Supply Operations (WSO) Section** These sections are responsible for the programs associated with the public and private water supply systems of Iowa. Both sections are housed in the Iowa DNR's Water Quality Bureau. The sections are responsible for Iowa's water allocation and use program; environmental laboratory certification program; certification programs for water operators, wastewater operators, and well drillers; and the technical aspects of the drinking water state revolving loan fund program. **Hazards**: Drought, Infrastructure Failure
	Website: https://www.iowadnr.gov/Environmental-Protection/Water-Quality/Water-Supply-Engineering	
DNR	Iowa Department of Natural Resources (State)	**Section 311-312 Hazardous Chemical Storage Reporting (Tier II)** **Description**: Environmental Protection Community Right-To-Know Act (EPCRA) Section 311/312 requires facilities that have a material safety data sheet (SDS) for any hazardous chemicals stored or used in the work place above certain quantities to submit an emergency and hazardous chemical inventory form (TIER II) to the SERC, LEPC, and local fire department. The TIER II form is due annually on March 1st. **Hazards**: Hazardous Materials
	Website: https://www.iowadnr.gov/Environmental-Protection/Land-Quality/Emergency-Planning-EPCRA/Chemical-Inventory-Reporting	
DNR	Iowa Department of Natural Resources (State)	**REAP Open Space** **Description**:One-tenth of the REAP funds that go to Open Space are set aside to cost-share land acquisitions with private organizations. The cost-share arrangement entails 75% of the acquisition costs coming from REAP and the other 25% coming from private contributions. The DNR owns and manages the property that is jointly purchased on behalf of the public. A project review committee made up of 3 DNR administrators and 3 representatives of private conservation organizations selects the projects. Applications for these projects are accepted once a year on August 15th. **Hazards**: Flash Flood, River Flood
	Website: https://www.iowadnr.gov/Conservation/REAP/REAP-Funding-at-Work/Open-Spaces-Protection	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
DNR	Iowa Department of Natural Resources (State)	**Conservation Education Program (CEP)** **Description**: The CEP uses a portion of REAP funds to make money available to grantees for programs that teach people of all ages about their environment and how to make intelligent, informed decisions about its well-being. In 2018, $350,000 was available. Contact the DNR for application. **Hazards**: Flash Flood, Grass/Wild-Fire, Landslide, River Flooding
	Website: https://www.iowadnr.gov/Conservation/REAP/REAP-Funding-at-Work/Conservation-Education	
DNR	Iowa Department of Natural Resources (State)	**Native Prairie, Wetland, and Wildlife Habitat Tax Exemption** **Description**: All applications for tax exemptions must be inspected by a DNR biologist to insure they meet the definition of native prairie, wetland, or wildlife habitat. Application are available from the DNR website or by contacting an Iowa DNR Private Lands staff or Wildlife Management Biologist. **Hazards**: River Flooding
	Website: https://www.iowadnr.gov/Conservation/Wildlife-Landowner-Assistance/Property-Tax-Exemption	
DNR	Iowa Department of Natural Resources (State)	**Regional Watershed Assesment Program** **Description**: The Program shall assess all the regional watersheds in the state at the rate of approximately one-fifth of the watersheds per year. Thereafter, DNR is to review and update the assessments on a regular basis. Each regional watershed assessment is to provide a summary of the condition of the watershed. The summary may include land use patterns, soil types, slopes, management practices, stream conditions, and both point and nonpoint source impairments. In conducting the Program, the DNR is to provide hydrological and geological information sufficient for the WRCC to prioritize watersheds statewide and for the various communities in those watersheds to plan remedial efforts in their local communities and subwatersheds. Upon completion of the statewide assessment, and upon updating the assessments, the DNR shall report the results of the assessment to the WRCC. **Hazards**: Flash Flood, River Flooding
	Website: https://www.iowadnr.gov/Environmental-Protection/Water-Quality/Watershed-Improvement	
DNR	Iowa Department of Natural Resources (State)	**DNR Geographic Information Services Section** Responsible for the development, management, and distribution of the Department's Natural Resource Geographic Information System (NRGIS). This includes data collection and analysis that may be required for various resource investigations and in support of making natural resource management decisions. Data is delivered in various formats to decision makers and the public. GIS support and training is also provided to other sections of the DNR. GIS data is primarily delivered to natural resource managers and the public through the States' Iowa Geodata GIS Clearinghouse, DNR GIS Web Services, and Web Mapping Applications. **Hazards**: Dam/Levee Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flash Flood, Grass/Wild Fire, Hazardous Materials, Landslide, River Flooding, Severe Winter Storm, Sinkholes, Lightning, Hail, Tornado, Windstorm
	Website: https://www.iowadnr.gov/Conservation/Mapping-GIS	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
DNR	Iowa Department of Natural Resources (State)	**Hazardous Household Materials (HHM) Program** Offers a variety of guidance and information on the proper management, use and disposal of HHMs to protect public health and safety and the environment. **Hazards**: Drought, Grass, Wild-Fire, Landslide
	Website: https://www.iowadnr.gov/Environmental-Protection/Household-Hazardous-Materials	
DNR	Iowa Department of Natural Resources (State)	**Wildland Fire Program** **Description**: Coordinating with the US Forest Service NA State & Private Forestry and the Big Rivers Forest Fire Management Compact to support Iowa's natural resource managers and fire departments. **Hazards**: Grass/Wild-Fire
	Website: https://www.iowadnr.gov/Conservation/Forestry/Fire-Management	
DNR	Iowa Department of Natural Resources (State)	**National Flood Insurance Program** The DNR works with communities and counties to develop and administer local floodplain management programs, coordinates the National Flood Insurance Program, and assists the Federal Emergency Management Agency and the Iowa Emergency Management Division in responding to flood disasters. **Hazards**: River Flooding
	Website: https://www.iowadnr.gov/Environmental-Protection/Land-Quality/Flood-Plain-Management/National-Flood-Ins-Program	
DNR	Iowa Department of Natural Resources (State)	**Storm Water Program** The following activities must be covered by storm water permits issued by the Storm Water Program: (1) Construction activity that disturbs one or more acres or which is part of a larger project that disturbs one or more acres in total; (2) Certain types of industrial or commercial activities; and, (3) Many city storm sewer systems in larger communities or those near larger communities. **Hazards**: Flash Flood, River Flood
	Website: https:///www.iowadnr.gov/Environmental-Protection/Water-Quality/NPDES-Storm-Water	
DNR	Iowa Department of Natural Resources (State)	**Underground Storage Tanks Section** Responsible for the regulation of underground storage tank systems used for the storage of regulated substances, primarily petroleum products. Staff in the section work with the owners of sites on the detection, prevention and correction of releases of products from underground tanks. **Hazards**: Hazardous Materials
	Website: https://www.iowadnr.gov/Environmental-Protection/Land-Quality/Underground-Storage-Tanks	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
DNR	Iowa Department of Natural Resources (State)	**Wastewater State Revolving Fund Loan Program and Wastewater Engineering Section** **Description**: The Wastewater Section issues permits for the construction of any municipal and industrial treatment and collection facilities that discharge treated wastewater to a river or stream. The section also administers the Wastewater State Revolving Fund Loan Program offering communities and sanitary districts low interest loans for the construction of wastewater treatment and collection system improvements. **Hazards**: Infrastructure Failure
	Website: https://www.iowadnr.gov/Environmental-Protection/Water-Quality/Wastewater-Construction	
DNR	Iowa Department of Natural Resources (State)	**Wildlife Bureau Private Lands Program** The Wastewater Section issues permits for the construction of any municipal and industrial treatment and collection facilities that discharge treated wastewater to a river or stream. The section also administers the Wastewater State Revolving Fund Loan Program offering communities and sanitary districts low interest loans for the construction of wastewater treatment and collection system improvements. **Hazards**: Infrastructure Failure, River Flooding
	Website: https://www.iowadnr.gov/Conservation/Wildlife-Landowner-Assistance	
DNR DOT IDCA IDALS	Iowa Dept. of Natural Resources, Iowa Dept. of Transportation, Iowa Dept. of Cultural Affairs, Iowa Dept. of Agriculture and Land Stewardship (State)	**Resource Enhancement and Protection (REAP)** REAP is funded from the state's Environment First Fund (Iowa gaming receipts) and from the sale of the natural resource license plate. First $350,000 of REAP funds each year go to Conservation Education, then 1% of balance goes for DNR Administration and the remaining balance is divided as follows: (3%) Roadside Vegetation, (5%) Historical Resources, (9%) Public Land Management, (15%) City Parks and Open Space, (20%) Soil and Water Enhancement, (20%) County Conservation, (28%) State Open Space **Hazards**: Landslide, River Flooding
	Website: https://www.iowadnr.gov/Conservation/REAP	
DNR IFC	Iowa Department of Natural Resources (State) Iowa Flood Center (State)	**GIS Mapping of Floodplains and Watersheds** The DNR, the Iowa Flood Center and other partners, have created comprehensive, accurate floodplain maps for many Iowa cities and counties, and will continue to do so until the whole state has such maps. Through such maps, Iowans will know if their property is at risk from flooding. Also, a Watershed Atlas provides a variety of interactive GIS data layers for watershed planning on all watersheds in Iowa. **Hazards**: River Flooding
	Website: https://www.iowadnr.gov/Environmental-Protection/Land-Quality/Flood-Plain-Management/Flood-Plain-Mapping	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
DNR EPA	Iowa Department of Natural Resources (State) EPA (Federal)	**Watershed Improvement Program and Comprehensive Water Quality Management Planning Grant** A federally funded grant opportunity through the state-administered Clean Water Act Section 319 and Section 604(b) grants. The grant is limited to Applicants representing state-recognized Watershed Management Authorities. Watershed Improvement Plans that improve water quality will also address water quantity, and therefore is listed here as a flood mitigation capability. **Hazards**: River Flooding
	Website: https://www.iowadnr.gov/Environmental-Protection/Water-Quality/Watershed-Improvement/Watershed-Planning	
DNR FEMA	Iowa Department of Natural Resources (State) Federal Emergency Management Agency (Federal)	**Community Rating System (CRS)** The NFIP Community Rating System allows communities to earn flood insurance premium discounts for measures implemented at the local level that reduce flood risk. These measures include 18 different activities, including public outreach, building code enforcement, floodplain management planning, and drainage system maintenance, specifically under Activity 330 Outreach Projects, Activity 450 Stormwater Management, Activity 540 Drainage System Maintenance, Activity 620 Levee Safety, and Activity 630 Dam Safety. The CRS gives credit to communities that identify unique and significant flood hazards faced by the community and for plans to manage these risks that include public outreach information accordingly. **Hazards**: River Flooding
	Website: https://www.fema.gov/national-flood-insurance-program-communityrating-system	
DNR	Iowa Department of Natural Resources (State)	**Permit and Environmental Review Management Tool (PERMT)** The DNR's **PERMT** tool will help you to complete and Submit a Joint Application for a State of Iowa Flood Plain Development Permit, State of Iowa Sovereign Lands Construction Permit, or a US Army Corps of Engineers (USACE) 404 Water Quality Permit. Request an Environmental Review. It will also help you request a Base Flood Elevation or other Flood Plain Technical Assistance, request a Flood Plain Determination or Declaratory Order for your Animal Feeding Operation. Additionally, you can view and track the status of your application and submit additional information for your application, if requested. **Hazards**: River Flooding
	Website: https://programs.iowadnr.gov/permt/	
DNR USACE	Iowa Department of Natural Resources (State) USACE (Federal)	**Wetlands or Floodplain Development Permitting** Construction, excavation or filling in streams, lakes, wetlands, or on the flood plains may require permits from both the Corps and Iowa DNR. A Joint Application Form shall be submitted to both agencies to begin the permit process for a variety of activities that impact a river, stream, wetland or lake or placement of fill in a flood plain or construction of levees, roadways, bridges or buildings in a flood plain. **Hazards**: River Flooding
	Website: https://www.iowadnr.gov/Environmental-Protection/Land-Quality/Flood-Plain-Management/Flood-Plain-Dev-Permits	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
DOT	Iowa Department of Transportation (State)	**Railroad Revolving Loan and Grant Program** The Rail Revolving Loan and Grant Program provides funding to improve rail facilities that will spur economic development and job growth and provide assistance to railroads for the preservation and improvement of the railroad transportation system. **Hazards**: Infrastructure Failure, Transportation Incident
	Website: https://www.iowadot.gov/iowarail/financial-assistance/rrlgp	
DOT	Iowa Department of Transportation (State)	**Living Roadway Trust Fund** 3% of REAP funds are available through the DOT's Living Roadway Trust Fund (LRTF) for integrated roadside vegetation management (IRVM) activities, including the establishment of native prairie vegetation in rights-of-way. Low-maintenance prairie roadsides reduce erosion, slow runoff, trap sediment and provide habitat. Grant applications are accepted once a year, on June 1st. **Hazards**: Flash Flood, River Flooding
	Website: https://iowadot.gov/lrtf	
DOT	Iowa Department of Transportation (State)	**BridgeWatch®** BridgeWatch® is a web-based monitoring software solution that empowers bridge owners to predict, identify, prepare for, manage, and record potentially destructive environmental events. Through the Iowa DOT's use of the BridgeWatch™ technology, traveler safety is significantly increased and public resources used much more efficiently. Iowa DOT personnel are now able to examine those bridges at risk, rather than blanketing an area of the state where flooding may be occurring. When bridges are at risk, Iowa DOT personnel are automatically notified by the BridgeWatch technology so they can closely monitor the structure. **Hazards**: Infrastructure Failure, Transportation Incident
	Website: https://iowadot.gov/bridge	
DOT	Iowa Department of Transportation (State)	**PROTECT** If the State has a Resilience Improvement Plan (by DOT) they can reduce non-federal share of PROTECT project - instead of 80/20 can be 87/13 (or 90/10 if integrated into Metro trans plan). Can even provide off-system work, such as levees, to protect and make transportation more resilient. RIP must be consistent with Iowa Hazard Mitigation Plan. RIP must also align with State Freight, Transportation Asset Management and State Transportation plans.
DPS	Iowa Department of Public Safety (State)	**511 Traffic Information** The 511 Traffic Information System works primarily during the winter months as a weather and road warning system for citizens to contact for road conditions. The system can be activated at other times of the year if severe weather warrants it and road condition information is necessary for the public. **Hazards**: River Flooding, Severe Winter Storm, Transportation Incident
	Website: https://www.iowadnr.gov/Environmental-Protection/Land-Quality/Dam-Safety	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
DPS	Iowa Department of Public Safety (State)	**Building Code reviews** The Building Code Bureau reviews plans for new construction and remodeling of state public buildings, especially in relation to the fire code. **Hazards**: River Flooding, Severe Winter Storm, Tornado/Windstorm
	Website: https://www.iowadnr.gov/Environmental-Protection/Land-Quality/Dam-Safety	
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Dairy and Food Laboratory (Consumer Protection and Animal Health Division)** The Dairy Laboratory is responsible for the testing of finished dairy products that are produced in Iowa and testing the raw milk produced at the farm for antibiotic residues. This testing is performed in accordance with FDA regulations and procedures, the Grade A Pasteurized Milk Ordinance and Standard Methods for the Examination of Milk Products. The FDA certifies this laboratory to perform quantitative bacterial tests; chemical tests to determine if a product has been properly pasteurized; tests to find antibiotic residues and tests to determine abnormal milk. This lab also tests for butterfat content and added water in milk. **Hazards**: Animal/Crop/Plant Disease, Human Disease
	Website: https://iowaagriculture.gov/iowa-laboratory/dairy-and-food-laboratory	
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Agricultural Drainage Well Closure Assistance Program** Agricultural drainage wells were constructed in Iowa in the early 1900s to provide outlets for surface runoff and tile drainage water from cropland areas. Because agricultural drainage wells discharge the water directly to groundwater aquifers, they are potential routes for movement of contaminants to underground drinking water supplies **Hazards**: Sinkholes
	Website: https://iowaagriculture.gov/water-resources-bureau/ag-drainage-well-closure-assistance-program	
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Iowa Buffer Initiatives** Riparian buffers, grassed waterways, contour buffer strips, field borders and other buffers on private farmlands **Hazards**: Animal/Crop/Plant Disease, Drought, Flash Flood, Grass/Wild Fire, Landslide, River Flooding
	Website: https://iowaagriculture.gov/field-services-bureau/additional-resources	
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Iowa Conservation Reserve Enhancement Program (CREP)** The Iowa Conservation Reserve Enhancement Program (CREP) is a major state/federal initiative to develop wetlands which are strategically located and designed to remove nitrate from tile-drainage water from cropland areas. **Hazards**: Flash Flood, Radiological, Sinkholes
	Website: https://iowaagriculture.gov/crep	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Animal Industry Bureau (Consumer Protection and Animal Health Division)** To protect, safeguard, and improve animal health among all livestock industries in Iowa through animal movement regulations, exhibition regulations, import regulations, and cooperative disease control/education campaigns. To cooperatively work with academia, industry groups, and others to eradicate/control infectious and contagious diseases of importance to animal agriculture in Iowa. **Hazards**: Animal/Crop/Plant Disease, Human Disease
	Website: https://iowaagriculture.gov/animal-industry-bureau	
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Cooperative Soil Survey** Nationwide partnership of federal, regional, state, and local agencies, and institutions to develop, maintain, and apply reliable soil resource information. **Hazards**: Drought, Flash Flood, Grass/Wild Fire, Landslide, River Flooding
	Website: https://iowaagriculture.gov/field-services-bureau/additional-resources	
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Pesticide Bureau (Plant Management and Technology division)** Program areas addressed by the bureau are: Enforcement, Private and Commercial Pesticide Applicator Certification, Pesticide Product Registration, Licensing of Pesticide Dealers and Commercial Applicator Businesses, Groundwater Protection, Endangered Species Protection, and Worker Protection Outreach. **Hazards**: Animal/Crop/Plant Disease, Hazardous Materials, Human Disease, Transportation Incident
	Website: https://iowaagriculture.gov/pesticide-bureau	
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Feed and Fertilizer Bureau (Plant Management and Technology division)** The Feed Bureau is responsible for enforcing the Iowa Commercial Feed Law and for licensing all firms distributing or manufacturing animal feed products offered for sale in Iowa. The Bureau also reviews all feed product labels, including those for small pet food products, to ensure their accuracy before those products can be authorized for sale in Iowa. **Hazards**: Animal/Crop/Plant Disease, Hazardous Materials, Human Disease, Transportation Incident
	Website: https://iowaagriculture.gov/commercial-feed-and-fertilizer-bureau	
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Field Office Staff** The Division provides staff support to all 100 soil and water conservation districts (SWCDs) in Iowa. The efforts of these staff support the combined soil and water conservation mission of the SWCD, the State of Iowa, and the USDA Natural Resources Conservation Service (NRCS). **Hazards**: Animal/Crop/Plant Disease, Drought, Flash Flood, Grass/Wild Fire, Landslide, River Flooding, Sinkholes
	Website: https://costshare.iowaagriculture.gov/swcdlocations	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Iowa Watershed Protection Program** The Watershed Protection statute enacted in 1999 includes two elements: 1. Watershed Protection Program - to provide technical and financial assistance for the development of local watershed initiatives. 2. Watershed Task Force - to study the condition of watershed protection in Iowa. **Hazards**: Dam/Levee Failure, Landslide, River Flooding
	Website: https://iowaagriculture.gov/water-resources-bureau/iowa-watershed-protection	
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Soil and Water Conservation Districts** Iowa's 100 Soil and Water Conservation Districts (SWCD) are responsible for carrying out soil conservation and water quality protection programs at the local level. **Hazards**: Animal/Crop/Plant Disease, Drought, Flash Flood, Grass/Wild Fire, Landslide, River Flooding, Sinkholes
	Website: https://costshare.iowaagriculture.gov/swcdlocations	
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Dairy Products Control Bureau (Consumer Protection and Animal Health Division)** Ensure the safety and quality of dairy products supplied to the consuming public, through regulation and education. **Hazards**: Animal/Crop/Plant Disease, Human Disease
	Website: https://iowaagriculture.gov/dairy-products-control-bureau	
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Division of Soil Conservation** The Division of Soil Conservation is responsible for state leadership in the protection and management of soil, water, and mineral resources, assisting soil and water conservation districts and private landowners to meet their agricultural and environmental protection needs. **Hazards**: Animal/Crop/Plant Disease, Drought, Expansive Soils, Flash Flood, Grass/Wild Fire, Landslide, River Flooding, Sinkholes
	Website: https://iowaagriculture.gov/commercial-feed-and-fertilizer-bureau	
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Conservation Practices Revolving Loan (No-Interest)** Fund allocations are made to soil and water conservation districts, commissioners set priorities for their use, and field office staff assure the technical quality of practices built. Eligible landowners may borrow up to $20,000 for a 10-year period. Can be used to fund temporary or permanent practices, which are subject to maintenance agreements. **Hazards**: Drought, Grass/Wild Fire, Landslide
	Website: https://iowaagriculture.gov/field-services-bureau/financial-assistance-conservation-practices	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Meat and Poultry Inspection Bureau (Consumer Protection and Animal Health Division)** IDALS holds cooperative agreements with the USDA/Food Safety and Inspection Service to provide a meat and poultry inspection program that meets the "equal to" provisions in the federal meat and poultry inspection acts. The dividing line between federal and state inspection is based on where the products will be distributed, as in interstate commerce and foreign export or intrastate commerce (Iowa only). **Hazards**: Animal/Crop/Plant Disease, Human Disease
	Website: https://iowaagriculture.gov/meat-poultry-inspection-bureau	
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Minerals** There are more than 1,100 registered mineral sites in Iowa, utilized by some 250 operators and 26 counties Minerals extracted at these sites include: limestone, sand and gravel, gypsum and clay. The limestone industry alone produces over 25 million tons of stone each year for use in the construction industry. **Hazards**: Hazardous Materials, Sinkholes, Transportation Incident
	Website: https://iowaagriculture.gov/mines-and-minerals-bureau/iowa-mineral-program	
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Abandoned Mine Reclamation** The Division was granted primacy for its Abandoned Mined Lands (AML) Program in 1983 by the Secretary of Interior and works cooperatively with the U.S. Office of Surface Mining (OSM). **Hazards**: Sinkholes
	Website: https://iowaagriculture.gov/mines-and-minerals-bureau/abandoned-mine-land-reclamation	
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Weights and Measures Bureau (Consumer Protection and Animal Health Division)** To improve the accuracy of measurements, enhance consumer protection, promote fair competition, and facilitate economic growth and trade. **Hazards**: Animal/Crop/Plant Disease, Hazardous Materials, Human Disease, Transportation Incident
	Website: https://iowaagriculture.gov/weights-and-measures-bureau	
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Soil Conservation & Water Quality Cost Share** Numerous State & Federal cost share programs are accessible through local Soil & Water Conservation Districts. These programs provide financial assistance to help reduce "out of pocket" cost of installing soil conservation and/or water quality improvement practices. The amount of cost share provided varies but generally ranges from 50 – 75% of total cost of the practice. Examples of eligible practices: terraces, cover crops, grassed waterways, grade stabilization structures, no-till planting, filter strips, forest stand improvement, saturated buffers, wetlands, windbreaks, storm water management (ex. Rain Garden). **Hazards**: Drought, Grass/Wild Fire, Landslide
	Website: https://costshare.iowaagriculture.gov/	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
IDALS	Iowa Department of Agriculture and Land Stewardship	**Water Quality Protection Practices** The Resource Enhancement and Protection (REAP) program provides funding to the Division to work with soil and water conservation districts to address local water quality protection needs. **Hazards**: Drought, Flash Flood, Grass/Wild Fire, Landslide, River Flooding
	Website: https://iowaagriculture.gov/field-services-bureau/water-quality-protection-projects-and-practices	
IDALS	Iowa Department of Agriculture and Land Stewardship (State)	**Water Quality Protection Projects** Water quality protection projects protect the state's surface and groundwater resources from point and non-point sources of contamination. **Hazards**: Drought, Flash Flood, Grass/Wild Fire, Landslide, River Flooding, Sinkholes
	Website: https://iowaagriculture.gov/field-services-bureau/water-quality-protection-projects-and-practices	
IEDA HUD	Iowa Economic Development Authority (State) & U.S. Department of Housing and Urban Development (Federal)	**Community Development Assistance - Water/Sewer Fund** About $11 million in federal Community Development Block Grant (CDBG) funds is available to cities and counties on an annual competitive basis through the Water/Sewer Fund. **Hazards**: Infrastructure Failure
	Website: https://www.iowaeda.com/cdbg/water-sewer/	
IEDA HUD	Iowa Economic Development Authority (State) & U.S. Department of Housing and Urban Development (Federal)	**State Administered CDBG** States participating in the CDBG Program award grants only to units of general local government that carry out development activities. Annually each State develops funding priorities and criteria for selecting projects. **Hazards**: Dam/Levee Failure, Flash Flood, Grass/Wild Fire, Infrastructure Failure, Landslide, River Flooding, Severe Winter Storm, Sinkholes, Tornado, Windstorm
	Website: https://www.iowaeda.com/cdbg/	
IEDA HUD	Iowa Economic Development Authority (State) & U.S. Department of Housing and Urban Development (Federal)	**Contingency Fund - Opportunities & Threats Fund** CDBG funds are also available for communities experiencing an imminent threat to public health, safety, or welfare that necessitates immediate corrective action sooner than can be accomplished through normal Community Development Block Grant (CDBG) procedures or communities responding to an immediate community development opportunity that requires action sooner than can be accomplished through normal funding procedures. **Hazards**: Dam/Levee Failure, Flash Flood, Grass/Wild Fire, Infrastructure Failure, Landslide, River Flooding, Severe Winter Storm, Sinkholes, Tornado, Windstorm
	Website: https://www.iowaeda.com/cdbg/opportunities-threats/	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
IDCA	Iowa Department of Cultural Affairs/State Historical Preservation Office	**State Historical Preservation Office** The office identifies, preserves, and protects Iowa's historic and prehistoric resources. It also administers state and federal historic preservation programs, and maintains a survey and inventory collection of historic properties in Iowa. **Hazards:** Relates to mitigation of many hazards
	Websites: https://iowaculture.gov/history/preservation	
HHS	Iowa Department of Health and Human Services (State)	**Radon Program** The Radon Program certifies radon testers and laboratories, approves credentials for mitigators that are inspected annually, and supplies information on radon the public. **Hazards**: Human Disease, Hazardous Materials
	Website: https://hhs.iowa.gov/radon	
HHS	Iowa Department of Health and Human Services (State)	**State of Iowa Trauma Program** The Iowa State Trauma Program utilizes trauma registry data, injury prevention and outreach, hospital verification, and performance improvement resources to assist Iowa's hospitals with optimizing the care of injured patients to improve outcomes and reduce morbidity and mortality from traumatic injury. **Hazards**: Human Disease, Hazardous Materials, Severe Winter Storm, Terrorism, Tornado/Severe Storm
	Website: https://hhs.iowa.gov/BETS/Trauma	
HHS	Iowa Department of Health and Human Services (State)	**Center for Acute Disease Epidemiology (CADE) Bureau** Works to protect and preserve the health and safety of Iowans from infectious diseases through disease surveillance; investigation of acute outbreaks; education and consultation to county, local, and private health agencies on infectious diseases; immunization and vaccine guidelines; treatment after animal bites; and vaccines for international travel. The center also provides consultation to county and local health agencies on diseases requiring public health intervention, collaborates with Centers for Disease Control and Prevention by weekly reporting of nationally reportable diseases, and offers health education opportunities through lectures and organizational seminars. **Hazards**: Animal/Crop/Plant Disease, Human Disease
	Website: https://hhs.iowa.gov/CADE	
HSEMD (state) FEMA (federal)	Iowa Homeland Security & Emergency Management Dept., Federal Emergency Management Agency	**Hazard Mitigation Grant Program** This program helps states and communities implement long-term hazard mitigation measures following a major disaster declaration. The program's objectives are to prevent or reduce the loss of life and property from natural hazards, to implement state or local hazard mitigation plans. **Hazards:** Dam/Levee Failure, Flash Flood, Grass/Wild Fire, Infrastructure Failure, Landslide, River Flooding, Severe Winter Storm, Sinkholes, Tornado, Windstorm

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
	Websites: https://homelandsecurity.iowa.gov/disasters/hazard-mitigation/ https://www.fema.gov/hazard-mitigation-grant-program	
HSEMD FEMA	Iowa Department of Homeland Security and Emergency Management (State) Federal Emergency Management Agency (Federal)	**Building Resilient Infrastructure and Communities (BRIC)** The Building Resilient Infrastructure and Communities (BRIC) grant program makes federal funds available to states, U.S. territories, federally recognized Tribal governments, and local governments for hazard mitigation activities. It does so with a recognition of the growing hazards associated with climate change, and of the need for natural hazard risk mitigation activities that promote climate adaptation and resilience with respect to those hazards. These include both acute extreme weather events and chronic stressors which have been observed and are expected to increase in intensity and frequency in the future. **Hazards:** Dam/Levee Failure, Flash Flood, Grass/Wild Fire, Infrastructure Failure, Landslide, River Flooding, Severe Winter Storm, Sinkholes, Tornado, Windstorm
	Websites: https://homelandsecurity.iowa.gov/disasters/hazard-mitigation/ https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities	
HSEMD FEMA	Iowa Homeland Security and Emergency Management Dept. (State), FEMA (Federal)	**Flood Mitigation Assistance (FMA)** The Flood Mitigation Assistance (FMA) program helps states and communities identify and implement measures to reduce or eliminate the long-term risk of flood damage to homes and other structures insurable under the National Flood Insurance Program. **Hazards:** River Flooding
	Websites: https://homelandsecurity.iowa.gov/disasters/hazard-mitigation/ https://www.fema.gov/grants/mitigation/floods	
HSEMD FEMA	Iowa Homeland Security and Emergency Management Dept. (State), FEMA (Federal)	**Public Assistance (PA) Program, Section 406** Public Assistance consists of three basic components; emergency protective measures, permanent work, and mitigation. It must result from a disaster declaration, but Section 406 provides discretionary authority to fund mitigation measures in conjunction with the repair of damaged facilities. The mitigation measures must be related to eligible disaster-related damages and must directly reduce the potential of future, similar disaster damages to the eligible facility. **Hazards:** Dam/Levee Failure, Earthquake, Flooding, Grass/Wild Fire, Infrastructure Failure, Landslide, Severe Winter Storm, Lighting/Hail, Sinkholes, Tornado/Wind
	Websites: https://homelandsecurity.iowa.gov/disasters/hazard-mitigation/ https://www.fema.gov/assistance/public	
HSEMD FEMA	Iowa Homeland Security and Emergency Management Dept. (State), FEMA (Federal)	**Training Programs** Training in both preparedness and mitigation in areas related to terrorism awareness and hazardous materials awareness training. Training is done both in-house and in other state and local government agencies. Website for training. **Hazards:** Hazardous Materials, Radiological, Terrorism

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
	Websites: https://hsemdtraining.iowa.gov/	
HSEMD FEMA	Iowa Homeland Security and Emergency Management Dept. (State), FEMA (Federal)	**Nonprofit Security Grant Program (NSGP)** NSGP provides funding for target hardening and other physical security activities to nonprofit organizations at high risk of terrorist attack. The intent is to integrate nonprofit preparedness activities with state & local preparedness efforts, and promote coordination & collaboration between public entities & private community representatives. **Hazards:** Terrorism
	Websites: https://www.fema.gov/grants/preparedness/nonprofit-security	
EPA	U.S. Environmental Agency (Federal)	**Low Impact Development and Green Infrastructure** Provides resources and training materials to implement stormwater management practices and programs to reduce runoff and protect water quality, including design and planning guides; case studies; examples of regulatory and non-regulatory policy approaches; and descriptions of EPA's past assistance projects, archived webinars, and upcoming technical assistance and webinars. **Hazards**: Flash Flood, River Flooding
	Website: https://www.epa.gov/green-infrastructure	
EPA	U.S. Environmental Agency (Federal)	**Smart Growth/Building Blocks for Sustainable Communities** "Smart growth" covers a range of development and conservation strategies that help protect our health and natural environment and make our communities more attractive, economically stronger, and more socially diverse. Building Blocks for Sustainable Communities provides quick, targeted technical assistance to selected communities using tools that are designed to address a variety of challenges in many different local contexts. The purpose of delivering these tools is to stimulate a discussion about growth and development and strengthen local capacity to implement sustainable approaches. **Hazards**: Flash Flood, River Flooding
	Website: https://www.epa.gov/smartgrowth https://www.epa.gov/smartgrowth/building-blocks-sustainable-communities	
EPA	U.S. Environmental Agency (Federal)	**Water Data and Tools** This site aggregates EPA water data and tools including integrated analysis, ambient water quality, watershed plan building and financing. **Hazards**: Flash Flood, River Flooding
	Website: https://www.epa.gov/waterdata	
EPA	U.S. Environmental Agency (Federal)	**The Watershed Academy** The Watershed Academy provides training and information about watershed implementation approaches. Self-paced training modules, webcast seminars, and live training courses provide current information from national experts across a broad range of watershed topics.

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
		Hazards: Flash Flood, River Flooding
	Website: https://www.epa.gov/watershedacademy	
NOAA NWS	National Oceanic and Atmospheric Administration/ National Weather Service (Federal)	**NWS Storm Ready Program** A voluntary program to provide guidance and incentive to communities interested in improving their hazardous weather operations. Once communities are recognized as StormReady, they can provide their StormReady recognition letter to their regional FEMA National Flood Insurance Program to determine if their activities will be acceptable for Community Rating System credits. Although there are no fees for StormReady recognition, a community may need to upgrade its emergency preparedness infrastructure to qualify for StormReady status. **Hazards**: Flash Flood, River Flooding, Severe Winter Storm, Lightning/Hail, Tornado/Windstorm
	Website: https://www.weather.gov/StormReady	
USDA NRCS	U.S. Department of Agriculture/ (USDA) Natural Resource Conservation Service (Federal)	**Watershed Protection and Flood Prevention Program (WFPO)** Provides for cooperation between the Federal government, the state and local jurisdictions to work together to prevent erosion, floodwater and sediment damage; to further the conservation development, use and disposal of water; and to further the conservation and proper use of land in authorized watersheds. The NRCS offers financial and technical assistance through this program for the following purposes: Erosion and sediment control, Watershed protection, Flood prevention, Water quality Improvements, Rural, municipal and industrial water supply, Water management, and others. **Hazards**: Dam/Levee failure, Drought, Flash Flood, Infrastructure Failure, River Flooding
	Website: https://www.nrcs.usda.gov/programs-initiatives/watershed-and-flood-prevention-operations-wfpo-program	
USDA NRCS	USDA Natural Resource Conservation Service (Federal)	**Watershed Surveys and Planning** Program assists federal, state and local agencies protect watersheds from damage caused by erosion, floodwater, and sediment and to conserve and develop water and land resources. Resource concerns addressed by the program include opportunities for water conservation, wetland and water storage capacity, agricultural drought problems, municipal water needs, and upstream flood damages. Rapid Watershed Assessments are used as one tool to collect data. **Hazards**: Dam/Levee failure, Drought, Flash Flood, Grass/Wild Fire, Infrastructure Failure, River Flooding, Radiological
	Website: https://www.nrcs.usda.gov/programs-initiatives/watershed-programs	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
USDA NRCS	USDA Natural Resource Conservation Service (Federal)	**Wetlands Reserve Easement (WRE) and the Agricultural Conservation Easement Program (ACEP)** Provides financial and technical assistance to help conserve agricultural lands, wetlands, and their related benefits. The Wetland Reserve Easement component is a voluntary program offering landowners an opportunity to protect, restore, and enhance wetlands on their property and offers an opportunity to establish long-term conservation and wildlife practices and protection. Goal is to achieve the greatest wetland functions and values, along with optimum wildlife habitat, on every enrolled acre. In many cases, restoration and protection of wetlands reduces flood damages. For permanent wetland easements, NRCS pays 100 percent of easement value and up to 100 percent of restoration costs. **Hazards**:River Flooding
	Website: https://www.nrcs.usda.gov/programs-initiatives/acep-agricultural-conservation-easement-program	
USDA NRCS	USDA Natural Resource Conservation Service (Federal)	**Dam Watch** Web-based dam monitoring tool helps NRCS project sponsors protect communities by providing real-time monitoring of 11,900 watershed program dams throughout the U.S. Alerts essential personnel when rainfall, snowmelt, and earthquakes threaten dams. Provides a 'one-stop" source for critical documents, such as drawings, photographs, and emergency action plans. Available only to NRCS employees and project sponsors with credentials. **Hazards**: Dam/Levee failure
	Website: https://nrcs.damwatch.us/main/admin-login.html	
USDA NRCS	USDA Natural Resource Conservation Service (Federal)	**Conservation Technical Assistance** The Conservation Technical Assistance provides assistance to landowners, communities, and other agencies in planning and implementing conservation systems that help those entities and address various issues including flood risk reduction, drought mitigation, water management structures, wetland restoration/creation, and streambank restoration. **Hazards**: Dam/Levee failure, Drought, Expansive Soils, Flash Flood, Landslide, River Flooding
	Website: https://www.nrcs.usda.gov/getting-assistance/conservation-technical-assistance	
USDA NRCS	USDA Natural Resource Conservation Service (Federal)	**Regional Conservation Partnership Program (RCPP)** The RCPP promotes coordination between NRCS and its partners to deliver conservation assistance on a regional or watershed scale to producers and landowners. NRCS provides assistance to producers through partnership agreements and through program contracts or easement agreements. **Hazards**: Animal/Crop/Plant Disease, Drought, River Flooding
	Website: https://www.nrcs.usda.gov/programs-initiatives/rcpp-regional-conservation-partnership-program	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
USDA NRCS	USDA Natural Resource Conservation Service (Federal)	**Emergency Watershed Protection Program** Emergency watershed protection consists of measures to reduce hazards to life and property from floods, drought, and the products of excessive runoff or erosion on any watershed impaired by a natural occurrence. **Hazards**: Drought, Flash Flood, River Flooding
	Website: https://www.nrcs.usda.gov/programs-initiatives/ewp-emergency-watershed-protection	
USDA NRCS	USDA Natural Resource Conservation Service (Federal)	**Environmental Quality Incentives Program** The Environmental Quality Incentives Program (EQIP) was reauthorized in the Farm Security and Rural Investment Act of 2002 (Farm Bill) to provide a voluntary conservation program for farmers and ranchers that promotes agricultural production and environmental quality as compatible national goals. EQIP offers financial and technical help to assist eligible participants install or implement structural and management practices on eligible agricultural land. **Hazards**: River Flooding
	Website: https://www.nrcs.usda.gov/apply-for-environmental-quality-incentives-program-eqip	
USDA FSA	U.S. Department of Agriculture/ Farm Service Agency (Federal)	**Conservation Reserve Program** CRP is a voluntary program that offers long-term rental payments and cost-share assistance to establish long-term, resource-conserving cover on environmentally sensitive cropland or, in some cases, marginal pastureland. Buffer strips and protective cover can reduce soil erosion, stabilize stream banks, reduce flooding, and improve water quality. **Hazards**: Flash Flood, River Flooding
	Website: https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/	
USGS	U.S. Geological Survey (Federal)	**U.S. Geological Service - Iowa** The USGS provides maps, reports and information to help others manage, develop and protect America's water, energy, mineral and land resources. **Hazards**: Earthquake, Expansive Soils, Landslide, Sinkholes, River Flooding
	Website: https://www.usgs.gov/	
USACE	U.S. Army Corps of Engineers (Federal)	**Continuing Authorities Program (CAP) Section 205 Small Flood Risk Management Projects** Provides for construction/improvement of flood control works or non-structural measures. Non-structural alternatives include installation of flood warning systems, raising and/or floodproofing structures, and relocation of flood-prone facilities. Other typical projects include levees, floodwalls, impoundments, pumps and channel modifications. Initial study is federally funded up to $100,000; other study costs are shared 50/50. Design & Construction cost shared at 65 percent federal, 35 percent nonfederal. Non-federal sponsor's cost share may include cash and work-in-kind. In Iowa, direct project requests to 309-794-5690. **Hazards**: Dam/Levee Failure, Flash Flood, River Flooding
	Website: https://www.sas.usace.army.mil/Missions/CAP/Section-205-Flood-Damage-Reduction/	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
USACE	U.S. Army Corps of Engineers (Federal)	**CAP Section 206 Aquatic Ecosystem Restoration** Such projects generally include manipulation of the hydrology in and along bodies of water, including wetlands and riparian areas. A project is adopted for construction only after a detailed investigation determines that the project will improve the quality of the environment and is in the best interest of the public. Initial study federally funded up to $100,000; other planning costs shared 50/50. Design & Construction cost shared at 65% federal, 35% nonfederal. Non-federal sponsor's cost share may include cash and work-in-kind. In Iowa, direct project requests to 309-794-5704 or customeroutreach@usace.army.mil.
	https://www.mvr.usace.army.mil/Business-With-Us/Outreach-Customer-Service/Ecosystem-Restoration/Section-206/	
USACE	U.S. Army Corps of Engineers (Federal)	**Floodplain Management Services** Provides technical assistance and guidance in the form of "Special Studies" on all aspects of floodplain management planning, including impacts of off-floodplain land use changes on the physical, socio-economic, and environmental conditions of the floodplain. Special Studies are done at 100% Federal cost; however, funding for these studies is very limited and competitive. Special Studies have included identification of present or future floodplain areas, assessment of various floodplain management alternatives, Dam Break Analysis Studies, and Hydrologic and Hydraulic Modeling. The program also provides for developing guides and pamphlets, and conducting workshops and seminars on nonstructural floodplain management measures, such as flood proofing and relocation of structures from the floodplain. **Hazards**: River Flooding
	Website: https://www.mvr.usace.army.mil/Business-With-Us/Outreach-Customer-Service/Floodplain-Management-Services/	
USACE	U.S. Army Corps of Engineers (Federal)	**CAP Section 14 Emergency Streambank and Shoreline Protection** Under Section 14 the Corps is authorized to construct bank protection works to protect endangered highways, highway bridge approaches, and other essential, important public works, such as municipal water supply systems and sewage disposal plants, churches, hospitals, schools, and non-profit public services and known cultural sites that are endangered by flood-caused bank or shoreline erosion. The first $100,000 of the Planning Design Analysis (PDA) phase is a Federal expense. All PDA costs after the first $100,000 are cost shared 50/50. All construction costs are cost shared 65% Federal and 35% non-Federal. Each project is limited to a total Federal cost of $5 million. In Iowa, direct project requests to 309-794-5690. **Hazards**: Flash Flood, River Flooding
	Website: https://www.mvr.usace.army.mil/Business-With-Us/Outreach-Customer-Service/Flood-Risk-Management/Section-14/	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
USACE	U.S. Army Corps of Engineers (Federal)	**Section 22 Planning Assistance to States (PAS)** Every year, each State or local government, can request USACE for a study under the PAS program, and USACE accommodates as many studies as funding permits. Typical studies are only planning level of detail; they do not include detailed design for project construction. The studies generally involve the analysis of existing data for planning purposes, using standard engineering techniques, although some data collection is often necessary. A maximum of $5,000,000 is authorized for PAS nationwide. Each state is authorized to be appropriated $2,000,000 annually. Costs are shared 50% Federal and 50% non-Federal. The non-Federal 50% share can be made up of all in-kind services and/or cash. Contact the Rock Island District's PAS Coordinator at (309) 794-5704 or at customeroutreach@usace.army.mil. **Hazards**: Dam/Levee Failure, Flash Flood, River Flooding
	Website: https://www.mvr.usace.army.mil/Business-With-Us/Outreach-Customer-Service/Planning-Assitance-to-States-and-Tribes/	
USACE	U.S. Army Corps of Engineers (Federal)	**National Nonstructural Commitee (NCC)** Promotes the use of nonstructural flood proofing methods for reducing life loss and minimizing property damage. Provides technical consultation from initial assessments and plan formulation through technical review. Offers tools and resources including publications, assessment tools, structure attribute table, nonstructural matrix, and National Flood Barrier Testing and Certification Program. **Hazards**: Flash Flood, River Flooding
	Website: https://www.usace.army.mil/Missions/Civil-Works/Project-Planning/nnc/	
USACE	U.S. Army Corps of Engineers (Federal)	**Levee Safety Program** Program strives to ensure levees provide benefit to the Nation by working with sponsors and stakeholders to assess, communicate, and manage risk to people, property, and the environment from inundation associated with levees. Maintains a national inventory of levee systems and makes the information available in the National Levee Database. Inspects, assesses, and communicates levee risk-related issues and concerns, holding life-safety paramount. Supports USACE and local decisions aimed at reducing flood risk. **Hazards**: Dam/Levee Failure
	Website: https://www.usace.army.mil/Missions/Civil-Works/Levee-Safety-Program/	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
USACE	U.S. Army Corps of Engineers (Federal)	**Public Law 84-99, Emergency Response to Natural Disasters** Provides preparedness, response and recovery assistance, including: Emergency response training and exercises, inspection of flood risk reduction works and advisement of maintenance requirements, and technical assistance with development of response and hazard mitigation plans. Immediate response and recovery assistance from flooding, including technical assistance, issuance of sandbags and/or pumps, construction of emergency measures, and initial repair and restoration of flood risk management projects. Opportunities for nonstructural project implementation may be considered in lieu of levee repair. All PL 84-99 efforts are supplemental to local, state, and tribal efforts. Reimbursement or grants are not permitted. **Hazards**: Flash Flood, River Flooding
	Website: https://www.usace.army.mil/Missions/Emergency-Operations/pl-84-99/	
USACE HSEMD	USACE (Federal) Iowa Dept. of Homeland Security and Emergency Management (State)	**Iowa Flood Risk Management Team (Silver Jackets)** Partners meet quarterly and communicate electronically to provide resources and develop tools to support information sharing and networking, and promotes implementation of flood risk management efforts that improve flood risk awareness and result in actions to reduce risk. Currently includes USACE, HSEMD, USDA NRCS, USGS, Iowa DNR, NOAA NWS, and others. **Hazards**: Dam/Levee Failure, Flash Flood, River Flooding
	Website: https://www.iwr.usace.army.mil/Silver-Jackets/State-Teams/Iowa/ www.floodrisk.iowa.gov	
IDALS WRCC	Iowa Water Resources Coordinating Council Mulitple Agencies (State & Federal)	**Iowa Water Resources Coordinating Council (WRCC)** WRCC's purpose is to preserve and protect Iowa's water resources, and coordinate the management of those resources in a sustainable and fiscally responsible manner. WRCC is to use an integrated approach to overcome old categories, labels, and obstacles with the primary goal of managing the state's water resources comprehensively rather than compartmentally. The WRCC shall develop recommendations for policies and funding promoting a watershed management approach to reduce the adverse impact of future flooding on the state's residents, businesses, communities, and soil and water quality. The council shall consider policies and funding options for various strategies including but not limited to additional floodplain regulation; wetland protection, restoration, and construction; the promulgation and implementation of statewide storm water management standards; conservation easements and other land management; perennial ground cover and other agricultural conservation practices; pervious pavement, bioswales, and other urban conservation practices; and permanent or temporary water retention structures. **Hazards**: Dam/Levee Failure, Drought, Flash Flood, River Flooding
	Website: https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/	

Agency Acronym	Agency Name (State, Federal, or Nonprofit)	Program Name Description Hazards Targeted
IFSMA	Iowa Floodplain and Stormwater Management Association (Non-Profit)	**Iowa Floodplain and Stormwater Management Association** Organization of professionals involved in floodplain management, flood hazard mitigation, stormwater management, the National Flood Insurance Program, flood preparedness, warning and recovery. IFSMA represents the interests of flood hazard specialists from local and state government, consulting engineers, research community, insurance industry, and the citizens of Iowa. IFSMA's members have skills and experience in the fields of engineering, hydrologic forecasting, community planning, enforcement, emergency response, water resources, and many others. **Hazards**: Dam/Levee Failure, Flash Flood, River Flooding
	Website: https://www.iowafloods.org/	
ISWEP	Iowa Stormwater Education Partnership (Non-Profit)	**Iowa Stormwater Education Partnership** ISWEP is a member driven organization formed in 2004 to address the educational needs of cities and others impacted by federal stormwater regulations. Services have expanded to include training and certification programs, technical services and workshop facilitation. **Hazards**: Flash Flood, River Flooding
	Website: https://iowastormwater.org/	

5.2.2. Use of FEMA Programs for Hazard Mitigation in Iowa

A. National Flood Insurance Program and Community Rating System

The number of jurisdictions that participate in the National Flood Insurance Program (NFIP) continues to increase in Iowa. This is reflected in local policies and ordinances aimed at reducing development in flood plains and other hazard areas as well as providing homeowners the opportunity to purchase flood insurance through the NFIP. Several communities are in the process of applying for NFIP membership; in part they do so to become eligible for federal and State mitigation funds. In 2010 there were 517 Iowa communities in the NFIP. In 2018, the number of communities participating had grown to 672. In July 2021 there were 688, and in 2022 there were 691. At last count in Spring 2023 there were 711.

While the increase in participating communities is good, there are still about 177 communities with mapped flood hazard areas that are not participating. Several of those, however, have no structures in the mapped floodplains and no plans to expand. The DNR's Floodplain Management staff has in their annual work plan to contact all these communities, but many of them do not have enough incentive or motivation to participate in NFIP.

In 2009 a statute was passed by the Iowa General Assembly involves participation in NFIP. The resulting code, found in Iowa Code 455B.262A , ties a community's eligibility for certain post-disaster State assistance to participation in the National Flood Insurance Program. Following a presidentially-declared disaster, FEMA makes public assistance grants available to local governments. The grants may be used for cleanup and repairs (e.g., assistance for debris removal or infrastructure repair). These grants usually provide only 75 percent of the cost of any post-disaster project. The State of Iowa typically contributes

another 10 percent toward the required 25 percent nonfederal match for public assistance grants. However, since 2011 the State of Iowa has made this match contribution contingent upon the community being in good standing with the NFIP.

This code chapter only affects those communities that have an existing Flood Insurance Rate Map (FIRM) published by FEMA that identifies areas within the community that are subject to inundation by flood waters during a 1-percent-chance flood event (also known as the 100-year flood). If a community is newly identified as having areas that are subject to inundation during a 1-percent-chance flood event, it will have two years from the effective date of the FIRM to join the NFIP before the community loses eligibility for State matching funds.

One of the duties of the Floodplain Management section of Iowa DNR is to help and encourage NFIP participating communities of their duties and responsibilities for making substantial damage determinations. Whenever a county has a presidentially-declared disaster, the Floodplain Management section sends a packet to the NFIP participating communities there to remind them of their duties and responsibilities for making substantial determinations. This packet includes several enclosures for local floodplain managers, including:

- Methods for Determining Substantial Damage;
- Substantial Damage Calculation Worksheet;
- Sample Floodplain Development Application form;
- Information on Increased Cost of Compliance; and
- Sample Substantial Determination letter (sent to property owners with substantial damaged structures that informs them to apply for state and local floodplain permits)

As of March 2023, the number of Iowa communities that participate in the Community Rating System (CRS) is 13, which is an increase from the last Plan update. These 13 communities all voluntarily participate in activities that exceed the minimum standards for the NFIP. The communities receive discounted flood insurance rates for implementing activities that reduce flood damage to insurable property, support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management. The communities and the respective flood insurance discounts available to their citizens is shown in this table:

Community Participating in Community Rating System (CRS)	CRS Class (as of October 2021)	% Discount on Flood Insurance	
		For Property in Special Flood Hazard Area	For Property Not in Special Flood Hazard Area
Cedar Falls, City of	5	25	10
Cedar Rapids, City of	6	20	10
Charles City	9	5	5
Clive, City of	5	25	10
Coralville, City of	7	15	5
Davenport, City of	7	15	5
Des Moines, City of	7	15	5
Iowa City, City of	6	20	10
Kalona, City of	9	5	5
Linn County	7	15	5
Pottawattamie County	9	5	5
Story County	7	15	5
Urbandale	7	15	5

B. Risk Mapping, Assessment, and Planning (Risk MAP)

Risk Mapping, Assessment, and Planning (Risk MAP) is a FEMA program that the DNR coordinates through Cooperating Technical Partners (CTP). Besides the Iowa DNR, FEMA and HSEMD are also included in CTP. Risk MAP makes planning resources available to local jurisdictions for hazard mitigation. These resources can be utilized for the development of risk assessments, watershed studies, mitigation plan elements, mapping, and risk communications.

Risk MAP has completed several flood-risk reports in Iowa, including those for the Middle Cedar, Middle Iowa, East and West Nishnabotna, and North Raccoon watersheds. These reports inform communities about risk to the built environment through modeling. HSEMD planners work frequently with Risk MAP program staff to integrate data and technical resources into state and local hazard mitigation planning. Coordination between HSEMD and DNR has greatly improved in the past five years as they reach out together to engage local jurisdictions and help them discover their flood risks and what can be done about them.

This coordination between HSEMD and DNR, along with other agencies from Iowa Silver Jackets, led to the creation of the "Help CUT Flooding TEAM", which is short for "Helping Communities Understand Their Flooding To Explore Alternatives for Mitigation". This initiative includes representatives from state and federal agencies who have technical resources, like mapping and engineering analysis, which can often be provided to help communities understand their flood issues and options for mitigation.

There is no financial assistance for implementation or construction, but with the additional information that is provided, communities are better positioned to apply for financial assistance available under an array of programs such as those found within FEMA's Hazard Mitigation Assistance.

The "Help CUT Flooding" initiative is possible in large part because of the Real Time Technical Assistance (RTTA) funding appropriated through the Iowa CTP and RiskMAP funding. RTTA is used to answer "what if" questions that arise during review of risk data with communities or raised by communities through other outreach like the Help CUT Flooding initiative. As RTTA projects arise without prior knowledge of a need for study or work being performed, they will be bi-annually reviewed by our RTTA team (typically October and April). This team consists of members of the Department of Natural Resources (DNR) Statewide Floodplain Mapping program, DNR Floodplain Permitting staff and Iowa HSEMD. The DNR sees the involvement of Iowa HSEMD as important in order to coordinate efforts for future projects that might be request FEMA Hazard Mitigation Assistance (HMA) grants through Iowa HSEMD.

The outcomes from RTTA and Help CUT Flooding initiative include RTTA reports for several cities. These reports include analyses of several alternatives and recommendations for development of preferred alternatives. Cities that have received RTTA reports include Oelwein, Decorah, Vinton, Belle Plaine, Cherokee, Mason City, Spencer, Wolford and Garwin. From these, those that have gone on to receive HMA awards include Vinton and Oelwein. Cherokee has also received HMA assistance through Direct Technical Assistance of the Building Resilient Infrastructure and Communities program.

C. FEMA Hazard Mitigation Assistance

FEMA's Hazard Mitigation Assistance (HMA) grants include the Hazard Mitigation Grant Program (HMGP), the Pre-disaster Mitigation Grant Program (PDM), the Building Resilient Infrastructure and Communities (BRIC) grant, and the Flood Mitigation Assistance (FMA) grant.

The areas of hazard mitigation specifically supported by FEMA grant programs in Iowa include:

- Acquire, relocate, or elevate structures located in flood hazard areas
- Protect critical public facilities and important commercial and business areas
- Construct tornado safe rooms in public facilities and schools
- Support the development and adoption of local hazard mitigation plans and enhance the capability of communities for effective hazard analysis and risk assessment
- Educate and market hazard mitigation to Iowa citizens and to promote safer homes and safer more disaster resistant communities
- Utility system retrofits

Iowa's grant priorities have consistently targeted locally-identified projects to remove residential and commercial structures from flood hazard areas. Diligent attention is used in evaluating all funded projects to determine the likely economic benefit through use of benefit-cost analysis. Iowa's criteria for grant funding not only ensure that the greatest number of flooded homeowners are provided with assistance, but also prioritize funding to ensure the greatest benefit in avoided future damage.

One aspect of managing mitigation grants has been the leadership role that the mitigation staff plays in addressing long-term housing recovery needs in the aftermath of severe flooding. A benefit of acquiring and removing residential structures is that the proven cost effectiveness is enhanced by contributing to the effectiveness of the recovery process through quick and efficient delivery of community home acquisition and relocation projects. HMGP funding has been utilized to address flood impacted areas to nearly eliminate needs associated with short-term replacement housing, underinsured or uninsured housing, or home rehabilitation needs.

Protection of critical public facilities is one of Iowa's leading types of mitigation measures. A natural hazard event which disrupts or shuts down wastewater treatment systems, electrical generation facilities, and water treatment plants serves to magnify the effects of a disaster event and encompasses citizens and areas otherwise not directly impacted. Great benefit has been achieved by ensuring that critical public facilities are sufficiently protected from hazards and risks, oftentimes ensuring that the impacts of natural hazards do not become a disaster event.

The State of Iowa has demonstrated a substantial financial commitment to hazard mitigation. Following a presidentially-declared disaster, FEMA makes HMGP grants available to local governments. The HMA grants usually provide federal funding for only 75 percent of the cost of any post-disaster project. For quite some time, the State of Iowa has contributed another 10 percent toward the required 25 percent non-federal match for HMGP grants for any community that is in good standing with the NFIP. Since the last state hazard mitigation plan was written, the State of Iowa has also started providing 10% non-federal match for any project receiving BRIC, FMA or PDM funds.

In the past five years alone, HMA programs have brought over $80 million of federal money to the state to reduce impacts from future natural disasters, and on average in the past 15 years these programs have brought $28,343,554 annually (about $425 million in total). These figures exclude state and local contributions to projects under these programs, which are typically 25% of the cost. The following chart shows the number of projects and funding for each of the HMA programs in Iowa over the last five years.

HMA Projects in Iowa for Projects Obligated 2018-2022 (as of 4/5/2023)			
Program	**# Projects**	**Eligible Project $**	**Federal Project $**
All HMA Programs	202	$101,972,348	$80,710,159
BRIC	18	$1,621,523	$1,255,640
FMA	5	$409,155	$367,905
HMGP	157	$91,252,341	$72,492,801
PDM	22	$8,689,328	$6,593,813
Management Costs alone (all HMA programs)	50	$5,310,603	$5,198,288

The chart below provides details on mitigation projects funded through HMA in the last five years that have helped effectively advance mitigation actions from the 2018 *Iowa Hazard Mitigation Plan*. The chart also illustrates just how important these FEMA mitigation programs are to the State's comprehensive mitigation program.

Mitigation Action from 2018 Iowa Hazard Mitigation Strategy	Implementation Progress through Use of FEMA HMA 2018-2022
Increase number of wastewater lift stations that are elevated/protected.	Between 2018 and 2023, HSEMD awarded lift station projects for 2 cities (Cherokee and Sumner).
Acquire more flood-prone properties (with priority for repetitive loss and SRL properties) and convert to open space/green space, or elevate to at least one foot above base flood elevation.	From 2018-2022, 28 communities have been awarded HMA funding and acquired and converted to open space 326 floodplain properties. Of these, 16 were Repetitive Loss or Severe Repetitive Loss (according to either NFIP or FMA definitions).
Implement floodplain and streambank restoration/channel improvement projects that reduce peak flow during flood events.	City of Ames awarded 2018 PDM grant for project along Squaw Creek that reconnects channel to floodplain and includes restoration of natural stream and native vegetation.
Construct cost-effective small-scale flood protection (e.g. impervious manholes, pumps, backflow prevention) other than the other methods listed in these mitigation actions.	At least 3 such projects submitted under HMA, including ones for Cedar Rapids and Davenport (both LPDM) and one for Storm Lake (HMGP 4557).
Construct public safe rooms.	Two safe room projects awarded HMA funds (community college and a community school district). Another one will be awarded if and when there is verification that all EHP requirements are met.
Electrical utility retrofit/hardening (see REC Mitigation Plan in Annex)	Over $28 million has been obligated since 2018 for 20 electric retrofit or line strengthening projects that affect nearly 42,000 customers. As of April 2018, 6 other such projects awaiting obligation of HMA funds (over $34 million affecting 25,115 customers). Plus, two projects have been awarded a combined $576,000 to complete scoping for projects to increase electric resiliency.

Mitigation Action from 2018 Iowa Hazard Mitigation Strategy	Implementation Progress through Use of FEMA HMA 2018-2022
Use a comprehensive approach to address problems with water washing over or threatening public roads, and with public bridges and culverts that do not meet flow requirements. A comprehensive approach could simply mean elevation, replacement, or retrofit, OR it could be system-wide with a collection of projects/changes that might include green infrastructure, basins, and increased capacity of soil to retain water.	Washington County awarded PDM 2019 grant that would raise road. Bettendorf, Sumner and Ames also received HMA grants to address such road flooding. Cherokee and Riverton were both selected for BRIC Direct Technical Assistance to address problem of water washing over roads around their cities.
Purchase/install backup power generators.	In five-year period 2018-2022, obligated $2.4 million of HMA funds for generators for three County EOCs, four county roads shops, and for 26 cities, municipal utilities, or fire departments. (14 projects from 2022 awards, 6 from 2021, 4 from 2020, and 8 from 2018-19).
Establish systems necessary to issue warnings, alert officials and emergency personnel, and inform the public (e.g. sirens).	In five-year period 2018-2022, obligated $3.2 million of HMA funds for 40 warning siren projects.

D. FEMA Public Assistance Grants for Mitigation

Following a presidentially-declared disaster, FEMA makes Public Assistance (PA) Program grants available to local governments so communities can quickly respond to and recover from major disasters or emergencies. The PA grants usually provide federal funding for 75 percent of the cost of any post-disaster project. The other 25 percent must come from non-federal sources. Since 2011 the State of Iowa has contributed 10 percent toward the required 25 percent non-federal match for Public Assistance Program grants for any community that is in good standing with the NFIP. The grants may be used to cover costs for debris removal, life-saving emergency protective measures, and restoring damaged public infrastructure and facilities. FEMA encourages protecting these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process. These Public Assistance – Mitigation (PAM) projects are authorized through Section 406 of the Stafford Act, and are sometimes referred to as Section 406 mitigation measures. Section 406 is applied on the parts of a facility damaged by the disaster, and funding for the mitigation measure is meant to directly reduce the potential of future, similar disaster damages to the eligible facility.

Since the 2018 SHMP update, Iowa has identified PA Mitigation as an area for enhanced state involvement.

In December 2021, HSEMD created a PA Mitigation Specialist position to spearhead the state's improved use of PAM. This position is intended to identify and guide policies, procedures, and training that could improve staff and applicant understanding of PAM opportunities that exist. The mitigation specialist is expected to track and identify damages and projects that could include mitigation, advocate for applicants' mitigation projects, and coordinate mitigation efforts with FEMA Region VII staff. Finally, the mitigation specialist serves as a general point person for PAM issues and as a liaison between HSEMD's Mitigation and PA bureaus.

While this position is still fairly new, progress has been made in the areas of tracking, advocating for, and coordinating mitigation projects and creating procedures and training. The HSEMD PA Bureau has, over

the past year, greatly expanded its training and support materials for staff, including for issues about PAM. The result is an improved understanding among staff of PAM policies and opportunities. The PA mitigation specialist position has not been in place long enough to determine its effectiveness numerically, but this is being tracked by the PA Bureau. Thus far, only one PA disaster has been declared since the position's inception.

Opportunities for PA mitigation are generally greatest among more populous jurisdictions with greater resources for disaster recovery. These applicants are generally better able to afford an increased cost of recovery that includes mitigation, who can better afford a potential delay in receipt of funds while mitigation is developed, and who have staffing capacity to identify and consider mitigation options. These also tend to be the applicants that need the least support from the state in identifying opportunities and preparing mitigation proposals.

Equity considerations would encourage a greater emphasis on supporting communities with less capacity or access to disaster recovery resources. This support may come in the form of outreach to applicants to improve public awareness of mitigation and funding opportunities (including targeted outreach during both "peacetime" and active recovery), raised attention from PA field delivery staff and the PA Mitigation Specialist to damages received in smaller communities, and success metrics that account for equity.

As part of HSEMD's increased attention to diversity, equity, and inclusion, the PA Bureau is in the process of developing outreach to non-governmental organizations to improve communities' awareness and understanding of the PA program. Mitigation is an essential part of this outreach, as many of the communities most vulnerable socioeconomically also live in areas that are most vulnerable to natural hazards.

Continued partnership and communication between HSEMD and FEMA will help to provide Iowa communities with every opportunity to take advantage of the PA mitigation program. By maintaining direct contacts between state and federal mitigation teams, this partnership has helped identify areas for improvement or clarification, including how to include mitigation in disaster recovery when the damage is repaired almost immediately, before PA mitigation funding becomes available.

Barriers to enhancing Iowa's use of PA mitigation are manifold. Communities may lack awareness or capacity. When a disaster strikes unexpectedly, not all communities have the financial flexibility to cover mitigation local cost shares and potentially delay funding while mitigation projects are developed. When a facility is damaged, communities do not often have plans for how they would improve its resiliency, or may be unaware of what opportunities exist to do so. They may also lack the staff to manage recovery and the added complexity of mitigation. The PA program offers coverage of the local cost of administering PA grants (Category Z work), but this process is often burdensome for applicants, and some that have used it in the past forgo it in subsequent disasters – the reward is not worth the effort for them. Even if the administrative funding process was simplified, rural communities may still face a lack of available labor to fill the need. Finally, when changing the size, location, capacity, or materials of a damaged facility (as often occurs with PA mitigation), applicants are also required to supply information that may either not exist or would be too costly to produce, discouraging their use of mitigation. Examples include hydrologic and hydraulic studies, environmental studies, or archaeological surveys.

The burden of removing these barriers largely falls to FEMA and the state. Policy changes may be able to help with funding shortfalls, hesitancy to use complicated processes, or burdensome requirements. Staff training and attention may help FEMA and HSEMD field delivery staff offer mitigation solutions, suggest supplemental funding sources, and provide guidance through the PA mitigation process. With increased

attention on mitigation at the federal, regional, & state level; with FEMA Region VII building regional mitigation staffing; and with HSEMD staffing and training improvements; it is hopeful that Iowa will see improvements in delivery and outcomes for the PA mitigation program.

Data on PAM 2018-2022

Under federally-declared disasters between August 2018 and September 2022, there were a total of 2,843 projects in PA (DR-4483, COVID-19, was excluded from this calculation, since PA mitigation was generally not eligible under this disaster declaration). Not all projects have been obligated or carried out yet. These projects are spread among five disasters declared in Iowa: DR-4386 (severe storms, tornadoes, straight-line winds, flooding), DR-4392 (severe storms and tornadoes), DR-4421 (severe storms and flooding), DR-4557 (severe storms), and DR-4642 (severe storms, straight-line winds, and tornadoes). This number includes both recipient projects (i.e. those submitted by Iowa HSEMD itself) and subrecipient projects.

In PA, projects eligible for mitigation funding are only "permanent work" projects, or in other words projects in categories C, D, E, F, and G (category C is roads and bridges, D is water control facilities, E is public buildings and equipment, F is public utilities, G is parks, recreational, and other facilities). Those projects in categories Z (administrative), A (debris removal), and B (emergency protective measures) are excluded from eligibility for mitigation, leaving a new total of 1411 projects potentially eligible for mitigation. Of these, 1180 were not marked as having mitigation, leaving just 231. Of these 231, 16 have not been signed, and thus were not yet obligated, leaving 215 mitigation projects.

Of the 215 PA mitigation proposals, 22 had costs noted as either zero or a negative number (indicating that the mitigation proposal cost less than the cost to repair to pre-disaster condition). Excluding these, the other 193 mitigation proposals cost a total of $11,949,223.48 (ranging from $190 to $1,778,067, with a median cost of $9,573).

The total cost of all 2,843 PA projects mentioned above (from disasters declared August 2018 through 2022, excepting COVID) is $494,992,985 ("best available cost" per FEMA Grants Portal). However, this figure includes projects not yet obligated or fully developed, and projects not eligible for mitigation (Categories A, B, and Z). Subtracting ineligible categories, the total cost of PA projects from 2018 to 2022 is $251,495,234 (across 1411 projects). Further subtracting the cost of projects not yet signed, the total cost is $236,489,633 (across 1359 projects).

PA Mitigation, as a percentage of total PA costs in Iowa is as little as 2.4% of total PA costs. However, as a percentage of costs for obligated PA projects that could theoretically have included mitigation, the total was 5.1%.

Some 95 of the projects not marked as having mitigation did have locally-adopted or consensus-based codes that required changes or upgrades to the pre-disaster condition of the facility(s). Seven of these projects have not been signed, so only 88 can be said to have been obligated.

So far, 215 of 1411 mitigation-eligible projects have utilized mitigation (15.2%). If codes- and standards-based upgrades and changes are included, this becomes 21.5%. Including codes and standards may not accurately represent the efforts of HSEMD and FEMA, however, since these changes ought to have happened with or without PA/HMA intervention. Projects that include codes and standards but not specifically including mitigation are not accounted for in the adjoining data table. The table shows the PA-Mitigation costs for each county for the period 2018-2022 (project type costs are also shown for each county).

County (and Category for each county)	**Total Section 406 HMP Cost**	
Adams County	**$**	**11,796**
C - Roads and Bridges	$	6,904
E - Buildings and Equipment	$	4,893
Boone County	**$**	**5,638**
C - Roads and Bridges	$	5,638
Buchanan County	**$**	**74,204**
C - Roads and Bridges	$	3,950
G - Parks, Recreational Facilities, Other Items	$	70,254
Buena Vista County	**$**	**5,423**
C - Roads and Bridges	$	2,988
G - Parks, Recreational Facilities, Other Items	$	2,435
Cass County	**$**	**22,293**
C - Roads and Bridges	$	3,180
F - Utilities	$	2,971
G - Parks, Recreational Facilities, Other Items	$	16,142
Cherokee County	**$**	**102,854**
C - Roads and Bridges	$	9,945
D - Water Control Facilities	$	41,150
F - Utilities	$	51,759
Clay County	**$**	**144,922**
F - Utilities	$	49,231
G - Parks, Recreational Facilities, Other Items	$	95,691
Clinton County	**$**	**45,769**
C - Roads and Bridges	$	23,541
F - Utilities	$	3,770
G - Parks, Recreational Facilities, Other Items	$	18,459
Crawford County	**$**	**5,501**
D - Water Control Facilities	$	5,501
Dallas County	**$**	**38,004**
C - Roads and Bridges	$	8,045
D - Water Control Facilities	$	14,900
G - Parks, Recreational Facilities, Other Items	$	15,059
Des Moines County	**$**	**102,648**
C - Roads and Bridges	$	10,298
D - Water Control Facilities	$	92,350
Douglas County	**$**	**50,402**
G - Parks, Recreational Facilities, Other Items	$	50,402
Franklin County	**$**	**1,847**
F - Utilities	$	1,847

County (and Category for each county)	**Total Section 406 HMP Cost**	
Fremont County	**$**	**329,215**
C - Roads and Bridges	$	6,516
D - Water Control Facilities	$	45,920
E - Buildings and Equipment	$	121,835
F - Utilities	$	149,140
G - Parks, Recreational Facilities, Other Items	$	5,804
Greene County	**$**	**148,000**
G - Parks, Recreational Facilities, Other Items	$	148,000
Guthrie County	**$**	**99,614**
C - Roads and Bridges	$	22,814
D - Water Control Facilities	$	76,800
Hamilton County	**$**	**71,536**
C - Roads and Bridges	$	71,536
Hancock County	**$**	**4,000**
F - Utilities	$	4,000
Harrison County	**$**	**4,138,277**
C - Roads and Bridges	$	737,762
D - Water Control Facilities	$	3,400,515
Henry County	**$**	**81,480**
Humboldt County	**$**	**54,284**
D - Water Control Facilities	$	32,614
G - Parks, Recreational Facilities, Other Items	$	21,670
Ida County	**$**	**55,279**
C - Roads and Bridges	$	39,966
D - Water Control Facilities	$	7,356
G - Parks, Recreational Facilities, Other Items	$	7,957
Jasper County	**$**	**118,888**
D - Water Control Facilities	$	99,960
E - Buildings and Equipment	$	-
G - Parks, Recreational Facilities, Other Items	$	18,928
Keokuk County	**$**	**55,138**
C - Roads and Bridges	$	55,138
Kossuth County	**$**	**3,386**
D - Water Control Facilities	$	3,386
Linn County	**$**	**128,517**
C - Roads and Bridges	$	4,725
E - Buildings and Equipment	$	116,800
G - Parks, Recreational Facilities, Other Items	$	6,992
Louisa County	**$**	**162,279**
C - Roads and Bridges	$	141,193
G - Parks, Recreational Facilities, Other Items	$	21,086

County (and Category for each county)	**Total Section 406 HMP Cost**	
Lucas County	**$**	**2,503**
C - Roads and Bridges	$	2,503
Lyon County	**$**	**40,811**
C - Roads and Bridges	$	40,811
Mills County	**$**	**379,605**
C - Roads and Bridges	$	32,817
D - Water Control Facilities	$	137,400
E - Buildings and Equipment	$	149,388
G - Parks, Recreational Facilities, Other Items	$	60,000
Mitchell County	**$**	**3,966**
G - Parks, Recreational Facilities, Other Items	$	3,966
Monona County	**$**	**176,977**
C - Roads and Bridges	$	176,977
Monroe County	**$**	**12,682**
C - Roads and Bridges	$	12,682
Muscatine County	**$**	**41,350**
E - Buildings and Equipment	$	4,350
G - Parks, Recreational Facilities, Other Items	$	37,000
O'Brien County	**$**	**188,327**
D - Water Control Facilities	$	24,327
F - Utilities	$	164,000
Page County	**$**	**4,143**
D - Water Control Facilities	$	4,143
Palo Alto County	**$**	**199,444**
D - Water Control Facilities	$	199,444
Plymouth County	**$**	**12,518**
D - Water Control Facilities	$	12,091
Pocahontas County	**$**	**18,770**
D - Water Control Facilities	$	18,770
Polk County	**$**	**543,825**
C - Roads and Bridges	$	29,985
D - Water Control Facilities	$	6,595
E - Buildings and Equipment	$	22,235
G - Parks, Recreational Facilities, Other Items	$	485,011
Pottawattamie County	**$**	**2,216,582**
C - Roads and Bridges	$	69,417
D - Water Control Facilities	$	1,784,043
F - Utilities	$	159,822
G - Parks, Recreational Facilities, Other Items	$	203,300

County (and Category for each county)	**Total Section 406 HMP Cost**	
Poweshiek County	**$**	**27,055**
C - Roads and Bridges	$	-
F - Utilities	$	27,055
Ringgold County	**$**	**80,562**
C - Roads and Bridges	$	80,562
Sac County	**$**	**2,780**
C - Roads and Bridges	$	2,780
Scott County	**$**	**12,606**
C - Roads and Bridges	$	12,606
Shelby County	**$**	**11,152**
C - Roads and Bridges	$	3,249
D - Water Control Facilities	$	7,903
Sioux County	**$**	**60,080**
C - Roads and Bridges	$	21,421
G - Parks, Recreational Facilities, Other Items	$	38,659
Story County	**$**	**10,145**
E - Buildings and Equipment	$	8,308
G - Parks, Recreational Facilities, Other Items	$	1,837
Tama County	**$**	**17,614**
C - Roads and Bridges	$	3,725
D - Water Control Facilities	$	12,000
F - Utilities	$	1,889
Union County	**$**	**64,903**
C - Roads and Bridges	$	64,903
Wapello County	**$**	**42,039**
C - Roads and Bridges	$	9,141
F - Utilities	$	32,898
Wayne County	**$**	**12,986**
C - Roads and Bridges	$	12,986
Webster County	**$**	**185,162**
C - Roads and Bridges	$	182,075
E - Buildings and Equipment	$	3,087
Winneshiek County	**$**	**35,994**
D - Water Control Facilities	$	1,121
G - Parks, Recreational Facilities, Other Items	$	34,872
Woodbury County	**$**	**1,412,887**
C - Roads and Bridges	$	180,991
D - Water Control Facilities	$	1,202,746
G - Parks, Recreational Facilities, Other Items	$	29,150

Dividing the costs of PAM between counties, one finds the counties with the greatest amounts well-spread throughout the state, but concentrated around population centers and along the two major rivers

(where much of the flood damage in DR-4421 occurred in 2019). A total of 65 counties included mitigation in PA projects, some of which are skewed in their total mitigation costs by outliers (e.g. million-dollar mitigation projects in Harrison county or least-cost projects that appear negative in Poweshiek, Iowa, and Wright counties). In the case of Harrison county, at least, this is still fairly accurate, as they would be ranked third even without any million-dollar projects.

E. Emergency Management Performance Grant (EMPG)

Of the several projects that the State uses EMPG to fund, one of them supports various efforts within the Recovery Division of HSEMD. In addition to development and implementation of the State's hazard mitigation plan, this project includes continuity of operations planning and exercise efforts, coordination of mitigation efforts related to the Silver Jackets, and development and exercise of the State's recovery plan. Continuity of operations planning and exercise ties to Goal Four of the *Iowa Hazard Mitigation Plan* strategy. The involvement of the Silver Jackets and the State is described in much more detail in section 5.2.3.

For the several years, the State has engaged in exercises to test recovery plans. These exercises started at a state level in 2017, and have now moved to state facilitation of local (county-wide) exercises. These exercises, while focused on recovery, very often include mitigation. For instance, when exercising the Housing Recovery Support Function (RSF) of the recovery plan, much discussion involves building or rebuilding housing for people impacted by disaster. Rebuilding housing is an opportunity to mitigate future disaster impacts on that housing, and therefore deeply involves mitigation programs and staff. Exercises of other RSFs have also touched the mitigation realm, and such exercises have provided a great opportunity for HSEMD staff to engage with representatives of local and state agencies on hazard mitigation efforts. With support from EMPG, HSEMD staff will continue to participate in the exercise and development of recovery plans as they integrate and strengthen the state's hazard mitigation capability.

F. Dam Safety Program

The Iowa Department of Natural Resources is responsible for the State's dam safety program. The program involves the review and approval for the construction of new dams, maintaining an inventory of existing dams of a minimum size, and the periodic inspection of certain dams. Currently there are approximately 4000 dams on the State's dam inventory. The inventory is available online at Iowa Online Dam Inventory, through a link at the webpage of the Iowa Dam Safety Program (see https://www.iowadnr.gov/Environmental-Protection/Land-Quality/Dam-Safety).

Dams that have the potential to create extensive damage to downstream houses or buildings, or to cause loss of life should they fail and release their impounded water, are required to be regularly inspected. There are currently about 320 dams that require regular inspection either on a two- or five-year inspection frequency.

Permits may be required to construct a dam, modify an existing dam, drawdown the water level, or remove a dam. The Permit Application Process in Iowa is described online. More information on the classification of dams in the state is described in the Section 3 subsection on dams and levees.

Staff from the Iowa DNR's Dam Safety Program have been involved with the development of the update of the 2023 Hazard Mitigation Plan throughout the entire planning process. The manager over both the Dam Safety Program and Flood Plain Management staff is a member of Iowa Silver Jackets, and attends

over 80% of the meetings. Much communication occurred between him and HSEMD staff in the process of analyzing the risks of high hazard potential dams. He and his staff provided data and analysis, and access to DNR's dam inventory. Data that has been provided include a complete list of all dams regulated by the state. Information provided about each dam has included location, population at risk (if currently known), inundation maps (if available), and inspection reports.

The DNR Dam Safety Program staff also contributed much input regarding what is currently being done to improve our understanding of dam risks, what will be done, and what actions should be added to the Iowa Hazard Mitigation Plan. They have their own plans for addressing high hazard potential dams and those plans have been shared freely with Iowa HSEMD so that planning efforts integrate seamlessly. They recognize a great need for dam owners to develop emergency action plans (EAP) for their dams. The development of EAPs is one of the mitigation actions listed in this strategy in section 5.5.

The state's Dam Safety Program got a recent boost in 2021 when new regulations became effective that require owners of all high hazard dams to have an approved EAP on file with the Iowa DNR. Also, the Program received grant funding that they are using to contract out a screening level risk assessment for 27 of the state's high hazard dams, (based primarily on age). This study will identify probable failure modes of the dams with potential consequences. This analysis will determine if additional studies are required for each dam to determine if potential rehabilitation is required for any unacceptable risks. They will be coming up with a population at risk number for each dam as well.

G. Community Assistance Program

The DNR's Floodplain Management and Dam Safety Bureau oversees the Community Assistance Program State Support Services Element. In the last three years (July 1, 2020 through June 30, 2023), the bureau's staff have made 8 Community Assessment Visits (CAVs). The CAV is a visit to a community by staff of a State agency on behalf of FEMA that serves the dual purpose of providing technical assistance to the community and assuring that the community is adequately enforcing its floodplain management regulations. In addition to the CAVs, bureau staff have made 78 Community Assistance Contacts (CACs), which is a type of engagement which allows FEMA state partners to determine a community's level of compliance with the NFIP's minimum requirements and support needed for communities who are experiencing problems or issues related to floodplain management. Bureau staff have also conducted 21 Consultation Coordination Officer (CCO) meetings. These CCO meetings are held with community officials and select stakeholders for Flood Risk Projects under FEMA's Risk MAP program. The Consultation Coordination Officer (CCO) meeting focuses on the release of the preliminary version of the FIRM and FIS Report and the processes for reviewing and adopting the FIRM. In total, over the last three years the bureau has contacted or engaged with 734 communities in regards to providing some level of technical assistance.

H. NEHRP, FMAG and HMGP Post Fire

The State of Iowa has not had occasion yet to utilize the National Earthquake Hazards Reduction Program (NEHRP), the Fire Management Assistance Grant (FMAG) Program, or HMGP Post Fire. As described in the hazard profiles for Earthquake and Wildfire in Chapter 3, the risk from these hazards is not as great as what is seen in other states, and certainly the estimated annual damages from these hazards is not as great as other hazards in Iowa.

Nonetheless, the state has come close to seeking assistance through the FMAG program. In the past year a wildfire near the borders of Nebraska and Iowa threatened to expand. This event and others have

prompted the state to be prepared to administer FMAG grants in the state. HSEMD has drafted a FEMA-State Agreement (FSA) for the Fire Management Assistance Grant (FMAG) Program. It is nearly ready to go should there be another significant wildfire that warrants it. The state has been discussing an FMAG administrative plan in order to be prepared for such an incident.

5.2.3. Use of Other (non-FEMA) Programs and Initiatives to Advance Hazard Mitigation and Resilience

A. State Legislation and Codes

1. Building Codes

In 2015 the Iowa General Assembly passed legislation that adopted a State building code (currently the 2015 International Building Code, with minor modifications). Adoption of the building code realized the accomplishment of one previous mitigation action and part of another from past state Hazard Mitigation Plans. The first listed mitigation action from that 2013 Plan called for promoting legislation and building codes that regulate construction and decrease risk. Another mitigation action on the list sought to increase shelter standards. Both of these came to fruition when the General Assembly adopted the State Building Code. The legislation makes the building code applicable to all Iowa cities with a population of 15,000 or more that have not adopted a local building code substantially in accord with the standards of a national building code organization. In addition, the State building code becomes applicable to any jurisdiction (county or city with less than 15,000) that has an ordinance passed accepting the application of the code. More than half of the population of Iowa is covered by a local building code.

Adoption, promotion, and enforcement of the Building Code would not be possible without the involvement of the State Fire Marshall and the Building Code Bureau, who were managed by the State Fire Marshall until July 2023. The Building Code Bureau ensures code requirements are met for many buildings, even in cities that do not have a building code. That is because the State Code also requires state buildings and many other public buildings, like schools, to be built according to the building code. The following is a list of the types of buildings, regardless of whether the local jurisdiction in which they are located has a code, that must adhere to either the State Building Code (primarily based on the series of 2015 International Building Codes) or a more recent and stricter building code of a local jurisdiction:

- Any facility housing an adult day service
- Any assisted living facility
- Any residential care facility
- Any elder group home
- Any facility owned by the state or an agency of the state.
- Any new building that has state funding
- Any licensed healthcare facility listed under 661-Chapter 205
- Any educational building or facility serving kindergarten through twelfth grade
- Any college or university building or facility
- Any child care facility intended to serve seven or more children at one time
- Any correctional facility
- Any gaming facility

The State Fire Marshall was involved throughout the process of updating this state Hazard Mitigation Plan. HSEMD staff also consults with him to coordinate efforts on reaching out to and encouraging local jurisdictions to adopt codes and standards to protect buildings and make them more resilient in the face of natural hazards. Our staff has begun an effort to expand such outreach, and such efforts have been

integrated with the State Fire Marshall who understand the codes and the issues surrounding getting them adopted locally and statewide.

2. State Funding for Hazard Mitigation

A recent change in the Iowa Code now provides for the State to contribute 10% of the cost of mitigation planning or a mitigation project for projects that are awarded federal funds through the FEMA HMA grant programs (Building Resilient Infrastructure and Communities, Hazard Mitigation Grant Program, and the Flood Mitigation Assistance Program). This funding shows the commitment of the state to hazard mitigation, and greatly helps jurisdictions in that they only need to come up with 15% of the non-federal match (as opposed to 25% without the state's contribution).

3. Levee Safety Office and Levee Improvement Program

Recognizing the frequency and impact of flooding, the Iowa General Assembly first adopted statutes describing and defining drainage districts in the late 1800s. However, because of the increased frequency and magnitude of flooding, the state has made a commitment to undertake an examination of our levee systems. On June 8, 2021, Governor Kim Reynolds approved House File 861, in which funds were appropriated to the Department of Homeland Security and Emergency Management (HSEMD) to conduct a statewide levee districts study. The *Iowa Statewide Levee Districts Study* was completed and presented to the state legislature in December 2022.

The *Study* recommended that "the General Assembly authorize additional funding to continue development of the inventory" that would include validating the information found in the National Levee Database. The *Study* also advised consideration of the following when developing a more complete inventory:

- Prioritize levees where owners have volunteered to participate in inspections and assessments
- Ensure levee owners understand the information collected, potential uses, and how they can revise or manage the information

The *Study* also recommended establishing a levee monitoring program and a state levee safety program, as described in the following three excerpts from the *Study*:

> The General Assembly should consider the establishment of a statewide levee-monitoring program as part of a state levee safety program. The intent of the monitoring program is to identify levee systems in danger of structural failure and provide the financial assistance needed to prevent that failure. This would be achieved by monitoring USACE inspection reports, maintaining communication with levee sponsors and USACE, as well as requiring the submission of annual reports.[1]
>
> As part of the legislation for the National Levee Safety Program, Congress envisions that state levee safety programs would adopt and implement consistent national levee safety program practices; be able to help receive federal assistance in support of levee safety; carry out public education activities to improve awareness of flood risk; and collect and share levee information using the National Levee Database. In addition, there is opportunity for state levee safety programs to: help build capacity in levee owner/operators to inspect, assess, repair and rehabilitate levees; collaborate across programmatic and political jurisdictions to ensure all levees have adequate oversight; and apply

[1] *Iowa Statewide Levee Districts Study*, December 2022. page 52

> services in a fair and equitable way across the landscape with special attention to disadvantaged communities, tribes, and individuals particularly vulnerable to flooding.[2]
>
> A state department or agency responsible for the state levee safety program would be positioned to take a holistic approach to flood mitigation efforts across the state and develop a strategic plan for building, maintaining and rehabilitating levees across the state. The responsible agency would be positioned to coordinate or synchronize statewide flood mitigation efforts"[3]

In 2023 the Iowa Legislature acted upon these recommendations. Legislation was passed in early 2023 to create and fund an Iowa Levee Safety Office to be housed in the Department of Homeland Security and Emergency Management (HSEMD). Among other things, the legislation directs the Levee Safety Office, in cooperation with the Iowa Geological Survey, to conduct a statewide analysis of the condition of the state's levees. Based on such analysis, the Office and Survey are then to "identify each levee requiring repair or reconstruction based on a scale adopted by the Office which assigns a number based on the levee's critical need." [4] The legislation directs HSEMD's Levee Office to use such information to prepare a statewide levee assessment report and submit it to the governor and general assembly by January 5 of each year.[5]

4. Dam Safety Program and Office

Until recently, Iowa was one of the few states that did not have the authority to require a dam owner of a high hazard potential dam (HHPD) to prepare an Emergency Action Plan (EAP). Fortunately, Iowa regulations have changed since the last update of the Iowa Hazard Mitigation Plan and now High Hazard dams must develop an EAP. It is very important that HHPDs have EAPs as it has "long been established that having an EAP reduces the potential for loss of life downstream of dams"[6]. The EAP accomplishes three important objectives:

1. Identifies the area below the dam that would be flooded from a failure,

2. Establishes lines of communication for the dam owner and emergency response personnel, and

3. Provides for warnings and evacuations to be conducted by police, fire, and rescue teams.

As of 2023, about two-thirds of the HHPDs have EAPs. But, now that EAPs have become a requirement, the expectation is that dam owners and the local communities in which they reside will become more capable to address the risks of the dams. The new requirements state that an EAP must include:

a. A statement of purpose;
b. A project description;
c. An emergency response process;
d. An emergency notification plan with flowchart;
e. Responsibilities of all parties;
f. A list of emergency preparedness and plan maintenance activities; and
g. Inundation maps or another acceptable description of the inundated area.

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[2] Ibid. pages 23-24
[3] Ibid. page 48
[4] Iowa Code 418A.4
[5] Iowa Code 418A.6
[6] From page 9 of Iowa DNR's *Maintenance Manual for Dam Owners* found at https://www.iowadnr.gov/Portals/idnr/uploads/water/dams/dams_manual.pdf

In addition, the new requirements, which became effective in October 2021, stipulate that the EAP must be updated regularly by verifying contact information in the plan at least once a year, and exercising the plan at least every five years. The owner of the dam shall keep an up-to-date copy of the emergency action plan on file with the DNR and with the local county emergency manager.

Several resources are available to help dam owners develop EAPs. The USACE has helped develop EAPs and inundation mapping for about one HHPD each year. An EAP was recently completed by them for the Virden Creek Dam in the Waterloo area. This next year they will be helping update EAPs for a series of dams along Bacon Creek in the Sioux City area. Iowa DNR's Levee Safety Program was also involved with those efforts, and they have pursued funding and resources to help other dam owners create or update EAPs for HHPDs. Thus, all HHPDs are expected to have EAPs within the next five years.

5. Other Flood Mitigation

The Iowa General Assembly passed legislation in 2012 to create a flood mitigation program and the Iowa Flood Mitigation Board to oversee the program[7]. This program allows certain governmental entities to submit flood mitigation projects to the board for review and possible approval for funding. The funding for this program comes from funds appropriated by the general assembly or by sales tax increment. The sales tax increment consists of the amount of increased sales tax revenue within the jurisdictional boundaries of the governmental entity receiving approval from the Flood Mitigation Board to participate. The Iowa Department of Revenue works with the governmental entity to establish a base year, and in subsequent years, deposits those sales tax revenues that exceed the base year revenues into a separate account maintained by the State treasurer. By law, only 70 percent of the increment revenue can be deposited into this account, with the remainder going to the State general fund. Funds placed into the account are then made available to the participating governmental entities to support their flood mitigation projects.

The funding made available each year cannot exceed $30 million in total for all governmental entities, with no more than $15 million going to a single entity. Entities participating in this program include the City of Des Moines and Metropolitan Wastewater Reclamation Authority and the cities of Burlington, Cedar Falls, Cedar Rapids, Council Bluffs, Dubuque, Iowa City, Coralville, Storm Lake, and Waverly. Their combined projects are projected to utilize the annual $30 million maximum until 2034.

B. Partnership Efforts and Coordinating Councils and Teams

1. Iowa Storm Water Management Manual

The Iowa Storm Water Management Manual has been developed by a team representing cities, State and federal agencies, and academic and research professionals from colleges and universities. The manual, found on a DNR website, provides information on hydrologic changes with urban development, uniform sizing criteria, and low-impact development alternatives and design guidelines for practices that protect water quality and reduce stream corridor erosion.

The manual has been successful in providing a guide for local ordinances to control storm water. It is a model that provides minimum standards that go beyond the basic NFIP requirements. It is continually updated with the latest best practices and updated guidance for local jurisdictions. Currently, it is

[7] **Iowa Code, Chapter 418**

undergoing an update through a project partially funded with FEMA BRIC funds. The project also includes outreach activities so that more cities will become familiar with the templates and tools in the manual that they could use in city ordinances and processes to better control storm water and thereby prevent and mitigate future flooding.

2. State Hazard Mitigation Team and Iowa Flood Risk Management Team (Silver Jackets)

Iowa's State Hazard Mitigation Team was created in 1998 by Executive Order (EO) 62 of the governor. The SHMT is given certain responsibilities in EO 62[8], including:

A. Determine the capabilities of each State agency to address various hazards, including the legal authority of each agency and the programs and funding sources available to address mitigation activities;
B. Provide assistance in developing, implementing and updating the State multi-hazard mitigation plan;
C. Coordinate activities of State agencies to reduce the loss of life and property, and costs of disaster; and
D. Recommend methods to improve mitigation activities of State agencies, local governments, federal government, and private industry

In 2011, the Iowa Flood Risk Management Team was created. Its charter was revised in 2015, after which several additional partners joined the team. The Team is more commonly referred to as the "Iowa Silver Jackets". The term "Silver Jackets" is a little strange, and people wonder what that has to do with flooding. Someone on the Team decided it was an acronym for "State and Interagency partners Lowering Vulnerability and Easing Risks through Joint Actions to Control and Keep Excess runoff from Topping Streambanks and floodplains." That is a pretty good description of what S.I.L.V.E.R. J.A.C.K.E.T.S. is all about.

As Silver Jackets was chartered to do many of the EO 62 activities, listed above, for flood hazards, the SHMT and Silver Jackets agreed to have the Silver Jackets assist the SHMT with those functions as they pertain to the flooding hazard. Rather than cover flood hazard issues in both meetings, the SHMT largely leaves to the Silver Jackets the discussion of particulars relating to flood mitigation issues. The SHMT meeting receives a brief report of the Silver Jackets activities and then can spend the rest of their meeting time on other hazards or items more general in nature. This arrangement has improved coordination while decreasing duplication.

At their meeting, the Silver Jackets do the following that previously would have been done by the SHMT for flooding:

- Report/evaluate progress on flood mitigation actions and projects
- Identify implementation issues
- Provide briefings on updates

The Silver Jackets is well positioned to coordinate and work with the SHMT to mitigate flood impacts because of all the knowledge and expertise of the partners and the resources they can bring to the table. Agencies participating in the Iowa Silver Jackets include HSEMD, DNR, IEDA, USACE (including St. Paul, Omaha, and Rock Island Districts), USDA NRCS, NOAA National Weather Service, USGS Iowa Water Science Center, Iowa Flood Center at the University of Iowa, and the Iowa Floodplain and Stormwater Management Association.

The Iowa Silver Jackets has pursued more than twenty projects. Descriptions of two of them are provided below:

[8] See http://publications.iowa.gov/3954/1/Executive_Order_Number_Sixty_-_Two.pdf for entire text of Executive Order 62.

Watershed Approach to Reducing Flooding

This project builds off research and work of the six-year Iowa Watershed Approach project, recently concluded (see http://iowawatershedapproach.iowa.gov/). A watershed approach to flood reduction is one in which practices or structures are installed upstream from a flood-prone area so that floodwaters either soak into the soil (i.e. infiltration), or are slowed down or held back (detention, storage or diversion). Where it works, the benefits of watershed approach flood reduction include:

- Reducing losses from flood damage
- Lowering flood elevations not only at the flood-prone area of focus, but also additional flood-prone areas further downstream
- Improving water quality, wildlife habitat and soil health (depending upon specific methods used)

These are some great benefits, but these benefits are only reaped where certain factors align. A few key factors are important in determining where watershed approach practices could most likely result in flood reduction, including:

1. The greater the dollar damage at the flood impact area, the more opportunity there is for reducing potential dollar losses.
2. The smaller the watershed above a flood impact area, the fewer watershed approach practices are needed to realize a reduction in flood levels.

Recently, HSEMD completed state-wide analysis showing areas with the greatest potential dollar damage, which addresses the first factor above. The next step is to find out how those impact areas align with watershed boundaries, and to discover the size of those watersheds and other important factors, such as the runoff potential of the watershed area. The project will take a look these factors and identify the areas that have the greatest **P**otential **O**f using a **W**atershed **A**pproach to **R**educe **Floods**, or **POWAR Floods** Ratio.

Once POWAR Floods ratios are calculated for areas throughout the state, Silver Jackets member agencies will share the results with the communities with whom they have contact. Such information will help them better understand their options and prospects for flood mitigation.

Iowa Flood Risk Data Inventory

The Iowa Flood Risk Data Inventory compiles federal and State agency flood risk models and metadata into a single easily-accessible source. Using the IFIS platform, interagency stream model repository enables statewide ability to quickly access the availability of flood risk models. The geospatial inventory map identifies stream reaches that extend through multiple communities. For each model, the posted information includes:

1) Stream name and site description;
2) Type of model (hydrologic, hydraulic 1D, 2D); and,
3) Agency name, point-of-contact, date of model data and model properties.

The inventory interagency team has established model documentation and review criteria to ensure only technically-appropriate models are included in the inventory. By maintaining an up-to-date Iowa Flood Risk Data Inventory, all governmental participating partners benefit from sharing the responsibility of posting recently-completed model metadata to the IFIS platform. This site identifies models that can be leveraged in a timely manner for additional applications, analysis, and expedited flood risk response.

3. Water Resources Coordinating Council (WRCC)

The WRCC's purpose is to preserve and protect Iowa's water resources, and coordinate the management of those resources in a sustainable and fiscally responsible manner. As directed in statute, the WRCC is to use an integrated approach to overcome old categories, labels, and obstacles, with the primary goal of managing the State's water resources comprehensively rather than compartmentally. The authorizing legislation also directs the WRCC to develop recommendations for policies and funding, and to promote a watershed management approach to reduce the adverse impact of future flooding on the state's residents, businesses, and communities. It is also to promote the improvement of soil and water quality. The council is directed to consider policies and funding options for various strategies including, but not limited to: additional floodplain regulation; wetland protection, restoration, and construction; the promulgation and implementation of statewide storm water management standards; conservation easements and other land management; perennial ground cover and other agricultural conservation practices; pervious pavement, bioswales, and other urban conservation practices; and permanent or temporary water retention structures.

The WRCC is headed by IDALS. Other members include representatives from the DNR, IDPH, HSEMD, Iowa State University College of Agriculture, University of Iowa College of Public Health, University of Iowa College of Engineering, University of Northern Iowa College of Natural Sciences, DOT, IEDA, and the Iowa Finance Authority. Others invited to attend WRCC meetings include representatives from USACE, EPA, USDA (NRCS, Rural Development, and Farm Services agencies) and USGS Iowa Water Science Center.

4. Watershed Management Authority (WMA)

Since 2010, Iowa law has authorized the creation of WMAs, a mechanism for cities, counties, soil and water conservation districts and other stakeholders to cooperatively engage in watershed planning and management. A watershed management authority may assess and reduce flood risk, assess and improve water quality, monitor federal flood-risk planning and activities, educate residents of the watershed regarding flood risks and water quality, and allocate moneys made available to the authority for purposes of water quality and flood mitigation. The Iowa Watershed Approach is implemented through WMAs in Iowa. Where a WMA was not already organized, State partners involved in the IWA have helped local entities organize and create a watershed management authority. Thus, WMAs have been created for the East Nishnabotna, West Nishnabotna, and North Raccoon River watersheds. Other watersheds that already had WMAs prior to becoming involved in the IWA include the Upper Iowa, Upper Wapsipinicon, Middle Cedar, Clear Creek, and English River. With such structures in place, it is hoped that the local entities and WMAs can work together to develop a watershed plan and implement actions that will reduce flooding and improve water quality in their respective watersheds.

5. Iowa Flood Center (IFC)

The Iowa Flood Center at the University of Iowa is the nation's only academic research center devoted solely to flooding. Created in 2009 by the Iowa General Assembly in the aftermath of the devastating flood of 2008, IFC is a valuable resource for a variety of information and tools that help Iowans prepare for and avoid flood damage. The general assembly has provided annual funding to the IFC since its creation.

The IFC's Iowa Flood Information System at http://ifis.iowafloodcenter.org/ifis/en is a free online suite of tools that offers access to the latest local flood information. IFIS also includes data that gives businesses

and homeowners a dollar estimate of property damage depending on the flood scenario. IFIS includes these features:

- Real-time stream levels at nearly 250 locations
- Flood alerts and forecasts for more than 1,000 Iowa communities
- Weather conditions including current and past rainfall accumulations
- Flood inundation maps

The IFC also has knowledgeable staff who help Iowa communities, both large and small. For example, an IFC water resources engineer assisted the town of Plainfield in northeast Iowa with finding solutions for its water problems. Floodwaters poured into Plainfield from all directions during rare fall flooding. In response to Plainfield's request for assistance, the IFC sent an engineer to model the flow of water through the community. Storm water movement modeling software simulated water flow in Plainfield, including ditches, culverts, and more. LiDAR (laser radar) data was also used to create a model of overland flow. The modeling results were then used to develop a report recommending mitigation projects for Plainfield to help city officials obtain funding for the projects. Plainfield, population of 450, is only one of the small towns that has benefitted from the expertise of the Iowa Flood Center. Engineers with IFC have also worked with officials from Kalona, Clarksville, and other communities to solve complex water issues.

The Iowa Flood Center's Resilience Team worked with several watersheds through the IWA program to promote flood resilience in Iowa communities. Through their efforts, flood resilience action plans were developed to provide local decision makers information about opportunities to increase support and expand resources, how to implement flood mitigation practices that maximize benefits, and what to do to protect vulnerable populations.

6. Iowa Floodplain and Stormwater Management Association (IFSMA)

The Iowa Floodplain and Stormwater Management Association is an organization of professionals with members involved in floodplain management, flood hazard mitigation, storm water management, the National Flood Insurance Program, flood preparedness, warning, and recovery.

IFSMA represents the interests of flood hazard specialists from local and state government, consulting engineers, research community, insurance industry, and the citizens of Iowa. IFSMA's members have skills and experience in the fields of engineering, hydrologic forecasting, community planning, enforcement, emergency response, water resources, and many others. IFSMA seeks to promote flood risk education throughout the state of Iowa, focusing on the following five main objectives:

- Increase awareness of the role floodplains play in conveying floodwaters, and the flood risks to structures that are built in the floodplain.
- Increase participation in the National Flood Insurance Program.
- Increase participation of NFIP communities in the Community Rating System.
- Increase the number of certified floodplain managers in the state of Iowa.
- Increase membership in IFSMA.

IFSMA was incorporated in 2010 and today is one of the partners of the Silver Jackets, representing a growing number of floodplain managers and storm water management professionals throughout the state.

7. Iowa Association of Electric Cooperatives (IAEC)

Since 2007 Iowa rural electric cooperatives (REC) have participated in mitigation planning. With most mitigation planning done at a local- or county-based level it did not make sense to require an REC to

participate in multiple local mitigation plans. For this reason the Iowa Association of Electric Cooperatives developed a plan to cover member cooperatives in Iowa through an annex to the State mitigation plan. Each time the State plan is updated, so too is the REC mitigation plan. In that way, REC mitigation plans and strategies are kept up-to-date and remain eligible for potential mitigation funding for individual local RECs. The 2023 REC mitigation plan is found in the annexes.

5.2.4. Training and Capability Building

Hazard mitigation training and capability building are an important component of Iowa's comprehensive hazard mitigation program. The state's commitment to mitigation capability building is demonstrated through the several partnerships described above in section 5.2.3. The many state programs listed in section 5.2.1 also illustrate the state's commitment to helping local entities become more capable in hazard mitigation and related endeavors. Some of the entries in the table in section 5.2.1 describe available training opportunities, but section 4.2.3 provides more details on training and workshops coordinated by HSEMD. In addition to the training that HSEMD coordinates, mitigation training related to flood hazards is sponsored by the following entities and information about training opportunities can be found at the websites shown:

Iowa Floodplain and Stormwater Management Association: http://www.iowafloods.org/
Iowa Flood Center: http://iowafloodcenter.org/education-outreach/
ISU Extension, Flooding in Iowa: https://www.extension.iastate.edu/floodinginiowa/

5.3. Obstacles and Challenges to State Hazard Mitigation Capabilities and Ideas for Overcoming Them

Several programs and partnerships have been listed above that have improved the hazard mitigation efforts in the state of Iowa. The creation of these programs and partnerships came only after the state encountered certain obstacles and challenges in trying to accomplish hazard mitigation. The initiative "Help CUT Flooding", established since the last plan update, was a result of several state and other agencies attempting to overcome some obstacles and challenges.

It became apparent years ago to the State Hazard Mitigation Officer and the state hazard mitigation planner that small cities and counties were at a great disadvantage when it came to flood mitigation. They did not have the resources to even understand what was causing their flood problems, much less the resources to hire engineers or others to help them design solutions and then fund those solutions. The Hazard Mitigation Bureau at Iowa HSEMD would receive applications, called Notices of Interest (NOI), in which a community expressed interest in funding for something to address flooding in their town. The NOI is the first step a city or county takes to apply for funding from one of FEMA's Hazard Mitigation Assistance grants. The problem would be that, in order to qualify for a grant award, a community would have to show evidence that a proposed project would be cost effective. Cost effective, to FEMA anyway, means that the benefits, in dollars, of a project will be greater than the costs of the project, over time. FEMA has methods, incorporated into its Benefit Cost Analysis Toolkit (BCA Toolkit 6.0 is the version in currency at the time of this writing), that help measure all benefits in dollars (including environmental service benefits converted into dollar values) so values can be compared to the costs.

Since the last state plan update it became ever more apparent that much design and engineering must be done in order to complete a benefit-cost analysis and have all the necessary documentation to back up the figures that need to be fed into the BCA Toolkit. In other words, a considerable amount of engineering and design is required to even apply for grant funds. And, a community has no guarantee when it begins

this process of engineering and design that they will get grant funds to implement their flood reduction project. As such, many communities, in particular small ones with little resources at their disposal, are not willing to spend the money needed to hire an engineer to complete the design work necessary for developing the project proposal. Thus, they are not able to finish a grant application and the project stalls before it ever gets started.

These concerns were shared with others on the Iowa Silver Jackets over the last four years (since the last plan update). After much discussion, and attending several workshops and conferences together (like the Region 7 CTP "Rendezvous"), Iowa HSEMD worked with the DNR Floodplain Mapping section to come up with solutions to help these small communities. DNR, through its CTP/RiskMAP funds, developed a program called "Real-time Technical Assistance" to offer limited engineering assistance to communities. RTTA is used by the Iowa CTP to answer "what if" questions that arise during review of risk data with communities or raised by communities through other outreach like the Help CUT Flooding initiative. A RiskMAP-contracted engineer analyzes several "what-if" scenarios to see how cost-effective certain mitigation options would be. This kind of engineering does not get near "design-level" engineering, and so is not too costly. It provides jurisdiction officials information about what is not worth considering, and what may be worth further exploration. It gives them some assurance that a potential solution is worth the investment for them to pursue.

RTTA and other technical assistance from other agencies that participate in the Help CUT Flooding initiative (like USACE) has been a great start to addressing these obstacles that the state faces in trying to help small communities mitigate flooding. But, it is just a start, and it does not address every challenge. Help CUT Flooding may help a small city get started with doing necessary engineering and design, but they still have to compete for funding whatever project solution they come up with.

Another challenge is that many communities seek solutions that address one problem, but may cause others. For example, city officials may know that they could get funding to buy-out flood-prone properties, but then that would cause them to lose tax base and population, which in a small town would have a much greater proportional impact than a large city would endure. Or, city officials may see that a flood wall or levee will help a certain flood-prone area, but it will just push the water away to flood someone else. Or, similarly, the city might straighten and line a channel with concrete, only to send the water away faster and flood other properties downstream.

Over the last several years several state agencies have worked with watershed management authorities to examine different alternatives to these mitigation options. These other alternatives, collectively referred to as watershed approach flood mitigation options, can reduce flood damage while greatly minimizing adverse impacts to those downstream (because the problem is not pushed downstream). They can lower flood elevations not only at the flood-prone area of focus, but also additional flood-prone areas further downstream. Not only would they improve the flood situation, but they would also improve water quality and wildlife habitat. What is more, compared to other flood mitigation methods, they offer a reduction in on-going maintenance cost through the use of nature-based methods. With so many advantages over more traditional methods of flood mitigation, one may wonder why a watershed approach to flood mitigation isn't used more often, or even exclusively. The answer, in brief, is that there are barriers to where and how it can be utilized effectively. Such barriers have become more apparent since the last plan update as a result of the state's engagement in the Iowa Watershed Approach project.

One of the key reasons that watershed approach flood reduction is not used more often is that it does not work everywhere, or at least it is not cost effective everywhere. Certain factors help determine how feasible it might be. Another reason it is not used often is because the specific methods or practices to be

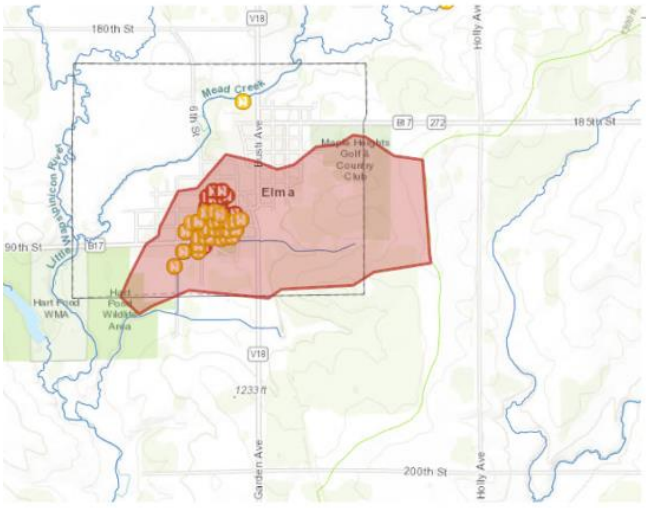
placed upstream to achieve flow and flood reduction are not well understood by local officials, or even engineers that may help them. Different methods have different capacities for infiltrating or detaining water. Some work with flood events of the 10-year recurrence interval (RI), some for the 25-, and others for the 100-year RI. Some can work for any one of those. The standards of practice and engineering protocols are not easy to understand, and require professional assistance. Another barrier to communities using a watershed approach for flood reduction is getting that professional assistance. They need professional assistance, usually in the way of engineering, to determine how much streamflow needs to be reduced to decrease flood impacts. They need engineering to draft designs and determine costs of a project. They need assistance in completing all the requirements to get funding from grant opportunities and other financial assistance. Finally, once the watershed approach project is designed, communities need funds to pay for construction and implementation of the project.

One of the outcomes of the recent Iowa Watershed Approach project was the completion of a report on strategies for how state and federal agencies can help overcome these barriers. The report, *Strategies for Flood Resilience: A Four Point Guide to Helping Locals with Watershed Approach Flood Reduction*, discusses four strategies or ways in which state, federal and non-profit agencies can help locals with achieving flood reduction through a watershed approach. Before examining these four strategies, the report first discusses different kinds of practices and how they each provide varying degrees of peak flow reduction.

The first strategy, or phase, examines how to determine, in a relatively quick way, an area's potential of using a watershed approach to reduce flood impacts. Many people assume that if they can reduce peak flow, which is possible most anywhere using nature-based or watershed approach solutions, that they have then reduced flooding. But, reducing peak flow is NOT the same as reducing flooding, at least not flood impacts. The report explains that in the first phase an analysis should be done to find out, in dollars, the prospective impact of flooding, whether it be due to damaged buildings, overtopped roads (and subsequent detours), or other impacts. After estimating the flood losses for an area, the cumulative sum of those losses can be divided by the acres of watershed above the flood impact area to determine the "POWAR Floods" number, which allows quick comparison of areas to see which have greater **P**otential **O**f using a **W**atershed **A**pproach to **R**educe **Floods**. Places with a high amount of likely flood damage AND a little watershed area above that flood damage area will have a higher POWAR Floods # and are more likely to be good candidates for using a watershed approach to reduce flooding.

HSEMD is partnering with USACE and other agencies to figure out the POWAR Floods numbers for areas throughout the state. That project is just beginning and hopefully will be completed in 2024.

POWAR Floods Ratio= $\frac{\text{\$ loss from potential flooding}}{\text{Watershed Area (acres)}}$



Evaluating the Potential Of using a Watershed Approach to Reduce Floods for Elma:

Building Loss[1]	$23,644
+Content Loss[1]	$7,667
+Inventory Loss[1]	$22
=Total Annual Avg. Loss[1]	$31,333
Divided by	
Total Upstream Drainage Acres	425
Elma's POWAR Floods ratio=	**74**

1 Loss shown is annualized loss. Loss amounts determined for several recurrence intervals. Then, these were combined by annualizing them using Simpson's Rule.

The idea is that where an area has a high POWAR Floods #, then more planning is warranted and flood mitigation and watershed approach champions for the area should move to the second phase or strategy. The second strategy is to figure out how much flow reduction will be needed to reduce flood water surface elevations where damages occur. This particular strategy is one that has and is being implemented through initiatives of different agencies. Iowa DNR, HSEMD and USACE have provided or are providing this kind of assistance to several communities, including Hartley, Mason City, Oelwein and Cherokee. With the last three communities, DNR's contractor calculated how much flow reduction was needed for the community to realize flood reduction. They looked at various scenarios and how much flood elevations could be reduced under different possible mitigation actions. This kind of analysis helps a community understand their options and what might be feasible.

The third strategy or phase is to do further engineering and design of practices that will hold back or store water, whether that be through wetlands or other detention, oxbow restoration, diversion, or a series of terraces and/or WASCOBs, or other solutions. Like the second strategy, this third strategy is already being implemented for some communities. For instance, Cherokee has been granted a direct technical assistance award from FEMA to get this kind of engineering and design done. Dyersville, Hartley and Oelwein are getting hazard mitigation assistance funds from FEMA to pay contractors to do the same.

Finally, the report discusses funding for construction and implementation. Many would think of such funding as the first thing to look for, but it is the last considered in the report. It is considered last because there is no point of pursuing funding to reduce flooding with a watershed approach if you have not determined if you have a good chance of being able to do it, which the first 3 strategies help determine.

Much more detail and several examples are provided in the report, which can be retrieved online at https://homelandsecurity.iowa.gov/iowa-watershed-approach/.

5.4. Progress on Past Actions and Lessons for Measuring Future Progress

To decide what mitigation actions to pursue, the SHMT took a look back in two different ways. First, they looked back over the hazards the state and its jurisdictions face and the overall risk faced due to vulnerability to the various hazards. Second, they looked back over the mitigation measures or actions from the 2018 *Iowa Hazard Mitigation Plan*. They considered what progress has been made in these areas and what recent changes have occurred that may have impacted those measures.

The SHMT reviewed all of the 2018 actions to determine how each should be changed. Some they determined had been completed, and therefore should be discontinued. Some they determined should be discontinued for other reasons. Most, however, were altered in some way to reflect changing conditions and to better clarify them. They also added several measures, which are found in section 5.5. The chart below shows the status and disposition of the actions of the 2018 Plan.

Disposition of 2018 Hazard Mitigation Actions

Old #	New #	Mitigation Action (*additions in italics;* cuts shown with ~~strike out~~)	Status
1.1	1.1	~~Increase number of jurisdictions adopting ordinances,~~ *Provide training, funding, or outreach encouraging adoption and implementation of codes,* regulations *or incentives for*~~, and~~ building ~~codes that provide higher standards to regulate construction in order to decrease risk in areas susceptible to hazards~~ *and retrofitting structures in a manner that improves resilience against natural hazards. Target such training and outreach to jurisdictions in accordance with the hazards with which they are particularly vulnerable (e.g. discuss methods for making structures earthquake resistant just with cities having greatest vulnerability to earthquakes).*	Adams, Bremer, and Johnson Counites have adopted the 2018 Building Code and Wapello County the 2021. Cedar Rapids and most of the other cities in Linn County have adopted the 2018 Code. Other cities that have adopted the 2018 Code: Adel, Algona, Altoona, Clinton, Denver, Dubuque, Farragut, Grimes, Independence, Indianola, Iowa City, Le Grand, Norwalk, Norway, Pleasant Hill, Readlyn, Sergeant Bluff, Shellsburg, Tripoli, Waukee, Waverly. While several cities are in the process of adopting the 2021 Code, only a few have adopted it, including Oxford and Mason City. Many other smaller cities are waiting to see what the state adopts before they adopt anything.
~~1.2~~		~~Of the communities that have repetitive loss properties, increase the percentage of such communities that include mitigation actions to address severe repetitive loss and repetitive loss in their all-hazard mitigation plans and comprehensive plans. Do this by verifying and updating the list of repetitive loss properties, and by educating communities on these properties in their jurisdictions and measures which may be used to reduce future damage.~~	The action of "verifying and updating the list of repetitive loss properties" was completed. So, this specific action was determined no longer needed in this form. (Other actions, however, address repetitive loss properties.)
1.3	1.3	*Maintain at least 700 communities* ~~Increase the number of jurisdictions participating~~ in NFIP ~~as well as Community Rating System~~.	May 2017 had 671 in NFIP; April 2019 had 677. Today 706 in NFIP and 13 CRS communities. Of those 13 CRS, 4 are new in last 5 years.
1.4	1.4	*Create guide with* ~~Promulgate (and develop if necessary) a handbook explaining~~ options and methods for communities to *manage deed-restricted* ~~deal with property acquired from~~ flood buyout~~s~~ *properties so they become assets instead of liabilities.*	A few different places have developed similar guides, but nothing targeted to Iowa or the Midwest, and nothing that spells out how to avoid mowing extra lots owned by the city.

Old #	New #	**Mitigation Action (*additions in italics;* cuts shown with ~~strike out~~)**	**Status**
1.5	1.5	*Alert* ~~Identify~~ communities *prone* ~~in areas vulnerable~~ to *location-specific hazards (e.g., landslides,* earthquakes*, wildfires, floods, levee/dam failure, sinkholes, and expansive soils)* ~~and make them aware of,~~ and encourage *land-use planning and regulation that reduces risk from such hazards by providing training, funding, and/or outreach on appropriate codes, ordinances, site assessments, and enforcement measures* ~~them to adopt, current building codes for seismic retrofitting to make structures earthquake resistant.~~	This was a "deferred" action in 2018, so was not tracked.
1.6	1.6	*Advocate for flood mitigation in* ~~As new~~ watershed plans *by having city officials and county emergency management participate in development and implementation of such plans*~~. are developed, ensure most integrate local hazard mitigation plan elements. Then, ensure that most jurisdictions in those watersheds include in their local hazard mitigation plan the references to relevant watershed plan elements.~~	Winneshiek and Allamakee Counties. Perhaps Dubuque and Buchanan, Polk or Dallas. Also some done by ECICOG (Benton, Iowa, Johnson, Jones, Linn, Washington)
1.7	1.7	Develop a *comprehensive, statewide flood mitigation* strategy *that considers* ~~for~~ flood buyouts, *watershed approach flood mitigation, levees and other solutions and outlines where and under what conditions these different strategies are best applied.*	A handbook for flood buyouts of commercial property was developed.
1.8	1.8	*Have 100 percent of high hazard potential* ~~Increase number of~~ dams with ~~completed~~ emergency action plans *(EAPs).*	EAPs were prepared for several dams. Regulations changes so that now all HHPDs will be required to have an EAP.
1.9	1.9	*Develop GIS database for* ~~Identify and map existing~~ sinkholes and ~~evaluate the potential for new sinkholes in hazard plans~~ *facilitate having communities and agencies input locations of sinkholes in the database.*	This was a "deferred" action in 2018, so was not tracked.
1.10	1.10	*Identify public buildings that are in the special flood hazard area (SFHA), notify their owners, and tell owners that to be eligible for grant opportunities for retrofitting such buildings they need to include such a mitigation action in their local hazard mitigation plan.* ~~Increase number of jurisdictions that have hazard mitigation plan action to do nonstructural retrofit of public structures.~~	The 2018 action proved very difficult to track, so this action was amended to something that could be tracked and accomplished.
2.1	2.1	*Provide* ~~Install~~ dry hydrants in *wildland-urban interface* areas with *no* ~~out~~water mains ~~and domestic fire hydrants~~ *through projects that partner federal and state hazard mitigation resources with local jurisdictions.*	This was a "deferred" action in 2018, so was not tracked.
2.2	2.2	Connect *drought-vulnerable water supply systems* to *other* ~~redundant~~ water ~~sources~~ *supplies through projects that partner federal and state hazard mitigation resources with local jurisdictions*.	This was a "deferred" action in 2018, so was not tracked.

Old #	New #	Mitigation Action (*additions in italics;* cuts shown with ~~strike out~~)	Status
2.3	2.3	*Elevate or protect* ~~Increase number of~~ wastewater lift stations ~~that are elevated/protected~~*, and/or complete other sanitary sewer hazard mitigation improvements, through 5 projects by 2028 that partner federal and state hazard mitigation resources with local jurisdictions*.	Between 2018 and 2023, HSEMD awarded lift station projects for 2 cities (Cherokee and Sumner).
2.4	2.4	*Mitigate flooding of buildings by elevating buildings (to the 0.2% annual chance flood elevation or 2+ feet above BFE), flood-proofing, constructing non-levee embankments (e.g. berms) on the building property, or acquiring and removing buildings on flood-prone properties, with a goal to apply for funding to remove at least 10 buildings from the list of repetitive loss properties* ~~Acquire more flood-prone properties (with priority for repetitive loss and SRL properties) and convert to open space/green space; or elevate to at least 1 foot above base flood elevation.~~	From 2018-2022, 28 communities have been awarded HMA funding and acquired and converted to open space 326 floodplain properties. Of these, 16 were Rep Loss/Severe Rep Loss according to either NFIP or FMA definitions.
2.5	2.5	*Increase floodwater storage projects through* ~~Implement~~ floodplain or streambank restoration ~~/channel improvement~~ projects that *partner federal and state hazard mitigation resources with local jurisdictions* ~~reduce peak flow during flood events.~~	City of Ames awarded 2018 PDM grant for project along Squaw Creek that reconnects channel to floodplain and includes restoration of natural stream and native vegetation.
2.6	2.6	*Put in impervious manholes, pumps, or backflow prevention, or similar* ~~Construct cost-effective~~ small-scale flood protection *projects (not addressed elsewhere in list of state hazard mitigation actions) through projects that partner federal and state hazard mitigation resources with local jurisdictions*~~(e.g., impervious manholes, pumps, backflow prevention), other than the other methods listed in these mitigation actions.~~	At least such projects have been submitted to FEMA for award, including ones for Cedar Rapids and Davenport (both LPDM) and one for Storm Lake (HMGP 4557).
2.7	2.7	Install and maintain protective measures for the physical safety and security of critical facilities *through projects that partner federal and state hazard mitigation resources with local jurisdictions (including school districts).*	This was a "deferred" action in 2018, but note that HSEMD now offers "Critical Infrastructure Security & Resilience Awareness" course. Also, Safe Schools grant program administered by HSEMD.
2.8	2.8	Construct public safe rooms *through projects that partner federal and state hazard mitigation resources with local jurisdictions or school districts.*	Two safe room projects have been awarded HMA funds since 2018 (community college and a community school district). Another one will be awarded if and when verification is complete that all EHP requirements are met. Many new school buildings have also included safe rooms.
~~2.9~~		~~Remove asbestos from public facilities.~~	This was a "deferred" action in 2018, so was not tracked. In 2023 the SHMT decided to eliminate it entirely.
2.10	2.10	*Where professional assessments have deemed necessary, rehabilitate dams & levees of high hazard potential (where failure would likely cause loss of human life).* ~~Construct, retrofit or maintain levees,~~	Tracking all the different types of structures involved many different agencies and so it was very difficult to track progress on the 2018. So, the action

Old #	New #	Mitigation Action (*additions in italics;* cuts shown with ~~strike out~~)	Status
		~~dams, floodwalls & floodgates to ensure adequate flood protection for property and critical facilities.~~	was narrowed and only HSEMD and DNR will be needed to track progress.
2.11	2.11	*Provide information to owners of* ~~Mitigate hazards associated with~~ underground ~~fuel~~ storage tanks *(USTs), and the officials of the jurisdictions in which they are located, about damages and consequences that could arise from flooding of UST sites, and how such damages and consequences could be prevented or mitigated.*	This was a "deferred" action in 2018, so was not tracked.
2.12	2.12	~~Encourage and~~ Implement green infrastructure *(including permeable pavement, detention basins, and methods that increase infiltration or detention) in cities to mitigate flooding through at least 5 projects by 2028 that partner federal and/or state resources with local municipalities* ~~practices to create healthier urban environments and manage storm water in cities. Practices include mechanisms that prevent soil erosion or provide flood protection, habitat, and cleaner air and water (riparian forest buffers, infiltration including bioswales, wet detention systems, storm water wetlands, vegetated swales, permeable pavement, and green roofs).~~	Unfortunately, the way this was originally worded made it extremely to track as some of the practices overlapped those in other actions and for some it was unknown who even keeps track of their implementation. So, the action was made more specific, measurable, achievable, realistic and timely (SMART).
2.13	2.13	*By participating in projects that partner federal and/or state resources with local municipalities or electric cooperatives, provide more resilient electric service through: robustness measures (including undergrounding power lines, system segmentation, and providing "design-failure" mode for lines), installation of ice resistant wire & other cold weather protection measures, extreme heat & drought resistance measures (e.g. dry cooling), flood protection measures (e.g. elevate equipment, such as substations, in flood-prone areas), or wind protection measures (e.g. stronger utility poles or more poles per mile).* ~~Electrical utility retrofit/ hardening~~ *(*See *Iowa* REC ~~Mitigation Plan in~~ Annex *& section 8 of Iowa Energy Security Plan.)*	Over $28 million has been obligated since 2018 for 20 electric retrofit or line strengthening projects that affect nearly 42,000 customers. Six other such projects are awaiting obligation of HMA funds (over $34 million affecting 25,115 customers). Plus, 2 projects have been awarded a combined $576,000 to complete scoping for projects to increase electric resiliency.

Old #	New #	**Mitigation Action** (*additions in italics;* **cuts shown with ~~strike out~~**)	**Status**
2.14	2.14	*After* ~~Use~~ a comprehensive *planning* approach *that fully considers watershed approach or green infrastructure options, mitigate flood damage to structures or public facilities (including* ~~to address problems with water washing over or threatening public~~ roads and *parks) through projects that partner federal and state hazard mitigation resources with local jurisdictions to retrofit bridges, elevate roads, build or reconstruct levees (in accordance with standards of 44 CFR 65.10), or install culverts or other stormwater system improvements* ~~with public bridges and culverts that do not meet flow requirements. A comprehensive approach could simply mean elevation, replacement, or retrofit, OR it could be systemwide with a collection of projects/changes that might include green infrastructure, basins, and increased capacity of soil to retain water~~.	Washington County awarded PDM 2019 grant that would raise road. Bettendorf, Sumner and Ames also received HMA grants to address such road flooding. Cherokee and Riverton were both selected for BRIC Direct Technical Assistance to address problem of water washing over roads around their cities.
2.15	2.15	*Mitigate flooding with a watershed approach by putting in practices upstream of cities that detain water and/or increase infiltration (e.g. wetlands, terraces, oxbows, other basins, perennial cover, series of WASCOBs) through at least 5 projects by 2028 that partner federal and/or state resources with local jurisdictions* ~~Construct, retrofit or maintain storm and sewage drainage systems (including retention and detention basins, pipes, culverts, and channels) to function adequately and properly~~.	The status of the sanitary sewer part of the 2018 action is described above (2.3). This action was confusing to track as it mixed sanitary and storm drainage, and it had so many different kinds of practices. The new action is a combination of parts of what were 2.15 & 4.2 in the 2018 Plan. Note that the new action only applies to methods put outside of cities (as opposed action 2.12, green infrastructure, which is inside cities).
3.1	3.1	*Improve awareness of hazard risks and ways to reduce their impacts through* ~~Develop~~ signage *projects or* ~~and educational materials for the general public, decision makers, and private volunteer organizations to improve~~ awareness *campaigns that partner local jurisdictions with federal and state resources* ~~of hazard risks and ways to prevent or reduce impacts of hazard events. Also, develop or maintain sustainment mechanisms to dispense such signage and educational materials~~.	HSEMD developed Ready.Iowa.gov. The site is updated regularly and contains shareable videos and graphics, emergency checklists, and other information for all hazards. HSEMD also shares educational messaging about local hazards almost daily on social media. Awareness campaigns are conducted annually for Tornado and Severe Weather, Winter Weather, and Heat. Such campaigns have included statewide radio spots and social media ads.
~~3.2~~		~~Promote NOAA all-hazards weather radio, including citizen purchase of receivers.~~	No record of any state involvement in the completion of the 2018 action. In 2023 the SHMT decided to eliminate it, with the new language of 3.1 providing the latitude to promote weather radios.
~~3.3~~		~~Educate architects and developers about need for shelters/safe rooms as well as guidance for their design as found in ICC/NSSA Standard for the Design and Construction of Storm Shelters and FEMA P-320 - Taking Shelter from the Storm: Building a Safe Room for Your Home or Small Business.~~	In 2023 the SHMT decided to eliminate this action.

Old #	New #	**Mitigation Action** (***additions in italics;*** **cuts shown with ~~strike out~~)**	**Status**
3.4	3.4	Provide *example* ~~model~~ standards and guides, including the Iowa Stormwater Management Manual, to local jurisdictions *that promote green infrastructure practices* ~~about construction, design~~ and ~~landscaping~~ measures that direct water away from structures.	A BRIC project began to update the ISWMM and provide outreach to cities and other jurisdictions about its contents and how to use it.
4.1	1.13	*By 2028* develop *at least 3* watershed plans, hydrolog~~y~~*ic and hydraulic* studies, or ~~and~~ studies of *issues related to* groundwater *or* ~~issues and areas of risk to~~ erosion *that analyze hazard mitigation options*~~, and implement recommendations of such plans and studies~~.	IWA watershed plans done (8). IWA FRAPs done. 2 WFPO plans in Iowa (in Dubuque and Polk counties). 10-12 RTTA studies. Walnut Creek studies with Silver Jackets. Several others done.
~~4.2~~		~~Coordinate with FEMA on earthquake program~~	This was a "deferred" action in 2018, so was not tracked. In 2023 the SHMT decided to eliminate this action.
~~4.3~~		~~Minimize damage and also preserve/restore the functions of natural systems by establishing vegetated buffers and strategically-placed wetlands that capture runoff and drainage waters before they can negatively impact the surrounding environment.~~	The language from 2018 was hard to track. The new language (now in number 2.15 as it has been combined with the old 2.15) will be tracked by checking how many jurisdictions awarded funding through HSEMD, IEDA, or NRCS with intent to reduce future flood losses by putting in watershed approach practices upstream of flood-impacted areas.
~~5.1~~		~~Develop/update/publicize continuity of operations plans for emergency and other essential functions (as defined by FEMA for continuity of operations).~~	Iowa HSEMD sponsored COOP/COG courses for local jurisdictions. They also facilitated the updates of COOP/COG plans of state agencies. In 2023 the SHMT decided to eliminate this action.
5.2	4.2	*Provide* ~~Purchase/install~~ backup power generat~~ors~~*ion, storage, or other energy redundancy measures (described in Section 8 of theIowa Energy Security Plan) to serve critical facilities or lifelines through projects that partner local jurisdictions with federal and state resources. (See Iowa REC Annex and section 8 of Iowa Energy Security Plan in appendices of this Plan.)*	In 5 year period 2018-2022, obligated $2.4 millon of HMA funds for generators for 3 County EOCs, 4 county roads shops, and for 26 cities, municipal utilities, or fire departments. (14 projects from 2022 awards, 6 from 2021, 4 from 2020, and 8 from 2018-19)
5.3	4.1	Establish *or improve warning and alert* systems ~~necessary to issue warnings, alert officials and emergency personnel, and inform the public~~ (e.g., sirens) through projects that partner local jurisdictions with federal and state resources.	In 5 year period 2018-2022, obligated $3.2 millon of HMA funds for 40 warning siren projects

5.5. 2023 State of Iowa Mitigation Actions

Mitigation planning regulations require states to identify and analyze a comprehensive range of specific mitigation actions that reduce the impacts of hazard events identified in the risk assessment. The SHMT discussed the impacts of recent disaster events in the state, the status of mapping and hazard mitigation planning, and conceptually "What problems are we trying to solve?" with the identification of mitigation actions. While Chapter 5 contains the mitigation actions that the SHMT decided to pursue, a greater range of actions that were considered is contained in Section 3. The profile of each natural hazard in Section 3.3 contains a summary of the problem(s) posed by each hazard and possible actions to address those problems.

In addition to the mitigation actions that were continued or amended as shown above, this plan contains several new actions that the SHMT has developed. The chart below shows all of the actions the SHMT and Silver Jackets decided upon for this year's strategy, and how they tie to one or more of the four mitigation goals described in section 5.1. The actions are grouped by these goals. The chart also shows possible funding programs and agencies that may assist with implementation of the actions.

Goal / Category	#	2023 State Mitigation Action	Agency/ Funding Source
Goal One - Planning & Regulation: Through comprehensive and collaborative planning and analysis, develop processes and regulations that reduce hazard risks, and provide resources to local jurisdictions so they can develop and update plans and regulations to mitigate hazard impacts.			
Planning and Regulation	1.1	Provide training, funding, or outreach encouraging adoption and implementation of codes, regulations or incentives for building and retrofitting structures in a manner that improves resilience against natural hazards. Target such training and outreach to jurisdictions in accordance with the hazards with which they are particularly vulnerable (e.g. discuss methods for making structures earthquake resistant just with cities having greatest vulnerability to earthquakes).	DNR Flood Plain Management, Building Code Bureau, HSEMD / BRIC
Planning and Regulation	1.2	Provide information and facilitate communities in the process of joining Community Rating System (CRS).	DNR Flood Plain Management
Planning and Regulation	1.3	Maintain at least 700 communities in NFIP.	DNR Flood Plain Management
Planning and Regulation	1.4	Create guide with options and methods for communities to manage deed-restricted flood buyout properties so they become assets instead of liabilities.	USACE, DNR, HSEMD, & rest of Silver Jackets / BRIC or FMA
Planning and Regulation	1.5	Alert communities prone to location-specific hazards (e.g., landslides, earthquakes, wildfires, floods, levee/dam failure, sinkholes, and expansive soils) and encourage land-use planning and regulation that reduces risk from such hazards by providing training, funding, and/or outreach on appropriate codes, ordinances, site assessments, and enforcement measures.	HSEMD / BRIC, FMA, HHPD
Planning and Regulation	1.6	Advocate for flood mitigation in watershed plans by having city officials and county emergency management participate in development and implementation of such plans.	HSEMD / BRIC, EMPG
Planning and Regulation	1.7	Develop a comprehensive, statewide flood mitigation strategy that considers flood buy-outs, watershed approach flood mitigation, levees and other solutions and outlines where and under what conditions these different strategies are best applied.	HSEMD, USACE, DNR Floodplain Sect. / BRIC, USACE

Goal / Category	#	2023 State Mitigation Action	Agency/ Funding Source
Planning and Regulation	1.8	Have 100 percent of high hazard potential dams with emergency action plans (EAPs).	DNR Dam Safety / HHPD
Planning and Regulation	1.9	Develop GIS database for sinkholes, and facilitate having communities and agencies input locations of sinkholes in the database.	DNR GIS Section
Planning and Regulation	1.10	Identify public buildings that are in the special flood hazard area (SFHA), notify their owners, and tell owners that to be eligible for grant opportunities for retrofitting such buildings they need to include such a mitigation action in their local hazard mitigation plan.	HSEMD, RiskMAP / BRIC, FMA
Planning and Regulation	1.11	Jurisdictions acquire software or other tools to help with implementing codes or regulations that mitigate hazards.	BRIC
Planning and Regulation	1.12	Work with IDNR and IDALS to ensure, as Section 319 and other watershed plans are developed in conjunction with their staff, that flood impact data is shared and local emergency management personnel in subject watershed areas are informed of watershed planning initiatives.	HSEMD, DNR, IDALS / EPA 319
Planning and Regulation	1.13	By 2028 develop at least 3 watershed plans, hydrologic and hydraulic studies, or studies of issues related to groundwater or erosion that analyze hazard mitigation options.	USACE, DNR Watershed Improvement, SWCDs, WMAs
Planning and Regulation	1.14	Develop a comprehensive, statewide electric resiliency strategy to prevent loss of service, especially to critical facilities. Measures to consider include: microgrids and grid islanding to take advantage of distributed electricity generation and storage; improved maintenance, portability and connectivity of portable generators; and developing a single application process for generator grants across state agencies. Explore creating a program for portable generators, managed by an entity or entities that will maintain, exercise, position, and deploy generators in cooperation with counties, municipalities, and electric generation and distribution systems.	IEDA (Energy), HSEMD, IUB, IAEC, IAMU / BRIC, HMGP
Planning and Regulation	1.15	Encourage cities, counties, levee districts and others to participate in watershed management authorities or other coalitions to study and recommend mitigation solutions for levee and flood issues, as well as drought. Offer technical assistance or outreach to jurisdictions, including levee districts and soil and water conservation districts, about how to coordinate watershed-wide implementation of small projects for a greater cumulative effect (such as controlling tile drain flow rates to not only reduce flooding but also drought impacts).	HSEMD Levee Safety Office, WMAs, DNR, SWCDs, Levee or Drainage Districts / EMPG
Planning and Regulation	1.16	Develop, implement, and continually improve the Iowa Drought Plan's communication plan, with an official update in 2024 and another revision in 2028.	DNR, HSEMD, IDALS
Planning and Regulation	1.17	Communities develop/update a Community Wildfire Protection Plan and/or become a Firewise community.	HSEMD, State Fire Marshal/BRIC
Planning and Regulation	1.18	By 2028 provide technical assistance (TA) to help 15 communities understand their flood issues to explore alternatives for mitigation.	HSEMD, USACE, DNR/ RiskMAP, BRIC, HMGP, USACE FRM

Goal / Category	#	2023 State Mitigation Action	Agency/ Funding Source
Goal Two - Resilient Systems & Structures: Construct new or improved structures and infrastructure, including natural infrastructure, and employ practices that reduce hazard risks while also preserving or restoring the functions of natural systems.			
Resilient Systems & Structures	2.1	Provide dry hydrants in wildland-urban interface areas with no water mains through projects that partner federal and state hazard mitigation resources with local jurisdictions.	HSEMD, DNR / BRIC
Resilient Systems & Structures	2.2	Connect drought-vulnerable water supply systems to other water supplies through projects that partner federal and state hazard mitigation resources with local jurisdictions.	SRF-DNR/IFA
Resilient Systems & Structures	2.3	Elevate or protect wastewater lift stations, and/or complete other sanitary sewer hazard mitigation improvements, through 5 projects by 2028 that partner federal and state hazard mitigation resources with local jurisdictions.	HSEMD, DNR, IEDA / SRF, PA-Mitigation, BRIC, HMGP, CDBG
Resilient Systems & Structures	2.4	Mitigate flooding of buildings by elevating buildings (to the 0.2% annual chance flood elevation or 2+ feet above BFE), flood-proofing, constructing non-levee embankments (e.g. berms) on the building property, or acquiring and removing buildings on flood-prone properties, with a goal to apply for funding to remove at least 10 buildings from the list of repetitive loss properties.	HSEMD, IEDA, USACE / HMGP, BRIC, CDBG, PA-Mitigation
Resilient Systems & Structures	2.5	Increase floodwater storage through floodplain or streambank restoration projects that partner federal and state hazard mitigation resources with local jurisdictions.	HSEMD, USACE, NRCS, DNR / FMA, BRIC, HMGP, PA-M
Resilient Systems & Structures	2.6	Put in impervious manholes, pumps, or backflow prevention, or similar small-scale flood protection projects (not addressed elsewhere in list of state hazard mitigation actions) through projects that partner federal and state hazard mitigation resources with local jurisdictions.	HSEMD / BRIC, FMA, HMGP, PA-Mitigation
Resilient Systems & Structures	2.7	Install and maintain protective measures for the physical safety and security of critical facilities through projects that partner federal and state hazard mitigation resources with local jurisdictions (including school districts).	HSEMD, DPS / HSGP, state Safe Schools
Resilient Systems & Structures	2.8	Construct public safe rooms through projects that partner federal and state hazard mitigation resources with local jurisdictions or school districts.	HSEMD / HMGP, BRIC
Resilient Systems & Structures	2.9	Reduce damage from flooding and erosion through stream channel improvement projects that partner federal and state hazard mitigation resources with local jurisdictions.	HSEMD / BRIC, FMA, HMGP, PA-M
Resilient Systems & Structures	2.10	Where professional assessments have deemed necessary, rehabilitate dams and levees of high hazard potential (where failure would likely cause loss of human life).	DNR / HHPD, BRIC, HMGP
Resilient Systems & Structures	2.11	Provide information to owners of underground storage tanks (USTs), and the officials of the jurisdictions in which they are located, about damages and consequences that could arise from flooding of UST sites, and how such damages and consequences could be prevented or mitigated.	DNR, HSEMD
Resilient Systems & Structures	2.12	Implement green infrastructure (including permeable pavement, detention basins, and methods that increase infiltration or detention) in cities to mitigate flooding through at least 5 projects by 2028 that partner federal and/or state resources with local municipalities.	HSEMD, IDALS, NRCS, Cities, FMA, IEDA / CDBG, HMGP, BRIC

Goal / Category	#	2023 State Mitigation Action	Agency/ Funding Source
Resilient Systems & Structures	2.13	By participating in projects that partner federal and/or state resources with local municipalities or electric cooperatives, provide more resilient electric service through: robustness measures (including undergrounding power lines, system segmentation, and providing "design-failure" mode for lines), installation of ice resistant wire and other cold weather protection measures, extreme heat and drought resistance measures (e.g. dry cooling), flood protection measures (e.g. elevate equipment, such as substations, in flood-prone areas), or wind protection measures (e.g. stronger utility poles or more poles per mile) . (See Iowa REC Annex and section 8 of Iowa Energy Security Plan.)	IEDA (Energy), HSEMD, IUB, IAEC, IAMU / BRIC, HMGP, Energy funds through IEDA
Resilient Systems & Structures	2.14	After a comprehensive planning approach that fully considers watershed approach or green infrastructure options, mitigate flood damage to structures or public facilities (including roads and parks) through projects that partner federal and state hazard mitigation resources with local jurisdictions to retrofit bridges, elevate roads, build or reconstruct levees (in accordance with standards of 44 CFR 65.10), or install culverts or other stormwater system improvements.	HSEMD, DOT / state Flood Recovery Fund (levee allocation), HMGP, BRIC, FMA
Resilient Systems & Structures	2.15	Mitigate flooding with a watershed approach by putting in practices upstream of cities that detain water and/or increase infiltration (e.g. wetlands, terraces, oxbows, other basins, perennial cover, series of WASCOBs) through at least 5 projects by 2028 that partner federal and/or state resources with local jurisdictions.	IEDA, HSEMD, SWCDs / IDALS WQI, DNR&IFA SRF, BRIC, HMPG, FMA
Resilient Systems & Structures	2.16	Initiate projects to reduce landslide damage and risk where landslides are most likely, through projects that partner federal and state resources with local jurisdictions.	HSEMD, DNR / HMGP, BRIC
Resilient Systems & Structures	2.17	Reduce water losses through leak detection and/or distribution system renovation projects that partner federal and state hazard mitigation resources with local jurisdictions.	HSEMD, DNR / SRF, CDBG, BRIC, HMGP
Resilient Systems & Structures	2.18	Encourage development of gray water infrastructure, recycling and reusing water at any scale whenever viable through projects that partner federal or state resources with local jurisdictions.	DNR, IDALS, HSEMD
Resilient Systems & Structures	2.19	Develop additional water storage, especially floodwater diversion and storage options, through projects that partner federal and state resources with local jurisdictions.	HSEMD, DNR, IDALS / SRF, HMGP, BRIC
Resilient Systems & Structures	2.20	Encourage the building of shelters (other than safe rooms) at parks and other outdoor areas where people congregate through projects that partner federal and state resources with local jurisdictions.	DNR, HSEMD / HMGP
Resilient Systems & Structures	2.21	Encourage use of mitigation funds to equip public facilities, community centers and resilience hubs to act as cooling and warming centers during extreme temperature events, especially those frequented by older adults and children, such as libraries.	IHHS, HSEMD / HMGP
Resilient Systems & Structures	2.22	Install transfer switches, panels, and connections for easy or automatic use of microgrids or generators (including portable generators) to supply power, through projects that partner federal and state mitigation (including Public Assistance - Mitigation) resources with local jurisdictions and non-profit entities.	Energy funds through IEDA, HSEMD, IUB, IAEC, IAMU / BRIC, HMGP
Resilient Systems & Structures	2.23	Encourage programs for residential properties (like Bee Branch Healthy Homes Resiliency Program) that implement on-site stormwater management practices (such as gutters, drains, concrete work, and landscaping that direct water away from homes).	HSEMD, IEDA / CDBG

Goal / Category	#	2023 State Mitigation Action	Agency/ Funding Source
Goal Three - Cooperation & Awareness: Expand public awareness and intergovernmental communication so that Iowa citizens and communities have knowledge to mitigate hazard impacts and become more resilient.			
Cooperation & Awareness	3.1	Improve awareness of hazard risks and ways to reduce their impacts through signage projects or awareness campaigns that partner local jurisdictions with federal and state resources.	DNR, HSEMD, & rest of Flood Risk Mgmt. Team (Silver Jackets) / USACE, HMGP
Cooperation & Awareness	3.2	Before 2028 provide training or outreach to 5 communities with repetitive loss properties, including information about measures which may be used to reduce future damage.	DNR, HSEMD, USACE / USACE FRM, BRIC
Cooperation & Awareness	3.3	Discuss and consider the recommendations of the December 2022 "Iowa Statewide Levee Districts Study" (Study), including establishing a state levee safety program and consolidating levee districts at the USACE system level (described more in Appendix F of the Study). Work toward implementing the recommendations that garner support amongst stakeholders.	Silver Jackets agencies
Cooperation & Awareness	3.4	Provide example standards and guides, including the Iowa Stormwater Management Manual, to local jurisdictions that promote green infrastructure practices and measures that direct water away from structures.	SWCDs, DNR Watershed Improvement, IDALS & other Silver Jackets agencies / BRIC
Cooperation & Awareness	3.5	By 2028, develop coordinated, prompt, reliable, and accessible information for the whole community, actionable at every level of organization (i.e., state agencies, local government, industries, NGOs, individuals), concerning current and likely drought and water supply status, drought vulnerability, drought-time response actions, and continuous conservation measures. Provide status updates in DNR's monthly Water Summary Update newsletter and provide resources on drought.iowa.gov.	IDALS, DNR, HSEMD / BRIC
Cooperation & Awareness	3.6	Maintain and expand monitoring network for stream flows, precipitation, soil moisture, evapotranspiration, and groundwater levels, in order to characterize Iowa's surface and groundwater resource availability, quality, use, and sustainability. Share the information in near-real time via a web-based data system.	IDALS, DNR, HSEMD / BRIC
Cooperation & Awareness	3.7	Explore the creation of tools that can help communities understand mitigation measures that have been implemented or considered by other communities in Iowa (e.g., interactive map, flyers, etc.).	IDALS, DNR, HSEMD / BRIC
Cooperation & Awareness	3.8	Annually provide training and/or outreach about mitigation opportunities, available resources, and application specifics with a special focus on smaller communities, underserved communities, EDRCs and those with higher socially vulnerable populations.	IDALS, DNR, HSEMD / BRIC, EMPG
Cooperation & Awareness	3.9	Discuss flood and drought mitigation opportunities with the Iowa Water Resources Coordination Council and Iowa Watershed Planning Advisory Council at least annually. Consider outreach to other stakeholders/groups that work in watershed management.	IDALS, DNR, HSEMD / BRIC, EMPG
Cooperation & Awareness	3.10	Encourage water utilities to review their operating procedures to ensure availability of backup or secondary water systems	DNR, HSEMD

Goal / Category	#	2023 State Mitigation Action	Agency/ Funding Source
Goal Four - Warning and Redundancy to Mitigate Disaster Disruptions: Through planning, improved warning systems, and redundancy, increase capabilities to ensure government operations, response and recovery are not significantly disrupted by disaster events.			
Warning & Redundancy to Mitigate Disaster Disruptions	4.1	Establish or improve warning and alert systems (e.g. sirens) through projects that partner local jurisdictions with federal and state resources.	HSEMD, USGS, NOAA / HMGP, BRIC
	4.2	Provide back-up power generation, storage, or other energy redundancy measures (described in Section 8 of the Iowa Energy Security Plan) to serve critical facilities or lifelines through projects that partner local jurisdictions with federal and state resources. (See Iowa REC Annex and section 8 of Iowa Energy Security Plan in appendices of this Plan.)	HSEMD / DNR & IFA SRF, BRIC, HMGP

5.6. Prioritization of Mitigation Actions

After the SHMT and Silver Jackets finished adding new mitigation actions and winnowing and clarifying the previous ones, it then turned its attention to determining the priority or rank of all the actions. The team agreed to use a scoring methodology to assist in the ranking. Depending on the score, each action was ranked in priority compared to the other mitigation actions in its respective category, according to these ranking classifications:

- High priority (abbreviated as priority A in places)
- Medium-high priority (abbreviated as priority B in places)
- Medium priority (abbreviated as priority C in places)

Actions that ranked below medium (C) priority, were determined to be actions that will be delayed (and so marked D) for now, and implementation would not be pursued in the next five years unless a very good opportunity suddenly appeared that made implementation easy with little commitment of existing State resources. (Also note, as always, local entities are welcome to pursue those, or any actions they wish, with their own resources.)

The criteria that the SHMT and Silver Jackets used to score the actions included criteria meant to evaluate how cost effective, environmentally sound, and technically feasible each action is. The actions were also considered relative to how much progress has been achieved by that action, or rather, how much more progress the SHMT felt still needed to be made implementing the particular action. Finally, the actions were also considered relative to which hazard or hazards each one addressed, and the degree of risk or vulnerability associated with such hazard(s).

To score the actions, an online form was developed so that each member of the State Hazard Mitigation Team or Silver Jackets could provide their scores for each of the criteria. Any member could provide a score for the following scoring factors: Cost Effectiveness, Environmental Soundness, How Much More to Do. In addition, any member could provide an opinion on which hazards he or she felt the action applied to. However, not everyone would be asked to provide a score for the two Technical Feasibility factors. Those who indicated their agency had a role in the implementation of the action would be asked to provide a Technical Feasibility score for a Cost factor, and another score for a Capability factor. Others could also provide scores for Technical Feasibility factors if they gained knowledge of details of

the implementation of the actions from Team members with relevant insights. (Such knowledge could be gained by attending a meeting at which different subject matter experts discussed details about the action.) The scoring factors that were used are explained below:

State Mitigation Action Evaluation/Scoring Factors

1. Cost Effectiveness Score:

   Each action given a score based on its considered likelihood of getting more benefit than cost. Scores given based on:

   5 points = Benefit expected to be five times or more than cost, **OR** will prevent deaths/injuries

   4 points = Benefit expected to be four to five times cost

   3 points = Benefit expected to be three to four times cost

   2 points = Benefit expected to be two to three times cost

   1 point = Benefit expected to be one to two times cost

   0 points = Cost may actually exceed benefit most of the time

2. Environmental Soundness Score:

   Each action given an "environmental" score according to how closely it matched the following:

   5 points = Great benefit to the environment and most everyone knows it!

   4 points = Most likely a benefit to the environment

   3 points = Perhaps some benefit to the environment, certainly no harm

   2 points = Generally accepted as causing no harm to environment, though not really considered a benefit either

   1 point = More likely NOT to damage the environment than to damage the environment

   0 points = Questionable if environmentally sound or not

3. How Much More To Do

   According to 44 CFR 201.4d, the plan needs to be updated to reflect progress on past mitigation efforts, and priorities must reflect that. To reflect that, points will be given based on the following:

   5 points = A lot more left to be done in the state

   2-4 points = Somewhere between above and below

   1 point = So much past progress that little need left for this, but still some need

   0 = So much past progress little or no need for this action

4. Technical Feasibility: Cost

   Each action considered in terms of ability for an agency (or agencies) to pay for it. Scores given on how closely each action matched the following:

   5 points = Cost easily covered within agency budgets or funding avenues (which may be from outside sources)

4 points = Cost within agency budgets or funding streams, but it would be tight and sometimes implementation would have to be delayed due to competing priorities
3 points = Could probably only do this action on a part-time basis, or provide sometimes
2 points = Could only do this action as a tangent or auxiliary to another purpose
1 point = Would need to find funding for this, as none currently available, but there is hope
0 points = Not likely to be able to find funding for this now due to legislative or other barriers

5. Technical Feasibility: Capability
   Other than cost, how technically feasible is the action? How capable is an agency to handle it?
   5 points = Already have an established program that does this very thing
   4 points = Fairly easy – have capable staff, resources, political support, etc.
   3 points = Would need to juggle staff and resources, but it is possible
   2 points = Would need some technical assistance to do this, because currently not entirely capable
   1 point = Very little capacity to do this, or political or other leaders do not seem to support
   0 points = Political or other factors seem against this

6. In addition to points for the above, each mitigation action gets additional points for each hazard the action applies to. Each voter would indicate whether or not they felt the action applied to each of the hazards listed below. The list also shows how many points would be given for applicability to the hazard. Below the list is an explanation of why each hazard got the amount of points designated.
   - Drought (2 points if applies to)
   - Tornado/Wind (4 points if applies to)
   - Floods - Riverine or Flash (3 points if applies to)
   - Severe Winter Storms/Cold (1 point if applies to)
   - Hail and Lightning Storms (1 point if applies to)
   - Excessive Heat (0.25 point if applies to)
   - Dam/Levee Failure (0.25 point if applies to)
   - Landslide (0.25 point if applies to)
   - Earthquake (0.25 point if applies to)
   - Wildfire (0.25 point if applies to)
   - Sinkholes (0.25 point if applies to)
   - Expansive Soils (0.25 point if applies to)

The assignment of point values to each of the natural hazards is based on the relative statewide risk and vulnerability of each hazard. The SHMT and Silver Jackets reviewed the risk and vulnerability of the several hazards and provided input on possible scoring schemes. The table summarizes the statewide impact severity of each hazard, and presents key factors used in the analysis to determine the point values for each hazard. (Note that in the table "NRI EAL" is from data from the National Risk Index Expected Annual Loss for all of Iowa from data retrieved December 2022. "NCEI" is derived from National Centers for Environmental Information Storm Events Data. "NFIP" is from the National Flood Insurance Program data.)

Iowa Natural Hazard Impact Severity Summary (2023)

Natural Hazard	Iowa Statewide Annualized Loss to buildings, population & agriculture[9] (adjusted for inflation unless noted)		Avg. Ann. Crop Ins. Payments (1991-2021, Inflation Adjusted)	Other Average Annual Insurance Payments	Annual Uninsured Losses (Range)	*Points per $50 Million Total Annual Loss*	*Minus Points per $100 M Insured Loss*	= Points *Rounded Up*
Drought	$163,480,599	(NRI EAL)	$133,415,593		$30 Million to $163 Million	**3.27**	**-1.33**	**2**
Tornado & Wind	$225,985,643	(NRI EAL)	$19,287,743	$52,520,000[10]	$154 Million to $226 Million	**4.52**	**-0.72**	**4**
Riverine Flood	$117,918,582	(NRI EAL)	$11,904,798	$4,435,926 Inflation Adjusted Avg. for years 1980-2006 (NFIP)	$102 Million to $118 Million	**2.36**	**-0.12**	**3**
Flash Flood	$26,395,114	Annual Average 1995-2021 NCEI			$11 Million to $26 Million	**0.53**		
Winter Weather & Cold Wave	$45,861,927	NRI EAL (Ice Storm EAL not included)	$2,035,979 (Includes Cold Winter, Freeze & Frost)	*[Less Than $52 Million combined]*	$44 Million to $46 Million	**0.92**	**-0.02**	**1**
Hail (Not Lightning)	$51,078,218	NRI EAL for Hail (Not Lightning)	$20,346,431		$31 Million to $51 Million	**1.02**	**-0.20**	**1**
Excessive Heat	$8,903,060	NRI EAL for Heat Wave	$4,075,774		$5 Million to $9 Million	**0.18**	**-0.04**	**0.2**
Dam/ Levee Failure	$5,210,667	Annual average for years 2006-2021 (NCEI, **NOT** adjusted for inflation)			$5 Million to $9 Million	**0.11**	**0**	**0.2**
Landslide	$2,878,870	(NRI EAL[9])	$0		Under $3 Million	0.06	0	0.1
Earthquake	$1,024,407	(NRI EAL[9])	$0		Under $3 Million	0.02	0	0.1
Wildfire	$854,539	(NRI EAL)	negligible		Under $3 Million	0.02	0	0.1
Sinkholes	Unknown		$0		Unknown	?		0.1
Expansive Soils	Unknown		$0		Unknown	?		0.1

[9] Agricultural losses not considered in Landslide and Earthquake hazards

[10] From ValuePenguin analysis of NOAA and Munich Re 2017-2021 data (https://www.valuepenguin.com/severe-weather-property-damages-study)

The scores of all those who scored a certain factor for an action were averaged for that factor. The average factor scores were then added together to come up with a total sum score for the mitigation action. But, because the points from applicability to hazards could add up so high if an action applied to all or many of them, the maximum amount of hazard applicability points was limited to 6, which is still one more point than the maximum points of any other factor.

The chart below shows the actions and the sum of their scores according to the factors above. The priority ranking is also shown. As mentioned above, each action is ranked in priority only as it compares to the other mitigation actions in its respective category. That may mean that an action that scores 30 in one category may be High (A) priority, but one with the same score, but in a different category, would only be Medium-high (B) priority. For actions that were determined to reduce vulnerability of State facilities, a + sign is shown in addition to the A, B, C, or D priority designation (as described above).

2023 State Hazard Mitigation Actions – Priority Ranked

#	Mitigation Action	Total Evaluation Score	Reduces Vulnerability of State Facilities (+)	Priority: A=High, B=Medium High, C=Medium
Goal One - Planning & Regulation: Through comprehensive and collaborative planning and analysis, develop processes and regulations that reduce hazard risks, and provide resources to local jurisdictions so they can develop and update plans and regulations to mitigate hazard impacts.				
1.1	Provide training, funding, or outreach encouraging adoption and implementation of codes, regulations or incentives for building and retrofitting structures in a manner that improves resilience against natural hazards. Target such training and outreach to jurisdictions in accordance with the hazards with which they are particularly vulnerable (e.g. discuss methods for making structures earthquake resistant just with cities having greatest vulnerability to earthquakes).	21.23		A
1.2	Provide information and facilitate communities in the process of joining Community Rating System (CRS).	19.26		B
1.3	Maintain at least 700 communities in NFIP.	20.75		B
1.4	Create guide with options and methods for communities to manage deed-restricted flood buyout properties so they become assets instead of liabilities.	20.14		B
1.5	Alert communities prone to location-specific hazards (e.g., landslides, earthquakes, wildfires, floods, levee/dam failure, sinkholes, and expansive soils) and encourage land-use planning and regulation that reduces risk from such hazards by providing training, funding, and/or outreach on appropriate codes, ordinances, site assessments, and enforcement measures.	20.95		B
1.6	Advocate for flood mitigation in watershed plans by having city officials and county emergency management participate in development and implementation of such plans.	18.60	+	C+
1.7	Develop a comprehensive, statewide flood mitigation strategy that considers flood buy-outs, watershed approach flood mitigation, levees and other solutions and outlines where and under what conditions these different strategies are best applied.	19.69	+	B+
1.8	Have 100 percent of high hazard potential dams with emergency action plans (EAPs).	18.48	+	C+
1.9	Develop GIS database for sinkholes, and facilitate having communities and agencies input locations of sinkholes in the database.	17.68		C
1.10	Identify public buildings that are in the special flood hazard area (SFHA), notify their owners, and tell owners that to be eligible for grant opportunities for retrofitting such buildings they need to include such a mitigation action in their local hazard mitigation plan.	20.05		B
1.11	Jurisdictions acquire software or other tools to help with implementing codes or regulations that mitigate hazards.	18.78		C

#	Mitigation Action	Total Evaluation Score	Reduces Vulnerability of State Facilities (+)	Priority: A=High, B=Medium High, C=Medium
1.12	Work with IDNR and IDALS to ensure, as Section 319 and other watershed plans are developed in conjunction with their staff, that flood impact data is shared and local emergency management personnel in subject watershed areas are informed of watershed planning initiatives.	21.39		A
1.13	By 2028 develop at least 3 watershed plans, hydrologic and hydraulic studies, or studies of issues related to groundwater or erosion that analyze hazard mitigation options.	23.08		A
1.14	Develop a comprehensive, statewide electric resiliency strategy to prevent loss of service, especially to critical facilities. Measures to consider include: microgrids and grid islanding to take advantage of distributed electricity generation and storage; improved maintenance, portability and connectivity of portable generators; and developing a single application process for generator grants across state agencies. Explore creating a program for portable generators, managed by an entity or entities that will maintain, exercise, position, and deploy generators in cooperation with counties, municipalities, and electric generation and distribution systems.	22.00	+	A+
1.15	Encourage cities, counties, levee districts and others to participate in watershed management authorities or other coalitions to study and recommend mitigation solutions for levee and flood issues, as well as drought. Offer technical assistance or outreach to jurisdictions, including levee districts and soil and water conservation districts, about how to coordinate watershed-wide implementation of small projects for a greater cumulative effect (such as controlling tile drain flow rates to not only reduce flooding but also drought impacts).	21.88		A
1.16	Develop, implement, and continually improve the Iowa Drought Plan's communication plan, with an official update in 2024 and another revision in 2028.	19.29		B
1.17	Communities develop/update a Community Wildfire Protection Plan and/or become a Firewise community.	12.82	This lower-priority action delayed (will do if opportunity appears, or locals may do with their own resources)	
1.18	By 2028 provide technical assistance (TA) to help 15 communities understand their flood issues to explore alternatives for mitigation.	22.25		A
Goal Two - Resilient Systems & Structures: Construct new or improved structures and infrastructure, including natural infrastructure, and employ practices that reduce hazard risks while also preserving or restoring the functions of natural systems.				
2.1	Provide dry hydrants in wildland-urban interface areas with no water mains through projects that partner federal and state hazard mitigation resources with local jurisdictions.	15.12	This lower-priority action delayed (will do if opportunity appears, or locals may do with their own resources)	

#	Mitigation Action	Total Evaluation Score	Reduces Vulnerability of State Facilities (+)	Priority: A=High, B=Medium High, C=Medium
2.2	Connect drought-vulnerable water supply systems to other water supplies through projects that partner federal and state hazard mitigation resources with local jurisdictions.	17.02		C
2.3	Elevate or protect wastewater lift stations, and/or complete other sanitary sewer hazard mitigation improvements, through 5 projects by 2028 that partner federal and state hazard mitigation resources with local jurisdictions.	21.17	+	A+
2.4	Mitigate flooding of buildings by elevating buildings (to the 0.2% annual chance flood elevation or 2+ feet above BFE), flood-proofing, constructing non-levee embankments (e.g. berms) on the building property, or acquiring and removing buildings on flood-prone properties, with a goal to apply for funding to remove at least 10 buildings from the list of repetitive loss properties.	21.66	+	A+
2.5	Increase floodwater storage through floodplain or streambank restoration projects that partner federal and state hazard mitigation resources with local jurisdictions.	21.40		A
2.6	Put in impervious manholes, pumps, or backflow prevention, or similar small-scale flood protection projects (not addressed elsewhere in list of state hazard mitigation actions) through projects that partner federal and state hazard mitigation resources with local jurisdictions.	20.06		B
2.7	Install and maintain protective measures for the physical safety and security of critical facilities through projects that partner federal and state hazard mitigation resources with local jurisdictions (including school districts).	15.68	+	Delayed - low priority
2.8	Construct public safe rooms through projects that partner federal and state hazard mitigation resources with local jurisdictions or school districts.	20.11	+	B+
2.9	Reduce damage from flooding and erosion through stream channel improvement projects that partner federal and state hazard mitigation resources with local jurisdictions.	20.74		B
2.10	Where professional assessments have deemed necessary, rehabilitate dams and levees of high hazard potential (where failure would likely cause loss of human life).	16.86	+	C+
2.11	Provide information to owners of underground storage tanks (USTs), and the officials of the jurisdictions in which they are located, about damages and consequences that could arise from flooding of UST sites, and how such damages and consequences could be prevented or mitigated.	20.13		B
2.12	Implement green infrastructure (including permeable pavement, detention basins, and methods that increase infiltration or detention) in cities to mitigate flooding through at least 5 projects by 2028 that partner federal and/or state resources with local municipalities.	21.65	+	A+
2.13	By participating in projects that partner federal and/or state resources with local municipalities or electric cooperatives,	25.10		A

#	Mitigation Action	Total Evaluation Score	Reduces Vulnerability of State Facilities (+)	Priority: A=High, B=Medium High, C=Medium
	provide more resilient electric service through: robustness measures (including undergrounding power lines, system segmentation, and providing "design-failure" mode for lines), installation of ice resistant wire and other cold weather protection measures, extreme heat and drought resistance measures (e.g. dry cooling), flood protection measures (e.g. elevate equipment, such as substations, in flood-prone areas), or wind protection measures (e.g. stronger utility poles or more poles per mile) . (See Iowa REC Annex and section 8 of Iowa Energy Security Plan.)			
2.14	After a comprehensive planning approach that fully considers watershed approach or green infrastructure options, mitigate flood damage to structures or public facilities (including roads and parks) through projects that partner federal and state hazard mitigation resources with local jurisdictions to retrofit bridges, elevate roads, build or reconstruct levees (in accordance with standards of 44 CFR 65.10), or install culverts or other stormwater system improvements.	20.19		B
2.15	Mitigate flooding with a watershed approach by putting in practices upstream of cities that detain water and/or increase infiltration (e.g. wetlands, terraces, oxbows, other basins, perennial cover, series of WASCOBs) through at least 5 projects by 2028 that partner federal and/or state resources with local jurisdictions.	21.08	+	A+
2.16	Initiate projects to reduce landslide damage and risk where landslides are most likely, through projects that partner federal and state resources with local jurisdictions.	13.125	This lower-priority action delayed (will do if opportunity appears, or locals may do with their own resources)	
2.17	Reduce water losses through leak detection and/or distribution system renovation projects that partner federal and state hazard mitigation resources with local jurisdictions.	19.46		B
2.18	Encourage development of gray water infrastructure, recycling and reusing water at any scale whenever viable through projects that partner federal or state resources with local jurisdictions.	17.61		C
2.19	Develop additional water storage, especially floodwater diversion and storage options, through projects that partner federal and state resources with local jurisdictions.	21.9		A
2.20	Encourage the building of shelters (other than safe rooms) at parks and other outdoor areas where people congregate through projects that partner federal and state resources with local jurisdictions.	16.38		C

#	Mitigation Action	Total Evaluation Score	Reduces Vulnerability of State Facilities (+)	Priority: A=High, B=Medium High, C=Medium
2.21	Encourage use of mitigation funds to equip public facilities, community centers and resilience hubs to act as cooling and warming centers during extreme temperature events, especially those frequented by older adults and children, such as libraries.	16.36		C
2.22	Install transfer switches, panels, and connections for easy or automatic use of microgrids or generators (including portable generators) to supply power, through projects that partner federal and state mitigation (including Public Assistance - Mitigation) resources with local jurisdictions and non-profit entities.	21.50	+	A+
2.23	Encourage programs for residential properties (like Bee Branch Healthy Homes Resiliency Program) that implement on-site stormwater management practices (such as gutters, drains, concrete work, and landscaping that direct water away from homes).	22.28		A
Goal Three - Cooperation & Awareness: Expand public awareness and intergovernmental communication so that Iowa citizens and communities have knowledge to mitigate hazard impacts and become more resilient.				
3.1	Improve awareness of hazard risks and ways to reduce their impacts through signage projects or awareness campaigns that partner local jurisdictions with federal and state resources.	23.21	+	A+
3.2	Before 2028 provide training or outreach to 5 communities with repetitive loss properties, including information about measures which may be used to reduce future damage.	16.18		C
3.3	Discuss and consider the recommendations of the December 2022 "Iowa Statewide Levee Districts Study" (Study), including establishing a state levee safety program and consolidating levee districts at the USACE system level (described more in Appendix F of the Study). Work toward implementing the recommendations that garner support amongst stakeholders.	19.21		B
3.4	Provide example standards and guides, including the Iowa Stormwater Management Manual, to local jurisdictions that promote green infrastructure practices and measures that direct water away from structures.	18.67		B
3.5	By 2028, develop coordinated, prompt, reliable, and accessible information for the whole community, actionable at every level of organization (i.e., state agencies, local government, industries, NGOs, individuals), concerning current and likely drought and water supply status, drought vulnerability, drought-time response actions, and continuous conservation measures. Provide status updates in DNR's monthly Water Summary Update newsletter and provide resources on drought.iowa.gov.	17.8		C

#	Mitigation Action	Total Evaluation Score	Reduces Vulnerability of State Facilities (+)	Priority: A=High, B=Medium High, C=Medium
3.6	Maintain and expand monitoring network for stream flows, precipitation, soil moisture, evapotranspiration, and groundwater levels, in order to characterize Iowa's surface and groundwater resource availability, quality, use, and sustainability. Share the information in near-real time via a web-based data system.	16.58		C
3.7	Explore the creation of tools that can help communities understand mitigation measures that have been implemented or considered by other communities in Iowa (e.g., interactive map, flyers, etc.).	20.62		B
3.8	Annually provide training and/or outreach about mitigation opportunities, available resources, and application specifics with a special focus on smaller communities, underserved communities, EDRCs and those with higher socially vulnerable populations.	22.60		A
3.9	Discuss flood and drought mitigation opportunities with the Iowa Water Resources Coordination Council and Iowa Watershed Planning Advisory Council at least annually. Consider outreach to other stakeholders/groups that work in watershed management.	21.51		B
3.10	Encourage water utilities to review their operating procedures to ensure availability of backup or secondary water systems	15.85	This lower-priority action delayed (will do if opportunity appears, or locals may do with their own resources)	
Goal Four - Warning and Redundancy to Mitigate Disaster Disruptions: Through planning, improved warning systems, and redundancy, increase capabilities to ensure government operations, response and recovery are not significantly disrupted by disaster events.				
4.1	Establish or improve warning and alert systems (e.g. sirens) through projects that partner local jurisdictions with federal and state resources.	21.29	+	A+
4.2	Provide back-up power generation, storage, or other energy redundancy measures (described in Section 8 of the Iowa Energy Security Plan) to serve critical facilities or lifelines through projects that partner local jurisdictions with federal and state resources. (See Iowa REC Annex and section 8 of Iowa Energy Security Plan in appendices of this Plan.)	20.14	+	B+