AMERICAN FLOOD COALITION

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Flood Vulnerability Assessment RFP/Q Creation

Tips and insights for successfully executing a vulnerability assessment for municipal staff

This technical guide is designed to walk a municipal staff member through the steps to create a Flood Vulnerability Assessment and provide a starting point and language for the creation of a Request for Proposals or Qualifications (RFP/Q).

For most coastal and riverine municipalities, their waterfront is a significant economic driver—from tourism and recreation to the marine industry and fisheries. An assessment should not just examine the risk to physical assets from flooding, but also the economic and social risks. Ultimately, creating a more resilient community is more than just building strong buildings, but also creating a sense of place and purpose that will bring residents and visitors back after a natural disaster.

6 steps to resilience

Select hazard
 Conduct assessment
 Explore adapation options
 Create adaptation plan
 Determine funding source
 Take action

A Flood Vulnerability Assessment is a diagnostic test for a community to understand how different levels of flooding may impact the municipality, now and in the future. A Flood Vulnerability Assessment is designed to help a community:

- Identify the hazards to which a community is exposed, and the associated likelihoods (even if qualitative) of hazard occurrence.
- Characterize the sensitivities of any exposed assets (i.e., the expected impacts from exposures).
- Evaluate the costs and benefits of potential adaptation projects designed to reduced the exposures and/or sensitivities.

Timeline



Before you embark

Internally • 6-12 months

Before embarking on a vulnerability assessment, it is necessary to properly prepare for the study. These items will set a feasible scope for the study and allow you to set realistic expectations. It's important to keep in mind that an assessment cannot answer all questions or provide all answers and should be viewed as an overall guide.

A point person for the process should be assigned, and the first three tasks are to:

- Examine what has already been done in this space in your locality;
- Define the goal(s) of the report; and
- Define the geographic extent of the project. There may be an opportunity to work with a neighboring municipality and reduce overall cost.

Examine your existing data and future data needs for your assessment. Although you may not know every item of data needed before starting the project, most can be anticipated prior to project commencement. For example, data needs to be reasonably current and derived from a reputable source. The scale of the data is also critical. Many times, federal datasets are available but may not be at a scale that is appropriate for municipal studies. Datasets should be explored, and the usefulness be considered before embarking on the assessment. Waiting until the project is underway to determine data needs and start collecting data can cause significant delays and cost-overruns on the project.

Once the first three tasks from above, which are the basics for your assessment, are completed, other considerations for the RFP/Q include:

Determine the audience of the study

For example, how are changing risk factors relevant to a local government (operations & infrastructure)? If one of your key audiences is Wall Street and the Bond Market, then is it essential to list that as a consideration in the RFP/Q and to create documents that use the language of the financial markets.

Create a steering committee

A steering committee is a good way to develop exactly what is needed for your community, and build public support by including them in the RFP/Q development. Potential steering committee members include scientists (especially from local colleges and universities), public officials, members of the business community, technical experts, community leaders, insurance experts, and other organized groups, such as neighborhood associations or environmental organizations. The steering committee should represent the full socio-economics and diversity of your community.

Estimate the budget for the report

Even if you are not allowed to include a budget in the RFP/Q, this will help determine the feasible scope of the RFP/Q.

Determine if outside funding is available

This will steer the direction of the project, as well. Many municipalities have found money from state environmental agencies, or organizations such as Sea Grant.

Determine in-house capabilities

Municipalities can save money by having certain parts of the process done in-house, instead of by an outside consultant, depending on capacity and capability. As previously mentioned, data collection by municipal staff can greatly reduce the cost and time of the project. A community with strong outreach staff may choose to do public outreach with in-house staff.

Set the time horizon to be explored

The selection of time horizon depends on the assets and infrastructure being explored. It is recommended to look at least 30 years into the future, and in reference to critical infrastructure that may have longer lifetimes. The timeline should also align with other major plans, such as comprehensive or transportation plans.

Oetermine risk factors

Internally or externally • 1-3 months

This can also be done by the steering committee.

This step explores the risk factors of your community and is generally considered the first step of a vulnerability assessment. During a flood and sea level rise vulnerability assessment, it is important to look at the opposite side of flooding. This includes droughts and extreme heat, as they can change flood risk.

Current risk factors associated with flooding may include, but are not limited to:

- Tidal flooding
- Storm surge
- Flash floods
- Riverine flooding
- Groundwater inundation
 & saltwater intrusion
- Changes in rainfall patterns / heavy rainfall flooding

- Extreme heat
- Drought
- Snow melt
- Erosion
- Wind hazards

It is vital to perform a scientific literature review to examine the existing body of studies and literature related to your local risks. This can be done by staff, a steering committee, or as part of a volunteer roundtable with local experts and municipal staff.

It is also important to review existing government plans for considerations of flood risk. This can be done by municipal staff. These may include:

- Sustainability plans
- Transportation plans
- Regional plans
- Other vulnerability assessments
- Master and comprehensive plans
- Visioning documents

- Hydrologic and basin studies
- Floodplain management and stormwater plans
- Hazard mitigation plans
- Capital improvement and investment plans and projects
- Recovery and resiliency plans

3 Identify potentially vulnerable systems Internally or externally • 1-2 months

Here, you will determine what systems may be affected by the selected risk factors. This step explores what functions of the local government and areas of the community may be disrupted due to one of the above determined risk factors. This should be done through analysis, but also through discussions with and decisions made by government staff, the steering committee, and additional identified stakeholders. The scope of the project may limit the systems examined.

These systems include, but are not limited to:

- Transportation infrastructure, such as roads, bridges, and tunnels
- Emergency response plans, considering evacuation routes and emergency response infrastructure and needs
- Seawalls and other water retention infrastructure
- Stormwater, water supply/distribution, and wastewater infrastructure
- Affordable and workforce housing

- Significant businesses, economic drivers, or business districts
- Additional overlooked systems to consider for inclusion:
 - Superfund and Brownfield sites
 - Landfills
 - Significant agricultural areas
 - Historic structures
 - Culturally-important infrastructure, such as schools or houses of worship

Conduct vulnerability assessment Externally • 6-8 months

This step and the next are the heart of the project. The assessment should identify what parts of the locality are at risk both generally and in the context of the vulnerable systems. This is done through an exposure and sensitivity analysis. There are numerous ways to conduct such an analysis, which will depend on potential consultants, but overall the process should examine:

- Exposure: Which natural hazards occur in the community, and how likely are these events to occur?
- Sensitivity: When a given natural hazard occurs in the community, what negative impacts do we expect?
- Focus Areas: Lastly, the process should determine either how many or a particular threshold for further examining specific areas with high exposure or sensitivity.

As part of the assessment, existing studies and maintenance logs and databases should be reviewed. Ground truthed data, if available, should be utilized. Municipal staff input should be intimately included in this process as they know the infrastructure of the locality best.

Through this process, a municipality should consider social vulnerability as well. Public infrastructure can have a greater impact in serving economically disadvantaged residents that do not have the resources to withstand a disaster on their own. This should be incorporated from the beginning of the flood vulnerability assessment.

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Externally • 2-3 months

Ultimately, the results of the assessment should be cataloged in a user-friendly way and a ranking system should be determined. The ranking system can be a quantitative and/ or qualitative process, and include public engagement. Prioritization can include social, economic, cultural, operational, and other factors that may be important to the locality. The quantitative system can be determined by a consultant or by municipal staff. The municipality may decide to provide specific evaluation criteria as part of the project. Ultimately, the goal of prioritizing vulnerability is to determine where it is best to increase adaptive capacity, reduce sensitivity, and/or reduce exposure in a logical and methodical manner.

OPOLICY REVIEW Internally or externally • 2-3 months

This part can be done concurrently with other portions of the assessment, and can be done by the consultant or government staff. The steering committee should also be consulted on this step. It involves reviewing existing policies and determining if, given the information from the vulnerability assessment, they should be modified. If so, this information would be considered as part of the Adaptation Strategies. Additional policy changes could include updating the planning process for capital improvement, or building resilience into other projects like general neighborhood improvements.

For example, a current ordinance may put a maximum height on seawalls. However, given the information in the vulnerability assessment, this maximum is insufficient to protect against tidal flooding in 15-20 years. Therefore, this policy should be flagged for further review to determine how it can be modified to best protect the community while considering the other aspects of changing an ordinance around seawalls.

Community outreach & formal presentations Internally or externally • <1 month</p>

The end of the assessment process should include community outreach and formatting presentations. Community buy-in is a vital part of building a strong foundation for resilience planning and ensuring the follow-on work that comes from the assessment has the support

of the public behind it. The community should be involved in the process as much as possible, without hindering the progress of the project. This can be done creatively through things like citizen science initiatives for data collection. This allows the community to "own" the outcome and makes the path to adaptation easier.

The final product should be presented to the community at-large, through several meetings if necessary, key committees and constituencies, and the Commission or Council of the locality.

Lastly, it should be determined if there are additional benefits that can come from the vulnerability assessment. For example, identify if there are there ways to use public outreach or the assessment itself to improve the community's points or class in Community Rating System.

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