

Resilience Innovations: Financing Opportunities



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Resilience Innovations: Financing Opportunities



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Liz Harvell
North Carolina Coastal Resilience Summit
June 12, 2019



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Dedicated to enhancing the ability of governments and other organizations to provide environmental programs and services in fair, effective, and financially sustainable ways through:

- Applied Research
- Teaching and Outreach
- Program Design and Evaluation



How you pay for it matters.





2017: Most Expensive Hurricane Season in U.S. History



Source: NOAA

PLANNING TIPS AND RESOURCES FROM THE EFC



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Be Proactive

- **Incorporate natural disaster resiliency into the capital planning process**
- **Know what's available**
 - *before* a disaster strikes
 - *what* sort of funds are allowed to be used for disaster planning or relief
 - I.e. examine restricted funds



Direct Technical Assistance for Small Water Systems

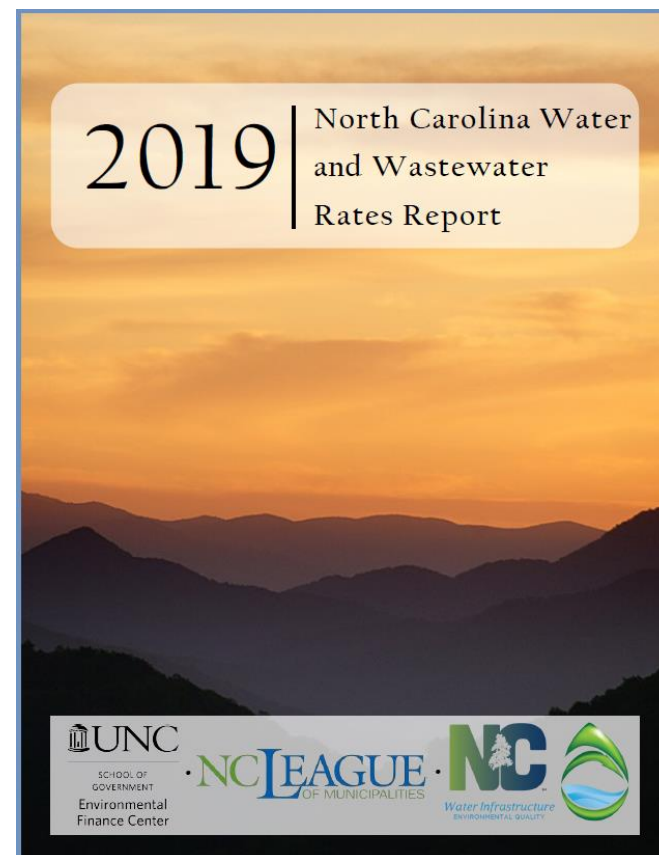
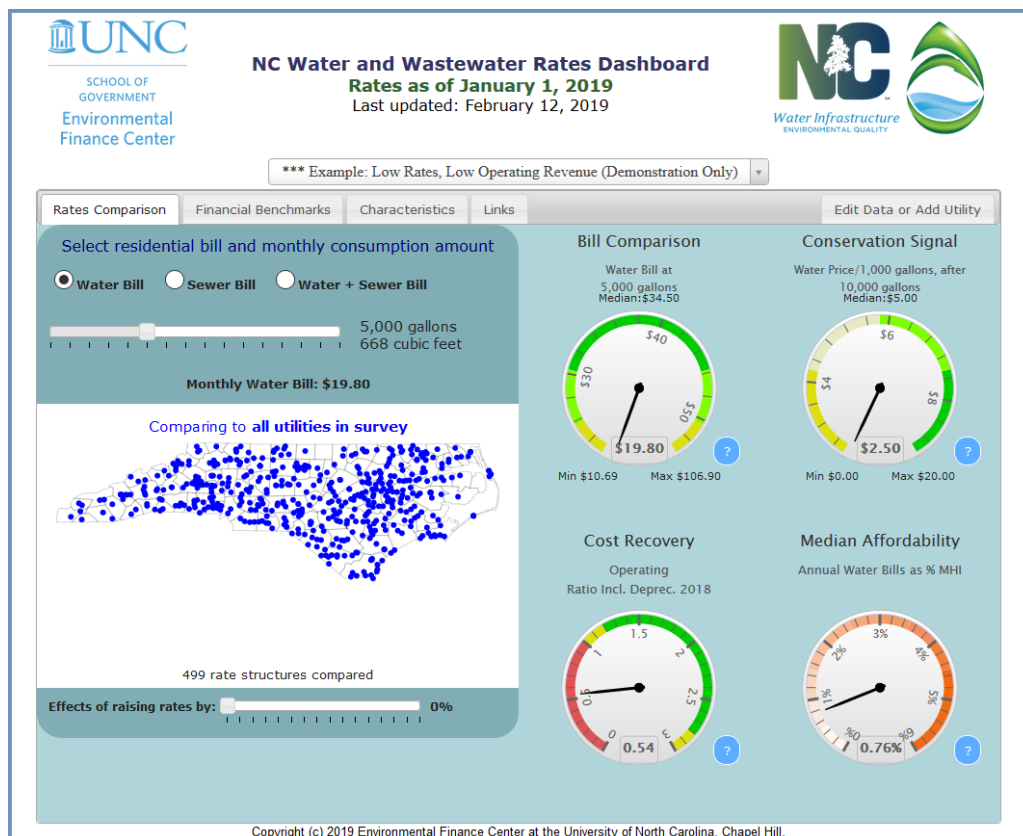
- Long-term capital planning
- Identifying sources of outside funding
- Collaborating with other water systems
- Resiliency Planning



**Smart Management for
Small Water Systems**

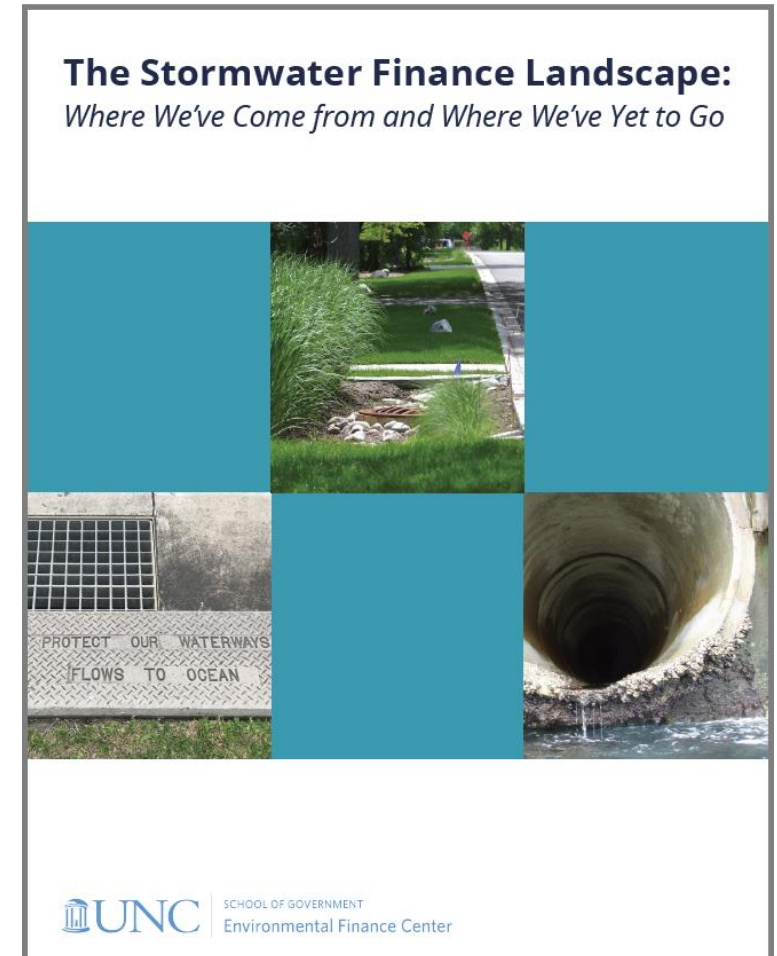
efcnetwork.org

North Carolina Rates Data



EFC Stormwater Finance Work

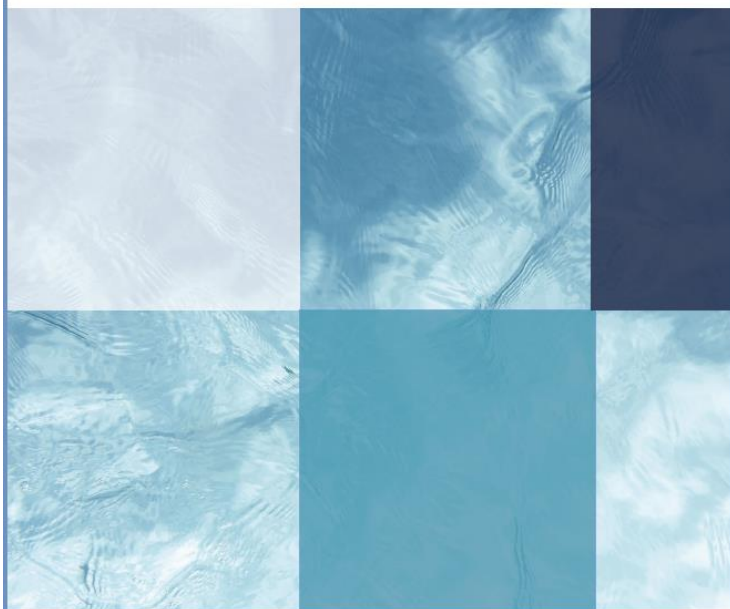
- Recent report, May 2019
- NC Stormwater Listserv
 - Sign-up at efc.sog.unc.edu
 - Services → Listservs
- NC Stormwater Fee Dashboard
 - May 2019



EFC Regionalization Work

go.unc.edu/regionalization

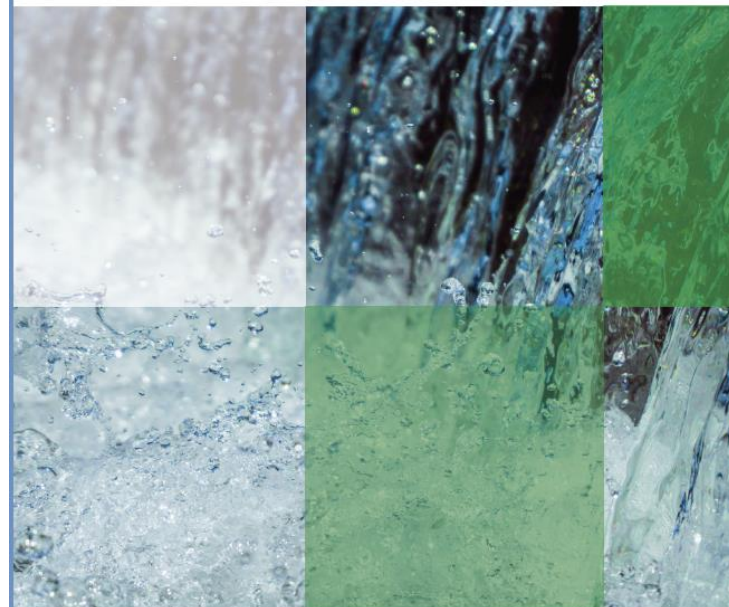
Crafting Interlocal Water and Wastewater Agreements



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May 2019

Consolidation of Water and Wastewater Systems: **Options and Considerations**



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Coming Soon

The Environmental Finance Blog

How you pay for it matters.



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Local Government Financial Resilience and Preparation Before a Natural Disaster

JANUARY 9, 2018 / ELIZABETH HARVELL / 0 COMMENTS / EDIT



The 2017 U.S. Atlantic hurricane season is officially the [most expensive](#) ever, amounting to \$202.6 billion in damages across the Atlantic basin. This record-breaking hurricane season brought some of the most catastrophic storms in recent memory. As Hurricane Katrina reshaped New Orleans in 2005, the destruction induced by Harvey, Irma, and Maria will have lasting consequences for cities and towns in Texas, Florida, and Puerto Rico. The devastation is likely to be even more long-lasting for many of the hardest hit small islands across the Caribbean. And hurricanes are not the only natural disasters with a hefty price tag; drought, freezing temperatures, severe storms, wildfires, and winter storms [cause](#) billions of dollars in damages every year.

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UNC School of Government Emergency Management Microsite

(<https://www.sog.unc.edu/resources/microsites/nc-emergency-management/>)

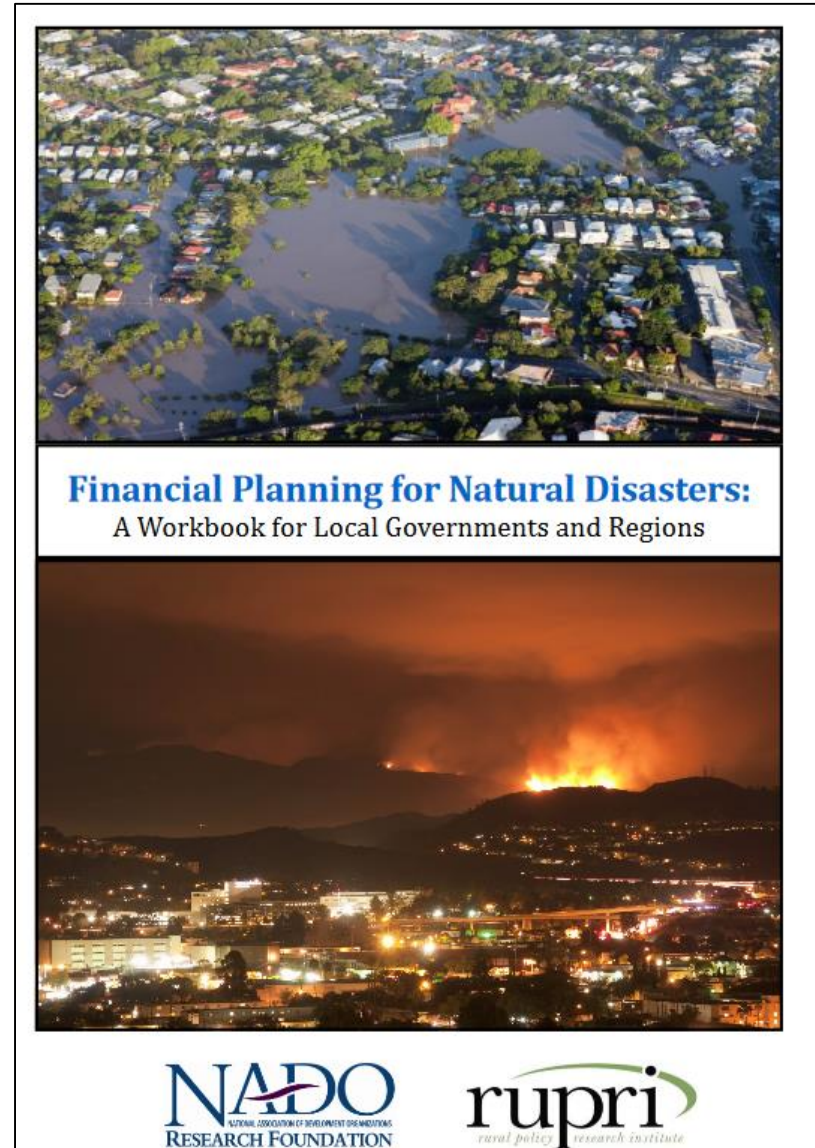


Other Resources

- ***Financial Planning for Natural Disasters: A Workbook for Local Governments and Regions***

National Association of
Development Organizations

(<https://www.nado.org/wp-content/uploads/2014/01/FINALWorkbook.pdf>)



HAZUS, Federal Emergency Management Agency (<https://www.fema.gov/hazus>)



HAZUS-MH Models

	Earthquake Ground Motion Ground Failure	Flood Frequency Depth Discharge Velocity	Hurricane Winds Pressure Missile Rain
Direct Damage			
General Building Stock	■	■	■
Essential Facilities	■	■	■
High Potential Loss Facilities	■		
Transportation Facilities	■	■	
Lifelines	■	■	
Induced Damage			
Fire Following	■		
Hazardous Materials Sites	■		
Debris Generation	■	■	■
Direct Losses			
Cost of Repairs/Replacement	■	■	■
Income Loss	■	■	■
Crop Damage		■	
Casualties	■	Generic Output	
Shelter and Recovery Needs	■	■	■
Indirect Losses			
Supply Shortages	■	■	
Sales Decline	■	■	
Opportunity Costs	■	■	
Economic Loss	■	■	

- **2018 Tropical Meteorology Project,**
Colorado State University
(<https://tropical.colostate.edu/>)

- ***Disaster Preparedness***
Government Finance Officers
Association
(<http://www.gfoa.org/disaster-preparedness>)

ATLANTIC BASIN SEASONAL HURRICANE FORECAST FOR 2018*

Forecast Parameter and 1981-2010 Median (in parentheses)	Issue Date 5 April 2018	Issue Date 31 May 2018	Issue Date 2 July 2018	Observed Activity Through June 2018	2 July Forecast for Remainder of 2018
Named Storms (NS) (12.0)	14	14	11	1	10
Named Storm Days (NSD) (60.1)	70	55	45	3.50	41.50
Hurricanes (H) (6.5)	7	6	4	0	4
Hurricane Days (HD) (21.3)	30	20	15	0	15
Major Hurricanes (MH) (2.0)	3	2	1	0	1
Major Hurricane Days (MHD) (3.9)	7	4	2	0	2
Accumulated Cyclone Energy (ACE) (92)	130	90	60	2	58
Net Tropical Cyclone Activity (NTC) (103%)	135	100	70	3	67

*Seasonal forecast numbers in the first three forecast columns in the above table include tropical cyclones that formed prior to the date of the forecast release (e.g., Alberto in May).

PROBABILITIES FOR AT LEAST ONE MAJOR (CATEGORY 3-4-5) HURRICANE LANDFALL ON EACH OF THE FOLLOWING COASTAL AREAS:

- 1) Entire U.S. coastline - 39% (average for last century is 52%)
- 2) U.S. East Coast Including Peninsula Florida - 22% (average for last century is 31%)
- 3) Gulf Coast from the Florida Panhandle westward to Brownsville - 21% (average for last century is 30%)

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