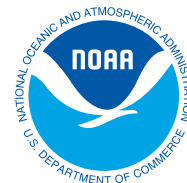**Florida Pilot Test**

Coastal Resilience Index: A Community Self-Assessment

A Guide to Examining How Prepared Your Community Is for a Disaster

DRAFT

Rod Emmer, Louisiana Sea Grant
LaDon Swann, Melissa Schneider, Stephen Sempier
and Tracie Sempier, Mississippi-Alabama Sea Grant Consortium
Tina Sanchez, NOAA Gulf Coast Services Center

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INTRODUCTION

The purpose of this self-assessment is to provide community leaders with a simple and inexpensive method of predicting if their community will reach and maintain an acceptable level of functioning and structure after a disaster. Experienced local planners, engineers, floodplain managers or administrators can complete this self-assessment using existing sources of information from their community. The goal is for every community to become highly resilient. The assessment may identify problems your community should address before the next disaster and where resources should be allocated.

Results of the assessment are presented as a Resilience Index that estimates the adaptability of your community to a disaster. This self-assessment was created to identify areas in which your community may become more resilient. Your community's unique Resilience Index is an internal evaluation tool and should not be used to compare your community with others.

The Resilience Index and methodology does not replace a detailed study just as self-examination for skin cancer is not a substitute for a check-up and tests by a dermatologist. But, the Resilience

> **DISASTER RESILIENCE** is the capacity of a community exposed to hazards to adapt, by resisting or changing, in order to reach and maintain an acceptable level of functioning and structure.
>
> **RESILIENCE** is determined by the degree to which the community is capable of organizing itself to increase its capacity for learning from past disasters.
>
> *Definitions are from the Subcommittee on Disaster Reduction. 2005. Grand Challenges for Disaster Resilience. National Science Technology Council, Committee on Environment and Natural Resources. Washington, D.C.: National Science and Technology Council.*

Assessment may encourage your community to seek further consultation.

NOTE: This Community Self-Assessment is date-specific and should be periodically applied as the community grows and/or the landscape changes, such as when shoreline erosion accelerates. Your community officials should conduct new assessments on a regular basis (annual, biannual, etc.) because of this growth and/or change.

RESULTS

After completing this self-assessment, you should complete the summary that will help you calculate your Resilience Index (see pages 10 and 11).

The Resilience Index used in this self-assessment will be defined as LOW, MEDIUM or HIGH.

The rating will give you an idea of how long it may take your community to provide basic services and reoccupy homes and businesses after a disaster.

For more details about interpreting Resilience Index results, go to page 12.

BUILD YOUR SCENARIOS

Use the definitions of Bad and Worst Storm below to complete the table. Decide as a group what the best benchmarks would be based upon your past experience, historical records, and prior knowledge. You will then refer to these benchmark storms to complete the rest of the Index.

Variables	Bad Storm Name:	Worst Storm Name:
Wind speed at landfall (mph)		
Rain (total/24hours)		
Storm Surge (height in feet)		
Direction		
Duration		
Tidal Influence (high or low)		
Landfall Location		
Speed of Movement		

Bad Storm: Select a benchmark storm that you will use to answer questions on the index. Look back at historical events to help you determine as a group which storm would be the best to use. Remember, this is a self-assessment, so try and select a benchmark you feel will give you the most information about where the community vulnerabilities may be.

Worst Storm: Select a storm which would be 50 percent worse than the "bad storm" you selected. For example, what if the storm surge was higher? The rainfall greater? This is to assist you in preparing for a future event that has not been witnessed in the historical records.

CRITICAL INFRASTRUCTURE AND FACILITIES

The following are key indicators that will give a preliminary assessment of your community's disaster resilience. A more detailed assessment process is available in the FEMA 386-2 publication (fema.gov).

1. Place a check mark in the column where your community's critical infrastructure and facilities are located. You may need to use flood maps to determine where the boundaries would be. If the facility is located in multiple areas, put a check in all that are applicable. Then put a check mark in the last column if the infrastructure or facility is functional after a disaster. Use the information in the yellow boxes to complete the section "Determining Your Resilience Index" on Page 10.

	Special Flood Hazard Area (SFHA)	Scenario 1 Bad Storm	Scenario 2 Worst Storm	Infrastructure or facility functions after disaster
Example: Power grid		√		√
Section A: Critical Infrastructure				
Wastewater treatment system				
Power grid				
Water purification system				
Transportation/ evacuation routes				
Total check marks for Section A:				
Section B: Critical Facilities*				
City Hall or other local government building(s)				
Police station or other law enforcement building(s)				
Fire station(s)				
Communications main office or substations				
Emergency operation center				
Evacuation shelter(s)				
Hospital(s)				
Critical record storage				
Total check marks for Section B:				

*Critical facilities may be defined a certain way in an ordinance. However, each community may identify other structures they consider critical.

TRANSPORTATION ISSUES

2. Assuming Scenario 1, if any of the following affect your transportation/evacuation route(s), will your community regain a pre-storm level of service within one week? Check Yes or No.

Transportation issue	Yes	No
Example: Will flood-prone areas (tunnels, roads in low-lying areas) be operational within one week?	√	
Will primary bridge(s) be out for less than one week?		
Will roads blocked by storm debris (trees, wrack) be cleared in less than one week?		
Will washouts (roads) be passable in less than one week?		
Will flood-prone areas (tunnels, roads in low-lying areas) be operational within one week?		
Is public transportation available to assist evacuation of residents unable to evacuate on their own?		
Is there more than one evacuation route?		
Total number of Yes answers and No answers:		

ADDITIONAL NOTES

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COMMUNITY PLANS AND AGREEMENTS

3. Does your community have the following plans, personnel or agreements in place? Check Yes or No.

Does your community:	Yes	No
Example: Have a certified floodplain manager?		√
Participate in the FEMA Community Rating System? (Rating of 8 or lower)		
Use an early flood warning system?		
Have a certified floodplain manager?		
Have planning commissioners with formal training in planning?		
Have a planning staff with credentials from the American Institute of Certified Planners (AICP)?		
Have a FEMA-approved and state EMS-approved mitigation plan?		
If you have an approved mitigation plan, has it been revised in the past two years?		
Have Memorandums of Understanding (MOUs) or Memorandums of Agreement (MOAs) with neighboring communities to help each other during times of disaster?		
Have a comprehensive plan or strategic plan that addresses natural disasters?		
Have a floodplain manager or planner who participates in the following organizations: Association of State Floodplain Managers or State Floodplain Management Association		
American Planning Association (APA) or state APA chapter?		
American Society of Civil Engineers (ASCE) or state or local section of ASCE?		
American Public Works Association?		
Have first-hand experience with disaster recovery within the last years?		
Have a communication system to use before during and after a disaster		
Total number of Yes answers and No answers:		

ADDITIONAL NOTES

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MITIGATION MEASURES

4. Has your community implemented the following ongoing mitigation measures or projects? Check Yes or No.

Mitigation measures in place	Yes	No
Example: Relocation of buildings and infrastructure		√
Elevation of residential, nonresidential buildings, or infrastructure to National Flood Insurance Program standards for your community		
Relocation of buildings and infrastructure from flood-prone areas		
Flood-proofing of nonresidential structures		
Education programs about mitigation options for your community		
Acquisition of repetitive loss structures or infrastructure		
Incentives-based mitigation measures		
Adoption of the most recent International Building Codes		
Hiring certified building inspectors		
Staffing an adequate number of people to enforce building codes		
Total number of Yes answers and No answers		

ADDITIONAL NOTES

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BUSINESS PLANS

5. What assets do the large retail stores (The Home Depot, Wal-Mart, etc.), grocery stores and fuel distributors in your community have to reopen after a disaster? If more than 50 percent of the businesses in your community have the following equipment or plans, mark yes. If fewer than 50 percent have the equipment or plans, check no.

Business equipment/plans	Yes (50% or more)	No (Less than 50%)
Example: Generators		√
Generators		
Backup options for basic needs (water, sewer, food, and communications)		
Plans to bring in staff to help reopen the business		
Plans for restocking		
Total number of Yes and No answers:		

ADDITIONAL NOTES

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SOCIAL SYSTEMS

6. Are there social systems that define your community or serve as the core of your community? Check Yes or No.

Social system category	Yes	No	If yes, describe relationship
Example: Strong faith-based networks	√		*Church networks*
Strong faith-based networks			
Cultural identity (unified Hispanic, Asian or other ethnic communities)			
Neighborhood associations Support members in times of need			
Business cooperative or working relations (industries that employ many residents, Chamber of Commerce, other business-related networks, etc.)			
Strong civic organizations (Kiwanis Club, Rotary Club, etc.)			
Total number of Yes answers and No answers:			

ADDITIONAL NOTES

DRAFT

7. Please provide any additional Resilience indicators you think should be included in this assessment:

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DETERMINING YOUR RESILIENCE INDEX

To determine your Resilience Index for each section, use the following tables, which are based on the totals you entered in the yellow boxes throughout the index.

Section 1A: Critical Infrastructure

Total number of infrastructure functioning after a disaster: _____.

Number of check marks	Percentage of infrastructure and facilities functioning after a disaster	Resilience Index
0	0%	LOW
1	25%	LOW
2	50%	MEDIUM
3	75%	MEDIUM
4	100%	HIGH

Your critical infrastructure Resilience Index is _____.

Find out what your Resilience Index means on page 12.

Section 1B: Critical Facilities

Total number of critical facilities functioning after a disaster: _____.

Number of check marks	Percentage of critical facilities functioning after a disaster	Resilience Index
1	14%	LOW
2	29%	LOW
3	43%	LOW
4	57%	MEDIUM
5	71%	MEDIUM
6	86%	HIGH
7	100%	HIGH

Your critical facilities Resilience Index is _____.

Find out what your Resilience Index means on page 12.

Sections 2-6: Transportation, Community Plans, Mitigation Measures, Business Plans and Social Systems

Use the information in the yellow boxes from Sections 2-6 to complete the following chart.

Sections 2-6	Number of Yes answers	Translate number of Yes answers to Resilience Index	Resilience Index	Comments
(Example) Section 2: Transportation issues	*I*	*2 or fewer (LOW)* *3 to 4 (MEDIUM)* *5 or more (HIGH)*	*LOW*	*A road construction project will create an additional evacuation route within a year. Also, we are in talks with the local public transportation provider about a program to assist evacuation.*
Section 2: Transportation Issues		2 or fewer (LOW) 3 to 4 (MEDIUM) 5 or more (HIGH)		
Section 3: Community Plans and Agreements		4 or fewer (LOW) 5 to 8 (MEDIUM) 9 or more (HIGH)		
Section 4: Mitigation Measures		2 or fewer (LOW) 3 to 6 (MEDIUM) 7 (HIGH)		
Section 5: Business Plans		I or fewer (LOW) 2 to 3 (MEDIUM) (HIGH)		
Section 6: Social Systems		I or fewer (LOW) 2 (MEDIUM) 4 or more (HIGH)		

ADDITIONAL NOTES

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INTERPRETING RESILIENCE INDEX RESULTS

RESILIENCE INDEX: A Resilience Index is an indicator of your community's ability to reach and maintain an acceptable level of functioning and structure after a disaster.

After completing the Summary section of this self-assessment, your Resilience Index was identified as LOW, MEDIUM or HIGH in different categories.

LOW Resilience Index. A low Resilience Index indicates that your community should pay specific attention to this category and should make efforts to address the areas of low rating. If the critical infrastructure category received this rating, then reoccupation of your community may take more

than 18 months before basic services are restored.

MEDIUM Resilience Index. A medium Resilience Index indicates that more work could be done to improve your Resilience in this category. If the critical infrastructure category received this rating, reoccupation of your community may take less than 2 months before basic services are restored.

HIGH Resilience Index. A high Resilience Index indicates that your community is well prepared for a storm event. If the critical infrastructure category received this rating, then the community probably will not suffer or will have minimal damage (can be functional in less than two weeks) to basic services.

NEXT STEPS

Regardless if your city has a HIGH, MEDIUM OR LOW resilience index, you should learn about and investigate the weaknesses you have identified during this process.

For more information, contact the NOAA Gulf of Mexico Coastal Storms Program Outreach Coordinator, Mississippi-Alabama Sea Grant Consortium, 703 East Beach Drive, Ocean Springs, MS, 39564, or (228) 818-8829.

ACKNOWLEDGMENTS

Appreciation is extended to the following communities for donating their time, sharing their expertise, and assisting us in strengthening the Index through their participation as pilot communities. In alphabetical order:

Bayou La Batre, AL
Biloxi, MS
Cameron Parish, LA
Dauphin Island, AL
Gulf Shores, AL

Ocean Springs, MS
Orange Beach, AL
Pascagoula, MS
Pass Christian, MS
St. Tammany Parish, LA

REFERENCES

Useful Definition

Critical facility (also called critical action) means facilities for which the effects of even a slight chance of flooding would be too great. The minimum floodplain of concern for critical facilities is the 0.2 percent chance flood level. Critical facilities include, but are not limited to facilities critical to the health and safety of the public such as: emergency operations centers, designated public shelters, schools, nursing homes, hospitals, police, fire and emergency response installations, vital data storage centers, power generation and water and other utilities (including related infrastructure such as principal points of utility systems) and installations which produce, use or store hazardous materials or hazardous waste (as defined under the Clean Water Act and other Federal statutes and regulations). Such facilities and access to such facilities will be constructed outside the one percent chance Special Flood Hazard Area or elevated/protected to or above the 0.2 percent chance flood level.

Additional Resources

Resilience Index Critical Facilities Mapping Tool: **www.csc.noaa.gov/criticalfacilities**

Risk and Vulnerability Assessment Tools: **www.csc.noaa.gov/rva_tools**

Community Rating System: **http://www.fema.gov/business/nfip/crs.shtm**

StormSmart Coasts Network: **http://stormsmartcoasts.org**

Training

Coastal Services Center: **http://www.csc.noaa.gov/training/**

Federal Emergency Management Agency: **http://training.fema.gov/**
  MS Emergency Management Agency Training: **http://www.msema.org/training/**
  FL Division of Emergency Management Training: **http://floridadisaster.org/TrainingCalendar/index.asp**
      AL Emergency Management Agency Training: **http://ema.alabama.gov/Organization/Preparedness/Training.cfm**
      LA Homeland Security & Emergency Preparedness Training: **http://www.ohsep.louisiana.gov/Training/**
      TX Division of Emergency Management Training: **http://www.txdps.state.tx.us/dem/pages/Training.htm**

National Estuarine Research Reserves-Coastal Training Program
      Grand Bay, MS: **http://grandbaynerr.org/education/ctp/**
      Weeks Bay, AL: **outdooralabama.com/public-lands/stateLands/WeeksBay/coastal%20training%20program/**
      Apalachicola, FL: **http://www.dep.state.fl.us/coastal/sites/apalachicola/ctp.htm**
      Guana Tolomato Matanzas, FL: **http://www.dep.state.fl.us/coastal/sites/gtm/education/ctp.htm**
      Rookery Bay, FL: **http://www.rookerybay.org/professional-development/ongoing-classes**
      Mission-Aransas Reserve, TX: **http://146.6.184.140/mission-aransas-nerr/coastal-training-program.html**