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After Hurricane Sandy: Time to Learn and Implement the Lessons in Preparedness, Response, and Resilience

The Heritage Foundation Emergency Preparedness Working Group

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Abstract
This Special Report *by The Heritage Foundation Emergency Preparedness Working Group focuses on the lessons learned from Hurricane Sandy in 2012. The group identified key observations, findings, and recommendations that have implications for preparing for and responding to natural disasters in the United States:*

- *FEMA must no longer be made to respond to all manner of routine disasters, so that when truly catastrophic disasters stike, such as Hurricane Sandy, FEMA and its pocketbook are prepared.*
- *Where FEMA failed in its response efforts and overall preparedness, the National Guard and Coast Guard excelled. Ensuring that such success continues in the future requires that both Guards receive the resources they need.*
- *Particularly for disaster response, State Defense Forces offer their states important, low-cost force multipliers. Given this fact, and building on the success seen during Hurricane Sandy, more states at high risk of natural disaster should look to establish these forces.*
- *More responsibility should be returned to the states in terms of disaster response and recovery. So too, the vital role of the local community, civil society, and the private sector must not be overlooked.*
- *These lessons should have been learned before—from Hurricane Katrina to the Gulf oil spill—yet the nation continues to fall short in terms of planning for catastrophic disaster response and recovery. It is time for the U.S. to stop brushing these shortfalls aside, and to ensure that the country is truly prepared for the next major disaster.*

Sandy Makes Landfall

Hurricane Sandy lived up to expectations in October 2012, delivering a powerful punch with heavy rains, strong winds, and significant storm surges. After taking 69 lives in the Caribbean, Sandy hit the eastern United States, where it claimed 72 more lives.[1]

Coastal communities in the Mid-Atlantic were among the hardest hit by the storm. Flooding posed problems for small towns and big cities alike, including New York. Parts of Manhattan lost power as the storm slammed into the Big Apple. Areas near Atlantic City, New Jersey, were consumed by the rising water level.

Amid the disaster, however, Americans came together to help family, friends, and neighbors. First responders navigated dangerous conditions to rescue

individuals in need. Other citizens answered the call to lend a helping hand. State and local governments took a leading role to prepare their communities for the disaster and mobilize once the storm hit.

The American Red Cross initially mobilized more than 1,000 disaster workers in communities up and down the East Coast. Local Red Cross chapters provided shelters for those in need of housing.[2]

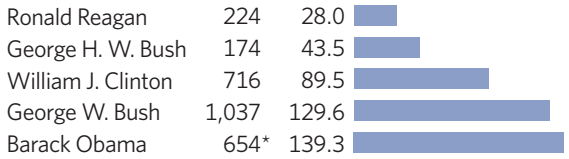
Meanwhile, the Salvation Army deployed dozens of mobile feeding units in seven states to serve thousands of meals. The organization worked with local emergency management officials to determine where help was needed most.[3]

In addition to the Red Cross and Salvation Army, local faith-based and community organizations played vital roles in the emergency response to Sandy.[4] Sandy was certainly a severe storm that will not soon be forgotten. Fortunately, America is still a resilient nation.

CHART 1

Total FEMA Disaster Declarations by Administration

President	Total	Yearly Average
Ronald Reagan	224	28.0
George H. W. Bush	174	43.5
William J. Clinton	716	89.5
George W. Bush	1,037	129.6
Barack Obama	654*	139.3



* As of September 30, 2013.

Source: Federal Emergency Management Agency, "Disaster Declarations," http://www.fema.gov/disasters (accessed September 30, 2013).

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Disaster Response

In the aftermath of Hurricane Sandy, the federal government responded by doling out more than $60 billion in total emergency spending, an appropriation process driven strongly by politics. Part of the problem driving the need for emergency spending is the increasing volume of disaster declarations issued by the Federal Emergency Management Agency (FEMA) over the past two decades. Each declaration issued by FEMA drains the Disaster Relief Fund (DRF), a fund intended for emergencies that overwhelm state resources.[5] The more declarations issued, the faster the DRF needs replenishing. If FEMA reserved the DRF and its resources for nationally catastrophic disasters, the need for emergency spending would drop significantly.

The pace of FEMA declarations has increased with each new President. In just eight years, President George W. Bush issued nearly as many FEMA declarations as Presidents Reagan, George H. W. Bush, and Clinton combined. In 2011 alone, President Obama issued more FEMA declarations than President Reagan did in eight years and President George H. W. Bush in four years. Is it any surprise that the DRF keeps running out of funds, thereby requiring emergency appropriations?

The increase in disaster declarations is largely a result of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act), the controlling federal statute for disasters. Under this act, the federal government pays 75 percent to 100 percent of disaster response bills as long as FEMA has issued a disaster declaration.

Meeting the requirements for such a declaration is relatively easy: The disaster in question must be "of such severity and magnitude that effective response is beyond the capabilities of the State and the affected local governments and that Federal assistance is necessary."[6] The financial threshold is also low: "when a state's storm-related damages reach $1.29 per capita, [which] for several states...is less than $1 million in damages."[7] The ambiguous provisions of the Stafford Act and low damages threshold create enormous incentives for governors to seek federal disaster declarations rather than shoulder most of the cost, especially during this time of tight state budgets.

When the influence of 24-hour news channels carrying images of suffering citizens is married with politicians eager to squeeze as much out of the federal government as possible, the ability of fiscally responsible politicians to stem the tide of more spending is washed away like the houses built too near the unpredictable ocean. In order to prevent this situation from continuing in the future, Congress should:

Modify the Stafford Act to establish clear requirements that limit the situations in which FEMA can issue declarations. As the litmus test for federal disaster dollars, the Stafford Act fails to clearly establish which disasters meet the federal requirements and which do not.

Congress should correct this ambiguity by establishing clear requirements that limit the types of situations in which declarations can be issued. This should include eliminating some types of disasters entirely from FEMA's portfolio. One way to accomplish this is to align declarations with the various scales used for disasters (such as the Saffir–Simpson Scale, the Richter Scale, and the Fujita Scale). Another way is to raise the minimum-dollar threshold for requesting disaster declarations. Doubling the per capita threshold to a minimum of $5 million (and a maximum threshold of $50 million) would significantly reduce the number of events that would warrant a federal disaster declaration.

FEMA's Operational Tempo and Lack of Preparedness

Nothing typifies the extent to which states rely on the federal government for disaster spending like New Jersey Governor Chris Christie's (R) demand that the federal government essentially give him a blank check to deal with Hurricane Sandy.[8] With his charge that Congress's refusal to give him that blank check was a "dereliction of duty," Governor Christie fails to appreciate that Congress has an obligation to ensure that precious taxpayers funds are appropriated responsibly.

Without a return of responsibility to the states, the federalization of routine disasters will continue to require FEMA to become involved with a new disaster somewhere in the U.S. at the current pace of every 2.5 days.

In some ways, it is hard to criticize Governor Christie too much for his expectation that the federal government should pick up the tab for Hurricane Sandy. He has watched for years as FEMA paid for disasters all over America that were far less damaging than what New Jersey experienced after Hurricane Sandy. He understandably believed it was his state's turn to receive FEMA's largesse.

Governor Christie's position reveals, however, just how dependent states have become on federal funding. Indeed, New York Governor Andrew Cuomo (D) demonstrated this dependence, as well. The fact is that neither New Jersey nor New York has a disaster relief fund. After two decades of an increasingly active and generous FEMA, governors have slashed preparedness budgets and drained any disaster rainy day funds over the past 13 years. If FEMA will pick up the tab, why should governors not spend their tax funds elsewhere, particularly during tough economic times?[9]

Yet, with the federal government's increasing fiscal crisis, including the $17 trillion national debt, the ability of FEMA to continue to pay for routine disasters across the United States will become harder to justify. That means that states must begin planning for disasters as they once did from 1787 to 1992, before federal disaster declarations skyrocketed. The first step is for states to allocate money to disaster relief funds that will give them the ability to fund their own disaster response and recovery operations directly.

Without a return of responsibility to the states, the federalization of routine disasters will continue to require FEMA to become involved with a new disaster somewhere in the United States at the current pace of every 2.5 days. This high operational tempo is affecting FEMA's overall preparedness because it keeps FEMA perpetually in a response mode, leaving little time and few resources for catastrophic preparedness. Hurricane Sandy illustrated this problem once again.

With Staten Island left to its own devices without federal assistance for several days, people began to criticize FEMA's response.[10] Across the river in New Jersey, residents complained about FEMA's lack of communication.[11] One FEMA worker described "a chaotic scene at New Jersey's Fort Dix, where emergency workers arrived as the storm bore down.... [T]he worker said officials at the staging area were unprepared and told the incoming responders there was nothing for them to do for nearly four days."[12] Michael Byrne, a FEMA federal coordinating officer acknowledged: "I'm not going to say we couldn't have done better."[13] One responder said, "I worked in Katrina, and Katrina was run better than Sandy."[14]

New Yorkers referred to President Obama's promise to reduce FEMA's red tape as little more than "hot air."[15] Three months later, many victims of Hurricane Sandy, still in "tent cities or living in homes without power, heat or running water," were

hit again by the arctic cold that swept into the New York area at the end of January[16]—and were left trying to navigate the legendary FEMA bureaucracy to receive housing assistance.[17] For those in FEMA-provided temporary housing, the constant uncertainty surrounding the provision of assistance underscored the failure of FEMA to develop a long-term housing program for disasters like Hurricane Katrina and Hurricane Sandy.[18]

Even FEMA's most recent program, the Rapid Repairs program "aimed at getting victims back home quickly," is riddled with communication errors, failure to follow up with victims, and widespread disorganization.[19] By January, one couple had waited "since mid-November for electrical work and a hot water heater."[20] The wife had been going to the Rapid Repairs' offices every day to find out when the workers would come to her home. She also made dozens of calls, chased contractors' trucks through her neighborhood on foot and by car, and one time even tried to block them with her car in order to force a conversation. The final straw came when she met a Rapid Repairs' worker looking for a nearby home that is only occupied in the summer.[21]

Former New York Mayor Rudolph Giuliani (R) said that FEMA's response after Hurricane Sandy was "as bad as Katrina."[22] Representative Jerrold Nadler (D–NY) "told the House Transportation and Infrastructure Committee that FEMA is not prepared to respond effectively to disasters, especially in urban areas."[23]

Beyond the short-term issues, as documented by the U.S. Government Accountability Office (GAO), FEMA's track record on long-term recovery efforts is spotty, at best.[24] As highlighted by the GAO, the key requirements for successful long-term recovery are:

- Clearly defined recovery roles and responsibilities;
- Effective coordination and collaboration among recovery stakeholders; and
- Periodic evaluation of, and reporting on, the recovery progress.[25]

As FEMA and the state leaderships of New Jersey and New York continue their shift to long-term recovery, fulfilling these key requirements must be the primary focus of the political leadership and their staffs. Otherwise, finite resources will continue to be expended inefficiently and ineffectively.

The fact is that FEMA spends too much time responding to routine natural disasters, such as small-scale tornadoes and snowstorms, and not enough time preparing for catastrophic natural disasters, such as hurricanes, earthquakes, and volcanic eruptions, which have wide regional impacts. This increases the likelihood that the federal response to catastrophic events will be insufficient, as once again demonstrated by the response to Hurricane Sandy. In order to reverse this trend:

Congress should reduce the federal share for all FEMA declarations to a maximum of 25 percent of the costs. This way at least three-fourths of the costs of a disaster are borne by the taxpayers living in the state or states where the disaster took place. For catastrophes with a nationwide or regional impact—such as 9/11 and Hurricane Katrina—a relief provision could provide a higher federal cost-share if the total costs of the disaster exceed a certain threshold.

The Role of the National Guard and Coast Guard

FEMA's operational tempo and lack of preparedness can be contrasted with that of the National Guard and Coast Guard before and after Sandy made landfall. Leading up to the storm's arrival, the National Guard mobilized with great efficiency and competence. Through the use of relatively new command structures, streamlining direction and information gathering, and use of specialized units, the National Guard, in conjunction with other state forces as well as active duty military personnel, was poised to respond to Hurricane Sandy well in advance.

Having learned in recent catastrophes, such as Hurricane Katrina, the value of "dual-status commanders"—generals that can have both state and federal authority—they were appointed by the governors of Maryland, New Hampshire, New York, and New Jersey prior to Sandy's landfall. This structure employs commanders who "have been trained to preserve the two separate chains of command of federal and state forces, helping to coordinate troops and reduce redundancies."[26]

The initiative for dual-status commanders emerged after insufficient direction and coordination between state and federal forces during Hurricane Katrina hampered response efforts. In Katrina, active duty and National Guard operations, even those that were seemingly identical in practice, were directed by two separate chains of command. The dual-status structure of the National Guard during Hurricane Sandy, however, enabled state and federal military responders to receive the instructions from the same personnel and operate in a more streamlined fashion.

The initiative for dual-status commanders emerged after insufficient direction and coordination between state and federal forces during Hurricane Katrina hampered response efforts.

This command structure, as well as the general state of readiness of the National Guard, allowed it to put 60,000 guardsmen on alert status nationwide as Hurricane Sandy approached the U.S. However, due to the nature of the incident, and the evidently robust state force responses from New York and New Jersey, only 12,000 of the 60,000 guard personnel were activated for Hurricane Sandy. Operations performed by the guard included search and rescue on land (the Coast Guard operates search and rescue at sea), food and water distribution, debris removal and route clearance, traffic control, fuel distribution for response vehicles, power generation support, and assistance in maintaining civil order.

In Massachusetts, for example, a National Guard Civil Support Team (CST), a unit for emergency preparedness support, was activated to respond to a possible hazardous material threat, but local response forces determined that they had control of the situation.[27] CSTs do not solely respond to hazardous material threats, however. Indeed, the New Jersey National Guard's 21st CST was deployed to Brick Township, New Jersey, during the incident to enhance the local responders' communications systems.[28] This type of support illustrates a critical benefit provided by CSTs. These teams have resources not necessarily available in local regions threatened by a storm, but work under the direction of the governors. In the case of the New Jersey 21st CST, the guard implemented a Joint Incident Site Communications Capability (JISCC).[29] The JISCC essentially creates a command and control center by which federal, state, and local forces can all communicate with each other regardless of which devices they employ to do so. This enables response efforts to run more efficiently as the JISCC quickly establishes a chain of command and enables the various capabilities to work in concert.

Overall, the National Guard has proven to be a robust amplifier of local response efforts by virtue of its consistently trained force and federal funding stream. Yet the guard does not have access to unlimited resources. While the Administration has said that the recent round of defense cuts will not lower the number of personnel in the guard or affect guardsmen's compensation or benefits, secondary effects could be felt in the future. Much of the equipment that the guard uses, for example, could be subject to improper modernization.

Like the National Guard, the Coast Guard also served a number of critical roles in restoring order and security during and after Hurricane Sandy. Most notably, the Coast Guard was responsible for rescuing 14 people stranded aboard the distressed HMS *Bounty*, a tall ship replica that was caught in the storm off the coast of North Carolina. This rescue mission exemplified the Coast Guard's use of various assets performing roles in concert, including an HC-130J airplane keeping watch, MH-60 Jayhawk helicopters conducting search and rescue missions, and Coast Guard Cutters *Elm* and *Gallatin*, which assisted in the search for missing crew members.[30]

The Coast Guard's medium-endurance cutter *Spencer* served as a command center in New York and New Jersey waters.[31] This cutter coordinated actions between U.S. Navy vessels and the Coast Guard cutter *Willow*. The Navy supported Coast Guard efforts, such as conducting hydrographic surveys to assess damage, resupplying Coast Guard vessels that were maintaining aids to navigation, and clearing debris.

While the *Spencer*, *Willow*, *Elm*, and *Gallatin* performed admirably during Sandy, these cutters cannot remain in the fleet forever. The Coast Guard is currently planning a comprehensive recapitalization of its fleet. This includes the nascent "offshore patrol cutter" class, which will replace all medium-endurance cutters. Congress should continue to

make sure that this and other modernization programs mature consistently and efficiently to ensure that the fleet remains capable and competent in future disaster relief. Specifically:

Congress and the Administration should modernize the Coast Guard fleet. The Coast Guard's aging fleet can no longer keep up with the increased mission-set of the service, including disaster response and recovery. Maintenance and repair is not enough to keep these assets operational. Instead, the Department of Homeland Security (DHS) should work with Congress to fully dedicate the resources needed to complete the development of the National Security Cutter, the Offshore Patrol Cutter, and the Fast Response Cutter fleets, and meet stated requirement levels.

At the same time:

- **The National Guard should continue building on lessons learned from Sandy and previous natural disasters.** Continuing to understand how the National Guard transitions between state and federal duty is vital to maintaining the guard's success as a response force in the future.

- **Governors should embrace the National Guard's dual-status command structure.** Since the guard's structure was generally successful in making response efforts more efficient and defined, governors affected by future incidents should feel encouraged in its use.

Community-Based Planning and Communication

"Do no harm"—a simple concept. When it comes to preparing for disasters like Hurricane Sandy, it takes on profound importance. Whether it is the individual, family, community organizations, or the private sector, the primary role is to do no harm. What does this statement mean exactly? It means that the system cannot erode the ability of people to first take care of themselves, so that first responders can focus on those who are endangered, injured, and cannot care for themselves.

Nothing can be more detrimental to the response to a catastrophe than if first responders must waste vital time and resources taking care of those who could have taken care of themselves. Every community has individuals who collectively form a sizable vulnerable population. Typically, the vulnerable population consists of the mentally and physically disabled, the elderly, non-English-speaking immigrants, and children. As was demonstrated during Hurricane Katrina and Hurricane Sandy, a society fails when it fails those most in need.

Once all elements of the community that are capable of doing so have taken care of themselves, then, and only then, can those elements engage with first responders to lend a hand and become part of the broader community response. As the 9/11 Commission noted, "The 'first' first responders on 9/11, as in most catastrophes, were private-sector civilians. Because 85 percent of our nation's critical infrastructure is controlled not by government but by the private sector, private-sector civilians are likely to be the first responders in any future catastrophes."[32]

It is the person whose family is safe and secure who is able to volunteer at a disaster relief center. It is a not-for-profit community food bank whose supplies are protected that can resume its delivery of meals to those who cannot leave their homes. It is the big-box retailer whose employees are accounted for and whose stores are assessed for damage that can donate bottled water and clothing to the victims of a disaster and reopen rapidly to serve its battered community.

Americans must, however, take a more realistic and pragmatic view on which actions community members should take based on the likelihood of various risks they may face. Many Americans struggle to meet their basic needs, particularly during tough economic times. For most businesses, money spent on preparing for disasters directly impacts their profits. Given these competing needs for individuals and businesses, it becomes even more critical to assess risk realistically.

When it comes to natural disasters, geography largely determines the relative risk to a community. Over the past 57 years, FEMA has compiled data on all of the larger natural disasters that have occurred in the United States. The information is publicly available, searchable by state or year, and contains details, such as impacted counties, and news articles related to the disaster. Community members can use this actuarial data to develop a better understanding of the natural disasters likely to occur in their area and, therefore, make better decisions about how to prepare.

One of the biggest issues arising after Hurricane Sandy was that many individuals who failed to evacuate did not have enough supplies on hand to survive.[33] It did not help that, as was the case during Hurricane Katrina, the evacuation order for New York City came very late in the process. As a result, many of the 375,000 residents in the most flood-prone areas in New York City did not evacuate.[34]

Once all elements of the community that are capable of doing so have taken care of themselves, then, and only then, can those elements engage with first responders to become part of the broader community response.

While many people rely on the Internet for information, the best method for conveying information to individuals is through a trusted community actor, such as a popular news personality or community leader. The information communicated should be as specific as possible and tailored to the particular disaster.

With individuals taking action to prepare themselves and their families, and engaging in community-based efforts so that the "do no harm" principle is followed, a community's resiliency will be high. As Hurricane Sandy showed, America's communities are far from prepared to deal with the major events. That needs to change. Notably, Congress and the Administration should work to:

Change the current American mindset of disaster response and relief from overfederalization to civil society. President Obama said it well: "But no matter how much money we invest or how sensibly we design our policies, the change that Americans are looking for will not come from government alone. There is a force for good greater than government. It is an expression of faith, this yearning to give back, this hungering for a purpose larger than our own, that reveals itself not simply in places of worship, but in senior centers and shelters, schools and hospitals, and any place an American decides."[35] This includes in the aftermath of a disaster. Unfortunately, politicians often feel that they and the federal government must be seen in control after a disaster, even if government control is ultimately detrimental to true relief. Instead of merely paying lip service to the importance of civil society, U.S. leaders should realize that in both short-term and long-term disaster relief efforts, civil society organizations are powerful assets, and that a government-centric approach fails to use these assets to their fullest.

State Defense Forces in Disaster Response

Like the National Guard, State Defense Forces (SDFs) played an important role in the response to Hurricane Sandy. Unlike the National Guard, however, these forces are largely made up of volunteers from local and state communities and are often composed of retired service members and reservists, along with other professionals, such as doctors, lawyers, and engineers, seeking to give back. Many members, therefore, have high levels of training and professionalism stemming from past experience that makes them invaluable for high-risk states, acting as force multipliers for response efforts in the aftermath of natural disasters or domestic attacks.

SDFs also have the advantage of being from, and thus understanding, the local area and culture. Additionally, they report to the governor of the state, and are generally under the command of the adjutant general, so they do not face the legal barriers that national forces sometimes face in deploying to states.

Perhaps what is most important, though, is that each state can tailor its SDF to meet specific needs. While New York needed a naval militia to assist with its homeland security needs, New Mexico, for example, can focus its SDF on state needs such as border security and forest fire response.

While not authorized to deploy outside their home states except under special circumstances, SDFs in some of the hardest-hit states, such as Maryland, New York, Virginia, and Connecticut, were activated to assist in the Sandy recovery efforts. As with the National Guard, many more militia troops were prepared and ready to serve their communities than were actually needed, but this is exactly the problem a state would want to have during a crisis.

The Maryland Defense Force (MDDF) deployed one Disaster Assessment Team (DAT) in Salisbury

ahead of the storm, and had two more DATs and four medical teams on standby that were never required to activate. The MDDF 121st Engineer Regiment was deployed to Salisbury as well as a medical team from the MDDF 10th Medical Regiment, which assisted a Maryland National Guard transportation team. Other MDDF personnel served in support roles at the State Emergency Operations Center and the Joint Operations Center at Camp Fretterd. Almost 70 MDDF personnel contributed 2,430 man hours to recovery efforts in the state of Maryland. Brigadier General (MDDF) Brian R. Kelm, Commander of the MDDF, recalled: "We were in place and ready to provide whatever support we could to our fellow citizens.... Although we dodged a major bullet, our personnel answered the call and served with pride and professionalism."[36]

Farther north in some of the hardest-hit areas, the New York Guard (NYG) maintained a 24/7 presence for at least three months after the storm. Its coordination in providing generators, light towers, fork lifts, cables, and other heavy operating materials out of Citi Field ballpark in Queens prevented immeasurable potential damages and losses for the state. There was no system for keeping track of all of this state-owned and leased equipment used for the response effort before activation of the NYG. George Gibson, Deputy Incident Commander of the Division of Homeland Security and Emergency Services for Citi Field operations, stated: "I can't begin to come up with a number of what our possible losses could have been without this system. Their work has truly kept us ahead."[37] The New York Naval Militia also assisted the Coast Guard with six patrol boats in New York Harbor.

Other states should take note:

- **Governors of high-risk states should promote the creation of SDFs.** Presently, 28 states have chosen not to authorize an SDF, including several states at high risk of natural disasters or terror attacks. The hesitation of many states to create an SDF makes little sense, given that SDFs offer near-zero-cost force multipliers for homeland security. There are, as outlined in this *Special Report*, a number of vibrant SDFs that can serve as models for new ones throughout the states, and whose command and staff elements could act as valuable advisers in the start-up process.
- **State and federal policymakers should integrate SDF units into state and federal emergency management planning.** States, the Department of Defense, and the Department of Homeland Security should integrate SDFs into existing and future emergency management plans to ensure that all players in state emergency response are aware of the resources provided by each state's SDF. Further, emergency management plans and exercises will provide the SDF with greater guidance on its role in state response in the event of a disaster. It is essential that all SDF personnel be drilled in National Incident Management System–Incident Command System (NIMS–ICS) protocols upon entry into service—and on a continuing basis.

NGOs and the Private Sector: Vital Partners in Response and Recovery

Another key lesson that can be learned from Hurricane Sandy is the importance of a vibrant civil society to disaster relief efforts. Nongovernmental organizations (NGOs), faith-based organizations and churches, and businesses all play roles that governments cannot fulfill on their own. Due to the bureaucratic nature of government responses, these organizations play a crucial role in reaching out to the victims of disaster in a rapid, responsive, and adaptive manner. Furthermore, these organizations are often not only the first responders, but they are also central to long-term relief and rebuilding efforts.

Nongovernmental organizations such as the American Red Cross, United Way, New York Cares, and countless others quickly responded to the needs of those affected. Local volunteers like "Safety Sue" Marticek from the Red Cross could be found across the region doing what they could in the immediate aftermath of the storm. Safety Sue managed 340 residents in a New Jersey evacuation shelter, while the Red Cross as a whole housed 11,000 people in 258 shelters across 16 states on the day Sandy hit.[38] With already existing infrastructure and individuals found throughout the U.S., these NGOs met the needs of individuals across the U.S., often spearheading relief efforts in connection with other groups and governments.

Similarly, churches and faith-based organizations have a unique role to play in disaster relief. Religious organizations are knit into their local communities, while also being part of a regional

or national group of like-minded adherents. As such, religious organizations already have the local knowledge and infrastructure needed to respond immediately as well as having the backing of their larger religious denomination which can provide resources and personnel quickly and consistently. For example, Catholic Charities of the New York Archdiocese was organizing volunteer efforts within two days of Sandy.[39] The Mormon congregations of Washington, D.C., sent 2,500 boxes of clothes and supplies to the affected areas within days of the disaster. Nondenominational organizations, such as the Salvation Army, provided over 1.5 million meals and drinks as well as blankets and other supplies to the victims at dozens of locations across the affected area within one week of the storm.[40]

In addition to physical relief, religious organizations also meet the spiritual and psychological needs of those who have experienced great loss. When dealing with the loss of homes, friends, and family, known and respected clergy are often viewed as the best source of counsel and advice. Faith-based organizations can similarly meet the needs of local firefighters, police, medical officials, and other caregivers, ensuring they are able to undertake other relief efforts.

By rebuilding infrastructure, employing local residents, and selling goods and services, businesses are instrumental in the long-term rebuilding efforts and must be integrated into government recovery plans.

Heroism and generosity from individuals, NGOs, and religious organizations indicate all too clearly the importance of civil society in the immediate aftermath of a disaster. Any disaster response must include such organizations, since they are often the greatest source of relief in the immediate aftermath of a disaster. And, with roots in local communities, these organizations are not there merely to provide relief, but also to rebuild.

NGOs, such as the United Way and the Red Cross, for example, were also invested in the long-term relief effort. Both organizations are still working to meet the ongoing material needs of Sandy's victims. The United Way has collaborated with organizations, including MTV and NBC, to continue to bring attention to the needs of ravaged communities. The United Way Hurricane Sandy Recovery Fund continues to provide essential supplies to those affected by Sandy. Similarly, the American Red Cross has worked to support the immediate needs of those affected, and had provided a total of over 17 million meals and snacks as of April 25.[41] The Red Cross also continues to provide housing assistance, financial guidance, and emotional and physical health consultations.[42] Supported by donations and volunteers, these organizations and others like them show how a vibrant civil society can do far more than a government in long-term restoration efforts after a disaster.

NGOs alone, of course, cannot restore a community after a catastrophic disaster. Perhaps one of the most important elements to restoring a community after a disaster is ensuring business involvement. Indeed, Johnson & Johnson, American Express, Home Depot, and countless other companies donated over $140 million in funds and materials within two months of Hurricane Sandy.[43]

Additionally, businesses play a crucial role in returning communities to normalcy. Businesses provide services and goods that communities need to operate. While basic supplies can be provided by government and nonprofits in the immediate aftermath of a disaster, only businesses can efficiently meet the various needs and demands of a community. Grocery stores, construction companies, and gas stations are just a few important examples. Along with selling critical goods and services, businesses also provide jobs, without which no community would ever recover. Employment allows individuals and families to return to their communities and rebuild what they have lost.

Businesses also provide the necessary capital and expertise to repair damaged critical infrastructure networks. Energy, information technology, communications, and other sectors of critical infrastructure are largely owned by the private sector. This infrastructure must be rebuilt for true recovery to begin, and only the private sector has the resources and capability to make that happen. Instead of stimulus spending, the government can encourage these investments by suspending and streamlining unnecessary regulations following a disaster. By rebuilding infrastructure, employing

local residents, and selling goods and services, businesses are instrumental in the long-term rebuilding efforts and must be integrated into government recovery plans.

In order to best leverage the cooperation of these vital partners in future disasters, the government should:

- **Incorporate NGOs, faith-based organizations, and businesses into federal and local disaster plans before disaster strikes.** While President Obama created the White House Office of Faith-Based and Neighborhood Partnerships, and continued the Department of Homeland Security's Center for Faith-Based and Neighborhood Partnerships, these offices need to be leveraged more. Specifically, the roles, responsibilities, and resources of all stakeholders need to be established before a disaster strikes. These offices, together with state and local agencies, should work closely with civil society organizations to create disaster response plans that assign roles and responsibilities to best take advantage of all the resources and capabilities that civil society possesses.

- **Reduce and streamline regulations after a disaster to encourage investment and rebuilding.** While some regulations have legitimate functions in maintaining safety, others hold back rebuilding efforts by hamstringing businesses, NGOs, and other agencies with various restrictions and litigation. After a disaster, the government should make it easier for homes, businesses, and infrastructure to be rebuilt by temporarily suspending requirements like those in the Davis–Bacon statute, which effectively mandates wage premiums for those hired to work on federal construction projects. Additionally, Congress should repeal or waive environmental regulations that allow various environmental organizations to block or delay rebuilding efforts or much-needed improvements that could help mitigate disasters in the future. Similarly, financial regulations that prevent businesses and individuals from obtaining resources or investing in improvements should be suspended or repealed.

Politics of Disaster

Pork in the Hurricane Sandy Relief Bill. It is quite clear from the emergency spending doled out after both Hurricane Katrina and Hurricane Sandy that the absolute worst time for Congress to appropriate funds is right after a disaster has occurred. The decision to appropriate additional funds is driven almost entirely by politics, not by good public policy. The result of such rash spending decisions is widespread waste, fraud, and abuse, as evidenced by Inspector General reports on FEMA's disaster preparedness, response, and recovery efforts and studies of the response to Hurricane Katrina.[44] Indeed, as previously reported by The Heritage Foundation: "Fraud related to Hurricane Katrina spending is estimated to top $2 billion. In addition, debit cards provided to hurricane victims were used to pay for Caribbean vacations, NFL tickets, Dom Perignon champagne, 'Girls Gone Wild' videos, and at least one sex change operation."[45]

Regarding Hurricane Sandy, President Obama made an initial request of $60.4 billion. The vast majority of the requested "emergency" spending involved mitigation for *future* events, replacement of damaged federal assets or facilities, and good old-fashioned pork barrel spending, including:

- $200 million for the U.S. Department of Health and Human Services to be used at the discretion of the Secretary;

- $15 billion for the U.S. Department of Housing and Urban Development's Community Development Block Grants; and

- $100 million for the federal Head Start day care program.[46]

Despite weeks of handwringing, Congress gave President Obama virtually every dollar he asked for with no offset.[47] The final coup de grace, according to the Congressional Budget Office, is that a majority of the appropriated funds will not be spent until after 2015.[48]

The world's second-largest reinsurer, Swiss Re, reported that Hurricane Sandy "accounted for $35 billion of insured losses."[49] For perspective: The disaster relief package approved by Congress allocated over $60 billion, nearly twice as much as the *entire privately insured payment.*

This is the kind of spending that helps unravel coherent budgeting and contributes to chronic trillion-dollar deficits. It also lures states and localities

into greater dependence on federal funds, further undermining the principle of federalism. It does not by any stretch meet the test of "emergency" or "disaster" spending, nor will the majority of the funds go to help the states, localities, businesses, and individuals directly affected by the disaster to rebuild.[50] In the future:

> **Congress should enact legislation that restricts the items for which the federal government can provide emergency funds post-disaster.** With this restriction on the federal government's appetite to engage in emergency spending, Americans should see a bit more responsible treatment of their tax dollars. Permissible items include disaster relief for registered and validated victims; debris removal; food, shelter, and other necessary supplies for disaster victims; and other direct aid to victims. Impermissible items include mitigation projects; repair or replacement of federal assets or facilities; and spending for any project beyond 150 miles of the disaster area (that is, pork barrel projects). In order for Congress to fund items outside the permissible list, it would need to secure two-thirds majorities in the House and Senate.

Global Warming Not to Blame. In the wake of such devastation, it is reasonable to look for a cause and explanation for suffering. Some, however, have incorrectly blamed global warming for an increase in disasters like Sandy, as well as the resulting increase in emergency declarations. The storm that hit the Northeast was an infamous combination of a hurricane and a cold front coming across Canada during high tide—a horrendous storm, but according to historical tables not an unprecedented one.[51] Science cannot yet show a connection between Hurricane Sandy (and other severe weather events) and global warming. If anything, the science seems to be saying the opposite. Although some models show catastrophic warming, the data does not yet do so. What the data does show is that temperatures have leveled out over the past 15 years, such that Britain's Met Office has dramatically lowered its temperature projections.[52] Neither has there been any discernible trend correlating carbon dioxide with hurricane activity over the past 200 years.[53] In fact, at the time of Hurricane Sandy, America was experiencing a hurricane drought of sorts, where for seven years there had not been a hurricane greater than Category 3 to make landfall since Wilma in 2005, the longest such stretch in over one hundred years.[54]

Global warming was the biggest nonstory of Hurricane Sandy. Nevertheless, politicians and pundits took advantage of Hurricane Sandy's devastation to advance global warming policies and projects.[55] Their proclamations captured much media attention and helped mobilize the passage of a relief package laced with global warming gestures.

Rather than helping people rebuild their lives, significant amounts of federal money were diverted to biofuels and wind-energy tax credits, helping no one except those in the politically favored industries.[56] Available data do not show that the Earth is approaching accelerated and catastrophic warming; but regardless, these programs have next to zero effect on the climate.[57] Though some of the billions in the Sandy relief package will reach victims, the relief bill resembles many previous legislative decisions to spend on pet projects rather than on appropriate functions of the federal government.

Rather than simply throwing money at the issue, a better and more honest federal approach to global warming right now is to encourage economic health—precisely what global warming energy subsidies do not accomplish. Federal programs like cap and trade, efficiency mandates, and fuel economy standards will not significantly affect global temperature, especially considering the efforts of developing nations to provide electricity to millions of people currently without it. But these policies will adversely affect American businesses and families. Instead of diverting federal dollars to these programs, Congress should pursue greater reform within the energy sector, where much of this spending takes place. Any program or policy should be eliminated that does not provide clear environmental benefits which outweigh total cost. Economic health, not special interest subsidies and politically driven agendas introduced in the name of fighting global warming, will enable individuals to handle the effects of global warming if they become a problem.[58]

Critical Infrastructure

Nuclear Safety: A Non-Event. As with those who blamed global warming for Hurricane Sandy, many infrastructure concerns turned out to be misguided. Before Hurricane Sandy made landfall,

nuclear skeptics and opponents were already likening the storm to the Fukushima disaster in Japan and raising alarm about flooding, power outages, and overheating spent fuel pools. However, the feared impact of Sandy on the 34 nuclear reactors in its path turned out to be a non-event.

The nuclear facilities in Hurricane Sandy's path were designed and built to withstand floods above predicted storm surges and other natural disasters long before Sandy was ever a threat. Even in the case of serious damage caused by weather, nuclear plants are built with layered safety systems to mitigate and control emergency situations. For example, should power to the reactors be significantly disrupted during a storm, reactors will automatically shut down and diesel generators will kick in to maintain safe operations and conditions.

Beyond plant design, federal law also requires nuclear plants to have preparedness and emergency response plans with local, state, and federal groups approved by FEMA and the Nuclear Regulatory Commission (NRC) before an operating license is granted. Nuclear facilities participate in full emergency exercises with state and local first responders at least once every two years. Operators also regularly undergo training and are tested for recertification every six years. NRC resident inspectors always staff each reactor facility in America, and independent groups like the Institution of Nuclear Power Operators and the World Association of Nuclear Reactors train, evaluate, and circulate best practices.[59] Because of these preparations and routine refreshing of emergency plans, America's nuclear reactors are among the world's safest.

Because of disaster preparations and routine refreshing of emergency plans, America's nuclear reactors are among the safest in the world.

The week prior to Sandy's landfall on the evening of October 29, nuclear facilities were entirely re-inspected and tested. Parts that could be disrupted by high winds were secured or moved. Backup power generators were fully fueled and ensured as operating properly. Staff at nuclear facilities in Sandy's path went through routine preparations for severe weather and plants were overstaffed around the clock.[60] The NRC also notified potentially affected reactors and augmented personnel at plants to verify that proper precautions were being made. Leading up to, throughout, and after the storm, operators, emergency responders, and NRC inspectors staffed the stations.[61]

Before and during the storm, the NRC monitored Sandy's progress from the Incident Response Center from its Region I office in King of Prussia, Pennsylvania, as well as from the Operations Center at headquarters in Rockville, Maryland. Channels of communication were kept open with the U.S. Department of Energy which twice daily issued situation reports, keeping the public well informed.[62]

As part of standard NRC policy, reactors must shut down two hours before hurricane winds are forecast to reach the plants, though operators have the prerogative to shut down the reactors earlier as a precaution. Of the 34 reactors expected to be in Sandy's path, 18 continued to operate at 100 percent power, six reduced power output at the request of regional grid operators or in response to the storm, seven were previously shut down for refueling or maintenance, and three successfully shut down manually in response to the storm. Of those three, New York's Nine Mile Point 1 and Indian Point 3 shut down because of grid disruption, and New Jersey's Salem 1 shut down because rough waters battered the housing structure for several of the plant's pumps. The safety systems of all three responded without incident.[63]

One plant, Oyster Creek Generating Station, issued an "unusual event" declaration and then an "alert"—the two lowest of four emergency alert levels—during the course of the storm. As the nation's oldest operating nuclear reactor, it became a focal point for anti-nuclear sentiment and misinformation before and after the storm.

Oyster Creek had been closed since October 22 for scheduled maintenance, eliminating many of the safety concerns that faced other facilities.[64] During the storm, high waters caused a partial loss of power and several of the cooling water pumps shut down. Even then a second set of pumps continued to operate. Operating company Exelon reported, "Station employees responded quickly and appropriately to the storm's challenges and all plant safety systems, including used fuel cooling, operated as designed."[65] Nevertheless, the alert

became a handhold for anti-nuclear activists and others to rally against nuclear power.[66]

On November 13, 2012, the NRC began a special inspection of the plant's preparation and management during the storm. Though finding several menial points for improvement (such as control room documentation), the NRC report "underscores how plant operators dealt with the harsh conditions at the water intake structure and other challenges, such as the loss of off-site power for a time."[67]

The successful weathering of Sandy is yet one more addition to the American nuclear industry's proven track record to prepare and withstand severe weather. The year 2011 should serve as proof enough: Nuclear reactor facilities were square in the crosshairs of hundreds of tornadoes sweeping through the South in April, massive flooding in Nebraska through June and July, the unusual Virginia earthquake in August, and Hurricane Irene later that same month, all without incident.[68]

Even Hurricane Katrina, the Category 5 hurricane that caused so much high-profile damage in 2005, caused no incident at Entergy's Waterford 3 unit in Louisiana, which was double-staffed in preparation for the storm and was safely shut down.[69]

Of the Atlantic states in Sandy's path, nuclear energy provides the majority of electricity in South Carolina, Virginia, New Jersey, and Vermont and a close second in North Carolina, Maryland, and Pennsylvania.[70] The nuclear facilities in these states were prepared and proved resilient against Sandy's force. Although Hurricane Sandy damaged much of the Northeast's coastal infrastructure, the nuclear non-event attests to what those in the industry already knew: that America has the best nuclear safety system in the world. More, however, can be done to ensure the expansion of safe nuclear energy in the U.S. As such, Congress should:

- **Complete its review of the U.S. Department of Energy's application to construct the used nuclear fuel repository at Yucca Mountain.** Finishing the permit application as required by law would allow the nation to move forward on developing a workable nuclear waste management policy.[71] If the NRC determines that the repository does not meet safety standards, the nuclear industry can begin searching for alternatives. Should the NRC determine that the repository can be safely built and operated, however, the Department of Energy should then transfer control of the permit to a Nevada-based entity that could negotiate directly with the nuclear industry the conditions under which the repository could be built. Rather than try to fix this fundamentally flawed system, the United States needs broad reform in the area of nuclear waste management, which at its basis requires giving nuclear waste producers responsibility for nuclear waste management.

- **Modernize the regulatory process for new nuclear power plants.** Though today's reactors are very safe, new reactors have the potential to bring Americans even safer, clean, abundant, and affordable energy. One of the obstacles to nuclear investment, however, is an antiquated system for nuclear regulations. The nation needs a regulatory system that allows the introduction of new technologies into the marketplace. By being largely capable of regulating only one reactor type, the NRC essentially blocks new technologies from competing with existing ones. The NRC needs a more neutral approach to regulation that invites more market competition.

A Greater Concern: Getting the Lights Back On

While uproar over the nuclear energy sector was misguided, concern over the electrical infrastructure was very realistic. Hurricanes generally cause widespread power outages, particularly in highly populated areas. Hurricane Sandy was no different. The widespread outages caused by Hurricane Sandy along the New Jersey coast and Long Island impacted all three parts of the power system—generation, transmission, and local distribution. Inland, the impact was almost entirely on the local distribution system, as wind and rain combined to down hundreds of individual power lines.

As with most hurricanes, the largest cause of outages from Sandy was due to damage to distribution systems. This network of substations, transformers, and distribution lines delivers electricity to individual customers. Above-ground distribution systems are especially vulnerable to widespread outages because high winds and heavy rain combine to cause branches, and often entire trees, to fall onto the lines. Even lines that are not snapped by falling branches or trees can still short-circuit when the electric line comes into contact with branches.

Moreover, in some cases, the wind and rain combine to knock down the distribution poles themselves.

When a distribution line short-circuits, the sudden change in power flow can damage transformers located along the line, or at a substation. (Transformers adjust voltage to the level at which an individual business or residence can be served.) In some cases, transformers can catch fire or, in worst-case situations, explode.

With this in mind, a common reaction to outages caused by hurricanes is often to call for burying distribution lines underground. Although underground distribution lines are immune to the effects of wind, undergrounding has drawbacks. In addition to the high cost, underground distribution lines are especially vulnerable to flooding. Thus, when a hurricane like Sandy causes significant flooding, underground distribution systems can suffer extensive damage. In Lower Manhattan, for example, some underground transformers flooded with corrosive sea water, rendering them nonfunctional. This was only aggravated by the fact that Hurricane Sandy made landfall at high tide, causing its particularly destructive storm surge, and resulting in even more significant flooding.

For utility customers, waiting for power to be restored can be a long and frustrating experience. An individual neighborhood, for example, may be without power even though power has been restored on the next block. For utilities, restoring power requires extensive coordination and care, so as not to endanger their workers or customers. Some of the more than eight million homes that lost power as a result of Sandy remained in the dark for weeks.

After a hurricane, power restoration requires clearing away debris, rebuilding distribution circuits, and replacing faulty equipment. In some cases, high-voltage transmission lines and generators may be damaged, requiring repair and replacement. Utility crews coordinate their repair efforts to restore the maximum number of customers in the least possible time, as well as giving priority to restoring power for critical users, such as hospitals. Power may not be restored in certain areas even after local repairs are completed because of the interconnected nature of the power system.

The damages caused to the power grid by a hurricane are event-specific. That is, damages can vary significantly from storm to storm, depending on the storm's characteristics. For example, had Sandy's landfall taken place several hours later or earlier, at low tide, rather than at high tide, the storm surge and subsequent flood damage to lower Manhattan would have been much less. Because of the uniqueness of storm characteristics and damages, a standardized "one-storm-fits-all" set of recommendations to improve the reliability and resilience of the power grid is difficult. Nevertheless, utilities can implement measures to improve the resilience of the electric grid. These should be to:

- **Promote contingency planning and training programs that help utilities respond more quickly and efficiently.** Having contingency plans in place in the event of a hurricane is a low-cost, straightforward exercise. Contingency plans should encompass both short-term and long-term actions. These include:
  - Coordinating repair crews with other utilities in advance of an approaching hurricane;
  - Ensuring that needed equipment is available and in good repair;
  - Maintaining sufficient supplies of spare parts, including distribution poles, wire, and pole transformers; and
  - Training repair crews and utility personnel to modify their responses as circumstances change.
- **Identify and implement cost-effective improvements to the power system.** Although it might be possible to build an electric system that is hurricane-proof, the cost would be prohibitive. Utilities can, however, undertake cost-effective actions to reduce potential outages and speed up power restoration in the event of catastrophic disasters, such as performing rigorous testing and analysis of aging transmission and distribution system assets to determine when various assets should be repaired or replaced, and the lowest-cost approaches for doing so.
- **Provide a financial incentive for electric utilities to take action.** Rather than identifying power system weaknesses as a means of punishing

electric utilities, state utility regulators should use an incentive-based approach to reward utilities for superior performance. These approaches include:

- Incentives that reward utilities for improved system reliability and restoration of power to customers as quickly as possible. For example, utility performance can be benchmarked against other, similar utilities; and

- Incentives for improved contingency planning efforts.

Incentive regulation offers utilities a balanced "carrot and stick" approach for not meeting established regulatory requirements. Such economic incentives have proven highly effective in improving overall utility reliability by allowing utilities to profit from superior performance, just as competitive firms do. There is no reason for similar incentives to not be applied to power restoration efforts.

Time for Lessons to Finally Be Learned

The reality is that most lessons learned from Hurricane Sandy are not new. Indeed, FEMA's lack of preparedness will come as a surprise to no one, nor will the sometimes-tenuous nature of the U.S. electric grid. From Hurricane Katrina to the Gulf oil spill Americans have been taught these lessons before, yet the nation continues to fall short in terms of planning for catastrophic disaster response and recovery. It is time for the U.S. to stop brushing these shortfalls aside and ensure that the country is truly prepared for the next major disaster. The lessons have been taught—it is time they are learned.

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