Dead in the Water

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Introduction

The morning of Wednesday, August 31, 2005, in the wake of Hurricane Katrina, the last backup generator at Memorial Medical Center of New Orleans provided a final surge of energy then died.[1] Electronic equipment immediately began to fail.[2] The generators went out, "throwing the hospital into darkness and cutting power to the machines that supported patients' lives."[3] The generators at Memorial were supposed to function for six days.[4] In the end, the floodwaters rose too high, and the precious generators failed after only two and a half days.[5] As a result many lives were lost.

The legal cause of the deaths is a mystery that has been subject to a great deal of litigation and scholarly debate.[6] Some believe the deaths to be an "Act of God."[7] Others believe the Army Corps of Engineers is to blame.[8] Finally, hospital administrators came under heavy scrutiny for breaching their duty to operate a resilient hospital during the emergency.

While various regulations stemming from federal and state laws are required or encouraged, numerous hospitals meet the minimum requirements and nothing more.[9] Although some hospitals will go beyond these standards to more aptly ensure energy resiliency in case of emergency,[10] many play the odds.[11]

Hospitals are often, if not always, analyzing competing needs and priorities.[12] Hospital officials face high costs of raising generators and automatic transfer switches[13] above the minimum level required by accreditation organizations.[14] Government agencies are failing to provide adequate funding for hospital officials to make such adjustments.[15] While the tragedy at Memorial was an eye-opening example of hospital failure in times of emergency, the problem still subsists throughout the United States.[16]

Today, our country takes a mixed-bagged approach to hospital backup energy regulations. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO), the Department of Homeland Security, the Department of Health and

Human Services, the Centers for Medicare and Medicaid, the National Fire Protection Association, and state laws and licensing provisions all impose regulations that result in slap-on-the-wrist penalties or loss of accreditation.[17] There are means for lawmakers to initiate adjustments to alter the legal landscape dealing with backup energy sources in hospitals through an implementation of entity liability immunity.

(Limited) Background: The Case of Memorial Hospital[18]

Four years before Hurricane Katrina, Tropical Storm Allison ransacked the Texas Medical Center in Houston.[19] The storm caused many of the Center's hospitals to lose primary and backup power because various generator components were located below flood levels.[20] In response, the New Orleans health director at the time inquired from hospitals within New Orleans as to (1) whether their health care facilities could provide resilient power in a case of water levels reaching fifteen feet and above, (2) the estimated cost of relocating generator and generator components to levels that would ensure such resiliency, and (3) whether New Orleans hospitals were interested in working with the city to push for federal money to make the required adjustments.[21] Responses were unenthusiastic, noting that the cost would be too high, and thus the plan never gained traction.[22]

After a meeting in 2004 with US Army Corps of Engineers, Eric Yancovich, then Memorial's Plant Operations Manager,[23] became concerned that a four-foot influx of water into the hospital would disable the generators.[24] In response, Yancovich sought an estimate for part of the required electrical work to fix the problem.[25] Yancovich received a response tallying over a quarter of a million dollars.[26] Rather than proposing the prospect to his superiors, Yancovich predicted the idea would be shut down for lack of funds.[27] Therefore, he stashed the idea away for review at a later date.[28]

Several months before Hurricane Katrina hit in August 2005, doctors at Memorial Hospital in New Orleans attended a banquet at the Ritz Carlton celebrating, among other things, passing "a midterm hospital accreditation survey."[29] Following September 11, 2001, Louisiana received $17 million in federal grants to assist the state in preparing for emergencies.[30] Nonetheless,

the day before Katrina made landfall, FEMA officials inquired into how many hospitals in Louisiana's flood prone region put their generators and transfer switches above ground-floor level.[31] In New Orleans alone, eighteen hospitals were prone to flooding,[32] —only two hospitals had their generators and transfer switches above ground level.[33] "Memorial was not one of them."[34]

Two months prior to Katrina's landfall, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) surveyed Memorial—noting dozens of deficiencies according to JCAHO standards, none of which concerned emergency plans.[41] In order to receive Medicare and Medicaid reimbursement from the federal government, hospitals had to receive a "Gold Seal" from JCAHO.[42] Like approximately 99 percent of hospitals that applied for a "Gold Seal," Memorial maintained its accreditation.[43]

In response to heightened emergency standards set out by JCAHO in 2001, Susan Mulderick, the head of Memorial's emergency preparedness committee, met with her committee to formulate and rate the hospital's preparedness.[44] In their evaluation, the committee categorized the hospital's "preparedness for power outages, generator failure, and floods as 'good'—the top ranking on the scale."[45] Dr. Robert Wise[46] would later conclude, "Memorial . . . missed the point of JCAHO's new preparedness standards, putting down on paper what was needed to pass accreditation inspection rather than focusing on cross-cutting 'all hazards' preparedness."[47]

Analysis of the Problem

a. The Good News

Not every hospital suffers from such drastic outcomes in times of emergency. Many hospitals during Hurricane Sandy and Hurricane Katrina implemented and executed emergency protocol that allowed them to care for patients in their hospital, and also accept patients from hospitals suffering from power failure.

Likewise, technological advances are producing more resilient power systems. For example, when Hurricane Sandy hit the East coast, Greenwich Hospital in Connecticut not only had a traditional backup generator, but also a Combined Heat and Power (CHP) system.[48] According to the EPA, CHP systems allow for

facilities to simultaneously produce electricity and heat from a single fuel source within a single facility. The benefits of such a system are many including enhanced resiliency and more reliable power.[49] Accordingly, the CHP system installed at Greenwich allowed the hospital to fully operate for seven days while the main grid remained down.[50] A total of five minutes elapsed from the time main grid power ceased to Greenwich's CHP transitioning to island mode.[51] As a result, Greenwich had no problem accepting twenty additional patients to the hospital while still being fully operational.[52]

Not only are states taking notice of the economical and environmental benefits of CHP systems, but states plagued with a history of natural disasters like Texas and Louisiana are adopting legislation requiring state agencies to consider installing CHP systems when building new facilities or extensively retrofitting existing ones.[53] Louisiana's Senate Resolution 171 urges the Louisiana Department of Natural Resources to adopt regulations to install CHP systems in government facilities, including hospitals.[54] This resolution acknowledges the need for such installations noting facilities such as hospitals "serve a critical function related to public health or safety during natural disasters and other emergency situations resulting in widespread outages of the electrical grid."[55] Similarly, Texas House Bill 1831 adopted into law a requirement that entities in charge of deciding to build or greatly alter a government facility, including hospitals, consider whether the installation of a combined heat and power system would be cost efficient.[56] Besides Texas and Louisiana, many states agree that CHP systems are more reliable and resilient than traditional generators in operating through disasters resulting in power grid failure.[57] A report sponsored by the U.S. Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE) found that CHP advantages over traditional backup generators include: (1) backup generators are seldom used and poorly maintained while CHP systems are run daily, (2) backup generators have a finite amount of fuel while CHP systems usually have a permanent source of fuel, such as natural gas brought in from an underground source, thus rarely affected by weather, (3) backup generators often take more time to start up when the main grid fails, and (4) CHP systems supply heating, cooling, and chilled water as well as electricity, while backup generators only supply power to a more limited number of items.[58]

The use of CHP systems in hospitals shows one of the emerging technologies out there that can eradicate the traditional downfalls associated with traditional generators.[59] Another notable advancement is that hospitals are becoming aware of the liability they could face when power fails at their hospitals. In reaction, many hospitals "are beginning to look past codes to set power reliability minimums."[60] For example, a recent case study deemed Duke University Medical Center an "Incubator for Critical Power Infrastructure Solution."[61] The case study author notes that regulatory compliance is not all that caused Duke to pursue such a "sophisticated critical power management system."[62] Rather, Duke recognized a greater need in uninterrupted power because their medical facilities are seeing an evolving and increasing reliance on electronics and technologies.[63]

b. The Bad News

While the emergence of new technologies and the phenomenon of hospital officials surpassing applicable standards are worthy steps forwards in ensuring public safety, the problem of power failure is far from being eradicated. For instance, in the case of *Preston v. Tenet Healthsystem*, the plaintiff's complaint brought to the court's notice "the lack of comprehensive emergency preparedness requirements for the nation's hospitals."[64] The regulation a hospital is subject to is contingent upon a bevy of factors. For instance, hospitals wishing to receive Medicaid and Medicare reimbursement must meet standards set out by the Centers for Medicare and Medicaid.[65] Hospitals receiving funds from the Department of Homeland Security must adopt the Department's standards.[66] The Department of Health and Human Services provides millions of dollars to hospitals for the specific purpose of improving emergency preparedness.[67] Any hospitals wishing to be accredited by the Joint Commission (JCAHO) must meet certain levels of emergency preparedness.[68] Moreover, states create another legal regime that hospitals must be compliant with when formulating emergency provisions.[69]

Not only does this mixed-bag legal regime of emergency preparedness create confusion for hospital administrators, but a 2011 report published by the U.S. Centers for Disease Control and Prevention exposed significant shortfalls in overall hospital emergency preparedness.[70] Among other significant findings,

the report notes 88.8 percent of hospitals surveyed had plans to continue operations in the event of an emergency, but during an actual emergency in 2007 only 14.9 percent actually executed their plan.[71]

Where Do We Stand?

Besides the advancement of technologies, such as CHP systems, and the independent initiatives of hospitals, such as Duke University Medical Center, the federal government has taken note of the need to reassess national emergency preparedness.[72] The Centers for Medicare & Medicaid (CMS) have proposed a rule to set new standards that various health care facilities, including hospitals, must meet to partake in Medicare and Medicaid reimbursement programs.[73] The CMS found the combination of current federal, state, and accreditation organization requirements and guidelines fall short of adequate emergency preparedness regulations.[74] Specifically, the proposed rule (CMS 3178-P) concludes, "current emergency preparedness regulatory requirements are not comprehensive enough to address the complexities of actual emergencies."[75] In order to resolve this problem, CMS 3178-P intends to create "a comprehensive, consistent, flexible, and dynamic regulatory approach to emergency preparedness and response that incorporates the lessons learned from the past, combined with the proven best practices of the present."[76]

Particularly relevant to this article are the provisions of CMS 3178-P that deal with standby power systems in facilities wishing to participate in Medicare and Medicaid.[77] The provision dealing with such systems is set out in § 482.15(e).[78]

While CMS makes a notable effort in attempting to mitigate the problem of generator failures, comments submitted by individuals and organizations note the inadequacies of this provision of the proposed rule. Health care facilities might meet problems of state and local requirements conflicting with the new CMS proposals.[79] For instance, state environmental regulations may conflict with CMS's proposed loading testing requirements. Also, the proposed rule requires generators to be located in accordance with NFPA 99, NFPA 101, and NFPA 110.[80] However, the American Hospital Association (AHA) notes that hospitals are already required to meet such standards because the CMS Conditions for

Participation requires "compliance with the Life Safety Code (NFPA 101), which cross references NFPA 99 and NFPA 110."[81] The AHA instead encourages the CMS to require hospitals to assess, using a "hazards vulnerability analysis,"[82] the vulnerability of the hospital's generators to disasters within a given location.[83] Thereafter, if it were found there was a likelihood of generator failure according to the hazards vulnerability analysis, the AHA recommends requiring hospitals to adopt strategies to relocate generators or mitigate the threat of such failures.[84] However, and as the AMA recognizes, such relocation projects are costly.[85] The final action for the adoption of CMS 3178-P is not scheduled until December 2016.[86]

Solution

When assessing whether to remodel or relocate backup energy systems, hospitals are primarily weighing costs versus potential liability. One counterargument to that problem is that CMS 3178-P, once adopted into law, will greatly decrease backup energy failure problems.[87] However, there are notable reasons this scenario will not become a reality. First, several comments to CMS-3178-P note concern with a significant underestimation by the CMS in calculating the costs of complying with the new rule.[88] Federal funding is also an emerging concern. The vessel used to allocate federal funds to hospitals throughout the U.S. is the Hospital Preparedness Program (HPP). The recent reduction in federal funding resulted in a 31.1 percent cut for funding to HPP, which began on July 1, 2014.[89] Secondly, for hospitals to comply with CMS 3178-P they must spend more money and go through more loopholes to receive the same continued Medicare and Medicaid reimbursements. Therefore, hospitals will be required to pay more money for the same benefits.

To combat these problems, states should step up to the challenge. With the potential adoption of CMS 3178-P in December 2016, hospitals will have to spend extra money to get the same benefits as before. Individual states should offer additional incentives for hospitals to take measures to ensure maximum power resiliency in situations where the main grid fails.

States can achieve this through passing legislation that immunizes health care entities against emergency preparedness liability claims.[90] This type of

legislation would offer immunity from civil liability to entities that take the initiative to ensure reliable and resilient backup power by installing or adjusting backup power systems to heights at or above current standards. The Nation Fire Protection Association, which authors regulations the federal government adopts in CMS 3178-P, suggests additional recommendations that go above and beyond both today's code requirements and the CMS 3178-P proposed requirements including: (1) installation of two or more generators, (2) going beyond minimum fuel supply standards, (3) providing two separate backup power feeds stemming from separate buildings and separate automatic transfer switches into each operating room and/or each intensive care unit, (4) providing connecting backup power to systems not required by code, such as cooling apparatuses,[91] sterilizing equipment, and imaging suites.[92]

It is recognized that many states already offer liability immunization for physicians and hospitals for actions occurring *during* emergencies.[93] However, hospitals are still liable for measures taken, or not taken, *before* emergencies that cause injuries or death to individuals within the hospital.[94] In preparing for an emergency, it is impossible to predict every possible catastrophe that may result in a power outage. However, each state knows the types of disasters that are most likely to affect them. Therefore, it should be the job of state officials to survey hospitals and decided which hospitals meet standards that qualify for entity liability protection.

As evidenced by the *LaCoste v. Pendleton Methodist* ***[95]*** decision, hospital officials that are ordinarily protected by medical malpractice caps, lose such protections when sued for injures occurring because of failure to properly prepare for a power outage. Therefore, hospitals in states such as Louisiana have even more of an incentive to meet heightened standards to gain immunity.

States wishing to enact legislation of the type proposed above should tailor such laws to heightened standards depending on the particular vulnerabilities of the state. For example, Louisiana is highly susceptible to flooding, so hospitals that place generators and all mechanisms needed to ensure generator functionality at a set height above the highest predicted flood level may qualify for immunity. In states with urban areas more vulnerable to blackouts, state legislation may grant

immunity to hospitals that use CHP systems, such as Greenwich Hospital's resilient system.

Some may argue that shielding hospitals from liability for their failure to properly prepare for emergencies may compromise incentives for hospitals to pursue robust preparedness activities.[96] However, the solution would *only* grant liability protection to hospitals that have taken robust preparedness measures. As a result, this extra incentive to spend money on emergency preparedness would better ensure citizens' safety in our nation's hospitals.

An argument supporting this solution stems from the idea that in theory, hospitals are currently held to an impossible legal standard. "By definition, legally declared emergencies are unpredictable in how existing capacities or resources may be strained when health care entities and clinicians shift crisis standards of care."[97] As a result, hospitals are liable for all patient injuries that were caused by any magnitude and any type of emergency. This creates a perverse incentive for hospitals. "Even if a hospital saves scores of patients through sound emergency [preparedness] practices, if just one patient's death was preventable through enhanced preparedness, liability could ensue."[98] Therefore, states must provide "legal clarification of a standard for entity liability."[99] Without such a standard, hospitals are compelled to endlessly prepare for every possible emergency. As a result of this impossibility, many hospitals find it most economical not to act at all.

A concrete legal standard that hospitals can meet to protect them from emergency preparedness liability will in turn make hospitals safer. Without such standards, courts currently assign liability broadly. Hospitals are liable for any emergency they may have foreseen. Thus, the current legal structure propels hospitals to initiate measures of defensive preparedness maneuvers in the courts rather than taking precautions before hand. The latter option would improve patient outcomes and the overall public health.

Conclusion

States should not depend on federal regulations to ensure the energy resiliency and dependability of their hospitals. Although there are a plethora of existing rules and regulations, state legislative initiatives should grant entity immunity for

hospital administrators that go above and beyond the present regulations in preparing their hospital's backup energy system. If hospitals are capable of adequately functioning during extended power outages then there will be less possibility that those hospitals will have to implement triage or evacuation programs during the outage. It should be state officials who set standards and survey hospitals because states are most aware of their own vulnerabilities. In the end, what matters most is that this solution has the unique and critical result of saving American lives.

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[1] Sheri Fink, Five Days at Memorial: Life and Death in a Storm-Ravaged Hospital 117 (2013).

[2] Richard Fausset and Ann M. Simmons, *Chaos Reigned in Dark New Orleans Hospital: Family and Colleagues of Dr. Anna Pou, Accused of Killing Patients After Hurricane Katrina, Praise Her Compassion and Professionalism*, L.A. Times, July 23, 2006, at A22.

[3] Fink, *supra* note 1.

[4] Sewell Chan and Gardiner Harris, *Hurricane and Floods Overwhelmed Hospitals*, N.Y. Times, September 14, 2005, at A1 ("Dr. Timothy Allen, an anesthesiologist, 'We were told and we believed that our generators would last six days, and of course they died after two and half one-half days, whether because they shorted out or were flooded,' he said").

[5] *Id.*

[6] *See, e.g.*, Preston v. Tenet Healthsystem Memorial Medical Center Inc., No. 05-11709-B-15 (LA Civ. Dist. Ct. settled March 23, 2011); Serou v. Touro Infirmary, 105 So. 3d 1068 (La. Ct. App. 4th Cir. 2013), writ denied, 110 So. 3d 588 (La. 2013) and on rehearing, 115 So. 3d 688 (La. Ct. App. 4th Cir. 2013); LaCoste v. Pendleton Methodist Hosp., L.L.C., 966 So.2d 519 (La. 2007).

[7] *See, e.g.*, Joel Eagle, Note, *Divine Intervention: Re-Examining the "Act of God" Defense in a Post-Katrina World*, 82 Chi.-Kent L. Rev. 459 (2007).

[8] Robinson v. United States (In re Katrina Canal Breaches Litig.), 696 F.3d 436 (5th Cir. La. 2012).

[9] James G. Hodge Jr. & Erin Fuse Brown, *Assessing Liability for Health Care Entities That Insufficiently Prepare for Catastrophic Emergencies*, JAMA 306 (2011).

[10] *See, e.g.*, Marina Dishel, *Hospitals Look Past Codes to Set Power Reliability Minimums*, FacilitiesNet.com, http://www.facilitiesnet.com/healthcarefacilities/article/NFPA-110s-Fuel-Requirements-Can-Help-Guide-Backup-Power-Plan-For-Hospitals-Facilities-Management-Health-Care-Facilities-Feature--14338 [https://perma.cc/PY5S-95ZG] ("Hospitals are beginning to look past codes to set power reliability minimums. The devastation of extended blackouts and storms in the last decade has led some of this country's largest acute care institutions to re-think their emergency power plans, asking 'What is needed to maintain power beyond the existing code-mandated minimum requirements?'").

[11] Philip J. Klotzbach & William M. Gray, Department of Atmospheric Science Colorado State University, Extended Range Forecast of Atlantic Seasonal Hurricane Activity and landfall Strike Probability for 2015 1, 33 (2015) (reporting the 2015 chances of a hurricane hitting Louisiana at 15%); *see* Fink, *supra* note 1, at 67-69.

[12] Fink, *The New Katrina Flood: Hospital Liability*, *supra* note 13.

[13] Automatic transfer switches are the devices that automatically transfer power loads and electrical distribution to backup power sources when the primary power source fails. *Automatic Transfer Switches*, Power.Cummins.Com, http://power.cummins.com/sites/default/files/literature/brochures/F-1443.pdf [https://perma.cc/K7NP-ELUG] (last visited Jan. 21, 2016).

[14] Fink, *The New Katrina Flood: Hospital Liability*, *supra* note 13. .

[15] *Id.*

[16] *See* Michael Heiman, *What Caused Generators to Fail at NYC Hospitals?* CBS News, Nov. 2, 2012, 12:57 PM), http://www.cbsnews.com/news/what-caused-generators-to-fail-at-nyc-hospitals/ [https://perma.cc/7RFM-F6UM](describing generator failures in New York during Hurricane Sandy); *See also* Serou v. Touro Infirmary, 115 So. 3d 688 (La.App. 4 Cir. 2013) (lawsuit brought by decedents of individuals who died in the New Orleans hospital, Touro Infirmary, during Hurricane Katrina); *See also* Andrew Alper & Susan L. Kupferman, New York City Emergency Response Task Force, Enhancing New York City's Emergency Preparedness: A Report to Mayor Michael R. Bloomberg 1 (2003) (report assessing the failures of hospitals during the 2003 Northeast blackout and potential remedies); *See also* Michael A. Crowley, P.E., Health Care Facilities Handbook, Supplement 3: Disaster Recovery at Texas Medical Center from Tropical Storm Allison 677-80 (2005) (describing generator failures at the Texas Medical Center during Tropical Storm Allison in 2001).

[17] *See* Fink, *The New Katrina Flood: Hospital Liability*, *supra* note 13.

[18] Perhaps the most intriguing story for the purposes of this article, this series of events encompasses several cases and competing legal issues that will be addressed. The ethics of Dr. Pou's story have been heavily argued and written on. This article focuses on the suspect Louisiana laws at play in the story as well as Memorial Hospital's failure to provide adequate backup power.

[19] Fink, Five Days at Memorial: Life and Death in a Storm-Ravaged Hospital 67 (2013).

[20] Fink, *supra* note 1, at 67.

[21] *Id.*

[22] *Id. at* 68.

[23] Yancovich was also a member of Memorial's emergency leadership team.

[24] Fink, *supra* note 1, at 67 (Memorial was plagued with a design failure all too common in backup power reliability. The generators were placed at a level well above any possible flood heights, but the critical parts of the backup power system, such as automatic transfer switches, were located a few inched above ground level).

[25] Fink, *supra* note 1, at 69.

[26] *Id.*

[27] *Id.*

[28] *Id.*

[29] *Id. at* 50.

[30] *Id.* at 30.

[31] Fink, *supra* note 1, at 30.

[32] *Id.*

[33] *Id.*

[34] *Id.*

[41] *Id.* at *71*.

[42] *Id.* at *72*.

[43] Fink, *supra* note 1, at 72.

[44] *Id. at* 74.

[45] *Id.*

[46] At the time of this statement, Dr. Wise was Vice president of JCAHO's division of standards and survey methods. Fink, *supra* note 1, at XVI.

[47] Fink, *supra* note 1, at 75.

[48] Anne Hampton, IFC International, Combined Heat and Power: Enabling Resilient Energy Infrastructure for Critical Facilities 14 (2013).

[49] Environmental protection Agency, EPA Energy and Environment Guide to Action (2015).

[50] Hampton, *supra* note 48.

[51] Hampton, *supra* note 48, at 14 (island mode is a term used to describe buildings with CHP systems operating completely independent from the main grid power).

[52] *Id.*

[53] *Id.*

[54]Rick Gallot, La. Senate Resolution 171 (2012).

[55] *Id.*

[56] Texas House Bill 1831 (2009).

[57] *See* U.S. Dep't of Energy, Energy Efficiency and Renewable Technologies Program: Building Technologies Program: Hospitals Discover Advantages to Using CHP Systems 2 (July 2011) (explaining the benefits of CHP over traditional backup generators:

Hospitals must perform critical, life-saving functions even when a widespread disaster interrupts their supply of natural gas and electricity from the utility grid. CHP systems can be designated to maintain critical life-support systems, operate independently of the grid during emergencies, and be capable of black start (the ability to come online without relying on external energy sources). Because they are already up and running, CHP systems can offer a more seamless, reliable power alternative than traditional emergency generators.

[58] Hampton, *supra* note 48, at 6.

[59] *See* Hotchkiss, U.S. Federal Emergency Management Agency, Alternative Energy Generation Opportunities in Critical Infrastructure: New Jersey 1 (2013).

[60] Dishel, *Hospitals Look Past Codes to Set Power Reliability Minimums*, *supra* note 19 ("Hospitals are beginning to look past codes to set power reliability minimums. The devastation of extended blackouts and storms in the last decade has led some of this country's largest acute care institutions to re-think their emergency power plans, asking 'What is needed to maintain power beyond the existing code-mandated minimum requirements?'").

[61] Don Rust, Blue Pillar, Case Study: Duke University Medical Center 1.

[62] *Id.*

[63] *Id.*

[64] Sheri Fink, *Trial to Open in Lawsuit Connected to Hospital Deaths After Katrina*, N.Y. Times, Mar. 21, 2011, at A16.

[65] Hodge Jr. & Brown, *Assessing Liability for Health Care Entities That Insufficiently Prepare for Catastrophic Emergencies*, *supra* note 18, at 308.

[66] *Id.*

[67] *Id.*

[68] *Id.*

[69] *Id.*

[70] Richard W. Niska, M.D. & Iris M. Shimizu, Ph.D., National Health Statistics Reports, Hospital Preparedness Response: United States, 2008, Number 37 (Mar. 24, 2011). *See also* Hodge Jr. & Brown, *Assessing Liability for Health Care Entities That Insufficiently Prepare for Catastrophic Emergencies*, *supra* note 18, at 308.

[71] Niska & Shimizu, *supra* note 70.

[72] Emergency Preparedness Requirements for Medicare and Medicaid Participating Providers and Suppliers, 78 Fed. Reg. 249 (proposed Dec. 27, 2013) (to be codified at 42 C.F.R. pts. 403, 416, 418, 441, 460, 482, 483, 484, 485, 486, 491, 494).

[73] *Id.*

[74] *Id.*

[75] *Id.*

[76] *Id.*

[77] As of 2009, Medicare and Medicaid make up 55% of all care provided by hospitals in the United States. American Hospital Association, Underpayment by Medicare and medicaid Fact Sheet 1 (2009).

[78] Emergency Preparedness Requirements for Medicare and Medicaid Participating Providers and Suppliers, 78 Fed. Reg. 249 p. 79187 (proposed Dec. 27, 2013) (to be codified at 42 C.F.R. pts. 403, 416, 418, 441, 460, 482, 483, 484, 485, 486, 491, 494).

[79] Letter from the American Hospital Association to Marilyn B. Tavenner, Administrator for the Centers for Medicare & Medicaid Service (March 28, 2014) (AHA's comments on the proposed rule, CMS 3178-P).

[80] Emergency Preparedness Requirements for Medicare and Medicaid Participating Providers and Suppliers, 78 Fed. Reg. 79187, et. seq. (proposed Dec. 27, 2013) (to be codified at 42 C.F.R. pts. 403, 416, 418, 441, 460, 482, 483, 484, 485, 486, 491, 494) (NFPA is the National Fire Protection Association, which is a nonprofit organization that sets out codes and regulations to better prepare institutions and individuals in times of emergency).

[81] Letter from the American Hospital Association to Marilyn B. Tavenner, *supra* note 79.

[82] A "hazards vulnerability analysis" is a term used by JCAHO describing a process for identifying potential emergencies and the effects these emergencies may have on the hospital.

[83] Letter from the American Hospital Association to Marilyn B. Tavenner, *supra* note 79.

[84] *Id.*

[85] *Id.* (AHA's comments on the proposed rule, CMS 3178-P) (noting that some calculations predict an average of $1.5 million for a hospital to move two generators).

[86]Jackie Gatz, Missouri Hospital Association, 2014 Emergency Preparedness Executive Report: Accomplishments and Next Steps (2014).

[87] *See* Emergency Preparedness Requirements for Medicare and Medicaid Participating Providers and Suppliers, 78 Fed. Reg. 249 p. 79187 (proposed Dec. 27, 2013) (to be codified at 42 C.F.R. pts. 403, 416, 418, 441, 460, 482, 483, 484, 485, 486, 491, 494) (Summary of the proposed rule sets forth the CMS's belief that this new rule will ensure providers will adequately meet the needs of patients in times of emergencies).

[88] Letter from the American Hospital Association to Marilyn B. Tavenner, *supra* note 79 (noting that some calculations predict an average of $1.5 million for a hospital to move two generators)

[89] Gatz, *supra* note 86.

[90] Hodge Jr. & Brown, *Assessing Liability for Health Care Entities That Insufficiently Prepare for Catastrophic Emergencies*, *supra* note 9.

[91] Note that a Louisiana court recognized in *Serou v. Touro Infirmary*, that while hospitals are not required by code to generate chilled air during power outages, the hospital was required to offer some air circulation and/or ventilation.

[92] Dishel, *Hospitals Look Past Codes to Set Power Reliability Minimums*, *supra* note 10.

[93] Hodge Jr. & Brown, *Assessing Liability for Health Care Entities That Insufficiently Prepare for Catastrophic Emergencies*, *supra* note 9.

[94] *See* LaCoste, 966 So.2d at 522.

[95] 966 So.2d 519 (La. 2007).

[96] James G. Hodge Jr. & Erin Fuse Brown, *Assessing Liability for Health Care Entities That Insufficiently Prepare for Catastrophic Emergencies*, *supra* note 9.

[97] *Id.*

[98] *Id.*

[99] *Id.*