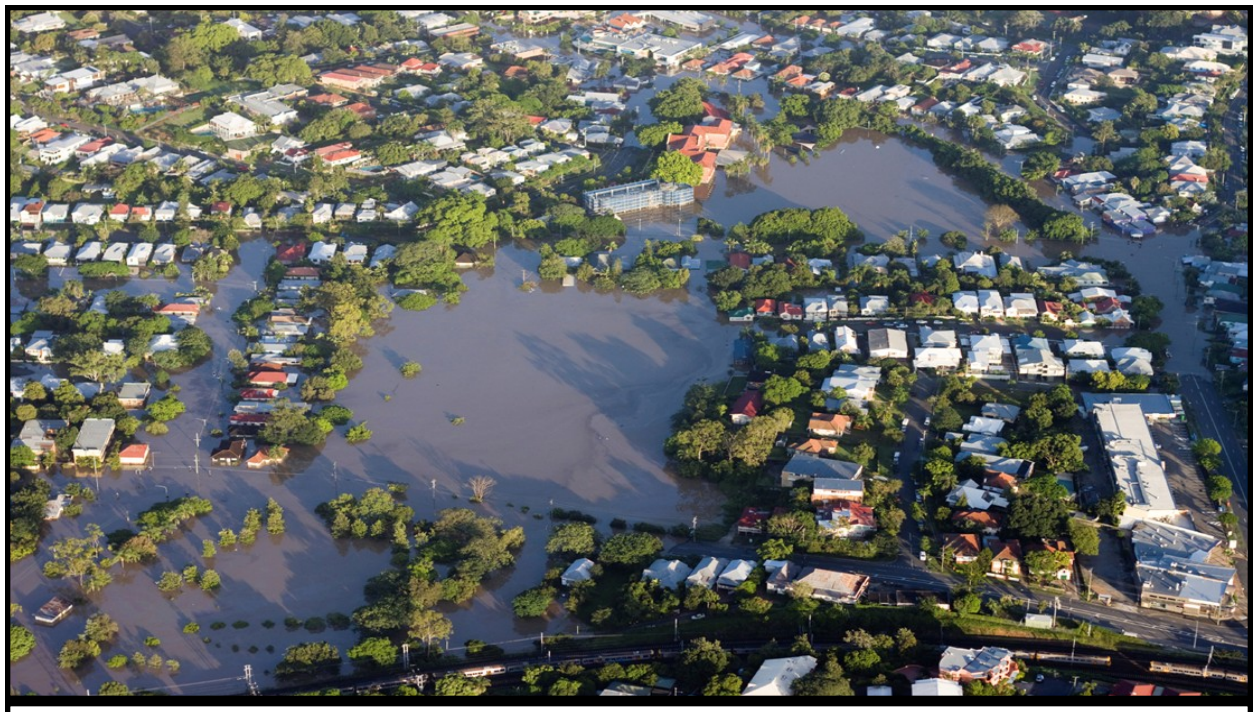
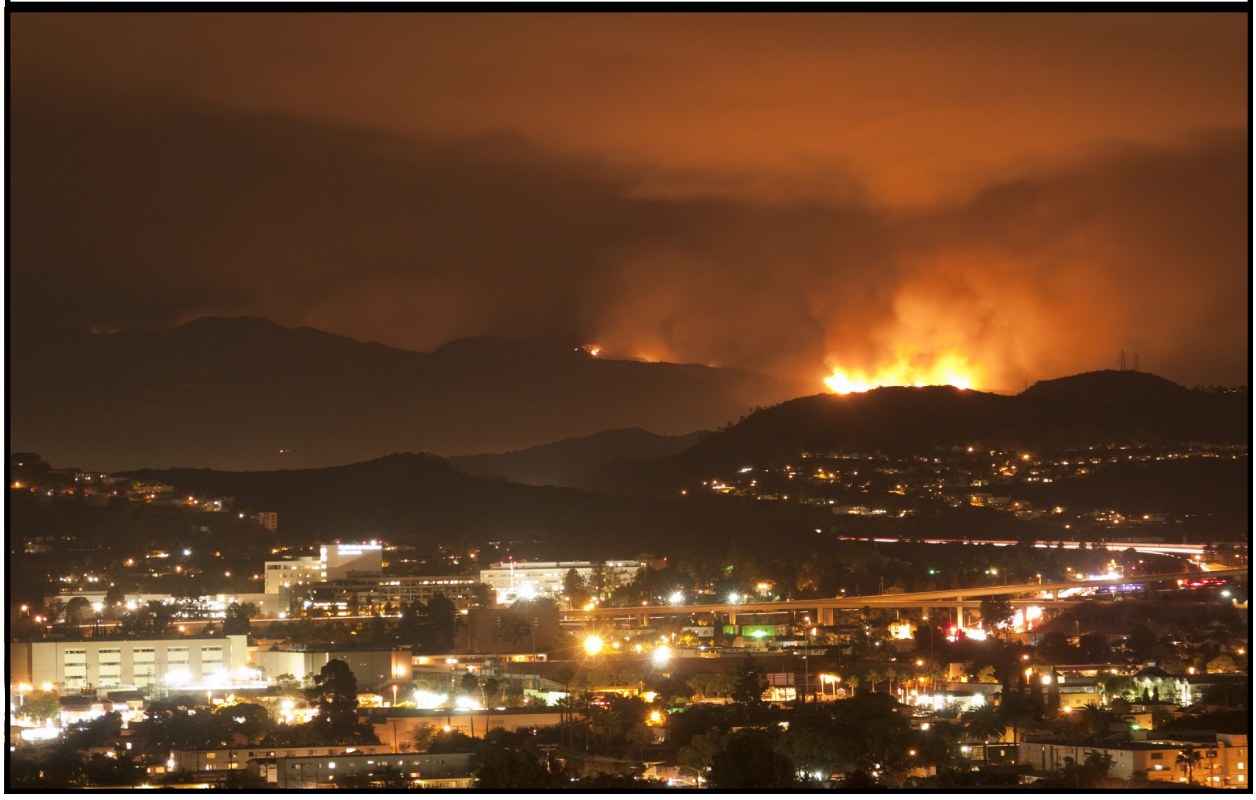


Financial Planning for Natural Disasters:

A Workbook for Local Governments and Regions



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Acknowledgments

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The authors would like to thank several individuals and organizations that made this project a success. First, we would like to thank Chuck Fluharty, President and CEO of RUPRI, for making resilience a priority within the analytic and academic portfolio of RUPRI. Second, the authors would like to thank the Mississippi Alabama Sea Grant Consortium who provided financial support for the City of Foley, Alabama case study highlighted in this workbook (through *Grant NA10OAR4170078, project no R/MG/CSP-21)*. The authors would like to thank Jody Thompson, Auburn University; Carol Franze and Kayla Brown, LSU AgCenter; and Sam Wagle, LSU Public Administration Institute, with their assistance in the Foley case study project. Finally, the authors would like to thank Brett Schwartz and Megan McConville at NADO for their quality input into the final version of this workbook.

Guide to Using this Workbook

After a natural disaster strikes a region, its physical consequences are very evident—wrecked homes and businesses, flooded streets, damaged vehicles, destroyed crops, and other visible impacts. However, natural disasters can have other effects that aren't as obvious to the naked eye, but have equally serious implications for communities. The strain that natural disasters place on local governments' financial capacity is one of the most serious of these impacts. While cities and counties may receive some federal aid after disasters, they are still responsible for many of the costs related to response and recovery, and if they are not prepared, these costs can have long-term impacts on local financial health.

A local government's financial resilience is defined as its ability to understand its potential future financial burdens and to cover those costs. This workbook helps municipalities, counties, and regions improve their financial resilience to natural disasters.

This workbook is designed to help local governments and regions understand their financial vulnerabilities to natural disasters, evaluate their financial capacity to cover the costs of those disasters, identify strategies to close the gap between financial vulnerability and capacity, and identify and address the spillover effects of neighboring local governments' financial vulnerabilities to disasters.

Workbook Organization

This workbook is organized into five modules:

Module 1: Identifying Natural Disasters with Potential Financial Implications for Your Community

Module 2: Measuring Local Government Financial Vulnerability to Natural Disasters

Module 3: Measuring the Financial Capacity of Local Governments to Address Natural Disasters

Module 4: Identifying Strategies to Reduce the Gap between Financial Vulnerability and Capacity

Module 5: Identifying Regional Financial Vulnerabilities

Each module contains a narrative introducing the topic, financial resilience strategies, and examples of solutions used by communities across the country. At the end of each module, there are worksheets with step-by-step instructions. In addition, all of the worksheets are compiled in an appendix at the end of the workbook for easy printing.

Audience

This workbook is targeted primarily at local government staff and leadership, including emergency managers, finance staff, and elected officials. We suggest that emergency managers and finance staff work together to complete all modules in the workbook.

This workbook will also be useful to regional planning and economic development organizations as they help their partner local governments prepare for natural disasters and promote regional approaches to mitigation and recovery. Regional planning organizations may find Modules 1 and 5 particularly valuable as they relate to inter-governmental relations within a larger region. Regional economic development organizations may find the measurement modules (2 and 3) valuable as they relate not only to financial planning for disasters, but also to general local government finances and how those impact the delivery of public services necessary for development over the long term.

Universities and their outreach organizations may also be interested in this workbook. University courses on disaster management could use Modules 2 and 3 for a lecture focused on financial issues related to disasters. Courses on community and economic development could use all five modules for a one- or two-week section on financial disaster resilience. University extension organizations may find Modules 2 and 3 useful for helping local governments think more strategically about disaster planning.

Disclaimer

This workbook is a general guide to local government financial planning for natural disasters. The suggestions in this document should not be considered a comprehensive set of financial planning tools that will guarantee resilience, but rather one decision support tool to be considered along with guidance from accountants, attorneys, and other professionals.

We hope you find this workbook valuable as you work to make your community financially strong and resilient to future natural disasters.

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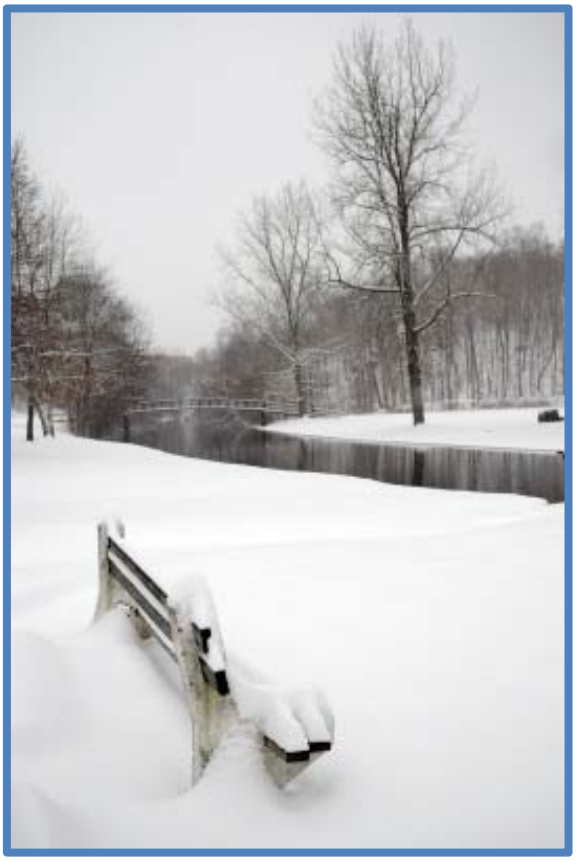
Module 1: Identifying Natural Disasters with Potential Financial Implications for Your Community

Overview



Just as local governments plan financially for other major events (e.g. planned reduction of tax revenue from a manufacturing plant closing that occurs within your region), it is possible to plan for the financial impacts of natural disasters. For example, many local governments in the Great Lakes region budget annually for snow removal. Snowstorms are one type of natural disaster that local governments can plan for–very frequent, predictable events. On the other end of the spectrum are very infrequent and less predictable events, such as earthquakes in non-earthquake prone regions. Most natural disasters fall within this continuum from high-frequency, predictable events to low-frequency and less predictable events.

In most cases, a community or region can't plan financially for extreme low-frequency, highly unpredictable natural disasters, but financial planning can be undertaken for most other disasters.

Which types of disasters should you consider planning for financially? In the worksheet that follows this module, we ask you to rank the natural disaster types that you may consider for financial preparation. These could include:

- Hurricanes
- Tornadoes
- Floods
- Earthquakes
- Droughts
- Wildfires
- Snow and ice storms
- Other types of natural disasters that may impact your region

Assessing and quantifying the risk of natural disaster is outside the scope of this workbook. However, that information is available from many other sources. Many natural disasters have sufficient historical

frequency that researchers have developed estimates of regional probabilities of future natural disaster events. For example, probabilities of a small tropical storm as well as a major hurricane passing through coastal counties in the Gulf Coast and Atlantic regions have been estimated at Colorado State University.[1] This website also provides likelihood of occurrence based on the planning horizon that can be as short-term as a single year or as long-term as 50 years. Local emergency managers are also good sources of information about natural disaster risks. They may have assessed these risks for the local hazard mitigation plan required by the Federal Emergency Management Agency (FEMA). State hazard mitigation plans may also contain useful information. Local government staff can also consult with regional planning councils, university researchers, and the regional offices of federal agencies such as FEMA and the National Oceanic and Atmospheric Administration. Both FEMA and NOAA offer helpful data tools that can help local governments assess risks, such as HAZUS, Digital Coast, and the National Climactic Data Center.[2,3,4]

Local governments must also identify the time horizon they will use for financial planning. There is no single optimal time horizon for disaster planning. One strategy local governments can use to choose a time horizon is to build a time horizon around the frequency of the disaster's occurrence in your region. For example, if a local government knows a Category 1 hurricane will pass through its region once every 25 years, then 25 years may be a maximum time horizon to consider for financial planning for that disaster event.

Conclusion

In this module, we asked you to identify the types of natural disasters that could have financial implications for your community. In the next module, we will help you identify specific ways to quantify the costs to individual local governments of natural disasters.

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[1] Klotzbach, P, and W. Gray. 2013. "United States Landfalling Hurricane Probability Project." Accessed October 1. Online: http://www.e-transit.org/hurricane/welcome.html

[2] Federal Emergency Management Agency. 2013. "Hazard Mitigation Planning Risk Assessment." Accessed October 15. Online: http://www.fema.gov/hazard-mitigation-planning-risk-assessment

[3] National Oceanic and Atmospheric Administration. 2013. "Digital Coasts: NOAA Coastal Services Center." Accessed October 15. Online: http://www.csc.noaa.gov/digitalcoast/

[4] National Oceanic and Atmospheric Administration. 2013. "National Climatic Data Center." Accessed October 15. Online: http://www.ncdc.noaa.gov/

Worksheet 1. Identifying Natural Disasters with Potential Financial Implications for Your Community

Step 1.

Rank the top three natural disasters in your individual community /region based on cost to the community to recover from the disaster, from most to least costly.

1. _____

2. _____

3. _____

Step 2.

Rank the top three natural disasters in your individual community /region based on likelihood of occurrence from most frequent to least frequent.

1. _____

2. _____

3. _____

Step 3.

Rank the top three natural disasters that could impact neighboring communities and create a financial burden for your community. For examples of how this might occur, see Module 5.

1. _____

2. _____

3. _____

Module 2: Measuring Local Government Financial Vulnerability to Natural Disasters

Background

Just after midnight on September 16, 2004, Hurricane Ivan made landfall near Gulf Shores in Baldwin County, Alabama as a Category 3 storm with sustained winds of 130 miles per hour.[5] This major hurricane had a sizeable impact on the entire region surrounding Baldwin County as well as points east reaching towards Pensacola, Florida.

As was expected, the storm's surge and strong winds devastated coastal communities. Communities farther north also experienced major wind damage and became littered with debris.

While many of the losses sustained by private businesses and households due to natural disasters are insured, local governments also bear significant disaster-related costs, none of which are insured. However, local governments can reduce their financial vulnerability by measuring and understanding it before a disaster occurs. This module begins with the case of the city of Foley, located in Baldwin County, which illustrates how a local government might assess its vulnerability to a future natural disaster.

Foley is a city of 14,618 residents[6] and is situated less than 10 miles from the beachside community of Gulf Shores. Given its proximity to the beach, much of Foley's economy is driven by tourism including restaurants, recreational services, and retail activities. Foley is a good example of a small to medium-sized municipality that is highly vulnerable to major natural disasters (hurricanes) and must work with other political jurisdictions when preparing for disasters and during the short- and long-term response.

This module presents a step-by-step process local governments can use to calculate their financial vulnerability to future natural disasters.

[5] National Weather Service Weather Forecast Office Mobile/Pensacola. 2005. "Powerful Hurricane Ivan Slams the US Central Gulf Coast as an Upper-Category 3 Storm." Accessed September 7, 2013. Online: http://www.srh.noaa.gov/mob/?n=ivan

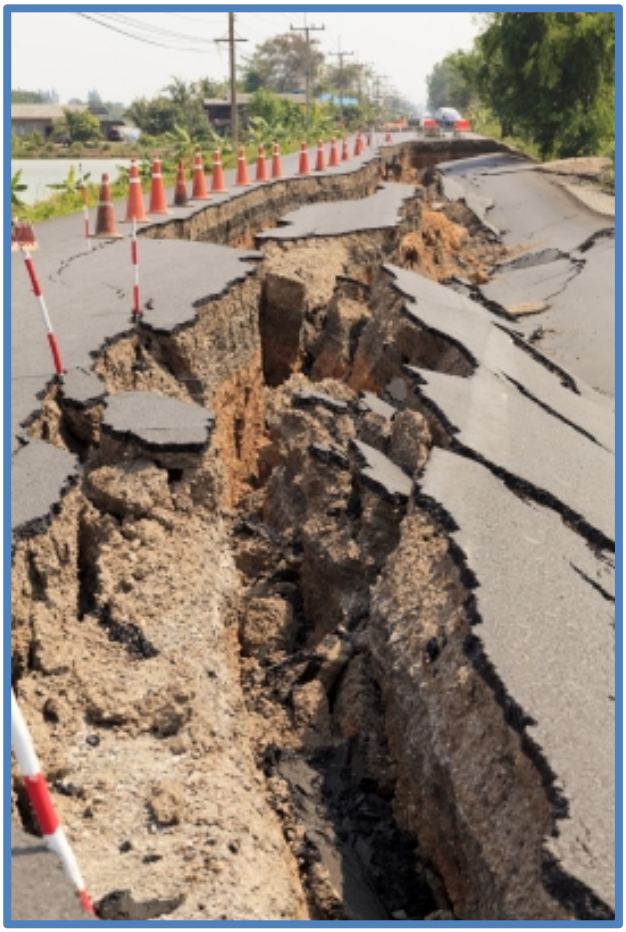
[6] United States Census Bureau American Factfinder. 2013. "2010 Population – Foley, Alabama." Accessed September 7. Online: http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml

How Many Disaster Events to Consider?

In Module 1, you ranked natural disasters based on different attributes. In determining the financial vulnerability of your community to natural disasters, you must determine how many disaster scenarios you want to prepare. There is no right answer to this question. The city of Foley chose to use one large natural disaster event, Hurricane Ivan, as their primary disaster event for future financial disaster planning.

Categorizing Natural Disasters for Measuring Vulnerability Costs

In Module 1, we discussed the frequency of natural disasters. Frequency matters for financial planning because it may be difficult for local governments to find historical data on disasters that occur very infrequently. As a result, it may be hard to predict future financial burdens. Natural disasters that occur more frequently may have impacted the finances of a local government more recently and can provide useful information for future planning.



Low Frequency Disasters with Local History

The New Madrid earthquakes of 1811 and 1812 had measurable impacts on a region near the Mississippi River between Memphis, Tennessee and St. Louis, Missouri. Three main earthquakes ranging from 7.5 to 7.7 on the Richter scale occurred during this period—highly unusual events for this area.[7] While historical data can be used to predict the physical damage a future earthquake might cause (e.g. sand blows, river bank failures, landslides, sunken land), changes in development patterns, infrastructure, and public policy over time can influence the financial consequences of a future earthquake in this region. For low frequency events with no recent history such as the New Madrid earthquakes, local governments should work with experts who develop simulation models that account for current conditions and simulate the financial losses of these events.

[7] It should be noted that earthquakes 7.0 or greater are a very infrequent occurrence in the continental United States. According to the Earthquake Hazards Program website, there have been only 36 earthquakes of magnitude 7.0 or greater (measured or estimated) on the Richter scale in the continental U.S. since the early 1800s. Source: United States Geological Survey. 2013. "Earthquake Hazards Program." Accessed October 15. Online: http://earthquake.usgs.gov/earthquakes/states/large_usa_7.php

Higher Frequency Disasters with Local History

When the disaster event a community or region wants to plan for is more frequent, additional questions should be asked. Has the community received federal assistance from FEMA for that type of disaster in recent years? If so, then historical financial data is typically available from FEMA or the state government. Current procedures that govern federal financial support for local governments impacted by disasters often involve a cost-sharing arrangement between the local government and the federal government. Depending on the financial severity of the disaster, the U.S. government has typically reimbursed 75 to 90 percent of local government expenses based on expense category eligibility through its Public Assistance (PA) Program.[8]

Some of these categories include expenses that may be covered in part by private sector insurance such as roads, bridges, water control facilities, public buildings and their contents, public utilities, and parks (Categories C-G of the PA Program). In these cases, public assistance is adjusted based on additional out-of-pocket expenses beyond what is covered by insurance. In other cases, there are disaster expenses that have no private sector insurance market such as emergency protective measures (e.g. evacuation expenses, fuel, water, ice, meals ready to eat, etc), and debris removal expenses (Categories A and B of the PA Program). Depending on the disaster type, these uninsurable expenses can often be the greatest burden on local governments and one for which they have not planned.

The chart below demonstrates the city of Foley's financial vulnerability.

Public Assistance Category Costs for the city of Foley for Hurricane Ivan (in 2004/2005 dollars)	
Category A: Debris Removal	$4,636,409.41
Category B: Emergency Protective Measures	$95,727.58
Category E: Public Buildings and Contents	$10,405.00
Administrative Costs	$58,425.42
Total	$4,800,967.41

Source: City of Foley
Note: Details of Public Assistance categories can be found at
http://www.fema.gov/pdf/government/grant/pa/fema323_app_handbk.pdf

If Foley were doing these calculations in 2014 dollars, these costs adjusted for inflation would exceed $6 million. Depending on the severity of the natural disaster, a local government may be responsible for as little as 10 percent of these costs, or in extreme cases, 100 percent if the disaster does not receive a federal declaration for reimbursement. If your local government has experienced a previous natural disaster that did not receive a federal declaration, you should consider organizing your historical cost records into the federal expenditure categories highlighted. By doing so, you can evaluate how your

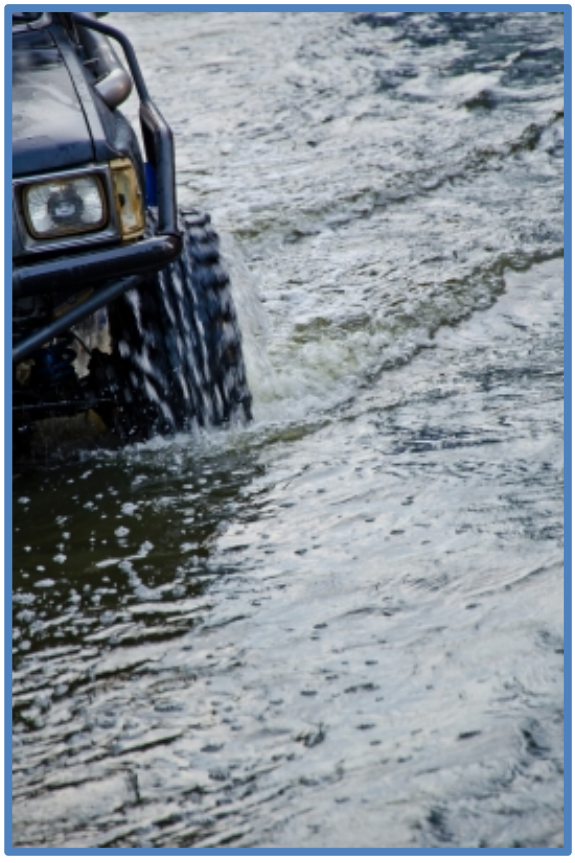
[8] An evolution of these cost shares is highlighted by McCarthy, F.X. (2010). "FEMA Disaster Cost-Shares: Evolution and Analysis." Accessed August 15, 2013. Online: http://assets.opencrs.com/rpts/R41101_20100309.pdf.

financial vulnerabilities might change if the historical disaster came again and the federal government declared it eligible for reimbursement.

High Frequency Disasters with No Local History

What happens if a community wants to prepare for a high frequency disaster that has not yet impacted the local community? For example, many regions along the Atlantic seaboard that did not take a direct hit from Hurricane Sandy have similar vulnerabilities to the regions that were affected. In these instances, it is helpful to ask peer local governments that have experienced that type of disaster for guidance. Selected peer local governments should have similar characteristics, especially those that could be impacted by a disaster. For example, you may want to choose a peer local government with similar population density, topography (elevation level and percent of land in floodplain), and a comparable percentage of forested acres, agricultural land, and percent urban and rural.

Once you have identified a peer local government, you should work with that local government to obtain information about the disaster. If the peer government's disaster was eligible for Public Assistance through the Stafford Act[9], what were its expenses by category? What level of insurance did it have on insurable items that were covered in the disaster? What were the deductibles or co-payments of these policies? Were there other expenses not covered by the federal government or insurance related to the disaster event?



Once calculated, these values should be converted into a common value that can be used for your own financial planning. For example, these costs could be converted to a per dollar of local government assessed value or a per capita basis. Once converted, these values can then be applied to the assessed value or population of your local government jurisdiction to generate an estimate for planning.

Conclusion

In this module, we presented a step-by-step process of calculating financial vulnerability for one or more natural disaster events for a local government. In the next module, we focus on calculating the financial capacity a local government has to address these financial vulnerabilities.

[9] The Stafford Act provides statutory authority for most federal disaster response activities as they relate to FEMA, http://www.fema.gov/robert-t-stafford-disaster-relief-and-emergency-assistance-act-public-law-93-288-amended.

Worksheet 2. Local Government Financial Vulnerability to Natural Disasters

Step 1.

*Is the frequency of your disaster event **High** or **Low**? If **Low**, go to **Step 2**. If **High**, go to **Step 3**.*

Step 2.

Contact a regional university, nonprofit organization, or state or federal partner about modeling capacity in your area to simulate the financial costs of a disaster event on your local government geography.

Step 3.

*Has your local government experienced a disaster event of this type in recent history? If **Yes**, go to **Step 4**. If **No**, go to **Step 5**.*

Step 4.

Calculate financial vulnerability from historical data. Please complete the blanks in the table below to estimate financial vulnerability.

Federally-Declared Disaster Example	
Line 1: Category A Costs: Debris Removal	$_____
Line 2: Category B Costs: Emergency Protective Measures	$_____
Line 3: Category C – Category G Costs[1]:	$_____
Line 4: Local Cost Share Rate (10%, 25%, 100%)	_____%
Line 5: Local Reimbursable Burden ((Line 1 + Line 2+ Line 3)* Line 4)	$_____
Line 6: Total Deductibles and Co-Pays for insured losses	$_____
Line 7: Uninsured and other federal ineligible expenses	$_____
Line 8: Total Financial Vulnerability (Line 5+ Line 6 + Line 7)	$_____
Line 9: Inflation Factor to Current Dollars	_____%
Line 10: Total Financial Vulnerability in Today's Dollars	
(Line 8 times Line 9)	$_____

[1]*Categories C-G represent infrastructure-related expenses. Details can be found at http://www.fema.gov/pdf/government/grant/pa/fema323_app_handbk.pdf.*

Note: Vulnerability can be influenced by state support for disasters as well as ad hoc changes in reimbursement policy for a given disaster policy, among other things.

Step 5.

Identify a peer local government that has experienced the disaster event from which you want to prepare financially and follow **Step 4** with that jurisdiction. Once finished, complete blanks in the box below.

Peer Local Government Example	
Line 1: Line 8 from Step 4 of Peer Government	$_____
Line 2: Assessed Valuation of Peer Government Jurisdiction	$_____
Line 3: Peer Costs per dollar of Assessed Valuation (Line 1 divided by Line 2)	$_____
Line 4. Local Government's Current Assessed Valuation	$_____
Line 5: Local Government's Financial Vulnerability (Line 3 times Line 4)	$_____
Line 6: Inflation Factor to Today's Dollars	_____%
Line 7: Total Financial Vulnerability in Today's Dollars (Line 5 times Line 6)	$_____

Note: One can also calculate local government burden from peer government by using population as an alternative to assessed value. If population is preferred, replace peer government population in Line 2 and local government population in Line 4 and recalculate.

Step 6.

If your local government wants to prepare for more than one natural disaster event (e.g. multiple disaster types or multiple disaster events of the same type), go back to **Step 1**. Sum total financial vulnerability from each disaster event calculated to identify total financial vulnerability.

Module 3: Measuring the Financial Capacity of Local Governments to Address Natural Disasters

Background

In Module 2, we presented a detailed strategy for assessing the financial vulnerability of a local government to one or more natural disasters. In this module, we will discuss an approach local governments can use to identify the financial resources they could draw on to cover the costs of future disasters.

In this module, we will highlight a strategy local governments can use to identify the financial resources they could draw on to cover the costs of future disaster events.

What Financial Resources are Available to Local Governments for Disaster-Related Costs?

Local governments receive revenues for delivering the public services they have been commissioned to provide to their residents. However, there are often restrictions on how these revenues can be spent. For example, local governments may receive revenues in the form of intergovernmental transfers to be used for specific purposes, such as funding from a state government for maintaining or building roads. Local governments may also receive revenues in the form of taxes created through ballot propositions that restrict the spending of those revenues to specific services such as solid waste or parks projects.

At the same time, many governments collect taxes and receive revenues from fees that are unrestricted. These funds can be used to pay for any classification of local government expenses, including emergency expenses after natural disasters. There are a variety of ways to identify the financial resources that a local government may use for disaster planning.

Using Audited Financial Statements

Many local governments generate publicly-available financial statements on a regular basis (typically annually or bi-annually). These statements may be called financial statements, audit statements, audited financial statements, or comprehensive annual financial reports. While recording requirements may vary by state and the size of the local government, many states require local governments to have external auditors review these

statements and submit them to a central repository where they will be available for the general public to view, in person or online.

When external auditors are involved, they typically follow a set of generally accepted accounting principles. For public sector organizations, these principles follow the guidance of the Governmental Accounting Standards Board (GASB).[10] Recent changes to this guidance have promoted more comparable statements across local government jurisdictions. Further, the recent adoption of GASB Statement 54 provides clarity on funds that can be applied to expenses related to natural disasters.

In particular, one governmental fund defined by GASB Statement 54, the general fund, has the most flexibility in terms of resources that can be used for any purpose, including natural disaster expenses. The general fund's balance sheet contains balance information that is broken into multiple categories. The category of "unassigned" in the fund balance section represents those financial resources of the general fund that are not otherwise committed, restricted, or assigned for another purpose. As a result, the amount of unassigned funds in a local government's general fund can be considered a reliable and conservative estimate of its financial capacity to cover disaster-related expenses, particularly those expenses immediately before or after a disaster such as emergency protective measures and debris removal.

Example: Foley's General Fund Balance Sheet

In the table below, we provide the balance sheet for the city of Foley's general fund for the fiscal year ending September 30, 2011. In this statement, total liabilities ($1,375,101) are subtracted from total assets ($21,921,505) to obtain the total fund balance ($20,546,404). This fund balance is divided into categories that will typically not be available to cover disaster expenses (nonspendable, restricted, committed, and assigned). The remaining fund balance that does not fit into these categories is the unassigned fund balance, which totals $16,889,069. This value represents Foley's financial resources that are fully unrestricted and can be considered available to cover the costs of a future natural disaster event.

[10] http://www.gasb.org.

General Fund Balance Sheet, City of Foley, Fiscal Year Ending September 30, 2011

	General Fund ($)
ASSETS	
Cash	16,773,595
Certificates of deposit	3,230,000
Receivables	
Utility tax equivalents	579,294
Gasoline excise tax	
Property and ad valorem taxes	25,236
Sales and other local taxes	903,909
Sanitation	21,197
Grants	82,266
Other	122,200
Due from other funds	5,597
Inventories	73,432
Prepaid expenses	104,779
Total Assets:	21,921,505
LIABILITIES AND FUND EQUITY	
Accounts payables	1,074,419
Accrued expenses	138,792
Due to other funds	123,890
Deferred revenue	38,000
Total liabilities:	1,375,101
FUND BALANCES	
Nonspendable	178,211
Restricted	257,992
Committed	
Assigned	3,221,132
Unassigned	16,889,069
Total fund balance:	20,546,404

Source: http://www.cityoffoley.org/Portals/cityoffoley/FY11%20Audited%20Financials-printable.pdf.

Restricted Funds for Disaster Expenses

While the previous discussion highlighted the most unrestricted funds, restricted funds may also be available to cover future disaster expenses. For example, a municipality's voters may have approved a tax to support solid waste disposal. The legal language developed for the tax proposition may be sufficiently flexible for the local government to use some of these revenues to cover debris removal expenses. A dedicated tax for roads may also be available to cover cost share expenses for repairing a road damaged by a disaster. Finally, a local government may have a legally restricted emergency or contingency fund that could be tapped to cover expenses arising from disasters. These funds should also be considered when measuring financial capacity.

In these cases, it is important to know the legal standing a local government has for using these restricted funds for non-traditional expenses. Local officials should consult their staff attorney or external auditor for advice on the use of these restricted funds before considering them to be available for spending.

Conclusion

In this module, we highlighted financial resources available to local governments to address the financial vulnerabilities discussed in Module 2. We focused on identifying flexible funds that could be used, and also suggested how restricted funds might be made available to cover the costs of natural disasters. In the next module, we help you identify strategies to address any gaps between vulnerabilities and the financial resources that are available.

Worksheet 3. Measuring the Financial Capacity of Local Governments to Address Natural Disasters

Line 1. Unassigned Fund Balance from General Fund Balance Sheet	**$_____**
Line 2. Restricted Funds Available for Natural Disaster Expenses*	**$_____**
Line 3. Total Financial Capacity of Local Government (Line 1 + Line 2)	**$_____**

**Please consult with a staff attorney or external auditor on availability of restricted funds for natural disaster expenses.*

Module 4: Identifying Strategies to Reduce the Gap between Financial Vulnerability and Capacity

Background

In the previous two modules, we discussed local government financial vulnerability to natural disasters and the financial resources that might be available to cover those costs. Some local governments may find that there is a gap between their financial vulnerability and capacity, with vulnerability exceeding capacity. In this module, we will identify strategies that can help to close that gap.

A local government's general level of financial preparedness or resilience can be evaluated using a basic formula:

If financial capacity **>** financial vulnerability,
the local government is financially prepared for the disaster(s) identified.

If financial capacity **<** financial vulnerability,
critical decisions need to be made.

As long as financial capacity exceeds expected financial vulnerability, then a local government is as prepared as can be reasonably expected for the future disaster event it identified. Of course, it is impossible to predict the number and severity of natural disasters, so costs may exceed expectations. For example, a local government may prepare for a Category 3 hurricane but experience a Category 4 storm.

As long as financial capacity exceeds expected financial vulnerability, then a local government is as financially prepared as can be reasonably expected for the future disaster event it defined.

Example: Foley

In Module 2, we evaluated the financial vulnerability of the city of Foley to a future major hurricane, and in Module 3, we calculated the city's financial capacity that could be used to cover the costs of that future disaster. Let's see how well the city is prepared:

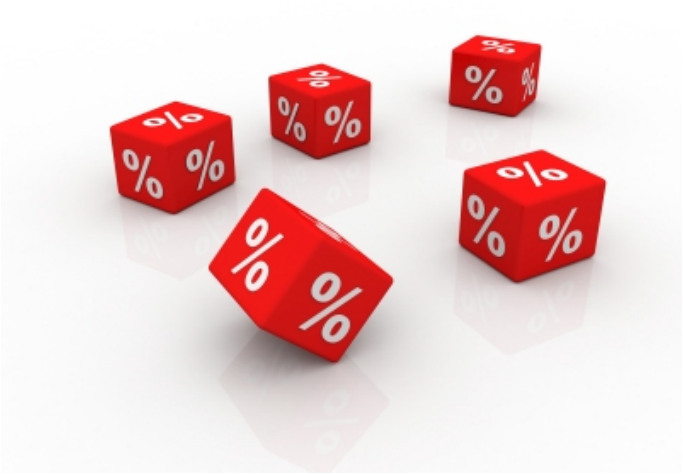
Financial Vulnerability: $6,000,000 (2013 dollars) (from Module 2) Financial Capacity: $16,889,069 (Unassigned Fund Balance) (from Module 3)

On initial inspection, it appears that Foley is more than adequately prepared for the costs of a future hurricane of the size and expense of Hurricane Ivan (as of 2011). However, it should be noted that Foley's financial vulnerability does not include any deductibles or co-pays for insurable property damages. On the other hand, the $6 million does not include the federal government cost share (typically 75 to 90 percent depending on disaster severity). If the local government expects a federal disaster declaration and federal aid, it would reduce its financial vulnerability costs on federally-reimbursable expenses to between 10 percent and 25 percent of this $6 million total.

Foley represents an unusual example where financial capacity is measurably higher than financial vulnerability. Many local governments are at a much lower level of financial preparedness. In the next section, we explore strategies for mitigating this gap. First, we discuss approaches to reduce financial vulnerability. We then propose methods of increasing financial capacity to cover disaster expenses.

Reducing the Gap – Reducing Vulnerability

A key strategy that local governments can use to decrease financial vulnerability is to invest in public infrastructure that reduces the impacts and costs of natural disasters. For example, if a local government is trying to reduce the costs of a potential future hurricane where damage is typically driven by storm surge, flooding, and wind, then building new infrastructure above the average storm surge level and outside the flood zone could reduce infrastructure costs. Purchasing storm windows with higher wind speed ratings for public buildings would also reduce costs.



Financial vulnerability may also be reduced through policies that lower the vulnerability of the private sector and simultaneously reduce local government expenses. Improved building codes to make residential properties more resistant to wind and flooding potentially lessen debris removal costs for the local government. Zoning ordinances that encourage the planting of trees that are resilient to high wind speeds and create less vegetative debris can further reduce public sector disaster expenses.

In each of the cases presented, a return on investment should be considered relative to the specific disaster events you want to consider, the timeline for that return on investment, and the financial resources available to invest. For example, high wind speed rating storm windows installed in public buildings may provide a quicker return on investment than improving storm surge protection by building or strengthening levees. The windows could pay for themselves by not shattering during one storm, whereas the high costs of levee construction may take multiple disaster events spread over several decades to generate a return on the initial investment. At the same time, building a levee may provide the safety and security that attracts development that would not otherwise occur, bringing new tax revenue. Each community should evaluate the costs and benefits of these approaches in the context of their financial constraints, natural hazards, and long-term goals.

Reducing the Gap – Increasing Financial Capacity

A local government has many options for increasing its financial capacity for covering disaster expenses, including generating new revenue, re-prioritizing existing revenue and spending, and borrowing. Each option is discussed further below.

1) Generating New Revenue

The first approach to reducing the capacity-vulnerability gap is to increase revenue through traditional levers such as general taxes, fees, and income through government-run business activities. Increases in revenue can sometimes be a difficult sell to communities that have not experienced recent natural disasters. Further, communities that have experienced major natural disasters may have vulnerable private sector economies for which tax increases may be problematic. If that is the case, other strategies may be more desirable as first steps.

2) Reprioritize Existing Revenue/Spending

A. Creation of Dedicated Fund or Fund Balance Thresholds

This approach can take several forms. For example, a local government could reprioritize its annual budget to create a disaster emergency fund, depositing a given percentage of the total annual budget into this fund up to a given threshold. A similar option would be to dedicate existing funds or fund balances for disaster event expenses only.

For example, in an effort to increase its financial preparedness for a future natural disaster on the scale of Hurricane Ivan, the City of Foley passed a resolution that requires an undesignated fund balance to meet or exceed 25 percent of budgeted operational expenditures annually plus one year's annual debt service payments of the city. This portion of the total undesignated fund balance can only be used to cover disaster-related expenses. This resolution is one of the reasons Foley showed such sizeable unassigned general funds in the earlier example.

One of the benefits of this approach is that as the city grows its budget, the size of the undesignated fund balance grows as well. Another community whose financial vulnerability exceeds its financial

capacity could adjust this approach by shifting the percentage so its fund balance is large enough to cover its vulnerabilities.

City of Foley Financial Capacity Strategy Resolution 3649-09

Undesignated fund balance must exceed a minimum of:

- **25% of budgeted operational expenditures PLUS**
- **One year's annual debt service payments**

Funding can only be spent on disaster-related expenses

Source: www.cityoffoley.org

B. Re-Prioritize Existing Dedicated Revenue for Spending

One of the potential revenue sources identified in Module 3 was a local government's dedicated funds. For example, tax revenue may support a solid waste fund to provide solid waste services for residents. Any fund balances or annual revenue that is received can only be spent on expenses related to solid waste. However, in some cases, the legal language passed by voters at the ballot box may allow a portion of these funds to be allocated to cover disaster expenses.

If not, many of these types of dedicated taxes have sunset provisions, requiring voters to renew the tax after a set time period. Voter renewal provides the opportunity for ballot box language to be adjusted to allow existing balances or future tax revenues to be used for disaster-related expenses. For example, a solid waste fund renewal could allow for emergency debris removal expenses to be paid out of the dedicated tax.

3) Borrowing

In the current fiscal environment where there have been several high-profile municipal bankruptcy cases, borrowing may not be considered a desirable option for many local governments. However for some local governments in poor financial health, borrowing may be the only option if they have zero savings and need time to sell assets or generate savings to pay off disaster expenses.

Financially healthy local governments may also consider borrowing as an effective tool for managing disaster expenses. For example, the federal government typically requires local governments to maintain pre-approved plans and contracts for common activities related to certain disasters, such as debris removal, in order to receive reimbursement. If a local government chooses to execute this plan by approving a bid with an external debris removal contractor, then it may borrow to obtain cost savings.

One of the elements in debris removal contract negotiation is the terms of payment. Many debris removal contractors may provide favorable terms that allow the local government to pay for the debris removal expenses several months after the service has been provided. These expanded payment terms are often incorporated into the price quoted per unit of debris removed. Local governments may be willing to accept these longer terms knowing that the federal government may pick up 75 percent of the cost and these longer terms will allow them sufficient time to receive the federal government reimbursement. However, if total debris costs are sizeable, the 25 percent cost share the local government must pay may still be substantial.

If a local government has sufficient cash on hand to pay debris removal contractors on shorter terms, it may be able to extract lower debris removal bids. If the local government does not have the cash on hand but has a good credit rating, obtaining a line of credit from a financial institution may provide similar cost savings. As long as the interest costs on the line of credit are less than the local cost share savings from lower bid prices, then borrowing can make financial sense.

Conclusion

In this module, we described strategies to mitigate the gap between a local government's financial vulnerabilities and its financial capacity. Generating new revenue, creating dedicated funds, creating flexibility in existing restricted funds, and borrowing were discussed as possible ways to add financial capacity. Approaches to reducing financial vulnerability by decreasing costs associated with public and private infrastructure were also presented.

In the final module, we will evaluate how local governments can create financial vulnerabilities for neighboring jurisdictions. We will present strategies for measuring and addressing these additional vulnerabilities.

Worksheet 4. Identifying Strategies to Reduce the Gap Between Financial Vulnerability and Capacity

This worksheet is a step-by-step guide for helping a local government close the gap between its financial vulnerability and capacity.

Step 1.

Measure the gap between financial capacity and vulnerability using the form below.

Line 1	Financial Capacity (Module 3)	$_____ +
Line 2	(Step 4)	$_____ +
Line 3	(Step 5)	$_____ +
Line 4	(Step 6)	$_____+
Line 5	(Step 7)	$_____ =
Line 6	Total Financial Capacity	$_____
MINUS		
Line 7	Financial Vulnerability (Module 2) $_____(Line 1 - Line 7)	= $_____

If financial capacity (Line 1) minus vulnerability (Line 7) >0, then stop. Local government is financially prepared for chosen disaster event. You have completed the worksheet.

If financial capacity (Line 1) – financial vulnerability (Line 7) <0, go to Step 2.

Step 2.

Rank the following strategies from what is most preferred to least preferred in your community. The most preferred strategy should receive a rank of 1. The least preferred should receive a rank of 4.

____A. Generating new revenue
____B. Reprioritize existing revenue/spending – Creation of dedicated fund / fund thresholds
____C. Reprioritize existing revenue/spending – Reprioritize existing revenue dedications
____D. Borrowing

Step 3.

If Strategy A is ranked #1, then proceed to Step 4. If Strategy B is ranked #1, go to Step 5. If Strategy C is ranked #1, go to Step 6. If Strategy D is ranked #1, go to Step 7. If all strategies have been considered, go to Step 8.

Step 4.

If your local government does not believe it can accomplish Strategy A in the next 12 months, then go back to Step 3 and move to the step affiliated with your next most preferred strategy. If you can accomplish this step in the next 12 months, complete the form below.

New Revenue Source: _____

Anticipated Revenue Generated: $_____

Apply anticipated revenue generated to box in Step 1.

Step 5.

If your local government does not believe it can accomplish Strategy B in the next 12 months, then go back to Step 3 and move to the step affiliated with your next most preferred strategy. If you can accomplish this step in the next 12 months, complete the form below.

New Dedicated Fund / Fund Threshold Created: _____

Additional Financial Capacity Identified: $_____

Add additional financial capacity to box in Step 1.

Step 6.

If your local government does not believe it can accomplish Strategy C in the next 12 months, then go back to Step 3 and move to the step affiliated with your next most preferred strategy. If you can accomplish this step in the next 12 months, complete the form box below.

Existing Revenue Dedication Reprioritized: _____

Additional Financial Capacity Identified: $_____

Add additional financial capacity to box in Step 1.

Step 7.

If your local government does not believe it can accomplish Strategy D in the next 12 months, then go back to Step 3 and move to the step affiliated with your next most preferred strategy. If you can accomplish this step in the next 12 months, complete the form below.

Debt Product Identified (Line of Credit, Bond Sales, etc) _____

Additional Financial Capacity Identified: $_____

Add additional financial capacity to box in Step 1.

Step 8.

You have exhausted all strategies and your financial vulnerability still exceeds your financial capacity, meaning you lack the financial capacity needed to adequately prepare for your identified disaster event over the next 12 months. Move to Step 9.

Step 9.

Go back to Step 3. Follow the steps again, replacing "12 months" with "four years" in each step. Once you have reached Step 9 again, go back to Step 3 and follow the steps one more time, replacing "four years" with "ten years."

Congratulations. You have developed 12-month, four-year, and ten-year financial preparedness plans for natural disasters.

Module 5: Identifying Regional Financial Vulnerabilities

Background

On August 29, 2012, Hurricane Isaac, a mild Category 1 hurricane, made landfall near Port Fourchon, Louisiana, with sustained wind speeds of 80 miles per hour.[11] For the residents of southeast Louisiana who experienced Hurricanes Katrina and Gustav, Isaac seemed mild by comparison. Communities along the shoreline made the usual preparations, including the evacuation of people and movable property, and those farther inland prepared for the short-term power losses usually caused by storms of that size.

As Isaac moved north, it dumped many inches of rain in southern Mississippi, filling tributaries and causing rivers and lakes to swell. The dam at Lake Tangipahoa, a lake created from the damming of the Tangipahoa River in southwest Mississippi, showed signs of failing. Residents living in the Tangipahoa River floodplain in Tangipahoa Parish, Louisiana were ordered to evacuate, leaving property of 40,000 residents vulnerable in the Louisiana parish if the dam did not hold.

A full failure of the dam fortunately did not occur, preventing the worst of the flooding scenarios from becoming a reality. However, Tangipahoa Parish spent an estimated $6 million to cover emergency operations and expenses related to evacuation.[12] A large percentage of these expenses would not have been necessary if the dam was improved before the storm or more efforts were made earlier to reduce the vulnerability of the residential property along the Tangipahoa River. The expenses for the reinforcement of the dam would have been incurred by county and state taxpayers in one state (Pike County and Mississippi), with most of the benefit being received by residents in the neighboring parish and state (Tangipahoa Parish and Louisiana).

The Tangipahoa Parish evacuation during Hurricane Isaac reveals the all-too-common reality of the financial implications of natural disasters. The resilience of a community to disasters is not entirely dependent on the community's own preparation for such events. In the public sector, a local government's resilience to natural disasters may be dependent in part on the resilience of infrastructure owned or operated by larger units of government, such as levees owned and maintained by the federal government or highways maintained by a state government. An individual community's resilience to disasters may also be impacted by the infrastructure and financial resources of neighboring communities. Further, the financial benefits of disaster mitigation may not always accrue to those paying the costs.

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[11] Berg, Ronnie. 2013. Tropical Cyclone Report: Hurricane Isaac. Accessed January 21. Online: http://www.nhc.noaa.gov/data/tcr/AL092012_Isaac.pdf

[12] Legeer, Donna Leinwant. 2013. "Near-disaster in Louisiana raises questions about evacuations." *USA Today*. Accessed September 13. Online: http://usatoday30.usatoday.com/news/nation/story/2012-09-09/hurricane-isaac-louisiana-evacuation/57702792/1

Many examples like this one arise after disasters. For example, a county that needs to evacuate its population due to rising flood waters can be prevented from doing so (or has to detour a measurable distance) due to a neighboring county's bridge failing from poor maintenance. Or a municipality may outsource its waste disposal services to its county government and the county government's equipment is destroyed by a tornado. In these and many other cases, an individual municipality's or county's resilience to a disaster event is intertwined with the resilience of other communities in the larger region. We investigate these interdependencies and ways to address them in this module.

Example: School District and County Government

In this hypothetical example, a hurricane passes through a county, washing away a bridge over a river. The county does not have sufficient funds to replace the bridge so the river crossing is cut indefinitely. The school district within the county had used that bridge for a school bus, which carries children on both sides of the river to a given school. What might the school district's financial burden be, due to the county's lack of financial capacity to replace the bridge?

If we assume that detouring the bridge causes an individual school bus to travel an additional 30 miles one way for two trips a day over 180 days in a school year, an additional 1,080 miles is added to the school bus mileage. If bus mileage costs the district $1.00 per mile traveled, then the total costs per school year for the bridge being out of service is $10,800.

While this is a very specific example, your local government could easily create its own formulas to identify the potential costs of its interdependencies with neighboring jurisdictions. For example, if a municipality is a tourism destination dependent on sales tax revenue, a road closure preventing tourists from entering the area might reduce sales tax dollars and cripple the local economy.

Categorizing Regional Interdependencies for Financial Vulnerability Reduction

When evaluating interdependencies within a region, it is helpful to categorize the structure of the financial interdependency. First, you must define the additional jurisdiction(s) to which you are interdependent. For public sector entities, this may include one or more combinations of a county commission, municipality, school district, fire district, or other special purpose district. Second, you must identify the financial vulnerability created. The financial vulnerability is usually made up of the costs associated with a physical vulnerability from a disaster event. Physical vulnerabilities that could cause regional financial impacts may be infrastructure-related such as roads, bridges, and utilities or communications-related such as incompatible communication infrastructure between local governments.

Next, you need to identify the jurisdiction responsible for mitigating the physical vulnerability that creates the financial vulnerability. What are the costs to the jurisdiction responsible for reducing the physical vulnerability?

When these questions are answered, several potential solutions arise. When local government A and local government B are financially vulnerable, and the cost to local government A of mitigating the

physical vulnerability is less than local government A's financial vulnerability, then local government B may want to petition local government A to make physical mitigation investments.

When local government A and local government B are financially vulnerable, but the cost of physical mitigation by local government A is greater than its financial vulnerability, then local government B may consider helping finance mitigation costs through direct payments or loans to local government A to make the physical investments required before the next natural disaster occurs.

One way of doing this is through revised contractual arrangements. For example, if a county purchases water for its residents from the municipality's water system, the county may re-negotiate a contract that requires it to have emergency backup generators and fuel so water service can be maintained for county residents for a sustained period of time while electricity is off-line. The county can help to pay for this service through a revised payment rate in the contract for water.

In other situations, an existing contractual arrangement from which physical vulnerabilities can be mitigated may not exist. For example, if the financial losses from a damaged county-owned road are greater for a municipal government than the county government, what can the municipality do?

In some instances, the municipality can reduce its financial vulnerability by working with the county over time to lessen its dependence on the single highway. A second highway could be constructed. If this is not an option, the municipality may consider working with higher levels of government to address its vulnerability. If the state has a measurable financial stake in the economic consequences of the vulnerability, another solution may be for the state to take control of the road including maintenance and disaster responsibility. The role of ownership can be important in mitigating financial vulnerability. If a municipal government is more financially vulnerable to the temporary closure of a county-owned physical asset than the county, then it may be in the interest of the municipality to negotiate with the county to purchase the asset. While this may cost much more than working out a contractual arrangement to minimize the vulnerability of the physical asset, it may be worth it if the financial vulnerability to the political jurisdiction that does not have decision making authority over the asset is high.

In some cases, ownership may not be the optimal approach for mitigating financial vulnerability and other tools from larger political jurisdictions may be preferable. Building codes at the state level may reduce financial interdependencies between counties and county zoning rules may minimize financial vulnerabilities between municipalities. For example, statewide building codes may increase the physical resilience of residential structures over time, reducing the potential for damage and debris and the resulting delays in evacuated residents returning to their homes. Without uniform statewide codes, a county could choose not to adopt resilient building codes, creating future debris challenges that may impact transportation arteries used by neighboring counties. When regions cross state boundaries, the role of the federal government in mitigating these financial vulnerabilities should also be considered.

Conclusion

Physical and financial interdependencies exist among political jurisdictions in a region. While many of these interdependencies, and the resulting financial vulnerabilities, can be identified before a natural disaster, others are often not discovered until after they have occurred. Increased collaboration between jurisdictions on physical mitigation may address those physical vulnerabilities, reducing financial burdens for multiple communities within a region. Jurisdictions should think creatively and use contractual arrangements, ownership structures, and larger jurisdiction policies and regulations as tools to mitigate these intra-regional financial vulnerabilities. Regional planning and economic development organizations are also key partners that can help to understand risks that cross jurisdictional lines, identify mitigation measures with mutually beneficial outcomes, and facilitate collaboration between local governments.

Worksheet 5. Identifying Regional Financial Vulnerabilities

This worksheet is meant to help you identify joint vulnerabilities between your community and others and think about general strategies that might help to lower the overall region's financial vulnerability. This example assumes two local government entities and their interdependent financial vulnerability. One can easily generalize this approach to three or more local governments.

Step 1.

Identify political jurisdictions impacted financially by a joint physical vulnerability related to the disaster you identified for Modules 2-4, or in Step 3 of Module 1.

Local Government #1 _____

Local Government #2 _____

Step 2.

Identify what level of financial vulnerability each local government would incur by the physical vulnerability for the given disaster identified in Step 1.

Local Government #1 $_____

Local Government #2 $_____

Step 3.

Identify which local government (if either) has control over the physical asset that is creating the potential financial vulnerability. (Place an X next to the local government)

Local Government #1 _____

Local Government #2 _____

Other (List) _____

Step 4.

Rank which of the following strategies best mitigates the physical vulnerability that creates the joint financial vulnerability:

____ Creation of new or modification of existing contractual arrangements to mitigate joint financial vulnerabilities.

____ Evaluation of alternative ownership arrangements of the physical assets between local governments.

____ Use higher level governmental units to create/modify laws, codes, rules and other regulations to generate local government behavior that mitigates joint financial vulnerabilities between jurisdictions.

Congratulations. You've taken your first steps towards a strategy of mitigating financial vulnerabilities between jurisdictions in your region.

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Appendix: Module Worksheets

Worksheet 1. Identifying Natural Disasters with Potential Financial Implications for Your Community

Step 1.

Rank the top three natural disasters in your individual community /region based on cost to the community to recover from the disaster, from most to least costly.

1. _____

2. _____

3. _____

Step 2.

Rank the top three natural disasters in your individual community /region based on likelihood of occurrence from most frequent to least frequent.

1. _____

2. _____

3. _____

Step 3.

Rank the top three natural disasters that could impact neighboring communities and create a financial burden for your community. For examples of how this might occur, see Module 5.

1. _____

2. _____

3. _____

Worksheet 2. Local Government Financial Vulnerability to Natural Disasters

Step 1.

*Is the frequency of your disaster event **High** or **Low**? If **Low**, go to **Step 2**. If **High**, go to **Step 3**.*

Step 2.

Contact a regional university, nonprofit organization, or state or federal partner about modeling capacity in your area to simulate the financial costs of a disaster event on your local government geography.

Step 3.

*Has your local government experienced a disaster event of this type in recent history? If **Yes**, go to **Step 4**. If **No**, go to **Step 5**.*

Step 4.

Calculate financial vulnerability from historical data. Please complete the blanks in the table below to estimate financial vulnerability.

Federally-Declared Disaster Example	
Line 1: Category A Costs: Debris Removal	$_____
Line 2: Category B Costs: Emergency Protective Measures	$_____
Line 3: Category C – Category G Costs[1]:	$_____
Line 4: Local Cost Share Rate (10%, 25%, 100%)	_____%
Line 5: Local Reimbursable Burden ((Line 1 + Line 2+ Line 3)* Line 4)	$_____
Line 6: Total Deductibles and Co-Pays for insured losses	$_____
Line 7: Uninsured and other federal ineligible expenses	$_____
Line 8: Total Financial Vulnerability (Line 5+ Line 6 + Line 7)	$_____
Line 9: Inflation Factor to Current Dollars	_____%
Line 10: Total Financial Vulnerability in Today's Dollars	
(Line 8 times Line 9)	$_____

[1]*Categories C-G represent infrastructure-related expenses. Details can be found at http://www.fema.gov/pdf/government/grant/pa/fema323_app_handbk.pdf.*

Note: Vulnerability can be influenced by state support for disasters as well as ad hoc changes in reimbursement policy for a given disaster policy, among other things.

Step 5.

Identify a peer local government that has experienced the disaster event from which you want to prepare financially and follow **Step 4** with that jurisdiction. Once finished, complete blanks in the box below.

Peer Local Government Example	
Line 1: Line 8 from Step 4 of Peer Government	$_____
Line 2: Assessed Valuation of Peer Government Jurisdiction	$_____
Line 3: Peer Costs per dollar of Assessed Valuation (Line 1 divided by Line 2)	$_____
Line 4. Local Government's Current Assessed Valuation	$_____
Line 5: Local Government's Financial Vulnerability (Line 3 times Line 4)	$_____
Line 6: Inflation Factor to Today's Dollars	_____%
Line 7: Total Financial Vulnerability in Today's Dollars (Line 5 times Line 6)	$_____

Note: One can also calculate local government burden from peer government by using population as an alternative to assessed value. If population is preferred, replace peer government population in Line 2 and local government population in Line 4 and recalculate.

Step 6.

If your local government wants to prepare for more than one natural disaster event (e.g. multiple disaster types or multiple disaster events of the same type), go back to **Step 1**. Sum total financial vulnerability from each disaster event calculated to identify total financial vulnerability.

Worksheet 3. Measuring the Financial Capacity of Local Governments to Address Natural Disasters

Line 1. Unassigned Fund Balance from General Fund Balance Sheet	**$_____**
Line 2. Restricted Funds Available for Natural Disaster Expenses*	**$_____**
Line 3. Total Financial Capacity of Local Government (Line 1 + Line 2)	**$_____**

**Please consult with a staff attorney or external auditor on availability of restricted funds for natural disaster expenses.*

Worksheet 4. Identifying Strategies to Reduce the Gap Between Financial Vulnerability and Capacity

This worksheet is a step-by-step guide for helping a local government close the gap between its financial vulnerability and capacity.

Step 1.

Measure the gap between financial capacity and vulnerability using the form below.

Line 1	Financial Capacity (Module 3)	$_____ +
Line 2	(Step 4)	$_____ +
Line 3	(Step 5)	$_____ +
Line 4	(Step 6)	$_____+
Line 5	(Step 7)	$_____ =
Line 6	Total Financial Capacity	$_____
MINUS		
Line 7	Financial Vulnerability (Module 2) $_____(Line 1 - Line 7)	= $_____

If financial capacity (Line 1) minus vulnerability (Line 7) >0, then stop. Local government is financially prepared for chosen disaster event. You have completed the worksheet.

If financial capacity (Line 1) – financial vulnerability (Line 7) <0, go to Step 2.

Step 2.

Rank the following strategies from what is most preferred to least preferred in your community. The most preferred strategy should receive a rank of 1. The least preferred should receive a rank of 4.

____A. Generating new revenue
____B. Reprioritize existing revenue/spending – Creation of dedicated fund / fund thresholds
____C. Reprioritize existing revenue/spending – Reprioritize existing revenue dedications
____D. Borrowing

Step 3.

If Strategy A is ranked #1, then proceed to Step 4. If Strategy B is ranked #1, go to Step 5. If Strategy C is ranked #1, go to Step 6. If Strategy D is ranked #1, go to Step 7. If all strategies have been considered, go to Step 8.

Step 4.

If your local government does not believe it can accomplish Strategy A in the next 12 months, then go back to Step 3 and move to the step affiliated with your next most preferred strategy. If you can accomplish this step in the next 12 months, complete the form below.

New Revenue Source: _____

Anticipated Revenue Generated: $_____

Apply anticipated revenue generated to box in Step 1.

Step 5.

If your local government does not believe it can accomplish Strategy B in the next 12 months, then go back to Step 3 and move to the step affiliated with your next most preferred strategy. If you can accomplish this step in the next 12 months, complete the form below.

New Dedicated Fund / Fund Threshold Created: _____

Additional Financial Capacity Identified: $_____

Add additional financial capacity to box in Step 1.

Step 6.

If your local government does not believe it can accomplish Strategy C in the next 12 months, then go back to Step 3 and move to the step affiliated with your next most preferred strategy. If you can accomplish this step in the next 12 months, complete the form box below.

Existing Revenue Dedication Reprioritized: _____

Additional Financial Capacity Identified: $_____

Add additional financial capacity to box in Step 1.

Step 7.

If your local government does not believe it can accomplish Strategy D in the next 12 months, then go back to Step 3 and move to the step affiliated with your next most preferred strategy. If you can accomplish this step in the next 12 months, complete the form below.

Debt Product Identified (Line of Credit, Bond Sales, etc) _____

Additional Financial Capacity Identified: $_____

Add additional financial capacity to box in Step 1.

Step 8.

You have exhausted all strategies and your financial vulnerability still exceeds your financial capacity, meaning you lack the financial capacity needed to adequately prepare for your identified disaster event over the next 12 months. Move to Step 9.

Step 9.

Go back to Step 3. Follow the steps again, replacing "12 months" with "four years" in each step. Once you have reached Step 9 again, go back to Step 3 and follow the steps one more time, replacing "four years" with "ten years."

Congratulations. You have developed 12-month, four-year, and ten-year financial preparedness plans for natural disasters.

Worksheet 5. Identifying Regional Financial Vulnerabilities

This worksheet is meant to help you identify joint vulnerabilities between your community and others and think about general strategies that might help to lower the overall region's financial vulnerability. This example assumes two local government entities and their interdependent financial vulnerability. One can easily generalize this approach to three or more local governments.

Step 1.

Identify political jurisdictions impacted financially by a joint physical vulnerability related to the disaster you identified for Modules 2-4, or in Step 3 of Module 1.

Local Government #1 _____

Local Government #2 _____

Step 2.

Identify what level of financial vulnerability each local government would incur by the physical vulnerability for the given disaster identified in Step 1.

Local Government #1 $_____

Local Government #2 **$**_____

Step 3.

Identify which local government (if either) has control over the physical asset that is creating the potential financial vulnerability. (Place an X next to the local government)

Local Government #1 _____

Local Government #2 _____

Other (List) _____

Step 4.

Rank which of the following strategies best mitigates the physical vulnerability that creates the joint financial vulnerability:

____ Creation of new or modification of existing contractual arrangements to mitigate joint financial vulnerabilities.

____ Evaluation of alternative ownership arrangements of the physical assets between local governments.

____ Use higher level governmental units to create/modify laws, codes, rules and other regulations to generate local government behavior that mitigates joint financial vulnerabilities between jurisdictions.

Congratulations. You've taken your first steps towards a strategy of mitigating financial vulnerabilities between jurisdictions in your region.