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**DANIEL PEREZ**  
*Speaker of the House of  
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September 19, 2025

Adam J. Teitzman, Commission Clerk  
Florida Public Service Commission  
2540 Shumard Oak Boulevard  
Tallahassee, Florida 32399-0850

**Re: Docket No. 20250011-EI- Petition for rate increase by Florida Power & Light Company**

Dear Mr. Teitzman:

Please find enclosed for filing in the above referenced docket the Direct Testimony and Exhibit of James F. Wilson. This filing is being made via the Florida Public Service Commission's web-based electronic filing portal.

If you have any questions or concerns, please do not hesitate to contact me. Thank you for your assistance in this matter.

Sincerely,

Walt Trierweiler  
Public Counsel

/s/ Octavio Simoes-Ponce  
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**CERTIFICATE OF SERVICE**  
**DOCKET NO. 20250011-EI**

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**BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

In re: Petition for rate increase by  
Florida Power & Light Company.

DOCKET NO.: 20250011-EI

FILED: September 19, 2025

**DIRECT TESTIMONY  
OF  
JAMES F. WILSON  
ON BEHALF  
OF  
THE CITIZENS OF THE STATE OF FLORIDA**

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## EXHIBITS

JFW-1          James F. Wilson Curriculum Vitae

1           **I. INTRODUCTION AND QUALIFICATIONS**

2

3   **Q 1: PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.**

4       A: My name is James F. Wilson. I am an economist and independent consultant doing  
5           business as Wilson Energy Economics. My business address is 11550 Old  
6           Georgetown Road Apt. 1036, North Bethesda, Maryland 20852.

7

8   **Q 2: ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS PROCEEDING?**

9       A: I am testifying on behalf of the Florida Office of Public Counsel (“OPC”).

10

11   **Q 3: PLEASE DESCRIBE YOUR EXPERIENCE AND QUALIFICATIONS.**

12       A: I have forty years of consulting experience, primarily in the electric power and natural  
13           gas industries. Many of my assignments have pertained to the economic and policy  
14           issues arising from the interplay of competition and regulation in these industries,  
15           including restructuring policies, market design, market analysis and market power.  
16           Other recent engagements have involved resource adequacy and capacity markets,  
17           contract litigation and damages, forecasting and market evaluation, pipeline rate cases  
18           and evaluating allegations of market manipulation. I also spent five years in Russia in  
19           the early 1990s advising on the reform, restructuring, and development of the Russian  
20           electricity and natural gas industries for the World Bank and other clients.

21

22           With respect to the data center issues I will address in my testimony, I have testified on  
23           data center questions multiple times in Virginia since 2016, when data centers became

1 a significant new electric load there. I have also submitted testimony on data center  
2 issues in Ohio, California, and other regions.

3 I have submitted affidavits and presented testimony in proceedings of the Federal  
4 Energy Regulatory Commission, state regulatory agencies, and U.S. district court. I  
5 hold a B.A. in Mathematics from Oberlin College and an M.S. in Engineering-  
6 Economic Systems from Stanford University. My curriculum vitae, summarizing my  
7 experience and listing past testimony, is attached as Exhibit JFW-1.

8

9 **Q 4: HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY IN FLORIDA**  
10 **PUBLIC SERVICE COMMISSION (“COMMISSION”) PROCEEDINGS?**

11 A: No. Exhibit JFW-1 identifies one presentation I gave in 2022 in a Commission  
12 workshop.

13

14 **Q 5: WHAT IS THE SCOPE AND PURPOSE OF YOUR TESTIMONY IN THIS**  
15 **CASE?**

16 A: In this proceeding Florida Power & Light Company (“FPL” or the “Company”),  
17 anticipating that very large new loads may seek to connect to its system in the future,  
18 has proposed two new tariffs that would be applicable to very large new loads. A  
19 settlement proposed by a subset of the parties to this proceeding filed on August 20,  
20 2025 (“August 20 Proposal”)<sup>1</sup> reflected a modified version of FPL’s original proposal.  
21 My assignment was to review and comment on FPL’s original proposal and the

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<sup>1</sup> Joint Motion for Approval of Settlement Agreement, Attachment 1, 2025 Stipulation and Settlement Agreement, filed August 20, 2025.



1 modified proposal in that proposed settlement, opine on whether the proposed changes  
2 reflected in the August 20 Proposal are in the public interest, and suggest the types of  
3 provisions needed to protect the public interest. I was also asked to respond to some  
4 other issues regarding data centers that have arisen in this proceeding as they impact  
5 the Commission’s consideration of the August 20 Proposal.

6

7 **II. SUMMARY AND RECOMMENDATIONS**

8

9 **Q 6: PLEASE SUMMARIZE FPL’S ORIGINALLY FILED PROPOSAL WITH**  
10 **REGARD TO VERY LARGE NEW LOADS.**

11 A: FPL proposed two new rate schedules, Large Load Contract Service-1 (LLCS-1) and  
12 Large Load Contract Service-2 (LLCS-2), for future customers with projected new or  
13 incremental load of 25 MW or more and a load factor of 85 percent or more.<sup>2</sup> The  
14 proposed new tariffs include provisions such as minimum take-or-pay requirements,  
15 minimum terms, and exit fees.<sup>3</sup>

16

17 **Q 7: WHY DID FPL PROPOSE THESE NEW TARIFFS AT THIS TIME?**

18 A: The Company states that while it does not have any agreements to serve any customers  
19 of this size in 2026 or 2027, it proposed these tariffs “to proactively address the  
20 potential scenario that future customers of this size request service within the FPL  
21 service area and, if so, to ensure that the general body of customers is protected from

---

<sup>2</sup> Petition by Florida Power & Light Company for Base Rate Increase, February 28, 2025, and Direct Testimony of Tiffany C. Cohen on behalf of FPL, February 28, 2025 (“Cohen Direct”), p. 23.

<sup>3</sup> Cohen Direct pp. 26-27.

1 higher costs to serve such large load customers.”<sup>4</sup> The Company states that the tariffs  
2 were developed to meet the following objectives:

3 “(i) ensure that FPL has a tariff and service agreement available to  
4 serve customers of this magnitude should they request service in the  
5 future;

6 (ii) ensure that the cost-causer bears primary responsibility and risk  
7 for the significant generation investments required to serve a  
8 customer of this size; and

9 (iii) protect the general body of customers and mitigate risk of  
10 subsidization and stranded assets.”<sup>5</sup>

11  
12 **Q 8: DO YOU AGREE THAT SUCH TARIFFS AND PROVISIONS ARE NEEDED**  
13 **TO PROTECT FPL’S OTHER CUSTOMERS?**

14 A: Yes I do. We are presently in the midst of a boom in the planning and siting of new  
15 data centers, regionally and worldwide. As I will explain, I consider future data center  
16 construction and the resulting electricity load growth to be highly uncertain; it could  
17 occur much slower, or faster, than current projections, and it is also highly uncertain in  
18 which regions new data center facilities and loads will develop.

19  
20 As the Company recognizes, rapid growth in data center loads could require large  
21 investments in transmission and generation to serve. There is risk that under current  
22 tariffs and rules in Florida and other regions, the cost of these investments could largely  
23 be borne by other customers whose loads have generally been comparatively flat and

---

<sup>4</sup> Cohen Direct p. 23.

<sup>5</sup> Cohen Direct pp. 23-24.

1           who do not cause these investments. As I will note later in my testimony, other regions  
2           have learned the hard way that accommodating very large new loads under current  
3           wholesale and retail tariffs can jeopardize resource adequacy and sharply raise  
4           electricity prices for other customers.

5

6           Additionally, the uncertainty about these potential future loads creates a risk of stranded  
7           cost should the anticipated loads not materialize in the locations and in the time frames  
8           projected, which utilities might attempt to recover from other customers.

9

10          In its original proposal the Company had wisely moved to get out in front of such  
11          problems by proposing the new tariffs applicable to very large new loads.

12

13   **Q 9: WHAT ARE THE BENEFITS OF TARIFFS THAT CALL FOR VERY LARGE**  
14   **NEW LOADS TO BEAR THE COST AND RISK OF INVESTMENTS TO**  
15   **SERVE THEM?**

16    A: Tariffs that call for very large new loads to bear the cost and risk of investments to  
17    serve them protect existing customers from costs being shifted to them or from attempts  
18    to recover stranded costs from them. They lead to cost allocation more consistent with  
19    cost causality. Such policies can also lead to duplicative and more speculative data  
20    center projects dropping out, leading to a firmer load forecast.

21

22   **Q 10: WOULD THE NEW TARIFFS UNDER FPL'S ORIGINAL PROPOSAL**  
23   **ADEQUATELY PROTECT ITS OTHER CUSTOMERS?**

1 A: Yes, I believe the original proposal would adequately protect other customers. I discuss  
2 the key provisions in a later section of my testimony.

3  
4 **Q 11: NOW PLEASE SUMMARIZE THE CHANGES TO FPL'S ORIGINAL**  
5 **PROPOSAL REFLECTED IN THE AUGUST 20 PROPOSAL.**

6 A: The August 20 Proposal proposes to modify FPL's original proposal with regard to  
7 very large new loads in the following ways:<sup>6</sup>

- 8 1. The size threshold would increase from 25 to 50 MW.
- 9 2. The minimum take-or-pay requirement would decline from 90% to 70%.
- 10 3. The Incremental Generation Charge ("IGC") applicable to the new tariffs would  
11 be modified to be based on a lower load amount.
- 12 4. The applicable performance security amount calculation would also be modified.

13  
14 **Q 12: WHAT PARTIES TO THIS PROCEEDING SUPPORTED THE AUGUST 20**  
15 **PROPOSAL?**

16 A: The August 20 Proposal was contained in a proposal signed by FPL, Florida Industrial  
17 Power Users Group, Florida Retail Federation, Florida Energy for Innovation  
18 Association, Inc., Walmart Inc., EVgo Services, LLC, Americans for Affordable Clean  
19 Energy, Inc., Circle K Stores, Inc., RaceTrac Inc., Wawa, Inc., Electrify America, LLC,  
20 Federal Executive Agencies, Armstrong World Industries, Inc., and Southern Alliance  
21 for Clean Energy. Few of these parties submitted testimony supporting the August 20

---

<sup>6</sup> August 20 Proposal pp. 7-8, Settlement Testimony of Tiffany C. Cohen, September 3, 2025, pp. 10-12.

1 Proposal so I do not have knowledge about which party actually supported the changes  
2 regarding the large load tariffs.

3

4 **Q 13: DO YOU HAVE ANY OBSERVATIONS WITH RESPECT TO THIS LIST OF**  
5 **SIGNATORIES?**

6 A: Yes. Two things are notable.

7 1. The August 20 Proposal is not supported by representatives of residential or small  
8 commercial customers, in particular it was not supported by the Office of Public  
9 Counsel.

10 2. The August 20 Proposal is not supported by the major national data center  
11 organizations, who are absent from this proceeding. In proceedings involving data  
12 center issues in Virginia, Ohio, and elsewhere, representatives of Amazon, Google,  
13 Meta, and Microsoft (hereafter, the “Big Tech” companies) are actively involved,  
14 because these four organizations account for the majority of data center  
15 development proposals. It is also notable that the national Data Center Coalition,  
16 which in my experience is always involved in proceedings and stakeholder  
17 processes dealing with data centers, is also absent from this proceeding.

18 In other venues the Big Tech companies, and the Data Center Coalition, have  
19 expressed that data centers should bear the cost of their incremental service. It is  
20 unclear to me whether, if they had to take a position, these entities would be  
21 supportive of the August 20 Proposal that has weakened FPL’s original proposal in  
22 that regard.

1 **Q 14: PLEASE SUMMARIZE YOUR CONCLUSIONS WITH REGARD TO THE**  
2 **CHANGES IN THE AUGUST 20 PROPOSAL TO THE ORIGINAL FPL**  
3 **PROPOSAL WITH REGARD TO VERY LARGE LOADS.**

4 A: The most significant proposed change is the reduction in the minimum take-or-pay  
5 requirement from 90% to 70%. As I will explain, this would substantially weaken the  
6 customer protection provided by the new tariffs. Accordingly, these changes would  
7 not be in the public interest.

8  
9 **Q 15: WOULDN'T DATA CENTERS BE VALUABLE TO THE STATE OF**  
10 **FLORIDA, AND SHOULDN'T FPL'S TARIFFS BE DEFINED TO BE MORE**  
11 **ATTRACTIVE TO THEM?**

12 A: It is often claimed that data centers represent economic development and provide other  
13 benefits. But data centers once in operation actually employ very few people,  
14 especially considered on a per-MW basis; they are very large buildings full of servers  
15 and chips, not offices. And to the extent data centers use up available generating  
16 capacity, they may delay attracting other types of new customers, such as electrified  
17 manufacturing, that would represent much more in the way of economic development.  
18 So making the tariffs more attractive to data centers could actually slow true economic  
19 development.

20 **Q 16: DO YOU HAVE ANY RECOMMENDATION WITH REGARD TO THE**  
21 **AUGUST 20 PROPOSAL?**

22 A: Yes. Based solely on the topics that I address in this testimony, I recommend that the  
23 Commission find that the data center-related elements -- in particular the reduction in

1 the minimum take-or-pay requirement -- are not in the public interest, and, accordingly,  
2 the Commission should reject the proposal.

3

4 **Q 17: SHOULD THE PARTIES SEEK TO FORGE A NEW PROPOSAL WITH**  
5 **BROADER CUSTOMER SUPPORT, DO YOU HAVE RECOMMENDATIONS**  
6 **FOR THE PROVISIONS REGARDING VERY LARGE NEW LOADS?**

7 A: Yes. I recommend that a new resolution of the large load issues in this proceeding  
8 could have the following elements (described in more detail later in my testimony),  
9 providing additional alternatives for prospective very large new loads:

- 10 1. The tariff provisions included in FPL's original proposal, perhaps with the  
11 compromise of reducing the minimum take-or-pay level from the original 90% to  
12 80%, as OPC with other parties has proposed;
- 13 2. An additional tariff with relaxed take-or-pay provisions, applicable to very large  
14 new loads that are willing to be fully interruptible by FPL (crypto facilities, and  
15 some data centers, might find such an alternative attractive); and
- 16 3. Additional provisions applicable to very large new loads that would connect to the  
17 FPL system in association with commensurate new generation acceptable to FPL;  
18 the provisions would call for the cost and risk of the new generation to be assigned  
19 to the new load in a manner that would protect other FPL customers from any cost  
20 or reliability impacts.

1 **Q 18: HOW IS THE REMAINDER OF YOUR TESTIMONY ORGANIZED?**

2 A: Section III describes the current boom in data center development proposals, the risks  
3 these potential new loads have posed for electricity customers in some regions, and  
4 how some other regions are dealing with these risks. Section IV describes FPL's  
5 original proposal and explains why it is an effective approach to protecting customers.  
6 Section V explains that the August 20 Proposal unacceptably weakens these  
7 protections. Section VI proposes possible provisions applicable to very large new loads  
8 that could be included in a new resolution of these issues to accommodate such loads  
9 while protecting other customers from cost and reliability risk.

10 **III. THE CURRENT BOOM IN DATA CENTER DEVELOPMENT**  
11 **PROPOSALS CREATES RISKS FOR OTHER ELECTRICITY**  
12 **CONSUMERS**  
13

14 **Q 19: YOU SUGGESTED THAT WE ARE IN THE MIDST OF A BOOM IN THE**  
15 **PLANNING, SITING, AND CONSTRUCTION OF DATA CENTERS. FIRST,**  
16 **PLEASE SUMMARIZE THIS ACTIVITY.**

17 A: Data center construction in Virginia and a few other regions has been growing rather  
18 steadily for several years. JLL, a leading real estate and investment management  
19 company, estimated the data center construction pipeline in the United States had risen  
20 to an estimated 1,913 MW by mid-2022.<sup>7</sup> The unveiling of ChatGPT in late 2022  
21 brought on a new era of expectations for artificial intelligence ("AI") and data centers.  
22 JLL estimated that across the hyperscale and colocation data center segments, 10 GW

---

<sup>7</sup> JLL, *H1 2022 Global Data Center Outlook* (2022) at 4.



1 will break ground globally in 2025, of which about half is in the United States.<sup>8</sup>

2 However, many more projects are under discussion amounting to many times this

3 capacity number. And while the “first generation” of data centers (roughly, those built

4 through 2024) were very clustered, with by far the largest cluster in Northern Virginia,

5 the current boom in data center plans and development proposals involves projects in

6 most states and many countries.<sup>9</sup>

7

8 Additionally, current data center development proposals are much larger than the first-

9 generation facilities. While few existing data centers are over 100 MW, most current

10 data center development proposals are over 100 MW, and there are proposed data

11 centers in some regions over 1,000 MW.<sup>10</sup>

12

13 We are clearly in the midst of a boom in expectations regarding data center

14 construction, capacity, and electricity demand, largely fueled by the recent boom in

15 expectations of high demand for future AI applications.

---

<sup>8</sup> JLL, *2025 Global Data Center Outlook* (2025) at 19.

<sup>9</sup> For summaries of data centers in other states, see Aurora Energy Research, *Data Centers and Their Impact on the US Power Market* (Feb. 10, 2025) at 3, available at <https://auroraer.com/insight/data-centers-and-their-impact-on-the-us-power-market/> (showing over 30 states with data centers) and Amber Jackson, *Top 10: Biggest Data Centre Projects*, Data Centre Magazine (Aug. 14, 2024), available at <https://datacentremagazine.com/top10/top-10-biggest-data-centre-projects> (describing large projects in Maryland, Nevada, Iowa, Utah, and Arizona). For summaries of data centers in other countries, see JLL, *2025 Global Data Center Outlook* at 19 (projecting a substantial portion of global data center capacity to occur in APAC and EMEA regions).

<sup>10</sup> See, e.g., Jackson, *supra* note 10 (identifying Quantum Loophole Project in Maryland as 1,800 MW); see also Rich Miller, *The Gigawatt Data Center Campus is Coming*, Data Center Frontier (Apr. 29, 2024), available at <https://www.datacenterfrontier.com/hyperscale/article/55021675/the-gigawatt-data-center-campus-is-coming> (“Hyperscale tech companies are already seeking sites for campuses that can support a gigawatt of electric power capacity.”).

1   **Q 20: PLEASE EXPLAIN YOUR VIEW THAT THE ELECTRICITY NEEDED TO**  
2       **POWER FUTURE DATA CENTERS IS HIGHLY UNCERTAIN.**

3       A: It is clear there will be a continuing increase in demand for the services provided by  
4       data centers (storage and processing of information, including both training AI models  
5       and creating inferences on the basis of those models). However, it is now and will  
6       remain highly uncertain how rapidly AI applications (and other new uses of  
7       information processing) are developed and become widely used. There have been  
8       mini-booms in expectations around AI in the past.<sup>11</sup> While this time it seems AI is  
9       coming to fruition, it will remain highly uncertain how rapidly the demand for it rises.

10  
11       However quickly the demand for the services data centers provide increases, that  
12       increase in demand for services does not translate into increased energy demand in any  
13       simple way. There has been and will continue to be rapid innovation in the software to  
14       train AI models, and also the software to make inferences based on those models. As  
15       an indication of this, the announcement last winter of the DeepSeek model,<sup>12</sup> which  
16       apparently accomplishes much more with much less hardware and energy use, upset  
17       the markets and valuations of many firms linked to AI and the data center boom.<sup>13</sup>

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<sup>11</sup> See, e.g., Stuart J. Russell & Peter Norvig, *Artificial Intelligence: A Modern Approach* 24 (2nd ed. 2003) (noting that “the AI industry boomed from a few million dollars in 1980 to billions of dollars in 1988. Soon after that came a period called the ‘AI Winter’”).

<sup>12</sup> See, e.g., Victor Chung, Julia Frayer & Donald Osborne-Moss, *Deeper Thinking Around DeepSeek*, London Economics International LLC (Jan. 31, 2025), available at <https://www.linkedin.com/pulse/deeper-thinking-around-deepseek-london-economics-v9zlc/> (describing DeepSeek and the connection between advances in AI and the electricity sector).

<sup>13</sup> See, e.g., Eduardo Baptista, *What Is DeepSeek and Why Is It Disrupting the AI Sector?*, Reuters (Jan. 28, 2025), available at <https://www.reuters.com/technology/artificial-intelligence/what-is-deepseek-why-is-it-disrupting-ai-sector-2025-01-27/> (summarizing DeepSeek’s quality and cost efficiencies and its disruption of the AI sector).

1        These computing innovations will continue, and will continue to rapidly increase the  
2        services that can be provided with any set of data center hardware.

3  
4        In addition to software innovations, there has been and will continue to be rapid  
5        innovation in the chips and other hardware used in data centers. The latest chips  
6        perform many more calculations for the same energy.<sup>14</sup> Quantum computing also holds  
7        the potential for a “revolutionary leap in computing power.”<sup>15</sup> These innovations will  
8        also continue, and will further leverage what can be accomplished in a given data center  
9        with a given power supply.

10  
11       To summarize, there is enormous uncertainty about how rapidly AI-related and other  
12       demands for the services data centers provide will grow; about how much processing  
13       will be needed to provide those services; and about the power needs of the chips that  
14       will be providing the processing. Thus, the growth in the amount of power needed for  
15       data centers is highly uncertain. Indeed, the services provided by data centers can  
16       expand enormously over the coming years even if there is little or no increase in power  
17       supply.

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<sup>14</sup> See, e.g., JLL, *2025 Global Data Center Outlook* at 4 (“At the core of the AI revolution is the rapid advancement in semiconductor technology. The industry is witnessing a race towards miniaturization that outpaces even Moore's Law. Over the past two years, graphics processing units (GPUs) have become substantially more powerful, with a transition from 7 nanometer (nm) to 5 nm, and eventually 2 nm technology.”).

<sup>15</sup> See, e.g., Matt Vincent, *8 Trends That Will Shape the Data Center Industry In 2025*, Data Center Frontier (Jan. 6, 2025), available at <https://www.datacenterfrontier.com/cloud/article/55253151/8-trends-that-will-shape-the-data-center-industry-in-2025> (“In 2025, quantum computing is no longer a distant dream but an emerging reality in the data center industry... By 2025, quantum computing is poised to complement classical systems, offering revolutionary capabilities that could redefine how data centers operate.... As a revolutionary leap in computational power, quantum computing uses the principles of quantum mechanics to process information.”).

1   **Q 21: IF THE GROWTH IN DEMAND FOR THE SERVICES DATA CENTERS**  
2       **PROVIDE IS SO UNCERTAIN, WHY ARE WE IN THE MIDST OF A BOOM**  
3       **IN THE SITING AND CONSTRUCTION OF DATA CENTERS?**

4       A: Much of this boom is fueled by the Big Tech companies, Amazon, Google, Meta, and  
5       Microsoft. Dominion Energy reports that most of its anticipated future data center load  
6       is attributable to just two companies.<sup>16</sup> It's a "Go Big or Go Home" moment for these  
7       competitors. While the Big Tech companies are undoubtedly very uncertain about how  
8       fast the demand for AI and other applications will grow, they are determined to not be  
9       hindered by hardware limitations in serving that growth if and when it comes; thus the  
10      current boom in data center planning and construction.

11  
12      Put another way, the "over/under" risk with regard to data center construction and  
13      capacity is very asymmetric at present. If too many data centers are built too soon, that  
14      is costly of course, but the data center capacity will likely be needed at some future  
15      time, or the capacity could be sold. But if one of the Big Tech companies or other  
16      competitors is caught with insufficient data center capacity in the near term, they could  
17      lose the AI race to other teams who invested more and sooner, and it could be  
18      impossible to catch up. That could have very long-term consequences that dwarf the  
19      investments they are now making.

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<sup>16</sup> Direct Testimony of James F. Wilson on Behalf of Appalachian Voices, filed February 28, 2025 in Virginia State Corporation Commission Case No. PUR-2024-00184 (Virginia Electric and Power Company's 2024 Integrated Resource Plan filing) ("Wilson 2025 Virginia Testimony"), p. 13 and footnote 19, citing to discovery.

1   **Q 22: ARE YOU SUGGESTING THAT THE CURRENT BOOM IN DATA CENTER**  
2       **SITING MAY HAVE A SPECULATIVE ELEMENT TO IT?**

3       A: Yes, there is a speculative aspect to the current boom in data centers. And there are at  
4       least two additional aspects of this:

- 5       1. First, the Big Tech companies and other entities developing data centers are running  
6       into constraints and possible delays in seeking the enormous amounts of data center  
7       capacity they anticipate they might eventually need. This has led them to pursue in  
8       parallel multiple sites in multiple locations, to see where they can find attractive  
9       circumstances of land, power, water, etc., with speed to market also a major  
10      aspect.<sup>17</sup> So there is duplication in individual companies' early stage plans and  
11      development proposals. This could mean that for every three data center sites that  
12      electric utilities are anticipating connecting, perhaps only one or two of them will  
13      actually be built anytime soon. This duplication is widely recognized, including by  
14      the Big Tech companies themselves.<sup>18</sup>
- 15      2. Second, the four Big Tech companies, and others, are likely planning future data  
16      centers with the intention of serving the same final demand for the services data  
17      centers provide. To the extent multiple entities are competing to serve the same  
18      final demand for service, at such time as it becomes clearer which entities are

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<sup>17</sup> See Jonathan Koomey et al., *Electricity Demand Growth and Data Centers: A Guide for the Perplexed*, Bipartisan Policy Center & Koomey Analytics (Feb. 2025) at 10, available at <https://bipartisanpolicy.org/report/electricity-demand-growth-and-data-centers/> (stating that data center developers “consider multiple states as possible locations for data centers, and they query multiple utilities simultaneously for electricity rates and incentives prior to making a final selection.”).

<sup>18</sup> See, e.g., Pre-Conference Comments of Brian D. George on behalf of Google, LLC, *Ex Parte: Electric Utilities and Load Growth*, Case No. PUR-2024-00144 (Dec. 9, 2024) at 6–7 (“Finally, we are concerned about the pace and volume of load requests impacting the PJM load forecast... The PJM load forecasting process does not sufficiently vet large load adjustments provided to PJM...”).

1 winning the race, others may refocus their investments and drop or delay some  
2 planned data centers.<sup>19</sup> This is yet another source of uncertainty about the demand  
3 for future data center capacity.

4  
5 In light of these two aspects of the current boom in data center planning, this boom may  
6 very well prove to have had a substantial speculative element to it.

7  
8 **Q 23: IF MANY NEW DATA CENTERS ARE CONSTRUCTED IN MULTIPLE**  
9 **REGIONS IN THE COMING YEARS, BUT THE DEMAND FOR THEIR**  
10 **SERVICES IS HIGHLY UNCERTAIN, WHAT MIGHT THIS MEAN FOR THE**  
11 **PACE AT WHICH THESE DATA CENTERS REACH THEIR CONTRACTED**  
12 **POWER DEMANDS?**

13 A: It is very possible that many new data centers will be constructed, but there won't be  
14 demand for the services – and/or sufficient chips to provide the services<sup>20</sup> – for many  
15 years after construction.

16  
17 While the Big Tech and other companies urgently seek to *site* data centers in order to  
18 be ready for an uncertain future, it can be expected that they will actually *equip* new

---

<sup>19</sup> This possibility was recognized in the JLARC Report at 50 (“For example, if one of the major hyperscaler companies decided not to pursue development of new artificial intelligence (AI) products or has a line of AI products that fail to be commercially viable, then energy demand from that company could decrease substantially.”).

<sup>20</sup> See, e.g., Bain & Company, *Prepare for the Coming AI Chip Shortage* (Sept. 25, 2025), available at <https://www.bain.com/insights/prepare-for-the-coming-ai-chip-shortage-tech-report-2024/> (warning of the possibility of a forthcoming semiconductor shortage).

1 data centers with the very expensive chips needed to provide services at a rate that  
2 reflects the growth in demand for services and the availability of the latest hardware.  
3 Accordingly, it is quite possible that the current cohort of new data centers planned for  
4 the coming years will not reach contract power demand levels for many years.

5

6 **Q 24: YOU NOTE THAT THE CHIPS AND OTHER HARDWARE USED IN DATA**  
7 **CENTERS ARE EXPENSIVE. PLEASE OUTLINE THE MAIN COST**  
8 **CATEGORIES FOR LARGE NEW DATA CENTERS.**

9 A: According to one estimate, a 1 GW data center costs \$30 to \$35 billion, with the chips  
10 replaced every five years; and assuming its power costs \$100/MWh (higher than recent  
11 power purchase agreements or forward energy and capacity prices in most areas),  
12 power amounts to less than 10% of the lifetime cost of the data center.<sup>21</sup>  
13 Thus, constructing a data center is one decision, but bringing a data center to full  
14 electricity load is another, much more costly, decision.

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<sup>21</sup> S&P Global, *Data Centers: Surging Demand Will Benefit and Test the U.S. Power Sector* (Oct. 22, 2025) at 32, available at <https://www.spglobal.com/ratings/en/research/articles/241022-data-centers-surging-demand-will-benefit-and-test-the-u-s-power-sector-13280625>.

1 **Q 25: YOU HAVE DESCRIBED THAT DATA CENTER LOADS HAVE BEEN**  
2 **INCREASING RAPIDLY BUT ARE HIGHLY UNCERTAIN. DO THE LARGE**  
3 **INCREASES IN LOAD POTENTIALLY AFFECT OTHER ELECTRICITY**  
4 **CUSTOMERS?**

5 A: Yes. The first generation of data centers was generally built in regions, like Virginia  
6 and PJM, that had excess generating capacity. These new customers used capacity that  
7 was not needed by other customers, and they shared in system costs. Under those  
8 circumstances, the new data center customers generally were welcome and had little  
9 impact on other customers' costs.

10  
11 However, the current and anticipated further rapid growth in data center loads has used  
12 up excess capacity, and will require large investments in generation and transmission  
13 to serve in most regions, such as in Virginia and Florida. Under current rules in many  
14 regions, and especially where utilities are vertically integrated and own generation (as  
15 is the Company's circumstance), existing tariffs would lead to much of the cost of these  
16 investments being borne by other customers whose loads are expected to remain  
17 generally flat and who do not cause these investments.

18  
19 In addition, the uncertainty about these loads creates a risk of stranded cost, should the  
20 anticipated loads not materialize in the locations and in the time frames projected.

21 Utilities might attempt to recover such stranded costs from other customers.



1 **Q 26: PLEASE NOTE AN EXAMPLE OF A REGION WHERE THE LARGE NEW**  
2 **LOADS HAVE ALREADY AFFECTED OTHER CUSTOMERS.**

3 A: In Virginia and in the PJM wholesale market in the mid-Atlantic region, the costs of  
4 serving incremental data center loads are spread to other consumers through utility  
5 integrated resource plans and through PJM wholesale transmission planning rules.  
6 PJM's 2024 forecast of further growth in data center demand spiked capacity prices,<sup>22</sup>  
7 and more recent load forecasts are much larger; the forecast load growth has also led  
8 to billions in transmission investments.

9  
10 Over the past 20 years PJM capacity prices had averaged around \$100/MW-day; they  
11 have recently more than tripled and are expected to remain at high levels for the  
12 foreseeable future. PJM has long had excess generating capacity, but now anticipates  
13 falling short of its target reserve requirement over the coming years.<sup>23</sup>

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<sup>22</sup> See, for instance, Monitoring Analytics, the market monitor for PJM, *Analysis of the 2025/2026 RPM Base Residual Auction Part G*, June 3, 2025, p. 1 (finding that data center load by itself resulted in an increase in revenues in the PJM capacity auction for the 2025/2026 delivery year of \$9.3 billion, or 174.3 percent), report available at [https://www.monitoringanalytics.com/reports/Reports/2025/IMM\\_Analysis\\_of\\_the\\_20252026\\_RPM\\_Base\\_Residual\\_Auction\\_Part\\_G\\_20250603\\_Revised.pdf](https://www.monitoringanalytics.com/reports/Reports/2025/IMM_Analysis_of_the_20252026_RPM_Base_Residual_Auction_Part_G_20250603_Revised.pdf).

<sup>23</sup> See, for instance, Susan McGill, PJM, *Scenario Analysis Supporting Large Load CIFP Problem Statement* CIFP – Stage 1 Meeting, September 15, 2025, pp. 2, 5 (showing an anticipated capacity deficit in 2026 and 2030) available at <https://www.pjm.com/-/media/DotCom/committees-groups/cifp-lla/2025/20250915/20250915-item-05---cifp-scenario-analysis---presentation.pdf>.

1 **Q 27: HOW ARE UTILITIES AND REGULATORS RESPONDING TO THE COST**  
2 **IMPACT AND STRANDED COST CONCERNS RAISED BY THE CURRENT**  
3 **BOOM IN VERY LARGE DATA CENTER DEVELOPMENT PROPOSALS?**

4 A: The power industry and regulatory authorities are responding by developing new  
5 approaches that call for the very large customers to bear more of the cost and risk  
6 associated with their service.  
7

8 **Q 28: PLEASE DESCRIBE SOME OF THE APPROACHES BEING USED TO HAVE**  
9 **LARGE NEW LOADS BEAR THE COST AND RISK OF THEIR SERVICE.**

10 A: Very large new customers are increasingly being called on to make a financial  
11 commitment to bear their share of the cost and risk of those investments. This is often  
12 described as ensuring the very large new customers have “skin in the game” and face  
13 the cost and risk of the investments needed to serve them. For example, AEP Ohio has  
14 proposed tariffs for very large data centers with firm “take or pay” type minimum  
15 demand levels over an extended period;<sup>24</sup> Georgia is pursuing a similar approach for  
16 very large data centers.<sup>25</sup> Dominion Energy<sup>26</sup> and other utilities are also taking this  
17 approach. The FPL original proposal is also of this type.

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<sup>24</sup> See Application for Approval of New Tariffs by Ohio Power Company, *In the Matter of the Application of Ohio Power Company for New Tariffs Related to Data Centers and Mobile Data Centers*, Ohio Pub. Utils. Comm’n Case No. 24-0508-EL-ATA (May 13, 2024).

<sup>25</sup> See Ga. Pub. Serv. Comm’n, *PSC Approves Rule to Allow New Power Usage Terms for Data Centers* (Jan. 23, 2025), available at [https://psc.ga.gov/site/assets/files/8617/media\\_advisory\\_data\\_centers\\_rule\\_1-23-2025.pdf](https://psc.ga.gov/site/assets/files/8617/media_advisory_data_centers_rule_1-23-2025.pdf) (describing a new rule that allows Georgia Power to charge new data centers in a manner that will protect ratepayers from cost shifting).

<sup>26</sup> See Virginia Electric and Power Company application in Virginia State Corporation Commission Docket No. PUR-2025-00058.

1   **Q 29: WHY ARE THESE NEW APPROACHES TO CONNECTING LARGE LOADS**  
2       **NEEDED AT THIS TIME?**

3       A: Throughout history, electric utilities have generally recovered the cost of  
4       interconnecting each customer from the customer, while the broader generation and  
5       transmission costs to serve expanding load were recovered from all customers through  
6       a standard set of tariffs. Under this paradigm, a new customer—or an existing customer  
7       expanding its power needs—simply informed the local utility of the power required  
8       (how much, where, and when), and the utility got to work planning for it, building  
9       generation and transmission as needed to meet aggregate load increases on a firm basis.

10  
11       This approach worked throughout history because load growth was “organic”; *i.e.*, it  
12       resulted from the sum total of many, relatively small, new and expanding customers  
13       with the growth generally in line with economic and demographic projections.

14  
15       Only recently have the proposals for new loads grown to the huge sizes and numbers  
16       that are now seen in many regions. These loads would require substantial new  
17       generation and transmission investments to serve. Utilities and regulators are  
18       increasingly unwilling to undertake the necessary huge investments without  
19       commitments that protect shareholders and other customers, should the potential  
20       customers ultimately not take service or only after a substantial delay or in a lower  
21       quantity. This is often described as ensuring the very large new customers have “skin  
22       in the game” and face the cost and risk of the investments needed to serve them.

1           Alternatively, very large new loads can interconnect under other arrangements that  
2           minimize their impact on other customers. For example, they can agree to be fully  
3           interruptible, so drawing power from the grid as long as the power is not needed by  
4           other customers. Or, large new loads can interconnect in conjunction with new  
5           generation (either behind or before the meter) commensurate with the load. This could  
6           be dispatchable backup generation or new gas-fired, nuclear, or other generation  
7           expected to operate at high load factor.

8

9   **Q 30: WHAT ARE THE BENEFITS OF THESE NEW APPROACHES TO**  
10 **INTERCONNECTING VERY LARGE LOADS?**

11   A: Ensuring that very large new point loads bear the cost and risk of the generation and  
12   transmission needed to serve them has a number of benefits:

- 13       1. First, it leads to cost allocation that is more consistent with cost causality, which is  
14       a bedrock regulatory principle. It is the anticipated huge growth in data center loads  
15       that creates the need for the costly new generation and transmission infrastructure.
- 16       2. Second, it protects existing customers who are not causing (and do not otherwise  
17       need) the large generation and transmission investments from potential cost shifting  
18       or stranded cost allocation.
- 19       3. Third, requiring very large new point loads to have “skin in the game” should cause  
20       the more speculative and duplicative proposals to drop out, resulting in a more  
21       sound, less speculative load forecast that can enable surer planning.
- 22       4. Finally, skin in the game in the form of minimum take requirements would help to  
23       ensure that data centers are equipped and their loads ramp up according to schedule,  
24       even if the demand for data center services is weak relative to supply, or chips are  
25       scarce. If in the future there is excess data center capacity relative to the demand  
26       for services, it can be expected that the loads will be ramped up at facilities that

1 impose minimum take requirements before other facilities operating under more  
2 flexible circumstances.

3  
4 **Q 31: WOULDN'T THESE PROVISIONS DISCOURAGE DATA CENTER**  
5 **DEVELOPMENT, WHICH COULD REPRESENT ECONOMIC**  
6 **DEVELOPMENT FOR A REGION?**

7 A: Even very large data centers do not represent much in the way of economic  
8 development on a per-MW basis. While data centers provide substantial tax revenues,  
9 they do not create many jobs. A data center is a large building full of servers and chips  
10 with very few employees. By contrast, other very large new loads, such as electrified  
11 industrial plants, would represent much more in the way of direct and indirect  
12 employment.

13  
14 **Q 32: AREN'T DATA CENTERS NEEDED IN FLORIDA AND OTHER AREAS TO**  
15 **PROVIDE INFORMATION TECHNOLOGY TO SERVE THE LOCAL**  
16 **ECONOMY?**

17 A: No. Data centers, wherever located, serve customers over very broad areas. Data  
18 centers do not need to be in certain places, there is a lot of flexibility in where they are  
19 built. This is evidenced by the very high concentration of data centers in Northern  
20 Virginia. As of 2024, Northern Virginia had more data center capacity than the next

1 five largest U.S. regions (Chicago, Dallas-Fort Worth, Phoenix, Northern California,  
2 and Oregon) combined.<sup>27</sup>

3

4 **Q 33: SOME UTILITIES, SUCH AS FPL, DO NOT YET HAVE CONTRACTS FOR**  
5 **LARGE AMOUNTS OF NEW LOAD. IS IT IMPORTANT TO PUT NEW**  
6 **PROVISIONS FOR INTERCONNECTING NEW LOADS IN PLACE EVEN IF**  
7 **TO DATE THEY HAVE NOT CAUSED PROBLEMS?**

8 A: Yes, it is critically important for utilities to get in front of this problem, as FPL has  
9 proposed to do. Once there are many contracts and vested interests, it becomes much  
10 harder to change the rules for interconnecting new loads, and any new rules might not  
11 apply to many projects in the pipeline.

12

13 Virginia and PJM have learned this lesson the hard way. PJM's Board has initiated an  
14 urgent, accelerated, "Critical Issue Fast Path" stakeholder process to attempt to craft  
15 approaches to addressing this problem.<sup>28</sup> However, PJM's proposal in this regard is  
16 rather modest would actually do little to address the problem, and has faced substantial  
17 opposition.

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<sup>27</sup> Dominion Energy, Q4 2024 earnings call (Feb. 12, 2025) at slide 43, available at [https://s2.q4cdn.com/510812146/files/doc\\_financials/2024/q4/2025-02-12-DE-IR-4Q-2024-earnings-call-slides-vTCII.pdf](https://s2.q4cdn.com/510812146/files/doc_financials/2024/q4/2025-02-12-DE-IR-4Q-2024-earnings-call-slides-vTCII.pdf).

<sup>28</sup> See the PJM current Critical Issue Fast Path – Large Load Additions stakeholder process, files available at <https://www.pjm.com/committees-and-groups/cifp-lla>.

1           **IV.    THE COMPANY’S ORIGINAL PROPOSAL WOULD PROTECT ITS**  
2           **CUSTOMERS FROM COST SHIFTING AND OTHER RISKS**  
3

4   **Q 34: NOW PLEASE DESCRIBE THE COMPANY’S ORIGINAL PROPOSAL FOR**  
5   **NEW TARIFFS FOR VERY LARGE NEW CUSTOMERS.**

6       A: FPL proposed the new rate schedule Large Load Contract Service-1 (LLCS-1) for  
7       future customers with projected new or incremental load of 25 MW or more and a load  
8       factor of 85 percent or more.<sup>29</sup> The proposed new tariff included a 90% minimum take-  
9       or-pay requirement, a 20-year term, an exit fee, and credit requirements, among other  
10      provisions.<sup>30</sup> Customers under this rate schedule would pay an Incremental Generation  
11      Charge (“IGC”) to recover the incremental costs of generation built to serve the new  
12      large loads.

13  
14   **Q 35: PLEASE EXPLAIN HOW THE COMPANY’S ORIGINAL PROPOSAL**  
15   **PROTECTS ITS OTHER CUSTOMERS FROM COST SHIFTING AND**  
16   **STRANDED COST RISK.**

17      A: These provisions work together to help ensure that the data center proposals that  
18      advance in FPL’s pipeline are being developed by serious operators who plan to run at  
19      a high load factor. These provisions might discourage some proposals and lead them  
20      to drop out.

---

<sup>29</sup> Petition by Florida Power & Light Company for Base Rate Increase, February 28, 2025, and Direct Testimony of Tiffany C. Cohen on behalf of FPL, February 28, 2025 (“Cohen Direct”), p. 23.

<sup>30</sup> Cohen Direct pp. 26-27.

1       The provisions also help ensure that if the total data center capacity becomes overbuilt  
2       in the coming years regionally or world-wide, operators will face strong incentives to  
3       maintain loads at the FPL data centers and reduce loads elsewhere where such  
4       provisions are not in place or are weaker.

5

6       **V.     THE AUGUST 20 PROPOSAL WOULD WEAKEN CONSUMER**  
7       **PROTECTION**  
8

9       **Q 36: NOW PLEASE DESCRIBE IN MORE DETAIL HOW THE AUGUST 20**  
10       **PROPOSAL WOULD CHANGE THE COMPANY’S ORIGINAL PROPOSAL**  
11       **FOR NEW TARIFFS FOR VERY LARGE NEW CUSTOMERS.**

12       A: The main changes that relate to the LLCS tariffs were as follows.<sup>31</sup>

- 13       1. The threshold for the LLCS tariffs was raised from 25 to 50 MW.
- 14       2. The minimum take-or-pay demand charge was lowered from 90% to 70%.
- 15       3. There were also changes to the performance security amount provisions and to the
- 16       schedules around the engineering and system impact studies.
- 17       4. There were also changes to FPL’s Contribution in Aid of Construction (“CIAC”)
- 18       tariff.<sup>32</sup>

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<sup>31</sup> August 20 Proposal pp. 7-9.

<sup>32</sup> August 20 Proposal pp. 9-10.



1 **Q 37: PLEASE EXPLAIN HOW THESE CHANGES WOULD WEAKEN THE**  
2 **CONSUMER PROTECTIONS IN THE COMPANY'S ORIGINAL PROPOSAL.**

3 A: Raising the threshold from 25 to 50 MW would weaken the protection by allowing very  
4 large new loads just under 50 MW to qualify for the existing General Service Large  
5 Demand (GSLD) tariffs that provide much less customer protection. However, data  
6 center development proposals have been increasing rapidly in size in all regions, so  
7 perhaps this change is reasonable.

8 The most concerning change is the reduction in the minimum take-or-pay demand  
9 charge threshold to 70%.

10  
11 **Q 38: AREN'T DATA CENTERS EXPECTED TO OPERATE AT VERY HIGH**  
12 **LOAD FACTORS; WHY WOULD THEY WANT, AND WHY WOULD FPL**  
13 **ACCOMMODATE, THE 70% LEVEL?**

14 A: This is unclear. I have not seen an explanation. Asked through discovery about the  
15 reduction from 90% to 70%, FPL's response mentioned the IGC and the CIAC, and  
16 concluded as follows:<sup>33</sup>

17 Based on the collective foregoing factors, and considering the  
18 concerns raised by the FEIA witnesses regarding the level of  
19 minimum demand charge that would be reasonably acceptable to a  
20 customer that meets the LLCS threshold, FPL witness Cohen  
21 concludes that approving a 70% minimum take-or-pay base demand  
22 charge for the LLCS tariffs versus a 90% would not be  
23 unreasonable.

---

<sup>33</sup> Response to FEL's Thirteenth Set of Interrogatories, No. 138.

1 Briefly put, FPL apparently reduced the minimum take-or-pay base demand charge  
2 level from 90% to 70% because some parties allege that higher levels would not be  
3 acceptable to the industry.

4

5 **Q 39: ARE UTILITIES IN OTHER STATES THAT ARE PUTTING SUCH TARIFFS**  
6 **IN PLACE INCLUDING SUCH LOW MINIMUM TAKE-OR-PAY LEVELS?**

7 A: According to a recent review of similar tariffs, most utilities are including higher  
8 thresholds. A recent review of twelve similar tariffs intended for data centers found  
9 that the majority had 80% or 90% minimum bill thresholds for the relevant load sizes.<sup>34</sup>

10

11 **Q 40: COULD THE LOWER MINIMUM TAKE REQUIREMENTS HAVE OTHER**  
12 **ADVERSE CONSEQUENCES?**

13 A: Yes. Should data center capacity become overbuilt in the coming years as a result of  
14 the current construction boom, the owners will have to decide which facilities to fully  
15 equip and which to leave below capacity. They will consider energy costs and other  
16 factors, but provisions such as minimum take requirements could be the most  
17 convincing. Lowering the minimum take requirements would free the future owners  
18 of Florida data centers to focus their investments on other markets that are lower costs  
19 or have higher minimum take requirements.

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<sup>34</sup> Rebuttal Testimony of Steven W. Wishart on Behalf of Virginia Electric and Power Company, State Corporation Commission of Virginia Case Nos. PUR-2025-00058 and 00059, page 5 Table 1.

1           **VI.   ADDITIONAL   APPROACHES   ARE   AVAILABLE   TO**  
2           **ACCOMMODATE VERY LARGE LOADS WHILE PROTECTING**  
3           **OTHER CUSTOMERS**  
4

5   **Q 41: SHOULD THE PARTIES IN THIS PROCEEDING SEEK TO FORGE A**  
6           **PROPOSAL WITH BROADER CUSTOMER SUPPORT, WHAT PROVISIONS**  
7           **WOULD YOU RECOMMEND REGARDING VERY LARGE NEW LOADS?**

8       A: First, I would recommend including the LLCS tariff provisions included in FPL's  
9           original proposal, with the various changes reflected in the August 20 Settlement except  
10          for the minimum take-or-pay level. The minimum take-or-pay level should be kept at  
11          90%, or perhaps set at to 80%.

12       An additional tariff could be defined for very large loads that are willing to be fully  
13       interruptible. And provisions could be added to accommodate very large loads that  
14       bring their own generation to the FPL system. These are approaches under discussion  
15       in other regions with substantial data center development.

16

17   **Q 42: DON'T DATA CENTERS TYPICALLY HAVE BACKUP GENERATION, AND**  
18           **DOES THIS ALLOW THEM TO BE FULLY INTERRUPTIBLE?**

19       A: No. Data centers do generally have on-site backup generation. However, this  
20       generating capacity is generally held only to provide reliability to the data center's  
21       customers, it is not made available to the utility to help meet system peak loads when  
22       needed. Typically that generation is diesel fired, which leads to environmental  
23       restrictions on its use. So this type of backup generation does not allow a data center  
24       to be interruptible.

1 To be interruptible, a data center operator would either have to be ready to shift loads  
2 to other data centers when necessary, or, more likely, to install dispatchable backup  
3 generation that runs on cleaner fuels.

4 Crypto mining facilities, which can be very large but are very different from data  
5 centers, would generally be willing to be interruptible, because their operations are no  
6 longer profitable when a system is tight.

7

8 **Q 43: PLEASE ELABORATE ON THE “BRING YOUR OWN GENERATION”**  
9 **APPROACH.**

10 A: FPL has proposed to build new generation to serve very large loads and to recover the  
11 cost through the IGC and LLCS. Alternatively, FPL could set the rules and criteria for  
12 review and acceptance of new generation planned to serve new very large loads. This  
13 is another approach under discussion in other regions, and it would give very large  
14 loads an additional alternative to the LLCS tariff.

15

16 **Q 44: DOES THIS COMPLETE YOUR TESTIMONY?**

17 A: Yes, it does.

## James F. Wilson Principal, Wilson Energy Economics

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### SUMMARY

James F. Wilson is an economist with over 40 years of consulting experience, primarily in the electric power and natural gas industries. Many of his assignments have pertained to the economic and policy issues arising from the interplay of competition and regulation in these industries, including restructuring policies, market design, market analysis and market power. Other recent engagements have involved resource adequacy and capacity markets, contract litigation and damages, forecasting and market evaluation, pipeline rate cases and evaluating allegations of market manipulation. Mr. Wilson has been involved in electricity restructuring and wholesale market design for over twenty years in California, PJM, New England, Russia and other regions. He also spent five years in Russia in the early 1990s advising on the reform, restructuring and development of the Russian electricity and natural gas industries.

Mr. Wilson has submitted affidavits and testified in Federal Energy Regulatory Commission and state regulatory proceedings. His papers have appeared in the *Energy Journal*, *Electricity Journal*, *Public Utilities Fortnightly* and other publications, and he often presents at industry conferences.

Prior to founding Wilson Energy Economics, Mr. Wilson was a Principal at LECG, LLC. He has also worked for ICF Resources, Decision Focus Inc., and as an independent consultant.

### EDUCATION

MS, Engineering-Economic Systems, Stanford University, 1982  
BA, Mathematics, Oberlin College, 1977

### RECENT ENGAGEMENTS

- Analysis of provisions to enhance resource fuel security in day-ahead and real-time wholesale electricity markets.
- Evaluated peak electric load forecasts and enhancements to load forecasting methodologies.
- Evaluated a probabilistic analysis to determine the electric generating capacity reserve margin to satisfy resource adequacy criteria.
- Evaluated the potential impact of an electricity generation operating reserve demand curve on a wholesale electricity market with a capacity construct.
- Developed wholesale capacity market enhancements to accommodate seasonal resources and resource adequacy requirements.
- Evaluation of wholesale electricity market design enhancements to accommodate state initiatives to promote state environmental and other policy objectives.
- Evaluation of proposals for natural gas distribution system expansions.
- Various consulting assignments on wholesale electric capacity market design issues in PJM, New England, the Midwest, Texas, and California.
- Cost-benefit analysis of a new natural gas pipeline.
- Evaluation of the impacts of demand response on electric generation capacity mix and emissions.
- Panelist on a FERC technical conference on capacity markets.
- Affidavit on the potential for market power over natural gas storage.

- Executive briefing on wind integration and linkages to short-term and longer-term resource adequacy approaches.
- Affidavit on the impact of a centralized capacity market on the potential benefits of participation in a Regional Transmission Organization (RTO).
- Participated in a panel teleseminar on resource adequacy policy and modeling.
- Affidavit on opt-out rules for centralized capacity markets.
- Affidavits on minimum offer price rules for RTO centralized capacity markets.
- Evaluated electric utility avoided cost in a tax dispute.
- Advised on pricing approaches for RTO backstop short-term capacity procurement.
- Affidavit evaluating the potential impact on reliability of demand response products limited in the number or duration of calls.
- Evaluated changing patterns of natural gas production and pipeline flows, developed approaches for pipeline tolls and cost recovery.
- Evaluated an electricity peak load forecasting methodology and forecast; evaluated regional transmission needs for resource adequacy.
- Participated on a panel teleseminar on natural gas price forecasting.
- Affidavit evaluating a shortage pricing mechanism and recommending changes.
- Testimony in support of proposed changes to a forward capacity market mechanism.
- Reviewed and critiqued an analysis of the economic impacts of restrictions on oil and gas development.
- Advised on the development of metrics for evaluating the performance of Regional Transmission Organizations and their markets.
- Prepared affidavit on the efficiency benefits of excess capacity sales in readjustment auctions for installed capacity.
- Prepared affidavit on the potential impacts of long lead time and multiple uncertainties on clearing prices in an auction for standard offer electric generation service.

## **EARLIER PROFESSIONAL EXPERIENCE**

LECG, LLC, Washington, DC 1998–2009.

### Principal

- Reviewed and commented on an analysis of the target installed capacity reserve margin for the Mid Atlantic region; recommended improvements to the analysis and assumptions.
- Evaluated an electric generating capacity mechanism and the price levels to support adequate capacity; recommended changes to improve efficiency.
- Analyzed and critiqued the methodology and assumptions used in preparation of a long run electricity peak load forecast.
- Evaluated results of an electric generating capacity incentive mechanism and critiqued the mechanism's design; prepared a detailed report. Evaluated the impacts of the mechanism's flaws on prices and costs and prepared testimony in support of a formal complaint.
- Analyzed impacts and potential damages of natural gas migration from a storage field.
- Evaluated allegations of manipulation of natural gas prices and assessed the potential impacts of natural gas trading strategies.
- Prepared affidavit evaluating a pipeline's application for market-based rates for interruptible transportation and the potential for market power.
- Prepared testimony on natural gas industry contracting practices and damages in a contract dispute.
- Prepared affidavits on design issues for an electric generating capacity mechanism for an eastern US regional transmission organization; participated in extensive settlement discussions.
- Prepared testimony on the appropriateness of zonal rates for a natural gas pipeline.
- Evaluated market power issues raised by a possible gas-electric merger.

- Prepared testimony on whether rates for a pipeline extension should be rolled-in or incremental under Federal Energy Regulatory Commission (“FERC”) policy.
- Prepared an expert report on damages in a natural gas contract dispute.
- Prepared testimony regarding the incentive impacts of a ratemaking method for natural gas pipelines.
- Prepared testimony evaluating natural gas procurement incentive mechanisms.
- Analyzed the need for and value of additional natural gas storage in the southwestern US.
- Evaluated market issues in the restructured Russian electric power market, including the need to introduce financial transmission rights, and policies for evaluating mergers.
- Affidavit on market conditions in western US natural gas markets and the potential for a new merchant gas storage facility to exercise market power.
- Testimony on the advantages of a system of firm, tradable natural gas transmission and storage rights, and the performance of a market structure based on such policies.
- Testimony on the potential benefits of new independent natural gas storage and policies for providing transmission access to storage users.
- Testimony on the causes of California natural gas price increases during 2000-2001 and the possible exercise of market power to raise natural gas prices at the California border.
- Advised a major US utility with regard to the Federal Energy Regulatory Commission’s proposed Standard Market Design and its potential impacts on the company.
- Reviewed and critiqued draft legislation and detailed market rules for reforming the Russian electricity industry, for a major investor in the sector.
- Analyzed the causes of high prices in California wholesale electric markets during 2000 and developed recommendations, including alternatives for price mitigation. Testimony on price mitigation measures.
- Summarized and critiqued wholesale and retail restructuring and competition policies for electric power and natural gas in select US states, for a Pacific Rim government contemplating energy reforms.
- Presented testimony regarding divestiture of hydroelectric generation assets, potential market power issues, and mitigation approaches to the California Public Utilities Commission.
- Reviewed the reasonableness of an electric utility’s wholesale power purchases and sales in a restructured power market during a period of high prices.
- Presented an expert report on failure to perform and liquidated damages in a natural gas contract dispute.
- Presented a workshop on Market Monitoring to a group of electric utilities in the process of forming an RTO.
- Authored a report on the screening approaches used by market monitors for assessing exercise of market power, material impacts of conduct, and workable competition.
- Developed recommendations for mitigating locational market power, as part of a package of congestion management reforms.
- Provided analysis in support of a transmission owner involved in a contract dispute with generators providing services related to local grid reliability.
- Authored a report on the role of regional transmission organizations in market monitoring.
- Prepared market power analyses in support of electric generators’ applications to FERC for market-based rates for energy and ancillary services.
- Analyzed western electricity markets and the potential market power of a large producer under various asset acquisition or divestiture strategies.
- Testified before a state commission regarding the potential benefits of retail electric competition and issues that must be addressed to implement it.
- Prepared a market power analysis in support of an acquisition of generating capacity in the New England market.
- Advised a California utility regarding reform strategies for the California natural gas industry, addressing market power issues and policy options for providing system balancing services.

ICF RESOURCES, INC., Fairfax, VA, 1997–1998.

Project Manager

- Reviewed, critiqued and submitted testimony on a New Jersey electric utility's restructuring proposal, as part of a management audit for the state regulatory commission.
- Assisted a group of US utilities in developing a proposal to form a regional Independent System Operator (ISO).
- Researched and reported on the emergence of Independent System Operators and their role in reliability, for the Department of Energy.
- Provided analytical support to the Secretary of Energy's Task Force on Electric System Reliability on various topics, including ISOs. Wrote white papers on the potential role of markets in ensuring reliability.
- Recommended near-term strategies for addressing the potential stranded costs of non-utility generator contracts for an eastern utility; analyzed and evaluated the potential benefits of various contract modifications, including buyout and buydown options; designed a reverse auction approach to stimulating competition in the renegotiation process.
- Designed an auction process for divestiture of a Northeastern electric utility's generation assets and entitlements (power purchase agreements).
- Participated in several projects involving analysis of regional power markets and valuation of existing or proposed generation assets.

IRIS MARKET ENVIRONMENT PROJECT, 1994–1996.

Project Director, Moscow, Russia

Established and led a policy analysis group advising the Russian Federal Energy Commission and Ministry of Economy on economic policies for the electric power, natural gas, oil pipeline, telecommunications, and rail transport industries (*the Program on Natural Monopolies*, a project of the IRIS Center of the University of Maryland Department of Economics, funded by USAID):

- Advised on industry reforms and the establishment of federal regulatory institutions.
- Advised the Russian Federal Energy Commission on electricity restructuring, development of a competitive wholesale market for electric power, tariff improvements, and other issues of electric power and natural gas industry reform.
- Developed policy conditions for the IMF's \$10 billion Extended Funding Facility.
- Performed industry diagnostic analyses with detailed policy recommendations for electric power (1994), natural gas, rail transport and telecommunications (1995), oil transport (1996).

Independent Consultant stationed in Moscow, Russia, 1991–1996

Projects for the WORLD BANK, 1992-1996:

- Bank Strategy for the Russian Electricity Sector. Developed a policy paper outlining current industry problems and necessary policies, and recommending World Bank strategy.
- Russian Electric Power Industry Restructuring. Participated in work to develop recommendations to the Russian Government on electric power industry restructuring.
- Russian Electric Power Sector Update. Led project to review developments in sector restructuring, regulation, demand, supply, tariffs, and investment.
- Russian Coal Industry Restructuring. Analyzed Russian and export coal markets and developed forecasts of future demand for Russian coal.
- World Bank/IEA Electricity Options Study for the G-7. Analyzed mid- and long-term electric power demand and efficiency prospects and developed forecasts.
- Russian Energy Pricing and Taxation. Developed recommendations for liberalizing energy markets, eliminating subsidies and restructuring tariffs for all energy resources.



Other consulting assignments in Russia, 1991–1994:

- Advised on projects pertaining to Russian energy policy and the transition to a market economy in the energy industries, for the Institute for Energy Research of the Russian Academy of Sciences.
- Presented seminars on the structure, economics, planning, and regulation of the energy and electric power industries in the US, for various Russian clients.

DECISION FOCUS INC., Mountain View, CA, 1983–1992  
Senior Associate, 1985-1992.

- For the Electric Power Research Institute, led projects to develop decision-analytic methodologies and models for evaluating long term fuel and electric power contracting and procurement strategies. Applied the methodologies and models in numerous case studies, and presented several workshops and training sessions on the approaches.
- Analyzed long-term and short-term natural gas supply decisions for a large California gas distribution company following gas industry unbundling and restructuring.
- Analyzed long term coal and rail alternatives for a midwest electric utility.
- Evaluated bulk power purchase alternatives and strategies for a New Jersey electric utility.
- Performed a financial and economic analysis of a proposed hydroelectric project.
- For a natural gas pipeline company serving the Northeastern US, forecasted long-term natural gas supply and transportation volumes. Developed a forecasting system for staff use.
- Analyzed potential benefits of diversification of suppliers for a natural gas pipeline company.
- Evaluated uranium contracting strategies for an electric utility.
- Analyzed telecommunications services markets under deregulation, developed and implemented a pricing strategy model. Evaluated potential responses of residential and business customers to changes in the client's and competitors' telecommunications services and prices.
- Analyzed coal contract terms and supplier diversification strategies for an eastern electric utility.
- Analyzed oil and natural gas contracting strategies for an electric utility.

## TESTIMONY AND AFFIDAVITS

In the Matter of the Application of Pacific Gas and Electric Company for Adoption of Electric Revenue Requirements and Rates Associated with its 2026 Energy Resource Recovery Account, California Public Utilities Commission Application 25-05-011, Direct Testimony on behalf of Small Business Utility Advocates, September 2, 2024.

PJM Interconnection, L.L.C., FERC Docket No. EL25-1357 (RPM Cap and Floor), Affidavit in Support of the Protest of Sierra Club, March 13, 2025; Reply Affidavit, April 2, 2025.

Virginia Electric and Power Company's 2024 Integrated Resource Plan filing, Virginia State Corporation Commission Case No. PUR-2024-00184, Direct Testimony on behalf of Appalachian Voices, February 28, 2025; testimony at hearings April 16, 2025.

In Re: Alabama Power Company Petition for a Certificate of Convenience and Necessity, Alabama Public Service Commission Docket No. 33513, Direct Testimony on behalf of Energy Alabama and GASP, January 27, 2025; testimony at hearings April 15, 2025.

Complaint of Sierra Club, Natural Resources Defense Council, Public Citizen, Sustainable FERC Project and Union of Concerned Scientists (RMRs in RPM), FERC Docket No. EL24-148, Attachment 3, Affidavit in Support of the Complaint, September 26, 2024; Reply Affidavit, October 31, 2024.

In the Matter of the Application of Pacific Gas and Electric Company for Adoption of Electric Revenue Requirements and Rates Associated with its 2025 Energy Resource Recovery Account, California Public Utilities Commission Application 24-05-009, Direct Testimony on behalf of Small Business Utility Advocates, September 3, 2024.

In the Matter of the Application of Ohio Power Company for New Tariffs Related to Data Centers and Mobile Data Centers, Public Utilities Commission of Ohio Case No. 24-508-EL-ATA, Direct Testimony on

behalf of the Ohio Consumers' Counsel, August 29, 2024; Testimony in Opposition to the October 10, 2024 Joint Stipulation and Recommendation, October 31, 2024; Testimony in Support of the October 23, 2024 Joint Stipulation and Recommendation, November 1, 2024.

Mark McEvoy et al, Plaintiffs, v. Diversified Energy Company PLC, EQT Corporation, et. al, Defendants, United States District Court for the Northern District of West Virginia, Civil Action No. 5:22-CV-171, Expert Report prepared for Appalachian Mountain Advocates, June 19, 2024; deposition September 16, 2024.

In the Matter of the Biennial Consolidated Carbon Plan and Integrated Resource Plans of Duke Energy Carolinas, LLC, and Duke Energy Progress, LLC, North Carolina Utilities Commission Docket No. E-100, SUB 190, Direct Testimony on behalf of Southern Alliance for Clean Energy, Sierra Club, Natural Resources Defense Council, and North Carolina Sustainable Energy Association, May 28, 2024; testimony at hearings, August 1, 2024.

PJM Interconnection, L.L.C., FERC Docket No. ER24-98 (Market Seller Offer Cap), Affidavit in Support of the Protest of the Public Interest Organizations, November 9, 2023; Supplemental Affidavit, December 22, 2023.

PJM Interconnection, L.L.C., FERC Docket No. ER24-99 (Resource Adequacy), Affidavit in Support of the Protest of the Public Interest Entities, November 9, 2023.

Midcontinent Independent System Operator, Inc.'s Reliability Based Demand Curve, FERC Docket No. ER23-2977, Affidavit in Support of the Comments of Public Interest Organizations, November 3, 2023; Supplemental Affidavit in Support of the Comments and Reply of Public Interest Organizations, January 11, 2024.

In the Matter of the Application of Ohio Edison Company, the Cleveland Electric Illuminating Company, and the Toledo Edison Company for Authority to Establish a Standard Service Offer Pursuant to R.C. 4928.143 in the Form of an Electric Security Plan, Public Utilities Commission of Ohio Case No. 23-301-EL-SSO, Direct Testimony on behalf of the Office of the Ohio Consumers' Counsel, October 23, 2023; testimony at hearings, November 29, 2023.

In the Matter of the Application of Pacific Gas and Electric Company for Adoption of Electric Revenue Requirements and Rates Associated with its 2024 Energy Resource Recovery Account, California Public Utilities Commission Application 23-05-012, Direct Testimony on behalf of Small Business Utility Advocates, September 6, 2023.

Virginia Electric and Power Company's 2023 Integrated Resource Plan filing, Virginia State Corporation Commission Case No. PUR-2023-00066, Direct Testimony on behalf of Appalachian Voices, August 8, 2023; testimony at hearings, September 19, 2023.

In the Matter of the Application of Ohio Power Company for Authority to Establish a Standard Service Offer in the Form of an Electric Security Plan, Public Utilities Commission of Ohio Case No. 23-23-EL-SSO, Direct Testimony on Behalf of the Office of the Ohio Consumers' Counsel, June 9, 2023; Testimony Recommending Modification of the Stipulation, September 20, 2023; testimony at hearings, October 11, 2023.

Essential Power OPP, LLC, et al. v. PJM Interconnection, L.L.C, FERC Docket No. EL23-53 (Winter Storm Elliott complaint cases), Affidavit in Support of the Comments of Sierra Club, May 26, 2023.

PJM Interconnection, L.L.C., FERC Docket No. ER23-1609 (RPM auction delay), Affidavit in Support of the Comments of Sierra Club, May 2, 2023.

In the Matter of the Application of The Dayton Power and Light Company d/b/a AES Ohio for Approval of Its Electric Security Plan, Public Utilities Commission of Ohio Case No. 22-900-EL-SSO, Direct Testimony on Behalf of the Office of the Ohio Consumers' Counsel, April 21, 2023; deposition, April 26, 2023; testimony at hearings May 3, 2023.

PJM Interconnection, L.L.C., FERC Docket No. ER22-2984 (RPM Quadrennial Review), Affidavit in Support of the Comments of the Public Interest Entities, October 21, 2022; Reply Affidavit in Support of the Reply Comments of the Public Interest Entities, November 4, 2022.

In the Matter of the Application of Pacific Gas and Electric Company for Adoption of Electric Revenue Requirements and Rates Associated with its 2023 Energy Resource Recovery Account, California Public

Utilities Commission Application 22-05-029, Direct Testimony on behalf of Small Business Utility Advocates, September 7, 2022.

In the Matter of the Application of DTE Electric Company for Approval to Implement a Power Supply Cost Recovery Plan for the 12 months ending December 31, 2022, Michigan Public Service Commission Case No. U-21050, Direct Testimony on behalf of Michigan Environmental Council, August 3, 2022.

In Re: Washington Utilities and Transportation Commission v. Avista Corporation d/b/a Avista Utilities; In the Matter of the Electric Service Reliability Reporting Plan of Avista Corporation d/b/a Avista Utilities; Dockets UE-220053, UG-220054, and UE-210854 (Consolidated), Joint Testimony in Support of the Full Multiparty Settlement on behalf of Small Business Utility Advocates, July 8, 2022; Supplemental Joint Testimony in Support of the Colstrip Tracker and Schedule 99, July 29, 2022; Testimony at hearings September 21, 2022.

In Re: Georgia Power Company's 2022 Integrated Resource Plan and 2022 Application for the Certification, Decertification, and Amended Demand- Side Management Plan; Georgia Public Service Commission Docket Nos. 44160 and 44161; Direct Testimony on behalf of Georgia Interfaith Power & Light and the Partnership For Southern Equity, May 6, 2022; testimony at hearings May 26, 2022.

Clean Air Council et al. v. Pennsylvania Department of Environmental Protection, Environmental Hearing Board Docket No. 2021-055, *Review and Evaluation of the Need for and Alternatives to the Proposed Renovo Energy Center Power Plant*, report prepared on behalf of Clean Air Council, Citizens for Pennsylvania's Future, and the Center for Biological Diversity, filed March 30, 2022; additional affidavit, June 29, 2022.

Appalachian Power Company and Wheeling Power Company, Petition for Commission Consent and Approval to Enter into Ownership and Operating Agreements for the Mitchell Plant, Public Service Commission of West Virginia Case No. 21-0810-E-PC, Direct Testimony on Behalf of West Virginia Citizen Action Group, Solar United Neighbors, and Energy Efficient West Virginia, March 28, 2022.

In the Matter of the Application of DTE Electric Company for Reconciliation of its Power Supply Cost Recovery Plan for the 12-month Period Ending December 31, 2020, Michigan Public Service Commission Case No. U-20528, Direct Testimony on behalf of Michigan Environmental Council, November 23, 2021.

In the Matter of the Application of San Diego Gas & Electric Company for Approval of its 2022 Electric Sales Forecast, California Public Utilities Commission Application 21-08-010, Direct Testimony on behalf of Small Business Utility Advocates, October 1, 2021.

In the Matter of the Nova Scotia Power Inc. 2021 Load Forecast Report, Nova Scotia Utility and Review Board Matter No. M10109, Evidence on behalf of the Nova Scotia Consumer Advocate, July 21, 2021.

In the Matter of the Application of DTE Electric Company for Approval to Implement a Power Supply Cost Recovery Plan for the 12 months ending December 31, 2021, Michigan Public Service Commission Case No. U-20826, Direct Testimony on behalf of Michigan Environmental Council, June 6, 2021; Surrebuttal Testimony September 8, 2021.

Independent Market Monitor for PJM v. PJM Interconnection, LLC, FERC Docket No. EL19-47-000, and Office of the People's Counsel for District of Columbia et al v. PJM Interconnection, LLC, FERC Docket No. Docket No. EL19-63-000, Affidavit in Support of the Reply Brief of the Joint Consumer Advocates, June 9, 2021.

In Re: Application for the issuance of a certificate of public convenience and necessity for the internal modifications at coal fired generating plants necessary to comply with federal environmental regulations, Appalachian Power Company and Wheeling Power Company, Public Service Commission of West Virginia Case No. 20-1040-E-CN, Direct Testimony on behalf of West Virginia Citizens Action Group, Solar United Neighbors, and Energy Efficient West Virginia, Direct Testimony May 6, 2021; Rebuttal Testimony May 20, 2021; testimony at hearings June 9, 2021; Supplemental Direct Testimony September 24, 2021; testimony at additional hearings September 24, 2021.

In the Matter of the 2020 Biennial Integrated Resource Plans and Related 2020 REPS Compliance Plans of Duke Energy Carolinas, LLC and Duke Energy Progress, LLC, *Review and Evaluation of the 2020 Resource Adequacy Studies Relied Upon for the Duke Energy Carolinas and Duke Energy Progress 2020 Integrated Resource Plans*, Attachment 5 to the Partial Initial Comments of Southern Alliance for

Clean Energy, Sierra Club, and Natural Resources Defense Council, North Carolina Utilities Commission Docket No. E-100 Sub 165, March 1, 2021.

In the Matter of South Carolina Energy Freedom Act (House Bill 3659) Proceeding Related to S.C. Code Ann. Section 58-37-40 and Integrated Resource Plans for Duke Energy Carolinas, LLC and Duke Energy Progress, LLC, South Carolina Public Service Commission Docket Nos. 2019-224-E and 2019-225-E, Direct Testimony on behalf of Natural Resources Defense Council, Southern Alliance for Clean Energy, Sierra Club, South Carolina Coastal Conservation League, and Upstate Forever, February 5, 2021; Surrebuttal Testimony April 15, 2021.

In the matter of the Application of DTE Electric Company for Reconciliation of its Power Supply Cost Recovery Plan for the 12-month Period Ending December 31, 2019, Michigan Public Service Commission Case No. U-20222, Direct Testimony on behalf of Michigan Environmental Council, October 27, 2020.

Virginia Electric and Power Company's 2020 Integrated Resource Plan filing, Virginia State Corporation Commission Case No. PUR-2020-00035, Direct Testimony on behalf of Environmental Respondent, September 15, 2020; testimony at hearings, October 27, 2020.

PJM Interconnection, L.L.C., FERC Docket Nos. ER19-1486 and EL19-58-003, Affidavit in Support of the Public Interest and Customer Organizations' Partial Protest of and Comments on PJM's Compliance Filing Regarding Energy and Ancillary Service Offset, September 2, 2020.

In the Matter of the Application of DTE Electric Company for Authority to Implement a Power Supply Cost Recovery Plan in its Rate Schedules for 2020 Metered Jurisdictional Sales of Electricity, Michigan Public Service Commission Case No. U-20527, Direct Testimony on behalf of Michigan Environmental Council, June 17, 2020.

ISO New England Inc., FERC Docket Nos. EL18-182, ER20-1567 (New England Energy Security), Prepared Testimony in Support of the Protest of the New England States Committee on Electricity, May 15, 2020.

Proceedings on Motion of the Commission to Consider Resource Adequacy Matters, New York Public Service Commission Case No. 19-E-0530, Reply Affidavit on behalf of Natural Resources Defense Council, Sustainable FERC Project, Sierra Club, New Yorkers for Clean Power, Environmental Advocates of New York, and Vote Solar, January 31, 2020.

In the Matter of the Application of DTE Electric Company for Reconciliation of its Power Supply Cost Recovery Plan for the 12-month Period Ending December 31, 2018, Michigan Public Service Commission Case No. U-20203, Direct Testimony on behalf of Michigan Environmental Council, January 17, 2020.

In Re: Joint Application of Longview Power II, LLC and Longview Renewable Power, LLC to Authorize the Construction and Operation of Two Wholesale Electric Generating Facilities and One High-Voltage Electric Transmission Line in Monongalia County, Public Service Commission of West Virginia Case No. 19-0890-E-CS-CN, Direct Testimony on behalf of Sierra Club, January 3, 2020; testimony at hearings January 30, 2019.

In Re: Alabama Power Company Petition for a Certificate of Convenience and Necessity, Alabama Public Service Commission Docket No. 32953, Direct Testimony on Behalf of Energy Alabama and Gasp, December 4, 2019; testimony at hearings March 11, 2020; declaration (re COVID-19 impact) September 11, 2020.

In the Matter of Duke Energy Carolinas, LLC and Duke Energy Progress, LLC Standard Offer, Avoided Cost Methodologies, and Form Contract Power Purchase Agreements, South Carolina Public Service Commission Docket Nos. 2019-185-E and 2019-186-E, Direct Testimony on behalf of the South Carolina Coastal Conservation League and Southern Alliance for Clean Energy, September 11, 2019; surrebuttal testimony, October 11, 2019; direct and surrebuttal testimony at hearings, October 22, 2019.

In the Matter of the Application of DTE Electric Company for Authority to Implement a Power Supply Cost Recovery Plan in its Rate Schedules for 2019 Metered Jurisdictional Sales of Electricity, Michigan Public Service Commission Case No. U-20221, Direct Testimony on behalf of Michigan Environmental Council, May 28, 2019.

PJM Interconnection, L.L.C., FERC Docket Nos. EL19-58 and ER19-1486 (Reserve Pricing - ORDC), Affidavit in Support of the Protest of the Clean Energy Advocates, May 15, 2019.

PJM Interconnection, L.L.C., FERC Docket Nos. EL19-58 and ER19-1486 (Reserve Pricing - Transition), Affidavit in Support of the Protests of the PJM Load/Customer Coalition and Clean Energy Advocates, May 15, 2019.

In Re: Georgia Power Company's 2019 Integrated Resource Plan, Georgia Public Service Commission Docket No. 42310, Direct Testimony on Behalf of Georgia Interfaith Power & Light and the Partnership For Southern Equity, April 25, 2019; testimony at hearings May 14, 2019.

PJM Interconnection, L.L.C., FERC Docket No. EL19-63 (RPM Market Supplier Offer Cap), Affidavit in Support of the Complaint of the Joint Consumer Advocates, April 15, 2019.

In the Matter of 2018 Biennial Integrated Resource Plans and Related 2018 REPS Compliance Plans, North Carolina Utilities Commission Docket No. E-100 Sub 157, Review and Evaluation of the Load Forecasts, and Review and Evaluation of Resource Adequacy and Solar Capacity Value Issues, with regard to the Duke Energy Carolinas and Duke Energy Progress 2018 Integrated Resource Plans, Attachments 3 and 4 to the comments of Southern Alliance for Clean Energy, Sierra Club, and the Natural Resources Defense Council, March 7, 2019; presentation at technical conference, January 8, 2020.

In the Matter of Biennial Determination of Avoided Cost Rates for Electric Utility Purchases from Qualifying Facilities – 2018, North Carolina Utilities Commission Docket No. E-100 Sub 158, Review and Evaluation of Resource Adequacy and Solar Capacity Value Issues with regard to the Duke Energy Carolinas and Duke Energy Progress 2018 Integrated Resource Plans and Avoided Cost Filing, Attachment B to the Initial Comments of the Southern Alliance for Clean Energy, February 12, 2019.

PJM Interconnection, L.L.C., FERC Docket No. ER19-105 (RPM Quadrennial Review), Affidavit in Support of the Limited Protest and Comments of the Public Interest Entities, November 19, 2018.

PJM Interconnection, L.L.C., FERC Docket No. EL18-178 (MOPR and FRR Alternative), Affidavit in Support of the Comments of the FRR-RS Supporters, October 2, 2018; Reply Affidavit on behalf of Clean Energy and Consumer Advocates, November 6, 2018.

Virginia Electric and Power Company's 2018 Integrated Resource Plan filing, Virginia State Corporation Commission Case No. PUR-2018-00065, Direct Testimony on behalf of Environmental Respondents, August 10, 2018; testimony at hearings September 25, 2018; Supplemental Testimony, April 16, 2019.

In the Matter of the Application of Duke Energy Ohio for an Increase in Electric Distribution Rates, etc., Public Utilities Commission of Ohio Case No. 17-32-EL-AIR et al, Direct Testimony on Behalf of the Office of the Ohio Consumers' Counsel, June 25, 2018; deposition, July 3, 2018; testimony at hearings, July 19, 2018.

In the Matter of the Application of DTE Gas Company for Approval of a Gas Cost Recovery Plan, 5-year Forecast and Monthly GCR Factor for the 12 Months ending March 31, 2019, Michigan Public Service Commission Case No. U-18412, Direct Testimony on behalf of Michigan Environmental Council, June 7, 2018.

Constellation Mystic Power, L.L.C., FERC Docket No. ER18-1639-000 (Mystic Cost of Service Agreement), Affidavit in Support of the Comments of New England States Committee on Electricity, June 6, 2018; prepared answering testimony, August 23, 2018.

New England Power Generators Association, Complainant v. ISO New England Inc. Respondent, FERC Docket No. EL18-154-000 (re: capacity offer price of Mystic power plant), Affidavit in Support of the Protest of New England States Committee on Electricity, June 6, 2018.

PJM Interconnection, L.L.C., FERC Docket No. ER18-1314 (Capacity repricing or MOPR-Ex), Affidavit in Support of the Protests of DC-MD-NJ Consumer Coalition, Joint Consumer Advocates, and Clean Energy Advocates, May 7, 2018; reply affidavit, June 15, 2018.

In the Matter of the Application of DTE Electric Company for Authority to Implement a Power Supply Cost Recovery Plan in its Rate Schedules for 2018 Metered Jurisdictional Sales of Electricity, Michigan Public Service Commission Case No. U-18403, Direct Testimony on behalf of Michigan Environmental Council and Sierra Club, April 20, 2018.

Virginia Electric and Power Company's 2017 Integrated Resource Plan filing, Virginia State Corporation Commission Case No. PUR-2017-00051, Direct Testimony on behalf of Environmental Respondents, August 11, 2017; testimony at hearings September 26, 2017.

Ohio House of Representatives Public Utilities Committee hearing on House Bill 178 (Zero Emission Nuclear Resource legislation), Opponent Testimony on Behalf of Natural Resources Defense Council, May 15, 2017.

In the Matter of the Application of Atlantic Coast Pipeline, Federal Energy Regulatory Commission Docket No. CP15-554, Evaluating Market Need for the Atlantic Coast Pipeline, Attachment 2 to the comments of Shenandoah Valley Network *et al*, April 6, 2017.

In the Matter of the Application of DTE Electric Company for Authority to Implement a Power Supply Cost Recovery Plan in its Rate Schedules for 2017 Metered Jurisdictional Sales of Electricity, Michigan Public Service Commission Case No. U-18143, Direct Testimony on behalf of Michigan Environmental Council and Sierra Club, March 22, 2017.

In the Matter of the Petition of Washington Gas Light Company for Approval of Revised Tariff Provisions to Facilitate Access to Natural Gas in the Company's Maryland Franchise Area That Are Currently Without Natural Gas Service, Maryland Public Service Commission Case No. 9433, Direct Testimony on Behalf of the Mid-Atlantic Propane Gas Association and the Mid-Atlantic Petroleum Distributors Association, Inc., March 1, 2017; testimony at hearings, May 1, 2017.

In the Matter of Integrated Resource Plans and Related 2016 REPS Compliance Plans, North Carolina Utilities Commission Docket No. E-100 Sub 147, Review and Evaluation of the Peak Load Forecasts and Reserve Margin Determinations for the Duke Energy Carolinas and Duke Energy Progress 2016 Integrated Resource Plans, Attachments A and B to the comments of the Natural Resources Defense Council, Southern Alliance for Clean Energy, and the Sierra Club, February 17, 2017.

In the Matter of the Tariff Revisions Designated TA285-4 filed by ENSTAR Natural Gas Company, a Division of SEMCO Energy, Inc., Regulatory Commission of Alaska Case No. U-16-066, Testimony on Behalf of Matanuska Electric Association, Inc., February 7, 2017, testimony at hearings, June 21, 2017.

PJM Interconnection, L.L.C., FERC Docket No. ER17-367 (seasonal capacity), Prepared Testimony on Behalf of Advanced Energy Management Alliance, Environmental Law & Policy Center, Natural Resources Defense Council, Rockland Electric Company and Sierra Club, December 8, 2016; Declaration in support of Protest of Response to Deficiency Letter, February 13, 2017.

Natural Resources Defense Council, Sierra Club, and Union of Concerned Scientists v. Federal Energy Regulatory Commission, U.S. District Court of Appeals for the D.C. Circuit Case No. 16-1236 (Capacity Performance), Declaration, September 23, 2016.

Mountaineer Gas Company Infrastructure Replacement and Expansion Program Filing for 2016, West Virginia Public Service Commission Case No. 15-1256-G-390P, and Mountaineer Gas Company Infrastructure Replacement and Expansion Program Filing for 2017, West Virginia Public Service Commission Case No. 16-0922-G-390P, Direct Testimony on behalf of the West Virginia Propane Gas Association, September 9, 2016.

Application of Chesapeake Utilities Corporation for a General Increase in its Natural Gas Rates and for Approval of Certain Other Changes to its Natural Gas Tariff, Delaware P.S.C. Docket No. 15-1734, Direct Testimony on behalf of the Delaware Association Of Alternative Energy Providers, Inc., August 24, 2016.

Virginia Electric and Power Company's 2016 Integrated Resource Plan filing, Virginia State Corporation Commission Case No. PUE-2016-00049, Direct Testimony on behalf of Environmental Respondents, August 17, 2016; testimony at hearings October 5, 2016.

In the Matter of the Application of DTE Electric Company for Authority to Implement a Power Supply Cost Recovery Plan in its Rate Schedules for 2016 Metered Jurisdictional Sales of Electricity, Michigan Public Service Commission Case No. U-17920, Direct Testimony on behalf of Michigan Environmental Council and Sierra Club, March 14, 2016.

In the Matter of the Application Seeking Approval of Ohio Power Company's Proposal to Enter into an Affiliate Power Purchase Agreement for Inclusion in the Power Purchase Agreement Rider, Public Utilities Commission of Ohio Case No. 14-1693-EL-RDR: Direct Testimony on Behalf of the Office of the Ohio

Consumers' Counsel, September 11, 2015; deposition, September 30, 2015; supplemental deposition, October 16, 2015; testimony at hearings, October 21, 2015; supplemental testimony December 28, 2015; second supplemental deposition, December 30, 2015; testimony at hearings January 8, 2016.

Indicated Market Participants v. PJM Interconnection, L.L.C., FERC Docket No. EL15-88 (Capacity Performance transition auctions), Affidavit on behalf of the Joint Consumer Representatives and Interested State Commissions, August 17, 2015.

ISO New England Inc. and New England Power Pool Participants Committee, FERC Docket No. ER15-2208 (Winter Reliability Program), Testimony on Behalf of the New England States Committee on Electricity, August 5, 2015.

Joint Consumer Representatives v. PJM Interconnection, L.L.C., FERC Docket No. EL15-83 (load forecast for capacity auctions), Affidavit in Support of the Motion to Intervene and Comments of the Public Power Association of New Jersey, July 20, 2015.

In the Matter of the Tariff Revisions Filed by ENSTAR Natural Gas Company, a Division of SEMCO Energy, Inc., Regulatory Commission of Alaska Case No. U-14-111, Testimony on Behalf of Matanuska Electric Association, Inc., May 13, 2015.

In the Matter of the Application of Ohio Edison Company et al for Authority to Provide for a Standard Service Offer Pursuant to R.C. 4928.143 in the Form of an Electric Security Plan, Public Utilities Commission of Ohio Case No. 14-1297-EL-SSO: Direct Testimony on Behalf of the Office of the Ohio Consumers' Counsel and Northeast Ohio Public Energy Council, December 22, 2014; deposition, February 10, 2015; supplemental testimony May 11, 2015; second deposition May 26, 2015; testimony at hearings, October 2, 2015; second supplemental testimony December 30, 2015; third deposition January 8, 2016; testimony at hearings January 19, 2016; rehearing direct testimony June 22, 2016; fourth deposition July 5, 2016; testimony at hearings July 14, 2016.

PJM Interconnection, L.L.C., FERC Docket No. ER14-2940 (RPM Triennial Review), Affidavit in Support of the Protest of the PJM Load Group, October 16, 2014.

In the Matter of the Application of Duke Energy Ohio for Authority to Establish a Standard Service Offer in the Form of an Electric Security Plan, Public Utilities Commission of Ohio Case No. 14-841-EL-SSO: Direct Testimony on Behalf of the Office of the Ohio Consumers' Counsel, September 26, 2014; deposition, October 6, 2014; testimony at hearings, November 5, 2014.

In the Matter of the Application of Ohio Power Company for Authority to Establish a Standard Service Offer in the Form of an Electric Security Plan, Public Utilities Commission of Ohio Case No. 13-2385-EL-SSO: Direct Testimony on Behalf of the Office of the Ohio Consumers' Counsel, May 6, 2014; deposition, May 29, 2014; testimony at hearings, June 16, 2014.

PJM Interconnection, L.L.C., FERC Docket No. ER14-504 (clearing of Demand Response in RPM), Affidavit in Support of the Protest of the Joint Consumer Advocates and Public Interest Organizations, December 20, 2013.

New England Power Generators Association, Inc. v. ISO New England Inc., FERC Docket No. EL14-7 (administrative capacity pricing), Testimony in Support of the Protest of the New England States Committee on Electricity, November 27, 2013.

Midwest Independent Transmission System Operator, Inc., FERC Docket No. ER11-4081 (minimum offer price rule), Affidavit In Support of Brief of the Midwest TDUs, October 11, 2013.

ANR Storage Company, FERC Docket No. RP12-479 (storage market-based rates), Prepared Answering Testimony on behalf of the Joint Intervenor Group, April 2, 2013; Prepared Cross-answering Testimony, May 15, 2013; testimony at hearings, September 4, 2013.

In the Matter of the Application of The Dayton Power and Light Company for Approval of its Market Rate Offer, Public Utilities Commission of Ohio Case No. 12-426-EL-SSO: Direct Testimony on Behalf of the Office of the Ohio Consumers' Counsel, March 5, 2013; deposition, March 11, 2013.

PJM Interconnection, L.L.C., FERC Docket No. ER13-535 (minimum offer price rule), Affidavit in Support of the Protest and Comments of the Joint Consumer Advocates, December 28, 2012.

In the Matter of the Application of Ohio Edison Company, et al for Authority to Provide for a Standard Service Offer in the Form of an Electric Security Plan, Public Utilities Commission of Ohio Case No. 12-1230-EL-SSO: Direct Testimony on Behalf of the Office of the Ohio Consumers' Counsel, May 21, 2012; deposition, May 30, 2012; testimony at hearings, June 5, 2012.

PJM Interconnection, L.L.C., FERC Docket No. ER12-513 (changes to RPM), Affidavit in Support of Protest of the Joint Consumer Advocates and Demand Response Supporters, December 22, 2011.

People of the State of Illinois *ex rel.* Leon A. Greenblatt, III v Commonwealth Edison Company, Circuit Court of Cook County, Illinois, deposition, September 22, 2011; interrogatory, Feb. 22, 2011.

In the Matter of the Application of Union Electric Company for Authority to Continue the Transfer of Functional Control of Its Transmission System to the Midwest Independent Transmission System Operator, Inc., Missouri PSC Case No. EO-2011-0128, Testimony in hearings, February 9, 2012; Rebuttal Testimony and Response to Commission Questions On Behalf Of The Missouri Joint Municipal Electric Utility Commission, September 14, 2011.

PJM Interconnection, L.L.C., and PJM Power Providers Group v. PJM Interconnection, L.L.C., FERC Docket Nos. ER11-2875 and EL11-20 (minimum offer price rule), Affidavit in Support of Protest of New Jersey Division of Rate Counsel, March 4, 2011, and Affidavit in Support of Request for Rehearing and for Expedited Consideration of New Jersey Division of Rate Counsel, May 12, 2011.

PJM Interconnection, L.L.C., FERC Docket No. ER11-2288 (demand response "saturation"), Affidavit in Support of Protest and Comments of the Joint Consumer Advocates, December 23, 2010.

North American Electric Reliability Corporation, FERC Docket No. RM10-10, Comments on Proposed Reliability Standard BAL-502-RFC-02: Planning Resource Adequacy Analysis, Assessment and Documentation, December 23, 2010.

In the Matter of the Reliability Pricing Model and the 2013/2014 Delivery Year Base Residual Auction Results, Maryland Public Service Commission Administrative Docket PC 22, Comments and Responses to Questions On Behalf of Southern Maryland Electric Cooperative, October 15, 2010.

PJM Interconnection, L.L.C., FERC Docket No. ER09-1063-004 (PJM compliance filing on pricing during operating reserve shortages): Affidavit In Support of Comments and Protest of the Pennsylvania Public Utility Commission, July 30, 2010.

ISO New England, Inc. and New England Power Pool, FERC Docket No. ER10-787 (minimum offer price rules): Direct Testimony On Behalf Of The Connecticut Department of Public Utility Control, March 30, 2010; Direct Testimony in Support of First Brief of the Joint Filing Supporters, July 1, 2010; Supplemental Testimony in Support of Second Brief of the Joint Filing Supporters, September 1, 2010.

PJM Interconnection, L.L.C., FERC Docket No. ER09-412-006 (RPM incremental auctions): Affidavit In Support of Protest of Indicated Consumer Interests, January 19, 2010.

In the Matter of the Application of Ohio Edison Company, et al for Approval of a Market Rate Offer to Conduct a Competitive Bidding Process for Standard Service Offer Electric Generation Supply, Public Utilities Commission of Ohio Case No. 09-906-EL-SSO: Direct Testimony on Behalf of the Office of the Ohio Consumers' Counsel, December 7, 2009; deposition, December 10, 2009, testimony at hearings, December 22, 2009.

Application of PATH Allegheny Virginia Transmission Corporation for Certificates of Public Convenience and Necessity to Construct Facilities: 765 kV Transmission Line through Loudon, Frederick and Clarke Counties, Virginia State Corporation Commission Case No. PUE-2009-00043: Direct Testimony on Behalf of Commission Staff, December 8, 2009.

PJM Interconnection, L.L.C., FERC Docket No. ER09-412-000: Affidavit on Proposed Changes to the Reliability Pricing Model on behalf of RPM Load Group, January 9, 2009; Reply Affidavit, January 26, 2009.

PJM Interconnection, L.L.C., FERC Docket No. ER09-412-000: Affidavit In Support of the Protest Regarding Load Forecast To Be Used in May 2009 RPM Auction, January 9, 2009.



Maryland Public Service Commission et al v. PJM Interconnection, L.L.C., FERC Docket No. EL08-67-000: Affidavit in Support Complaint of the RPM Buyers, May 30, 2008; Supplemental Affidavit, July 28, 2008.

PJM Interconnection, L.L.C., FERC Docket No. ER08-516: Affidavit On PJM's Proposed Change to RPM Parameters on Behalf of RPM Buyers, March 6, 2008.

PJM Interconnection, L.L.C., Reliability Pricing Model Compliance Filing, FERC Docket Nos. ER05-1410 and EL05-148: Affidavit Addressing RPM Compliance Filing Issues on Behalf of the Public Power Association of New Jersey, October 15, 2007.

TXU Energy Retail Company LP v. Leprino Foods Company, Inc., US District Court for the Northern District of California, Case No. C01-20289: Testimony at trial, November 15-29, 2006; Deposition, April 7, 2006; Expert Report on Behalf of Leprino Foods Company, March 10, 2006.

Gas Transmission Northwest Corporation, Federal Energy Regulation Commission Docket No. RP06-407: Reply Affidavit, October 26, 2006; Affidavit on Behalf of the Canadian Association of Petroleum Producers, October 18, 2006.

PJM Interconnection, L.L.C., Reliability Pricing Model, FERC Docket Nos. ER05-1410 and EL05-148: Supplemental Affidavit on Technical Conference Issues, June 22, 2006; Supplemental Affidavit Addressing Paper Hearing Topics, June 2, 2006; Affidavit on Behalf of the Public Power Association of New Jersey, October 19, 2005.

Maritimes & Northeast Pipeline, L.L.C., FERC Docket No. RP04-360-000: Prepared Cross Answering Testimony, March 11, 2005; Prepared Direct and Answering Testimony on Behalf of Firm Shipper Group, February 11, 2005.

Dynegy Marketing and Trade v. Multiut Corporation, US District Court of the Northern District of Illinois, Case. No. 02 C 7446: Deposition, September 1, 2005; Expert Report in response to Defendant's counterclaims, March 21, 2005; Expert Report on damages, October 15, 2004.

Application of Pacific Gas and Electric Company, California Public Utilities Commission proceeding A.04-03-021: Prepared Testimony, Policy for Throughput-Based Backbone Rates, on behalf of Pacific Gas and Electric Company, May 21, 2004.

Gas Market Activities, California Public Utilities Commission Order Instituting Investigation I.02-11-040: Testimony at hearings, July, 2004; Prepared Testimony, Comparison of Incentives Under Gas Procurement Incentive Mechanisms, on behalf of Pacific Gas and Electric Company, December 10, 2003.

Application of Red Lake Gas Storage, L.P., FERC Docket No. CP02-420, Affidavit in support of application for market-based rates for a proposed merchant gas storage facility, March 3, 2003.

Application of Pacific Gas and Electric Company, California Public Utilities Commission proceeding A.01-10-011: Testimony at hearings, April 1-2, 2003; Rebuttal Testimony, March 24, 2003; Prepared Testimony, Performance of the Gas Accord Market Structure, on behalf of Pacific Gas and Electric Company, January 13, 2003.

Application of Wild Goose Storage, Inc., California Public Utilities Commission proceeding A.01-06-029: Testimony at hearings, November, 2001; Prepared testimony regarding policies for backbone expansion and tolls, and potential ratepayer benefits of new storage, on behalf of Pacific Gas and Electric Company, October 24, 2001.

Public Utilities Commission of the State of California v. El Paso Natural Gas Co., FERC Docket No. RP00-241: Testimony at hearings, May-June, 2001; Prepared Testimony on behalf of Pacific Gas and Electric Company, May 8, 2001.

Application of Pacific Gas and Electric Company, California Public Utilities Commission proceeding A.99-09-053: Prepared testimony regarding market power consequences of divestiture of hydroelectric assets, December 5, 2000.

San Diego Gas & Electric Company, *et al*, FERC Docket No. EL00-95: Prepared testimony regarding proposed price mitigation measures on behalf of Pacific Gas and Electric Co., November 22, 2000.

Application of Harbor Cogeneration Company, FERC Docket No. ER99-1248: Affidavit in support of application for market-based rates for energy, capacity and ancillary services, December 1998.

Application of and Complaint of Residential Electric, Incorporated vs. Public Service Company of New Mexico, New Mexico Public Utility Commission Case Nos. 2867 and 2868: Testimony at hearings, November, 1998; Direct Testimony on behalf of Public Service Company of New Mexico on retail access issues, November, 1998.

Management audit of Public Service Electric and Gas' restructuring proposal for the New Jersey Board of Public Utilities: Prepared testimony on reliability and basic generation service, March 1998.

## **PUBLISHED ARTICLES**

*Forward Capacity Market CONEfusion*, Electricity Journal Vol. 23 Issue 9, November 2010.

*Reconsidering Resource Adequacy (Part 2): Capacity Planning for the Smart Grid*, Public Utilities Fortnightly, May 2010.

*Reconsidering Resource Adequacy (Part 1): Has the One-Day-in-Ten-Years Criterion Outlived Its Usefulness?* Public Utilities Fortnightly, April 2010.

*A Hard Look at Incentive Mechanisms for Natural Gas Procurement*, with K. Costello, National Regulatory Research Institute Report No. 06-15, November 2006.

*Natural Gas Procurement: A Hard Look at Incentive Mechanisms*, with K. Costello, Public Utilities Fortnightly, February 2006, p. 42.

*After the Gas Bubble: An Economic Evaluation of the Recent National Petroleum Council Study*, with K. Costello and H. Huntington, Energy Journal Vol. 26 No. 2 (2005).

*High Natural Gas Prices in California 2000-2001: Causes and Lessons*, Journal of Industry, Competition and Trade, vol. 2:1/2, November 2002.

*Restructuring the Electric Power Industry: Past Problems, Future Directions*, Natural Resources and Environment, ABA Section of Environment, Energy and Resources, Volume 16 No. 4, Spring, 2002.

*Scarcity, Market Power, Price Spikes, and Price Caps*, Electricity Journal, November, 2000.

*The New York ISO's Market Power Screens, Thresholds, and Mitigation: Why It Is Not A Model For Other Market Monitors*, Electricity Journal, August/September 2000.

*ISOs: A Grid-by-Grid Comparison*, Public Utilities Fortnightly, January 1, 1998.

*Economic Policy in the Natural Monopoly Industries in Russia: History and Prospects* (with V. Capelik), Voprosi Ekonomiki, November 1995.

*Meeting Russia's Electric Power Needs: Uncertainty, Risk and Economic Reform*, Financial and Business News, April 1993.

*Russian Energy Policy through the Eyes of an American Economist*, Energeticheskoye Stroitelstvo, December 1992, p 2.

*Fuel Contracting Under Uncertainty*, with R. B. Fancher and H. A. Mueller, IEEE Transactions on Power Systems, February, 1986, p. 26-33.

## **OTHER ARTICLES, REPORTS AND PRESENTATIONS**

*Panel: Examining Expected Load Growth in Illinois*, Illinois Commerce Commission, Resource Adequacy Policy Session, February 20, 2025.

Commonwealth of Virginia State Corporation Commission Technical Conference, *Electric Utilities and Load Growth*, Case No. PUR-2024-00144, Panel 2: Characteristics of new forecasted load and implications for cost allocation, Pre-Technical Conference Statement: *Data Centers Are Different: New Approaches Are Needed for Connecting, Forecasting, and Planning for Data Center Loads*,

December 9, 2024; participation in Panel 2, December 16, 2024 (comments also filed in Federal Energy Regulatory Commission Docket No. AD24-11).

*Panel: What's Happening to Load Growth in PJM?* Organization of PJM States, Inc. Annual Meeting, Cincinnati, Ohio, October 22, 2024.

*Panel: What Changes Has PJM Proposed to Capacity Markets?* Organization of PJM States, Inc. Annual Meeting, Cincinnati, Ohio, October 16, 2023.

*Pre-Forum Comments*, PJM Capacity Market Forum, FERC Docket No. AD17-11, June 2, 2023; panelist on Panel 2, Capacity Market Design Reforms, June 15, 2023; *Post-Forum Comments*, August 14, 2023.

*Maintaining the PJM Region's Robust Reserve Margins (a Critique of the PJM Report: Energy Transition in PJM: Resource Retirements, Replacements and Risks)*, May 2, 2023, prepared for Sierra Club and Natural Resources Defense Council.

*Panel: What's Happened to Load Growth in PJM?* Organization of PJM States, Inc. Annual Meeting, Columbus Ohio, October 22, 2024.

*Panel: Russia-Ukraine Conflict: Understanding the Big Picture*, Oberlin College Alumni Association Zoom Discussion June 6, 2022.

*Load Forecasting and Resource Planning for Extreme Cold*, presentation on behalf of the Southern Alliance for Clean Energy and Vote Solar, Florida Public Service Commission Workshop on Ten-Year Site Plans, June 1, 2022.

*Panel: Primary Challenges to Wholesale Markets*, American Public Power Association's Wholesale Markets Virtual Summit, July 14, 2020.

*Over-Procurement of Generating Capacity in PJM: Causes and Consequences*, prepared for Sierra Club and Natural Resources Defense Council, February 2020.

*Panel: Reserve Pricing*, Organization of PJM States Spring Strategy Meeting, April 8, 2019.

*Panel: Capacity Markets*, AWEA Future Power Markets Summit 2018, September 5, 2018.

With Rob Gramlich, *Maintaining Resource Adequacy in PJM While Accommodating State Policies: A Proposal for the Resource-Specific FRR Alternative*, July 27, 2018, prepared for Sierra Club, Natural Resources Defense Council, District of Columbia Office of the People's Counsel, American Council on Renewable Energy.

*Seasonal Capacity Technical Conference*, Federal Energy Regulatory Commission Docket Nos. EL17-32 and EL17-36, *Pre-Conference Comments* April 11, 2018; panelist, April 24, 2018, post-conference comments July 13, 2018.

*Panel: Demand Response*, Organization of PJM States Spring Strategy Meeting, April 9, 2018.

*Panel: Energy Price Formation*, Organization of PJM States Spring Strategy Meeting, April 9, 2018.

*Panel: Regional Reliability Standards: Requirements or Replaceable Relics?* Harvard Electricity Policy Group Ninetieth Plenary Session, March 22, 2018.

*Panel: Transitioning to 100% Capacity Performance: Implications to Wind, Solar, Hydro and DR*; moderator; Infocast's Mid-Atlantic Power Market Summit, October 24, 2017.

*Panel: PJM Market Design Proposals Addressing State Public Policy Initiatives*; Organization of PJM States, Inc. Annual Meeting, Arlington, VA, October 3, 2017.

*Post Technical Conference Comments*, State Policies and Wholesale Markets Operated by ISO New England Inc., New York Independent System Operator, Inc., and PJM Interconnection, L.L.C., FERC Docket No. AD17-11, June 22, 2017.

*Panel: How Can PJM Integrate Seasonal Resources into its Capacity Market?* Organization of PJM States, Inc. Annual Meeting, Columbus Ohio, October 19, 2016.

*IMAPP "Two-Tier" FCM Pricing Proposals: Description and Critique*, prepared for the New England States Committee on Electricity, October 2016.

*"Missing Money" Revisited: Evolution of PJM's RPM Capacity Construct*, report prepared for American Public Power Association, September 2016.

*Panel: PJM Grid 20/20: Focus on Public Policy Goals and Market Efficiency*, August 18, 2016.

*Panel: What is the PJM Load Forecast*, Organization of PJM States, Inc. Annual Meeting, October 12, 2015.

*PJM's "Capacity Performance" Tariff Changes: Estimated Impact on the Cost of Capacity*, prepared for the American Public Power Association, October, 2015.

*Panel: Capacity Performance (and Incentive) Reform*, EUCI Conference on Capacity Markets: Gauging Their Real Impact on Resource Development & Reliability, August 15, 2015.

*Panel on Load Forecasting*, Organization of PJM States Spring Strategy Meeting, April 13, 2015.

*Panelist for Session 2: Balancing Bulk Power System and Distribution System Reliability in the Eastern Interconnection*, Meeting of the Eastern Interconnection States' Planning Council, December 11, 2014.

*Panel: Impact of PJM Capacity Performance Proposal on Demand Response*, Mid-Atlantic Distributed Resources Initiative (MADRI) Working Group Meeting #36, December 9, 2014.

*Panel: Applying the Lessons Learned from Extreme Weather Events – What Changes Are Needed In PJM Markets and Obligations?* Infocast PJM Market Summit, October 28, 2014.

*Panel on RPM: What Changes Are Proposed This Year?* Organization of PJM States, Inc. 10<sup>th</sup> Annual Meeting, Chicago Illinois, October 13-14, 2014.

*Panel on centralized capacity market design going forward*, Centralized Capacity Markets in Regional Transmission Organizations and Independent System Operators, Docket No. AD13-7, September 25, 2013; post-conference comments, January 8, 2014.

*Economics of Planning for Resource Adequacy*, NARUC Summer Meetings, Denver, Colorado, July 21, 2013.

*The Increasing Need for Flexible Resources: Considerations for Forward Procurement*, EUCI Conference on Fast and Flexi-Ramp Resources, Chicago, Illinois, April 23-24, 2013.

*Panel on RPM Issues: Long Term Vision and Recommendations for Now*, Organization of PJM States, Inc. Spring Strategy Meeting, April 3, 2013.

*Comments On: The Economic Ramifications of Resource Adequacy Whitepaper*, peer review of whitepaper prepared for EISPC and NARUC, March 24, 2013.

*Resource Adequacy: Criteria, Constructs, Emerging Issues*, Coal Finance 2013, Institute for Policy Integrity, NYU School of Law, March 19, 2013.

*Panel Discussion – Alternative Models and Best Practices in Other Regions*, Long-Term Resource Adequacy Summit, California Public Utilities Commission and California ISO, San Francisco, California, February 26, 2013.

*Fundamental Capacity Market Design Choices: How Far Forward? How Locational?* EUCI Capacity Markets Conference, October 3, 2012.

*One Day in Ten Years? Economics of Resource Adequacy*, Mid-America Regulatory Conference Annual Meeting, June 12, 2012.

*Reliability and Economics: Separate Realities?* Harvard Electricity Policy Group Sixty-Fifth Plenary Session, December 1, 2011.

*National Regulatory Research Institute Teleseminar: The Economics of Resource Adequacy Planning: Should Reserve Margins Be About More Than Keeping the Lights On?*, panelist, September 15, 2011.

*Improving RTO-Operated Wholesale Electricity Markets: Recommendations for Market Reforms*, American Public Power Association Symposium, panelist, January 13, 2011.

*Shortage Pricing Issues*, panelist, Organization of PJM States, Inc. Sixth Annual Meeting, October 8, 2010.

*National Regulatory Research Institute Teleseminar: Forecasting Natural Gas Prices*, panelist, July 28, 2010.

*Comments on the NARUC-Initiated Report: Analysis of the Social, Economic and Environmental Effects of Maintaining Oil and Gas Exploration Moratoria On and Beneath Federal Lands* (February 15, 2010) submitted to NARUC on June 22, 2010.

*Forward Capacity Market CONEfusion*, Advanced Workshop in Regulation and Competition, 29<sup>th</sup> Annual Eastern Conference of the Center for Research in Regulated Industries, Rutgers University, May 21, 2010.

*One Day in Ten Years? Resource Adequacy for the Smart Grid*, revised draft November 2009.

*Approaches to Local Resource Adequacy*, presented at Electric Utility Consultants' Smart Capacity Markets Conference, November 9, 2009.

*One Day in Ten Years? Resource Adequacy for the Smarter Grid*, Advanced Workshop in Regulation and Competition, 28<sup>th</sup> Annual Eastern Conference of the Center for Research in Regulated Industries, Rutgers University, May 15, 2009.

*Resource Adequacy in Restructured Electricity Markets: Initial Results of PJM's Reliability Pricing Model (RPM)*, Advanced Workshop in Regulation and Competition, 27<sup>th</sup> Annual Eastern Conference of the Center for Research in Regulated Industries, Rutgers University, May 15, 2008.

*Statement* at Federal Energy Regulatory Commission technical conference, Capacity Markets in Regions with Organized Electric Markets, Docket No. AD08-4-000, May 7, 2008.

*Raising the Stakes on Capacity Incentives: PJM's Reliability Pricing Model (RPM)*, presentation at the University of California Energy Institute's 13<sup>th</sup> Annual POWER Research Conference, Berkeley, California, March 21, 2008.

*Raising the Stakes on Capacity Incentives: PJM's Reliability Pricing Model (RPM)*, report prepared for the American Public Power Association, March 14, 2008.

*Comments on GTN's Request for Market-Based Rates for Interruptible Transportation*, presentation at technical conference in Federal Energy Regulatory Commission Docket No. RP06-407, September 26-27, 2006 on behalf of Canadian Association of Petroleum Producers.

*Comments on Policies to Encourage Natural Gas Infrastructure, and Supplemental Comments on Market-Based Rates Policy For New Natural Gas Storage*, State of the Natural Gas Industry Conference, Federal Energy Regulatory Commission Docket No. AD05-14, October 12, 26, 2005.

*After the Gas Bubble: A Critique of the Modeling and Policy Evaluation Contained in the National Petroleum Council's 2003 Natural Gas Study*, with K. Costello and H. Huntington, presented at the 24<sup>th</sup> Annual North American Conference of the USAEE/IAEE, July 2004.

*Comments on the Pipeline Capacity Reserve Concept*, State of the Natural Gas Industry Conference, Federal Energy Regulatory Commission Docket No. PL04-17, October 21, 2004.

*Southwest Natural Gas Market and the Need for Storage*, Federal Energy Regulatory Commission's Southwestern Gas Storage Technical Conference, docket AD03-11, August 2003.

*Assessing Market Power in Power Markets: the "Pivotal Supplier" Approach and Variants*, presented at Electric Utility Consultants' Ancillary Services Conference, November 1, 2001.

*Scarcity and Price Mitigation in Western Power Markets*, presented at Electric Utility Consultants' conference: What To Expect In Western Power Markets This Summer, May 1-2, 2001.

*Market Power: Definition, Detection, Mitigation*, pre-conference workshop, with Scott Harvey, January 24, 2001.

*Market Monitoring in the U.S.: Evolution and Current Issues*, presented at the Association of Power Exchanges' APEx 2000 Conference, October 25, 2000.

*Ancillary Services and Market Power*, presented at the Electric Utility Consultants' Ancillary Services Conference (New Business Opportunities in Competitive Ancillary Services Markets), Sept. 14, 2000.

*Market Monitoring Workshop*, presented to RTO West Market Monitoring Work Group, June 2000.

*Screens and Thresholds Used In Market Monitoring*, presented at the Conference on RTOs and Market Monitoring, Edison Electric Institute and Energy Daily, May 19, 2000.

*The Regional Transmission Organization's Role in Market Monitoring*, report for the Edison Electric Institute attached to their comments on the FERC's NOPR on RTOs, August, 1999.

*The Independent System Operator's Mission and Role in Reliability*, presented at the Electric Utility Consultants' Conference on ISOs and Transmission Pricing, March 1998.

*Independent System Operators and Their Role in Maintaining Reliability in a Restructured Electric Power Industry*, ICF Resources for the U. S. Department of Energy, 1997.

*Rail Transport in the Russian Federation, Diagnostic Analysis and Policy Recommendations*, with V. Capelik and others, IRIS Market Environment Project, 1995.

*Telecommunications in the Russian Federation: Diagnostic Analysis and Policy Recommendations*, with E. Whitlock and V. Capelik, IRIS Market Environment Project, 1995.

*Russian Natural Gas Industry: Diagnostic Analysis and Policy Recommendations*, with I. Sorokin and V. Eskin, IRIS Market Environment Project, 1995.

*Russian Electric Power Industry: Diagnostic Analysis and Policy Recommendations*, with I. Sorokin, IRIS Market Environment Project, 1995.

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