What
From The Energy Industry

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POST WRITTEN BY

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Vehicles sit abanoned at an Exxon Mobil Corp. gas station due to floodwaters from Hurricane Harvey in Houston, Texas, U.S., on Tuesday, Aug. 29, 2017. Estimates for damages caused by Hurricane Harvey are climbing with the storm poised to regain strength in the Gulf of Mexico before crashing back on land. Photographer: Luke Sharrett/Bloomberg

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Dumping m meaning to 163,000 apartments and more than 500,000 vehicles, Harvey also is responsible for 88 fatalities.

The storm's impact on the energy supply chain was significant, too. Airports, roads and freight were affected, including about 10% of the nation's trucking business. Harvey shut down 22% of nation's refining capacity, 25% of oil production in the Gulf of Mexico and half of both the production of organic chemical and plastics resin and of natural gas in the Eagle Ford. Fuel shortages (perceived or real) hit Houston, Austin and Dallas.

So how did the industry deal with the disaster? We interviewed key decision-makers from a dozen companies to find out what they had learned from the past and what should be changed before future storms. And we asked their thoughts on remaining and growing their organizations along the Gulf Coast, a geographic region prone to severe weather.

This wasn't the industry's first test, although past emergency management plans mostly addressed hurricane-force winds and storm surge. Massive rain and inland flooding on the scale witnessed during Harvey was unprecedented. In addition to facilities and operations, approximately 10% of industry personnel were impacted, as was access to offices, and industrial sites. In short mobility was curtailed for 7 days for over six million people. Harvey was unique.

After Superstorm Sandy, the Department of Energy (DOE) requested the National Petroleum Council (NPC) to study emergency preparedness, which

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emergencies while maintaining compliance with antitrust laws that limit information-sharing across companies. During emergencies, the electric power utilities operate under rules set by the Federal Energy Regulatory Commission and in the state of Texas by ERCOT, which operates most of the state's electric grid. In addition, in Texas the Fuel Team, a state level coordinating council, brings together industry and the public sector to help coordinate relief efforts, including the ports, Federal Emergency Management Agency, the Department of Public Safety, Department of Transportation, health care and local emergency management officials.

While the framework for disaster planning was in place, Harvey tested its effectiveness.

Our interviews with 15 C-level executives from 12 energy firms offer insight into what went well and what did not. The companies – which included large integrated oil and gas firms, oilfield equipment suppliers, specialty chemicals manufacturers and power companies – have market capitalization ranging from $30 billion to $355 billion.

Here is what we learned.

Every firm had a risk mitigation plan in place. Whether it was part of a crisis management plan or a business continuity plan, the components were somewhat similar and included defining and preparing differently for different levels of risk, implementing annual drills involving hundreds of managers and employees, creating coordination channels across functional areas and with the teams on site (incident management teams), and

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Unlike storm surges associated with previous natural disasters, Harvey-related flooding impacted operations and entire communities. Many firms relocated their decision-makers and supply chain liaisons, leaving ride-out teams onsite. In some cases they worked with weather experts and meteorologists, relocating leadership teams prior to Harvey's landfall.

Most respondents said having a designated individual (not the CEO) who could direct resources and manage the emergency response team ensured efficiency and safety. Organizationally, the process worked via decentralized teams that reported to senior leadership and in some cases to 'country' chairs who communicated frequently.

In addition to reaching out to customers and employees, public affairs teams reached out to the media and external groups.

All executives we spoke with described efforts to provide accommodation, transportation and emergency financial assistance, including interest-free loans to affected employees. "Mucking" crews helped employees and the community in the clean-up process. In the weekends that followed, it was not unusual to see teams wearing company/organization branded T shirts arrive to help communities and neighborhoods across the region.

In many cases, company ride-out and volunteer teams wound up helping both their own employees and other residents. This was perhaps the most commonly cited "learning" from the disaster. Natural disasters result in damage to communities and to the extent that businesses were actively

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What went better than expected:

1. Communications - The variety of platforms used to communicate with employees and customers was critical. Emails, phone trees, daily summary text messages, call in numbers, emergency alerts, text blasting, intranet communications and social media channels all helped management stay in touch with employees. Social media platforms including Facebook, Twitter and Yammer connected employees who wanted to volunteer with those who needed assistance.
2. Technology – Modern technology clearly helped, from using drones to monitor facilities and operations to services like the *Power Alert Service* offered by CenterPoint Energy, which sent customers notifications of power outages on a timely basis. Agile deployment of technologies such as remote connectivity allowed for business continuity.
3. Preparation – The multiple sets of training and simulations along with "hardening" of critical assets led to a swift recovery of much of the upstream, refining and downstream chemicals industry. Many companies contracted with hotels and conference facilities outside of Houston to maintain business continuity and leveraged IT solutions to ensure a smooth work flow.
4. Agile decision-making – Communications between industry and regulators enhanced the effectiveness of the response. Examples include access to the Strategic Petroleum Reserve, waivers allowing refiners and blenders to adopt winter gasoline standards rather than

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employees, including interest-free loans, paid days off, paid volunteer days, charitable giving by employees to fellow-employees, per-diem payments for temporary accommodations, extension of emergency benefits and corporate contracting of "mucking crew" and cleaning services. Employees were given flexibility to work from remote locations and/or from home.
6. Leadership – Daily check-ins at the highest levels and the ability to listen in on conversations without actively participating at lower levels helped leaders function as 'guides on the side'. One CEO alluded to his efforts to not interrupt crisis managers, instead communicating with his direct reports by text message if necessary, enabling decentralized ownership of the risk management process. The ability to listen to all levels of the organization, not just the direct reports, was considered valuable and used strategically to manage disaster response.

What could be improved:

- More preplanning and flexibility in travel plans to help move people as plans and potential impact projections change.
- The magnitude of disruption associated with Harvey was unique and affected the supply chain of gasoline, jet fuel and diesel in Texas. State and local leadership dealt with industry disruption even as they responded to life safety and humanitarian crises in three locations – Corpus Christi, Houston and Beaumont in succession. In contrast, the Governor's Office in Florida coordinated all supply chain activities before, during and after Hurricane Irma.

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and non-governmental organizations. While there was coordination with the local and state officials, a broader coordination group that uses modern communication tools would result in real time appraisal and awareness of the collective status of the industry. This would need to be done within the guidelines set by antitrust regulations.

- A small fraction of petroleum and chemical storage was affected by the massive rain and inland flooding, with spills and leaks reported, some with significant life-safety risks. Revisiting design guidelines, examining retrofits and increasing smart sensors and analytics are being examined to improve the vital components of this supply chain.

Overall, our analysis suggests the industry has well-defined risk management and mitigation plans in place. At the same time, given the nature of the crisis which temporarily shut down the entire region and impacted employees personally and professionally, the management plans were only as good as the communications systems used to share them. While decisions could be made by centralized leadership teams, the efficacy of communications channels and agility in decision making were crucial to the success and rapidity of the recovery.

Harvey spoke loud and clear that private and public partnerships can and must work together to deal with disasters that have broad impact.

Finally, while extreme events prompt consideration of location risk, almost all respondents agreed the industry has developed better tools to manage the risks associated with extreme weather. Balancing those risks against the advantages of the Houston region – capital on the ground via already

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happy with what we heard.

Moving energy facilities away from the Gulf Coast is not a consideration, Harvey or not.

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