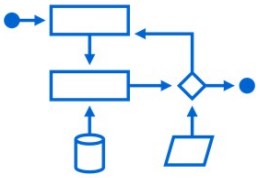


MODULE TWO: Developing Sustainable Community Policies and Plans

Overview

Planning and mitigation are less costly and more efficient approaches to building resilience than response and recovery. Successful planning relies on coordination across multiple levels of government and organizations, strong community plans and well-informed floodplain regulation. The institutional parameters to be assessed in this portion of the Scorecard include:

Resource Inventory and Mapping

- Up-to-date maps of floodplains, flood hazards and past flood impacts are important to community development and emergency response planning and can inform policy and regulation so as to best prevent future property damage and loss.
- Enrollment in FEMA's National Flood Insurance Program (NFIP) and Community Rating System provide protection for community members and property by providing flood insurance commonly left out of regular homeowner's insurance and incentivizing flood mitigation practices.

Plan Quality and Coordination

- Having consistent maps, language and regulations around flooding, floodplains and stormwater management across all community plans strengthens future planning and limits confusion.
- Including an array of different stakeholders, departments and expertise in community planning will move your community toward a more comprehensive and holistic approach to flood resilience.

Staff and Technological Capacity

- Having your staff trained in floodplain management or collaborating with trained staff within your region allows your community to plan for flooding with the most up-to-date and well-informed practices.
- Access to geographic information systems (GIS) or other mapping technology in your community or through regional connections is essential to flood and hazard mitigation planning.

Tools

- Infrastructure is a cornerstone of flood mitigation. In a time when infrastructure across the country is in disrepair, making sure to closely monitor existing grey infrastructure and implement green infrastructure whenever possible in future development helps build flood resilience.
- Outside of infrastructure, your community can also implement numerous non-structural policy tools that regulate and incentivize proper floodplain and stormwater management.

Implementation and Enforcement

- Having a sound process to assess properties deemed "*Substantially Damaged*" by FEMA is important in order to get the best relief and support possible after a flood event.
- Having flood resilience goals can help your community streamline, prioritize and collaborate effectively around flood mitigation and management.

Who Should Complete this Assessment?

Depending on the composition of your staff, one or more individuals from the following groups may be appropriate to conduct this assessment:

- City planning staff
- Community development staff
- Economic development staff

Alternatively, whoever knows the most about your community plans (e.g., comprehensive plan, hazard mitigation plan, area plans, transit plans) could complete this section.

What Will you Need in Order to Complete this Assessment?

- All land-use-related community plans, such as your stormwater management plan, comprehensive plan and so on
- Flood Insurance Rate Maps (FIRMs) from FEMA
    - A FIRM is an official map of a community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community.
    - Full FIRM panels are 36"x25.875," so most users prefer to print a smaller selected version called a FIRMette, which is adapted to print on a standard home printer.
    - Individual maps can be downloaded from msc.fema.gov by entering an address or place in the search bar. Then click the "DYNAMIC MAP PRINT MAP/FIRMette" button to download and print your map or maps. Some communities may be small enough that their entire area is contained within one map.
- Any other flood-related maps within your community plans and/or reports
- Flood or hazard mitigation-related policies
- Knowledge of the status of both current and planned green and grey infrastructure within your community

Definitions

A Zone: Areas subject to inundation by the 1% annual chance flood event. Detailed hydraulic analyses have not been performed, so no base flood elevations (BSEs) or flood depths are shown.

Best Management Practices: Best management practices (BMPs) are defined by the North Carolina Forest Service as "a practice, or combination of practices, that is determined to be an effective and practicable (including technological, economic, and institutional considerations) means" for meeting goals; for the purpose of this assessment, this goal is reducing flood damage.

Certified Floodplain Manager (CFM): This is a national floodplain management certification program administered by the Association of State Floodplain Managers (ASFPM). A floodplain manager is a professional trained in strategies and policies to reduce flood losses and protect natural resources and functions of floodplains.

Channel modification: Human-induced changes to the natural flow and location of a stream channel.

Closed-basin lakes: Lakes that have either a small outlet or no outlet and may remain above flood stage for years.

Coastal erosion: The wearing away of material from a coastal profile, including the removal of beach, sand dunes or sediment by wave action, tidal currents, wave currents, drainage or high winds.

Combined sewer system (CSS): A system that is designed to collect rainwater runoff, domestic sewage and industrial wastewater in the same pipe (US EPA, 2020).

Combined sewer overflow (CSO): When the volume of wastewater exceeds the capacity of a CSS (e.g., during heavy rainfall events or snowmelt), untreated stormwater and wastewater overflow and discharge into nearby streams, rivers and water bodies, which has negative implications for local water quality (US EPA, 2020).

Community Rating System (CRS): A program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP (defined below) standards.

Dam failure inundation area: The area that would be flooded if a dam were to be damaged and no longer function.

Emergency Action Plan: A written document required by particular OSHA standards to facilitate and organize employer and employee actions during workplace emergencies, including floods.

Future conditions hydrology: Flood discharges are modeled and mapped by communities based on projected land use conditions, not just current conditions. More information can be found in

the FEMA document "Modernizing FEMA's Flood Hazard Mapping Program: Recommendations for Using Future-Conditions Hydrology for the National Flood Insurance Program."

Geographic information system (GIS): Software designed to store, retrieve, manage, display and analyze all types of geographic and spatial data.

Green infrastructure: A flood management technique that uses vegetation, soils and other elements and practices to enhance on-site stormwater infiltration and treatment utilizing natural processes. These techniques can be used in partnership with traditional gray infrastructure, such as dams and levees.

Green roof: A flat or slightly sloped building roof that is partially or completely covered with vegetation and a growing medium, planted over a waterproof membrane.

Hazus: A nationally applicable standardized methodology developed by FEMA that contains models for estimating potential losses from earthquakes, floods and hurricanes. It uses GIS technology to estimate physical, economic and social impacts of disasters.

Ice jam: Pieces of floating ice carried with a stream's current can accumulate and create an obstruction to streamflow which is called an ice jam. They generally develop near river bends, mouths of tributaries, points where the river slope decreases, downstream of dams and upstream of bridges or obstructions (National Weather Service, n.d.).

Land subsidence: The gradual settling or sudden sinking of the Earth's surface due to subsurface movement of earth materials (United States Geological Survey, 2020).

Mudflow: A river of liquid mud similar in consistency to a milkshake.

National Flood Insurance Program (NFIP): A federal program administered by FEMA that enables property owners in participating communities to purchase insurance against flood losses, in return for that community adhering to certain development regulations.

Open space zoning district: A zoning strategy that requires new construction on a parcel to be located on only a portion—typically half—of the parcel. The remaining open space is permanently protected under a conservation easement (Arendt, 1992)

Permeable pavement: An alternative paving surface that allows stormwater runoff to filter through voids in the pavement surface into an underlying stone reservoir, where it is temporarily stored and/or infiltrated.

Rain garden: A garden of native shrubs, perennials and flowers planted in a small depression, designed to temporarily hold and soak in rain water runoff that flows from roofs, driveways, patios or lawns.

Repetitive loss property: Any insurable building for which two or more claims of more than $1,000 were paid by the National Flood Insurance Program (NFIP) within any rolling 10-year period, since 1978.

River erosion: The wearing away of rock and soil found along the riverbed and banks.

Stormwater management plan: A plan made by a community to identify potential sources of stormwater pollution on a construction, industrial or municipal site and describe best management practices to reduce pollutants in stormwater discharge from these sites.

"Substantially damaged": In Wisconsin, a property is considered substantially damaged if the cost of repairs is 50% or more of the structure's equalized assessed value as listed before the damage occurred (Wisconsin Department of Natural Resources, n.d.).

Uncertain flow paths: Alluvial fans, moveable bed streams or other floodplains where the channel moves during a flood.

V Zone: Velocity zones subject to storm surge and wave action. Buildings located here will likely be damaged or demolished unless constructed to certain high standards.

Resource Inventory and Mapping

This section includes an assessment of your community's up-to-date flood maps, historical records and other background information necessary to inform planning for the future.

For this section you will need to find your community's **Flood Insurance Rate Maps (FIRMs)**; please visit the FEMA Map Service Center at msc.fema.gov.

Here, you can input an address or set of longitude and latitude coordinates to focus in on your community, and you will be directed to your FIRMs. There may be more than one, depending on the size of your area of interest.

On the map itself, there is a date listed that indicates the most recent update of your map (it is indicated as "eff. 2/3/2016"). In this example, the FIRM for this selected area was last updated February 3, 2016. This is important for evaluating whether another update is necessary.

To complete this section, it may also be helpful to have any other **flood-related map delineated for your community** and your **floodplain management policies**.

1. Does your community have a Flood Insurance Rate Map(s)?

a. Yes, and it has been updated <5 years ago
b. Yes, but it hasn't been updated in >5 years
c. Yes, but only part of our community has been mapped
d. No, we do not have a FIRM but we use another map that serves this purpose (such as a Flood Hazard Boundary Map, or FHBM)
e. No, we have no flood hazard map of any kind

1a. If you have flood maps, are they designed with small contour intervals and recently constructed streets/developments included?

a. Yes, our flood maps have the most accurate ground elevation information possible
b. Yes, our flood maps are either at high resolution or include newly constructed streets and developments, but not both
c. No, our maps are not at the highest resolution possible and could benefit from improvement
d. Unsure

2. How frequently have major flood events impacted your community in the past ten years?

a. Never
b. Infrequently
c. Approximately every other year
d. At least once a year every year

3. Has your community mapped the extent of previous flood events?

a. Yes, all previous floods have been mapped and documented
b. Yes, some of the previous floods have been mapped and documented
c. Previous flood extents have been documented but not mapped
d. Previous flood extents have been neither documented nor mapped
e. N/A, we have had no previous floods

4. Does your community participate in the *National Flood Insurance Program (NFIP)*?

a. Yes, and we are in full compliance
b. Yes, but we are not in full compliance
c. No, but we have considered participating or did previously
d. No, we have never explored this option

5. Does your community participate in the *Community Rating System* program through the National Flood Insurance Program (NFIP)?

a. Yes, and we have a rating of 5 or better
b. Yes, and we have a rating of 6 or lower
c. No, but we have considered participating or did previously
d. No, we have never explored this option

6. In your community, has a plan, including long-term funding and designated staff/ responsible department, been designed to keep flood hazard maps up to date?

a. Yes, there is a specific plan that designates both funding and staff/responsible department to update hazard maps
b. Yes, there is a specific plan that designates either funding or staff/responsible department, but not both
c. Updating flood maps is mentioned in our plans, but with no specifics as to funding or staff/responsible department
d. Updating flood maps is not mentioned in any of our plans

7. Does your community require that developers provide detailed flood data (base flood elevation data), particularly if they are developing within an *A zone or V zone*?

a. Yes, we require developers to provide flood data for all size developments and in all FIRM zones
b. Yes, we require developers to provide flood data in all FIRM zones, but only if the development is 5 acres or 50 lots in size or greater
c. Yes, we require developers to provide flood data, but only within A zones
d. No, we do not require developers to provide flood data

Have you mapped other flood-related hazards?

	a. Yes	**b. Some, not all**	**c. No**	**d. N/A**
8. *Uncertain Flow Paths*				
9. *Closed-Basin Lakes*				
10. *Ice Jams*				
11. Debris and Sediment Blockage				
12*. Land Subsidence*				
13. *Mudflow* Hazards				
14. *Dam Failure Inundation*				
15. *Coastal Erosion*				
16. *River Erosion*				
17. *Channel Modification*				

Scoring Resource Inventory and Mapping

Number of “a” answers: _____
Number of “b” answers: _____
Number of “c” answers: _____
Number of “d” answers: _____
Number of “e” answers: _____

If you answered “c,” “d” or “e” for eight or more questions, please refer to the Resource Inventory and Mapping recommendations section on page 28.

Plan Quality and Coordination

For this section, you will need to assemble **all of your community plans.** These may include comprehensive land use plans, transportation plans, economic development plans, downtown improvement plans, historic district plans, coastal zone management plans, watershed management plans, and so on.

List the plans your community uses below:

Plan Name	Identifies current flood-prone zones	Identifies future flood-prone zones	Restricts damage-prone development in such zones
Plan 1:			
Plan 2:			
Plan 3:			
Plan 4:			
Plan 5:			
Plan 6:			
Plan 7:			
Plan 8:			

1. How many of your community's plans identify current flood-prone zones?

a. All of them
b. Over half of them
c. Less than half of them
d. None

2. How many of your community's plans identify future flood-prone zones?

a. All of them
b. Over half of them
c. Less than half of them
d. None

3. Are the flood-prone zones identified in one plan the same flood-prone zones as identified in others?

a. Yes, all plans agree on which areas are deemed flood prone
b. Yes, most plans agree on which areas are deemed flood prone
c. No, different areas are designated flood prone in different plans
d. No, flood-prone zones are not designated in most of our plans
e. No, flood-prone zones are not designated in any of our plans

4. How many of your community's plans restrict development in flood-prone zones, current or future?

a. All of them
b. Over half of them
c. Less than half of them
d. None

5. Is there a designated floodplain management plan in your community?

a. Yes, and it has been updated in the past five years
b. Yes, but it has not been updated in the past five years
c. No, but there are robust elements of floodplain management included in our other plans
d. No, no such plan or plan elements exist

6. Are floodplains in your community designated as an *open space zoning* district (such as recreation or conservation) that will limit the costs of flooding damage?

a. Yes, all areas within the floodplain are zoned to limit development
b. Some, but not all, of the floodplain is zoned to limit development
c. No, development on the floodplain is not limited

7. Is there a community-wide open space or parks plan that specifies the role of open space in stormwater management?

a. Yes, and it has been updated in the past five years
b. Yes, but it has not been updated in the past five years
c. No, but there are robust elements of open space and stormwater management included in our other plans
d. No, no such plan or plan elements exist

8. Are designated *stormwater management plans* required from developers in your community?

a. Yes, stormwater management plans are required of developers
b. No, but there are robust elements of stormwater management included in other plans
c. No, no such plan or plan elements exist

9. Does your community have guidelines or procedures to ensure that all departments have compatible messages and goals concerning stormwater?

a. Extensive efforts have been made to coordinate messaging
b. Some efforts have been made to coordinate messaging
c. No efforts have been made to coordinate messaging

10. Does the community involve staff with scientific training in water issues when developing comprehensive land use plans?

a. Always
b. Sometimes
c. No

11. Are regular interdepartmental meetings or trainings held regarding flood-based issues in your community?

a. Once a year or more
b. These meetings are only held as issues emerge
c. We rarely host such meetings, but have in the past
d. No, these sorts of meetings are not held

12. Do you work with other governmental agencies or other communities on water-related hazards projects?

a. Yes
b. We have before, but it is inconsistent
c. No

13. Has your community investigated strategies used by other communities to determine *best management practices (BMPs)* that would be appropriate for your own community?

a. Yes
b. We have previously or very minimally
c. No

14. Are your community's comprehensive plans, stormwater reports and other water resources management documents easily accessible to the public and officials?

a. Yes, these documents are available and easy to locate online for public and official use
b. Yes, these documents are available, but only upon request
c. No, these documents are available for officials, but not for the public
d. No, these documents are difficult to access or do not exist at all

Scoring Plan Quality and Coordination

Number of “a” answers: _____
Number of “b” answers: _____
Number of “c” answers: _____
Number of “d” answers: _____
Number of “e” answers: _____

If you answered “c,” “d” or “e” for seven or more questions, please refer to the Plan Quality and Coordination recommendations section on page 28.

Staff and Technological Capacity

For this section, you will need to review **flood-related policies** and **descriptions of staff responsibilities** to determine roles and functions related to flooding. While you don't need specific materials, you may need to consult community plans.

1. Does your community have a designated department to address flooding issues?

a. Yes, one specific department has been identified to address flooding issues
b. No, but specific employees from multiple departments have been identified to address flooding issues
c. No, responsible departments are not identified until a flooding event has already happened

2. Does your community have staff to perform site assessments specifically to evaluate flood potential?

a. Yes, we have designated staff to perform site assessments
b. No, but we have funds allocated to hire limited term employees or consultants to perform these duties
c. No, but we have performed site assessments in the past
d. No, we have no staff or funds for such assessments

3. Does your community have any individuals on staff who have completed the *Certified Floodplain Manager (CFM*) program through the Association of State Floodplain Managers?

a. Yes, we have at least one CFM on our municipal staff
b. No, but we consult with at least one CFM at a regional or county level
c. No, we do not have access to a CFM

4. Does your community have access to *geographic information system (GIS)* software or other mapping technology?

a. Yes, at least one department has access to GIS and has committed full time staff trained in it
b. Yes, at least one department has access to GIS, but either relies on limited term staff or temporary consultants to utilize it
c. No, but we have had some analyses done previously in GIS by an external partner
d. No, we have no staff or software to support mapping in-house, nor have such maps been made

4a. If yes, have you utilized tools in GIS including the Flood Loss Estimation Model or FEMA's *Hazus*?

a. Yes, we have explored and used additional flood-specific tools through GIS
b. Yes, we have at least explored additional flood-specific tools
c. No, we have not explored these options in GIS

5. Has your community worked in collaboration with other regional partners to enhance staff and technological capacity?

a. Yes, we have reached out to regional partners and have determined all resources available
b. Yes, we have reached out to at least one regional partner to initiate collaboration
c. No, we have not made attempts to coordinate with regional partners for flood resilience

Scoring Staff and Technological Capacity

Number of “a” answers: _____
Number of “b” answers: _____
Number of “c” answers: _____
Number of “d” answers: _____

If you answered “c” or “d” for three or more questions, please refer to the Staff and Technological Capacity recommendations section on page 29.

Tools

For this section, you will need **knowledge of both structural (physical infrastructure such as dams and rain gardens) and non-structural (policies and regulations) tools related to flooding**. This may just be common knowledge among your staff or contained within community plans.

Structural

1. Does your community have a *combined sewer system (CSS)*?

a. Yes
b. No

1a. If yes, has your community experienced a *combined sewer overflow (CSO)*?

a. No, this has never been a problem in our community
b. Yes, it has happened, but more than ten years ago
c. Yes, it happens, but not regularly
d. Yes, this happens at least once a year

Incentivizing and Promoting Green Infrastructure

2. Are *green infrastructure* strategies such as *green roofs* and *permeable pavement* permitted and encouraged in your community's plans?

a. Yes, they are both permitted and encouraged
b. Yes, they are permitted
c. Yes, some but not all are permitted
d. Green infrastructure is not mentioned in our plans
e. No, it is explicitly prohibited

3. Do your community's transportation plans promote *green infrastructure* in new street design?

a. Yes, it is both permitted and encouraged
b. Yes, it is permitted
c. Green infrastructure is not mentioned in our street design policies
d. No, it is explicitly prohibited

4. Does your community identify key *green infrastructure* areas during land use plan development?

a. Yes
b. No

5. Does your community analyze abandoned sites for possible redevelopment as *green infrastructure* sites?

a. Yes, sites have been both identified and redeveloped into green infrastructure sites already
b. Yes, sites have been identified, but not yet redeveloped
c. Yes, we analyze sites, but none suitable have been found
d. No, this is not our practice
e. No, we have no abandoned sites

6. Does your community have demonstration sites for *green infrastructure* such as *rain gardens* or *green roofs* to use as educational tools to inform the public of benefits?

a. Yes, we have at least one such demonstration site
b. No, but we actively promote such a site at the regional/county level
c. No, we do not have or promote any sites

7. Does your community have an award or appreciation program for businesses or individuals who adopt stormwater conservation or *green infrastructure* practices?

a. Yes, we sponsor and publicize our own appreciation program
b. Yes, we promote and publicize a program from another organization
c. No, we have no such program

Gray Infrastructure

8. Are there structural flood barriers, such as dams, levees, floodwalls or berms within your community?

a. No
b. Unsure
c. Yes

8a. If yes, has your community identified all of such existing structures?

a. Yes, all structures within the community have been identified
b. Yes, some structures have been identified, but some may have been overlooked
c. No, there are structures that have not been identified yet
d. No, no such effort has been conducted

8b. Have these structures been evaluated for structural stability?

a. Yes, all structures have been evaluated by an engineer within the past five years
b. Yes, some structures have been evaluated by an engineer within the past five years
c. Yes, all structures have been evaluated, but not within the past five years
d. Yes, some structures have been evaluated, but not within the past five years
e. No, structures have not been evaluated professionally at any point

8c. Are these structures sound and able to manage the amount of stormwater they were initially designed for?

a. Yes, all structures are structurally sound
b. Yes, most structures are structurally sound
c. No, most or all structures are insufficient or damaged
d. We have not conducted such an analysis

8d. Is there an established, regular schedule and designated staff to reevaluate structural stability, based on clear criteria?

a. Yes, there is designated staff to reevaluate flood structures on an annual basis
b. Yes, there is designated staff to reevaluate flood structures, but this is not conducted on any regular schedule
c. Yes, there is designated staff to reevaluate flood structures, but criteria for this evaluation is subjective
d. Yes, there is either designated staff or a regular schedule, but not both
e. Flood structure evaluations are only conducted after a flood event has occurred

8e. Does your community have *emergency action plans* to prepare downstream communities if a dam failure were to occur?

a. Yes, such a plan exists and community members are aware of it and have access to it
b. Yes, such a plan exists, but it is only accessible to community members upon request
c. Yes, but the plan is outdated and needs to be redone to reflect current needs
d. No, such a plan does not exist
e. No, we either do not have dams or the dams we have are not anticipated to affect downstream communities in a significant way

Non-structural

Do you participate in any of the following land use regulatory strategies for land known to be flood prone?

	a. Required	b. Encouraged	c. Permitted, but not encouraged	d. Not mentioned in plans	e. Explicitly prohibited
9. Buyouts of flood-prone land					
10. Cluster development					
11. Transfer of development rights					
12. Purchase of development rights					
13. Requiring on-site compensatory storage					
14. Directed downspouts to pervious areas					
15. Stormwater impact fees					

16. Low-impact development principles					
17. Requirement of engineering study to determine stormwater impacts of new development					

18. Do you prohibit any residential or commercial development in floodplains?

a. All residential and commercial development in floodplains is banned
b. Just one of these types of development is banned
c. No types of development are banned
d. We do not have floodplains in our community

19. Has your community purchased and removed structures in floodplains?

a. Have removed all residential and commercial structures from floodplains
b. Have removed some but not all residential and/or commercial structures from floodplains
c. Have inventoried structures in floodplains and developed a plan for removal
d. Have not removed any structures nor planned to do so
e. Do not have any buildings in floodplains

20. Do you involve emergency responders and other local government departments early in the planning process to discuss street design for flood resilience?

a. Yes
b. Sometimes
c. No

Scoring Tools

Number of “a” answers: _____
Number of “b” answers: _____
Number of “c” answers: _____
Number of “d” answers: _____
Number of “e” answers: _____
Number of “f” answers: _____

If you answered “c,”, “d,” “e” or “f” for 10 or more questions, please refer to the Tools recommendations section on page 30.

Implementation and Enforcement

For this section, you will need to know about your **community's procedures for evaluating flood damage** and the **long-term planning process**. No specific materials are required; you should rely on local knowledge.

1. Does your community have clear, regularly updated evacuation plans for all regions of your municipality?

a. Yes
b. Some, but not all regions
c. No

2. Has your community identified repetitive loss properties?

a. Yes, and they are up to date
b. Yes, but it has been 5 years or more
c. Some, but not all, have been identified
d. No, repetitive loss properties haven't been tracked over time

3. Does your community have a process to determine whether a home has been *"substantially damaged"* following a flood event? (e.g., FEMA Residential Substantial Damage Estimator program)

a. Yes
b. No, but the community relies on county or regional resources to fill this need
c. No

4. Does your community have dedicated staff for evaluating flood damage?

a. Yes, the community has regular dedicated staff with the explicit duty of evaluating flood damage
b. No, but the community relies on county or regional resources to fill this need
c. No, the community has not had flooding that necessitates this staff
d. No, the community needs this staff but does not have them

5. What is done after a house is evaluated and deemed *substantially damaged* in your community?

a. The house must either be rebuilt to meet clear requirements or the property is bought and converted to open space or other low-impact development
b. The house must be rebuilt to stricter standards, but not exceeding state requirements
c. The house may remain structurally as it was before the flooding, with the financial burden resting on the homeowner
d. There is no standardized protocol for this situation

6. Is there a system in place in your community to reevaluate flood policies over time and ensure they have been successful?

a. Yes, the community reevaluates policies regularly and updates them with new information
b. Yes, the community has reevaluated policies, but not in recent years
c. No, the community does not have a system to regularly reevaluate flood policies

7. Has your community established flood resilience goals, both long and short term, to gauge success of your efforts?

a. Yes, the community has established goals that are both specific and quantifiable
b. Yes, the community has established goals, but they are broad and not quantifiable
c. No, the community has not established clear flood resilience goals

8. Has your community established funding sources and strategies, both long and short term, to meet identified goals?

a. Yes, the community has a clear idea of where flood resilience funding will come from over both the short and long term
b. Yes, the community has a clear idea of where flood resilience funding will come from over the short term, but not the long term
c. No, the community has not established funding sources or strategies for the future

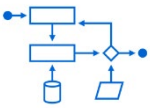
Scoring Implementation and Enforcement

Number of “a” answers: _____
Number of “b” answers: _____
Number of “c” answers: _____
Number of “d” answers: _____

If you answered “c” or “d” for four or more questions, please refer to the Implementation and Enforcement recommendations section on page 31.

RECOMMENDATIONS

In this section, you will find recommendations, resources and contacts to learn more about how to improve your community's resilience to flooding. Recommendations are grouped into the same sections as the guide itself. **Keep in mind that you may benefit from recommendations in a variety of sections, not just those that you were suggested for you based on your scoring during the assessment**. It may be valuable to review all or many suggestions below before choosing the best course of action. **Please note that this list of recommendations is not exhaustive and does not represent the full spectrum of possibilities for your community.**



Module Two

Resource Inventory and Mapping

Update existing floodplain maps

- Compare FIRMs with local flood knowledge and check for discrepancies.
    - If discrepancies exist or if maps are too old to include contemporary development, contact FEMA to receive an updated FIRM.
    - More information about the creation of new flood maps can be found on the Wisconsin DNR website.
    - Become a cooperating technical partner with FEMA. In this case, costs to update maps will be shared with FEMA and your community will have higher priority for a new flood study.
- Contact FEMA to include future conditions hydrology on your FIRMs. If the community requests, FEMA will include this information and designate it as Zone X (Future Base Flood)
- Contact Wisconsin state NFIP Coordinator for more local information.
- Gather historic data about where and how intensely flooding has happened in the past to identify critical areas.

Maintain existing floodplain maps

- Create a specific plan for updating maps that includes potential funding sources and identifies responsible municipal department.
- Publicize and make these maps clearly available online for all community members to access.

Supplement these maps with other hazard-related maps

- Map the extent of other flood-related hazards (as described in the table in the guide). These include land subsidence, coastal erosion and so on.
    - This is an opportunity to get Community Rating System credit.

Plan Quality and Coordination

Review and update all community plans to include language about flood resilience

- Include at least one scientific or engineering consultant when any new community plans are developed to ensure that language about stormwater is included.
- Review and update your emergency operations plan.
- Review and update your hazard mitigation plan.
- Review and update your comprehensive plan and other plans your community may use (e.g., economic development plan, capital improvements plan).

Make sure all updated plans agree about flood priorities and vulnerable areas

- Review all of your city plans to ensure that they are consistent in their flood language and that they all identify the same vulnerable areas.
    - Guidance can be provided by the Texas A&M Plan Integration for Resilience Scorecard.

Leverage regional partnerships

- Contact other area communities to see what language they have included in their plans to coordinate strategies on a regional level.
    - Plan semi-regular (at least annual) meetings with these communities to share strategies and compare successes/failures.

Staff and Technological Capacity

Hire new staff trained in floodplain management or emergency management

- Hire staff trained in GIS or other mapping technology.
- Hire a grant writer to both research existing grant opportunities and apply for them.
- If possible, buy GIS or other software, or dedicate staff to learn free tools such as FEMA's HAZUS.
    - HAZUS can be downloaded on the FEMA website.

Train existing staff in floodplain management or emergency management

- Compensate at least one staff member to complete the Certified Floodplain Manager training offered through the Association of State Floodplain Managers.
    - Contact: cfm@floods.org.
- **FEMA's Emergency Management Institute (EMI) offers several trainings, including some that are free**. All emergency management, fire, police and emergency volunteers should complete at least Incident Command System (ICS)-100, and potentially ICS-200.
- Wisconsin Emergency Management's Emergency Response training.
    - Training Portal—more information from Gary Wieczorek, program supervisor: gary.wieczorek@wisconsin.gov.

Reach out to potential regional or national partners

- Consider partnering with local UW extension to see if there are students who could complete research or projects in collaboration with you.
- Become involved with the League of Wisconsin Municipalities to share knowledge with other cities that also have flooding issues.

- Become a participant in FEMA's National Flood Insurance Program (NFIP) and the Community Rating System (CRS). Note that many of the recommendations in this document count for CRS credit!
    - Depending on the level of participation, flood insurance premium rates for policyholders in these communities can be reduced up to 45%.
    - More information can be found on the NFIP website.
    - Wisconsin state NFIP Coordinator: Michelle Staff, michelle.staff@wisconsin.gov.
- Contact your regional planning commission to see if they can fill any of these purposes for you.
- Contact Wisconsin Emergency Management.
- Contact the National Association of Counties (NACo).

Create coalitions and partnerships between staff and residents

- Activate your local emergency planning committee (LEPC).
    - A local emergency planning committee should include (at a minimum): elected officials; police, fire, civil defense and public health professionals; environment, transportation and hospital officials; facility representatives; representatives from vulnerable populations or that represent these vulnerable populations; and the media.
    - This group should meet at least twice a year to evaluate emergency procedures and to determine strategies for educating the public.
    - More information about what these groups do can be found at in this fact sheet create by FEMA.
- Start a Community Emergency Response Team (CERT).
    - FEMA has a recommended training for volunteers involved in such teams. This is a good way to engage residents without professional background in emergency management.
    - Volunteers can be a powerful and affordable addition to your emergency response.
    - More information can be found in this document.

Tools

Gray Infrastructure

- Hire engineers to both identify and evaluate the state of the built environment.
- Using flow modeling, have engineers determine whether these structures are capable of handling volumes of water associated with a 1% annual chance flood event.

- Prioritize infrastructure projects for flood resilience within your capital improvements plan (CIP).
- Establish a schedule to conduct this evaluation at regular intervals into the future, based on clear and established criteria.
    - A potential resource is FEMA's Checklist for Vulnerability of Flood-Prone Sites and Buildings.

Green Infrastructure

- Ensure that green infrastructure is not unnecessarily prohibited in any plans.
- Include language about green infrastructure in transportation plans, not only allowing for it but actively encouraging it.
- Analyze abandoned sites for possible redevelopment as green infrastructure sites.
- Create demonstration sites for green infrastructure to use as educational tools (potentially at schools or on public land).
- When a demonstration site is created, host a community event to encourage the public to visit and learn about its benefits.
- Set clear guidelines about long-term maintenance responsibilities for green infrastructure sites.

Non-Structural

- Adopt or update your Flood Damage Prevention Ordinance.
    - This activity can earn you credit for the National Flood Insurance Program and Community Rating System!

Implementation and Enforcement

Determine a clear procedure for assessing flood damage once an event has occurred

- Determine a clear and objective process to determine whether a home has been "substantially damaged" following a flood event.
    - The Building Code Effectiveness Grading Schedule (BCEGS) may be useful as a guide if you do not already have building codes.
    - Consider requiring a lower threshold for damage before a building is required to meet new building flood requirements (the standard is 50% damaged, but some places, such as the state of Indiana, lowered it to 40% damaged).
- Hire or designate existing staff members as responsible for evaluating flood damage.

Develop long- and short-term goals

- Establish both long- and short-term flood resilience goals to help gauge the success of your efforts.
    - Research funding strategies, local, statewide and nationally, to meet these goals.
- Host either tabletop exercises or full-scale exercises to test your preparedness and response capabilities.
    - Wisconsin Emergency Management can provide guidance about how to run such exercises. Contact Gary Wieczorek, program supervisor: gary.wieczorek@wisconsin.gov