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Re: Grid Resilience¹
Guidance for Enhancing Oil and Natural Gas Resilience²

Southern Company Services, Inc. (“SCS”), as agent for Alabama Power Company, Georgia Power Company, Mississippi Power Company, Southern Power Company, their other public utility affiliates, and their natural gas distribution affiliates (collectively, “Southern Companies”), appreciates this opportunity to provide these comments to the Department of Energy (“DOE”)’s Resiliency RFIs. As discussed herein, Southern Companies have a proven record of having established resilient utility infrastructure in the face of the severe weather

¹ *Codes, Standards, Specifications, and Other Guidance for Enhancing the Resilience of Electric Infrastructure Systems Against Severe Weather Events*, Notice of Request for Information, 84 F.R. 32,730 (July 9, 2019) (the “Electric Resilience RFI”)

² *Codes, Standards, Specifications, and Other Guidance for Enhancing the Resilience of Oil and Natural Gas Infrastructure Systems Against Severe Weather Events*, Notice of Request for Information, 84 F.R. 32,731 (July 9, 2019) (the “Oil and Gas Resilience RFI”) (collectively, the Electric Resilience RFI and Oil and Gas Resilience RFI referred herein as the “Resilience RFIs” or as the “RFIs”).

events that often characterize the Southeastern United States. Given their longstanding appreciation of the importance of resilience, Southern Companies strongly support DOE's efforts to facilitate the development of resilient infrastructure through the Resilience RFIs and other proceedings.

I. Background and Overview

DOE seeks information and comments under separate RFIs issued, for electric infrastructure and oil and natural gas infrastructure, respectfully, asking identical questions in each RFI. As Southern Companies comprise electric utilities and natural gas distribution affiliates, this single set of comments is offered in response to both RFIs.

Resiliency is largely a regional issue, especially when considered in the context of severe weather events. In this regard, the electric systems in the Southeast are characterized by vertically integrated, rate-based, jointly dispatched and physically firm electric systems that maintain a robust transmission system and a diverse and adequate generation fleet with fuel security,³ all of which support resilience. Indeed, Southern Companies have a proven history of resilience in response to severe weather, as demonstrated by their timely restoration of service following some of the most catastrophic weather events that have confronted this country.⁴ With

³ As used herein, fuel security is a reference to having sufficient firm transmission commitments and on-site storage so as to be able to continue reliable operations of rate-based generation for the electric system during foreseeable contingencies.

⁴ See, e.g., Dennis Cauchon, *The Little Company That Could*, USA TODAY (Oct. 10, 2005) (https://usatoday30.usatoday.com/money/companies/management/2005-10-09-mississippi-power-usat_x.htm) (discussing how Hurricane Katrina resulted in catastrophic damage to Mississippi Power's electric system, including the loss of electric service to all of its customers; nevertheless, Mississippi Power was able to restore service to all customers that could safely receive electric service in 12 days); see also *Hurricane Katrina: What Can Government Learn from the Private Sector's Response? Hearing Before the Senate Committee on Homeland Security and Governmental Affairs*, 109th Cong. (2005) (prepared testimony of David Ratcliffe, President and CEO, Southern Company explaining how Southern Companies were able to restore service in such an expeditious manner following Hurricane Katrina); see also Donna Cope, *From 'Armageddon' to Restoration After April 27, 2011 Tornadoes*, ALABAMA NEWSCENTER (Apr. 27, 2016) (<http://alabamane.wscenter.com/2016/04/27/armageddon-restoration->

the industry finding itself in transition and confronted with the potential loss of substantial amounts of baseload generation, resource diversity (in particular) has proven critical to ensuring reliability, economic security, and electric system resilience. Southern Companies remain committed to maintaining a diverse resource portfolio, as demonstrated by their investing heavily in renewable generation and constructing the first nuclear units in the United States in more than three decades. In addition, Southern Companies continue to make significant investment to ensure robust and resilient transmission and distribution systems with redundant pathways, coupled with high-speed and diverse communications systems to enhance their ability to provide reliable service in the event of multiple outages or contingencies.

Importantly, resilience encompasses both federal and state jurisdictions, with state regulation of distribution, resource planning, and resource adequacy as well as federal regulation of wholesale market rules and bulk electric system reliability both being essential to maintaining system resiliency. The role of state regulators in promoting and maintaining resiliency, thus, must be respected. A “cooperative federalism” approach is necessarily required. With Southern Companies’ proven track record of, and continued commitment to, resilience, Southern Companies strongly support DOE’s efforts to promote and maintain a reliable, robust and thus resilient utility infrastructure.

Southern Companies are a leading energy provider, serving approximately 9 million customers through their affiliated companies. With more than 4.6 million electric customers, 44,000 MWs of generating capacity, and 27,000 miles of transmission lines, Southern

[april-27-2011-tornadoes/](#) (describing how Alabama Power was able to restore its system in 8 days following a tornado outbreak that killed 249 people in Alabama, forging paths of devastation totaling 1,200 miles across the state).

Companies are a leading U.S. producer of clean, safe, reliable, and affordable electricity, providing retail electric service in three Southeastern states. In addition, Southern Power is a leading U.S. wholesale energy provider, meeting the electricity needs of municipalities, electric cooperatives, investor-owned utilities, and commercial and industrial customers across the country. Southern Power and its subsidiaries own 49 facilities operating or under construction in 12 states with more than 11,200 MW of generating capacity.

Southern Companies' affiliates also serve 4.2 million natural gas distribution customers and have approximately 1,500 billion cubic feet of combined natural gas consumption and throughput volume serving both LDC and power generation. Other affiliates of Southern Companies include Southern Nuclear, a licensed operator of three nuclear generating plants; Southern Telecom and Southern LINC Wireless, providers of fiber optics and wireless communications, respectively; and PowerSecure, a national leader in distributed infrastructure technologies that has engineered and installed over 2.0 GWs of distributed generation systems across the United States.

II. Responses to the RFIs' Specific Questions

The RFIs ask a series of specific questions under the two broad topics of: A) questions regarding consensus-based codes, specifications, standards, and other forms of guidance for improving the resilience of both electric and oil and natural gas infrastructure against severe weather events; and B) questions regarding state or locally adopted costs and standards that have resilience implications. The following provides Southern Companies' responses to the specific questions raised under each of these broad topics raised in the RFIs.

A. Questions regarding consensus-based codes, specifications, standards, and other forms of guidance for improving the resilience of both electric and oil and natural gas infrastructure against severe weather events

1. Specific technical design standards or requirements for physical system components

a. The Benefits of Physically Firm Transmission: a Robust Transmission System

The overall design and functionality of the transmission market structure in the Southeast promotes the resilience of the electric grid in this region. In particular, while some areas of the country have moved to transmission markets governed by *financial* rights, the transmission markets in the Southeast remain driven by *physical* transmission rights. Under Southern Companies' physical transmission market structure, the transmission system is expanded so that customers making long-term firm commitments have the right to use the underlying physical transmission capacity. This physical transmission market structure promotes system resiliency by providing for a robust transmission grid better capable of maintaining reliable operations, and more capable of timely responding to system outages, in response to external stresses, including significant weather events.

Pursuant to this physical transmission market structure, the transmission system in the Southeast is planned and expanded to reliably and economically satisfy the load projections, resource assumptions, public policy requirements, and firm transmission service commitments within the region. These transmission system delivery capacity requirements are typically driven by long-term, firm commitments and are planned with the intent that those who have made such commitments will be able to access their resources to serve load with minimal congestion, constraint, or curtailment. In other words, Southern Companies and the other transmission

planners in the Southeast identify, evaluate, and implement efficient and cost-effective transmission expansion options to provide sufficient physical capacity to enable delivery of a long-term, firm transmission customer's service without impacting other long-term, firm delivery commitments, and with the intent that the service will normally be available without congestion, interruption or curtailment. In this regard, such long-term firm customers include not only third-party wholesale customers that commit to such transmission service, but also bundled retail transmission customers that constitute the vast majority of Southern Companies' load. The provision of physical firm transmission service (combined with the IRP planning processes discussed below, which identifies least-cost solutions to address identified needs) yields significant resiliency benefits to these customers. First, customers are provided certainty as to long-term delivery costs and minimize delivery risks for transmission users. Second, and perhaps more importantly from a resiliency standpoint, the planned physical transmission capacity results in a robust, reliable, and flexible transmission system that responds well under a wide range of contingencies and operating uncertainties.⁵

b. Coordination of Design and Equipment Specifications

While providing electric service to their retail customers in three states through three separate operating company affiliates (*i.e.*, Alabama Power, Georgia Power, and Mississippi Power), Southern Companies coordinate their design and equipment specifications to facilitate the sharing and interoperability of system components. This practice enhances Southern

⁵ See Southeastern Regional Transmission Planning, *Regional Transmission Plan & Input Assumptions Overview*, at 8 (Nov. 29, 2018) (discussing the physical transmission delivery market that characterizes the southeastern U.S.).

Companies' ability to quickly implement solutions in response to extreme weather events and other system contingencies.

2. Relevant Corporate Business Practices

As discussed further below, Southern Companies' business model and vertically integrated corporate structure, along with the resiliency preparation model they have developed and adopted, all contribute to the resilient nature of their electric systems.

a. Southern Companies' Business Model: Focus on the Customers

Southern Companies' approach to resiliency begins with their underlying corporate philosophy of, in all things, maintaining a customer-centered focus. This means that sometimes competing policy goals must be balanced and reconciled to provide all customers clean, safe, reliable, and affordable power. Accordingly, resilience should not be considered in isolation but instead in the overall context of a balanced approach. For example, Southern Companies' explicitly incorporate customer outage costs into their generation planning processes, being an important consideration in determining the cost-effective level of target reserve levels that they undertake to satisfy. Winterization efforts are also a point of emphasis, with the effects being incorporated in planning studies. Among other things, this consideration means that costs to customers of severe weather events as well as associated resiliency measures designed to mitigate the impacts of such events are considered.

b. Southern Companies' Vertical Integration

Southern Companies' retail operating companies remain vertically integrated. While vertical integration results in numerous benefits to customers, it supports resilience in several important ways. First, in the event of catastrophic events and resulting service disruptions,

vertical integration allows for the optimization of scarce resources and the efficient coordination of distribution, transmission, and generation resources to restore service faster to critical customers (such as pipeline pumping stations) and, ultimately, to all customers. Second, because Southern Companies remain vertically integrated, they are able to engage in coordinated IRP processes (discussed further below) that considers all feasible generation, transmission, and demand-side options to identify the most reliable and cost-effective solutions to address the challenges facing the electric industry in the Southeast. As referenced above, this broad perspective has facilitated Southern Companies' ability to establish a diverse generation fleet and balanced resource portfolio, which inherently promotes resiliency.

3. *Analytic methods and tools*: Southern Companies' Resiliency Preparation Model

The RFIs also request comments regarding the “analytic methods and tools for estimating the possible economic benefits from strategies, investments, or initiatives to enhance the resilience of relevant facilities.”⁶ In response, Southern Companies specifically address significant resilience threats through their resiliency preparation model. This model has three major temporal elements, categorized into long-term (3+ years), intermediate-term (1-3 years), and short-term (less than 1 year) planning horizons.

i. Long-Term (3+ years): Plan and Design

Southern Companies' long-term preparation includes the robust planning and standardized design of transmission facilities, minimizing critical disruptions to business operations through business assurance programs, and significant participation in industry initiatives as well as research and development activities concerning resilience.

⁶ RFIs, pp. 32,731; 32,732.

- Transmission Planning: The goal of Southern Companies' transmission planning is to develop a transmission expansion plan that: 1) enables the delivery of power on a safe, reliable, and economical basis; and 2) preserves all long-term firm commitments. Southern Companies' transmission planning incorporates the results of their IRP processes, ensuring that the resource commitments adopted therein are deliverable on a long-term, physically firm basis. In addition, their transmission planning incorporates the long-term transmission commitments made by third parties who take service under Southern Companies' Open Access Transmission Tariff. The transmission planning criteria acknowledges expected and unexpected transmission and generation outages/contingencies, and plans for Southern Companies' ability to recover and maintain reliability associated with such contingencies. In this context of analyzing contingencies, Southern Companies also regularly perform gas pipeline disruption analysis to assess the impact of an assumed loss of a major pipeline. This analysis requires coordination with Southern's fuels purchasing group as well as with major pipeline supplies regarding underlying study assumptions. An important feature of this analysis concerns Southern Companies' dual fuel combustion turbines, in that the analysis emphasizes the significance of having sufficient onsite oil storage to address periods when natural gas supply might become constrained.
- Design and Equipment Specifications: As discussed previously, Southern Companies' standards, among other things, facilitate the sharing and interoperability of system components and Southern Companies' ability to quickly implement solutions.
- Research and Development: Southern Companies are engaged in multiple research and development activities seeking to improve transmission grid resilience.
- Industry Development: Southern Companies are an engaged leader with multiple governmental departments and industry organizations focused on business continuity, physical and cyber security, and electric system resilience. These include the following programs that allow for the quick and reliable access to a larger pool of transmission equipment after a major event: EEI-STEP, EEI Spare Connect, RESTORE, and NERC-SED. Southern Companies are also actively engaged in industry efforts to address Geomagnetic Disturbance ("GMD") and Electromagnetic Pulse ("EMP").
- Business Assurance: Southern Companies' business assurance program focuses on maintaining critical business operations during unexpected disruptions. Key elements of this program include a physical threat assessment process to heighten awareness of credible threats and leverage coordinated communications and response across the Southern system.

ii. Intermediate-Term (1-3 years): Secure/Prepare

Southern Companies' intermediate-term preparation includes both physical security and cyber security through Southern Companies' Corporate Security department and adherence to industry security standards. This time frame also includes internal and industry security exercises, a spare equipment inventory for critical equipment, and transformer repair facilities.

- **Physical Security**: Southern Companies coordinate with local, state, and federal law enforcement on threat intelligence, defense and incidents. Strategic planning is performed for the physical defense of critical transmission infrastructure. Southern Companies are implementing physical security enhancements at appropriate transmission and generation assets in accordance with applicable NERC Reliability Standards.
- **Cyber Security**: These on-going efforts include compliance with NERC CIP Cyber Security Standards that define the requisite controls and protections for different types of assets such as control centers, power plants, and substations. Southern Companies also monitor corporate assets and personnel traffic to and from physical security perimeters around critical BES cyber systems and monitors threats and digital traffic to/from operationally critical BES cyber systems. Southern Companies also have leadership roles on NERC CIP standards development teams, the EEI Security Committee, and the NERC EMP Task Force.
- **Drills and Exercises**: Southern Companies participate in NERC Grid Security Exercises ("GridEx"), as well as multiple security drills in accordance with internal requirements and through industry initiatives. Southern Companies' business assurance programs also coordinate emergency response/action plan drills, incident response team training and test, and business continuity plan testing.
- **Spare Inventory Management**: Each operating company maintains an extensive inventory of spare parts for substation equipment, and strong relationships are maintained with multiple transformer manufacturers to ensure that a sufficient supply of quality equipment is available.
- **Transformer Repair Capability**: To reduce the amount of downtime for a given transformer, Southern Companies maintain major transformer repair shops.

iii. Short-Term (<1 year): Operate/Respond/Recover

Southern Companies' short-term preparation includes redundant and flexible operations functions and facilities through their Power Coordination Center ("PCC") and Transmission Control Centers ("TCCs"), redundant data and telecommunications systems, and mutual assistance agreements.

- Real-Time Operations: Southern Companies have redundant control centers and communications channels as well as back-up applications and plans. Constant communications are maintained to ensure that redispatch and generation output options are available, and on-going communications with neighboring regions regarding the management of flows over the interfaces are maintained. In addition, the Southeastern Reliability Coordinator ("RC") works closely with neighboring RCs to maintain reliability in daily operations. Southern Companies also have a communications protocol in the event that there is an unexpected loss of communications between their power control center and gas company control centers.
- Mutual Assistance Agreements: Southern Companies participate in the Southeastern Electric Exchange ("SEE"), which is a Regional Mutual Assistance Group consisting of 22 different holding companies. SEE provides coordinated storm restoration services to its member companies,⁷ with such mutual assistance having proven essential to the timely restoration of service in response to major outages caused by significant weather events.
- Equipment Transportation Logistics: In addition to the large haul capabilities that Southern Companies maintain, they also have arrangements with heavy equipment movers and railcars to retain significant equipment transportation capabilities.
- Telecommunications: Southern Companies and their affiliates maintain redundant fiber optic communications and data paths throughout Southern Companies' service territory, and SCADA and other internet-based internal data communications are constantly monitored. Southern LINC radio provides backup capabilities should there be a loss of telephone and wireless capabilities. In the event of the loss of data telecommunications, Southern Companies have processes for manual monitoring and balancing and for the manual provision of real-time information from affected substations. Southern Companies have invested and will continue to invest in upgrading and maintaining both fiber-based and wireless communications systems to

⁷ More information concerning SEE is available at <https://www.theexchange.org/members.html>

ensure the robustness, diversity, and resilience of their communications systems as a critical part of its operations.

B. Questions regarding state- or locally-adopted codes and standards that have resilience implications.

The RFIs seek information regarding state- or locally-adopted codes and standards that have resilience implications. For each such code or standard, the RFIs ask for information regarding its a) scope and applicability, b) origin, and c) validation.⁸ As discussed below, Southern Companies' state-regulated IRP and retail rate-based generation are major contributors to the resilience that characterizes their electric systems.

1. Southern Companies' State-Regulated IRP Processes.

Southern Companies' IRP processes are the primary means by which Southern Companies chart an energy future best suited to provide their customers clean, safe, reliable and affordable power. Such planning is necessarily a primary driver in Southern Companies' establishment of a resilient electric system.

a. Scope and Applicability of Southern Companies' IRP Processes

In their IRP processes, Southern Companies project their incremental system needs and then identify the appropriate solutions to address those needs considering all reasonably feasible alternatives, including demand-side, supply-side, and transmission solutions and combinations thereof. Environmental policies and requirements are addressed and technological advances are considered, with many different disciplines and areas of expertise within Southern Companies being incorporated into this planning process. Operational flexibility, resource adequacy, fuel market diversity, fuel security, firm transmission, and other positive system attributes are

⁸ RFIs, pp. 32,731; 32,732.

likewise considered in the planning process. The end result is a comprehensive plan for continuing to provide customers with reliable electric service from a diverse portfolio of supply- and demand-side resources at rates below the national average.

Additionally, Southern Companies' IRP processes enable them to continue to assess both reliability and resilience as the generation fleet transitions. Some of the risks considered in this process include: the intermittency associated with increasing amounts of renewable generation, fuel transportation risk, and high-impact events that have low probability (such as physical- and cyber-attacks). Using the existing IRP processes, coupled with state oversight and regulation, resilience can be achieved and maintained for the benefit of customers in a cost-effective, reliable and safe manner.

i. Southern Companies' IRP Has Resulted in the Adoption of a Diverse Generation Fleet that Is Inherently Resilient.

In providing appropriate solutions to address system needs in a reliable and least-cost basis, these IRP processes have resulted in Southern Companies' adoption of, and continued commitment to, providing their customers a diverse supply-side generating portfolio that provides reliable and cost-effective service to all customers. Maintaining a diverse supply-side generating portfolio is inherently resilient. Diversity is critical given the inherent uncertainty of the future and the potential for rapid changes in the economic and regulatory landscape impacting energy supply as well as for certain extreme weather events that can challenge the availability of certain types of generation.⁹

⁹ While natural gas availability has proven problematic during periods of extreme cold for certain areas of the country that rely upon interruptible supplies, one of the benefits of Southern Companies' IRP process is that it allows for fuel security and firm delivery. As discussed in the following section of these comments, these positive attributes mean, among other things, that Southern Companies obtain an adequate amount of firm transmission for the natural gas that serves Southern Companies' natural gas-fired generation that is committed on a long-term basis

Southern Companies' diverse portfolio of supply-side generating resources—comprising nuclear, natural gas, coal, oil, hydro (both run-of-river and pumped storage), solar, wind, and biomass generation—provides significant benefit to customers and positions Southern Companies to maximize value for customers in a wide variety of future economic and regulatory scenarios. As of the first quarter of 2019, Southern Companies' energy mix reflected: 47% from natural gas-fired generation, 23% from coal-fired generation, 16% from nuclear-fired generation, and 14% from hydroelectric and other renewable resources.¹⁰ Southern Companies' commitment to maintaining diversity, including baseload generation, is further demonstrated by, for example:

- Southern Companies' development of the nation's first new nuclear units in the United States in over 30 years at Georgia Power's Plant Vogtle;
- Southern Companies have added more than 5,000 MWs of renewable generating capacity since 2010 and expect to add an additional 3,000 MWs by 2023.¹¹

ii. IRP Allows for Assurances that Resources Have Fuel Security and Firm Delivery

As referenced above, Southern Companies' IRP processes allow for the provision of positive system attributes, including fuel security and firm delivery. Fuel security and firm delivery can prove particularly critical during significant weather events, including periods of

to serve Southern Companies' load. During periods of extreme cold, Southern Companies have found that they can rely upon these firm transmission arrangements for the continued delivery of natural gas to those units, which supplies are only contingent upon *force majeure* events. For Southern Companies, the impacts of extreme cold weather upon the availability of nature gas has meant an overall decrease in flexibility due to interruptible natural gas not being available, but Southern Companies' firm arrangements have proven dependable.

¹⁰ See *Facts and Figures*, SOUTHERN COMPANY, <https://www.southerncompany.com/about-us/facts-and-figures0.html> (last visited August 21, 2019). Generally, with respect to renewable energy generated or purchased by the operating companies, the operating companies retain the right to use the renewable energy to serve customers or to sell the energy and associated renewable energy credits (RECs), together or separately, to third parties for the benefit of customers.

¹¹ See *Facts and Figures*, SOUTHERN COMPANY, <https://www.southerncompany.com/corporate-responsibility/environment/energy-mix.html> (last visited August 21, 2019).

extreme cold. As part of the selection of new supply-side resources to address identified needs, generation capacity that is designated to serve firm obligations must be firm in all respects critical to the delivery of the associated energy, including firm electric transmission delivery arrangements and firm gas pipeline transportation for our gas supply contracts for natural gas-fired generation. To this end, for Southern Companies' gas-fired resources that are not dual-fuel capable, sufficient amounts of firm gas transportation and fuel storage capacity are maintained for the reliable operation of such facilities when needed to satisfy system demand. In addition, Southern Companies' vertical integration and rate-based model generally enables them to maintain more on-site storage of fuel supplies, which can prove significant during an extreme weather event. Accordingly, Southern Companies do not generally suffer from the same constraints on natural gas availability during peak demand periods or the impacts of interruptions and/or delays of delivery of coal or gas supplies that has sometimes characterized other areas of the country.¹²

b. *The Origins of Southern Companies' IRP processes*

Southern Companies' IRP processes have their origin in their respective state laws that require them to render economic, reliable, and safe electric service to their retail customers. The IRP processes serve as the primary means whereby Southern Companies fulfill that statutory duty. Importantly, while Southern Companies' IRP processes are coordinated on a system-wide basis, the specific IRPs completed for each of Southern Companies' retail operating companies are subject to the jurisdiction and oversight of that operating company's state public service

¹² As noted *supra* at n. 9, while Southern Companies have adequate firm transmission for natural gas deliveries to maintain reliability during weather-constrained events, Southern Companies have found that they do lose some operational flexibility during periods of extreme cold as interruptible natural gas becomes no longer available.

commission. This relationship between the retail operating companies and their state regulators ensures that the IRP processes and demand-side, supply-side, and transmission/transportation options that are pursued address and satisfy applicable legal requirements, as well as any tailored policy goals established by those regulators. Of course, the state-specific nature of each retail operating company's IRP processes also means that the specific processes are unique and differ from those in other states in important aspects.

c. *Validation of Southern Companies' IRP Processes*

As discussed at the beginning of these comments, Southern Companies have a proven history of resilience in response to severe weather, constituting empirical validation that Southern Companies' IRP processes promote the development and maintenance of resilient utility infrastructure.

2. The Benefits of the Regulatory Compact and Rate-Based Generation

Another resiliency benefit of the state regulation of Southern Companies' retail operating companies is rate-based generation. Southern Companies provide service largely pursuant to a traditional cost of service model under which they provide service upon demand on a least-cost basis. As part of this regulatory compact, the retail operating companies' generation fleet is largely rate-based, with Southern Companies entitled to recover all prudently incurred revenue requirements of those generating facilities. From a resiliency perspective, this rate-basing of generation promotes resilience by maintaining the diversity of the generation fleet notwithstanding that, at any time, a particular fuel source may make resources powered by other fuel services no longer profitable for a given period. This occurrence can be particularly problematic in capacity markets where the pricing is set based upon some marginal clearing

price. In other words, the rate-basing of generation in Southern Companies' vertically integrated model reduces the impact of economic and fuel market volatility during short-term events, which improves the economic viability of those assets over the long term.

C. Other Important Point of Consideration: from a Resiliency Perspective, Southern Companies' Physical Firm and Traditional Vertical Integration Differentiate Them from Many Other Electric Utilities

To further emphasize the importance of some of the foregoing to the promotion of resiliency, it bears emphasizing that while other regions may have firm transmission products, IRP processes, and the presence of significant vertically integrated utilities, the terms "firm," "IRP," and "vertical integration" in those regions may not have the same meaning as they do for Southern Companies. Again, Southern Companies' *physical* firm transmission model differs significantly from the *financial* firm transmission model provided in many Day-2 RTO markets. Specifically, while the latter provides financial hedges to their firm transmission customers as potential offsets to congestion charges, Southern Companies' physical firm transmission model means that their transmission system is planned and expanded with the intent that such firm customers will receive service *without congestion*, curtailment, or constraint. Rather than designing the transmission system to incorporate and monetize certain internal congestion (as in the financial transmission markets), Southern Companies' transmission system is designed with the intent that firm customers will not be subject to congestion.

Likewise, while other utilities may have IRP processes and the presence of vertically integrated utilities, they may have market structures or other factors that limit the resiliency benefits traditionally associated with IRP processes and vertical integration. For example, even if a utility's IRP process values the benefits of resource diversity and fuel security, if that utility

is in a region having Day-2 RTO markets that do not likewise value those attributes, then it is unlikely that resource diversity and fuel security will be maintained. Similarly, even if a utility is vertically integrated, the benefits of vertical integration may be diminished if there are multiple entities within a footprint having overlapping responsibilities.¹³

V. CONCLUSION AND SUMMARY

Southern Companies address resilience in the larger context of providing their customers clean, safe, reliable, and affordable power. Addressing resilience means that all potential threats are taken seriously in a risk-based, defense-in-depth approach. For Southern Companies, their vertically integrated, physically firm transmission and rate-based model have resulted in an electric system characterized by resource diversity, robust transmission and distribution systems as well as reliable communications across those systems, and fuel security - - all requisite components of a resilient system. Resiliency means not only that the electric system must be planned to be resilient, but that redundancy must be incorporated; drills and response plans must be developed and updated; and real-time monitoring must be provided.

At the same time, a reasonable balance between resiliency/reliability and costs to customers must be attained. For Southern Companies, resiliency is pursued in the overall context of a balanced approach that seeks to provide all customers clean, safe, reliable and affordable power. Southern Companies specifically addresses significant, high-risk low-probability events from the planning stage through recovery pursuant to their resiliency preparation model. Southern Companies' IRP processes ensure resource diversity, firm

¹³ See U.S. Department of Energy, *Quadrennial Energy Review 1.2*, p. 4-41 (Jan. 2017) (“[r]esilience requirements tend to be valued as contributions to reliability and incorporated as part of ratemaking processes. These processes are more easily executed in structures that are traditional end-to-end, vertically integrated electricity delivery services; other market structures complicate reliability and resilience investment decision making.”).

deliverability, and fuel security. Southern Companies' physically firm transmission rights and transmission planning have resulted in a robust transmission system capable of providing firm deliverability under numerous contingencies, and Southern Companies' vertical integration, pool operations, and rate-based generation further enhance resiliency.

Resiliency is largely a regional issue, as the resource diversity, fuel security, market structure, and other resiliency related matters raised in these comments differ significantly across the nation. With certain regions potentially in need of the regulatory assistance to bolster their resiliency, it is imperative that DOE understand, appreciate, and respect the role of the states in these matters, as key aspects of resiliency, such as resource planning and distribution reliability, are subject to state jurisdiction.

Respectfully submitted,

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