# Increasing Financial Resiliency of your Region in a Disaster-Filled World

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# **Financial Resiliency**

- Why evaluate financial resiliency for your region?
  - Impacts short-term decision making in advance of and following a disaster
  - Impacts long-term benefits to households and businesses in a region

Financial wealth of a region (whether public or private) impacts investments in other forms of wealth that impact returns to a region



- Buildings and equipment
- Maintenance of natural amenities and cultural artifacts
- Knowledge and networks of residents



# **Resiliency of a Region**

- Categories of Resiliency
  - Physical
  - Financial
- Categories interlinked
  - Financial resiliency impacts speed and level of physical resiliency

# **Financial Resiliency**

### Factors influencing resiliency

- Vulnerability
- Capacity

### Capacity – Vulnerability = Financial preparation

# Vulnerability

How do we measure potential financial losses of a disaster event?

- If frequent event in region, evaluate past financial losses of region's public sectors
  - Previous costs of a major hurricane or ice storm
- If frequent but not in region, identify financial relationships of other regions and adjust to your own region's characteristics
  - Wildfire costs per dollar of assessed value



# Vulnerability

When disaster events are infrequent

- Simulations
  - Tsunami
  - Earthquakes
- Subjective assessments/expert opinion can be helpful when resources are limited and no preparation has previously occurred

## Vulnerability Example: Calcasieu Parish, LA

Event	Eligible Losses
Hurricane Rita (2005)	
Parish	\$7,279,858
Selected municipalities	\$33,916,827
Hurricane Ike (2008)	
Parish	\$1,643,340
Selected municipalities	\$3,748,650

Calcasieu Parish, Louisiana

## Vulnerability Example: City of Foley, AL



#### Event *Hurricane Ivan (2004*)

Eligible losses

Non-eligible losses

#### Hurricane Katrina (2005)



Pine Hiuti



\$318,735

# **Risk and Vulnerability**

- Each disaster event has a likelihood of occurring over a given period of time
- A region's planning horizon will be helpful in knowing how much financially to prepare for an event
- Further, probabilities of a disaster event occurring can change over time





# Risk and Resiliency Calcasieu Parish, LA

Storm Type	1 Year Prob.	4 Year Prob.	10 Year Prob.	20 Year Prob.	50 Year Prob.
Named Storm	4.19	16.06	35.44	58.32	88.78
Hurricane	2.04	7.99	18.80	34.07	64.70
Intense Hurricane	0.63	2.51	6.16	11.95	27.25

# Capacity

- Capacity represents the financial resources available to address financial vulnerability
- Can be analyzed from financial resources in the budget or on the balance sheet
- Resources can be used in a variety of strategies to improve financial resiliency

# **Capacity Strategies**

- Strategy 1: Use financial capacity to invest in physical resiliency
  - Building levees
  - Hurricane proofing buildings
  - Earthquake resistant infrastructure



# **Capacity Strategies**

- Strategy 2: Use financial capacity to transfer financial risk outside the region
  - Purchasing insurance (fire, flood, etc)



# **Capacity Strategies**

- Strategy 3: Use financial capacity to self insure where the cost of transferring financial risk is cost prohibitive or unavailable.
  - Develop financial reserves to finance emergency operations and debris removal of public sector from flood, tornado, hurricane, etc.



# Capacity

- Strategy 3 (Continued)
  - Available reserve funds are typically found on the balance sheets of most local governments in a region
  - Unreserved general funds from most audited financial statements can be used as conservative estimate of available reserves
  - Depending on purpose, some restricted fund reserves may also be available
    - Road fund, solid waste fund, drainage fund, etc

# **Financial Resiliency**

- When financial capacity > financial vulnerability,
  - Local public sector entity is financially resilient!
- When financial capacity < financial vulnerability,</li>
  - Decisions should be made!

## Calcasieu Parish: Vulnerability vs Capacity Example (Hurricane Rita)

Jurisdiction:	Unreserved General Fund	Eligible Losses	% of U.G.F.	25% of U.G.F.
Dequincy	\$762,989	\$152,567	20.0%	5.0%
Lake Charles	\$23,388,617	\$10,203,902	43.6%	10.9%
Sulphur	\$8,330,709	\$1,940,658	23.3%	5.8%
Westlake	\$6,428	\$8,916,845	138,718.8%	34,679.7%
Iowa	\$1,085,550	\$157,093	14.5%	3.6%
Vinton	\$551,886	\$5,265,904	954.2%	238.5%
Parish unincorporated	\$4,540,905	\$7,279,858	160.3%	40.1%

## Foley, AL: Capacity vs Vulnerability Example

#### Short–Term

- Vulnerability (Ivan Plus Katrina type)
  - \$6,712,469 (2013 dollars)
- Capacity (Unassigned General Fund Balance (September 30<sup>th</sup>, 2012)
  - \$16,921,540
- Capacity minus Vulnerability
  \$10,209,071

# Alternatives to Address Gap

- Creation of laws/ordinances to mandate funding of reserves dedicated to disaster events in existing budgets
- Add flexibility to existing restricted funds for disaster expenses (E.g. road fund, solid waste fund)

# Alternatives to Address Gap

- Generate new revenue
  - Taxes, fees, etc
- Debt financing
  - Lines of credit, bond sales, etc.
- The choice is likely a function of the fiscal health of the local public sector entity and the return liquidity provides in managing disaster expenses

# **Gap Alternatives Example**

#### City of Foley, AL

- Resolution 3649-09 requires undesignated fund balance to meet or exceed
  - 25% of budgeted operational expenditures plus
  - Annual debt service payments
- Funds are not allowed to go below this threshold except for financing emergency disaster expenses
- Strategy creates an "inflation adjustment" based on growth of operational expenditures

- The solvency and liquidity of a local government entity can be important in addressing the gap between vulnerability and capacity.
- By incorporating risk, we can adjust the fiscal health of a local government to assess their capacity to apply gap alternatives



- The "expected" cost from a disaster event occurring would be the financial loss if the event occurred times the probability of occurrence
  - Loss from hurricane if occurs: \$1 million
  - Probability over 10 year period of occurring: 20%
  - Expected loss:
    \$1 million x 0.20 = \$200,000

- Add expected losses to actual liabilities to identify risk adjusted liabilities
- Risk adjusted liabilities can be used to calculate risk adjusted net assets and other fiscal health indicators

- Solvency Indicator
  - Debt to Asset Ratio (Total Liabilities / Total Assets)
  - Healthy public sector ratio < 0.5</li>
- Liquidity Indicator
  - Current Ratio (Current Assets / Current Liabilities)
  - Healthy public sector ratio > 2

# Example: Foley, AL

Storm Type	1 Year Prob.	4 Year Prob.	10 Year Prob.	20 Year Prob.	50 Year Prob.
127 Year Data					
Named Storm	6.2%	23.2%	48.4%	73.3%	96.3%
Minor Hurricane	3.1%	12.0%	27.3%	47.1%	79.7%
Major Hurricane	1.4%	5.5%	13.3%	24.8%	50.9%
<i>30 Year Data</i>					
Minor Hurricane	6.4%	22.8%	49.1%	77.6%	99.0%
Major Hurricane	2.8%	10.3%	24.2%	44.0%	84.1%

# Example: Foley, AL

	Actual 2012	Risk Adjusted (127 Year)	Risk Adjusted (30 Year)
Debt to Asset Ratio	0.26	0.28	0.30
Debt to Marketable Asset Ratio	0.80	0.88	0.93
Current Assets	\$21,199,839	\$21,199,839	\$21,199,839
Current Liabilities	\$1,254,168	\$4,782,746	\$6,956,475
Current Ratio	16.90	4.43	3.05

- Solvency
  - As risk adjusted fiscal health improves/declines the cost of alternatives like debt financing decreases / increases
- Liquidity
  - As liquidity improves/declines cost savings from pre- and post-disaster contracting can decrease/increase

- Regional Financial Resiliency of Public Sector
  - Summation of public sector vulnerabilities and capacities
    - County commission, municipalities, school districts, fire district, drainage district, etc.
  - Approach measures costs appropriated to regional governments
    - Does not account for future costs from delay in recovery or recovery to lower level

 Regional financial resiliency requires and understanding of the interdependence between institutions in preparing and responding to a disaster



- Physical interdependence
  - Use of roads and bridges by school districts that are owned and maintained by county
  - Waste disposal equipment owned by county but used by municipality
  - Levee infrastructure owned by independent levee district providing flood protection for municipality



- Physical interdependence can lead to financial vulnerability
- Example: Hurricane blows out county bridge.
  County does not have sufficient replacement funds. School district must detour bus 30 miles roundtrip twice a day for school year.
  - 30 miles × \$1.00/mile × 360 trips = \$10,800

- Regional Strategies
  - Identify inter-governmental physical vulnerabilities and attempt to quantify financial vulnerability
  - Once identified, evaluate strategies for increased financial preparation
    - Re-negotiation of inter-governmental contracts
    - Changes in state statutes requiring financial resource requirements
    - Purchasing of assets by most vulnerable local government

# **Role of Federal Government**

- Federal government began to share financial risk of natural disasters after Mt. St. Helens eruption in 1980 and Hurricane Andrew in 1992
- Current approach is like an insurance of last resort with a co-pay requirement





# **Role of Federal Government**

- Federal support based on two thresholds
  - \$1.37: state per capita threshold for FEMA Public Assistance (PA) Program (FY 2013) at 25% local government co-pay for disaster
  - \$133: state per capita threshold for co-pay to be reduced to 10% local government co-pay

### FEMA Public Assistance Thresholds



Source: U.S. Census Bureau Population Estimates, 2012; State Population x \$1.37 Map prepared by RUPRI

# **Role of Federal Government**

- Regions should realize that some disasters are more localized than others
- The more localized, the higher probability that FEMA will not provide PA support
- Regional strategies are more important under these circumstances

# **Concluding Thoughts**

- Managing future disasters is an important management function
- Regions need to understand their individual own public sector direct financial vulnerabilities and develop a strategy to become financially prepared
- Regions need to identify their physical interdependencies that lead to indirect financial vulnerability and propose solutions

# **Concluding Thoughts**

- Regions may be more financially vulnerable for localized disasters than more expansive catastrophes
- Regions should consider incorporating risk in evaluating their public sector's overall fiscal health

# Next Steps

- Developing workbook help region think through individual government and joint vulnerabilities including
  - Measuring vulnerability
  - Measuring capacity
  - Identifying strategies to narrow gaps that may exist





# **Questions?**

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