



# Municipal Securities Research

## Municipal Commentary

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# Stormy Weather: Natural Disasters and Municipal Finance

Municipal market participants routinely worry when natural disaster strikes, but there are rarely defaults as a result. In fact, the infusion of federal and state money, as well as insurance payments for businesses and residents, has, in the past, resulted in a boost to the local economy — providing stimulus. In Florida for example, the heavy hurricane years of 2004 and 2005 significantly intensified the building boom there. Hurricanes Wilma, Rita and Katrina destroyed a substantial amount of housing stock just when lending for new construction was approaching its peak. Today, the Center for Business and Economic Research at the University of Alabama estimates that recovery and repair following the devastating EF4 tornados in Tuscaloosa, Ala., might infuse \$2.9 billion into the state’s economy, exceeding the cost of the damage.

However, all this was before members of Congress dug in their heels against any new funding without equivalent program cuts elsewhere. With the many disasters this year, the Federal Emergency Management Administration (FEMA) is short on funds, and Congress has not yet provided additional help—removing a key piece of funding for the rebuilding process. Premiums for the flood insurance program have not been priced at a sufficient level to cover the extent of this year’s damage. When FEMA funding falls to less than \$1 billion (now around \$800 million), the agency is authorized to prioritize payments. The priorities include making urgent, emergency payments to individual disaster victims but postponing or suspending longer-term rebuilding of damaged infrastructure. Damage-mitigation facilities (think levees, embankments and other infrastructure) are considered longer-term projects. There is no automatic appropriation to fund the agency, and Congress will have to appropriate additional funds. The Congressional “to-do” list is so cluttered at this point that rebuilding may be stalled for some months.

Suspended projects include those in places hard hit by recent tornadoes, such as Joplin, Mo. and Tuscaloosa, Ala. It is unclear too, how the funding priorities will affect Vermont’s and upstate New York’s repair of bridges and key roads. Without quick road and bridge reconstruction, tourist travel during the peak fall “leaf-peeping” and winter ski seasons could be harmed. Private insurance (where it is available and coverage was purchased) should help, and states too are pitching in. Officials report that destroyed schools in Tuscaloosa will be rebuilt without recourse to the federal monies. But private insurance does not cover flood damage — as this is covered by the National Flood Insurance Program (NFIP). Unlike an openly bullish approach to disaster recovery in the past, we caution investors to

Saffir-Simpson Hurricane Wind Scale	
Category 1	74-95mph
Category 2	96-110
Category 3	111-130
Category 4	131-155
Category 5	>155
Source: NOAA	

Enhanced Fujita Tornado Scale (EF)	
EF0	65-85mph
EF1	86-110
EF2	111-135
EF3	136-165
EF4	166-200
EF5	>200
Source: NOAA	

Richter Scale of Earthquake	
2.0-3.9	felt, but not damaging
4.0-4.9	noticeable
5.0-5.9	major damage to poorly constructed buildings; better design may not have damage
6.0-6.9	destructive up to about 100 miles
7.0-7.9	serious damage over major region
8.0-8.9	devastating
Note: the Richter Scale measures the amount of energy released and is exponential as the numbers get higher	
Source: US Geological Survey	

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look more closely at the nature of damage, the level of private insurance and state aid as well as the importance of the damaged facilities to the local economy.

***Loss Estimates Tell only Part of the Story***

With primarily private insurance and state/local funds (also strapped) on which to rely, property losses will be only partially covered, in our view. It is important to keep in mind that actual losses to state and local government include *all* properties, although the figures most commonly reported by the media refer solely to *insured* losses. Most companies that produce loss estimates typically rely on insurance valuations. Places with poorer populations may not have high insurance coverage. For example, private insurance covered about 50% of the estimated total losses from Hurricane Katrina, while insurance covered about 75.6% of the losses from Hurricane Rita, which hit the Florida Keys and Lake Charles, La. (according to Munich Re, which provides catastrophe insurance). Outside the United States, Munich Re estimated that only 14% of Japan’s earthquake and tsunami damage was covered by insurance, but 67% of the losses in the Christchurch earthquake in New Zealand were covered.

The cost of storms has grown — this is largely due to the boom in property values (coupled with the desire to live along panoramic coastlines) between 2000 and 2007. We point out that some of the valuations of loss that are popularized in the media may be using higher pre-recession property values.

***And We Are not Done Yet***

Hurricane season for the Atlantic began on June 1 and ends on Nov. 30. This has been one of the most active years in history for disasters. In the first six months of 2011, there were 98 notable events, according to Munich Re. This has been the deadliest tornado season since 1953, with nearly 600 fatalities, and the most deadly tornado since 1947 hit Joplin, Mo. There has been extensive severe flooding in the Midwest and Great Plains. Texas might welcome a hurricane or flooding at this point — more than 3.5 million acres across the state have suffered wildfires in 2011. Wildfires have also damaged significant areas of Arizona and New Mexico and are ongoing in Texas. There was a major blizzard and ice storm in the Midwest. Last week, the East Coast experienced Hurricane Irene and the Gulf Coast is being drenched by tropical storm Lee. At this writing, 60% of the oil and gas production off the Louisiana and Mississippi coastline has been shut down, and we are not done yet.

***Assessing Vulnerable Areas***

Dr. William Gray, who pioneered the Tropical Meteorology Project (TMP) at Colorado State University, affirmed at the beginning of August a “very active Atlantic basin hurricane season in 2011... (*and*) well above-average probability of United States and Caribbean major hurricane landfall.” The National Oceanic Atmospheric Administration (NOAA) predicts an 85% chance of an above-normal Atlantic hurricane season. TMP details the probabilities of landfall of different categories of storms along the Atlantic Coast, from Maine to Texas. We believe the maps and data are useful for the analyst/investor who wishes to assign a higher risk to certain hurricane-prone locations.

***Federal Aid***

Federal disaster assistance is intended to supplement private and state/local funding. Given the sovereign powers of the states, a governor has to request help, and the president has to declare a major disaster. State and local governments have to show a reasonable commitment of funds in order to receive federal aid. (We note that disaster relief is, on paper at least, excluded from the Budget Control Act of 2011.)

**Construction Employment, as percent of total, Selected Coastal States**

State	July 2006	July 2011
Florida	7.6%	4.6%
Maryland	7.3%	5.5%
Virginia	6.9%	4.9%
South Carolina	6.7%	4.2%
Delaware	6.5%	4.5%
Texas	6.2%	5.6%
North Carolina	6.1%	4.4%
Alabama	5.6%	4.6%
Vermont	5.1%	4.4%
Maine	5.1%	4.1%
Mississippi	5.0%	4.4%
Rhode Island	4.7%	3.3%
Massachusetts	4.4%	3.3%
New Jersey	4.2%	3.4%
New York	3.9%	3.5%
Connecticut	3.9%	3.1%

Source: Bureau of Labor Statistics, Wells Fargo Securities, LLC

The year 1968 was a watershed year when congress passed the flood insurance program. FEMA was created in 1979 and brought numerous agencies and programs under one roof. Following 9/11, FEMA was transferred to the Office of Homeland Security.

### ***Flood Insurance – Our Federal Program***

Homeowners insurance does not typically cover flood hazard. National flood insurance is provided to communities that have developed flood management programs, which typically include building codes, preparedness, evacuation plans, and so on. According to FEMA, there are 19,700 communities participating in the NFIP. Insurance premiums are based on a 1% chance of the 100-year flood. Some critics feel that this criterion is not sufficient, and recent history has proven this true.

Population density should play a role in determining the standards for insurance. In its report following Hurricane Katrina, the National Research Council commented: “For areas in which catastrophic levee failure is not a major public safety concern, and where large floods would not imperil evacuation routes, the 100- year standard may be appropriate. For heavily populated urban areas, where the failure of protective structures would be catastrophic—such as New Orleans—this standard is inadequate.”

### ***Catastrophe Insurance – State Programs***

Many states have created catastrophe funds to cover their residents and businesses where private insurance may fall short. Perhaps the best known is Citizens Property Insurance in Florida. In our view, single-state (and single risk) catastrophe insurers make little sense. Rather, when constructing a “cat fund,” the goal should be to diversify the types of risk and establish geographic dispersion so that premiums from a quiet area keep the fund solvent when another area heats up with hurricane or earthquake. At this point in history, it also seems unrealistic for these public fund managers to assume there would be a federal bailout when funds fall short, given that FEMA is already strapped and not meeting all its needs. Rather, collaboration amongst states that have varying natural hazard risk might make more sense.

### ***Preparedness in a Post-Katrina World***

Hurricane Katrina taught elected officials that it is politically in their interest to respond quickly and decisively in the face of natural disaster—a good fact. The effectiveness of being prepared in reducing loss of life and property has entered public awareness. Also, following Hurricane Katrina, FEMA re-drew the floodplain maps for coastal areas and increased housing elevation requirements. The Insurance Services Office (ISO) has put out a grading system for building code effectiveness that stresses not only the quality of the code but *enforcement* as well. Enforcement has been found to be weak and fraught with fraud, leading to heavier damage than necessary following a hurricane. In short, building codes may be strict for natural hazards, but if enforcement is lacking, then hurricanes, earthquakes, tornados and floods will find their buildings to destroy.

### ***Preventing Loss***

Preparedness is key to minimizing human and property loss. Assessing the probability of events is an important decision factor. In our view, we should envision what it looks like the day after an event – and then what? Natural disasters have a way of exceeding design parameters. For example, the levees protecting New Orleans were built to withstand a Category 3 hurricane. Hurricane Katrina powered up to a Category 5 from Category 1. Parts of New Orleans are shaped like a soup

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bowl and require pumping to get water out (not unlike a water-logged canoe). Less well-known is the fact that the Sacramento, San Joaquin Delta is at more risk of flooding than other parts of the country, including New Orleans. Levees were built years ago, before much real estate development and population inflow and may be insufficient to sustain heavy water. Following the Aug. 23 earthquake, Virginia's Dominion Resources Inc. reported that the North Anna nuclear power plant sustained shaking that may have exceeded levels for which it was designed. Japan is an earthquake-prone series of islands, yet is heavily dependent on nuclear power. Certain structures are designed for certain levels of wind—and during Hurricane Irene, reports circulated that bridges were to be closed when winds reached 60 mph. Policy-makers, in our opinion, should take “day-after” effects into consideration, should disasters exceed historical probabilities.

### ***A Typology of Sectors to Watch***

If located in a “hot” or active area, we recommend giving heightened review to the following security sectors (see map on the following page):

- a) tax allocation bonds
- b) standalone hospitals
- c) localized single-family housing
- d) multi-family housing
- e) student housing
- f) small issue industrial development bonds
- g) nuclear power plants and utility systems with a single generating plant
- h) revenue based bridges
- i) parking garages, stadia and convention centers
- j) ports and airports
- k) colleges and universities
- l) special assessment
- m) equipment loans, particularly ones with loans concentrated in hot spots
- n) leases including certificates of participation that rely on usability of the facility
- o) collateral that includes any of the above

Bonds that are typically insulated from natural hazard risk fall into sectors that are secured with a broad geographic pledge:

- a) general obligation
- b) water, sewer, electric systems
- c) sales tax, franchise, excise taxes
- d) state-wide single family housing
- e) student loan bonds
- f) hospital systems with geographic and financial diversity

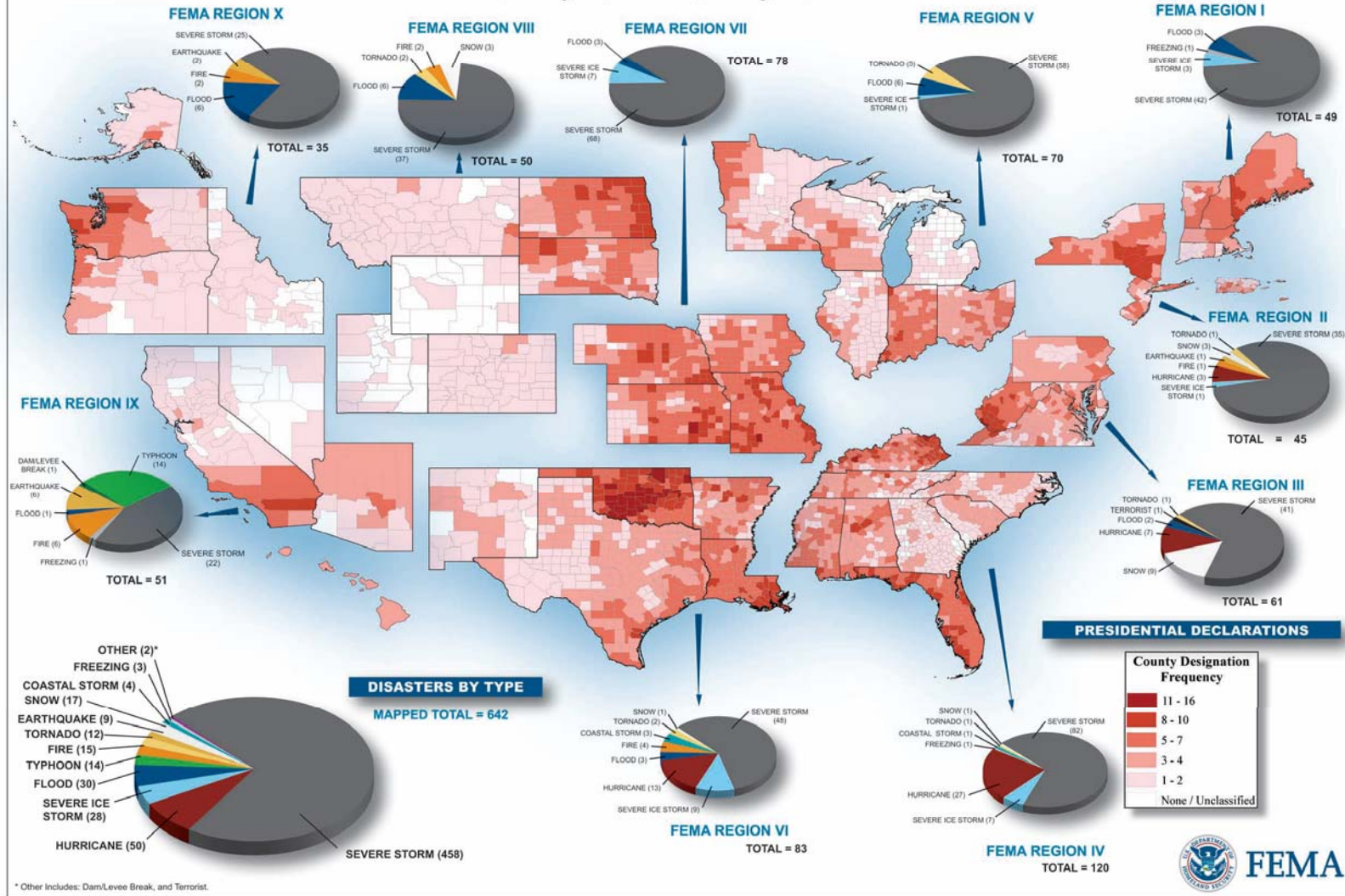
Where a single piece of real property is the sole source of revenue, loss of that property could be catastrophic (unless covered for full replacement, including business interruption insurance during the reconstruction). A sales tax-backed security is, in our view, less risky in that the points of purchase are generally numerous and geographically dispersed. The essential nature of services provided also mitigates the level of financial risk. Electric, telephone, water and sewer utilities are most likely to be repaired first. Hospitals, schools, and municipal administrative buildings may be most likely to be restored to full functionality.

Natural disasters, in our view, have limited effect on tax-exempt bonds, but they *are* capable of creating unexpected market volatility elsewhere. In the 1990s, Nick Leeson, whose dramatic losses felled Barings Bank, aggressively gambled on Nikkei futures. His strategy worked well when the Nikkei remained between 18,500 and 19,500. But when the Kobe earthquake hit Japan, and the index fell more than 1,000 points six days later, the house of cards crumbled.

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# PRESIDENTIAL DISASTER DECLARATIONS

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Source: Federal Emergency Management Agency

**Additional information is available on request.**

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