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# The Day After Tomorrow: A Survey Of How Gulf Coast State Utility Commissions and Utilities are Preparing for Future Storms

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# THE DAY AFTER TOMORROW: A SURVEY OF HOW GULF COAST STATE UTILITY COMMISSIONS AND UTILITIES ARE PREPARING FOR FUTURE STORMS

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With widespread outages caused by devastating natural disasters such as Superstorm Sandy and Hurricane Ike in the nation's recent memory, the public wants to know that the electric utility industry is prepared to withstand and respond to the storms of the future. But is the industry prepared? The government's role in regulating the electric utility industry makes it impossible to properly analyze why industry players are prepared or unprepared without looking at the actions and decisions of the state regulatory officials. The industry's actions are inherently tied to the regulations it is required to follow and the costs it is allowed to recover.

State public service commissions are tasked with allowing investments and setting rates for the electric utility industry that are "just and reasonable" and "in the public interest." These vague guidelines have led to many different approaches to investments, cost recovery, and rate-setting. State commissioners are tasked with finding the balance between keeping costs low today and ensuring service remains reliable for their ratepayers in the future. With one of the worst economic recessions in U.S. history and predictions for tomorrow's climate trends worsening every year, are state commissions striking the proper balance? Part I of this Note gives a brief introduction to the role of state commissions within the electric utility industry, with a focus on why this matters in the context of the important discussion taking place today on climate change trends and, more specifically, preparing for tomorrow's storms. Part II presents a summary of what actions, if any, Gulf Coast state commissions have taken regarding resiliency measures and storm hardening and how some major utilities have responded to those actions, or alternatively, how utilities have acted when little commission action has occurred. Part III provides an analysis of the results of the survey and recommendations going forward.

## I. Introduction

### A. Role of State Commissions

State commissions play an important role in public utility regulation, including the regulation of storm hardening. The rates that a public utility charges its customers are subject to government regulation. While the federal government sets rates in the electric utility industry for interstate transmission as well as the wholesale market, states have the authority to set a public utility's

retail rates.[1] Federal laws such as the Energy Policy Act of 2005 have recently led to a larger federal role in the electric industry, but states still have the regulatory authority to determine distribution retail rates and to work to ensure safe, reliable, and adequate service. While specific approaches to rate design differ, a utility's rate is generally determined using a "just and reasonable" standard or a variant thereof.[2] A just and reasonable rate allows a utility company to earn a fair return on its prudent costs while also keeping costs low for ratepayers.[3] However, there is no bright-line rule on what defines a fair return or a prudent investment.[4] Commissions are given broad authority to make these decisions. In addition to rate-setting, a state commission's authority includes, but is not limited to, the power to set reliability standards, to establish reporting requirements, or to implement energy conservation and efficiency programs.[5] The state legislature may also exercise this authority directly, but it delegates concurrent authority to a regulatory body, a public service commission.[6]

This note looks at two major areas relating to preparation for tomorrow's storms in which state commissions have the power to require or incentivize action by electric utilities: storm resiliency measures and storm hardening. State commissions have the power to incentivize action in these areas, but arguably state commissions are also in the best position to take action in these areas as they are best able to identify and prioritize local vulnerabilities. Many predicted climate change trends affect different regions of the United States in diverse ways.[7] Thus, a national approach to storm preparation for utilities does not make as much sense. State commissions are in the best position to make the most informed decisions on how to act.

**B. Climate Change Trends and the Gulf Coast**

Numerous studies have identified several climate change trends that have significant impacts on the U.S. energy sector, many of which are predicted to continue.[8] Average annual temperatures across the country have increased, and several areas throughout the United States experienced record-breaking high temperatures in 2012. [9] Since 1960, heat waves are generally happening

[1] This federal-state balance of regulatory power within the utility sector has changed several times in the nation's history, but the stated balance above is the balance in effect today. *See generally* FEDERAL ENERGY REGULATORY COMMISSION, An Overview of the Federal Energy Regulatory Commission and Federal Regulation of Public Utilities in the U.S, *available at* http://www.ferc.gov/about/ferc-does/ferc101.pdf (December 2010).
[2] *See, e.g.* ALA. CODE § 37-1-80 (a) (2013) ("The rates and charges for the services rendered and required shall be reasonable and just to both the utility and the public."); FLA. STAT. ANN. § 366.041(1) (2013) ("In fixing the just, reasonable, and compensatory rates . . . .").
[3] Jeremy Knee, *Rational Electricity Regulation: Environmental Impacts and the 'Public Interest'*, 113 W. VA. L. REV. 739 (2011).
[4] *See generally Wabash Valley Elec. Co. v. Singleton*, 1 F. Supp. 106 (S.D. Ind. 1932), *aff'd,* 287 U.S. 488 (1933).
[5] *See generally* COLUMBIA CENTER FOR CLIMATE CHANGE LAW, COLUMBIA LAW SCHOOL, PUBLIC UTILITY COMMISSIONS AND ENERGY EFFICIENCY: A HANDBOOK OF LEGAL & REGULATORY TOOLS FOR COMMISSIONERS AND ADVOCATES (August 2012).
[6] *See* 29 CJS Electricity 64.
[7] DEPT OF ENERGY, U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather 1(2013).
[8] *Id.* at 1.
[9] *Id.* at 8.

more frequently and with increasing intensity.[10] Droughts are also increasing in number and duration.[11] Of particular concern to many is the increasing intensity of hurricanes and tropical storms.[12] While the problem of droughts is threatening certain areas of the country, the complementary issue of flooding and sea level rise is also a major threat to many regions.[13] The rate at which the global sea level is rising has doubled over the last twenty years as compared to the rate over the last century.[14]

These trends vary region by region, but the coastal states of the South and Southeast (commonly known as the Gulf Coast) are especially vulnerable to many of the identified climate change trends.[15] The region is expected to experience more extreme heat in the near future.[16] Of particular concern for this Note, it is also an area that is at especially high risk of hurricanes and tropical storms.[17] On average, losses from extreme storms already cost the Gulf Coast about $14 billion annually.[18] The damage estimates from the worst storms to have hit the U.S. in recent years are shocking. Estimates of the costs of damages to the U.S. from Hurricane Sandy are over $50 billion dollars as of May 2013.[19] The damages total from Hurricane Katrina has been reported as $108 billion dollars.[20] Furthermore, sea level rise is exacerbated in this region by land subsidence (the gradual sinking of an area of land).[21] The combination of more intense storms and increasing sea level rise is expected to lead to higher storm surge damage in this region.[22]

These issues are not theoretical risks of tomorrow. They have already proven to be a major problem today, as evidenced by the billions in damages that several recent hurricanes have cost the area.[23] One report estimates that up to 3% of the nation's future GDP could go towards reconstruction costs exclusively in the Gulf Coast.[24]

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[10] *Id.* at 17.
[11] *Id.* at 26.
[12] *Id.* at 37-38. While the report found that the number of storms hitting land over the years has fluctuated and some studies predict that storms will be *less* frequent, the studies and report still predict that the storms will get stronger.
[13] *Id.* at 28.
[14] *Id.* at 38.
[15] NAT'L OCEANIC AND ATMOSPHERIC ADMINISTRATION, Regional Climate Trends and Scenarios for the U.S. Nat'l Climate Assessment 17 (2013).
[16] *Id.* ("The NARCCAP model simulations indicate increases in the number of days with a maximum temperature of more than 95°F . . . more than 35 days in the southeast.").
[17] ENTERGY CORP. AND WETLANDS FOUNDATION, Building a Resilient Energy Gulf Coast 3 (2011).
[18] ENTERGY CORP. AND WETLANDS FOUNDATION, Building a Resilient Energy Gulf Coast 1 (2011).
[19] NAT'L OCEANIC AND ATMOSPHERIC ADMINISTRATION, Hurricane/Post-Tropical Cyclone Sandy (MAY 2013).
[20] NAT'L HURRICANE CENTER, Tropical Cyclone Report: Hurricane Katrina 13 (20 December 2005) (Updated 10 August 2006).
[21] *Supra* note 15
[22] DEPT OF ENERGY, U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather 38 (2013).
[23] *Id.* at 38.
[24] ENTERGY CORP. AND WETLANDS FOUNDATION, Building a Resilient Energy Gulf Coast 1 (2011).

## C. Electric Industry Vulnerabilities

These climate change trends could be especially costly to the electric utility industry. Facilities for generation, transmission, and distribution are all at high risk of damage from more intense storms (the highest damage costs result from high winds, flooding, and storm surges).[25] Higher wind speeds have the potential to damage distribution and transmission poles.[26] Flooding and storm surges can cause serious harm to substations.[27] While storms are an especially significant risk, problems associated with rising temperatures are also of concern. Hotter temperatures lower the ability of electric utilities to meet demand because transmission and distribution systems carry less current as the temperature rises, which increases the risk of power outages.[28]

The vulnerability of this industry is especially worrisome considering our nation's dependency on electricity. Storm-related power outages cost the nation billions of dollars annually.[29] Furthermore, vulnerabilities are not limited to just one region. The interconnectivity of the nation's electrical grid means that damage to facilities can have wide-ranging impacts that go far beyond that locality.[30] The vulnerability of the electric industry to damages is multiplied because of the risk that the industry is not prepared to respond to damages quickly. Understandably, power outages that last longer cause more damage. Thus, it is crucial that electric utilities have the ability to restore power quickly after damage has occurred.

It is clear that these climate change trends raise the risk of damage because of their potential effect on the industry's supply side; the fuse is lit from both ends, however, because of the additional potential effect these trends can have on the industry's *demand* side. For many different reasons, the demand for electricity in the U.S. is growing.[31] Because electricity cannot ordinarily be stored in a cost-efficient manner at this point,[32] the amount of electricity the industry has the ability to produce (capacity) must be able to meet the highest level of expected demand (peak demand).[33] As peak demand grows, so must the utility's ability to meet that demand – whether through increased capacity or demand side management.[34] Issues such as

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[25] *Id.*
[26] *Id.*
[27] *Id.*
[28] *Id.* at 19, 21. ("Rising temperatures are expected to increase transmission losses, reduce current carrying capacity, increase stresses on the distribution system, and decrease substation efficiency and lifespan." (citations omitted))
[29] RICHARD CAMPBELL, WEATHER-RELATED POWER OUTAGES AND ELECTRIC SYSTEM RESILIENCY, 7-5700 R42696 (2012).
[30] DEPT OF ENERGY, U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather 13–14 (2013).
[31] *Id.*
[32] While there are certain electricity storage technologies that are possible, such as pumped hydroelectric storage facilities, these technologies are limited in the amount that can be stored and used within the U.S. electric grid. *See* Stan Kaplan, Cong. Research Serv., R40797, Electric Power Storage 1 (2009).
[33] JOSEPH P. TOMAIN & RICHARD D. CUDAHY, ENERGY LAW IN A NUTSHELL (West ed., 2nd ed. 2004).
[34] The importance of demand side management, such as demand response programs, cannot be overstated. However, while I felt it was important to mention the demand side issues public utilities face to emphasize the importance of the electric industry preparing for the future, the topic of demand side management is not the focus of this Note.

higher temperatures and longer heat waves exacerbate the problem because they cause a significant increase in demand for cooling and, consequently, higher peak requirements.[35] Thus, increased temperatures cause an increase in demand just when the system is less capable of supplying electricity.[36] This raises the risk that current electric facilities will become overloaded, causing blackouts.[37]

As discussed in the previous section, the South and Southeast coastal region is at especially high risk to these climate change trends. This region is also densely developed with electric utility facilities.[38] Consequently, the region is of particular concern to our nation's economy.

**D. Storm Response and Mitigation Measures**

The damage that these climate change trends can cause has roused the public's attention after several recent natural disasters have cost the nation billions of dollars in damages.[39] While the exact nature and scope of the future impact of these climate trends on the U.S. electric utility industry cannot be determined with exactness, many studies are recognizing the importance of taking action today in order to prepare for the likely scenario that these trends will continue.[40] Many long-term mitigation solutions to mitigate climate change trends, such as GHG emission standards and the development of the renewable energy industry, have been proposed (and vigorously contested). While long-term solutions are important, this Note focuses on the several adaptation actions that, if taken now, have the potential to produce significant benefits in the short-term as well as the long-term. These actions (normally referred to as storm response, adaptation, and/or mitigation measures) are considered the best solutions to "combating and mitigating storm damage and outages."[41] A short outline of these two major potential areas of action is provided below:

1. Resiliency measures refer to measures taken to enhance the reliability of operations by improving the facility's ability "to recover quickly from damage to any of its components or to any of the external systems on which it depends."[42] The primary purpose of resiliency measures is not to prevent damage from occurring in the first place. The primary purpose is to ensure quick recovery in the case that damage does in fact occur.[43] Examples of resiliency measures include the creation of a company-specific emergency plan for employees, contracting for meeting the

[35] DEPT OF ENERGY, U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather 22 (2013).
[36] *Id.*
[37] *See, e.g.* FEDERAL ENERGY REGULATORY COMMISSION, *Arizona-Southern California Outages on September 8, 2011 Causes and Recommendations.* http://www.ferc.gov/legal/staff-reports/04-27-2012-ferc-nerc-report.pdf. (2012); PUBLIC POLICY INSTITUTE OF CALIFORNIA, *Adaptation of California's Electricity Sector to Climate Change.* http://www.ppic.org/content/pubs/report/R_1108EVR.pdf. (2008).
[38] ENTERGY CORP. AND WETLANDS FOUNDATION, Building a Resilient Energy Gulf Coast (2011).
[39] *Id.*
[40] *Id.;* DEPT OF ENERGY, U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather (2013).
[41] EDISON ELECTRIC INSTITUTE, Before and After the Storm 7 (2013).
[42] DEP'T OF ENERGY, Hardening and Resiliency: U.S. Energy Industry Response to Recent Hurricane Seasons v (2010).
[43] *Id.*

increased labor demand that storm response requires, and ensuring standby equipment is available.[44] A less common, but highly recommended, resiliency measure is participation in regional mutual assistance groups in which several utilities across regions agree to assist others in times of need.[45] Certain Smart Grid technologies are also considered resiliency measures because they can assist electric utilities in preventing outages through highly responsive grid isolation actions or they can increase a company's ability to quickly respond to outages as well.[46]

2. Storm hardening refers to "physically changing the infrastructure to make it less susceptible to damage from extreme wind, flooding, or flying debris."[47] In contrast to resiliency measures, the primary purpose of storm hardening is to improve the infrastructure's ability to withstand storms in order to lower the risk of damage occurring at all.[48] Examples of storm hardening include upgrading distribution and transmission poles, elevating substations that are at risk of flooding, and "undergrounding" power lines and other facilities that are at too high of a risk of damage above ground.[49] One important storm hardening measure can also be considered a resiliency measure: the identification and prioritization of a company's or industry's vulnerabilities through localized assessments.[50] This information allows electric utilities to properly invest their limited funds in both resiliency measures and storm hardening based on where the need is highest. Without localized vulnerability assessments, electric utilities run the risk of taking action that may not be the most cost-effective for that region at that time.

**E. Possible Barriers**

Several studies have found that certain actions, if taken today, could save a significant amount of money for the electric utility industry and its ratepayers in the future.[51] Unfortunately, a number of barriers may be working to prevent the implementation of these actions.[52] A summary of some of the major barriers identified as acting against the most efficient, cost-effective use of storm hardening and resiliency measures is provided below.

One major issue is that regulatory commissions and utilities may not have enough information, or access to information, to accurately identify the best, most cost-effective use of such measures. In the context of limited time and resources, identifying the most important measures to implement is essential for the success of such measures. Unfortunately, identification of cost-effective storm hardening and resiliency measures is a highly localized task. Because climate

[44] *See* THE LAW OF CLEAN ENERGY: EFFICIENCY AND RENEWABLES 15-16 (Michael Gerrard ed., 2011).
[45] COUNCIL OF ECONOMIC ADVISERS AND THE U.S. DEP'T OF ENERGY'S OFFICE OF ELECTRICITY DELIVERY AND ENERGY RELIABILITY, Economic Benefits of Increasing Electric Grid Resilience to Weather Outages 12 (2010).
[46] *See* THE LAW OF CLEAN ENERGY: EFFICIENCY AND RENEWABLES 15-16 (Michael Gerrard ed., 2012)
[47] DEPT OF ENERGY, Hardening and Resiliency: U.S. Energy Industry Response to Recent Hurricane Seasons (2010).
[48] *Id.*
[49] *See* EDISON ELECTRIC INSTITUTE, Before and After the Storm 1–14 (2013).
[50] DEPT OF ENERGY, U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather 36 (2013); *see also* EDISON ELECTRIC INSTITUTE, Before and After the Storm 12 (2013).
[51] ENTERGY CORP. AND WETLANDS FOUNDATION, Building a Resilient Energy Gulf Coast (2011).
[52] CENTER FOR CLIMATE AND ENERGY SOLUTIONS, Weathering the Storm (2013).

change trends are having different effects on different regions, the prioritization of hardening and resiliency measures will vary significantly region to region. Formulating a cost-effective action plan requires a large amount of data and analysis, most of which is difficult, time-consuming, and costly for one commission or utility company to gather on its own.[53] Furthermore, even when the localized climate data is available to a commission or utility, it may be difficult to translate that data into concrete regulatory or business decisions. The difficult primarily arises because these decisions involve analyzing the economic impact of climate trends as well. For example, a utility may know that a certain region is predicted to experience significantly increased wind speeds during storms in the near future. However, this does not easily resolve the business decision of, for example, whether it is more cost-effective for the utility to prioritize an investment in upgrading its distribution poles as compared to an investment in additional storm response planning. The probabilistic nature of climate change trends also makes it difficult to incorporate the information into all of the other information commissions or electric utilities look at when making financial decisions.[54] Climate change trends and hardening and resiliency measures involve the use of a less certain cost-benefit analysis (due to the fact that climate change models involve a statistical range of possible future weather scenarios and not an exact prediction) over a longer range of time than these electric utilities typically use in a decision-making process.[55] Climate change is also a politicized topic and an area in which conflicting information has been, and continues to be, presented to the public.[56] Uncertainty regarding the reliability of data in the face of this conflicting information may result in inaction.

Another possible barrier to the most cost-effective implementation of resiliency and hardening measures is an ineffective commission approach to cost-recovery mechanisms for such measures. Cost-recovery mechanisms are methods by which the utility recovers its costs from consumers. This can occur through its rate base, rate adjustment mechanisms, or even securitization and insurance reserve funds. The choice of which mechanisms to put in place for which costs can have very important effects on utility actions. First, the method by which the utility company recovers costs can have an important impact on the public's response. If the costs of a large investment are transferred over to the customer all at once, customer's surprise against a sudden, dramatic rate increase, commonly referred to as "rate shock," may lead to strong public resistance. Distributing cost-recovery over a longer period of time can help to alleviate the effect of certain costs on the ratepayers while also still ensuring that utilities recover for prudent investments. For example, some state commissions include storm resiliency or hardening efforts in a utility's rate base. If a utility wants to make investments now, it may not be able to recover those costs for years depending on when its next rate case is scheduled. In addition, utilities may not want to invest money now if it is not clear whether the commission will allow recovery for those costs as reasonable at the next rate case. Other state commissions allow electric utilities to recover storm damage or storm hardening costs through a separate rider or tariff that is attached to a customer's bill through a surcharge in addition to the base rate.[57] That surcharge can be adjusted during the period in between rate hearings, which often only happen once every several

[53] *See* CENTER FOR CLIMATE AND ENERGY SOLUTIONS, Weathering the Storm (2013).
[54] DEPT OF ENERGY, U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather 15 (2013).
[55] CENTER FOR CLIMATE AND ENERGY SOLUTIONS, Weathering the Storm 21 (2013).
[56] *Id.*
[57] *See* EDISON ELECTRIC INSTITUTE, Before and After the Storm 16–23 (2013).

years. Such rate adjustment mechanisms are often used for costs that utilities did not foresee at the time of the previous rate case, costs that are volatile and thus difficult to predict (such as fuel costs), or costs that are a result of a non-recurring event.[58] Thus, the use of separate riders or tariffs is significant because it allows utilities to recover their costs more quickly and also allows them to, in certain circumstances, receive commission approval of the investment before moving forward. How a commission does or, more importantly, does *not* allow cost recovery for certain costs may have a significant effect on utility action. The financial decisions of utilities are inherently tied to their outlook on the ability to recover those costs relatively painlessly. Thus, a commission's power to allow or bar recovery of certain costs and its power to determine how that cost recovery happens is very important. Inefficient use of cost-recovery mechanisms may serve to discourage utilities from making investments even if it is actually cost-effective to do so. Other common cost-recovery issues that may affect a utility's incentives to invest in resiliency and hardening include whether a commission uses historical costs or predicted future costs to determine recovery, whether a commission allows a utility to recover interest on certain investments, and whether a commission allows the use of certain self-insurance and securitization techniques such as storm reserve accounts or storm bonds.[59]

The overemphasis of short-term costs and benefits as compared to long-term costs and benefits may be serving as another barrier to efficient and cost-effective action. As discussed in the previous section, public service commissions are tasked with the responsibility of setting rates that are just and reasonable.[60] But what does "just and reasonable" mean? This responsibility entails fixing electric rates to strike the right balance between the consumer's interest in keeping costs low and the public's interest in continued reliability of the industry through investments in areas like those described above: resiliency measures and storm hardening.[61] How much investment today is just and reasonable if it prevents higher costs in the future? As to be expected, there are many different possible answers to this question. As it is impossible to predict how exactly these climate change trends will affect the industry, some see investments related to such trends as too speculative to justify the accompanying increase in rates.[62] Many recognize the benefit of such actions but don't agree that the benefits outweigh the costs at this time.[63] The public interest in keeping rates low is especially great in times of recession.[64] Commissioners feel the pressure to avoid "rate shock," especially those whose job depends on future election by those consumers. Commissioners may have a disincentive to act because the potential for an increase in rates almost always draws public attention while inaction or refusal to allow utilities to take action, even if ultimately it would be cost-effective to do so, most likely

[58] *Id.* at 17.
[59] *Id.* at 15-20.
[60] ALA. CODE § 37-1-80 ("shall be reasonable and just to both the utility and the public").
[61] *See* 29 CJS Electricity 64.
[62] *See supra* note 49; CENTER FOR CLIMATE AND ENERGY SOLUTIONS, Weathering the Storm (2013) PG 77 *Id.* at 75. ("There are still questions—both within the company and among U.S. state regulators—about whether recent extreme weather is attributable to climate change and indicative of a 'new normal.' Given this uncertainty and the lack of any federal mandate, should the company spend more to harden power and gas systems? If National Grid does invest in system upgrades, and the unusual weather subsides, will they be punished by state regulators and shareholders?")
[63] *See* FL PSC Order No. 09-855.
[64] *Id.* ("The downturn of the present economy, coupled with soaring unemployment, make rates and the monthly utility bill ever more important to utility customers." ).

has limited or no impact on public opinion because it is less likely that the public is aware of the alternatives to inaction. The politicization of climate change issues in today's world also may have undue influence on the decisions and actions of state governments and regulatory bodies.[65] For example, commissioners may feel they must take a certain stance on climate-related issues because of their party affiliation. Commissioners may also worry that their decisions in this area may affect their ability to get re-elected.

Any or all of these barriers may be working against the implementation of cost-effective and important storm resiliency measures and storm hardening. Thus, action may not occur even when there has been widespread agreement within the scientific community that properly preparing the electric industry for tomorrow's storms is crucial and cost-effective in the long-term.

**F. Storm Resiliency Measures and Storm Hardening in the Gulf States: An Introduction to the Survey**

With the very real risk of these future climate trends and the abundance of studies recommending certain actions, is action happening? This Note summarizes what state regulatory commissions of the Southeast region are doing today to prepare for tomorrow's storms by looking at commission action taken in the two major areas of storm resiliency measures and storm hardening. This Survey then looks at how the actions of state regulatory commissions may be affecting the decisions and actions of electric utilities through a comparative analysis of how utilities have responded to commission actions in the different states surveyed. Finally, this Note attempts to synthesize all of this information to determine what commission actions are working and what remains to be done.

This Survey focuses on the states of the Gulf Coast region because the area is particularly vulnerable to the problems of tomorrow's storms. The predicted severity of tomorrow's storms in the Gulf Coast region is especially troublesome, considering that the electric utility industry has such a large presence in this region.[66] Furthermore, there are more local studies on climate change trends in this region (most likely because of the extensive damages this region and the electric utility industry of this region have suffered because of several recent huge storms as well as the predicted storms of tomorrow). These studies provide important data on the potential cost-effectiveness of certain storm resiliency measures and storm hardening.

[65] *See generally* Aaron M. McWright and Riley E. Dunlap, *The Politicization of Climate Change and Polarization in the American Public's View of Global Warming, 2001-2010*, The Sociological Quarterly 52, 155-194 (2011); *see also* Michelle S. Simon and William Pentland, Reliable *Science: Overcoming Public Doubts in the Climate Change Debate*, 37 Wm. & Mary Envtl. L. & Pol'y Rev. 219 (Fall 2012); Robert F. Rich and Kelly R. Merrick, *Use and Misuse of Science: Global Climate Change and the Bush Administration*, 14 Va. J. Soc. Pol'y & L. 223 (Spring 2007).

[66] *See* ENTERGY CORP. AND WETLANDS FOUNDATION, Building a Resilient Energy Gulf Coast (2011).

## II. Storm Resiliency and Storm Hardening in the Gulf State Region: A Survey

### A. Summary of Survey Method

The specific states within the Gulf Region that this Note focuses on are Alabama, Florida, Louisiana, Mississippi, and Texas. This Survey summarizes actions taken, if any, by state commissions that involve storm resiliency measures and storm hardening. The Survey further provides information on how utilities have responded to any commission action. The summaries consist of information gathered through researching state laws, commission regulations, orders, and reports. Utility response is based on information provided in public documents filed with the regulatory commission, as well as utility statements and reports. Some studies also contained summaries of utility response. Actions taken and utility responses are further divided into two major sub-areas: (1) commission action related to reporting and (2) substantive action requirements and the specific cost-recovery mechanisms in place regarding storm resiliency measures and storm hardening. While there are several different cost-recovery mechanisms that can be implemented, this study limits the analysis to three major mechanisms: Rate adjustment mechanisms, use of storm reserve accounts, and securitization. This limit does not reflect any opinion on the quality or effectiveness of certain mechanisms as compared to others.

### B. Commission Action: Resiliency Measures and Storm Hardening

| | **Regulatory Requirements** | **How often is utility action required?** | **Is there a review and/or approval process involved?** |
|---|---|---|---|
| **Alabama** | • The electric utility company has its emergency plan on file with the commission.[67] (but it is does not seem to be available publicly). | • It only needs to be updated if the company changes its emergency plan.[68] | • There is no formal review or approval process. |
| **Florida** | • Distribution Service Reliability Report[69]<br>• Storm Hardening Plan, which includes storm preparation actions[70] | • The Reliability Report must be submitted annually.[71]<br>• The Storm Hardening Plan must be updated every three years.[72] | • All reports require approval by the commission.[73] |

[67] *See* ALABAMA EMERGENCY MANAGEMENT AGENCY, State of Alabama Emergency Operations Plan ESF 12 – 4 (Feb. 1, 2012).
[68] *Id.*
[69] FLA. ADMIN. CODE R. 25-6.0455.
[70] FLA. ADMIN. CODE R. 25-6.0342.

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| **Louisiana** | • Emergency response plan[74]<br>• Integrated Resource Plan (IRP) Order issued in 2012[75] | • Emergency Response Plan must be submitted annually.[76]<br>• After the initial IRP is filed, it must be updated every 4 years.[77] | • The commission reviews the Emergency Response Plans.[78]<br>• The commission has stated it will review and approve IRPs but this is ongoing.[79] |
| **Mississippi** | • No regulations related to storm preparation or storm hardening.<br>• Past MS PSC Orders reference post-storm inquiries into actions taken by utilities to prepare for major storms and its response to major storms.[80] | | |

[71] *See* FLA. ADMIN. CODE R. 25-6.0455 and 25-6.0221(5).
[72] FLA. ADMIN. CODE R. 25-6.0342.
[73] *See supra* notes 72-74.
[74] *See* LA PSC General Order, 1992 WL 609478.
[75] *See* LA PSC Corrected General Order, Docket No. R-30021.
[76] *Supra* 76.
[77] *See* La.P.S.C. Corrected General Order at16, Docket No. R-30021.
[78] *Supra* 76.
[79] *Supra* 79.
[80] *See, e.g.* MS PSC Order (Dec. 13, 2002), Docket No. 02-UN-0526 ("In response to the Commission's inquiry and at the Commission's direction, the Company implemented a number of reliability and customer service improvement programs [in 1998]. In order to allow the Commission to monitor the effectiveness of these programs, the Company keeps the Commission informed on a monthly basis of improvements in customer service. In addition, the Company began to address specific service issues by increased emphasis on the number of field personnel, reliability in underground service, and pole maintenance and inspection programs.").

| | | | |
|---|---|---|---|
| **Texas** | • Service Quality Report[81]<br>• Emergency Operations Plan[82]<br>• Storm Preparation and related Storm Hardening Report[83]<br>• Vegetation Management Plan[84] | • Emergency Operations plan must be reviewed annually by the utility for accuracy, but it only needs to be re-filed if updated.[85]<br>• Storm hardening plan must be updated every 5 years[86]<br>• Service Quality, Storm Preparation, and Vegetation Management reports are required to be submitted annually.[87] | • No requirements imposed beyond general reporting requirements.<br>• The commission is authorized to penalize utilities for violating service quality and/or service reliability standards. |

While the majority of states surveyed have imposed some standards or requirements regarding storm resiliency measures, the substance of those requirements, the accessibility of the reports or information, and the method through which these requirements are imposed vary widely. This Section discusses the different approaches each state has taken to resiliency and hardening. The only two states of this Survey that have regulations addressing reporting requirements specifically related to storm hardening are Florida and Texas, so we will begin by looking at those two states.[88]

Florida and Texas

The Florida Public Service commission has adopted several regulations related to hardening and resiliency. Florida's regulatory actions in this area go beyond the other states surveyed in the extent of detail required. For example, utilities must provide supporting performance data in its report on how its facilities are performing (with the goal of identifying highly vulnerable equipment).[89] The commission seems to view resiliency measures as a sub-category of hardening. Its regulation requiring utilities to submit storm hardening plans includes, as one of its primary goals, the reduction of "restoration costs and outage times associated with extreme

[81] 16 TAC §25.81.
[82] 16 TAC §25.53.
[83] 16 TAC §§25.94, 25.95.
[84] 16 TAC §25.96.
[85] 16 TAC §25.53.
[86] 16 TAC §25.95.
[87] *See* 16 TAC §§25.81; 25.94; 25.96; 25.211.
[88] *See* FLA. ADMIN. CODE R. 25-6.0342; FL PSC Order No.06-0781; *see also* 16 TAC §§ 25.94, 25.95.
[89] FLA. ADMIN. CODE R. 25-6.0455.

weather events," which traditionally falls into the resiliency category.[90] As part of this storm hardening plan, electric utilities must submit a reliability assessment of its facilities, including analysis of its performance during storms as supported by data collection.[91] They must also submit a Disaster Preparedness Plan as part of the storm hardening reports.[92] The commission further emphasized resiliency measures through its statement that the utilities' plans should include information on "lessons learned [from previous storm recovery performance], disaster recovery training, pre-storm staging activities, and post-storm recovery."[93]

The Florida commission's regulation and related order on the Storm Hardening Report is also the only state commission among the Gulf State commissions surveyed that requires substantive action related to storm hardening from utilities beyond reporting. The reporting requirements mandate utilities to report on activities that the very same regulation orders them to implement. The Storm Hardening Reporting requirements include ten initiatives. The utilities are required to submit detailed report on each initiative, including the scope, timeline, and estimated costs of plans and actions in each initiative. The Florida commission developed these ten initiatives using the results from localized vulnerability assessments completed after the 2005 and 2006 hurricane seasons. The commission used those assessments to develop regulatory requirements that prioritize the most important and cost-effective resiliency and hardening actions for its region. For example, all electric utilities in every state implement some sort of vegetation management plan; many are based upon national standards. However, the Florida commission has adopted specific vegetation management requirements based on localized cost-benefit assessments. While all of the initiatives are worthy storm hardening measures in their most general format, the amount of detail included in the regulation and related Commission Order reflects a very informed, localized approach to storm hardening and resiliency.

The ten initiatives include a three-year trim cycle plan for their distribution facilities (including performance requirements), an audit of Joint-Use Attachment Agreements (in which utilities conduct strength tests on poles with attachments), a six-year Transmission Structure Inspection Program, the development of a plan to upgrade or replace their existing transmission (including any limiting factors), a plan to develop a geographic information system for their transmission and distribution facilities, the development of a program to collect post-storm data for forensic analysis, the development of a program to collect performance data that differentiates between overhead and underground facility performance, the development of a program to increase coordination with local governments, a plan to increase collaborative research and promote cost sharing, and a natural disaster preparedness and recovery plan, outlining their recovery procedures. [94] The Florida commission also implements a review and approval process for these reports, which it takes seriously. The commission has shown, through its previous review and approval sessions, that it would not approve whatever information utilities submitted. The commission went through an extensive review and approval process after the initial reports were

[90] FLA. ADMIN. CODE R. 25-6.0342(4).
[91] *See* FLA. ADMIN. CODE R. 25-6.0455 (2006 amendment).
[92] *See* FL PSC Order No. PSC-06-0351-PAA-EI.
[93] *Id.*
[94] *See* FLA. ADMIN. CODE R. 25-6.0342; *see also* FL PSC Order No. PSC-06-035 1-PAA-E1

filed in 2007, in which the commission rejected some electric utilities' initial reports and required those utilities to revise and re-file their plans again.[95]

The Florida commission also emphasizes collaboration and communication both between the government and the utilities as well as between the utilities themselves. In 2007, the commission required all investor owned utilities within its jurisdiction to assist in funding and participating in a collaborative storm hardening research program with Florida universities and research organizations.[96] In response, the utilities formed a non-profit, member-financed organization to collaborate research efforts, with a particular focus on hurricane wind effects, vegetation management, and undergrounding.[97] The utilities are also easily able to communicate and learn from each other through the commission's use of annual workshops that bring all utilities together to report on their progress with, for example, hurricane preparedness.[98] The Florida commission summarizes much of this collaboration, along with other actions taken in this area, on the "Storm Hardening" section of its website.[99]

It is important to note that much of the Florida commission's initiative in resiliency and hardening was originally due to actions taken by the Florida State Legislature. For example, in 2006, the Florida legislature passed a law requiring the Florida Public Service Commission to conduct a study looking at what should be done to enhance reliability of transmission and distribution grids.[100] This included a sub-requirement that the commission provide an annual report to the Legislature on its actions related to this matter. These actions by the state legislature were the original reason why the Florida Commission implemented all the initiatives discussed above.

Texas has also implemented several regulations related to resiliency and hardening in recent years. In December 2008, the Texas Commission funded an extensive localized vulnerability assessment by Quanta that was completed in 2011.[101] The study recommended several "first stage" and "second stage" best practices actions that Texas utilities should take.[102] In 2009, the Texas Legislature passed a bill requiring all electric transmission and distribution utilities to report to the Texas Commission describing any activities the utilities undertook related to the identification of areas vulnerable to storm damage, any hardening efforts within those areas, vegetation management activities, and distribution pole inspections.[103] In response to the Quanta study and the legislation, the Texas PUC adopted several new reporting requirements, with a

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[95] *See* FLORIDA PUBLIC SERVICE COMMISSION, 2007 Storm Hardening Report to Legislature.
[96] *See* FL PSC Order No. PSC-06-0351-PAA-EI, issued April 25, 2007, in Docket No. 060198-EI.
[97] *See* FLORIDA PUBLIC SERVICE COMMISSION, Report to Legislature on Storm Hardening Efforts 23-25 (2007).
[98] *See* FLORIDA PUBLIC SERVICE COMMISSION, Storm Workshops, *available at* http://www.psc.state.fl.us/utilities/electricgas/stormworkshops/default.aspex
[99] *See* FLORIDA PUBLIC SERVICE COMMISSION, Storm Hardening, *available at* http://www.floridapsc.com/utilities/electricgas/eiproject/index.aspx
[100] *See* section 19, of Chapter 2006-230, Laws of Florida.
[101] *See* TEXAS PUBLIC UTILITY COMMISSION, 2011 Report to Legislature.
[102] *See generally* QUANTA TECHNOLOGY, "Cost-Benefit Analysis of the Deployment of Utility Infrastructure Upgrades and Storm Hardening Programs", TX PUC Project No. 36375.
[103] *See* H.B. 1831, 81st Tex. Leg. (2009).

particular focus on resiliency measures such as emergency response planning.[104] Utilities must provide specific information regarding their critical load assessments, their prioritization lists for returning service during an emergency, and their emergency communications plans. All electric utilities must also conduct an annual drill to test and evaluate their emergency response plans, and an affidavit must be submitted ensuring the commission that all personnel are familiar with emergency procedures.

The Texas Commission also adopted a regulation in 2009 that requires all utilities to submit an annual report identifying any activities they have undertaken related to emergency operations planning and to identify the most vulnerable service areas and facilities.[105] This report must also include information on any activities utilities undertook related to vegetation management and distribution pole inspections to prevent damage in severe weather.[106] The specific details the commission required from utilities in these reports were primarily based upon the localized vulnerabilities identified in the Quanta Study. In 2010, the Texas Commission adopted additional reporting requirements related to electric utilities' storm hardening activities. The commission required additional information to be included in the five-year plans that utilities submitted to the regulatory body. The utilities had to provide details of any plans they had to harden their infrastructure for storms through construction standards, their hazard tree identification and mitigation plans, and their smart grid improvement plans related to storm recovery and fast outage response.[107] However, the commission emphasized repeatedly that while it was requiring reporting on these areas, it was not establishing any requirements to take specific actions.[108] Texas also considered and rejected requiring utilities to report on the projected costs for the projects or setting performance goals for any of the initiatives.[109]

Even though the commission does not require action from utilities beyond reporting, the Texas Legislature has given the commission statutory authority to penalize utilities for certain violations such as failing to file reports on time or failing to follow general service reliability standards.[110] The commission does exercise this power, as evidenced through its list of penalties that was included in its 2013 Annual Report to the Texas Legislature.[111]

Similar to the approach taken by the Florida Commission, the Texas Commission has attempted to provide the public, the electric utilities, and all other major stakeholders with a comprehensive source of information on the topics of resiliency and hardening. The Texas Utility Commission, along with two other Texas regulatory commissions, recently prepared an extensive "Energy Assurance Plan" that was published in November 2012. This report summarized the general strategy utilized by the commission along with major actions taken to address the preparation

[104] *See* 16 TAC §25.53.
[105] *See* 16 TAC §25.94.
[106] *See id.*
[107] *See* 16 TAC §25.95.
[108] *See* TX PUC Order Adopting §25.95, Project No. 37475; TX PUC Order (May 12, 2011), Docket No. 38339 (§25.95 "did not require any utility to undertake any specific storm-hardening initiatives.")
[109] *See* TX PUC Order Adopting §25.95, Project No. 37475.
[110] *See* 16 TAC §25.8
[111] *See* TEXAS PUBLIC UTILITY COMMISSION, 2013 Report to Legislature, for a report of the penalties issued by the Commission in 2010-2011.

and response to the general threat of natural disasters, including storm resiliency and hardening actions.[112] The Texas Commission has also funded several electric projects that are related to hardening and resiliency, a summary of which is provided on its website.[113]

Many actions taken by the Texas Commission were also, as in Florida, initiated by the Texas State Legislature. As a result of the Legislature's interest in these areas, the Texas Utility Commission's Annual Reports to the Legislature are very useful sources of information for action taken related to resiliency and hardening.

Alabama, Louisiana, and Mississippi

In contrast to Florida and Texas, the commissions of Louisiana, Alabama, and Mississippi have not adopted any significant regulations related to hardening or resiliency. There are no major regulations on these topics in these three states, but the Louisiana Commission did pass some resiliency requirements through Commission Orders. In 1992, the commission issued an Order requiring electric utilities to submit emergency response plans annually.[114] The Order requires that utilities report on "their plans for continuation and restoration of service in the event of generation failure and restoration of service where inclement weather or natural disaster has caused disruption. These plans shall include specific and detailed information as to how the plan shall be carried out."[115] While the Order requires that plans are revised, as needed, annually and are reviewed by the commission, an extensive search did not reveal any public hearings or Orders by the commission following up on this original Order.[116] Thus, it is difficult to determine what action is actually being taken within the commission to review these plans, if any.

In 2008, in response to Hurricane Gustav, the Louisiana Commission opened a rulemaking docket to discuss the costs and benefits of "potential methods to decrease the vulnerability of electric utility distribution infrastructure in response to severe weather events."[117] The docket discussion was focused primarily on the costs and benefits of undergrounding distribution facilities and hardening the infrastructure through distribution pole replacement.[118] The assessment seems to have been primarily based on utility feedback to certain questions related to those two areas.[119] The commission Staff ultimately advised the commission against passing any

[112] *See generally* TEXAS PUBLIC UTILITY COMMISSION, Texas Energy Assurance Plan (Nov. 2012), *available at* http://www.puc.texas.gov/industry/electric/reports/energy_assurance/Energy_Assurance_Plan-Texas.pdf.
[113] *See* TEXAS PUBLIC UTILITY COMMISSION, Electric Projects, *available at* https://www.puc.texas.gov/industry/projects/electric/ElectricProjectIndex.aspx. (See, for example, Project #38257 "Project to Investigate Best Practices in Vegetation Management for Utilities")
[114] *See* LA PSC General Order (Nov. 16, 1992), 1992 WL 609478 (La. P.S.C.).
[115] *Id.*
[116] The search included a full text search for "Emergency Service Plan" and related terms on two legal databases and the online docket and order searches available through the Louisiana Public Service Commission website.
[117] *See* LA PSC Docket No. R-30821.
[118] *See id.*
[119] *See id.*

state-wide mandates, stating that any mandates would not be cost-effective. The Staff advised that it was best to allow utilities the flexibility to develop their own plans.[120]

In 2012, the Louisiana Commission adopted a regulation requiring utilities to file Integrated Resource Plans detailing their five-year resource planning efforts.[121] This regulation includes a requirement that utilities provide information on projects and planning related to reliability of their infrastructures generally. Reliability projects would theoretically include resiliency or hardening plans but this is not specifically required.

As discussed above, the Louisiana Commission's public records indicate that the commission has not taken any significant regulatory action related to hardening or resiliency, yet the commission's Five-Year Strategic Plans from both 2010 and 2013 (filed as required by the state), include several descriptions of various emergency response planning activities that serve to advance the Louisiana State Outcome Goal of Hurricane Protection and Emergency Preparedness.[122] The commission states that its oversight "involves the filing of electric utilities of annual Emergency Service Plans with the PSC; performance under the State Plan; response coordination and resource allocation following disasters; and docketed audits of utility planning and performance following a disaster."[123] It also states that its Office of General Counsel "conducts investigations, hearings, and rulemakings" to determine whether utilities are prepared for storm response "consistent with best practices of the industry."[124] However, there are no easily accessible public records to verify these statements. There seems to be a discrepancy between these commission statements and its public records.

One interesting aspect about Louisiana's regulatory system is its divided approach to the supervision of its electric utilities. It is the New Orleans City Council, not the Louisiana Public Service Commission, which has general regulatory authority over electric utilities providing services within its jurisdiction.[125] Thus, the City of New Orleans normally has the power to regulate the rates and services provided within city limits by two electric utilities: Entergy New Orleans, Inc. and the portion of Entergy Louisiana, L.L.C. that is located in Orleans Parish.[126] The City Council has handled storm hardening and resiliency differently than the commission. For example, the City Council has conducted storm investigations on numerous occasions, reviewing Entergy's storm preparation and response. In February of 2013, Entergy filed an extensive report, for review by the Council, summarizing its resiliency and hardening actions

[120] *See* LA PSC Docket No. R-30821, Report by Staff dated January 28, 2009.
[121] *See* LA PSC Corrected General Order, Docket No. R-30021.
[122] *See* Strategic Plan of the Louisiana Public Service Commission (FY 2014-2015 through FY 2018-2019), Louisiana Public Service Commission (June 2013); Strategic Plan of the Louisiana Public Service Commission (FY 2011-2012 through FY 2015-2016), Louisiana Public Service Commission (July 2010).
[123] *Id.*
[124] *Id.*
[125] This long-standing authority in Louisiana is derived from the Louisiana Constitution's grant of home rule. *See* LA. CONST. art 6, § 4; *see also* State v. City of New Orleans, 91 So. 533 (La. 1922).
[126] *See generally* CITY OF NEW ORLEANS UTILITY COMMITTEE, *available at* http://www.nolacitycouncil.com/committees/committee_utility.asp; *see also* ENTERGY NEW ORLEANS, About Us, *available at* http://www.entergy-neworleans.com/about_entergy/default.aspx.

taken after Hurricane Isaac as required by recently-adopted City Council's Resolutions.[127] This survey does not include a full summary of New Orleans regulations related to resiliency and hardening but references some actions taken by the City Council as a useful comparison to actions taken (or not taken) by the Louisiana Public Service commission.

As with Louisiana, Alabama also has no major regulations related to hardening and resiliency. The Alabama Commission only regulates one investor-owned utility: Alabama Power. Certain government documents refer to an emergency plan that the commission apparently requires the utility to have on file: the State of Alabama's Emergency Operations Manual notes that Alabama Power's emergency plan is on file with the commission. However, there is no reference to this plan on the Alabama Commission's website or in any Commission Order within its archives. In addition, a search of AL PSC's Orders resulted in zero findings for any AL PSC Order using the terms "storm hardening" or "storm response."[128]

The Alabama Commission (along with Mississippi) requires some resiliency action from its electric utility as a result of its automatic adoption of the national standards set by National Electric Safety Code (NESC), which includes some requirements related to vegetation management.[129] The Alabama Commission also requires that Alabama Power keep records related to service interruptions, including analysis of causes to determine prevention. However, Alabama's requirements on this matter are the same as federal standards set by the Federal Energy Regulatory Commission (FERC).[130]

It is important to note that Alabama has not had a public rate case in over 30 years. The Alabama Commission allows Alabama Power to adjust its charges each year without any public evidentiary hearing.[131] While Louisiana and Mississippi use a similar rate-setting mechanism, Alabama is especially worrisome because it does not offer the public any meaningful way to participate in rate cases.[132] This may be part of the reason why extensive research on hardening and resiliency in Alabama did not result in much success.

Research on the last state of the Survey, Mississippi, also did not reveal any significant requirements in place regarding storm resiliency or hardening measures. Its most significant period of action related to hardening and resiliency, at least action which is supported by public records, occurred after the 2006 hurricane season. The Mississippi Commission spent a significant amount of time reviewing the adequacy of the utilities' responses to the 2005 hurricanes, their storm recoveries, and related costs. However, this process did not evolve into a

[127] *See* Entergy Hurricane Isaac Report filed Feb. 6, 2013 in NO Council Docket No. UD-12-04; *see also* Council of the City of New Orleans Resolution Nos. R-12-332 and R-12-426

[128] The search, conducted on two legal databases, also included attempts to find similar terms such as "disaster preparedness" and "mitigation" as well as specific program terms such as "pole inspection" and "vegetation management."

[129] *See* ALA. ADMIN. CODE R 770-X-3-.01 (2013).

[130] *See* ALA. ADMIN. CODE R. 770-X-3-.16 (2013).

[131] This occurs through the use of what is called Rate Stabilization and Equalization Mechanism.

[132] *See generally* David Schlissel & Anna Sommer, *Public Utility Regulation Without the Public: The Alabama Public Service Commission and Alabama Power* (The Institute for Energy Economics & Financial Analysis 2013).

permanent regulatory fixture. Currently, there are some procedures through which the commission reviews utility action in these areas, but they are only related to cost-recovery, as discussed in the next section. Several commission documents reference some type of continuing review process for analyzing electric utilities' emergency response plans or reliability actions, and some documents filed with the commission even offer details on those plans.[133] However, these plans do not seem to be reviewed in a public setting, nor are they easily accessible through the commission's public records. As with Alabama and Louisiana, whatever review process the commission may currently conduct seems to be done primarily behind closed doors, making it difficult to determine how thorough it approaches utility action related to resiliency and hardening.

[133] *See, e.g.* MS PSC Order 2012UA358 (August 2013), which mentions storm-hardening projects; MS PSC Docket No. 2005-UA-0555; *see also* MS PSC Order (Dec. 13, 2002), Docket No. 02-UN-0526.

**B. Cost-Recovery Mechanisms Used by State Commissions**

All of the commissions have required or allowed some use of cost-recovery mechanisms related to post-storm recovery costs. For example, all state commissions included in this Survey utilize storm reserve accounts in some manner. Some commissions also allow (but do not require) utilities to use their storm reserve funds to invest in reliability-related projects. Some commissions, however, have gotten more creative with their use of such mechanisms. Florida, for example, has implemented certain cost-recovery mechanisms to ease the financial barrier for customers concerning undergrounding new facilities.

This section explores the various uses of cost-recovery mechanisms by commissions in the five states surveyed.

| States | Cost-Recovery Mechanisms |
|---|---|
| **Alabama** | • Storm Reserve Account, with cost-recovery allowed through rider.[134] |
| **Florida** | • Storm hardening-related costs are approved through hardening report process. Costs are recovered through a related tariff filing.[135]<br>• In 2005, FL Legislature passed FL. Stat. Ann. §366.8260 on storm recovery financing. Storm recovery charge, storm reserve account and issue to finance with storm-recovery bonds.[136]<br>• FL PSC amended §25-6.0143 to allow utilities to establish storm reserve accounts, and allow utilities to petition to recover costs through "a surcharge, securitization, or other cost-recovery mechanism."[137] |
| **Louisiana** | • 2007: Legislature passed the Louisiana Utilities Restoration Corporation Act, creating nonprofit to issue bonds for storm restoration costs. LUPC issued financing orders authorizing the LURC to borrow the proceeds of system |

[134] *See* AL PSC Docket No. U-2556.
[135] *See* FLA. ADMIN. CODE R. 25-6.064 (Contribution-in-Aid-of-Construction (CIAC))
[136] *See* FL. STAT. ANN. §366.8260.
[137] *See* FLA. ADMIN. CODE R. 25-6.0143.

| | |
|---|---|
| | restoration bonds. LURC also required utilities to file an annual report with LUPC.[138]<br>• Storm Reserve accounts.[139] |
| **Mississippi** | • State legislature passed 2006 Hurricane Katrina Electric Utility Customer Relief and Electric Utility System Restoration Act authorized commission to approve issuance of securitized storm bonds.[140]<br>• Storm Reserve Accounts.[141] |
| **Texas** | • 2009: S.B. 769 provides for securitization methods for storm recovery costs.[142]<br>• 2011: Implemented the use of a rate adjustment mechanism for reliability-related costs through TX PUC §25.243.[143] |

Florida and Texas

This section again begins with a summary of actions taken by Florida and Texas. In Florida, the commission has adopted a general regulation regarding storm-recovery costs. This regulation is much more detailed than those of other states. The regulation includes examples of what specific types of costs electric utilities can be expected to recover from the storm reserve account and what costs are not acceptable to charge to the account.[144] Florida has also separated its cost review and cost-recovery mechanisms related to storm hardening and storm recovery. Storm hardening costs are reviewed separately from other costs, as part of the storm hardening report review, and those approved costs are recovered through a tariff. In contrast, costs related to storm recovery are recovered through funds in the utility's storm reserve account.[145]

The Florida Commission has also taken an interesting approach to cost-recovery related to undergrounding. Prior to 2006, customers who requested underground facilities were responsible for the cost difference comparable to the cost of an overhead facility, implemented through a Contribution-in-Aid-of-Construction (CIAC) tariff.[146] This approach is similar to the other Gulf

[138] *See* LA RS §45:1311.
[139] *See* LA PSC Docket Nos. U-29203- B, - C and –D (2007).
[140] *See* H.B. 1498, 2006 Regular Session (Mississippi).
[141] *See, e.g.* MS PSC Docket No. 2010-UN-436.
[142] *See* S.B. 769, 83rd Tex. Legis. (2013).
[143] *See* S.B. 1693, 81st Tex. Legis. (2011); *see also* 16 TAC §25.243.
[144] *See* FLA. ADMIN. CODE R. 25-6.0143
[145] *Id.*
[146] *See* FLORIDA PUBLIC SERVICE COMMISSION, 2007 Storm Hardening Report to Legislature.

States surveyed. This was a significant deterrence for customers due to the high up-front costs. In 2006, the commission reduced this barrier for customers significantly. The commission implemented new requirements, which mandated that utilities do a more extensive comparable cost analysis in determining the CIAC, which also needed to include long-term operating costs and benefits (reducing the difference due to undergrounding's long-term benefits). Additionally, the commission allowed for the costs to be allocated among a more widespread basis of customers if there proved to be quantifiable benefits for more than just the immediate customers. The commission endorses spreading the costs over time instead of requiring the investment from customers upfront.[147]

Texas has also taken advantage of several cost-recovery mechanisms in this area. As with all of the states surveyed, the Texas Utility Commission's use of cost-recovery mechanisms originated through state legislation. In 2009, the Texas legislature amended the Utilities Code, adding Tex. Util. Code Ann. §36.401, which allowed for a more timely recovery of system restoration costs and the use of securitization financing to recover these costs.

Like Florida, the Texas Commission has also largely separated the review process for cost recovery associated with storm hardening. In 2011, the Texas Commission adopted §25.243, which approved the use of a Distribution and Transmission Cost Recovery Factor (DCRF).[148] The DCRF provided utilities with a more efficient and timely recovery for certain investments as utilities were allowed to make up to four requests in between rate cases to recover costs regarding prudent storm restoration and hardening investments.[149] The commission again adopted this rule in response to Texas legislation.[150]

Alabama, Louisiana, and Mississippi

All of the state commissions of this Survey require or allow the use of storm reserve accounts. While the Texas Commission, interestingly, has not adopted a specific regulation requiring storm reserve accounts, the commission has authorized storm reserve accounts for all electric utilities when the utilities requested such accounts in various rate cases.

Unlike Florida and Texas, the other three states in this Survey do not separate the review process for costs related to storm hardening or resiliency from costs related to storm recovery. The Mississippi Commission allows electric utilities to use their storm reserve funds for both storm restoration costs as well as storm preparation.[151] Additionally, in response to the devastation caused by Hurricane Katrina, the Mississippi state legislature passed the 2006 Hurricane Katrina

[147] *See* FLORIDA PUBLIC SERVICE COMMISSION, 2007 Storm Hardening Report to Legislature; *see also* FL PSC Docket Nos. 060172-EU and 060173-EU.
[148] *See* 16 TAC §25.243.
[149] *Id.*
[150] *See* S.B. 1693, 81st Tex. Legislature (2011).
[151] The Mississippi PSC noted in its June 28, 2006 Order approving the issuance of storm bonds for Entergy Mississippi Inc.'s storm restoration costs that, "typically, the *preparation* and storm restoration costs" related to natural disasters are charged against the storm reserve. MS PSC Order No. EC-123-0082-00 (emphasis added).

Electric Utility Customer Relief and Electric Utility System Restoration Act.[152] The purpose of this Act was to enable the commission to authorize financing orders in which the state would issue storm bonds to a utility. These bonds would be used to securitize a utility's system restoration costs and storm damage reserve levels.[153] The Act specified that such costs would be recovered through a system restoration charge in addition to customers' base rate.[154] The Act also required that utilities submit detailed and timely reports to the commission, outlining what system restoration activities occurred. The system restoration charge must also be reviewed at least annually by the commission in order to adjust it accordingly.[155]

Alabama is the only state included in the Survey that does not utilize securitization as a tool for cost recovery. However, the Alabama Public Utility Commission does make use of other cost-recovery mechanisms for storm-related costs. The commission allows Alabama Power to use funds from its Natural Disaster Reserve on reliability-related expenditures if the balance of the Reserve exceeds $75 million.[156] In 2010, the commission further authorized Alabama Power to "make discretionary accruals to the Reserve above the existing authorized limit and to include reliability related expenditures among the category of costs that can be charged against the Reserve."[157] Alabama Power had proactively requested that it be allowed the discretion to increase the balance above $75 million, and any such increases "will enhance the Company's ability to deal with the financial effects of future natural disasters (both after the fact as well as through proactive measures), promote system reliability, and offset costs that retail customers would otherwise bear."[158] The commission's 2012 Annual Report stated that the NDR had over $100 million at that point.[159]

Louisiana's approach to cost-recovery mechanisms is similar to that of Mississippi. The Louisiana Commission did make an interesting regulatory move in 2013 when it established a new docket in order to analyze whether it should implement methods for adjusting the calculation for the authorized rates of return for electric utilities according to each utility's respective compliance with standards for reliability of service and disaster preparedness and response.[160] However, this debate is ongoing and no new rate adjustment methods have resulted from this docket as of yet.

[152] *See generally* H.B. 1498, 2006 Session (Mississippi).
[153] *Id.* at §2.
[154] HB 1498
[155] HB 1498, §4(d)
[156] Natural Disaster Reserve account approved for Alabama Power in 1994 and approved NDR rider in 2005 (Docket U-3556) to increase amount in reserve from $32 to $75 mil
[157] See ALABAMA PUBLIC SERVICE COMMISSION, 2011 Report to Legislature. *See also* AL PSC Order (Aug. 20, 2010), Docket U-3556.
[158] See AL Power Request, AL PSC Docket U-3556.
[159] *See* ALABAMA PUBLIC SERVICE COMMISSION, 2012 Report to Legislature.
[160] *See* LA PSC, Docket R-32757.

## C. Utility Response

This Survey also reveals interesting differences in utility action taken in response to each state's actions (or lack thereof) regarding storm resiliency and storm hardening. This Section summarizes those actions using a state-by-state analysis approach.

Florida

Utilities have traditionally responded to the Florida Commission's actions quite quickly. After the Florida commission implemented its hardening requirements in 2007, the amount of money electric utilities in Florida invested on new projects related to these requirements jumped from $47,949.95 in 2006 to $491,454.50 in 2007.[161] The total amount in 2008 went down significantly to $113,286.68, but it was still over twice the amount invested in 2006 before the storm hardening requirements were implemented.[162]

Recent presentations by Florida electric utilities reveal that utilities are still taking action related to resiliency and hardening efforts five years after the original hardening reports were filed. The Florida Commission recently conducted its eighth annual hurricane preparedness briefing on April 3, 2013.[163] All Florida utilities gave detailed presentations on both completed and ongoing projects related to preparing for the 2013 hurricane season. All presentations are available to access online through the commission's website.[164] The presentations generally reflected detailed resiliency planning by all major investor-owned utilities, including the use of training drills, mutual assistance groups, and contracting for additional supplies during a natural disaster.[165] The presentations also included short descriptions of continued hardening efforts, such as expansion of vegetation management programs and pole inspection programs.[166]

In addition to participation in the annual Hurricane Preparedness Workshop, all major utilities recently submitted their 2013 storm hardening reports. The 2013 reports reveal that many Florida utilities are mainly focusing on the continuation of their existing hardening programs as opposed to the initiation of new projects.[167] The costs section of the report reflects that some utilities are continuing to invest extensively while others are tapering off their investments.[168] For example, Florida Power & Light ("FPL") has invested nearly $460 million in storm hardening projects during the period of 2007-2013, but it continues to make significant investments. On May 2, 2013, FPL announced a three-year plan to further harden its facilities, including extensive improvements to its power lines and associated equipment. Overall, FPL plans to invest approximately $500 million between 2013 and 2015. In contrast, Gulf Power's

[161] *See* Project Billings through April 2008 from Public Utility Research Center
[162] *Id.*
[163] *See generally* http://www.psc.state.fl.us/utilities/electricgas/stormworkshops/default.aspx
[164] *Id.*
[165] *Id.*
[166] *Id.*
[167] *See generally* FL PSC Docket Nos. 130129-EI, 130132-EI, 130139-EI.
[168] For example, Florida Power & Light is investing significantly more in 2013 than it did in 2010-2012. *See* FL PSC Order No. PSC-13-0639-PAA-EI (Dec. 3, 2013).

2013-2015 projected costs were a significant reduction from its 2010-2012 costs.[169] However, while Gulf Power has reduced its storm hardening investments, it did propose three smart grid initiatives for 2013 that are related to hardening and resiliency.[170] The Florida Public Service Commission approved all 2013 plans filed.[171]

While the importance of the Florida Commission's leadership in resiliency and hardening efforts within the Gulf States should not be understated, it is worth discussing the possibility that the high standards of approval the commission originally required of electric utilities in their original 2007 reports may not be at the same level today. A comparison of the storm hardening plan and Commission review process of FPL's 2007, 2010, and 2013 plans shows an example of this possibility. The Company's 2007 plan was 227 pages long, its 2010 plan was 171 pages long, and its 2013 plan was 142 pages long.[172] In 2007, the review process was the most extensive (but note that may very likely be attributable to the fact that this was the first year this type of report was required). The major event within the commission's extensive 2007 review was a two-day workshop/public hearing held in Tallahassee. The transcript for this hearing, which reviewed the plans for the five Investor Owned Utilities (IOUs) in Florida, totaled 626 pages.[173] This was followed by an individualized approval process for each utility. In 2010, the commission review process for the five IOUs also included a public workshop, involving presentations from a representative of each utility. The transcript from the one-day workshop totaled 149 pages.[174] Each utility's plan was then individually discussed and recommended by Commission staff and voted upon by the commissioners.[175] In contrast, the docket for the review and approval process for FPL's most recent storm hardening plan contains no transcript from any type of review hearing similar to the 2007 and 2010 public workshops. It merely contains one major review document consisting of a brief summary of any updates IOUs made to their plans and the commission staff's recommendation for approval of the plans for all five utilities.[176] There could be several reasons for this change, but the difference is worth noting.

Utilities have proven to be very receptive to Florida's creative approach to cost recovery related to undergrounding. Shortly after the Contribution-in-Aid-of-Construction (CIAC) revisions were implemented, two major electric utilities (FPL and Gulf Power Company, a subsidiary of Southern Company) filed updated rates for the construction of facilities underground,

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[169] *See* FL PSC Order No. PSC-13-0641-PAA-EI (Dec. 3, 2013)

[170] Gulf Power's proposed initiatives: continuation of installing additional distribution automation devices on distribution feeders for outage restoration; continued installation of automatic overhead faulted circuit indicators. Doing this would reduce customer outage time. Gulf will also install faulted circuit indicators at 14 locations per year; continuation of implementation of systems and applications that would permit the remote control of distribution line devices such as reclosers and switches and the acquisition of operational data, in order to reduce customer outage times. *See* FLORIDA PUBLIC SERVICE COMMISSION, Order No. PSC-13-0641-PAA-E1 (Dec. 3, 2013).

[171] *See, e.g.* FL PSC Order Nos. PSC-13-0639-PAA-EI (Dec. 3, 2013) and PSC-13-0641-PAA-E1 (Dec. 3, 2013).

[172] *See* FL PSC, Doc. No. 03831-07, Docket No. 07031; Doc. No. 03687-10, Docket No. 100266; Doc. No. 02408-13, Docket No. 130132.

[173] *See* FL PSC, Doc Nos. 09527-07, 09528-07, 09529-07, 09530-27, Docket No. 070301.

[174] *See* FL PSC, Doc. No. 05243-10, Docket No. 100266.

[175] *See* FL PSC, Order No. PSC-07-1023-FOF-EI

[176] *See* FL PSC Doc. No. 06689-13, Docket No. 130132

implementing updated cost-differentiation calculations as authorized by the commission's revision .[177] Shortly after the revision, the Florida Commission also reported that it had approved updated tariffs for two electric utilities, including FPL, which allowed customers to pay the CIAC over an extended period of time rather than an immediate, upfront payment.[178]

Texas

In Texas, electric utilities have proven less receptive to the reporting requirements adopted by the commission. Large electric utilities like Entergy Texas, Inc. have not responded with as much detail to the commission's new reporting requirements as they have in Florida reports. For example, Entergy Texas Inc.'s 2012 report is a five-page document with many sections simply stating that no implementation of that particular initiative is required and requesting the reader to refer to its §25.94 storm preparation report for other updates.[179] However, the report did indicate that initiatives regarding pole construction standards and damage outage prediction models were implemented and completed by Entergy in 2011 (though no details are given about those completed programs).[180] Many of Entergy's reports on storm preparation and hardening list respectable goals and actions on the utility's part, but only vague information is provided.[181] The phrase "it has a plan in place" is used numerous times. Also, while some numbers are included in the reports, many sections do not offer specific numbers, costs, or any sort of specified timeline. Also, vegetation management is a big focus of the report while the other sections get much less discussion. While the 2012 §25.94 reports provide significant details about the utilities' resiliency measures, data in these reports on storm hardening activities of Texas electric utilities leave something to be desired, especially considering the next cycle of reports will not be filed until 2016.[182]

Texas utilities have been very responsive to all cost-recovery mechanisms implemented by the state legislature and the commission, especially securitized funding. In 2009, the commission approved several requests, including one by Entergy, to securitize hundreds of millions of dollars in Hurricane Ike restoration costs.[183]

Alabama, Louisiana, and Mississippi

In contrast to Florida and Texas, it is less clear what specific actions utilities are taking in the states that do not require detailed reporting on this subject, but the little information found on

[177] *See* FL PSC, Docket No. 070231-EI and Docket No. 070242-EI
[178] See FLORIDA PUBLIC SERVICE COMMISSION, Storm Hardening Report to Legislature 32 (2007).
[179] *See* "Entergy Texas Inc. Storm Hardening Plan Summary 2011-2016", Project No. 39339 (May 1, 2012).
[180] *See id.*
[181] *See* Entergy Texas Inc. 2011 §25.94 and §25.95 Reports.
[182] *See* 16 TAC §25.95.
[183] For example, in August 2009, Centerpoint Energy received approval from the Texas Utility Commission to securitize approximately $655 million of Hurricane Ike restoration costs. *See generally* Texas Public Utility Commission Docket, Case 37200. In September 2009, Entergy received approval from TX PUC to securitize about $539.8 million of restoration costs. *See generally* Texas Public Utility Commission Docket, Case 37247.

this subject in these states does suggest that utilities are implementing some proactive programs to harden their systems, despite a lack of regulatory requirements. However, actions taken by utilities vary widely.

Research on utility response in Alabama resulted in very little information on this topic. Alabama Power offers little information on its resiliency and hardening actions. Reports on Alabama Power's Storm Center website indicate that it has implemented some resiliency measures, but minimal details are offered.[184] As discussed in the previous section, Alabama Power proactively requested authority from the commission to use its discretion to accrue funds in excess of $75 million in its Natural Disaster Reserve Fund in order to invest in reliability-related projects. In 2011 and 2012, Alabama Power incurred at least $62.3 million in expenses related to storm recovery that was charged to the Natural Disaster Reserve Fund according to the commission's Annual Reports to the Legislature.[185] In 2012, the commission reported that Alabama Power has over $100 million remaining in its reserve fund.[186] A document search in the AL PSC docket does not reveal significant details about what, if anything, Alabama Power is doing with the funds in excess of $75 million.

While the Mississippi Commission does not require specific resiliency or hardening measures to be reported or implemented, Entergy has a "comprehensive plan for disaster" which was described in detail in its 2006 request for recovery of its storm costs. This plan included "maintenance of pre-arranged contracts with logistic vendors, line construction and other contractors; and maintenance of pre-arranged agreements for materials, fuels and equipment. The plan also defines the priority for repairing electric facilities based on the need to establish stability to the electric system and to restore service to critical customers such as hospitals, emergency responders and water systems."[187] Furthermore, in August 2013, Entergy Mississippi was allowed to adjust its Formula Rate Plan for the first time since 2009 in order to recover costs associated with "improvements in infrastructure and reliability."[188] This included adding or upgrading substations and their equipment as well as over 150 miles of transmission lines. In 2013, Entergy Mississippi announced its plan to spend $83 million on further reliability improvements and $13 million on vegetation management.[189]

Mississippi Power, the other major electric utility within Mississippi's jurisdiction, has taken a different approach than Entergy Mississippi. In its 2006 storm recovery request, in addition to requesting recovery for its costs related to storm recovery, it went beyond mere storm recovery and made a request to build a new Storm Center, which would move all of its most critical operating functions to a location much further away from the coastline.[190] The commission

[184] *See generally* ALABAMA POWER, Storm Center News Center, *available at* http://alabamapowernews.com/storm-center/
[185] *See* ALABAMA PUBLIC SERVICE COMMISSION, Annual Reports for Fiscal Years 2011 and 2012.
[186] *Id.*
[187] *See* MS PSC Order No. EC-123-0082-00 (Dec. 20, 2005).
[188] *See* Entergy MS News Release (August 13, 2013), available *at* http://www.entergy.com/news_room/newsrelease.aspx?NR_ID=2765.
[189] *Id.*
[190] *See* MS PSC Docket No. 2006-UA-82

approved this request, and Mississippi Power has since completed the Storm Center. The Center is protected by a 200-mph hurricane-rated enclosure.

As authorized by the 2006 Act passed by the Mississippi State Legislature, the commission issued Orders in response to these two recovery requests, allowing both utilities to obtain securitized "storm bonds" as a method of recovering their costs that had not already been recovered through other methods.[191]

Review of utility response in Louisiana is limited to one utility: Entergy. Entergy is the only major investor owned utility in Louisiana. The company has proactively taken some very basic steps regarding resiliency and hardening within the state. For example, while the Louisiana Commission has not officially adopted the National Electrical Safety Code (NESC), Entergy proactively uses the NESC in evaluating its operations.

Entergy's response to action taken by the New Orleans City Council provides additional information for this Survey. Entergy's report in response to the City Council of New Orleans' storm investigation and request for details on the utility's post-Katrina hardening actions also provides some additional information about the utility's primary actions related to resiliency and hardening: the development of more aggressive vegetation management and pole inspection programs.[192] The report generally emphasizes restoration and resiliency over hardening. When it discusses hardening efforts, it primarily seems to be using the NESC as its guide. The report is also helpful in its description of Entergy's reasoning for not implementing various hardening projects, mainly emphasizing the results of a cost-benefit analysis. The report addressed its views on the primary barriers to undergrounding and its efforts to harden new substations and identify and elevate critical substations. One point worth noting is that it is apparent from its report that Entergy analyzed and relied upon several publicly-available regional resources in its preparation of the report, such as the Texas Quanta study, Entergy's own 2007 Hurricane Hardening Report submitted to the Texas Utility Commission, and reports on action taken by other major utilities in this area like Florida Power & Light.

[191] *See* MS PSC Order EC-123-0082-00 (June 28, 2006); MS PSC Order EC-120-00097-00 (Oct. 21, 2005).
[192] *See* CNO Docket No. UD-12-04 (Entergy Filing dated February 6, 2013).

## III. Analysis and Recommendations

The results of this Survey demonstrate that state commissions have a powerful influence on the actions of utilities related to storm resiliency and storm hardening. The Survey has revealed some common themes that establish that certain commission actions can successfully incentivize efficient utility action related to storm hardening and resiliency.

First, as seen in Florida and Texas especially, it is clear that legislative action has spurred much of the regulatory action taken by Commissions regarding hardening and resiliency. While Commissions have authority to regulate rates, state legislatures should not sit idly by if Commissions are not taking proper action. Legislative action, while one step removed, has proven to spur quick commission and subsequent utility action on the matter at hand.

Another takeaway is the significant positive influence that localized vulnerability assessments can have on regulatory policy decisions. Localized vulnerability assessments guided the rulemaking process in Florida, and this guidance resulted in a more detailed, efficient approach to resiliency and hardening as compared to the other states. Commissions need to take action to ensure that its regulatory decisions are always informed and shaped by local needs. Furthermore, commissions are better able to organize a comprehensive and unified assessment than other stakeholders, either through their own funding or through regulations requiring utility action.

Reporting in itself seems to induce positive behavior. This may be because reporting requirements are serving to hold electric utilities publicly accountable to their statements, and also providing more data to both the commission and electric utilities on where there may be weaknesses to address or what programs are successful, etc. The contrast between Louisiana and New Orleans serves to demonstrate that point. The public hearing following Hurricane Isaac allowed Entergy the opportunity to publicly provide succinct, clear reasoning for why it has taken some actions over others. It also provides the Council the opportunity to review those actions and decide whether that is the best course of action going forward. Entergy New Orleans filed a report, as required by the City Council of New Orleans' newly-enacted resolutions,[193] in February of 2013 summarizing its response to Hurricane Isaac as well as general "storm recovery matters." However, interestingly, the report also addressed several reasons why Entergy was *not* implementing certain programs: Entergy described the various costly barriers that preventing the company from undergrounding facilities.[194] Entergy also discussed its goals to continue its ongoing efforts to harden new substations and identify and elevate critical substations in a cost-effective manner.[195] The report provided much more than simply information on the company's activities. It provided an effective way to figure out why the company was taking some actions over others and where the company wanted to go in the future. This is also incredibly useful information for state commissions and electric utilities alike, underlining the importance of reporting requirements.

[193] *See* City Council of New Orleans, Resolutions R-12-332 and R-12-426 (Sept. 6, 2012).
[194] *Id.*
[195] *Id.*

While reporting requirements are only the first step, it is clear from the results of this Survey that they are an important part of the process in order to not only ensure accountability but also ensure that information is available for electric utilities and state commissions to learn from others in the same region. The absence of reporting requirements seems to be a serious barrier to efficient information-gathering and comparative analysis for the public as well as commissions and electric utilities. Storm hardening especially is a somewhat uncertain science. While certain actions are predicted to save costs, it is important to know how certain actions pay off in the future. This cannot be efficiently determined without common reporting requirements throughout the states and easy access to this information.

As seen in the different reporting responses by Texas utilities as compared to Florida utilities, utilities do not seem to have the proper incentive to ensure reporting is detailed and adequate without a review and approval process (or in other words, without a synthesis of reporting and action requirements). Florida's comparative success in the areas of resiliency and hardening may also have to do with its review and approval process. The commission takes a much more hands-on approach than all other states surveyed through its inclusion of an extensive approval process. Even though the approval process has seemingly become a bit less stringent during the most recent review, it still requires utilities to meet minimum requirements that they then must report in detail to the commission. Texas, in contrast, does not have as extensive of an approval process. The more minimal utility response in Texas shows that when Commissions emphasize that standards are not required and vigorously upheld, electric utilities may not be properly incentivized to meet those performance standards.

The commission has a unique ability to bring together several different stakeholders to create a public discussion on these important issues, as seen in Florida and Texas. Involving all stakeholders requires that the regulatory process is much more transparent than the regulatory scheme used in Alabama, Louisiana, and Mississippi. Many of the state commissions have neglected to pass very basic, simple reporting requirements for both resiliency measures and storm hardening. The lack of reporting requirements doesn't necessarily mean that commissions are not getting information regarding action within these areas from the utilities in other ways, such as base rate hearings. However, it has led to a worrisome absence of information easily accessible by the public and most likely other electric utilities and state commissions within the region. For example, the closed-door process in Alabama has resulted in a lack of public review and knowledge of Alabama Power's activities. This lack of publicly available information raises some serious questions about the overall regulatory process in that state as well as Alabama Power's preparedness for the storms of tomorrow. This closed-door process can be contrasted against Florida's much more transparent, collaborative process. Florida's approach has allowed utilities to learn from each other and also work together to achieve the most optimal hardening and resiliency in the most efficient manner. Collaborative processes allow for the pooling of resources to gather information that is much more difficult for utilities to obtain on their own. It also avoids the any duplication in order to ensure two utilities are not spending money on the same research. Finally, it allows for a significant feedback loop in which other utilities, major research centers, government bodies like the commission, and the public may help to improve upon existing plans and actions. In short, it allows for input from many different stakeholders.

In contrast to the comprehensive approach organized through the Florida Commission's initiative, allowing utilities to take the lead with resiliency and hardening actions seems to result in highly fragmented approaches. For example, Entergy Mississippi and Mississippi Power took extremely different approaches to storm financing in response to state legislation allowing storm securitization. Mississippi Power went much further in initiating proposals, to which the commission has proven receptive. However, Entergy has not done so to the same extent, and because Mississippi's overall legislative and regulatory scheme requires utilities to take the first step, there has simply been no action where there could have been if the commission initiated it. Without more Commission direction, utilities may not be taking the most appropriate level of action or may not be taking the most cost-effective actions.

While there tends to be a lot of government and public focus on hardening and resiliency immediately following severe storm events, the relative success of Florida's approach emphasizes that resiliency and hardening needs to be a topic of public discussion at all times, not just after storms, as they require a multi-step process and long-term commitments from many different stakeholders. Thus, Commissions and utilities need to break the cycle of post-storm reaction and instead approach resiliency and hardening as a constant, pre and post-storm process, involving all stakeholders.

Turning to cost-recovery mechanisms, Texas and Florida have also separated storm hardening procedures and reports from the rest of the utility ratemaking process. This has allowed for what appears to be a more predictable, transparent process. Florida's approach also exemplifies the predictability that comes along with extensive details. Both the public as well as the utilities know what to expect BEFORE they take action. This predictability encourages more action just as unpredictability encourages inaction.

The results of this Survey clearly show that cost-recovery mechanisms are an extremely effective tool to use to induce utility action. For example, Mississippi's implementation of certain cost-recovery mechanisms after the 2005 Hurricane system seemed to positively influence utilities to invest more in hardening and resiliency as there were fewer damaged poles, transmission lines, and transformers overall after the 2008 hurricane season. Furthermore, there were fewer power outages during that season as well.[196] Furthermore, as exemplified by Florida's use of certain cost-recovery mechanisms to encourage undergrounding, Commissions should extend their use of cost-recovery mechanisms to include use of such mechanisms to encourage certain pre-storm hardening actions as well. Mechanisms should not just be used as a post-storm recovery tool as they can successfully incentivize efficient utility action in storm preparation and hardening as well.

[196] *See generally* OFFICE OF ELECTRICITY DELIVERY AND ENERGY RELIABILITY, U.S. DEP'T OF ENERGY, Comparing the Impacts of the 2005 and 2008 Hurricanes on U.S. Energy Infrastructure (Feb 2009).

## IV. Conclusion

While the five states face many of the same climate trend threats in the near future, the results of this Survey makes it clear that the regulatory commissions of each state are taking vastly different approaches in response to these threats. Each state commission researched has repeatedly acknowledged the high costs of storm damage and restoration, but few have taken proactive steps to ensure that electric utilities within their region are taking proper, cost-effective steps to prepare their infrastructures for tomorrow's storms. In fact, most of the state commissions researched have not even taken the significant first step of identifying and prioritizing localized vulnerabilities.

Commissions need to start taking a much more proactive approach in the important areas of storm resiliency and storm hardening. The results of this Survey suggest that a successful approach to incentivizing utility action is for state commissions to set specific, detailed goals for utilities in combination with a more aggressive approval process. Commissions also need to implement a review and approval process along with a predictable cost-recovery mechanism within these areas to help further incentivize action. Finally, Commissions also need to take charge to ensure that localized vulnerability assessments are used as a basis for taking action as it is clear from this state-by-state analysis that different utilities are taking vastly different approaches in these areas. This lack of uniformity reflects a need for more research as well as more use of the research that has already been done. With limited funds, it is very concerning that some utilities may be spending money on initiatives that are not the most cost-effective or most needed.

Ultimately, state commissions need to create and lead a more synthesized public discussion on the importance of taking efficient storm resiliency and storm hardening actions today. Recall that a search of Alabama Commission decisions reveals that it has not mentioned the term "storm hardening" once in any of its orders. While this does not necessarily mean that discussion between the commissions and electric utilities is not happening (though it *could* mean that), commissions in the majority of the states surveyed do not prioritize public access to the decision-making process surrounding the actions it takes or the actions by utilities that it reviews. This lack of transparency hinders the ability of all stakeholders, including electric utilities' themselves, to participate in a collaborative and comparative public dialogue on these important issues. This risks wasteful overlapping efforts as well as inefficient investment choices. It also may be indicative of a much larger trend of state commissions failing to sufficiently and publicly address and discuss the possible impacts of future climate change trends generally.

Commissions need to establish speedy and predictable cost-recovery mechanisms for storm resiliency measures and storm hardening. Separating the costs of storm resiliency measures and hardening from the general rate base hearing seems to positively influence utility action as demonstrated by actions taken in Florida and Texas.

In conclusion, this Survey attempts to clarify what commission action is working and what isn't. One issue has been made clear: the hardening and resiliency actions taken by electric utilities in the Gulf States today are not sufficient. This needs to change, and state commissions are the ones in the best position to incentivize such changes. This Survey shows that if state commissions

properly incentivize electric utilities through a combination of detailed reporting requirements, substantive action regulations, cost-recovery mechanisms, and continuous public dialogue, utilities will quickly and efficiently respond with much-needed action. Today's storms have already cost the nation billions. With the widespread prediction by several studies that the storms of tomorrow will be even worse than those of today, action is desperately needed.