

**STATE OF NEW JERSEY  
OFFICE OF ADMINISTRATIVE LAW  
BEFORE THE HONORABLE GAIL M. COOKSON**

<b>I/M/O THE PETITION OF PUBLIC</b>	)	
<b>SERVICE ELECTRIC AND GAS</b>	)	
<b>COMPANY FOR APPROVAL OF AN</b>	)	
<b>INCREASE IN ELECTRIC AND GAS</b>	)	<b>BPU DOCKET NOS. ER18010029 and</b>
<b>RATES AND FOR CHANGES IN THE</b>	)	<b>GR18010030</b>
<b>TARIFFS FOR ELECTRIC AND GAS</b>	)	
<b>SERVICE, B.P.U.N.J. NO.16 ELECTRIC</b>	)	<b>OAL DOCKET NO. PUC 01151-18</b>
<b>AND B.P.U.N.J. NO. 16 GAS, AND FOR</b>	)	
<b>CHANGES IN DEPRECIATION RATES,</b>	)	
<b>PURSUANT TO N.J.S.A. 48:2-18, N.J.S.A.</b>	)	
<b>48:2-21 AND N.J.S.A. 48:2-21.1 AND FOR</b>	)	
<b>OTHER APPROPRIATE RELIEF</b>	)	

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**DIRECT TESTIMONY OF DR. DAVID E. DISMUKES, PH.D.  
ON BEHALF OF THE  
DIVISION OF RATE COUNSEL**

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**DIRECT TESTIMONY OF**  
**DAVID E. DISMUKES, PH.D.**  
**ON BEHALF OF THE**  
**NEW JERSEY DIVISION OF RATE COUNSEL**  
**BPU DOCKET NO. ER18010029 and GR18010030**

**I. INTRODUCTION**

**Q. WOULD YOU PLEASE STATE YOUR NAME AND BUSINESS ADDRESS?**

A. My name is David E. Dismukes. My business address is 5800 One Perkins Place Drive, Suite 5-F, Baton Rouge, Louisiana, 70808.

**Q. WOULD YOU PLEASE STATE YOUR OCCUPATION AND CURRENT PLACE OF EMPLOYMENT?**

A. I am a Consulting Economist with the Acadian Consulting Group (“ACG”), a research and consulting firm that specializes in the analysis of regulatory, economic, financial, accounting, statistical, and public policy issues associated with regulated and energy industries. ACG is a Louisiana-registered partnership, formed in 1995, and is located in Baton Rouge, Louisiana.

**Q. DO YOU HOLD ANY ACADEMIC POSITIONS?**

A. Yes. I am a full Professor, Executive Director, and Director of Policy Analysis at the Center for Energy Studies, Louisiana State University (“LSU”). I am also a full Professor in the Department of Environmental Sciences and the Director of the Coastal Marine Institute in the School of the Coast and Environment at LSU. I also serve as an Adjunct Professor in the E. J. Ourso College of Business Administration (Department of Economics), and I am a member of the graduate research faculty at LSU. Appendix A provides my academic curriculum vitae, which

1 includes a full listing of my publications, presentations, pre-filed expert witness testimony, expert  
2 reports, expert legislative testimony, and affidavits.

3 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

4 A. I have been retained by the New Jersey Division of Rate Counsel (“Rate Counsel”) to  
5 provide an expert opinion to the Board of Public Utilities (“BPU” or “Board”) on a number of  
6 economic and regulatory policy issues included in the base rate proposal filed by Public Service  
7 Gas & Electric Company (“PSE&G” or “the Company”) on January 12, 2018. My testimony will  
8 focus on the economic and regulatory policy issues associated with the Company’s pipeline  
9 replacement and resiliency efforts while Mr. Edward McGee, an independent engineering  
10 consultant for ACG, will address the specific engineering issues associated with these pipeline  
11 replacement efforts. I will also address the Company’s revenue decoupling, or “green enabling  
12 mechanism” (“GEM”) proposal. Lastly, I will address the Company’s cost benchmarking analysis  
13 and a few of the policy issues related to the Company’s request to earn at the upper end of its  
14 authorized return on equity (“ROE”). Mr. Matthew Kahal, another expert appearing on the behalf  
15 of Rate Counsel, will address the remaining set of issues related to the Company’s ROE request.

16 **Q. HAVE YOU PREPARED ANY SCHEDULES IN SUPPORT OF YOUR**  
17 **RECOMMENDATIONS?**

18 A. Yes. I have prepared six schedules in support of my direct testimony that were prepared  
19 by me or under my direct supervision.

20 **Q. HOW IS THE REMAINDER OF YOUR TESTIMONY ORGANIZED?**

21 A. My testimony is organized into the following sections:

- 22 • Section II: Summary of Recommendations
- 23 • Section III: Overview of Company’s GEM Proposal

- 1 • Section IV: ROE Performance Incentive
- 2 • Section V: Energy Strong Program Performance
- 3 • Section VI: Gas System Modernization Program Performance
- 4 • Section VII: Conclusions and Recommendations

5 **II. SUMMARY OF RECOMMENDATIONS**

6 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS**  
7 **REGARDING THE COMPANY’S PROPOSED GEM?**

8 A. The Company’s GEM proposal should be rejected for a number of reasons. First, and most  
9 importantly, the Company has not tied its GEM request to a specific set of energy efficiency  
10 programs and savings targets. This makes the GEM a solution in search of a problem. Second,  
11 the Company’s GEM is entirely inconsistent with the recently enacted Clean Energy Act<sup>1</sup> that  
12 creates a Board-administered system of financial incentives and penalties that will directly reward  
13 or penalize the Company for its efficiency actions and it allows the utility to ask for lost base  
14 revenue recovery associated with specific efficiency-induced revenue losses. Third, the  
15 Company’s proposed GEM is inconsistent with the Board’s past policies regarding revenue  
16 adjustment mechanisms as they have been embodied in the various Conservation Incentive  
17 Program (“CIP”) approvals since 2006. Fourth, the Company has not been able to show that its  
18 efficiency activities have, or will have, a negative financial impact on its ability to earn its allowed  
19 rate of return. On a historical basis, the Company’s past efficiency efforts have not impacted its  
20 ability to earn its allowed ROE. The Company has not provided in this proceeding any projections  
21 that quantify any specific future earnings challenges, raising questions about its validity and

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<sup>1</sup> P.L. 2018, Chapter 17, approved May 23, 2018 Assembly, No. 3723.

1 whether or not the Company will, in fact, see financial impacts that differ significantly those  
2 experienced over the past five years.

3 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS**  
4 **REGARDING THE COMPANY’S PROPOSAL TO RECEIVE A HIGHER ROE AS A**  
5 **RESULT OF ITS OPERATING PERFORMANCE?**

6 A. The Board should reject the Company’s position that its operating performance should  
7 allow it a higher ROE. The Company’s benchmarking analysis does not warrant an increase in its  
8 ROE. The incentive ROE request is inconsistent with the basic principles of the regulatory  
9 compact as it is commonly defined and used in utility regulation. The Company’s proposal is  
10 asymmetrical and comes at the cost of ratepayers. Furthermore, the Company’s failure to even  
11 quantify this apparent “bonus” in and of itself should be reason for rejection.

12 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS**  
13 **REGARDING THE COMPANY’S ENERGY STRONG AND GSMP I PROGRAMS?**

14 A. The Company appears to have made all the necessary replacements and system upgrades  
15 within the budgets approved by the Board for the GSMP I and gas portion of its Energy Strong  
16 Program. Although the Company has been able to complete the GSMP I within the awarded  
17 budget the Company has fallen short of the number of miles replaced. The Company now  
18 anticipates replacing 330 miles as opposed to the 400 miles initially estimated in the approved  
19 program Stipulation. The reduction in replacement miles is largely due to the increase in the  
20 Company’s cost per mile for replacements.

21 **III. GREEN ENABLING MECHANISM (“GEM”)**

22 **A. Introduction**

23 **Q. PLEASE EXPLAIN THE COMPANY’S PROPOSED GEM.**

1 A. The Company’s GEM is a type of revenue adjustment mechanism which the Company has  
2 characterized as a form of revenue decoupling. The GEM is constructed on a revenue per-customer  
3 basis and will allow the Company to recover any differences between actual post-rate case per-  
4 customer revenues and those authorized in the current proceeding.<sup>2</sup> In other words, if, after twelve  
5 months, actual revenues are less than allowed revenues under the proposed GEM, ratepayers would  
6 receive an additional rate increase. If the actual revenues are more than the allowed revenues  
7 under the GEM, ratepayers would receive a rate decrease. The Company is requesting the  
8 approval of the GEM for both its electric and gas operations.<sup>3</sup> There is no time duration offered  
9 for the GEM proposal and, presumably, it will remain in place until such time that the Company  
10 requests its discontinuation.

11 **Q. WHAT IS THE COMPANY’S RATIONALE FOR PROPOSING THE GEM?**

12 A. The Company states that the GEM is a “prerequisite” in order for PSE&G to fulfill its  
13 commitment to significantly increase its investment in cost-effective energy efficiency initiatives,  
14 which would reduce customer usage, customer bills, and emissions.<sup>4</sup> The Company states that it  
15 currently has a disincentive to encourage customers to reduce usage because when customers  
16 reduce usage PSE&G loses revenues.<sup>5</sup> According to the Company, this disincentive is created by  
17 the fact that a large amount of the Company’s revenues, and costs, are recovered through  
18 volumetric charges. The Company notes that as volumes fall, due to conservation or any other  
19 factor, so too do volumetric-based revenues. The GEM will eliminate this disincentive, the  
20 Company argues, since the Company will be made whole for any revenue losses between rate

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<sup>2</sup> Direct Testimony of Daniel Hansen, 2:14-21.

<sup>3</sup> Company’s Petition, p.15, ¶46.

<sup>4</sup> Company’s Petition, p.15, ¶47.

<sup>5</sup> Direct Testimony of Daniel Hansen, 2:7-10.

1 cases. The Company believes that this is particularly relevant because PSE&G is planning to  
2 implement a large set of energy efficiency programs.<sup>6</sup>

3 **Q. IS REVENUE DECOUPLING A NEW METHOD FOR DEALING WITH**  
4 **CHANGES IN SALES RESULTING FROM ENERGY EFFICIENCY?**

5 A. No. Revenue decoupling dates back to the late 1980s and early 1990s and was included as  
6 a regulatory review requirement in the Energy Policy Act of 1992 (“EPAct 1992”). During this  
7 period, revenue decoupling initiatives were driven primarily by the electric utility industry, as well  
8 as many of the same energy efficiency and environmental advocates promoting the mechanism  
9 today. Most decoupling mechanisms created during this period were eliminated during the electric  
10 restructuring process that also began in the early 1990s and accelerated through the better part of  
11 the decade. A number of states, however, have re-instated revenue decoupling for electric utilities,  
12 but the policy is more pervasive for natural gas distribution utilities. Schedule DED-1 has a map  
13 indicating which states have electric and natural gas utility revenue decoupling. This map,  
14 however, can tend to distort the pervasiveness of the use of this regulatory mechanism. Currently,  
15 only 35 electric utilities, out of 152 investor-owned electric utilities<sup>7</sup> have an active revenue  
16 decoupling mechanism (23 percent of total electric utilities) and only 44 natural gas utilities, out  
17 of 256 investor-owned gas utilities<sup>8</sup> have similar mechanisms (17 percent of total gas utilities).

18 **Q. WHAT FACTORS HAVE MOTIVATED RENEWED INTEREST IN REVENUE**  
19 **DECOUPLING?**

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<sup>6</sup> Direct Testimony of Daniel Hansen, 3:6-7.

<sup>7</sup> Energy Information Administration Form 861. Includes utilities listed as “Investor Owned” engaged in electricity distribution.

<sup>8</sup> Energy Information Administration Form 176. Includes utilities listed as “Investor Owned” or “Private” with nonzero residential sales volumes.

1 A. Revenue decoupling attained a new level of interest around 2004 and 2005 primarily due  
2 to (1) increases in natural gas prices which reduced overall usage and (2) the acceleration of state-  
3 driven energy efficiency goals and targets. Schedule DED-2 shows the adoption of revenue  
4 decoupling mechanisms across time and the strong correlation between the program's adoption  
5 and natural gas prices. On an incremental basis, few states have been moving forward with  
6 adopting revenue decoupling over the past several years. Those states that were early adopters of  
7 revenue decoupling policies have maintained their use, but those states that have not adopted the  
8 mechanism do not appear to be rushing in that direction any time soon.

9 **Q. ARE DECREASES IN SALES DUE TO ENERGY EFFICIENCY THE ONLY**  
10 **REASON THAT TEST YEAR REVENUES AND ACTUAL REVENUES MAY DIFFER?**

11 A. No. There are a variety of factors that can influence sales between rate cases and can lead  
12 to differences between actual retail sales and revenues and those in a utility's test year used to  
13 establish rates. Test year retail sales and revenues in a rate case are usually based upon a "typical"  
14 year, and as such, they are based upon factors such as the weather, the economy, and prices, among  
15 other factors. In any given year, the actual performance of the economy may differ from the test  
16 year. Weather may be colder or warmer than the historical normal weather trends included in the  
17 test year, and other factors may occur that could impact sales differently than what was anticipated  
18 in the test year determination. The differences in sales created by weather, the economy,  
19 commodity prices, and other factors usually account for greater changes in revenue than those  
20 resulting from utility-sponsored energy efficiency programs.

21 **Q. IS THE COMPANY'S GEM APPROPRIATE?**

22 A. No. The Company's GEM suffers from a number of shortcomings that include:  
23 • The proposal is not needed since it is inconsistent with New Jersey's recently-passed  
24 Clean Energy Act requirements and provisions.

- 1 • The proposal is inconsistent with past Board revenue adjustment policies.
- 2 • The GEM proposal is not accompanied by any bona fide energy efficiency program
- 3 commitments.
- 4 • The Company has not shown how its current or proposed energy efficiency efforts have
- 5 resulted in a negative financial impact.

6 **a. The Company’s proposal is inconsistent with the Clean Energy Act.**

7 **Q. PLEASE EXPLAIN NEW JERSEY’S RECENT CLEAN ENERGY ACT.**

8 A. Senate Bill 2314 and Assembly Bill 3723 (“S.2314/A.3723”), or the “Clean Energy Act,”  
9 establishes and modifies New Jersey’s clean energy and energy efficiency programs in addition to  
10 modifying the State's solar renewable energy portfolio standards.<sup>9</sup> The newly-passed legislation  
11 requires electric utilities, within a five-year period, to reduce electricity usage by at least two  
12 percent per year. This two percent reduction is relative to the prior three-year average electricity  
13 levels. Similarly, the legislation requires natural gas utilities to achieve at least a 0.75 percent  
14 annual usage reduction, over a five-year period. Again, this reduction is relative to the prior three  
15 year average annual usage level.<sup>10</sup>

16 **Q. DOES THIS LEGISLATION IMPACT UTILITY INCENTIVES FOR ADOPTING**  
17 **ENERGY EFFICIENCY?**

18 A. Yes. The Company is requesting adoption of the GEM to reduce what it claims is a  
19 disincentive to adopt energy efficiency programs. The Clean Energy Act effectively eliminates  
20 this disincentive since it mandates utilities to adopt energy efficiency programs and meet target  
21 usage reduction levels. The Board need not adopt PSE&G’s GEM proposal to require the  
22 Company to behave in a certain manner since this legislation already does so in a number of  
23 different ways.

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<sup>9</sup> P.L. 2018, Chapter 17, approved May 23, 2018 Assembly, No. 3723.

<sup>10</sup> P.L. 2018, Chapter 17, §3(a).

1 **Q. EXPLAIN HOW THE CLEAN ENERGY ACT WILL CHANGE UTILITY**  
2 **ENERGY EFFICIENCY INCENTIVES.**

3 A. The legislation mandates the establishment of both incentives and penalties for utilities’  
4 energy efficiency activities and performance. The legislation requires the Board to define a set of  
5 incentives for utilities to reward them for their energy efficiency activities. In addition, the  
6 legislation also requires the Board to evaluate utility failures to meet targeted usage reductions and  
7 to implement penalties where needed.<sup>11</sup> Thus, the new legislation directly addresses utilities’  
8 incentives for energy efficiency, eliminating the need for the GEM or any other type of revenue  
9 decoupling mechanism.

10 **Q. DOES THE LEGISLATION ADDRESS LOST BASE REVENUES?**

11 A. Yes. The legislation does address lost base revenues and offers specific remedies for any  
12 utility claims of efficiency program-induced revenue losses. The Clean Energy Act specifically  
13 provides that utilities can request recovery of costs including revenues associated with the “sales  
14 losses resulting from implementation of the energy efficiency and peak demand reductions” that  
15 are mandated under the legislation.<sup>12</sup> The legislation’s ratemaking treatment of lost revenues,  
16 therefore, is much more specific than the Company’s GEM proposal. The Company requests the  
17 Board approve a GEM that allows recovery of all revenue losses associated with any change in  
18 sales, regardless of reason: weather; electric and natural gas commodity price changes; economic  
19 conditions; exogenous shocks; efficiency changes; technological change; to name a few. The  
20 Clean Energy Act, however, is much more specific and calibrated, only allowing utilities to ask

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<sup>11</sup> P.L. 2018, Ch. 17, §3(e)(3).

<sup>12</sup> P.L. 2018, Ch. 17, §3(e)(1).

1 for lost base revenues that are shown to be directly attributable to their respective energy efficiency  
2 activities.

3 **b. The Company’s proposal is inconsistent with the Board’s past revenue**  
4 **adjustment policies.**

5 **Q. PLEASE DESCRIBE THE BOARD’S PAST REVENUE ADJUSTMENT**  
6 **POLICIES.**

7 A. The Board does not have a revenue decoupling mechanism even though there are a number  
8 of popular industry trade association surveys that suggest New Jersey is one of several states that  
9 have adopted some form of revenue decoupling mechanism. While it is true that New Jersey has  
10 a mechanism for addressing utility lost base revenues which is known as the Conservation  
11 Incentive Plan (“CIP”), this mechanism is **not** a true form of revenue decoupling and has  
12 characteristics that are much more performance-based and symmetric than traditional revenue  
13 decoupling mechanisms as they have been adopted throughout the U.S.

14 **Q. PLEASE EXPLAIN THE BOARD’S CONSERVATION INCENTIVE PLAN**  
15 **(“CIP”).**

16 A. In 2006, the Board adopted the CIP for New Jersey Natural Gas (“NJNG”) and South Jersey  
17 Gas Company (“SJG”).<sup>13</sup> PSE&G did not participate in the CIP proceeding. The purpose of the  
18 CIP was to address the purported issues associated with natural gas utilities’ incentive for adopting  
19 energy efficiency programs. The CIP allows NJNG and SJG (collectively, “gas utilities” for  
20 purposes of this discussion) to fund part of their respective energy efficiency programs with  
21 shareholder funds while allowing cost recoveries subject to conditions that assure ratepayers will  
22 benefit from efficiency gains.

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<sup>13</sup> Docket No. GR05121019 and Docket No. GR05121020, Order dated December 12, 2006.

1 **Q. HOW IS THE CIP UNIQUE RELATIVE TO OTHER FORMS OF LOST**  
2 **REVENUE ADJUSTMENT MECHANISMS?**

3 A. Revenue decoupling is a relatively blunt instrument for addressing energy efficiency  
4 incentives. Revenue decoupling mechanisms, like the GEM, allow utilities to recover all revenue  
5 losses, regardless of the reason for those losses. The CIP, however, directly links revenue recovery  
6 to natural gas utility energy efficiency activities. Further, revenue recoveries under the CIP are  
7 performance-based, in order to assure that all ratepayers receive benefits from a utility's efficiency  
8 activities, such as savings on the costs of interstate pipeline capacity. Revenue decoupling, has no  
9 such feature and, in fact, shifts a large part of the revenue losses from efficiency activities away  
10 from participants and onto non-participating customers with little benefit.

11 **Q. PLEASE EXPLAIN HOW THE CIP IS PERFORMANCE-BASED.**

12 A. The CIP ties lost revenue recovery to a reduction in a utility's costs of acquiring interstate  
13 gas pipeline and storage capacity, thus assuring that all ratepayers receive efficiency benefits. This  
14 performance "tying" aspect of the CIP leads to an important difference with revenue decoupling  
15 mechanisms like the GEM. The GEM is premised upon the position that (1) utilities have a large  
16 amount of fixed, capacity-related costs and (2) revenue collections are heavily weighted towards  
17 variable, volumetric-oriented charges. The Company argues that without decoupling, it will  
18 effectively "strand" a certain degree of fixed, capacity-related costs. The Company's proposed  
19 remedy, the GEM, however, will allow it to recover revenue losses attributable to any reason, not  
20 just the "stranding" of distribution capacity. The GEM would permit recovery of revenue losses  
21 from commodity price changes, shifts in the regional economy, weather, and other factors that are  
22 unrelated to its energy efficiency activities. The CIP, in contrast, only allows for the recovery of  
23 revenue losses when a verifiable loss of capacity requirements has occurred, as reflected in the

1 reduction of a utility’s need for pipeline transportation and storage capacity. The CIP directly ties  
2 the potential “stranding” of downstream distribution capacity (mains, regulators, etc.) to upstream  
3 capacity savings (transport, storage). If a utility does not create true efficiencies, through  
4 reductions in contracted capacity, there will be no opportunities to recover lost base revenues since,  
5 by definition, no capacity has been stranded: a utility cannot strand capacity downstream without  
6 freeing up a comparable amount of capacity upstream for its transmission and storage  
7 requirements.

8 **Q. HOW DOES THIS RELATE TO ELECTRIC UTILITY OPERATIONS?**

9 A. Clearly, the situation for electric utilities is somewhat different since they do not directly  
10 contract for capacity in the same manner as natural gas distribution utilities. However, that is not  
11 the real issue: the real issue is that the CIP is performance-based and attempts to create a  
12 mechanism with benefits for utilities and ratepayers. The GEM, on the other hand, is not  
13 performance-based and is one-sided: the Company gains through a guarantee of base revenue cost  
14 recovery, while ratepayers lose by receiving no corresponding benefit. This fact, coupled with the  
15 Company’s inability to define any specific energy efficiency programs that it will be pursuing in  
16 return for the GEM, makes it a poor regulatory alternative to something like the CIP or a lost base  
17 revenue approach that is directly tied to energy efficiency efforts as envisioned in the Clean Energy  
18 Act.

19 **Q. ARE THERE ANY OTHER DIFFERENCES BETWEEN THE CIP AND THE**  
20 **GEM?**

21 A. Yes. There are a number of key elements, included in the CIP, that help to create direct  
22 ratepayer benefits or mitigate potential utility performance risk, that are omitted in the Company’s

1 proposed GEM. The CIP includes the following requirements and commitments that are entirely  
2 missing from the GEM:

- 3 • Defined, focused energy efficiency activities, including equipment upgrades and other  
4 specific measures that lead to a long-term usage reduction.<sup>14</sup>
- 5 • The use of shareholder, as opposed to ratepayer money, to finance and administer the  
6 program.<sup>15</sup>
- 7 • A strict earnings cap for each utility that restricts revenue recoveries in the event a utility  
8 is already earning its allowed ROE.<sup>16</sup>
- 9 • Limitation of BGSS savings eligible to offset lost revenues to those realized beginning on  
10 October 1, 2007, thus giving ratepayers the benefit of an additional year of BGSS gas cost  
11 savings.<sup>17</sup>
- 12 • A limitation of CIP- eligible cost savings to those agreed to by Rate Counsel and the  
13 Board's Staff, and for SJG, specifically excluding savings resulting from portfolio  
14 restructuring that was required under an earlier stipulation and in accordance with an audit  
15 recommendation.<sup>18</sup>

16 **Q. IS THE CIP STILL IN PLACE?**

17 A Yes. The Board issued an order in 2014 approving a stipulation that continued and  
18 modified the CIP.<sup>19</sup>

19 **Q. PLEASE EXPLAIN THE OTHER REQUIREMENTS AND COMMITMENTS**  
20 **CONTAINED IN THE MOST RECENTLY-APPROVED VERSION OF THE CIP.**

21 A. The recently-approved CIP requires NJNG and SJG to continue to implement specified  
22 programs designed to help customers reduce their costs and reduce each company's peak winter  
23 and design day system demand. Both natural gas utilities are required, under the new CIP, to  
24 contribute funds to cover the costs of such programs. Specifically, NJNG agreed to contribute

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<sup>14</sup> Docket No. GR05121019 and Docket No. GR05121020, Order dated December 12, 2006, p. 3, par. 1; Stipulation Exhibits A & B.

<sup>15</sup> Docket No. GR05121019 and Docket No. GR05121020, Order dated December 12, 2006, p. 3, par. 2.

<sup>16</sup> Docket No. GR05121019 and Docket No. GR05121020, Order dated December 12, 2006, p. 4, par. 5.

<sup>17</sup> Docket No. GR05121019 and Docket No. GR05121020, Order dated December 12, 2006, p. 5, par. 12.

<sup>18</sup> Docket No. GR05121019 and Docket No. GR05121020, Order dated December 12, 2006, p. 5-6, par. 13 & 14.

<sup>19</sup> Docket No. GR13030185, Order dated May 21, 2014.

1 \$700,000 annually for its CIP program costs and expenses, and SJG agreed to contribute \$500,000  
2 annually for its CIP program costs and expenses. Any amount that is not spent in a year would be  
3 carried over to the following year. If the costs of the specified CIP programs exceed these funding  
4 levels, the companies would still provide funding for 100 percent of the cost in the following  
5 years.<sup>20</sup> The BGSS savings test was retained with some modifications, and, in addition, recovery  
6 of non-weather related margins was capped at 6.5 percent of variable margins for the accrual  
7 year.<sup>21</sup> Other key elements of the CIP were retained, including the provisions requiring Rate  
8 Counsel and Board Staff agreement to savings proposed to be used to offset recoveries under the  
9 CIP.<sup>22</sup>

10 **Q. PLEASE SUMMARIZE HOW THE PROPOSED GEM IS INCONSISTENT WITH**  
11 **THE BOARD’S PAST CIP APPROVALS.**

12 A. The GEM is a one-sided proposal that provides certain benefits to the Company and its  
13 shareholders without offering a corresponding set of benefits to ratepayers. The CIP is more of a  
14 performance-based mechanism that requires participating utilities to be active partners in assuring  
15 efficiency benefits to ratepayers. The GEM is simply a request by PSE&G to be made whole for  
16 any revenue changes it may incur between rate cases, regardless of the reason for these revenue  
17 losses. There are a number of very important differences between the GEM and CIP that make  
18 the GEM entirely inappropriate for use in New Jersey:

- 19 • The CIP is a comprehensive program that defines efficiency programs, utility financial  
20 contributions, utility lost revenue recoveries, and ratepayer benefits. A considerable  
21 amount of efficiency-related performance risk rests with the utilities participating in the  
22 program, not ratepayers. The GEM is only a revenue true-up program that asserts a future,  
23 yet unknown and undefined efficiency program. The GEM shifts all regulatory and

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<sup>20</sup> Docket No. GR13030185, Order dated May 21, 2014, p.2-3.

<sup>21</sup> Docket No. GR13030185, Order dated May 21, 2014, p. 3-6.

<sup>22</sup> Docket No. GR13030185, Order dated May 21, 2014, p. 3.

1 efficiency performance risk of this efficiency program onto ratepayers: there is little to no  
2 performance risk assumed by PSE&G.

- 3 • The CIP guarantees ratepayer efficiency benefits of some type (such as permanent savings  
4 for capacity releases or contract terminations), the GEM offers ratepayers no guaranteed  
5 efficiency benefits.
- 6 • The CIP ties any revenue recoveries to bona fide capacity savings, the GEM is tied to no  
7 performance metric of any kind.
- 8 • The CIP requires utilities to pay for certain efficiency-related administrative and program  
9 costs. PSE&G has made no financial contribution commitment to cover any GEM or other  
10 efficiency, administrative, or other program costs.

11 **c. The Company has not provided any explicit energy efficiency program**  
12 **commitments.**

13 **Q. WHY IS THE COMPANY’S FAILURE TO PROVIDE ANY EXPLICIT ENERGY**  
14 **EFFICIENCY PROGRAM COMMITMENTS IMPORTANT FOR CONSIDERING THE**  
15 **GEM?**

16 A. This omission is important for two reasons. First, the entire premise for the GEM is to  
17 remove a disincentive associated with promoting energy efficiency. Proposing the GEM alone,  
18 without any program commitments, effectively “decouples” the problem from the solution.  
19 Second, this omission shifts the entire regulatory and performance-related risks associated with  
20 the Company’s future energy efficiency activities entirely onto ratepayers.

21 **Q. PLEASE EXPLAIN HOW THE GEM DECOUPLES THE COMPANY’S**  
22 **PROPOSED SOLUTION FROM ITS PURPORTED PROBLEM.**

23 A. The Company has not provided any information or identified a single energy efficiency  
24 program that would be implemented requiring the need for the proposed GEM. The Company has  
25 only stated that it “looks forward to exploring larger scale energy efficiency programs that will  
26 help the State meet its clean energy and energy efficiency targets” and that it “has not yet  
27 determined when a more expansive energy efficiency offering would be submitted to the BPU for

1 approval.”<sup>23</sup> “Exploring” energy efficiency opportunities and studying the opportunities that may  
2 exist for these efficiency programs in New Jersey is an aspiration, it is not a commitment.

3 **Q. IS IT COMMON FOR REGULATORS TO APPROVE REVENUE DECOUPLING**  
4 **MECHANISMS WITHOUT ANY BONA FIDE ENERGY EFFICIENCY**  
5 **COMMITMENTS?**

6 A. No. While it is difficult to make sweeping generalizations about the approval of revenue  
7 decoupling mechanisms across the country, one theme that appears to be consistent is that their  
8 approvals tend to be contingent upon a strong and specific energy efficiency commitment. A large  
9 number of states that have adopted revenue decoupling programs have done so either after a utility  
10 has put into place a portfolio of meaningful energy efficiency programs, or a utility has a specific  
11 proposal and commitment to a suite of efficiency programs that can be reviewed in tandem with  
12 the revenue decoupling mechanism request.<sup>24</sup>

13 **Q. DOESN'T THE NEW CLEAN ENERGY ACT REQUIRE NEW JERSEY**  
14 **ELECTRIC UTILITIES TO REDUCE THEIR LOADS ON A PERCENTAGE BASIS BY**  
15 **A CERTAIN DATE?**

16 A. Yes, but the details associated with these programs, the extent of the measures that will be  
17 included in these programs, and the degree of savings that will be attained (at least outside the  
18 minimums defined by the statute) are all yet to be determined. The means by which the Board  
19 will evaluate these programs is also uncertain, including the degree to which cost-effectiveness  
20 considerations will play into these statutory requirements. In short, the Company is asking the  
21 Board to approve the GEM in a vacuum since there are still a large number of unknowns associated

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<sup>23</sup> Company’s response to RCR-DEC-0021.

<sup>24</sup> See Schedule DED-1.

1 with the Clean Energy Act and the Company’s energy efficiency programs. If the Board approves  
2 the GEM now, ratepayers will have to wait for some period of time before they will know whether  
3 or not this GEM approval is a good deal from their perspective. Lastly, the Clean Energy Act  
4 cannot be used as justification for the GEM since the Act itself, as noted earlier, already has a  
5 prescription to address the Company’s perceived “disincentive” to promote efficiency.

6 **Q. ARE YOU AWARE OF ANY REGULATORY COMMISSIONS THAT HAVE**  
7 **TIED REVENUE DECOUPLING APPROVAL TO EFFICIENCY PROGRAM**  
8 **COMMITMENTS?**

9 A. Yes. The Washington Utilities and Transportation Commission, in its review of extending  
10 Avista Corporation’s decoupling mechanism found:

11 The regulatory construct for decoupling in Washington has centered  
12 on the utility’s performance relative to conservation. Our approval  
13 of decoupling in our two pilot programs was founded on the premise  
14 that lost margins affected the utility’s appetite for offering additional  
15 conservation programs. Thus, both pilots required the companies to  
16 account for lost margin due to conservation, and discriminate  
17 between the various causes of lost margin. In that more limited  
18 context, we conclude that the recovery of lost margin attributable to  
19 Avista’s programmatic and non-programmatic conservation  
20 endeavors is sufficient to encourage Avista’s [Demand Side  
21 Management] DSM efforts. We seek to avoid guaranteed recovery  
22 of lost margin that would occur should lost margin from other causes  
23 be included in the mechanism.<sup>25</sup>

24 The Washington Commission reiterated this principle again in its 2010 investigation into  
25 utility conservation incentives stating that “revenue recovery by the company under the

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<sup>25</sup> *Washington Utilities and Transportation Commission v. Avista Corporation, d./b./a. Avista Utilities*, Docket 090134 and UG 090135, consolidated, *Order 10: Final Order Rejecting Tariff Filing; Approving and Adopting Multi-Party Partial Settlement Stimulation; Deferring Lancaster Costs; Extending Decoupling Mechanism; Authorizing Tariff Filing; and Requiring Compliance Filing*, December 22, 2009. Final Order at p. 114, ¶291, emphasis added.

1 mechanism will be conditioned upon a utility's level of achievement with respect to its  
2 conservation target.<sup>26</sup>

3 **d. Company has not shown that its current or proposed energy efficiency efforts**  
4 **have resulted in a negative financial impact.**

5 **Q. HAS THE COMPANY ESTIMATED THE FINANCIAL IMPACT OF ITS**  
6 **CURRENT EFFICIENCY PROGRAMS?**

7 A. Yes. The Company has provided an analysis quantifying the financial impact of its current  
8 energy efficiency activities for both its electric and gas operations. This analysis is replicated and  
9 provided in Schedule DED-3. The analysis shows the historic financial impact of the Company's  
10 efficiency activities from 2012 to 2017. Revenue losses from these programs, collectively, are  
11 asserted to have been in the \$6.6 million to \$8 million range over the past four years.<sup>27</sup> The net  
12 income impact of these programs is in the \$4 million to \$5 million range.<sup>28</sup> These numbers are not  
13 very large considering PSE&G's total base distribution revenues of \$1.99 billion<sup>29</sup> in its test year  
14 and 2017 reported net income of almost \$980 million.<sup>30</sup> The Company's analysis estimates that,  
15 on a historic basis, its efficiency efforts have had less than a one-tenth of one percent impact on its  
16 overall ROE. This number represents a relatively small impact considering that in four of the past  
17 ten years, the Company has over-earned by amounts ranging from eleven to ninety basis points.<sup>31</sup>  
18 Thus, the Company's efficiency activities, at least on a net historic basis, have never compromised  
19 its ability to earn its allowed ROE.

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<sup>26</sup> *In the Matter of the Washington Utilities and Transportation Commission's Investigation into Energy Conservation Incentives. Washington State Utilities and Transportation Commission. Docket U-100522, Report and Policy Statement on Regulatory Mechanisms, Including Decoupling, to Encourage Utilities to Meet or Exceed Their Conservation Targets, November 4, 2010. ¶28.*

<sup>27</sup> Company's response to RCR-DEC-0014, Attachment RCR-DEC\_0014\_EE program cost and savings final.xlsx.

<sup>28</sup> Company's response to RCR-DEC-0013.

<sup>29</sup> Company response to data requests S-PSEG-ERD-0013 and S-PSEG-GRD-0013.

<sup>30</sup> Federal Energy Regulatory Commission Form 1, p. 117.

<sup>31</sup> See Schedule DED-4.

1 **Q. HAS THE COMPANY PROVIDED ANY EVIDENCE THAT ITS CURRENT OR**  
2 **PROPOSED ENERGY EFFICIENCY EFFORTS OR PROGRAMS WILL HAVE A**  
3 **NEGATIVE FINANCIAL IMPACT?**

4 A. No. The Company has not provided any record evidence at this point that tie any revenue  
5 losses, or financial impacts, to a Company-specific portfolio of energy efficiency programs.

6 **B. GEM Recommendation**

7 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS**  
8 **REGARDING THE COMPANY'S PROPOSED GEM?**

9 A. The Company's GEM proposal should be rejected for a number of reasons. First, and most  
10 importantly, the Company has not tied its GEM request to a specific set of energy efficiency  
11 programs and savings targets. This makes the GEM a solution in search of a problem. Second,  
12 the Company's GEM is entirely inconsistent with the recently enacted Clean Energy Act that  
13 creates a Board-administered system of financial incentives and penalties that will directly reward  
14 or penalize the Company for its efficiency actions and allows the utility to ask for lost base revenue  
15 recovery associated with specific efficiency-induced revenue losses. Third, the Company's  
16 proposed GEM is inconsistent with the Board's past revenue adjustment policies as they have been  
17 embodied in various CIP approvals since 2006. Fourth, the Company has not been able to show  
18 that its efficiency activities have, or will have a negative financial impact on its ability to earn its  
19 allowed rate of return. On a historical basis, the Company's past efficiency efforts have not  
20 impacted its ability to earn its allowed ROE. The Company has not provided in this proceeding  
21 any projections that show some future earnings challenges from a Company-specific portfolio of  
22 efficiency programs, raising questions about the GEM's validity and whether or not the Company

1 will, in fact, see financial impacts that differ significantly from what it has seen over the past five  
2 years.

3 **IV. ROE PERFORMANCE INCENTIVE**

4 **Q. PLEASE DISCUSS THE COMPANY'S INCENTIVE ROE REQUEST**

5 A. The Company requests an increase in its allowed rate of return based upon its historic  
6 operating, reliability, and customer service performance. More specifically, the Company requests  
7 that the Board set its allowed ROE at the upper end of the Company's proposed ROE range.<sup>32</sup> The  
8 Company appears to be requesting that the Board approve an "ROE incentive" or "ROE bonus"  
9 relative to what the Company would otherwise be allowed. However the Company's actual request  
10 is vague and unclear since PSE&G has not quantified this "bonus."

11 **Q. WHAT INFORMATION DID THE COMPANY PROVIDE TO SUPPORT ITS**  
12 **INCENTIVE ROE REQUEST?**

13 A. The Company has provided a series of benchmarking analyses that examines its historic  
14 operating performance and also compares this performance to a set of peer electric and natural gas  
15 utilities. The data for this analysis comes from the Energy Information Administration ("EIA") as  
16 well as the FERC Form 1, for electric utilities, and comparable data in FERC Form 2 format for  
17 natural gas utilities that is often filed with state regulatory commissions.<sup>33</sup> The electric reliability  
18 data comes from an annual survey collected and compiled by the Institute of Electrical and  
19 Electronics Engineers ("IEEE") ("IEEE database")<sup>34</sup> and the customer satisfaction information  
20 comes from a survey conducted by J.D. Power and Associates.<sup>35</sup>

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<sup>32</sup> Direct Testimony of Michael J. Adams, 2:21-22.

<sup>33</sup> Direct Testimony of Michael J. Adams, 6:14-18.

<sup>34</sup> Direct Testimony of Michael J. Adams, 22:17-21.

<sup>35</sup> Direct Testimony of Michael J. Adams, 25:10-15.

1 **Q. HAVE YOU VERIFIED THAT THE COMPANY’S COST BENCHMARKING**  
2 **ANALYSIS IS ACCURATE AND REPRESENTATIVE OF ITS TRUE PERFORMANCE?**

3 A. Yes. I have examined the information provided by the Company and conducted my own  
4 independent analysis of the Company’s O&M and A&G costs for both its electric and natural gas  
5 operations, relative to a set of regional peer utilities. I have also examined several of the  
6 Company’s integrity management statistics (pipe replacements, leaks) as well as its electric  
7 reliability performance as measured by its SAIDI, SAIFI and CAIDI statistics.<sup>36</sup> My findings in  
8 some areas are comparable to the ones provided by the Company, particularly as they relate to the  
9 Company’s historic cost trends.<sup>37</sup> Over the past decade, the Company has been able to maintain  
10 the growth of its costs in a fashion that places it in the upper quartile of regional peer utilities.  
11 However, there is nothing that suggests that these historic trends are grounds for a performance-  
12 specific adjustment to allowed ROE.

13 **Q. PLEASE EXPLAIN THE PROBLEMS ASSOCIATED WITH THE COMPANY’S**  
14 **ROE REQUEST.**

15 A. The Company’s request for an incentive ROE suffers from a number of shortcomings that  
16 include:

- 17 (1) The incentive ROE request is inconsistent with the basic principles of the  
18 regulatory compact as it is commonly defined and used in utility regulation.
- 19 (2) The incentive ROE proposal is not appropriately designed.
- 20 (3) The incentive ROE proposal is inconsistent with regulatory practice.

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<sup>36</sup> SAIDI is the System Average Interruption Duration Index, SAIFI is the System Average Interruption Frequency Index, and CAIDI is the Customer Average Interruption Duration Index. PSE&G’s electric reliability performance is addressed in the direct testimony of Rate Counsel Witnesses Messrs. Chang and Salamone.

<sup>37</sup> Rate Counsel Witness Susan Baldwin will address the Company’s customer service performance.

1 **Q. LET’S TURN TO THE FIRST PROBLEM YOU IDENTIFY. PLEASE EXPLAIN**  
2 **WHAT YOU MEAN BY THE “REGULATORY COMPACT.”**

3 A. The “regulatory compact” is a term of practice, used in utility regulation, describing the  
4 relationship between regulators and ratepayers, on the one hand, and regulated utilities and their  
5 shareholders, on the other. This compact can be defined in slightly differing ways. Generally, it  
6 recognizes that utilities are given a monopoly franchise area and a reasonable opportunity to earn  
7 a return on and of their prudently incurred investment, as well as cost recovery of their prudently-  
8 incurred expenses, in return for providing safe, economic, and reliable service.

9 **Q. WHY IS THE COMPANY’S ROE INCENTIVE INCONSISTENT WITH THE**  
10 **REGULATORY COMPACT?**

11 A. The regulatory compact expects utilities to take all reasonable steps possible to operate and  
12 provide service in a manner that reflects best, not average, practices. There is nothing in this  
13 compact that suggests some form of average performance but instead, assumes that utilities will  
14 be operating in the most efficient, least-cost fashion. This compact also assumes that utilities will  
15 also be providing service in the safest and most reliable fashion, as well. Regulators, upholding  
16 their end of the bargain, allow utilities a reasonable opportunity to earn a competitive return on  
17 their investments. There is no corollary or addendum to this compact that suggests “a utility has  
18 a reasonable opportunity to earn a return on its investment, except in instances when it is  
19 performing better than average, and then it can earn more.” The Company is expected to exhibit  
20 sterling operating performance in return for an opportunity for a competitive rate of return, and a  
21 shield from competition (through the monopoly franchise service territory).

22 **Q. HAS THE COMPANY BEEN AFFORDED AN OPPORTUNITY TO EARN A**  
23 **REASONABLE RETURN ON ITS INVESTMENTS?**

1 A. Yes. Schedule DED-4 shows the Company’s achieved ROE over the past decade. As  
2 shown in Schedule DED-4, the Company’s earnings in each year have been close to, and in several  
3 instances exceeded the 10.3 percent return allowed by the Board. In fact, the Company has earned,  
4 on average, 10.4 percent over the past five years returning as much as \$73.8 million to shareholders  
5 which is over and beyond what the Board found as fair and reasonable in the Company’s last rate  
6 case.<sup>38</sup> Thus, the Company’s earnings performance shows that it, and its shareholders, have been  
7 treated well under the regulatory compact in New Jersey and, in many instances, have been able  
8 to take advantage of the additional efficiency and earnings generated by regulatory lag.

9 **Q. PLEASE EXPLAIN REGULATORY LAG.**

10 A. Regulatory lag is another term of practice in utility regulation that can also have differing  
11 interpretations. One commonly accepted definition is that regulatory lag represents the time period  
12 in which achieved rates of return differ from those allowed in the last base rate case. Consider that  
13 in a typical rate case, regulators attempt to define a reasonable rate of return based upon  
14 information from a typical test year. In any year, post-rate case, achieved and allowed returns will  
15 only match by happenstance. Utilities are often able to find some “wiggle” room in their achieved  
16 returns and if they can garner efficiencies during this time period, rates will not automatically be  
17 “re-set.” This leads to a certain degree of earnings benefits that would not exist otherwise without  
18 this regulatory lag. Obviously, there is a limit to this “wiggle” room, but repeated empirical  
19 evidence in several academic studies has shown that it is rare for utility commissions to “haul in”  
20 utilities when they have moderate levels of over-earning.<sup>39</sup> Further, utilities also have the ability

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<sup>38</sup> It should be noted that these excess earnings may be understated since as discussed in the Direct Testimony of witness Matthew I. Kahal, the cost of equity awarded to regulated utilities has decreased since the Company’s last rate case.

<sup>39</sup> Paul L. Jaskow. (1973) “Pricing Decisions of Regulated Firms: A Behavioral Approach.” *The Bell Journal of Economics and Management Science*. 4 (Spring):118-140.

1 to request a rate increase at any time the utility believes its earnings have been threatened, thereby  
2 under-scoring the significant benefits of the regulatory compact, regulatory lag, and the  
3 expectations for utility performance under both regulatory principles. Collectively, these  
4 principles have built in opportunities for rewarding exceptional utility performance.

5 **Q. HAVE THESE OPPORTUNITIES FOR REGULATORY LAG-INDUCED**  
6 **INCENTIVES BEEN ENHANCED IN ANY WAY BY THE USE OF COST RECOVERY**  
7 **MECHANISMS?**

8 A. Yes, clause-type cost recovery mechanisms, like the ones used in New Jersey, can help to  
9 shelter and reduce the risks associated with the cost recovery and earnings of a large number of  
10 specific capital investments.

11 **Q. ARE THERE ANY IMPLICIT QUID PRO QUOS ASSOCIATED WITH THE**  
12 **APPROVAL OF THESE TRACKER MECHANISMS?**

13 A. Yes. The Board allows the Company to utilize several special ratemaking mechanisms, on  
14 both the electric and natural gas sides of its business, in order to facilitate the accelerated cost  
15 recovery and accelerated return on investment of a large number of capital investments that are  
16 designed to enhance system reliability and resiliency. The clause-type cost recovery mechanisms  
17 associated with the Company's GSMP I and Energy Strong programs, as well as the recently-  
18 approved GSMP II, are two such examples. The expectation is that utilities, like PSE&G, will  
19 enhance their reliability and resilience performance in return for an accelerated and de-risked  
20 opportunity to earn a return of and on a specific set of capital investments relative to the status quo  
21 (traditional regulation). Thus, it is unreasonable to ask for an additional "bonus" rate of return  
22 given these other benefits afforded by an ample number of Board-approved special ratemaking  
23 mechanisms for PSE&G. In fact, over half of the Company's overall cost structure is already

1 recovered in one or more of these types of cost recovery mechanisms (including the BGS and  
2 BGSS).<sup>40</sup> “Other-tracker” related costs (all trackers excluding the BGS and BGSS tracker) have  
3 averaged about 16 percent of the Company’s cost structure and were over 20 percent during 2013-  
4 2015.<sup>41</sup>

5 **Q. LET’S TURN TO THE SECOND PROBLEM YOU IDENTIFY WITH THE**  
6 **COMPANY’S INCENTIVE RETURN REQUEST. WHAT DO YOU MEAN WHEN YOU**  
7 **STATE THAT THE REQUEST IS NOT “APPROPRIATELY DESIGNED?”**

8 A. The Company’s request suffers from a number of design deficiencies. The first is that the  
9 request is based upon historic performance for rates that will be in effect prospectively, and  
10 potentially a meaningful time period into the future. The second design problem is that the  
11 incentive return request is asymmetrical: the Company requests an incentive return, but offers no  
12 bona fide benefit for ratepayers in return.

13 **Q. PLEASE EXPLAIN WHY THE USE OF HISTORIC PERFORMANCE**  
14 **INDICATORS IS A PROBLEM.**

15 A. The Company has utilized an extensive amount of historic information to support its  
16 incentive return request. The analyses supporting the request includes a time period that spans a  
17 decade. Bygones, however, are forever bygones. The Company requests an incentive for what it  
18 has done in the past; in fact, ten years in the past on a cumulative basis. The Company requests  
19 that the Board change current and future rates based upon performance that it was already rewarded  
20 for in the past. Further, the Company is requesting an increase in its future earnings opportunities  
21 without any corresponding guarantee that it will maintain its cost containment and reliability

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<sup>40</sup> Company response to data request RCR-A-0004.

<sup>41</sup> Company response to data request RCR-A-0004.

1 performance, nor does this request include any penalties or removal of the incentive if the  
2 Company's future performance deteriorates. This unfairly shifts all future performance risk  
3 associated with this incentive return request squarely on ratepayers' shoulders. There is simply no  
4 accountability in the request since there is no way to assure that a corrective action will be taken  
5 if the Company's future performance deteriorates.

6 **Q. WILL RATES BE HIGHER WITH THE COMPANY'S INCENTIVE REQUEST?**

7 A. Yes. The Company's request will do nothing more than increase rates to ratepayers without  
8 any corresponding benefit. A higher allowed rate of return means higher rates, period. Ratepayers  
9 are already, and have been, receiving the benefits of the Company's operating performance  
10 consistent with its expectations under the regulatory compact. There is no new incremental benefit  
11 that will accrue to ratepayers since the Company is not making any specific, quantifiable  
12 incremental improvement in costs and operating performance if it receives its incentive ROE.  
13 Consider, for example, a 50 basis point "bonus allowance" to the Company's allowed ROE. Rates  
14 would increase by as much as \$186.6 million, on a cumulative basis, over the next five years, or  
15 roughly \$37.3 million per year rate increase just to facilitate this incentive return, the benefit of  
16 which will inure entirely to shareholders.

17 **Q. IS THE COMPANY'S INCENTIVE ROE REQUEST CONSISTENT WITH**  
18 **ALTERNATIVE OR INCENTIVE FORMS OF RATEMAKING?**

19 A. No. An effective incentive or performance-based regulatory structure includes symmetries  
20 that reward utilities for exceptional performance and penalizes them for sub-standard performance.  
21 Quite often, incentive regulatory structures include earnings sharing mechanisms ("ESMs") that  
22 create increasing earnings opportunities for utilities, on the upside, that are shared in some  
23 proportion with ratepayers. The more efficient the utility becomes, the more earnings it retains for

1 both ratepayers and shareholders. Rates are adjusted annually to reflect these efficiency  
2 improvements. The Company's proposal, on the other hand, does not propose to (a) share excess  
3 earnings with ratepayers from efficiency gains in the future and (b) assume any future performance  
4 risk associated with its incentive ROE request.

5 **Q. LET'S TURN TO THE LAST CONCERN YOU EXPRESSED EARLIER WITH**  
6 **THE COMPANY'S ROE INCENTIVE REQUEST. DO YOU AGREE WITH THE**  
7 **COMPANY'S ASSERTION THAT IT IS COMMON FOR REGULATORY**  
8 **COMMISSIONS TO OFFER AN INCENTIVE ROE FOR GOOD PERFORMANCE?**

9 A. No. The Company suggests that it is common for utilities providing excellent service to  
10 receive an ROE commensurate with that high performance, including allowing an ROE above the  
11 mid-point of a range of reasonable rates.<sup>42</sup> The Company goes even further and suggests that New  
12 Jersey, and presumably the Board, in particular, also recognizes performance in setting an allowed  
13 rate of return and that "superior utility service commands a higher rate of return to recognize the  
14 benefits that customers receive from managerial efficiency."<sup>43</sup>

15 **Q. IS THE PRACTICE OF SETTING INCENTIVE ROE RETURNS COMMON IN**  
16 **NEW JERSEY?**

17 A. No. The Company suggests that prior New Jersey precedent, which recognizes  
18 performance, "commands" that a higher rate of return be given for utilities that provide superior  
19 managerial efficiency.<sup>44</sup> This suggestion does not appear to be correct, or consistent with past  
20 Board actions and decisions, since the only instance that I am aware of where the Board explicitly  
21 adjusted the ROE for utility performance as a downward adjustment to the ROE in an instance

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<sup>42</sup> Jennings Direct Testimony, 40: 15-17.

<sup>43</sup> Jennings Direct Testimony, 40: 19-20.

<sup>44</sup> Jennings Direct Testimony, 40: 17-20.

1 where a utility exhibited poor, not superior, performance. This downward adjustment occurred in  
2 BPU Docket No. ER02080506 when the Board evaluated the reliability performance of the Jersey  
3 City Power & Light Company (“JCP&L”) and found its performance to be lacking. The Board  
4 reduced the allowed rate of return by 25 basis points based upon JCP&L’s poor, not exceptional  
5 performance.<sup>45</sup>

6 **Q. IF THE BOARD REDUCED A UTILITY’S ROE FOR POOR PERFORMANCE,**  
7 **WOULDN’T THAT SUGGEST THAT THE BOARD ALSO RECOGNIZES THAT**  
8 **EXCELLENT PERFORMANCE SHOULD RESULT IN AN INCENTIVE ROE?**

9 A. No. The Board was quite explicit, in its prior JCP&L decision, that it expected utilities to  
10 perform well and that their allowed rate of return was a function of meeting best practices for cost  
11 containing and managerial efficiency.<sup>46</sup> Nowhere in the Board’s JCP&L decision did it state that  
12 “average” performance or managerial efficiency was acceptable.

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<sup>45</sup> *In The Matter Of The Verified Petition Of Jersey Central Power & Light Company For Review And Approval Of An Increase In And Adjustments To Its Unbundled Rates And Charges For Electric Service, And For Approval Of Other Proposed Tariff Revisions In Connection Therewith; In The Matter Of The Verified Petition Of Jersey Central Power & Light Company For Review And Approval Of Its Deferred Balances Relating To The Market Transition Charge And Societal Benefits Charge; In The Matter Of The Consumer Education Program On Electric Rate Discounts And Energy Competition - Jersey Central Power & Light Company's Verified Petition For Declaratory Ruling; In The Matter Of The Verified Petition Of Jersey Central Power & Light Company For Review And Approval Of Costs Incurred For Environmental Remediation Of Manufactured Gas Plant Sites And For An Increase In The Remediation Adjustment Clause Of Its Filed Tariff In Connection Therewith; In The Matter Of Jersey Central Power & Light Company For Increases In Its Levelized Energy Adjustment Clause Charge And Demand Side Factor, Docket Nos. ER02080506, ER02080507, EO02070417, ER02030173, and ER95120633, Order, May 17, 2004, p. 26.*

<sup>46</sup> *In The Matter Of The Verified Petition Of Jersey Central Power & Light Company For Review And Approval Of An Increase In And Adjustments To Its Unbundled Rates And Charges For Electric Service, And For Approval Of Other Proposed Tariff Revisions In Connection Therewith; In The Matter Of The Verified Petition Of Jersey Central Power & Light Company For Review And Approval Of Its Deferred Balances Relating To The Market Transition Charge And Societal Benefits Charge; In The Matter Of The Consumer Education Program On Electric Rate Discounts And Energy Competition - Jersey Central Power & Light Company's Verified Petition For Declaratory Ruling; In The Matter Of The Verified Petition Of Jersey Central Power & Light Company For Review And Approval Of Costs Incurred For Environmental Remediation Of Manufactured Gas Plant Sites And For An Increase In The Remediation Adjustment Clause Of Its Filed Tariff In Connection Therewith; In The Matter Of Jersey Central Power & Light Company For Increases In Its Levelized Energy Adjustment Clause Charge And Demand Side Factor, Docket Nos. ER02080506, ER02080507, EO02070417, ER02030173, and ER95120633, Order, May 17, 2004, p. 26.*

1 **Q. DO YOU AGREE WITH THE COMPANY’S POSITION THAT ALLOWING**  
2 **INCENTIVE RETURNS IS COMMONPLACE IN UTILITY REGULATION?**

3 A. No. I have found at least two situations, in Illinois and in Maryland, where Commissions  
4 have rejected similar types of one-sided proposals. Both of these Commissions have recognized  
5 that the purpose of the regulatory process is to allow the Company to recover prudently-incurred  
6 expenses as well as determine a reasonable rate of return to cover the Company’s cost of capital.  
7 Adjusting the Company’s allowed ROE simply because the Company has conducted business  
8 efficiently as it is required to do would distort the regulatory process.

9 **Q. PLEASE EXPLAIN THE FINDINGS IN THE ILLINOIS PROCEEDING.**

10 A. In its 2010 rate case before the Illinois Commerce Commission, Commonwealth Edison  
11 (“ComEd”) requested a 40 basis point adder to its ROE to compensate for the risk of reduced sales  
12 associated with its energy efficiency programs. The Illinois Commission rejected ComEd’s  
13 proposal, ruling that, “ComEd has failed to justify the need for this adder as ComEd is not subject  
14 to an unavoidable risk for which it should be compensated,”<sup>47</sup> further noting, in some detail that:

15 In fact, ComEd’s requests for various forms of regulatory relief in  
16 this proceeding illustrate an ability to manage the potential risks  
17 related to energy efficiency without imposing the proposed adder.  
18 Moreover, the Commission finds that an adder is an inappropriate  
19 response to the identified risk. Even if usage reductions never  
20 occurred, the proposed adder would still impose higher rates on  
21 customers and yield a higher authorized return for ComEd.  
22 Substituting Commission action in the form of an adder to ComEd’s  
23 ROE in place of risk management by the utility reduces regulatory  
24 efficiency and it excuses the utility from its responsibility to manage  
25 operational risks. Further, the specific magnitude of the proposed  
26 adder has not been explained or justified. Therefore, the  
27 Commission rejects ComEd’s proposed 40 basis point adder.<sup>48</sup>

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<sup>47</sup> *Commonwealth Edison Company Proposed general increase in rates*, Illinois Commerce Commission Docket No. 10-0467, Order issued May 24, 2011, p. 167.

<sup>48</sup> *Commonwealth Edison Company Proposed general increase in rates*, Illinois Commerce Commission Docket No. 10-0467, Initial Brief of the People of the State of Illinois, p. 167.

1 **Q. PLEASE EXPLAIN THE FINDINGS IN THE MARYLAND PROCEEDING.**

2 A. The Maryland Public Service Commission also addressed the necessity of an increase in  
3 ROE related to performance in Baltimore Gas & Electric’s (“BGE”) 2005 rate case, in which BGE  
4 proposed a 40 basis point adder for its “exceptional performance.” The Maryland Commission  
5 noted that it:

6 ... certainly possesses the authority to recognize  
7 exceptional performance in the setting of rates, just as it can  
8 recognize substandard performance. However, the Commission  
9 further observes that the timing of this particular proposal is one-  
10 sidedly advantageous to the Company. That is, the Commission  
11 doubts the Company would have proposed a 40 basis point reduction  
12 to its requested return if it were in the midst of a period of poor  
13 performance. In other words, the corollary to the Company's  
14 proposal should be that the Commission could or should impose a  
15 performance penalty on a jurisdictional utility that under-performs.  
16 Additionally, the Commission expects good results and sets rates to  
17 recognize that expectation. Therefore, for the reasons provided  
18 above, we decline to include a specific performance adder in this  
19 proceeding.<sup>49</sup>

20 **Q. WHAT ARE YOUR CONCLUSIONS AND RECOMMENDATIONS REGARDING**  
21 **THE COMPANY’S PROPOSAL TO RECEIVE A HIGHER ROE AS A RESULT OF ITS**  
22 **OPERATING PERFORMANCE?**

23 A. The Board should reject the Company’s position that its operating performance should  
24 allow it a higher ROE. The Company’s benchmarking analysis does not warrant an increase in its  
25 ROE. The incentive ROE request is inconsistent with the basic principles of the regulatory  
26 compact as it is commonly defined and used in utility regulation. The Company’s proposal is  
27 asymmetrical and comes at the cost of ratepayers. Furthermore, the Company’s failure to even  
28 quantify this apparent “bonus” in and of itself should be reason for rejection.

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<sup>49</sup> *In the Matter of the Application of the Baltimore Gas and Electric Company for Revision in its Gas Base Rates.* Public Service Commission of Maryland Case No. 9036, Order No. 80460, Issued December 21, 2005, p. 66.

1 **V. ENERGY STRONG PROGRAM ISSUES**

2 **A. Energy Strong program overview**

3 **Q. WILL YOU PLEASE DESCRIBE THE COMPANY'S ENERGY STRONG**  
4 **PROGRAM?**

5 A. The Company's Energy Strong Program was developed in response to the Board's generic  
6 Storm Mitigation Proceeding which was initiated in response to Hurricane Irene and Superstorm  
7 Sandy.<sup>50</sup> The Storm Mitigation Proceeding was established to investigate possible opportunities  
8 to support and protect New Jersey's utility infrastructure against future major storm events. The  
9 Board approved the Company's Energy Strong Program on May 21, 2014, authorizing investments  
10 up to \$1 billion, consisting of \$600 million in electric infrastructure investments and \$400 million  
11 in natural gas infrastructure investments, all of which were allowed to be recovered through a  
12 special ratemaking mechanism.<sup>51</sup> The Energy Strong Program also included an additional \$220  
13 million in electric system investments related to substation improvements that were not recovered  
14 through a special rate recovery mechanism.<sup>52</sup>

15 **Q. OVER WHAT TIME PERIODS WERE THESE INVESTMENTS ANTICIPATED**  
16 **TO EVOLVE?**

17 A. The Company's Energy Strong investments were to be made over a three year period  
18 beginning on May 21, 2014 with the exception of the Electric Station Flood Mitigation sub-  
19 program and the Gas Metering & Regulating Station Flood Mitigation ("M&R Station") sub-  
20 program which would be undertaken for a five year period.<sup>53</sup> The Energy Strong Program

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<sup>50</sup> *In the Matter of the Petition of Public Service Electric & Gas Company for Approval of the Energy Strong Program*, Docket No. EO13020155 and GO13020156, Order Approving Stipulation of Settlement, May 21, 2014, p. 2.

<sup>51</sup> *Id.*, p. 5.

<sup>52</sup> *Id.*

<sup>53</sup> *Id.*

1 consisted of the Electric Station Flood Mitigation sub-program, the natural gas M&R Station Flood  
2 Mitigation sub-programs, and the natural gas Utilization Pressure Cast Iron (“UPCI”) sub-  
3 program, the latter of which involved the replacement of 250 miles of cast iron pipe over a two  
4 year period.<sup>54</sup>

5 **Q. PLEASE DESCRIBE THE COMPANY’S M&R STATION FLOOD MITIGATION**  
6 **SUB-PROGRAM.**

7 A. The M&R Station Flood Mitigation sub-program was based upon a \$50 million investment  
8 designed to (a) raise and harden eight M&R stations that were flooded during Superstorm Sandy  
9 and (b) install an auxiliary generator at the Burlington Liquefied Natural Gas (“LNG”) Plant  
10 station.<sup>55</sup> The stations included in this investment sub-program included the: (1) Crown Central  
11 M&R Station and LPG Storage in Linden, (2) Piles Creek M&R Station in Linden, (3) Newark  
12 Airport M&R Station in Newark; (4) West End M&R Station in Jersey City, (5) two Harrison  
13 M&R Stations in Harrison, and (6) Harrison LPG peak shaving plant in Harrison.<sup>56</sup>

14 **Q. PLEASE DESCRIBE THE COMPANY’S UPCI SUB-PROGRAM?**

15 A. The Company’s UPCI sub-program was comprised of a \$350 million investment designed  
16 to replace 250 miles of UPCI and associated services over a three year period with a higher  
17 operating pressure system, utilizing plastic or cathodically-protected steel mains and services in  
18 areas that were previously flooded, or are in or near Federal Emergency Management Agency  
19 (“FEMA”) flood zones.<sup>57</sup> The Company was to give replacement priority to previously flooded  
20 areas, and adjoining FEMA flood zones with the lowest ratio of proximity mains, as well as

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<sup>54</sup> *Id.*

<sup>55</sup> *Id.*, p. 12.

<sup>56</sup> *Id.*

<sup>57</sup> *Id.*

1 prioritizing the replacement of mains in areas that have a history of leaks.<sup>58</sup> The Board’s approval  
2 of this program anticipated completion of the UPCI sub-program within a two year period.<sup>59</sup>

3 **Q. DID THE COMPANY REALLOCATE ANY INVESTMENT DOLLARS ACROSS**  
4 **THE VARIOUS NATURAL GAS SUB-PROGRAMS?**

5 A. Yes. The Board’s Order approving the Energy Strong Stipulation included a provision that  
6 allowed for some program investment funds to be moved between the two gas sub-programs.<sup>60</sup>  
7 Two such transfers (from the M&R sub-program to the UPCI sub-program) have occurred over  
8 the course of the Energy Strong program implementation period, both of which totaled \$20 million.  
9 The first of these two transfers (\$13.5 million) occurred in December 2015, when the Company  
10 was experiencing higher-than-projected services replacement costs under the UPCI sub-program.<sup>61</sup>  
11 The redistribution of investment dollars was made possible due to a reduction in the scope for the  
12 Harrison LP project.<sup>62</sup> The second transfer of investment dollars (\$6.5 million) occurred in July  
13 2016 and was used to complete existing jobs and restoration and service work associated with the  
14 UPCI sub-program.<sup>63</sup> These investment funds were “freed-up” due to savings in the development  
15 of the West End M&R Station project.

16 **Q. PLEASE EXPLAIN THE LEAK REDUCTION TARGET ASSOCIATED WITH**  
17 **THE ENERGY STRONG GAS SUB-PROGRAMS?**

18 A. The Board’s approval of the Energy Strong program included a requirement that the  
19 Company reduce its open leak inventory (1,937 leaks as of December 31, 2013) by 582 leaks (30

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<sup>58</sup> *Id.*

<sup>59</sup> *Id.*

<sup>60</sup> *Id.*, p. 13.

<sup>61</sup> Direct Testimony of Jorge Cardenas, Exhibit P-3, Schedule JLC3(a), p. 284.

<sup>62</sup> *Id.*

<sup>63</sup> *Id.*, p. 345.

1 percent) within the first three years of the Energy Strong Program (or 194 leak reductions per  
2 year).<sup>64</sup>

3 **B. Energy Strong Program Performance – Investment Amounts**

4 **Q. PLEASE PROVIDE AN OVERVIEW OF THE COMPANY’S M&R STATION**  
5 **SUB-PROGRAM PERFORMANCE.**

6 A. The Company has completed seven of the eight major investments in the M&R Station  
7 Flood Mitigation sub-program totaling some \$25.27 million in capital expenditures. This  
8 constitutes 84 percent of the total sub-program investment (\$30 million). The Newark Airport  
9 M&R Station project is the last to be completed in this sub-program and, according to the  
10 Company, is still pending due to lease negotiations involving PSE&G and the City of Newark, as  
11 well as land use and other approvals involving the City of Newark and the Port Authority of New  
12 York and New Jersey.<sup>65</sup> However, all construction work, including all demolition work associated  
13 with the Newark Airport M&R station, was completed by February 21, 2018, with the exception  
14 of restoration, which was completed in April 2018. The Company currently anticipates the final  
15 completion date for the Newark Airport M&R Station project to be September 2018.<sup>66</sup>

16 **Q. PLEASE PROVIDE AN OVERVIEW OF THE COMPANY’S UPCI SUB-**  
17 **PROGRAMS PERFORMANCE.**

18 A. The Company has replaced 240 miles of cast iron mains and 21,092 services with a capital  
19 expenditure of \$370 million or \$1.54 million per mile.<sup>67</sup> The Company indicates that it completed

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<sup>64</sup> In the Matter of the Petition of Public Service Electric & Gas Company for Approval of the Energy Strong Program, Docket No. EO13020155 and GO13020156, Order Approving Stipulation of Settlement, May 21, 2014, Stipulation, p. 16.

<sup>65</sup> Company’s Response to RCR-G-ENG-0006.

<sup>66</sup> Company’s Response to S-OCI-PSEG-ENG-G-0012.

<sup>67</sup> The Company’s Response to RCR-G-POL-0041, Attachment RCR-G-POL\_0041\_Energy Strong Workpaper.xlsx; and RCR-G-POL-0035, Attachment RCR-G-POL\_0035\_Gas Infrastructure Program Costs.xlsx.

1 all construction and restoration work for the UPCI sub-program by July 22, 2016.<sup>68</sup> The Company  
2 has invested \$395.3 million of the \$400 million capital budget approved by the Board for its gas  
3 sub-programs.

4 **C. Energy Strong Program Performance – Leaks and Outages**

5 **Q. HAS THE COMPANY REDUCED ITS OPEN LEAK INVENTORY AS**  
6 **REQUIRED BY THE BOARD’S ORDER?**

7 A. Yes. The Board’s Order required the Company to reduce its open leak inventory (as of  
8 December 31, 2013) by 30 percent or 582 leaks within the first three years of the Energy Strong  
9 Program (or a reduction of 194 open leaks per year).<sup>69</sup> The Company has eliminated all of the  
10 required 582 leaks in the first year of the program. Over the term of the program the Company  
11 has eliminated a total of 1,869 leaks.<sup>70</sup>

12 **Q. HAVE YOU PREPARED AN ANALYSIS OF THE COMPANY’S LEAK**  
13 **PERFORMANCE PRE- AND POST-ENERGY STRONG IMPLEMENTATION?**

14 A. Yes. Schedule DED-5 provides a chart examining the number of known open leaks on the  
15 Company’s system. As shown in DED-5 overall system leaks have been decreasing in recent  
16 years. Although leaks increased in 2015 to 2,315 leaks, the number of known leaks have since  
17 decreased to 1,481 in 2017.

18 **Q. WERE THE NATURAL GAS SUB-PROGRAMS OF THE ENERGY STRONG**  
19 **PROGRAM DEVELOPED IN A FASHION DESIGNED TO REDUCE SYSTEM**  
20 **OUTAGES?**

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<sup>68</sup> Direct Testimony of Jorge Cardenas, Exhibit P-3, Schedule JLC3(a), p. 651.

<sup>69</sup> In the Matter of the Petition of Public Service Electric & Gas Company for Approval of the Energy Strong Program, Docket No. EO13020155 and GO13020156, Order Approving Stipulation of Settlement, May 21, 2014, Stipulation, p. 16.

<sup>70</sup> Company’s Response to RCR-G-POL-0032, Attachment RCR-G-POL\_0032\_ES Leak Reduction.xlsx.

1 A. Yes. An important goal of the natural gas sub-programs has been to reduce outages that  
2 occur on the Company's system due to water infiltration.<sup>71</sup> In fact, increasing system pressures,  
3 one of the tasks included in the UPCI sub-program, was designed specifically to minimize water  
4 infiltration-related outages.<sup>72</sup>

5 **Q. HAS THE COMPANY PROVIDED ANY EVIDENCE THAT THESE WATER**  
6 **INFILTRATION-RELATED OUTAGES HAVE BEEN REDUCED?**

7 A. Yes, outages on the Company's system due to water infiltration have been generally  
8 decreasing since the implementation of the Energy Strong Program in 2014.<sup>73</sup> For instance, in  
9 2014, the Company had 398 unplanned outages and 12 outages due specifically to water  
10 infiltration. However, in 2017, the number of unplanned outages decreased to 329 outages and  
11 outages due to water infiltration decreased to only seven.<sup>74</sup> The Company has not experienced any  
12 unplanned outages or outages due to water infiltration on any of the pipeline replacements made  
13 under the Energy Strong Program.<sup>75</sup>

14 **D. Energy Strong Program -- Recommendations**

15 **Q. WHAT ARE YOUR RECOMMENDATIONS REGARDING THE COMPANY'S**  
16 **ENERGY STRONG PROGRAM?**

17 A. Mr. McGee will provide details on the engineering aspects of the Company's program.  
18 However, from a policy perspective, the Company has complied with the Energy Strong program  
19 contingences and expenditures as approved by the Board. The Company completed the Energy  
20 Strong UPCI sub-program within the awarded budget and the Company has made the necessary

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<sup>71</sup> In the Matter of the Petition of Public Service Electric & Gas Company for Approval of the Energy Strong Program, Docket No. EO13020155 and GO13020156, Direct Testimony of Jorge Cardenas, p. 40.

<sup>72</sup> Company's Response to RCR-G-POL-0030.

<sup>73</sup> *Id.*

<sup>74</sup> *Id.*

<sup>75</sup> Company's Response to RCR-G-POL-0052.

1 replacements. Additionally, the Company exceeded its leak reduction targets, achieving the entire  
2 leak reduction target in the first year of the program.

3 **VI. OVERVIEW OF THE GSMP I PROGRAM**

4 **A. Program overview**

5 **Q. PLEASE DESCRIBE THE COMPANY’S GSMP I PROGRAM?**

6 A. The GSMP I program was approved by the Board in Docket No. GR15030272 as part of a  
7 Settlement Agreement between the parties in that proceeding. The GSMP I, which began in 2016,  
8 was designed as an accelerated distribution infrastructure replacement and safety program that  
9 would span a three year period. Part of the approval of the GSMP I program included an  
10 accelerated cost recovery mechanism that allowed the Company to recover program costs outside  
11 a traditional rate case. The Order approving the Stipulation in this case required the Company,  
12 however, to file a rate case by November 1, 2017. The instant rate case is motivated in large part  
13 by this requirement.<sup>76</sup> The current GSMP I will expire on December 31, 2018,<sup>77</sup> however, the  
14 Company has proposed to implement a new, second phase to the GSMP (“GSMP II”) which was  
15 approved by the Board on May 22, 2018.<sup>78</sup>

16 **Q. PLEASE DESCRIBE THE GSMP I PROGRAM COMPONENTS.**

17 A. The GSMP I program included the following components: the accelerated replacement of  
18 utilization pressure cast iron (“UPCI”) and unprotected steel mains and associated unprotected  
19 steel services; the installation of excess flow valves (“EVFs”); and the elimination of district

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<sup>76</sup> In the Matter of the Public Service Electric and Gas Company for Approval of a Gas System Modernization Program and Associated Cost Recovery Mechanism, Docket No. GR15030272, Order, November 16, 2015, p. 4. See also, Company’s Petition p. 2.

<sup>77</sup> In the Matter of the Public Service Electric and Gas Company for Approval of a Gas System Modernization Program and Associated Cost Recovery Mechanism, Docket No. GR15030272, Order, November 16, 2015, p. 3.

<sup>78</sup> In the Matter of the Petition of Public Service Electric and Gas Company for Approval of the Next Phase of the Gas System Modernization Program and Associated Cost Recovery Mechanism (“GSMP II”), Docket No. GR17070776, approved May 22, 2018.

1 regulators where necessary.<sup>79</sup> The program was designed to replace 400 miles of UPCI and  
2 unprotected steel mains and associated unprotected steel services.<sup>80</sup> The Company’s GSMP I also  
3 included a pressure upgrade to the UPCI system.

4 **Q. WERE ANY PROGRAM COSTS EXCLUDED FROM THE GSMP I COST**  
5 **RECOVERY MECHANISM?**

6 A Yes. The costs associated with the replacement of high pressure cast iron mains, meter  
7 replacements, and the additional costs associated with the relocation of inside meters to the outside  
8 were excluded from the accelerated cost recovery mechanism approved as part of this program.<sup>81</sup>

9 **Q. DID THE BOARD’S ORDER DEFINE ANY BASE LEVEL EXPENDITURES FOR**  
10 **PIPELINE INTEGRITY MANAGEMENT ACTIVITIES?**

11 A. Yes. The GSMP I Order required the Company to maintain a base level of capital spending  
12 (“stipulated base”) of \$85 million per year which would not be recovered through the GSMP I cost  
13 recovery mechanism.<sup>82</sup> This stipulated base spending was to include the replacement of cast iron  
14 (Utilization Pressure and Equalization Pressure), the replacement of unprotected steel mains and  
15 services, the costs associated with uprating the UPCI system if applicable, elimination of district  
16 regulators, installation of excess flow valves, and the costs associated with moving meters inside  
17 to outside.<sup>83</sup> The Company was to replace a minimum of 110 miles of cast iron and unprotected  
18 steel mains over the three-year program period as part of the stipulated base.<sup>84</sup> Any underspent

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<sup>79</sup> In the Matter of the Public Service Electric and Gas Company for Approval of a Gas System Modernization Program and Associated Cost Recovery Mechanism, Docket No. GR15030272, Order, November 16, 2015, p. 3.

<sup>80</sup> *Id.*

<sup>81</sup> *Id.*

<sup>82</sup> *Id.*, p. 4.

<sup>83</sup> In the Matter of the Public Service Electric and Gas Company for Approval of a Gas System Modernization Program and Associated Cost Recovery Mechanism, Docket No. GR15030272, Order, November 16, 2015, Stipulation and Agreement, p. 7.

<sup>84</sup> *Id.*

1 amounts were applied to stipulated base replacement activities without receiving cost recovery  
2 from ratepayers.<sup>85</sup>

3 **Q. DID THE GSMP I HAVE ANY PERFORMANCE TARGETS?**

4 A. Yes. The Board's approval of the GSMP I requires the Company to reduce its open leak  
5 inventory, as of September 30, 2015, by 60 percent over the period of September 30, 2015 through  
6 September 30, 2018.<sup>86</sup> The Company is required to notify Board Staff and Rate Counsel, and  
7 schedule a compliance conference within 30 days if it fails to meet these reductions targets by 20  
8 percent in the first year, or 40 percent after the first two years. Furthermore, failure to meet the  
9 overall 60 percent leak reduction target over the three year program term would result in the  
10 Company having to achieve compliance of this leak reduction obligation without seeking cost  
11 recovery from ratepayers.<sup>87</sup>

12 **B. GSMP I Program Performance**

13 **Q. PLEASE DISCUSS THE COMPANY'S GSMP I MAIN AND SERVICE**  
14 **REPLACEMENTS.**

15 A. The Company has invested \$427.9 million for the replacement of 231.5 miles of cast iron  
16 and unprotected steel mains and 18,287 services. Its replacement activities have resulted in per  
17 unit replacement investment of \$1.85 million per mile replaced.<sup>88</sup> The Company anticipates that  
18 it will be able to make all of the remaining investments and replacements under the GSMP I within  
19 the allowed program budget of \$650 million.<sup>89</sup> However, in order to meet this budget, the

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<sup>85</sup> *Id.*

<sup>86</sup> In the Matter of the Public Service Electric and Gas Company for Approval of a Gas System Modernization Program and Associated Cost Recovery Mechanism, Docket No. GR15030272, Order, November 16, 2015, p. 4.

<sup>87</sup> In the Matter of the Public Service Electric and Gas Company for Approval of a Gas System Modernization Program and Associated Cost Recovery Mechanism, Docket No. GR15030272, Order, November 16, 2015, Stipulation and Agreement, p. 13, ¶24.

<sup>88</sup> The Company's Response to RCR-G-POL-0043, Attachment RCR-G-POL\_0043\_RCR-G-POL-43 Workpaper.xls; and RCR-G-POL-0035, Attachment RCR-G-POL\_0035\_Gas Infrastructure Program Costs.xlsx.

<sup>89</sup> Company's Response to RCR-G-POL-0033.

1 Company will only be able to replace 330 miles of priority mains as opposed to the originally-  
2 anticipated 400 miles.<sup>90</sup> The decrease in the replacement mileage is a function of the increase in  
3 the per-mile replacement investments experienced in the program, which are 15 percent higher  
4 than what was anticipated in the Company's original GSMP I filing and 20 percent higher than the  
5 replacement costs associated with its Energy Strong experience discussed earlier in my testimony.

6 **Q. HAVE YOU PREPARED ANY ANALYSIS OF THE PROGRAM COSTS PER**  
7 **MILE OF THE ACCELERATED INFRASTRUCTURE REPLACEMENT PROGRAMS**  
8 **OF OTHER GAS UTILITIES OPERATING IN THE MID-ATLANTIC?**

9 A. Yes. Schedule DED-6 shows the cost per mile of the accelerated infrastructure  
10 replacement programs of gas utilities operating in the Mid-Atlantic and northeastern U.S. My  
11 analysis focused on natural gas utilities that were located in densely populated areas (cities with  
12 greater than 100,000 people) and had at least 55 customer services per mile of main. The results  
13 of my analysis show that, for utilities with publicly available information, the cost per mile of the  
14 Company's GSMP I are within the range of the cost per mile of other gas utilities in the Mid-  
15 Atlantic and northeastern U.S. that are or have implemented accelerated pipeline replacement  
16 programs. For instance, NSTAR in Massachusetts has a cost per mile of \$1.83 million and  
17 Baltimore Gas & Electric Company in Maryland has a cost per mile for its accelerated replacement  
18 program of \$2.6 million per mile.

19 **C. Stipulated Base Replacement Capital Expenditures**

20 **Q. PLEASE SUMMARIZE THE COMPANY'S CAPITAL EXPENDITURES UNDER**  
21 **ITS STIPULATED BASE REPLACEMENT SPENDING FOR THE GSMP I?**

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<sup>90</sup> Company's Response to RCR-G-POL-0043, Attachment RCR-G-POL\_0043\_RCR-G-POL-43 Attachment.xls.

1 A. The GSMP I Settlement provided that the Company was to maintain a base level of capital  
2 spending of \$85 million per year or a total of \$255 million which would not be recovered through  
3 the GSMP I cost recovery mechanism.<sup>91</sup> The Company has spent \$94.8 million in 2016 and \$99.9  
4 million in 2017, and \$5.9 million as of February 2018 in stipulated base capital spending under the  
5 GSMP I.<sup>92</sup> The Company has replaced 101.3 miles of main and 5,779 services as of February  
6 2018.<sup>93</sup> The Company projects that it will replace 110 miles of main and 6,865 services by the  
7 end of the program under its stipulated base capital spending.<sup>94</sup>

8 **Q. WILL THE COMPANY MEET ITS STIPULATED BASE SPENDING**  
9 **REQUIREMENTS UNDER THE GSMP I BY THE END OF THE PROGRAM PERIOD?**

10 A. Yes. It appears that the Company will meet the requirements of the settlement regarding  
11 stipulated base spending. The Company anticipates to have expended over \$310 million and  
12 replaced 110 miles of main and 6,865 services by December 31, 2018.

13 **D. Leaks Reductions**

14 **Q. PLEASE PROVIDE DETAILS ON THE COMPANY'S LEAK REDUCTIONS**  
15 **REQUIRED UNDER THE GSMP I PROGRAM.**

16 A. The Board's Order approving the GSMP I required the Company to reduce its open leak  
17 inventory as of September 30, 2015 by 60 percent within the first three years of the GSMP I.<sup>95</sup>  
18 The Company recorded an open leak inventory of 2,508 at the start of the GSMP I which means

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<sup>91</sup> In the Matter of the Public Service Electric and Gas Company for Approval of a Gas System Modernization Program and Associated Cost Recovery Mechanism, Docket No. GR15030272, Order, November 16, 2015, Stipulation and Agreement, p. 6.

<sup>92</sup> Company's response to RCR-G-POL-0040, Attachment RCR-G\_POL\_0040 Gas Capital and OandM.xlsx.

<sup>93</sup> Company's response to RCR-G-POL-0044.

<sup>94</sup> *Id.*

<sup>95</sup> In the Matter of the Public Service Electric and Gas Company for Approval of a Gas System Modernization Program and Associated Cost Recovery Mechanism, Docket No. GR15030272, Order, November 16, 2015, Stipulation and Agreement, p. 13, ¶24.

1 that its total leak reduction target was to reduce 1,505 leaks.<sup>96</sup> To date, the Company has actually  
2 exceeded this leak reduction target, reducing 2,283 leaks, or a total reduction of 91 percent relative  
3 to its prior open inventory level.<sup>97</sup>

4 **Q. WHAT ARE YOUR RECOMMENDATIONS REGARDING THE**  
5 **REPLACEMENTS AND COSTS INCURRED UNDER THE GSMP I PROGRAM?**

6 A. From a policy perspective, the Company has complied with the Board's GSMP I  
7 requirements and expectations. The Company is on target to complete the GSMP I within the  
8 awarded budget and the Company has made the necessary replacements.<sup>98</sup> Additionally, the  
9 Company exceeded its leak reduction targets, achieving the entire leak reduction target in the first  
10 two years of the program. The Company's program expenditures and replacements appear to have  
11 been made prudently and are within the parameters of the Board's original approvals. Ed McGee  
12 will address the engineering aspects of the GSMP I program.

13 **VII. CONCLUSIONS AND RECOMMENDATIONS**

14 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS**  
15 **REGARDING THE COMPANY'S PROPOSED GEM?**

16 A. The Company's GEM proposal should be rejected for a number of reasons. First, and most  
17 importantly, the Company has not tied its GEM request to a specific set of energy efficiency  
18 programs and savings targets. This makes the GEM a solution in search of a problem. Second,  
19 the Company's GEM is entirely inconsistent with the recently enacted Clean Energy Act that  
20 creates a Board-administered system of financial incentives and penalties that will directly reward  
21 or penalize the Company for its efficiency actions and it allows the utility to ask for lost base

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<sup>96</sup> Company's Response to RCR-G-POL-0046, Attachment RCR-G-POL\_0046\_2018 Leak Projection.xlsx.

<sup>97</sup> Company's Response to RCR-G-POL-0031.

<sup>98</sup> Company's Response to RCR-G-POL-0033.

1 revenue recovery associated with specific efficiency-induced revenue losses. Third, the  
2 Company's proposed GEM is inconsistent with the Board's past policies regarding revenue  
3 adjustment mechanisms as they have been embodied in the various Conservation Incentive  
4 Program ("CIP") approvals since 2006. Fourth, the Company has not been able to show that its  
5 efficiency activities have, or will have, a negative financial impact on its ability to earn its allowed  
6 rate of return. On a historical basis, the Company's past efficiency efforts have not impacted its  
7 ability to earn its allowed ROE. The Company has not provided in this proceeding any projections  
8 that quantify any specific future earnings challenges, raising questions about its validity and  
9 whether or not the Company will, in fact, see financial impacts that differ significantly those  
10 experienced over the past five years.

11 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS**  
12 **REGARDING THE COMPANY'S PROPOSAL TO RECEIVE A HIGHER ROE AS A**  
13 **RESULT OF ITS OPERATING PERFORMANCE?**

14 A. The Board should reject the Company's position that its operating performance should  
15 allow it a higher ROE. The Company's benchmarking analysis does not warrant an increase in its  
16 ROE. The incentive ROE request is inconsistent with the basic principles of the regulatory  
17 compact as it is commonly defined and used in utility regulation. The Company's proposal is  
18 asymmetrical and comes at a cost to ratepayers. Furthermore, the Company's failure to even  
19 quantify this apparent "bonus" in and of itself should be reason for rejection.

20 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS**  
21 **REGARDING THE COMPANY'S ENERGY STRONG AND GSMP I PROGRAMS?**

22 A. The Company appears to have made all the necessary replacements and system upgrades  
23 within the budget as approved by the Board for the GSMP I and gas portion of its Energy Strong

1 Program. Although the Company has been able to complete the GSMP I within the awarded  
2 budget the Company has fallen short of the number of miles replaced. The Company now  
3 anticipates replacing 330 miles as opposed to the 400 miles initially estimated in the approved  
4 program Stipulation. The reduction in replacement miles is largely due to the increase in the  
5 Company's cost per mile for replacements.

6 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY FILED ON AUGUST 6,**  
7 **2018?**

8 A. Yes, it does. However, I reserve the right to supplement my testimony if any updated or  
9 additional information becomes available during the course of this proceeding.

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**EDUCATION**

Ph.D., Economics, Florida State University, 1995.  
M.S., Economics, Florida State University, 1992.  
M.S., International Affairs, Florida State University, 1988.  
B.A., History, University of West Florida, 1987.  
A.A., Liberal Arts, Pensacola State College, 1985.

Master's Thesis: *Nuclear Power Project Disallowances: A Discrete Choice Model of Regulatory Decisions*

Ph.D. Dissertation: *An Empirical Examination of Environmental Externalities and the Least-Cost Selection of Electric Generation Facilities*

**ACADEMIC APPOINTMENTS**

Louisiana State University, Baton Rouge, Louisiana

**Center for Energy Studies**

2014-Current	Executive Director
2007-Current	Director, Division of Policy Analysis
2006-Current	Professor
2003-2014	Associate Executive Director
2001-2006	Associate Professor
1999-2001	Research Fellow and Adjunct Assistant Professor
1995-2000	Assistant Professor

**College of the Coast and the Environment (Department of Environmental Studies)**

2014-Current	Professor (Joint Appointment with CES)
2010-Current	Director, Coastal Marine Institute
2010-2014	Adjunct Professor

**E.J. Ourso College of Business Administration (Department of Economics)**

2006-Current	Adjunct Professor
2001-2006	Adjunct Associate Professor
1999-2000	Adjunct Assistant Professor

Michigan State University, East Lansing, Michigan

**Institute of Public Utilities**

2018-current Senior Fellow

Florida State University, Tallahassee, Florida

**College of Social Sciences, Department of Economics**

1995 Instructor

**PROFESSIONAL EXPERIENCE**

Acadian Consulting Group, Baton Rouge, Louisiana

2001-Current Consulting Economist/Principal  
1995-1999 Consulting Economist/Principal

Econ One Research, Inc., Houston, Texas

1999-2001 Senior Economist

Florida Public Service Commission, Tallahassee, Florida

**Division of Communications, Policy Analysis Section**

1995 Planning & Research Economist

**Division of Auditing & Financial Analysis, Forecasting Section**

1993 Planning & Research Economist  
1992-1993 Economist

Project for an Energy Efficient Florida/FlaSEIA, Tallahassee, Florida

1994 Energy Economist

Ben Johnson Associates, Inc., Tallahassee, Florida

1991-1992 Research Associate  
1989-1991 Senior Research Analyst  
1988-1989 Research Analyst

**GOVERNMENT APPOINTMENTS**

2017-Current Member, National Petroleum Council.  
U.S. Department of Energy.  
2007-Current Louisiana Representative, Interstate Oil and Gas Compact  
Commission; Energy Resources, Research & Technology  
Committee.  
2007-Current Louisiana Representative, University Advisory Board  
Representative; Energy Council (Center for Energy,  
Environmental and Legislative Research).  
2005 Member, Task Force on Energy Sector Workforce and Economic  
Development (HCR 322).  
2003-2005 Member, Energy and Basic Industries Task Force, Louisiana  
Economic Development Council  
2001-2003 Member, Louisiana Comprehensive Energy Policy Commission.

**PUBLICATIONS: BOOKS AND MONOGRAPHS**

1. *Power System Operations and Planning in a Competitive Market.* (2002). With Fred I. Denny. New York: CRC Press.
2. *Distributed Energy Resources: A Practical Guide for Service.* (2000). With Ritchie Priddy. London: Financial Times Energy.

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2. "The feasibility of repurposing natural gas pipelines to transport carbon dioxide: a Louisiana case study and analysis. (2018). With Brian Snyder and Michael Layne. *International Journal of Greenhouse Gas Control*. Forthcoming.
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4. "Understanding the challenges of industrial carbon capture and storage: an example in a U.S. petrochemical corridor." (2018). With Brian Snyder and Michael Layne. *International Journal of Sustainable Energy*.
5. "Sea level rise and coastal inundation: a case study of the Gulf Coast energy infrastructure." (2018). With Siddhartha Narra. *Natural Resources*. 9: 150-174.
6. "The energy pillars of society: perverse interactions among human resource use, the economy and environmental degradation." (2018). With Adrian R.H. Wiegman, John W. Day, Christopher F. D'Elia, Jeffrey S. Rutherford, Charles Hall. *BioPhysical Economics and Resource Quality*. 3(2) 1-16.
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10. "Economic impact of Gulf of Mexico ecosystem goods and services and integration into restoration decision-making." (2014) With Shepard, A.N., J.F. Valentine, C.F. D'Elia, D.W. Yoskowitz. *Gulf Science*.
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14. "Using Competitive Bidding As A Means of Securing the Best of Competitive and Regulated Worlds." (2004). With Tom Ballinger and Elizabeth A. Downer. *NRRI Journal of Applied Regulation*. 2 (November): 69-85. (Received 2005 Best Paper Award by NRRI)
15. "Deregulation of Generating Assets and the Disposition of Excess Deferred Federal Income Taxes." (2004). With K.E. Hughes II. *International Energy Law and Taxation Review*. 10 (October): 206-212.
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21. "Cogeneration and Electric Power Industry Restructuring" (1999). With Andrew N. Kleit. *Resource and Energy Economics*. 21:153-166.
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23. "Oil Spills, Workplace Safety, and Firm Size: Evidence from the U.S. Gulf of Mexico OCS." (1997). With O. O. Iledare, A. G. Pulsipher, and Dmitry Mesyanzhinov. *Energy Journal* 4: 73-90.
24. "A Comment on Cost Savings from Nuclear Regulatory Reform" (1997). *Southern Economic Journal*. 63:1108-1112.
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### **PUBLICATIONS: PEER REVIEWED PROCEEDINGS**

1. "Hydraulic Fracturing: A Look at Efficiency and the Environmental Effects of Fracking" (2014). With Emily C. Jackson. *Environmental Science and Technology: Proceedings from the 7<sup>th</sup> International Conference on Environmental Science and Technology*. Volume 1 of 2: edited by George A. Sorial and Jihua Hong. (Houston, TX: American Science Press, ISBN: 978-0976885368): 42-46.

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6. “Power System Operations, Control, and Environmental Protection in a Restructured Electric Power Industry” (1998). With Fred I. Denny. *IEEE Proceedings: Large Engineering Systems Conference on Power Engineering*. June: 294-298.
7. “New Paradigms for Power Engineering Education.” (1997). With Fred I. Denny. *Proceedings of the International Association of Science and Technology for Development*. October: 499-504.
8. “Safety Regulations, Firm Size, and the Risk of Accidents in E&P Operations on the Gulf of Mexico Outer Continental Shelf” (1996). With Allan Pulsipher, Omowumi Iledare, and Bob Baumann. *Proceedings of the American Society of Petroleum Engineers: Third International Conference on Health, Safety, and the Environment in Oil and Gas Exploration and Production*, June.
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3. “Competitive Bidding in the Electric Power Industry.” (2003). *Proceedings of the Association of Energy Engineers*. December 2003.
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11. "Modeling Electric Power Markets in a Restructured Environment" (1998). With Robert F. Cope and Dan Rinks. *Proceedings of the International Association for Energy Economics: Technology's Critical Role in Energy and Environmental Markets*. October: 48-56.
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2. "The Road Ahead: The Outlook for Louisiana Energy." (2006). In *Commemorating Louisiana Energy: 100 Years of Louisiana Natural Gas Development*. Houston, TX: Harts Energy Publications, 68-72.

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4. “Alaskan North Slope Natural Gas Development.” (2003). In *Natural Gas and Electric Industries Analysis 2003*. With William E. Nebesky, Dmitry Mesyanzhinov, and Jeffrey M. Burke. Edited by Robert Willett. Houston, TX: Financial Communications Company, 185-205.
5. “Challenges and Opportunities for Distributed Energy Resources in the Natural Gas Industry.” (2002). In *Natural Gas and Electric Industries Analysis 2001-2002*. Edited by Robert Willett. With Martin J. Collette, Ritchie D. Priddy, and Jeffrey M. Burke. Houston, TX: Financial Communications Company, 114-131.
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2. Review of ***Electricity Transmission Pricing and Technology***, edited by Michael Einhorn and Riaz Siddiqi. (Boston: Kluwer Academic Publishers, 1996) pp. 282. ISBN 0-7923-9643-X. *Energy Journal* 18 (1997): 146-148.
3. Review of ***Electric Cooperatives on the Threshold of a New Era*** by Public Utilities Reports. (Vienna, Virginia: Public Utilities Reports, 1996) pp. 232. ISBN 0-910325-63-4. *Energy Journal* 17 (1996): 161-62.

### **PUBLICATIONS: TRADE AND PROFESSIONAL JOURNALS**

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2. “Unconventional Natural Gas and the U.S. Manufacturing Renaissance” (2013). *BIC Magazine*. Vol. 30: No. 2, p. 76 (March).
3. “Louisiana’s Tuscaloosa Marine Shale Development: Emerging Resource and Economic Potentials” (2012). *Spectrum*. January-April: 18-20.
4. “The Impact of Legacy Lawsuits on Louisiana’s Conventional Drilling Activity” (2012). *LOGA Industry Report*. Spring 2012: 27-34.
5. “Value of Production Losses Tallied for 2004-2005 Storms.” (2008). With Mark J. Kaiser and Yunke Yu. *Oil and Gas Journal*. Vol. 106.27: 32-26 (July 21) (part 3 of 3).
6. “Model Framework Can Aid Decision on Redevelopment.” (2008). With Mark J. Kaiser and Yunke Yu. *Oil and Gas Journal*. Vol. 106.26: 49-53 (July 14) (part 2 of 3).

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7. "Field Redevelopment Economics and Storm Impact Assessment." (2008). With Mark J. Kaiser and Yunke Yu. *Oil and Gas Journal*. Vol. 106.25: 42-50 (July 7) (part 1 of 3).
8. "The IRS' Latest Proposal on Tax Normalization: A Pyrrhic Victory for Ratepayers," (2006). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 55(1): 217-236
9. "Executive Compensation in the Electric Power Industry: Is It Excessive?" (2006). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 54(4): 913-940.
10. "Renewable Portfolio Standards in the Electric Power Industry." With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 54(3): 693-706.
11. "Regulating Mercury Emissions from Electric Utilities: Good Environmental Stewardship or Bad Public Policy? (2005). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 54 (2): 401-424
12. "Using Industrial-Only Retail Choice as a Means of Moving Competition Forward in the Electric Power Industry." (2005). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 54(1): 211-223
13. "The Nuclear Power Plant Endgame: Decommissioning and Permanent Waste Storage. (2005). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 53 (4): 981-997
14. "Can LNG Preserve the Gas-Power Convergence?" (2005). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 53 (3):783-796.
15. "Competitive Bidding as a Means of Securing Opportunities for Efficiency." (2004). With Elizabeth A. Downer. *Electricity and Natural Gas* 21 (4): 15-21.
16. "The Evolving Markets for Polluting Emissions: From Sulfur Dioxide to Carbon Dioxide." (2004). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 53(2): 479-494.
17. "The Challenges Associated with a Nuclear Power Revival: Its Past." (2004). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 53 (1): 193-211.
18. "Deregulation of Generating Assets and The Disposition of Excess Deferred Federal Income Taxes: A 'Catch-22' for Ratepayers." (2004). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 52: 873-891.
19. "Will Competitive Bidding Make a Comeback?" (2004). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 52: 659-674
20. "An Electric Utility's Exposure to Future Environmental Costs: Does It Matter? You Bet!" (2003). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 52: 457-469.
21. "White Paper or White Flag: Do FERC's Concessions Represent A Withdrawal from Wholesale Power Market Reform?" (2003). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 52: 197-207.
22. "Clear Skies" or Storm Clouds Ahead? The Continuing Debate over Air Pollution and Climate Change" (2003). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 51: 823-848.
23. "Economic Displacement Opportunities in Southeastern Power Markets." (2003). With Dmitry V. Mesyanzhinov. *USAEE Dialogue*. 11: 20-24.
24. "What's Happened to the Merchant Energy Industry? Issues, Challenges, and Outlook" (2003). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 51: 635-652.

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25. "Is There a Role for the TVA in Post-Restructured Electric Markets?" (2002). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 51: 433-454.
26. "The Role of Alaska North Slope Gas in the Southcentral Alaska Regional Energy Balance." (2002). With William Nebesky and Dmitry Mesyanzhinov. *Natural Gas Journal*. 19: 10-15.
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35. "Distributed Energy Must Be Watched As Opportunity for Gas Companies." (2001). With Martin Collette, and Ritchie D. Priddy. *Natural Gas Journal*. January: 9-16.
36. "Clean Air, Kyoto, and the Boy Who Cried Wolf." (2000). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. December: 529-540.
37. "Energy Conservation Programs and Electric Restructuring: Is There a Conflict?" (2000). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. September: 211-224.
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40. "Distributed Energy Resources: The Next Paradigm Shift in the Electric Power Industry." (2000). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 48:593-602.
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5. "Low cost hydrocarbons continue to benefit the Gulf Coast." (2017). *10/12 Industry Report*. *Baton Rouge Business Report*. Q:2.
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12. *Combined Heat and Power in Louisiana: Status, Potentials, and Policies. Phase 4 Report: Policy and Market Opportunities and Challenges for CHP Development.* (2013). Louisiana Department of Natural Resources, Baton Rouge, Louisiana. 17 pp.
13. *Combined Heat and Power in Louisiana: Status, Potentials, and Policies. Phase 3 Report: Empirical Results, Technical and Cost-Effectiveness Potentials.* (2013). Louisiana Department of Natural Resources, Baton Rouge, Louisiana. 65 pp.
14. *Combined Heat and Power in Louisiana: Status, Potentials, and Policies. Phase 2 Report: Technical and Cost Effectiveness Methodologies.* (2013). Louisiana Department of Natural Resources, Baton Rouge, Louisiana. 39 pp.
15. *Combined Heat and Power in Louisiana: Status, Potentials, and Policies. Phase 1 Report: Resource Characterization and Database.* (2013). Louisiana Department of Natural Resources, Baton Rouge, Louisiana. 62 pp.

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16. *Onshore Oil and Gas Infrastructure to Support Development in the Mid-Atlantic OCS Region.* (2014). U.S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study BOEM 2014-657. 360 pp.
17. *Unconventional Resources and Louisiana's Manufacturing Development Renaissance* (2013). Baton Rouge, LA: LSU Center for Energy Studies, 93 pp.
18. *Removing Big Wind's "Training Wheels:" The Case for Ending the Production Tax Credit* (2012). Washington, DC: American Energy Alliance, 19 pp.
19. *The Impact of Legacy Lawsuits on Conventional Oil and Gas Drilling in Louisiana.* (2012). Baton Rouge, LA: LSU Center for Energy Studies, 62 pp.
20. *Diversifying Energy Industry Risk in the GOM: Post-2004 Changes in Offshore Oil and Gas Insurance Markets.* (2011) With Christopher P. Peters. U.S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico Region, New Orleans, LA. OCS Study BOEM 2011-054. 95pp.
21. *OCS-Related Infrastructure Fact Book. Volume I: Post-Hurricane Impact Assessment.* (2011). U.S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico Region, New Orleans, LA. OCS Study BOEM 2011-043. 372 pp.
22. *Fact Book: Offshore Oil and Gas Industry Support Sectors.* (2010). U.S. Department of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico Region, New Orleans, LA. OCS Study BOEM 2010-042. 138pp.
23. *The Impacts of Greenhouse Gas Regulation on the Louisiana Economy.* (2011). With Michael D. McDaniel, Christopher Peters, Kathryn R. Perry, and Lauren L. Stuart. Louisiana Greenhouse Gas Inventory Project, Task 3 and 4 Report. Prepared for the Louisiana Department of Economic Development. Baton Rouge, LA: LSU Center for Energy Studies, 134 pp.
24. *Overview of States' Climate Action and/or Alternative Energy Policy Measures.* (2010). With Michael D. McDaniel, Christopher Peters, Kathryn R. Perry, and Lauren L. Stuart. Louisiana Greenhouse Gas Inventory Project, Task 2 Report. Prepared for the Louisiana Department of Economic Development. Baton Rouge, LA: LSU Center for Energy Studies, 30 pp.
25. *Louisiana Greenhouse Gas Inventory.* (2010). With Michael D. McDaniel, Christopher Peters, Kathryn R. Perry, Lauren L. Stuart, and Jordan L. Gilmore. Louisiana Greenhouse Gas Inventory Project, Task 1 Report. Prepared for the Louisiana Department of Economic Development. Baton Rouge, LA: LSU Center for Energy Studies, 114 pp.
26. *Opportunities for Geo-pressured Thermal Energy in Southwestern Louisiana.* (2010). Report prepared on behalf of Louisiana Geothermal, L.L.C, 41 pp.
27. *Economic and Energy Market Benefits of the Proposed Cavern Expansions at the Jefferson Island Storage and Hub Facility.* (2009). Report prepared on behalf of Jefferson Island Storage and Hub, LLC, 28 pp.
28. *The Benefits of Continued and Expanded Investments in the Port of Venice.* (2009). With Christopher Peters and Kathryn Perry. Baton Rouge, LA: LSU Center for Energy Studies. 83 pp.
29. *Examination of the Development of Liquefied Natural Gas on the Gulf of Mexico.* (2008). U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS

- Region, New Orleans, LA OCS Study MMS 2008-017. 106 pp.
30. *Gulf of Mexico OCS Oil and Gas Scenario Examination: Onshore Waste Disposal.* (2007). With Michelle Barnett, Derek Vitrano, and Kristen Strellec. OCS Report, MMS 2007-051. New Orleans, LA: U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico Region.
  31. *Economic Impact Analysis of the Proposed Lake Charles Gasification Project.* (2007). Report Prepared on Behalf of Leucadia Corporation.
  32. *The Economic Impacts of New Jersey's Proposed Renewable Portfolio Standard.* (2005) Report Prepared on Behalf of the New Jersey Division of Ratepayer Advocate.
  33. *The Importance of Energy Production and Infrastructure in Plaquemines Parish.* (2006). Report Prepared on Behalf of Project Rebuild Plaquemines.
  34. *Louisiana's Oil and Gas Industry: A Study of the Recent Deterioration in-State Drilling Activity.* (2005). With Kristi A.R. Darby, Jeffrey M. Burke, and Robert H. Baumann. Baton Rouge, LA: Louisiana Department of Natural Resources.
  35. *Comparison of Methods for Estimating the NO<sub>x</sub> Emission Impacts of Energy Efficiency and Renewable Energy Projects Shreveport, Louisiana Case Study.* (2005). With Adam Chambers, David Kline, Laura Vimmerstedt, Art Diem, and Dmitry Mesyanzhinov. Golden, Colorado: National Renewable Energy Laboratory.
  36. *Economic Opportunities for a Limited Industrial Retail Choice Plan in Louisiana.* (2004). With Elizabeth A. Downer and Dmitry V. Mesyanzhinov. Baton Rouge, LA: Louisiana State University Center for Energy Studies.
  37. *Economic Opportunities for LNG Development in Louisiana.* (2004). With Elizabeth A. Downer and Dmitry V. Mesyanzhinov. Baton Rouge, LA: Louisiana Department of Economic Development and Greater New Orleans, Inc.
  38. *Marginal Oil and Gas Production in Louisiana: An Empirical Examination of State Activities and Policy Mechanisms for Stimulating Additional Production.* (2004). With Dmitry V. Mesyanzhinov, Jeffrey M. Burke, Robert H. Baumann. Baton Rouge, LA: Louisiana Department of Natural Resources, Office of Mineral Resources.
  39. *Deepwater Program: OCS-Related Infrastructure in the Gulf of Mexico Fact Book.* (2004). With Louis Berger Associates, University of New Orleans National Ports and Waterways Institute, and Research and Planning Associates. MMS Study No. 1435-01-99-CT-30955. U.S. Department of the Interior, Minerals Management Service.
  40. *The Power of Generation: The Ongoing Benefits of Independent Power Development in Louisiana.* With Dmitry V. Mesyanzhinov, Jeffrey M. Burke, and Elizabeth A. Downer. Baton Rouge, LA: LSU Center for Energy Studies, 2003.
  41. *Modeling the Economic Impact of Offshore Oil and Gas Activities in the Gulf of Mexico: Methods and Application.* (2003). With Williams O. Olatubi, Dmitry V. Mesyanzhinov, and Allan G. Pulsipher. Prepared by the Center for Energy Studies, Louisiana State University, Baton Rouge, LA. OCS Study MMS2000-0XX. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA.
  42. *An Analysis of the Economic Impacts Associated with Oil and Gas Activities on State Leases.* (2002) With Robert H. Baumann, Dmitry V. Mesyanzhinov, and Allan G. Pulsipher. Baton Rouge, LA: Louisiana Department of Natural Resources, Office of

Mineral Resources.

43. *Alaska In-State Natural Gas Demand Study*. (2002). With Dmitry Mesyanzhinov, et.al. Anchorage, Alaska: Alaska Department of Natural Resources, Division of Oil and Gas.
44. *Moving to the Front of the Lines: The Economic Impacts of Independent Power Plant Development in Louisiana*. (2001). With Dmitry Mesyanzhinov and Williams O. Olatubi. Baton Rouge, LA: Louisiana State University, Center for Energy Studies.
45. *The Economic Impacts of Merchant Power Plant Development in Mississippi*. (2001). Report Prepared on Behalf of the US Oil and Gas Association, Alabama and Mississippi Division. Houston, TX: Econ One Research, Inc.
46. *Energy Conservation and Electric Restructuring in Louisiana*. (2000). With Dmitry Mesyanzhinov, Ritchie D. Priddy, Robert F. Cope III, and Vera Tabakova. Baton Rouge, LA: Louisiana State University, Center for Energy Studies.
47. *Assessing the Environmental and Safety Risks of the Expanded Role of Independents in Oil and Gas E&P Operations on the U.S. Gulf of Mexico OCS*. (1996). With Allan Pulsipher, Omowumi Iledare, Dmitry Mesyanzhinov, William Daniel, and Bob Baumann. Baton Rouge, LA: Louisiana State University, Center for Energy Studies.
48. *Restructuring the Electric Utility Industry: Implications for Louisiana*. (1996). With Allan Pulsipher and Kimberly H. Dismukes. Baton Rouge, LA: Louisiana State University, Center for Energy Studies.

**GRANT RESEARCH**

1. *Co-investigator*. Estimating offshore Gulf of Mexico carbon capture, sequestration, and utilization opportunities. (2018). With Southern States Energy Board, Advanced Resources International, Argonne Laboratories, University of Alabama, University of South Carolina, and Oklahoma State University. U.S. Department of Energy, National Energy Technology Laboratory. \$731,031 (LSU share of \$4.0 million project, three years, in progress).
2. *Principal Investigator*. Understanding MISO long term infrastructure needs and stakeholder positions. (2017). Midcontinent Independent System Operator. Total Project: \$9,500, six months. Status: In Progress.
3. *Principal Investigator*. Offshore oil and gas activity impacts on ecosystem services in the Gulf of Mexico. (2017) With Brian F. Snyder. U.S. Department of the Interior, Bureau of Ocean Energy Management. Total Project: \$240,982, two years. Status: In Progress.
4. *Principal Investigator*. Economic Impacts of the Bayou Bridge pipeline. (2017). With Gregory B. Upton, Jr., Energy Transfer Corporation. \$9,900. Status: Completed.
5. *Principal Investigator*. Integrated carbon capture, storage and utilization in the Louisiana chemical corridor. (2017). U.S. Department of Energy/National Energy Technology Laboratory. Total funding: \$1,300,000 (18 months). Status: In progress
6. *Co-Principal Investigator*. Gulf coast energy outlook and analysis. (2016). With Gregory B. Upton and Mallory Vachon. Regions Bank. Total funding: \$20,000, one year. Status: Completed.
7. *Principal Investigator*. GOM energy infrastructure trends and factbook update. (2016).

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- With Gregory B. Upton and Mallory Vachon. U.S. Department of the Interior, Bureau of Ocean Energy Management (“BOEM”). Total funding: \$224,995, two years. Status: In progress.
8. *Principal Investigator.* Examining Louisiana’s Industrial Carbon Sequestration Potential. Phase 2: Follow-up and estimation. (2016). With Brian F. Snyder. Southern States Energy Board. Total Project: \$69,990, three months. Status: Completed.
  9. *Principal Investigator.* Examining Louisiana’s Industrial Carbon Sequestration Potential. Phase 1: Scoping and Identification. (2016). With Brian F. Snyder. Southern States Energy Board. Total Project: \$29,919, three months. Status: Completed.
  10. *Principal Investigator.* Energy efficiency building codes for Louisiana. (2016). With Brian F. Snyder. Louisiana Department of Natural Resources. Total Project: \$50,000, one year. Status: Completed.
  11. *Principal Investigator.* An update of Louisiana’s combined heat and power potentials, current utilizations, and barriers to improved operating efficiencies. (2016). Louisiana Department of Natural Resources. Total Project: \$90,000, one year. Status: Completed.
  12. *Principal Investigator.* Combined Heat and Power Stakeholder Meeting. (2016). Southeastern Energy Efficiency Council. Total Project \$9,160, two months. Status: Completed.
  13. *Co-Investigator.* “Expanding Ecosystem Service Provisioning from Coastal Restoration to Minimize Environmental and Energy Constraints” (2015). With John Day and Chris D’Elia. Gulf Research Program. Total Project: \$147,937. Status: Completed.
  14. *Principal Investigator.* “Coastal Marine Institute Administrative Grant” (2104). U.S. Department of the Interior. Total Project \$45,000. Status: Completed.
  15. *Principal Investigator.* “Analysis of the Potential for Combined Heat and Power (CHP) in Louisiana.” (2013). Louisiana Department of Natural Resources. Total Project: \$90,000. Status: Completed.
  16. *Co-Investigator.* “CNH: A Tale of Two Louisianas: Coupled Natural-Human Dynamics in a Vulnerable Coastal System” (2013) With Nina Lam, Margaret Reams, Kam-Biu Liu, Victor Rivera, Yi-Jun Xu and Kelley Pace. National Science Foundation. Total Project: \$1.5 million. Status: In Progress (Sept 2012-Feb 2017).
  17. *Principal Investigator.* “Examination of Unconventional Natural Gas and Industrial Economic Development” (2012). America’s Natural Gas Alliance. Total Project: \$48,210. Status: Completed.
  18. *Principal Investigator.* “Investigation of the Potential Economic Impacts Associated with Shell’s Proposed Gas-To-Liquids Project” (2012). Shell Oil Company, North America. Total Project: \$76,708. Status: Completed.
  19. *Principal Investigator.* “Analysis of the Federal Wind Energy Production Tax Credit.” American Energy Alliance. Total Project: \$20,000. Status: Completed.
  20. *Principal Investigator.* “Energy Sector Impacts Associated with the Deepwater Horizon Oil Spill.” Louisiana Department of Economic Development. Total Project: approximately \$50,000. Status: Completed.
  21. *Principal Investigator.* “Economic Contributions and Benefits Support by the Port of

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- Venice.” Port of Venice Coalition. Total Project: \$20,000. Status: Completed.
22. *Principal Investigator.* “Energy Policy Development in Louisiana.” Louisiana Department of Natural Resources. Total Project: \$150,000. Status: Completed.
  23. *Principal Investigator.* “Preparing Louisiana for the Possible Federal Regulation of Greenhouse Gas Regulation.” With Michael D. McDaniel. Louisiana Department of Economic Development. Total Project: \$98,543. Status: Completed.
  24. *Principal Investigator.* “OCS Studies Review: Louisiana and Texas Oil and Gas Activity and Production Forecast; Pipeline Position Paper; and Geographical Units for Observing and Modeling Socioeconomic Impact of Offshore Activity.” (2008). With Mark J. Kaiser and Allan G. Pulsipher. U.S. Department of the Interior, Minerals Management Service. Total Project: \$377,917 (3 years). Status: Completed.
  25. *Principal Investigator.* “State and Local Level Fiscal Effects of the Offshore Petroleum Industry.” (2007). With Loren C. Scott. U.S. Department of the Interior, Minerals Management Service. Total Project: \$241,216 (2.5 years). Status: Completed.
  26. *Principal Investigator.* “Understanding Current and Projected Gulf OCS Labor and Ports Needs.” (2007). With Allan G. Pulsipher, Kristi A. R. Darby. U.S. Department of the Interior, Minerals Management Service. Total Project: \$169,906. (one year). Status: Completed.
  27. *Principal Investigator.* “Structural Shifts and Concentration of Regional Economic Activity Supporting GOM Offshore Oil and Gas Activities.” (2007). With Allan G. Pulsipher, Michelle Barnett. U.S. Department of the Interior, Minerals Management Service. Total Project: \$78,374 (one year). Status: Awarded, In Progress.
  28. *Principal Investigator.* “Plaquemine Parish’s Role in Supporting Critical Energy Infrastructure and Production.” (2006). With Seth Cureington. Plaquemines Parish Government, Office of the Parish President and Plaquemines Association of Business and Industry. Total Project: \$18,267. Status: Completed.
  29. *Principal Investigator.* “Diversifying Energy Industry Risk in the Gulf of Mexico.” (2006). With Kristi A. R. Darby. U.S. Department of the Interior, Minerals Management Service. Total Project: \$65,302 (two years). Status: Awarded, In Progress.
  30. *Principal Investigator.* “Post-Hurricane Assessment of OCS-Related Infrastructure and Communities in the Gulf of Mexico Region.” (2006). U.S. Department of the Interior, Minerals Management Service. Total Project Funding: \$244,837. Status: In Progress.
  31. *Principal Investigator.* “Ultra-Deepwater Road Mapping Process.” (2005). With Kristi A. R. Darby, Subcontract with the Texas A&M University, Department of Petroleum Engineering. Funded by the Gas Technology Institute. Total Project Funding: \$15,000. Status: Completed.
  32. *Principal Investigator.* “An Examination of the Opportunities for Drilling Incentives on State Leases.” (2004). With Robert H. Baumann and Kristi A. R. Darby. Louisiana Office of Mineral Resources. Total Project Funding: \$75,000. Status: Completed.
  33. *Principal Investigator.* “An Examination on the Development of Liquefied Natural Gas Facilities on the Gulf of Mexico.” (2004). With Dmitry V. Mesyanzhinov and Mark J. Kaiser. U.S. Department of the Interior, Minerals Management Service. Total Project Funding \$101,054. Status: Completed.

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34. *Principal Investigator.* “Examination of the Economic Impacts Associated with Large Customer, Industrial Retail Choice.” (2004). With Dmitry V. Mesyanzhinov. Louisiana Mid-Continent Oil and Gas Association. Total Project Funding: \$37,000. Status: Completed.
35. *Principal Investigator.* “Economic Opportunities from LNG Development in Louisiana.” (2003). With Dmitry V. Mesyanzhinov. Metrovision/New Orleans Chamber of Commerce and the Louisiana Department of Economic Development. Total Project Funding: \$25,000. Status: Completed.
36. *Principal Investigator.* “Marginal Oil and Gas Properties on State Leases in Louisiana: An Empirical Examination and Policy Mechanisms for Stimulating Additional Production.” (2002). With Robert H. Baumann and Dmitry V. Mesyanzhinov. Louisiana Office of Mineral Resources. Total Project Funding: \$72,000. Status: Completed.
37. *Principal Investigator.* “A Collaborative Investigation of Baseline and Scenario Information for Environmental Impact Statements.” (2002). With Dmitry V. Mesyanzhinov and Williams O. Olatubi. U.S. Department of Interior, Minerals Management Service. Total Project Funding: \$557,744. Status: Awarded, In Progress.
38. *Co-Principal Investigator.* “An Analysis of the Economic Impacts of Drilling and Production Activities on State Leases.” (2002). With Robert H. Baumann, Allan G. Pulsipher, and Dmitry V. Mesyanzhinov. Louisiana Office of Mineral Resources. Total Project Funding: \$8,000. Status: Completed.
39. *Principal Investigator.* “Cost Profiles and Cost Functions for Gulf of Mexico Oil and Gas Development Phases for Input Output Modeling.” (1998). With Dmitry Mesyanzhinov and Allan G. Pulsipher. U.S. Department of Interior, Minerals Management Service. Total Project Funding: \$244,956. Status: Completed.
40. *Principal Investigator.* “An Economic Impact Analysis of OCS Activities on Coastal Louisiana.” (1998). With Dmitry Mesyanzhinov and David Hughes. U.S. Department of Interior, Minerals Management Service. Total Project Funding: \$190,166. Status: Completed.
41. *Principal Investigator.* “Energy Conservation and Electric Restructuring in Louisiana.” (1997). Louisiana Department of Natural Resources.” Petroleum Violation Escrow Program Funds. Total Project Funding: \$43,169. Status: Completed.
42. *Principal Investigator.* “The Industrial Supply of Electricity: Commercial Generation, Self-Generation, and Industry Restructuring.” (1996). With Andrew Kleit. Louisiana Energy Enhancement Program, LSU Office of Research and Development. Total Project Funding: \$19,948. Status: Completed.
43. *Co-Principal Investigator.* “Assessing the Environmental and Safety Risks of the Expanded Role of Independents in Oil and Gas E&P Operations on the U.S. Gulf of Mexico OCS.” (1996). With Allan Pulsipher, Omowumi Iledare, Dmitry Mesyanzhinov, William Daniel, and Bob Baumann. U.S. Department of Interior, Minerals Management Service, Grant Number 95-0056. Total Project Funding: \$109,361. Status: Completed.

### **ACADEMIC CONFERENCE PAPERS/PRESENTATIONS**

1. “The changing nature of Gulf of Mexico energy infrastructure.” (2017). Session 3B: New Directions in Social Science Research. 27<sup>th</sup> Gulf of Mexico Region Information Technology

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- Meetings. U.S. Department of the Interior, Bureau of Ocean Energy Management, Environmental Studies Program. New Orleans, LA. August 24.
2. "Capacity utilization, efficiency trends, and economic risks for modern CHP installations." (2017). U.S. Department of Energy, 2017 Industrial Energy Technology Conference, New Orleans, LA June 21.
  3. "The Impact of Infrastructure Cost Recovery Mechanisms on Pipeline Replacements and Leaks." (2015). With Gregory Upton. Southern Economic Association Meeting 2015. New Orleans, Louisiana. November 23.
  4. "The Impact of Infrastructure Cost Recovery Mechanisms on Pipeline Replacements and Leaks" (2015). With Gregory Upton. 38<sup>th</sup> IAEE International Conference, Antalya, Turkey. May 26.
  5. "Modifying Renewables Policies to Sustain Positive Economic and Environmental Change" (2015). IEEE Annual Green Technologies ("Greentech") Conference. April 17.
  6. "The Gulf Coast Industrial Investment Renaissance and New CHP Development Opportunities." (2014). Industrial Energy and Technology Conference, New Orleans, Louisiana. May 20.
  7. "Estimating Critical Energy Infrastructure Value at Risk from Coastal Erosion" (2014). With Siddhartha Narra. American's Estuaries: 7<sup>th</sup> Annual Summit on Coastal and Estuarine Habitat Restoration. Washington, D.C., November 3-6.
  8. "Economies of Scale, Learning Curves, and Offshore Wind Development Costs" (2012). With Gregory Upton. Southern Economic Association Annual Conference, New Orleans, LA November 17.
  9. "Analysis of Risk and Post-Hurricane Reaction." (2009). 25<sup>th</sup> Annual Information Transfer Meeting. U.S. Department of the Interior, Minerals Management Service. January 7.
  10. "Legacy Litigation, Regulation, and Other Determinants of Interstate Drilling Activity Differentials." (2008). With Christopher Peters and Mark Kaiser. 28<sup>th</sup> Annual USAEE/IAEE North American Conference: Unveiling the Future of Future of Energy Frontiers. New Orleans, LA, December 3.
  11. "Gulf Coast Energy Infrastructure Renaissance: Overview." (2008). 28<sup>th</sup> Annual USAEE/IAEE North American Conference: Unveiling the Future of Future of Energy Frontiers. New Orleans, LA, December 3.
  12. "Understanding the Impacts of Katrina and Rita on Energy Industry Infrastructure." (2008). American Chemical Society National Meetings, New Orleans, Louisiana. April 7.
  13. "Determining the Economic Value of Coastal Preservation and Restoration on Critical Energy Infrastructure." (2007). With Kristi A. R. Darby and Michelle Barnett. International Association for Energy Economics, Wellington, New Zealand, February 19.
  14. "Regulatory Issues in Rate Design, Incentives, and Energy Efficiency." (2007). 34<sup>th</sup> Annual Public Utilities Research Center Conference, University of Florida. Gainesville, FL. February 16.
  15. "An Examination of LNG Development on the Gulf of Mexico." (2007). With Kristi A.R. Darby. US Department of the Interior, Minerals Management Service. 24<sup>th</sup> Annual Information Technology Meeting. New Orleans, LA. January 9.

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16. "OCS-Related Infrastructure on the GOM: Update and Summary of Impacts." (2007). U.S. Department of the Interior, Minerals Management Service. 24<sup>th</sup> Annual Information Technology Meeting. New Orleans, LA. January 10.
17. "The Economic Value of Coastal Preservation and Restoration on Critical Energy Infrastructure." (2006). With Michelle Barnett. Third National Conference on Coastal and Estuarine Habitat Restoration. Restore America's Estuaries. New Orleans, Louisiana, December 11.
18. "The Impact of Implementing a 20 Percent Renewable Portfolio Standard in New Jersey." (2006). With Seth E. Cureington. Mid-Continent Regional Science Association 37<sup>th</sup> Annual Conference, Purdue University, Lafayette, Indiana, June 9.
19. "The Impacts of Hurricane Katrina and Rita on Energy Infrastructure Along the Gulf Coast." (2006). Environment Canada: 2006 Arctic and Marine Oilspill Program. Vancouver, British Columbia, Canada.
20. "Hurricanes, Energy Markets, and Energy Infrastructure in the Gulf of Mexico: Experiences and Lessons Learned." (2006). With Kristi A.R. Darby and Seth E. Cureington. 29<sup>th</sup> Annual IAEE International Conference, Potsdam, Germany, June 9.
21. "An Examination of the Opportunities for Drilling Incentives on State Leases in Louisiana." (2005). With Kristi A.R. Darby. 28<sup>th</sup> Annual IAEE International Conference, Taipei, Taiwan (June).
22. "Fiscal Mechanisms for Stimulating Oil and Gas Production on Marginal Leases." (2004). With Jeffrey M. Burke. International Association of Energy Economics Annual Conference, Washington, D.C. (July).
23. "GIS and Applied Economic Analysis: The Case of Alaska Residential Natural Gas Demand." (2003). With Dmitry V. Mesyanzhinov. Presented at the Joint Meeting of the East Lakes and West Lakes Divisions of the Association of American Geographers in Kalamazoo, MI, October 16-18.
24. "Are There Any In-State Uses for Alaska Natural Gas?" (2002). With Dmitry V. Mesyanzhinov and William E. Nebesky. IAEE/USAEE 22<sup>nd</sup> Annual North American Conference: "Energy Markets in Turmoil: Making Sense of It All." Vancouver, British Columbia, Canada. October 7.
25. "The Economic Impact of State Oil and Gas Leases on Louisiana." (2002). With Dmitry V. Mesyanzhinov. 2002 National IMPLAN Users' Conference. New Orleans, Louisiana, September 4-6.
26. "Moving to the Front of the Lines: The Economic Impact of Independent Power Plant Development in Louisiana." (2002). With Dmitry V. Mesyanzhinov and Williams O. Olatubi. 2002 National IMPLAN Users' Conference. New Orleans, Louisiana, September 4-6.
27. "New Consistent Approach to Modeling Regional Economic Impacts of Offshore Oil and Gas Activities in the Gulf of Mexico." (2002). With Vicki Zatarain. 2002 National IMPLAN Users' Conference. New Orleans, Louisiana, September 4-6.
28. "Distributed Energy Resources, Energy Efficiency, and Electric Power Industry Restructuring." (1999). American Society of Environmental Science Fourth Annual Conference. Baton Rouge, Louisiana. December.

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29. "Estimating Efficiency Opportunities for Coal Fired Electric Power Generation: A DEA Approach." (1999). With Williams O. Olatubi. Southern Economic Association Sixty-ninth Annual Conference. New Orleans, November.
30. "Applied Approaches to Modeling Regional Power Markets." (1999.) With Robert F. Cope. Southern Economic Association Sixty-ninth Annual Conference. New Orleans, November 1999.
31. "Parametric and Non-Parametric Approaches to Measuring Efficiency Potentials in Electric Power Generation." (1999). With Williams O. Olatubi. International Atlantic Economic Society Annual Conference, Montreal, October.
32. "Asymmetric Choice and Customer Benefits: Lessons from the Natural Gas Industry." (1999). With Rachelle F. Cope and Dmitry Mesyanzhinov. International Association of Energy Economics Annual Conference. Orlando, Florida. August.
33. "Modeling Regional Power Markets and Market Power." (1999). With Robert F. Cope. Western Economic Association Annual Conference. San Diego, California. July.
34. "Economic Impact of Offshore Oil and Gas Activities on Coastal Louisiana" (1999). With Dmitry Mesyanzhinov. Annual Meeting of the Association of American Geographers. Honolulu, Hawaii. March.
35. "Empirical Issues in Electric Power Transmission and Distribution Cost Modeling." (1998). With Robert F. Cope and Dmitry Mesyanzhinov. Southern Economic Association. Sixty-Eighth Annual Conference. Baltimore, Maryland. November.
36. "Modeling Electric Power Markets in a Restructured Environment." (1998). With Robert F. Cope and Dan Rinks. International Association for Energy Economics Annual Conference. Albuquerque, New Mexico. October.
37. "Benchmarking Electric Utility Distribution Performance." (1998) With Robert F. Cope and Dmitry Mesyanzhinov. Western Economic Association, Seventy-sixth Annual Conference. Lake Tahoe, Nevada. June.
38. "Power System Operations, Control, and Environmental Protection in a Restructured Electric Power Industry." (1998). With Fred I. Denny. IEEE Large Engineering Systems Conference on Power Engineering. Nova Scotia, Canada. June.
39. "Benchmarking Electric Utility Transmission Performance." (1997). With Robert F. Cope and Dmitry Mesyanzhinov. Southern Economic Association, Sixty-seventh Annual Conference. Atlanta, Georgia. November 21-24.
40. "A Non-Linear Programming Model to Estimate Stranded Generation Investments in a Deregulated Electric Utility Industry." (1997). With Robert F. Cope and Dan Rinks. Institute for Operations Research and Management Science Annual Conference. Dallas Texas. October 26-29.
41. "New Paradigms for Power Engineering Education." (1997). With Fred I. Denny. International Association of Science and Technology for Development, High Technology in the Power Industry Conference. Orlando, Florida. October 27-30
42. "Cogeneration and Electric Power Industry Restructuring." (1997). With Andrew N. Kleit. Western Economic Association, Seventy-fifth Annual Conference. Seattle, Washington. July 9-13.

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43. "The Unintended Consequences of the Public Utilities Regulatory Policies Act of 1978." (1997). National Policy History Conference on the Unintended Consequences of Policy Decisions. Bowling Green State University. Bowling Green, Ohio. June 5-7.
44. "Assessing Environmental and Safety Risks of the Expanding Role of Independents in E&P Operations on the Gulf of Mexico OCS." (1996). With Allan Pulsipher, Omowumi Iledare, Dmitry Mesyanzhinov, and Bob Baumann. U.S. Department of Interior, Minerals Management Service, 16th Annual Information Transfer Meeting. New Orleans, Louisiana.
45. "Empirical Modeling of the Risk of a Petroleum Spill During E&P Operations: A Case Study of the Gulf of Mexico OCS." (1996). With Omowumi Iledare, Allan Pulsipher, and Dmitry Mesyanzhinov. Southern Economic Association, Sixty-Sixth Annual Conference. Washington, D.C.
46. "Input Price Fluctuations, Total Factor Productivity, and Price Cap Regulation in the Telecommunications Industry" (1996). With Farhad Niami. Southern Economic Association, Sixty-Sixth Annual Conference. Washington, D.C.
47. "Recovery of Stranded Investments: Comparing the Electric Utility Industry to Other Recently Deregulated Industries" (1996). With Farhad Niami and Dmitry Mesyanzhinov. Southern Economic Association, Sixty-Sixth Annual Conference. Washington, D.C.
48. "Spatial Perspectives on the Forthcoming Deregulation of the U.S. Electric Utility Industry." (1996) With Dmitry Mesyanzhinov. Southwest Association of American Geographers Annual Meeting. Norman, Oklahoma.
49. "Comparing the Safety and Environmental Performance of Offshore Oil and Gas Operators." (1995). With Allan Pulsipher, Omowumi Iledare, Dmitry Mesyanzhinov, William Daniel, and Bob Baumann. U.S. Department of Interior, Minerals Management Service, 15th Annual Information Transfer Meeting. New Orleans, Louisiana.
50. "Empirical Determinants of Nuclear Power Plant Disallowances." (1995). Southern Economic Association, Sixty-Fifth Annual Conference. New Orleans, Louisiana.
51. "A Cross-Sectional Model of IntraLATA MTS Demand." (1995). Southern Economic Association, Sixty-Fifth Annual Conference. New Orleans, Louisiana.

### **ACADEMIC SEMINARS AND PRESENTATIONS**

1. "Air Emissions Regulation and Policy: The Recently Proposed Cross State Air Pollution Rule and the Implications for Louisiana Power Generation." Lecture before School of the Coast & Environment. November 5, 2011.
2. "Energy Regulation: Overview of Power and Gas Regulation." Lecture before School of the Coast & Environment, Course in Energy Policy and Law. October 5, 2009.
3. "Trends and Issues in Renewable Energy." Presentation before the School of the Coast & Environment, Louisiana State University. Spring Guest Lecture Series. May 4, 2007.
4. "CES Research Projects and Status." Presentation before the U.S. Department of the Interior, Minerals Management Service, Outer Continental Shelf Scientific Committee Meeting, New Orleans, LA May 22, 2007.
5. "Hurricane Impacts on Energy Production and Infrastructure." Presentation Before the 53<sup>rd</sup>

- Mineral Law Institute, Louisiana State University. April 7, 2006.
6. "Trends and Issues in the Natural Gas Industry and the Development of LNG: Implications for Louisiana. (2004) 51<sup>st</sup> Mineral Law Institute, Louisiana State University, Baton Rouge, LA. April 2, 2004.
  7. "Electric Restructuring and Conservation." (2001). Presentation before the Department of Electrical Engineering, McNeese State University. Lake Charles, Louisiana. May 2, 2001.
  8. "Electric Restructuring and the Environment." (1998). Environment 98: Science, Law, and Public Policy. Tulane University. Tulane Environmental Law Clinic. March 7, New Orleans, Louisiana.
  9. "Electric Restructuring and Nuclear Power." (1997). Louisiana State University. Department of Nuclear Science. November 7, Baton Rouge, Louisiana.
  10. "The Empirical Determinants of Co-generated Electricity: Implications for Electric Power Industry Restructuring." (1997). With Andrew N. Kleit. Florida State University. Department of Economics: Applied Microeconomics Workshop Series. October 17, Tallahassee, Florida.

**PROFESSIONAL AND CIVIC PRESENTATIONS**

1. "Infrastructure and capacity: challenges for development." (2018). Society of Utility and Regulatory Financial Analysts (SURFA) Annual Meeting, New Orleans, LA, April 20.
2. "Louisiana industrial cogeneration trends." (2018). Annual Louisiana Solid Waste Association Conference, Lafayette, LA, March 16.
3. "Gulf Coast industrial development: overview of trends and issues." (2018). Gulf Coast Power Association Meetings, New Orleans, LA, February 8.
4. "Energy outlook – reflection on market trends and Louisiana implications." (2017). IberiaBank Corporation Bank Board of Directors Meeting, New Orleans, LA. November 15.
5. "Integrated Carbon Capture and Storage in the Louisiana Chemical Corridor." (2017). Industry Associates Advisory Council Meeting, Baton Rouge, LA. November 7.
6. "The outlook for natural gas and energy development on the Gulf Coast." (2017). Louisiana Chemical Association, Annual Meeting, New Orleans, LA. October 26.
7. "Critical energy infrastructure: the big picture on resiliency research." (2017). National Academies of Science, Engineering, and Medicine. New Orleans, LA. September 18.
8. "The changing nature of Gulf of Mexico energy infrastructure." (2017). 27<sup>th</sup> Gulf of Mexico Region Information Technology Meetings, New Orleans, LA, August 24.
9. "Capacity utilization, efficiency trends, and economic risks for modern CHP installations." (2017). Industrial Energy Technology Conference, New Orleans, LA. June 21.
10. "Crude oil and natural gas outlook: Where are we and where are we going?" (2017). CCREDC Economic Trends Panel. Corpus Christi, TX, June 15.
11. "Navigating through the energy landscape." (2017). Baton Rouge Rotary Luncheon. Baton Rouge, LA, May 24.

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12. "The 2017-2018 Louisiana energy outlook." (2017). Junior Achievement of Greater New Orleans, JA BizTown Speaker Series. New Orleans, LA, May 12.
13. "The Gulf Coast energy economy: trends and outlook." (2017). Society for Municipal Analysts. New Orleans, LA, April 21.
14. "Recent trends in energy: overview and impact for the banking community." (2017). Oil and Gas Industry Update, Louisiana Bankers Association. Baton Rouge, LA, March 24.
15. "How supply, demand and prices have influenced unconventional development." (2016). Energy Annual Meeting, CLEER-University Advisory Board Lecture. New Orleans, LA, September 17.
16. "The Basics of Natural Gas Production, Transportation, and Markets." (2016). Center for Energy Studies. Baton Rouge, LA, August 1.
17. "Gulf Coast industrial development: trends and outlook." (2016). Investor Relations Group Meeting, Edison Electric Institute. New Orleans, LA, June 23.
18. "The future of policy and regulation: Unlocking the Treasures of Utility Regulation." (2016). Annual Meeting, National Conference of Regulatory Attorneys. Tampa, FL, June 20.
19. "Utility mergers: where's the beef?". (2016). National Association of State Utility Consumer Advocates Mid-Year Meetings. New Orleans, LA, June 6.
20. "Overview of the Clean Power Plan and its application to Louisiana." (2016). Shell Oil Company Internal Meeting. April 12.
21. "Energy and economic development on the Gulf Coast: trends and emerging challenges." (2016). Gas Processors Association Meeting. New Orleans, LA, April 11.
22. "Unconventional Oil and Gas Drilling Trends and Issues." (2016). French Delegation Visit, LSU Center for Energy Studies. March 16.
23. "Gulf Coast Industrial Growth: Passing clouds or storms on the horizon?" (2016). Gulf Coast Power Association Meetings. New Orleans, LA, February 18.
24. "The Transition to Crisis: What do the recent changes in energy markets mean for Louisiana?" (2016). Louisiana Independent Study Group. February 2.
25. "Regulatory and Ratepayer Issues in the Analysis of Utility Natural Gas Reserves Purchases" (2016). National Association of State Utility Consumer Advocates Gas Consumer Monthly Meeting. January 25.
26. "Emerging Issues in Fuel Procurement: Opportunities & Challenges in Natural Gas Reserves Investment." (2015). National Association of State Utility Consumer Advocates Annual Meeting. Austin, Texas. November 9.
27. "Trends and Issues in Net Metering and Solar Generation." (2015). Louisiana Rural Electric Cooperative Meeting. November 5.
28. "Electric Power: Industry Overview, Organization, and Federal/State Distinctions." (2015). EUCI. October 16.
29. "Natural Gas 101: The Basics of Natural Gas Production, Transportation, and Markets." (2015). Council of State Governments Special Meeting on Gas Markets. New Orleans, LA. October 14.

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30. "Update and General Business Matters." (2015). CES Industry Associates Meeting. Baton Rouge, Louisiana. Fall 2015.
31. "The Impact of Infrastructure Cost Recovery Mechanisms on Pipeline Replacements and Leaks." (2015). 38<sup>th</sup> IAEE 2015 International Conference. Antalya, Turkey. May 26.
32. "Industry on the Move – What's Next?" (2015). Event Sponsored by Regional Bank and 1012 Industry Report. May 5.
33. "The State of the Energy Industry and Other Emerging Issues." (2015). Lex Mundi Energy & Natural Resources Practice Group Global Meeting. May 5.
34. "Energy, Louisiana, and LSU." (2015). LSU Science Café. Baton Rouge, Louisiana. April 28.
35. "Energy Market Changes and Impacts for Louisiana." (2015). Kinetica Partners Shippers Meeting, New Orleans, Louisiana. April 22.
36. "Incentives, Risk and the Changing Nature of Utility Regulation." (2015). NARUC Staff Subcommittee on Accounting and Finance Meetings, New Orleans, Louisiana. April 22.
37. "Modifying Renewables Policies to Sustain Positive and Economic Change." (2015). IEEE Annual Green Technologies ("Greentech Conference"). April 17.
38. "Louisiana's Changing Energy Environment." (2015). John P. Laborde Energy Law Center Advisory Board Spring Meeting, Baton Rouge, Louisiana. March 27.
39. "The Latest and the Long on Energy: Outlooks and Implications for Louisiana." (2015). Iberia Bank Advisory Board Meeting, Baton Rouge, Louisiana. February 23.
40. "A Survey of Recent Energy Market Changes and their Potential Implications for Louisiana." (2015). Vistage Group, New Orleans, Louisiana. February 4.
41. "Energy Prices and the Outlook for the Tuscaloosa Marine Shale." (2015). Baton Rouge Rotary Club, Baton Rouge, Louisiana. January 28.
42. "Trends in Energy & Energy-Related Economic Development." (2014). Miller and Thompson Presentation, Baton Rouge, Louisiana. December 30.
43. "Overview EPA's Proposed Rule Under Section 111(d) of the Clean Air Act: Impacts for Louisiana." (2014). Louisiana State Bar: Utility Section CLE Annual Meeting, Baton Rouge, Louisiana. November 7.
44. "Overview EPA's Proposed Clean Power Plan and Impacts for Louisiana." (2014). Clean Cities Coalition Meeting, Baton Rouge, Louisiana. November 5.
45. "Impacts on Louisiana from EPA's Proposed Clean Power Plan." (2014). Air & Waste Management Annual Environmental Conference (Louisiana Chapter), Baton Rouge, Louisiana. October 29, 2014.
46. "A Look at America's Growing Demand for Natural Gas." (2014). Louisiana Chemical Association Annual Meeting, New Orleans, Louisiana. October 23.
47. "Trends in Energy & Energy-Related Economic Development." (2014). 2014 Government Finance Officer Association Meetings, Baton Rouge, Louisiana. October 9.
48. "The Conventional Wisdom Associated with Unconventional Resource Development." (2014). National Association for Business Economics Annual Conference, Chicago,

- Illinois. September 28.
49. Unconventional Oil & Natural Gas: Overview of Resources, Economics & Policy Issues. (2014). Society of Environmental Journalists Annual Meeting. New Orleans, Louisiana. September 4.
  50. "Natural Gas Leveraged Economic Development in the South." (2014). Southern Governors Association Meeting, Little Rock, Arkansas. August 16.
  51. "The Past, Present and Future of CHP Development in Louisiana." (2014). Louisiana Public Service Commission CHP Workshop, Baton Rouge, Louisiana. June 25.
  52. "Regional Natural Gas Demand Growth: Industrial and Power Generation Trends." (2014). Kinetica Partners Shippers Meeting, New Orleans, Louisiana. April 30.
  53. "The Technical and Economic Potential for CHP in Louisiana and the Impact of the Industrial Investment Renaissance on New CHP Capacity Development." (2014). Electric Power 2014, New Orleans, Louisiana. April 1.
  54. "Industry Investments and the Economic Development of Unconventional Development." (2014). Tuscaloosa Marine Shale Conference & Expo, Natchez, Mississippi. March 31.
  55. Discussion Panelist. Energy Outlook 2035: The Global Energy Industry and Its Impact on Louisiana, (2014). Grow Louisiana Coalition, Baton Rouge, Louisiana. March 18.
  56. "Natural Gas and the Polar Vortex: Has Recent Weather Led to a Structural Change in Natural Gas Markets?" (2014). National Association of State Utility Consumer Advocates Monthly Gas Committee Meeting. February 19.
  57. "Some Unconventional Thoughts on Regional Unconventional Gas and Power Generation Requirements." (2014). Gulf Coast Power Association Special Briefing, New Orleans, Louisiana. February 6.
  58. "Leveraging Energy for Industrial Development." (2013). 2013 Governor's Energy Summit, Jackson, Mississippi. December 5.
  59. "Natural Gas Line Extension Policies: Ratepayer Issues and Considerations." (2013). National Association of State Utility Consumer Advocates Annual Meeting, Orlando, Florida. November 19.
  60. "Replacement, Reliability & Resiliency: Infrastructure & Ratemaking Issues in the Power & Natural Gas Distribution Industries." (2013). Louisiana State Bar, Public Utility Section Meetings. November 15.
  61. "Natural Gas Markets: Leveraging the Production Revolution into an Industrial Renaissance." (2013). International Technical Conference, Houston, TX. October 11.
  62. "Natural Gas, Coal & Power Generation Issues and Trends." (2013). Southeast Labor and Management Public Affairs Committee Conference, Chattanooga, Tennessee. September 27.
  63. "Recent Trends in Pipeline Replacement Trackers." (2013). National Association of State Utility Consumer Advocates Monthly Gas Committee Meeting. September 19.
  64. Discussion Panelist (2013). Think About Energy Summit, America's Natural Gas Alliance, Columbus Ohio. September 16-17.
  65. "Future Test Years: Issues to Consider." (2013). National Regulatory Research Institute,

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- Teleseminar on Future Test Years. August 28.
66. "Industrial Development Outlook for Louisiana." (2013). Louisiana Water Synergy Project Meetings, Jones Walker Law Firm, Baton Rouge, Louisiana. July 30.
  67. "Natural Gas & Electric Power Coordination Issues and Challenges." (2013). Utilities State Government Organization Conference, Pointe Clear, Alabama. July 9.
  68. "Natural Gas Market Issues & Trends." (2013). Western Conference of Public Service Commissioners, Santa Fe, New Mexico. June 3.
  69. "Louisiana Unconventional Natural Gas and Industrial Redevelopment." (2013). Louisiana Chemical Association/Louisiana Chemical Industry Alliance Annual Legislative Conference, Baton Rouge, Louisiana. May 8.
  70. "Infrastructure Cost Recovery Mechanism: Overview of Issues." (2013). Energy Bar Association Annual Meeting, Washington, D.C. May 1.
  71. "GOM Offshore Oil and Gas." (2013). Energy Executive Roundtable, New Orleans, Louisiana. March 27.
  72. "Louisiana Unconventional Natural Gas and Industrial Redevelopment." (2013). Risk Management Association Luncheon, March 21.
  73. "Natural Gas Market Update and Emerging Issues." (2013). NASUCA Gas Committee Conference Call/Webinar, March 12.
  74. "Unconventional Resources and Louisiana's Manufacturing Development Renaissance." (2013). Baton Rouge Press Club, De La Ronde Hall, Baton Rouge, LA, January 28.
  75. "New Industrial Operations Leveraged by Unconventional Natural Gas." (2013) American Petroleum Institute-Louisiana Chapter. Lafayette, LA, Petroleum Club, January 14.
  76. "What's Going on with Energy? How Unconventional Oil and Gas Development is Impacting Renewables, Efficiency, Power Markets, and All that Other Stuff." (2012). Atlanta Economics Club Monthly Meeting. Atlanta, GA. December 11.
  77. "Trends, Issues, and Market Changes for Crude Oil and Natural Gas." (2012). East Iberville Community Advisory Panel Meeting. St. Gabriel, LA. September 26.
  78. "Game Changers in Crude and Natural Gas Markets." (2012). Chevron Community Advisory Panel Meeting. Belle Chase, LA, September 17.
  79. "The Outlook for Renewables in a Changing Power and Natural Gas Market." (2012). Louisiana Biofuels and Bioprocessing Summit. Baton Rouge, LA. September 11.
  80. "The Changing Dynamics of Crude and Natural Gas Markets." (2012). Chalmette Refining Community Advisory Panel Meeting. Chalmette, LA, September 11.
  81. "The Really Big Game Changer: Crude Oil Production from Shale Resources and the Tuscaloosa Marine Shale." (2012). Baton Rouge Chamber of Commerce Board Meeting. Baton Rouge, LA, June 27.
  82. "The Impact of Changing Natural Gas Prices on Renewables and Energy Efficiency." (2012). NASUCA Gas Committee Conference Call/Webinar. 12 June 2012.
  83. "Issues in Gas-Renewables Coordination: How Changes in Natural Gas Markets Potentially Impact Renewable Development" (2012). Energy Bar Association, Louisiana

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- Chapter, Annual Meeting, New Orleans, LA. April 12, 2012.
84. "Issues in Natural Gas End-Uses: Are We Really Focusing on the Real Opportunities?" (2012). Energy Bar Association, Louisiana Chapter, Annual Meeting, New Orleans, LA. April 12, 2012.
  85. "The Impact of Legacy Lawsuits on Conventional Oil and Gas Drilling in Louisiana." (2012). Louisiana Oil and Gas Association Annual Meeting, Lake Charles, LA. February 27, 2012.
  86. "The Impact of Legacy Lawsuits on Conventional Oil and Gas Drilling in Louisiana." (2012) Louisiana Oil and Gas Association Annual Meeting. Lake Charles, Louisiana. February 27, 2012.
  87. "Louisiana's Unconventional Plays: Economic Opportunities, Policy Challenges. Louisiana Mid-Continent Oil and Gas Association 2012 Annual Meeting. (2012) New Orleans, Louisiana. January 26, 2012.
  88. "EPA's Recently Proposed Cross State Air Pollution Rule ("CSAPR") and Its Impacts on Louisiana." (2011). Bossier Chamber of Commerce. November 18, 2011.
  89. "Facilitating the Growth of America's Natural Gas Advantage." (2011). BASF U.S. Shale Gas Workshop Management Meeting. Florham Park, New Jersey. November 1, 2011.
  90. "CSAPR and EPA Regulations Impacting Louisiana Power Generation." (2011). Air and Waste Management Association (Louisiana Section) Fall Conference. Environmental Focus 2011: a Multi-Media Forum. Baton Rouge, LA. October 25, 2011.
  91. "Natural Gas Trends and Impact on Industrial Development." (2011). Central Gulf Coast Industrial Alliance Conference. Arthur R. Outlaw Convention Center. Mobile, AL. September 22, 2011.
  92. "Energy Market Changes and Policy Challenges." (2011). Southeast Manpower Tripartite Alliance ("SEMTA") Summer Conference. Nashville, TN September 2, 2011.
  93. "EPA Regulations, Rates & Costs: Implications for U.S. Ratepayers." (2011). Workshop: "A Smarter Approach to Improving Our Environment." 38<sup>th</sup> Annual American Legislative Exchange Council ("ALEC") Meetings. New Orleans, LA. August 5, 2011.
  94. Panelist/Moderator. Workshop: "Why Wait? Start Energy Independence Today." 38<sup>th</sup> Annual American Legislative Exchange Council ("ALEC") Meetings. New Orleans, LA. August 4, 2011.
  95. "Facilitating the Growth of America's Natural Gas Advantage." Texas Chemical Council, Board of Directors Summer Meeting. San Antonio, TX. July 28, 2011.
  96. "Creating Ratepayer Benefits by Reconciling Recent Gas Supply Opportunities with Past Policy Initiatives." National Association of State Utility Consumer Advocates ("NASUCA"), Monthly Gas Committee Meeting. July 12, 2011.
  97. "Energy Market Trends and Policies: Implications for Louisiana." (2011). Lakeshore Lion's Club Monthly Meeting. Baton Rouge, Louisiana. June 20, 2011.
  98. "America's Natural Gas Advantage: Securing Benefits for Ratepayers Through Paradigm Shifts in Policy." Southeastern Association of Regulatory Commissioners ("SEARUC") Annual Meeting. Nashville, Tennessee. June 14, 2011.

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99. "Learning Together: Building Utility and Clean Energy Industry Partnerships in the Southeast." (2011). American Solar Energy Society National Solar Conference. Raleigh Convention Center, Raleigh, North Carolina. May 20, 2011.
100. "Louisiana Energy Outlook and Trends." (2011). Executive Briefing. Consul General of Canada. LSU Center for Energy Studies, Baton Rouge, Louisiana. May 24, 2011.
101. "Louisiana's Natural Gas Advantage: Can We Hold It? Grow It? Or Do We Need to be Worrying About Other Problems?" (2011). Louisiana Chemical Association Annual Legislative Conference, Baton Rouge, Louisiana, May 5, 2011.
102. "Energy Outlook and Trends: Implications for Louisiana. (2011). Executive Briefing, Legislative Staff, Congressman William Cassidy. LSU Center for Energy Studies, Baton Rouge, Louisiana. March 25, 2011.
103. "Regulatory Issues in Inflation Adjustment Mechanisms and Allowances." (2011). Gas Committee, National Association of State Utility Consumer Advocates ("NASUCA"). February 15, 2011.
104. "Regulatory Issues in Inflation Adjustment Mechanisms and Allowances." (2010). 2010 Annual Meeting, National Association of State Utility Consumer Advocates ("NASUCA"), Omni at CNN Center, Atlanta, Georgia, November 16, 2010.
105. "How Current and Proposed Energy Policy Impacts Consumers and Ratepayers." (2010). 122<sup>nd</sup> Annual Meeting, National Association of Regulatory Utility Commissioners ("NARUC"), Omni at CNN Center, Atlanta, Georgia, November 15, 2010.
106. "Energy Outlook: Trends and Policies." (2010). 2010 Tri-State Member Service Conference; Arkansas, Louisiana, and Mississippi Electric Cooperatives. L'Auberge du Lac Casino Resort, Lake Charles, Louisiana, October 14, 2010.
107. "Deepwater Moratorium and Louisiana Impacts." (2010). The Energy Council Annual Meeting. Gulf of Mexico Deepwater Horizon Accident, Response, and Policy. Beau Rivage Conference Center. Biloxi, Mississippi. September 25, 2010.
108. "Overview on Offshore Drilling and Production Activities in the Aftermath of Deepwater Horizon." (2010) Jones Walker Banking Symposium. The Oil Spill: What Will it Mean for Banks in the Region? New Orleans, Louisiana. August 31, 2010.
109. "Long-Term Energy Sector Impacts from the Oil Spill." (2010). Second Annual Louisiana Oil & Gas Symposium. The BP Gulf Oil Spill: Long-Term Impacts and Strategies. Baton Rouge Geological Society. August 16, 2010.
110. "Overview and Issues Associated with the Deepwater Horizon Accident." (2010). Global Interdependence Meeting on Energy Issues. Baton Rouge, LA. August 12, 2010.
111. "Overview and Issues Associated with the Deepwater Horizon Accident." (2010). Regional Roundtable Webinar. National Association for Business Economics. August 10, 2010.
112. "Deepwater Moratorium: Overview of Impacts for Louisiana." Louisiana Association of Business and Industry Meeting. Baton Rouge, LA. June 25, 2010.
113. Moderator. Senior Executive Roundtable on Industrial Energy Efficiency. U.S. Department of Energy Conference on Industrial Efficiency. Office of Renewable Energy and Energy Efficiency. Royal Sonesta Hotel, New Orleans, LA. May 21, 2010.
114. "The Energy Outlook: Trends and Policies Impacting Southeastern Natural Gas Supply

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- and Demand Growth.” Second Annual Local Economic Analysis and Research Network (“LEARN”) Conference. Federal Reserve Bank of Atlanta. March 29, 2010.
115. “Natural Gas Supply Issues: Gulf Coast Supply Trends and Implications for Louisiana.” Energy Bar Association, New Orleans Chapter Meeting. Jones Walker Law Firm. January 28, 2010, New Orleans, LA.
  116. “Potential Impacts of Federal Greenhouse Gas Legislation on Louisiana Industry.” LCA Government Affairs Committee Meeting. November 10, 2009. Baton Rouge, LA
  117. “Regulatory and Ratemaking Issues Associated with Cost and Revenue Tracker Mechanisms.” National Association of State Utility Consumer Advocates (“NASUCA”) Annual Meeting. November 10, 2009.
  118. “Louisiana’s Stakes in the Greenhouse Gas Debate.” Louisiana Chemical Association and Louisiana Chemical Industry Alliance Annual Meeting: The Billing Dollar Budget Crisis: Catastrophe or Change? New Orleans, LA.
  119. “Gulf Coast Energy Outlook: Issues and Trends.” Women’s Energy Network, Louisiana Chapter. September 17, 2009. Baton Rouge, LA.
  120. “Gulf Coast Energy Outlook: Issues and Trends.” Natchez Area Association of Energy Service Companies. September 15, 2009, Natchez, MS.
  121. “The Small Picture: The Cost of Climate Change to Louisiana.” Louisiana Association of Business and Industry, U.S. Chamber of Commerce, Louisiana Oil and Gas Association, and LSU Center for Energy Studies Conference: Can Louisiana Make a Buck After Climate Change Legislation? August 21, 2009. Baton Rouge, LA.
  122. “Carbon Legislation and Clean Energy Markets: Policy and Impacts.” National Association of Conservation Districts, South Central Region Meeting. August 14, 2009. Baton Rouge, LA.
  123. “Evolving Carbon and Clean Energy Markets.” The Carbon Emissions Continuum: From Production to Consumption.” Jones Walker Law Firm and LSU Center for Energy Studies Workshop. June 23, 2009. Baton Rouge, LA
  124. “Potential Impacts of Cap and Trade on Louisiana Ratepayers: Preliminary Results.” (2009). Briefing before the Louisiana Public Service Commission. Business and Executive Meeting, May 12, 2009. Baton Rouge, LA.
  125. “Natural Gas Outlook.” (2009). Briefing before the Louisiana Public Service Commission. Business and Executive Meeting, May 12, 2009. Baton Rouge, LA.
  126. “Gulf Coast Energy Outlook: Issues and Trends.” (2009). ISA-Lafayette Technical Conference & Expo. Cajundome Conference Center. Lafayette, Louisiana. March 12, 2009.
  127. “The Cost of Energy Independence, Climate Change, and Clean Energy Initiatives on Utility Ratepayers.” (2009). National Association of Business Economics (NABE). 25<sup>th</sup> Annual Washington Economic Policy Conference: Restoring Financial and Economic Stability. Arlington, VA March 2, 2009.
  128. Panelist, “Expanding Exploration of the U.S. OCS” (2009). Deep Offshore Technology International Conference and Exhibition. PennWell. New Orleans, Louisiana. February 4, 2009.

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129. "Gulf Coast Energy Outlook." (2008.) Atmos Energy Regional Management Meeting. Louisiana and Mississippi Division. New Orleans, Louisiana. October 8, 2008.
130. "Background, Issues, and Trends in Underground Hydrocarbon Storage." (2008). Presentation before the LSU Center for Energy Studies Industry Advisory Board Meeting. Baton Rouge, Louisiana. August 27, 2008.
131. "Greenhouse Gas Regulations and Policy: Implications for Louisiana." (2008). Presentation before the Praxair Customer Seminar. Houston, Texas, August 14, 2008.
132. "Market and Regulatory Issues in Alternative Energy and Louisiana Initiatives." (2008). Presentation before the 2008 Statewide Clean Cities Coalition Conference: Making Sense of Alternative Fuels and Advanced Technologies. New Orleans, Louisiana, March 27, 2008.
133. "Regulatory Issues in Rate Design, Incentives, and Energy Efficiency." (2007) Presentation before the New Hampshire Public Utilities Commission. Workshop on Energy Efficiency and Revenue Decoupling. November 7, 2007.
134. "Regulatory Issues for Consumer Advocates in Rate Design, Incentives, and Energy Efficiency." (2007). National Association of State Utility Consumer Advocates, Mid-Year Meeting. June 12, 2007.
135. "Regulatory and Policy Issues in Nuclear Power Plant Development." (2007). LSU Center for Energy Studies Industry Advisory Council Meeting. Baton Rouge, LA. March 23, 2007.
136. "Oil and Gas in the Gulf of Mexico: A North American Perspective." (2007). Canadian Consulate, Heads of Mission EnerNet Workshop, Houston, Texas. March 20, 2007.
137. "Regulatory Issues for Consumer Advocates in Rate Design, Incentives & Energy Efficiency." (2007). National Association of State Utility Consumer Advocates ("NASUCA") Gas Committee Monthly Meeting. February 13, 2006.
138. "Recent Trends in Natural Gas Markets." (2006). National Association of Regulatory Utility Commissioners, 118<sup>th</sup> Annual Convention. Miami, FL November 14, 2006.
139. "Energy Markets: Recent Trends, Issues & Outlook." (2006). Association of Energy Service Companies (AESC) Meeting. Petroleum Club, Lafayette, LA, November 8, 2006.
140. "Energy Outlook" (2006). National Business Economics Issues Council. Quarterly Meeting, Nashville, TN, November 1-2, 2006.
141. "Global and U.S. Energy Outlook." (2006). Energy Virginia Conference. Virginia Military Institute, Lexington, VA October 17, 2006.
142. "Interdependence of Critical Energy Infrastructure Systems." (2006). Cross Border Forum on Energy Issues: Security and Assurance of North American Energy Systems. Woodrow Wilson Center for International Scholars. Washington, DC, October 13, 2006.
143. "Determining the Economic Value of Coastal Preservation and Restoration on Critical Energy Infrastructure." (2006) The Economic and Market Impacts of Coastal Restoration: America's Wetland Economic Forum II. Washington, DC September 28, 2006.
144. "Relationships between Power and Other Critical Energy Infrastructure." (2006). Rebuilding the New Orleans Region: Infrastructure Systems and Technology Innovation Forum. United Engineering Foundation. New Orleans, LA, September 24-25, 2006.

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145. "Outlook, Issues, and Trends in Energy Supplies and Prices." (2006.) Presentation to the Southern States Energy Board, Associate Members Meeting. New Orleans, Louisiana. July 14, 2006.
146. "Energy Sector Outlook." (2006). Baton Rouge Country Club Meeting. Baton Rouge, Louisiana. July 11, 2006.
147. "Oil and Gas Industry Post 2005 Storm Events." (2006). American Petroleum Institute, Teche Chapter. Production, Operations, and Regulations Annual Meeting. Lafayette, Louisiana. June 29, 2006.
148. "Concentration of Energy Infrastructure in Hurricane Regions." (2006). Presentation before the National Commission on Energy Policy Forum: Ending the Stalemate on LNG Facility Siting. Washington, DC. June 21, 2006.
149. "LNG—A Premier." (2006). Presentation Given to the U.S. Department of Energy's "LNG Forums." Los Angeles, California. June 1, 2006.
150. "Regional Energy Infrastructure, Production and Outlook." (2006). Executive Briefing for Board of Directors, Louisiana Oil and Gas Plc., Enhanced Exploration, Inc. and Energy Self-Service, Inc. Covington, Louisiana, May 12, 2006.
151. "The Impacts of the Recent Hurricane Season on Energy Production and Infrastructure and Future Outlook." Presentation before the Industrial Energy Technology Conference 2006. New Orleans, Louisiana, May 9, 2006.
152. "Update on Regional Energy Infrastructure and Production." (2006). Executive Briefing for Delegation Participating in U.S. Department of Commerce Gulf Coast Business Investment Mission. Baton Rouge, Louisiana May 5, 2006.
153. "Hurricane Impacts on Energy Production and Infrastructure." (2006). Presentation before the Interstate Natural Gas Association of America Mid-Year Meeting. Hyatt Regency Hill Country. April 21, 2006.
154. "LNG—A Premier." Presentation Given to the U.S. Department of Energy's "LNG Forums." Astoria, Washington. April 28, 2006.
155. Natural Gas Market Outlook. Invited Presentation Given to the Georgia Public Service Commission and Staff. Georgia Institute of Technology, Atlanta, Georgia. March 10, 2006.
156. The Impacts of Hurricanes Katrina and Rita on Louisiana's Energy Industry. Presentation to the Louisiana Economic Development Council. Baton Rouge, Louisiana. March 8, 2006.
157. Energy Markets: Hurricane Impacts and Outlook. Presentation to the 2006 Louisiana Independent Oil and Gas Association Annual Conference. L'Auberge du Lac Resort and Casino. Lake Charles, Louisiana. March 6, 2006
158. Energy Market Outlook and Update on Hurricane Damage to Energy Infrastructure. Presentation to the Energy Council 2005 Global Energy and Environmental Issues Conference. Santa Fe, New Mexico, December 10, 2005.
159. "Putting Our Energy Infrastructure Back Together Again." Presentation Before the 117<sup>th</sup> Annual Convention of the National Association of Regulatory Utility Commissioners (NARUC). November 15, 2005. Palm Springs, CA

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160. "Hurricanes and the Outlook for Energy Markets." Presentation before the Baton Rouge Rotary Club. November 9, 2005, Baton Rouge, LA.
161. "Hurricanes, Energy Supplies and Prices." Presentation before the Louisiana Department of Natural Resources and Atchafalaya Basin Committee Meeting. November 8, 2005. Baton Rouge, LA.
162. "The Impact of the Recent Hurricane's on Louisiana's Energy Industry." Presentation before the Louisiana Independent Oil and Gas Association Board of Directors Meeting. November 8, 2005. Baton Rouge, LA.
163. "The Impact of the Recent Hurricanes on Louisiana's Infrastructure and National Energy Markets." Presentation before the Baton Rouge City Club Distinguished Speaker Series. October 13, 2005. Baton Rouge, LA.
164. "The Impact of the Recent Hurricanes on Louisiana's Infrastructure and National Energy Markets." Presentation before Powering Up: A Discussion About the Future of Louisiana's Energy Industry. Special Lecture Series Sponsored by the Kean Miller Law Firm. October 13, 2005. Baton Rouge, LA.
165. "The Impact of Hurricane Katrina on Louisiana's Energy Infrastructure and National Energy Markets." Special Lecture on Hurricane Impacts, LSU Center for Energy Studies, September 29, 2005.
166. "Louisiana Power Industry Overview." Presentation before the Clean Air Interstate Rule Implementation Stakeholders Meeting. August 11, 2005. Louisiana Department of Environmental Quality.
167. "CES 2005 Legislative Support and Outlook for Energy Markets and Policy." Presentation before the LMOGA/LCA Annual Post-Session Legislative Committee Meeting. August 10-13, 2005. Perdido Key, Florida.
168. "Electric Restructuring: Past, Present, and Future." Presentation to the Southeastern Association of Tax Administrators Annual Conference. Sheraton Hotel and Conference Facility. New Orleans, LA July 12, 2005.
169. "The Outlook for Energy." Lagniappe Studies Continuing Education Course. Baton Rouge, LA. July 11, 2005.
170. "The Outlook for Energy." Sunshine Rotary Club. Baton Rouge, LA. April 27, 2005.
171. "Background and Overview of LNG Development." Energy Council Workshop on LNG/CNG. Biloxi, Ms: Beau Rivage Resort and Hotel, April 9, 2005.
172. "Natural Gas Supply, Prices, and LNG: Implications for Louisiana Industry." Cytec Corporation Community Advisory Panel. Fortier, LA January 14, 2005.
173. "The Economic Opportunities for a Limited Industrial Retail Choice Plan." Louisiana Department of Economic Development. Baton Rouge, Louisiana. November 19, 2004.
174. "Energy Issues for Industrial Customers of Gas and Power." Louisiana Association of Business and Industry, Energy Council Meeting. Baton Rouge, Louisiana. October 11, 2004.
175. "Energy Issues for Industrial Customers of Gas and Power." Annual Meeting of the Louisiana Chemical Association and the Louisiana Chemical Industry Alliance. Point Clear, Alabama. October 8, 2004.

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176. "Energy Issues for Industrial Customers of Gas and Power." American Institute of Chemical Engineers – New Orleans Section. New Orleans, LA. September 22, 2004.
177. "Natural Gas Supply, Prices and LNG: Implications for Louisiana Industry." Dow Chemical Company Community Advisory Panel Meeting. Plaquemine, LA. August 9, 2004.
178. "Energy Issues for Industrial Customers of Gas and Power." Louisiana Chemical Association Post-Legislative Meeting. Springfield, LA. August 9, 2004.
179. "LNG In Louisiana." Joint Meeting of the Louisiana Economic Development Council and the Governors Cabinet Advisory Council. Baton Rouge, LA. August 5, 2004.
180. "Louisiana Energy Issues." Louisiana Mid-Continent Oil and Gas Association Post Legislative Meetings. Sandestin, Florida. July 28, 2004.
181. "The Gulf South: Economic Opportunities Related to LNG." Presentation before the Energy Council's 2004 State and Provincial Energy and Environmental Trends Conference. Point Clear, AL, June 26, 2004.
182. "Natural Gas and LNG Issues for Louisiana." Presentation before the Rhodia Community Advisory Panel. May 20, 2004, Baton Rouge, LA.
183. "The Economic Opportunities for LNG Development in Louisiana." Presentation before the Louisiana Chemical Association Plant Managers Meeting. May 27, 2004. Baton Rouge, LA.
184. "The Economic Opportunities for LNG Development in Louisiana." Presentation before the Louisiana Chemical Association/Louisiana Chemical Industry Alliance Legislative Conference. May 26, 2004. Baton Rouge, LA.
185. "The Economic Opportunities for LNG Development in Louisiana." Presentation before the Petrochemical Industry Cluster, Greater New Orleans, Inc. May 19, 2004, Destrehan, LA.
186. "Industry Development Issues for Louisiana: LNG, Retail Choice, and Energy." Presentation before the LSU Center for Energy Studies Industry Associates. May 14, 2004, Baton Rouge, LA.
187. "The Economic Opportunities for LNG Development in Louisiana." Presentation before the Board of Directors, Greater New Orleans, Inc. May 13, 2004, New Orleans, LA.
188. "Natural Gas Outlook: Trends and Issues for Louisiana." Presentation before the Louisiana Joint Agricultural Association Meetings. January 14, 2004, Hotel Acadiana, Lafayette, Louisiana.
189. "Natural Gas Outlook" Presentation before the St. James Parish Community Advisory Panel Meeting. January 7, 2004, IMC Production Facility, Convent, Louisiana.
190. "Competitive Bidding in the Electric Power Industry." Presentation before the Association of Energy Engineers. Business Energy Solutions Expo. December 11-12, 2003, New Orleans, Louisiana.
191. "Regional Transmission Organization in the South: The Demise of SeTrans" Presentation before the LSU Center for Energy Studies Industry Associates Advisory Council Meeting. December 9, 2003. Baton Rouge, Louisiana.

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192. "Affordable Energy: The Key Component to a Strong Economy." Presentation before the National Association of Regulatory Utility Commissioners ("NARUC"), November 18, 2003, Atlanta, Georgia.
193. "Natural Gas Outlook." Presentation before the Louisiana Chemical Association, October 17, 2003, Pointe Clear, Alabama.
194. "Issues and Opportunities with Distributed Energy Resources." Presentation before the Louisiana Biomass Council. April 17, 2003, Baton Rouge, Louisiana.
195. "What's Happened to the Merchant Energy Industry? Issues, Challenges, and Outlook" Presentation before the LSU Center for Energy Studies Industry Associates Advisory Council Meeting. November 12, 2002. Baton Rouge, Louisiana.
196. "An Introduction to Distributed Energy Resources." Presentation before the U.S. Department of Energy, Office of Renewable Energy and Energy Efficiency, State Energy Program/Rebuild America Conference, August 1, 2002, New Orleans, Louisiana.
197. "Merchant Energy Development Issues in Louisiana." Presentation before the Program Committee of the Center for Legislative, Energy, and Environmental Research (CLEER), Energy Council. April 19, 2002.
198. "Power Plant Siting Issues in Louisiana." Presentation before 24<sup>th</sup> Annual Conference on Waste and the Environment. Sponsored by the Louisiana Department of Environmental Quality. Lafayette, Louisiana, Cajundome. March 12, 2002.
199. "Merchant Power and Deregulation: Issues and Impacts." Presentation before the Air and Waste Management Association Annual Meeting. Baton Rouge, LA, November 15, 2001.
200. "Moving to the Front of the Lines: The Economic Impact of Independent Power Production in Louisiana." Presentation before the LSU Center for Energy Studies Merchant Power Generation and Transmission Conference, Baton Rouge, LA. October 11, 2001.
201. "Economic Impacts of Merchant Power Plant Development in Mississippi." Presentation before the U.S. Oil and Gas Association Annual Oil and Gas Forum. Jackson, Mississippi. October 10, 2001.
202. "Economic Opportunities for Merchant Power Development in the South." Presentation before the Southern Governor's Association/Southern State Energy Board Meetings. Lexington, KY. September 9, 2001.
203. "The Changing Nature of the Electric Power Business in Louisiana." Presentation before the Louisiana Department of Environmental Quality. Baton Rouge, LA, August 27, 2001.
204. "Power Business in Louisiana: Background and Issues." Presentation before the Louisiana Interagency Group on Merchant Power Development. Baton Rouge, LA, July 16, 2001.
205. "The Changing Nature of the Electric Power Business in Louisiana: Background and Issues." Presentation before the Louisiana Office of the Governor. Baton Rouge, LA, July 16, 2001.
206. "The Changing Nature of the Electric Power Business in Louisiana: Background and Issues." Presentation before the Louisiana Department of Economic Development. Baton Rouge, LA, July 3, 2001.

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207. "The Economic Impacts of Merchant Power Plant Development In Mississippi." Presentation before the Mississippi Public Service Commission. Jackson, Mississippi, March 20, 2001.
208. "Energy Conservation and Electric Restructuring." With Ritchie D. Priddy. Presentation before the Louisiana Department of Natural Resources. Baton Rouge, Louisiana, October 23, 2000.
209. "Pricing and Regulatory Issues Associated with Distributed Energy." Joint Conference by Econ One Research, Inc., the Louisiana State University Distributed Energy Resources Initiative, and the University of Houston Energy Institute: "Is the Window Closing for Distributed Energy?" Houston, Texas, October 13, 2000.
210. "Electric Reliability and Merchant Power Development Issues." Technical Meetings of the Louisiana Public Service Commission. Baton Rouge, LA. August 29, 2000.
211. "A Introduction to Distributed Energy Resources." Summer Meetings, Southeastern Association of Regulatory Utility Commissioners (SEARUC). New Orleans, LA. June 27, 2000.
212. Roundtable Moderator/Discussant. Mid-South Electric Reliability Summit. U.S. Department of Energy. New Orleans, Louisiana. April 24, 2000.
213. "Electricity 101: Definitions, Precedents, and Issues." Energy Council's 2000 Federal Energy and Environmental Matters Conference. Loews L'Enfant Plaza Hotel, Washington, D.C. March 11-13, 2000.
214. "LSU/CES Distributed Energy Resources Initiatives." Los Alamos National Laboratories. Office of Energy and Sustainable Systems. Los Alamos, New Mexico. February 16, 2000.
215. "Distributed Energy Resources Initiatives." Louisiana State University, Center for Energy Studies Industry Associates Meeting. Baton Rouge, Louisiana. December 15, 1999.
216. "Merchant Power Opportunities in Louisiana." Louisiana Mid-Continent Oil and Gas Association (LMOGA) Power Generation Committee Meetings. Baton Rouge, Louisiana. November 10, 1999.
217. Roundtable Discussant. "Environmental Regulation in a Restructured Market" The Big E: How to Successfully Manage the Environment in the Era of Competitive Energy. PUR Conference. New Orleans, Louisiana. May 24, 1999.
218. "The Political Economy of Electric Restructuring In the South" Southeastern Electric Exchange, Rate Section Annual Conference. New Orleans, Louisiana. May 7, 1999.
219. "The Dynamics of Electric Restructuring in Louisiana." Joint Meeting of the American Association of Energy Engineers and the International Association of Facilities Managers. Metairie, Louisiana. April 29, 1999.
220. "The Implications of Electric Restructuring on Independent Oil and Gas Operations." Petroleum Technology Transfer Council Workshop: Electrical Power Cost Reduction Methods in Oil and Gas Field Operations. Lafayette, Louisiana, March 24, 1999.
221. "What's Happened to Electricity Restructuring in Louisiana?" Louisiana State University, Center for Energy Studies Industry Associates Meeting. March 22, 1999.
222. "A Short Course on Electric Restructuring." Central Louisiana Electric Company. Sales and Marketing Division. Mandeville, Louisiana, October 22, 1998.

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223. "The Implications of Electric Restructuring on Independent Oil and Gas Operations." Petroleum Technology Transfer Council Workshop: Electrical Power Cost Reduction Methods in Oil and Gas Field Operations. Shreveport, Louisiana, October 13, 1998.
224. "How Will Utility Deregulation Affect Tourism." Louisiana Travel Promotion Association Annual Meeting, Alexandria, Louisiana. January 15, 1998.
225. "Reflections and Predictions on Electric Utility Restructuring in Louisiana." With Fred I. Denny. Louisiana State University, Center for Energy Studies Industry Associates Meeting. November 20, 1997.
226. "Electric Utility Restructuring in Louisiana." Hammond Chamber of Commerce, Hammond, Louisiana. October 30, 1997.
227. "Electric Utility Restructuring." Louisiana Association of Energy Engineers. Baton Rouge, Louisiana. September 11, 1997.
228. "Electric Utility Restructuring: Issues and Trends for Louisiana." Opelousas Chamber of Commerce, Opelousas, Louisiana. June 24, 1997.
229. "The Electric Utility Restructuring Debate In Louisiana: An Overview of the Issues." Annual Conference of the Public Affairs Research Council of Louisiana. Baton Rouge, Louisiana. March 25, 1997.
230. "Electric Restructuring: Louisiana Issues and Outlook for 1997." Louisiana State University, Center for Energy Studies Industry Associates Meeting, Baton Rouge, Louisiana, January 15, 1997.
231. "Restructuring the Electric Utility Industry." Louisiana Propane Gas Association Annual Meeting, Alexandria, Louisiana, December 12, 1996.
232. "Deregulating the Electric Utility Industry." Eighth Annual Economic Development Summit, Baton Rouge, Louisiana, November 21, 1996.
233. "Electric Utility Restructuring in Louisiana." Jennings Rotary Club, Jennings, Louisiana, November 19, 1996.
234. "Electric Utility Restructuring in Louisiana." Entergy Services, Transmission and Distribution Division, Energy Centre, New Orleans, Louisiana, September 12, 1996
235. "Electric Utility Restructuring" Louisiana Electric Cooperative Association, Baton Rouge, Louisiana, August 27, 1996.
236. "Electric Utility Restructuring -- Background and Overview." Louisiana Public Service Commission, Baton Rouge, Louisiana, August 14, 1996.
237. "Electric Utility Restructuring." Sunshine Rotary Club Meetings, Baton Rouge, Louisiana, August 8, 1996.
238. Roundtable Moderator, "Stakeholder Perspectives on Electric Utility Stranded Costs." Louisiana State University, Center for Energy Studies Seminar on Electric Utility Restructuring in Louisiana, Baton Rouge, May 29, 1996.
239. Panelist, "Deregulation and Competition." American Nuclear Society: Second Annual Joint Louisiana and Mississippi Section Meetings, Baton Rouge, Louisiana, April 20, 1996.

## **EXPERT WITNESS, LEGISLATIVE, AND PUBLIC TESTIMONY; EXPERT REPORTS.**

**RECOMMENDATIONS, AND AFFIDAVITS**

1. Expert Testimony. Docket No. 17-010-FR. (2018). Before the Arkansas Public Service Commission. *In the Matter of the Formula Rate Plan Filing of CenterPoint Energy Resources Corp. D/B/A CenterPoint Energy Arkansas Gas Pursuant to APSC Docket No. 15-098-U*. Issues: cost of service, rate design, alternative regulation, formula rate plan.
2. Expert Testimony. Case No. PU-17-398. (2018). Before the North Dakota Public Service Commission. *In the Matter of the Application of Otter Tail Power Company for Authority to Increase Rates for Electric Utility Service in North Dakota*. Issues: cost of service, marginal cost of service, and rate design.
3. Expert Testimony. Docket No. 20170179-GU. (2018). Before the Florida Public Service Commission. *In re: Petition for rate increase and approval of depreciation study by Florida City Gas*. On Behalf of the Citizens of the State of Florida. Issues: policy issues concerning long-term gas capacity procurement.
4. Expert Testimony. Docket No. 18-KCPE-095-MER. (2018). Before the Kansas Corporation Commission. *In the Matter of the Joint Application of Great Plains Energy Incorporated, Kansas City Power & Light Company, and Westar Energy, Inc. for Approval of the Merger of Westar, Inc. and Great Plains Energy Incorporated*. On the Behalf of the Kansas Electric Power Cooperative, Inc. Issues: merger/acquisition policy, financial risk, and ring-fencing.
5. Expert Testimony. Docket No. GR17070776. (2018). Before the New Jersey Board of Public Utilities. *In the Matter of the Petition of Public Service Electric and Gas Company for Approval of the Next Phase of the Gas System Modernization Program and Associated Cost Recovery Mechanism ("GSMP II")*. Issues: economic impact, infrastructure replacement program rider, pipeline replacement, leak rate comparisons and cost benefit analysis.
6. Expert Affidavit. Case No. 18-489. (2018). Before the Civil District Court for the Parish of Orleans, State of Louisiana. *Bayou Bridge Pipeline, LLC versus The White Castle Lumber and Shingle Company Limited and Jeanerette Lumber & Shingle CO. L.L.C.* Issues: economic impact of crude oil pipeline development.
7. Expert Testimony. Docket No. 16-036-FR. (2017). Before the Arkansas Public Service Commission. *In the Matter of the Formula Rate Plan Filings of Entergy Arkansas, Inc., Pursuant to APSC Docket No. 15-015-U*. On behalf of the Office of the Arkansas Attorney General Leslie Rutledge. Issue: cost of service, rate design, alternative regulation, formula rate plan.
8. Expert Testimony. Docket No. 2017-AD-0112. (2017). Before the Mississippi Public Service Commission. *In re: Encouraging Stipulation of Matters in Connection with the Kemper County IGCC Project*. On Behalf of the Mississippi Public Utilities Staff. Issues: financial analysis, rates and cost trends, economic impacts of proposal.
9. Expert Testimony. Case No. 2017-00179. (2017). Before the Public Service Commission, Commonwealth of Kentucky. *Electronic Application of Kentucky power Company For (1) A General Adjustment of Its Rates for Electric Service; (2) An Order Approving Its 2017 Environmental Compliance Plan; (3) An Order Approving Its Tariffs and Riders; (4) An Order Approving Accounting Practices to Establish a Regulatory Asset or Liability Related to the Big Sandy 1 Operation Rider; and (5) An Order Granting All Other Required*

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- Approvals and Relief.* Issues: rate design, revenue allocation, economic development.
10. Expert Testimony. Docket No. 17-010-FR. (2017). Before the Arkansas Public Service Commission. *In the Matter of the Formula Rate Plan Filing of CenterPoint Energy Resources Corp. D/B/A CenterPoint Energy Arkansas Gas Pursuant to APSC Docket No. 15-098-U.* Issues: cost of service, rate design, alternative regulation, formula rate plan.
  11. Expert Testimony. Formal Case No. 1142. (2017). Before the Public Service Commission of the District of Columbia. *In the Matter of the Merger of AltaGas Ltd. and WGL Holdings, Inc.* On Behalf of the Office of the People's Counsel. Issues: merger/acquisition policy, financial risk, ring-fencing, and reliability.
  12. Expert Testimony. D.P.U. 17-05. (2017). Before the Massachusetts Department of Public Utilities. *Petition of NSTAR Electric Company and Western Massachusetts Electric Company each d/b/a Eversource Energy for Approval of an Increase in Base Distribution Rates for Electric Service Pursuant to G.L. c. 164, § 94 and 220 C.M.R. § 5.00.* On Behalf of the Massachusetts Office of the Attorney General Office of Ratepayer Advocacy. Issues: performance-based ratemaking, multi-factor productivity estimation.
  13. Deposition and Testimony. (2017) Before the Nebraska Section 70, Article 13 Arbitration Panel. *Northeast Nebraska Public Power District, City of South Sioux City Nebraska; City of Wayne, Nebraska; City of Valentine, Nebraska; City of Beatrice, Nebraska; City of Scribner, Nebraska; Village of Walthill, Nebraska, vs. Nebraska Public Power District.* On the Behalf of Baird Holm LLP for the Plaintiffs. Issues: rate discounts; cost of service; utility regulation, economic harm.
  14. Expert Testimony. Docket No. 16-052-U. (2017). Before the Arkansas Public Service Commission. *In the Matter of the Application of the Oklahoma Gas and Electric Company for Approval of a General Change in Rates, Charges and Tariffs.* On the Behalf of the Office of Arkansas Attorney General Leslie Rutledge. Issues: cost of service, rate design, alternative regulation, formula rate plan.
  15. Expert Testimony. Docket No. 16-KCPE-593-ACQ. (2016). Before the Kansas Corporation Commission. *In the Matter of the Joint Application of Great Plains Energy Incorporated, Kansas City Power & Light Company, and Westar Energy, Inc. for Approval of the Acquisition of Westar, Inc. by Great Plains Energy Incorporated.* On the Behalf of the Kansas Electric Power Cooperative, Inc. Issues: merger/acquisition policy, financial risk, and ring-fencing.
  16. Expert Testimony. Formal Case No. 1139. (2016). Before the Public Service Commission of the District of Columbia. *In the Matter of the Application of Potomac Electric Power Company for Authority to Increase Existing Retail Rates and Charges for Electric Distribution Service.* On the Behalf of the Office of the People's Counsel for the District of Columbia. Issues: cost of service, rate design, alternative regulation.
  17. Expert Affidavit. Docket No. CP15-558-000 (2016). Before the United States of America Federal Energy Regulatory Commission. *PennEast Pipeline Company, LLC.* Affidavit and Reply Affidavit. On the Behalf of the New Jersey Division of Rate Counsel. Issues: pipeline capacity, peak day requirements.
  18. Expert Testimony. Docket No. RPU-2016-0002. (2016). Before the Iowa Utilities Board. *In re: Iowa American Water Company application for revision of rates.* On behalf of the

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- Citizens of the State of Florida. Issue: revenue stabilization mechanism, revenue decoupling.
19. Expert Testimony. Docket No. 15-015-U. (2016). Before the Arkansas Public Service Commission. *In the Matter of the Formula Rate Plan Filings of Entergy Arkansas, Inc., Pursuant to APSC Docket No. 15-015-U.* On behalf of the Office of the Arkansas Attorney General Leslie Rutledge. Issue: formula rate plan evaluation.
  20. Expert Testimony. Docket Nos. 160021-EI, 160061-EI, 160062-EI, and 160088-EI. (2016). Before the Florida Public Service Commission. *In re: Petition for rate increase by Florida Power & Light Company (consolidated).* On behalf of the Office of Consumer Advocate, Iowa Department of Justice. Issue: load forecasting.
  21. Expert Testimony. Docket Nos. 160021-EI, 160061-EI, 160062-EI, and 160088-EI. (2016). Before the Florida Public Service Commission. *In re: Petition for rate increase by Florida Power & Light Company (consolidated).* On behalf of the Citizens of the State of Florida. Issue: off-system sales incentives.
  22. Expert Testimony. Project No. 5-103. (2016). United States of America Federal Energy Regulatory Commission. *Confederated Salish and Kootenai Tribes Energy Keepers, Incorporated.* On behalf of the Flathead, Mission, and Jocko Valley Irrigation Districts and the Flathead Joint Board of Control of the Flathead, Mission, and Jocko Valley Irrigation Districts.
  23. Expert Testimony. Docket No. 15-098-U. (2016). Before the Arkansas Public Service Commission. *In the Matter of the Application of CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Arkansas Gas for a General Change or Modification in its Rates, Charges and Tariffs.* On behalf of the Office of the Arkansas Attorney General. Issues: formula rate plan, cost of service and rate design.
  24. Expert Testimony. BPU Docket No. GM15101196. (2016). *In the Matter of the Merger of Southern Company and AGL Resources, Inc.* On behalf of the New Jersey Division of Rate Counsel. Issues: merger standards of review, customer dividend contributions, synergy savings and costs to achieve, ratemaking treatment of merger-related costs.
  25. Expert Testimony. Docket No. 15-078-U. (2015). Before the Arkansas Public Service Commission. *In the Matter of the Joint Application of SourceGas Inc., SourceGas LLC, SourceGas Holdings LLC and Black Hills Utility Holdings, Inc. for all Necessary Authorizations and Approvals for Black Hills Utility Holdings, Inc. to Acquire SourceGas Holdings LLC.* On behalf of the Office of the Arkansas Attorney General. Issues: public policy and regulatory policy associated with the acquisition.
  26. Expert Testimony. Docket No. 15-031-U. (2015). Before the Arkansas Public Service Commission. *In the Matter of the Application of SourceGas Arkansas Inc. for an Order Approving the Acquisition of Certain Storage Facilities and the Recovery of Investments and Expenses Associated Therewith.* On behalf of the Office of the Arkansas Attorney General. Issues: cost-benefit analysis, transmission cost analysis, and a due diligence analysis.
  27. Expert Testimony. Docket No. 15-015-U. (2015). Before the Arkansas Public Service Commission. *In the Matter of the Application of Entergy Arkansas, Inc. for Approval of Changes in Rates for Retail Electric Service.* On behalf of the Office of the Arkansas

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- Attorney General. Issues: economic development riders and production plant cost allocation.
28. Expert Testimony. Docket No. 7970. (2015). Before the Vermont Public Service Board. *Petition of Vermont Gas Systems, Inc., for a certificate of public good pursuant to 30 V.S.A. § 248, authorizing the construction of the "Addison Natural Gas Project" consisting of approximately 43 miles of new natural gas transmission pipeline in Chittenden and Addison Counties, approximately 5 miles of new distribution mainlines in Addison County, together with three new gate stations in Williston, New Haven, and Middlebury, Vermont.* On behalf of AARP-Vermont. Issues: net economic benefits of proposed natural gas transmission project.
  29. Expert Testimony. File No. ER-2014-0370 (2015). Before the Public Service Commission of the State of Missouri. *In the Matter of Kansas City Power & Light Company for Authority Implement A General Rate Increase for Electric Service.* On behalf of the Missouri Office of the People's Counsel. Issues: customer charges, rate design, revenue distribution, class cost of service, and policy and ratemaking considerations in connection with electric vehicle charging stations.
  30. Expert Testimony. File No. ER-2014-0351 (2015). Before the Public Service Commission of the State of Missouri. *In the Matter of The Empire District Electric Company for Authority To File Tariffs Increasing Rates for Electric Service Provided to Customers In the Company's Missouri Service Area.* On behalf of the Missouri Office of the People's Counsel. Issues: customer charges, rate design, revenue distribution, and class cost of service.
  31. Expert Testimony. D.P.U. 14-130 (2015). Before the Massachusetts Department of Public Utilities. *Petition of Fitchburg Gas and Electric Light Company d/b/a Unutil for approval by the Department of Public Utilities of the Company's 2015 Gas System Enhancement Program Plan, pursuant to G.L. c. 164, § 145, and for rates effective May 1, 2015.* On behalf of the Attorney General's Office. Issues: ratepayer protections, cost allocations, rate design, performance metrics.
  32. Expert Testimony. D.P.U. 14-131 (2015). Before the Massachusetts Department of Public Utilities. *Petition of The Berkshire Gas Company for approval by the Department of Public Utilities of the Company's Gas System Enhancement Program Plan for 2015, pursuant to G.L. c. 164, § 145, and for rates effective May 1, 2015.* On behalf of the Attorney General's Office. Issues: ratepayer protections, cost allocations, rate design, performance metrics.
  33. Expert Testimony. D.P.U. 14-132 (2015). Before the Massachusetts Department of Public Utilities. *Petition of Boston Gas Company and Colonial Gas Company d/b/a National Grid for approval by the Department of Public Utilities of the Companies' Gas System Enhancement Program for 2015, pursuant to G.L. c. 164, § 145, and for rates effective May 1, 2015.* On behalf of the Attorney General's Office. Issues: ratepayer protections, cost allocations, rate design, performance metrics.
  34. Expert Testimony. D.P.U. 14-133 (2015). Before the Massachusetts Department of Public Utilities. *Petition of Liberty Utilities for approval by the Department of Public Utilities of the Company's Gas System Enhancement Program Plan for 2015, pursuant to G.L. c. 164, § 145, and for rates effective May 1, 2015.* On behalf of the Attorney General's Office. Issues: ratepayer protections, cost allocations, rate design, performance metrics.
  35. Expert Testimony. D.P.U. 14-134 (2015). Before the Massachusetts Department of Public

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- Utilities. *Petition of Bay State Gas Company d/b/a Columbia Gas of Massachusetts for approval by the Department of Public Utilities of the Company's Gas System Enhancement Program Plan for 2015, pursuant to G.L. c. 164, § 145, and for rates to be effective May 1, 2015.* On behalf of the Attorney General's Office. Issues: ratepayer protections, cost allocations, rate design, performance metrics.
36. Expert Testimony. D.P.U. 14-135 (2015). Before the Massachusetts Department of Public Utilities. *Petition of NSTAR Gas Company for approval by the Department of Public Utilities of the Company's Gas System Enhancement Program Plan for 2015, pursuant to G.L. c. 164, § 145, and for rates to be effective May 1, 2015.* On behalf of the Attorney General's Office. Issues: ratepayer protections, cost allocations, rate design, performance metrics.
  37. Expert Report. Docket No. X-33192 (2015). Before the Louisiana Public Service Commission. *Examination of the Comprehensive Costs and Benefits of Net Metering in Louisiana.* On behalf of the Louisiana Public Service Commission. Issues: cost-benefit, cost of service, rate impact.
  38. Expert Testimony. F.C. 1119 (2014). Before the District of Columbia Public Service Commission. *In the Matter of the Merger of Exelon Corporation, Pepco Holdings, Inc., Potomac Electric Power Company, Exelon Energy Delivery Company, LLC, and new Special Purpose Entity, LLC.* On behalf of the Office of the People's Counsel. Issues: economic impact analysis, reliability, consumer investment fund, regulatory oversight, impacts to competitive electricity markets.
  39. Expert Report. Civil Action 1:08-cv-0046 (2014). Before the U.S. District Court for the Southern District of Ohio. *Anthony Williams, et al., v. Duke Energy International, Inc., et al.* On behalf of Markovits, Stock & DeMarco, Attorneys & Counselors at Law. Issues: public utility regulation, electric power markets, economic harm.
  40. Expert Testimony. D.P.U. 14-64 (2014). Before the Massachusetts Department of Public Utilities. *NSTAR Gas Company/HOPCO Gas Services Agreement.* On behalf of the Office of the Public Advocate. Issues: certain ratemaking features associated with the proposed Gas Service Agreement.
  41. Expert Testimony. Docket Nos. 14-0224 and 14-0225 (2014). Before the Illinois Commerce Commission. *In the Matter of the Peoples Gas Light and Coke Company and North Shore Gas Company Proposed General Increase in Rates for Gas Service (consolidated).* On behalf of the People of the State of Illinois. Issues: test year expenses, cost benchmarking analysis, pipeline replacement, and leak rate comparisons.
  42. Expert Testimony. Docket 8191 (2014). Before the Vermont Public Service Board. *In Re: Petition of Green Mountain Power Corporation for Approval of a Successor Alternative Regulation Plan.* On the behalf of AARP-Vermont. Issues: Alternative Regulation.
  43. Expert Testimony. Docket No. 2013-00168 (2014). Before the Maine Public Utilities Commission. *In the Matter of the Request for Approval of an Alternative Rate Plan (ARP 2014) Pertaining to Central Maine Power Company.* On behalf of the Office of the Public Advocate. Issues: class cost of service study, marginal cost of service study, revenue distribution and rate design.
  44. Expert Testimony. D.P.U. 13-90 (2013). Before the Massachusetts Department of Public Utilities. *Petition of Fitchburg Gas and Electric Light Company (Electric Division) d/b/a*

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- Unitil to the Department of Public Utilities for approval of the rates and charges and increase in base distribution rates for electric service.* On behalf of the Office of the Ratepayer Advocate. Issues: capital cost adjustment mechanism and performance-based regulation.
45. Expert Testimony. BPU Docket Nos. EO13020155 and GO13020156. (2013). Before the State of New Jersey Board of Public Utilities. *I/M/O The Petition of Public Service Electric & Gas Company for the Approval of the Energy Strong Program.* On behalf of the Division of Rate Counsel. Issues: economic impact, infrastructure replacement program rider, pipeline replacement, leak rate comparisons and cost benefit analysis.
  46. Expert Testimony. D.P.U. 13-75 (2013). Before the Massachusetts Department of Public Utilities. *Investigation by the Department of Public Utilities on its Own Motion as to the Propriety of the Rates and Charges by Bay State Gas Company d/b/a Columbia Gas of Massachusetts set forth in Tariffs M.D.P.U. Nos. 140 through 173, and Approval of an Increase in Base Distribution Rates for Gas Service Pursuant to G.L. c. 164, § 94 and 220 C.M.R. § 5.00 et seq., filed with the Department on April 16, 2013, to be effective May 1, 2013.* On the Behalf of the Office of the Attorney General, Office of Ratepayer Advocacy. Issues: Target infrastructure replacement program rider, pipeline replacement, and leak rate comparisons; environmental benefits analysis; O&M offset; and cost benchmarking analysis.
  47. Expert Testimony. Docket No. 13-115 (2013). Before the Delaware Public Service Commission. *In the Matter of the Application of Delmarva Power & Light Company FOR an Increase in Electric Base Rates and Miscellaneous Tariff Changes* (Filed March 22, 2013). On the Behalf of Division of the Public Advocate. Issues: pro forma infrastructure proposal, class cost of service study, revenue distribution, and rate design.
  48. Expert Testimony. Formal Case No. 1103 (2013). Before the Public Service Commission of the District of Columbia. *In the Matter of the Application of the Potomac Electric Power Company for Authority to Increase Existing Retail Rates and Charges for Electric Distribution Service.* On the Behalf of the Office of the People's Counsel of the District of Columbia. Issues: Pro forma adjustment for reliability investments.
  49. Expert Testimony. Case No. 9326 (2013). Before the Public Service Commission of Maryland. *In the Matter of the Application of Baltimore Gas and Electric Company for Adjustments to its Electric and Gas Base Rates.* On the Behalf of the Maryland Office of the People's Counsel. Issues: Electric Reliability Investment ("ERI") initiatives, pro forma gas infrastructure proposal, tracker mechanisms, class cost of service study, revenue distribution, and rate design
  50. Rulemaking Testimony. (2013). Before the Louisiana Tax Commission. Examination of Louisiana Assessors' Association Well Diameter Analysis, economic development policies regarding midstream assets and industrial development.
  51. Expert Testimony. Case No. 9317 (2013). Before the Public Service Commission of Maryland. *In the Matter of the Application of Delmarva Power & Light Company for Adjustments to its Retail Rates for the Distribution of Electric Energy.* Direct, and Surrebuttal. On the Behalf of the Maryland Office of the People's Counsel. Issues: Grid Resiliency Charge, tracker mechanisms, pipeline replacement, class cost of service study, revenue distribution, and rate design.
  52. Expert Testimony. Case No. 9311 (2013). Before the Public Service Commission of

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- Maryland. *In the Matter of the Application of Potomac Electric Power Company for an Increase in its Retail Rates for the Distribution of Electric Energy*. Direct, and Surrebuttal. On the Behalf of the Maryland Office of the People's Counsel. Issues: Grid Resiliency Charge, tracker mechanisms, pipeline replacement, class cost of service study, revenue distribution, and rate design.
53. Expert Testimony. Docket No. 12AL-1268G (2013). Before the Public Utilities Commission of the State of Colorado. *In the Matter of the Tariff Sheets Filed by Public Service Company of Colorado with Advice No. 830 – Gas. Answer*. On the Behalf of the Colorado Office of Consumer Counsel. Issues: Pipeline System Integrity Adjustment, tracker mechanisms, pipeline replacement and leak rate comparisons.
  54. Expert Testimony. BPU Docket No. EO12080721 (2013). Before the New Jersey Board of Public Utilities. *In the Matter of the Public Service Electric & Gas Company for Approval of an Extension of Solar Generation Program*. On the Behalf of the New Jersey Division of Rate Counsel. Direct, Rebuttal, Surrebuttal. Issues: solar energy market design, solar energy market conditions, solar energy program design and net economic benefits.
  55. Expert Testimony. BPU Docket No. EO12080726 (2013). Before the New Jersey Board of Public Utilities. *In the Matter of the Petition of Public Service Electric & Gas Company for Approval of a Solar Loan III Program*. On the Behalf of the New Jersey Division of Rate Counsel. Direct, Rebuttal and Surrebuttal. Issues: solar energy market design, solar energy market conditions, solar energy program design.
  56. Expert Testimony. BPU Docket No. EO11050314V. (2012). Before the New Jersey Board of Public Utilities. *In the Matter of the Petition of Fishermen's Atlantic City Windfarm, LLC for the Approval of the State Waters Project and Authorizing Offshore Wind Renewable Energy Certificates*. On the Behalf of the New Jersey Division of Rate Counsel. December 17, 2012. Issues: approval of offshore wind project and ratepayer financial support for the proposed project.
  57. Expert Testimony. D.P.U. 12-25. (2012). Before the Massachusetts Department of Public Utilities. *In the Matter of Bay State Gas Company d/b/a/ Columbia Gas Company of Massachusetts Request for Increase in Rates*. On the Behalf of the Office of the Attorney General, Office of Ratepayer Advocacy. Issues: Target infrastructure replacement program rider, pipeline replacement and leak rate comparisons.
  58. Expert Testimony. Docket Nos. UE-120436, et.al. (consolidated). (2012). Before the Washington Utilities and Transportation Commission. *Washington Utilities and Transportation Commission v. Avista Corporation D/B/A Avista Utilities*. On the Behalf of the Washington Attorney General, Office of the Public Counsel. Issues: Revenue Decoupling, lost revenues, tracker mechanisms, attrition adjustments.
  59. Expert Testimony. Case No. 9286. (2012) Before the Public Service Commission of Maryland. *In Re: Potomac Electric Power Company ("Pepco") General Rate Case*. On the Behalf of the Maryland Office of the People's Counsel. Issues: Capital tracker mechanisms/reliability investment mechanisms, reliability issues, regulatory lag, class cost of service, revenue distribution, rate design.
  60. Expert Testimony. Case No 9285. (2012) Before the Public Service Commission of Maryland. *In Re: the Delmarva Power and Light Company General Rate Case*. On the Behalf of the Maryland Office of the People's Counsel. Issues: Capital tracker mechanisms/reliability investment mechanisms, reliability issues, regulatory lag, class

cost of service, revenue distribution, rate design.

61. Expert Testimony. Docket Nos. UE-110876 and UG-110877 (consolidated). (2012). Before the Washington Utilities and Transportation Commission. *Washington Utilities and Transportation Commission v. Avista Corporation D/B/A Avista Utilities*. On the Behalf of the Washington Attorney General, Office of the Public Counsel. Issues: Revenue Decoupling, lost revenues, tracker mechanisms.
62. Expert Testimony. BPU Docket No. EO11050314V. (2012). Before the New Jersey Board of Public Utilities. *In the Matter of the Petition of Fishermen's Atlantic City Windfarm, LLC for the Approval of the State Waters Project and Authorizing Offshore Wind Renewable Energy Certificates*. On the Behalf of the New Jersey Division of Rate Counsel. February 3, 2012. Issues: approval of offshore wind project and ratepayer financial support for the proposed project.
63. Expert Testimony. Docket No. NG 0067. (2012). Before the Public Service Commission of Nebraska. *In the Matter of the Application of SourceGas Distribution, LLC Approval of a General Rate Increase*. On the Behalf of the Public Advocate. January 31, 2012. Issues: Revenue Decoupling, Customer Adjustments, Weather Normalization Adjustments, Class Cost of Service Study, Rate Design.
64. Expert Testimony. Docket No. G-04204A-11-0158. (2011). Before the Arizona Corporation Commission. On the Behalf of the Arizona Corporation Commission Staff. *In the Matter of the Application of UNS Gas, Inc. for the Establishment of Just and Reasonable Rates and Charges Designed to Realize a Reasonable Rate of Return on the Fair Value of Its Arizona Properties*. Issues: Revenue Decoupling; Class Cost of Service Modeling; Revenue Distribution; Rate Design.
65. Expert Testimony. Formal Case Number 1087. (2011). Before the Public Service Commission of the District of Columbia. On the Behalf of the Office of the People's Counsel of the District of Columbia. *In the Matter of the Application of Potomac Electric Power Company for Authority to Increase Existing Retail Rates and Charges for Electric Distribution Service*. Issues: Regulatory lag, ratemaking principles, reliability-related capital expenditure tracker proposals.
66. Expert Affidavit. Case No. 11-1364. (2011). *The State of Louisiana, the Louisiana Department of Environmental Quality, and the Louisiana Public Service Commission v. United States Environmental Protection Agency and Lisa P. Jackson*. Before the United States Court of Appeals for the District of Columbia Circuit. On the behalf of the State of Louisiana, the Louisiana Department of Environmental Quality, and the Louisiana Public Service Commission. Issues: Impacts of environmental costs on electric utilities, compliance requirements, investment cost of mitigation equipment, multi-area dispatch modeling and plant retirements.
67. Expert Affidavit. Docket No. EPA-HQ-OAR-2009-0491. (2011). Before the U.S. Environmental Protection Agency. *Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals*. On the Behalf of the Louisiana Public Service Commission. Issues: Impacts of environmental costs on electric utilities, compliance requirements, investment cost of mitigation equipment, multi-area dispatch modeling and plant retirements.
68. Expert Testimony. Case No. 9296. (2011). Before the Maryland Public Service Commission. *On the Behalf of the Maryland Office of People's Counsel. In the Matter of*

## Attachment A

- the Application of Washington Gas Light Company for Authority to Increase Existing Rates and Charges and Revise its Terms and Conditions for Gas Service.* Issues: Infrastructure Cost Recovery Rider; Class Cost of Service Modeling; Revenue Distribution; Rate Design.
69. Expert Testimony. Docket No. G-01551A-10-0458. (2011). Before the Arizona Corporation Commission. On the Behalf of the Arizona Corporation Commission Staff. *In the Matter of the Application of Southwest Gas Corporation for the Establishment of Just and Reasonable Rates and Charges Designed to Realize A Reasonable Rate of Return on the Fair Value of its Properties throughout Arizona.* Issues: Revenue Decoupling; Class Cost of Service Modeling; Revenue Distribution; Rate Design.
70. Expert Testimony. Docket No. 11-0280 and 11-0281. (2011). Before the Illinois Commerce Commission. On the Behalf of the Illinois Attorney General, the Citizens Utility Board, and the City of Chicago, Illinois. *In re: Peoples Gas Light and Coke Company and North Shore Natural Gas Company.* Issues: Revenue Decoupling and Rate Design. (Direct and Rebuttal)
71. Expert Testimony. D.P.U. 11-01. (2011). Before the Massachusetts Department of Public Utilities. On the Behalf of the Office of the Attorney General, Office of Ratepayer Advocacy. *Petition of the Fitchburg Electric and Gas Company (Electric Division) for Approval of A General Increase in Electric Distribution Rates and Approval of a Revenue Decoupling Mechanism.* Issues: Capital Cost Rider, Revenue Decoupling.
72. Expert Testimony. D.P.U. 11-02. (2011). Before the Massachusetts Department of Public Utilities. On the Behalf of the Office of the Attorney General, Office of Ratepayer Advocacy. *Petition of the Fitchburg Electric and Gas Company (Gas Division) for Approval of A General Increase in Electric Distribution Rates and Approval of a Revenue Decoupling Mechanism.* Issues: Pipeline Replacement Rider, Revenue Decoupling.
73. Expert Affidavit. Docket No. EL-11-13 (2011). Before the Federal Energy Regulatory Commission. Petition for Preliminary Ruling, Atlantic Grid Operations. On the Behalf of the New Jersey Division of Rate Counsel. Issues: Offshore wind generation development, offshore wind transmission development, ratemaking treatment of development costs, transmission development incentives.
74. Expert Opinion. Case No. CI06-195. (2011). Before the District Court of Jefferson County, Nebraska. On the Behalf of the City of Fairbury, Nebraska and Michael Beachler. *In re: Endicott Clay Products Co. vs. City of Fairbury, Nebraska and Michael Beachler.* Issues: rate design and ratemaking, time of use and time differentiated rate structures, empirical analysis of demand and usage trends for tariff eligibility requirements.
75. Expert Testimony. D.P.U. 10-114. (2010). Before the Massachusetts Department of Public Utilities. On the Behalf of the Office of the Attorney General, Office of Ratepayer Advocacy. *Petition of the New England Gas Company for Approval of A General Increase in Electric Distribution Rates and Approval of a Revenue Decoupling Mechanism.* Issues: infrastructure replacement rider.
76. Expert Testimony. D.P.U. 10-70. (2010). Before the Massachusetts Department of Public Utilities. *Petition of the Western Massachusetts Electric Company for Approval of A General Increase in Electric Distribution Rates and Approval of a Revenue Decoupling Mechanism.* On the Behalf of the Office of the Attorney General, Office of Ratepayer Advocacy. Issues: Revenue decoupling; infrastructure replacement rider; performance-based regulation; inflation adjustment mechanisms; and rate design.

## Attachment A

77. Expert Testimony. G.U.D. Nos. 998 & 9992. (2010). Before the Texas Railroad Commission. In the Matter of the Rate Case Petition of Texas Gas Services, Inc. On the Behalf of the City of El Paso, Texas. Issues: Cost of service, revenue distribution, rate design, and weather normalization.
78. Expert Testimony. B.P.U Docket No. GR10030225. (2010). Before the New Jersey Board of Public Utilities. In the Matter of the Petition of New Jersey Natural Gas Company for Approval of Regional Greenhouse Gas Initiative Programs and Associated Cost Recovery Mechanisms Pursuant to N.J.S.A. 48:3-98.1. On the Behalf of the Department of the Public Advocate, Division of Rate Counsel. Issues: solar energy proposals, solar securitization issues, solar energy policy issues.
79. Expert Testimony. D.P.U. 10-55. (2010). Before the Massachusetts Department of Public Utilities. Investigation Into the Propriety of Proposed Tariff Changes for Boston Gas Company, Essex Gas Company, and Colonial Gas Company. (d./b./a. National Grid). On the Behalf of the Office of the Attorney General, Office of Ratepayer Advocacy. Issues: Revenue decoupling; pipeline-replacement rider; performance-based regulation; partial productivity factor estimates, inflation adjustment mechanisms; and rate design.
80. Expert Testimony. Cause No.43839. (2010). Before the Indiana Utility Regulatory Commission. In the Matter of Southern Indiana Gas and Electric Company d/b/a/ Vectren Energy Delivery of Indiana, Inc. (Vectren South-Electric). On the behalf of the Indiana Office of Utility Consumer Counselor (OUCC). Issues: revenue decoupling, variable production cost riders, gains on off-system sales, transmission cost riders.
81. Congressional Testimony. Before the United States Congress. (2010). U.S. House of Representatives, Committee on Natural Resources. Hearing on the Consolidated Land, Energy, and Aquatic Resources Act. June 30, 2010.
82. Expert Testimony. Before the City Counsel of El Paso, Texas; Public Utility Regulatory Board. (2010). On the Behalf of the City of El Paso. In Re: Rate Application of Texas Gas Services, Inc. Issues: class cost of service study (minimum system and zero intercept analysis), rate design proposals, weather normalization adjustment, and its cost of service adjustment clause, conservation adjustment clause proposals, and other cost tracker policy issues.
83. Expert Testimony. Docket 09-00183. (2010). Before the Tennessee Regulatory Authority. In the Matter of the Petition of Chattanooga Gas Company for a General Rate Increase, Implementation of the EnergySMART Conservation Programs, and Implementation of a Revenue Decoupling Mechanism. On the Behalf of Tennessee Attorney General, Consumer Advocate & Protection Division. Issues: revenue decoupling and energy efficiency program review and cost effectiveness analysis.
84. Expert Testimony and Exhibits. Docket No. 10-240. (2010). Before the Louisiana Office of Conservation. In Re: Cadeville Gas Storage, LLC. On the Behalf of Cardinal Gas Storage, LLC. Issues: alternative uses and relative economic benefits of conversion of depleted hydrocarbon reservoir for natural gas storage purposes.
85. Expert Testimony. Docket No. 09505-EI. (2010). Before the Florida Public Service Commission. In Re: Review of Replacement Fuel Costs Associated with the February 26, 2008 outage on Florida Power & Light's Electrical System. On the Behalf of the Florida Office of Public Counsel for the Citizens of the State of Florida. Issues: Replacement costs for power outage, regulatory policy/generation development incentives, renewable

- and energy efficiency incentives.
86. Expert Testimony. Docket 09-00104. (2009). Before the Tennessee Regulatory Authority. In the Matter of the Petition of Piedmont Natural Gas Company, Inc. to Implement a Margin Decoupling Tracker Rider and Related Energy Efficiency and Conservation Programs. On the Behalf of the Tennessee Attorney General, Consumer Advocate & Protection Division. Issues: revenue decoupling, energy efficiency program review, weather normalization.
  87. Expert Testimony. Docket Number NG-0060. (2009). Before the Nebraska Public Service Commission. In the Matter of SourceGas Distribution, LLC Approval for a General Rate Increase. On the Behalf of the Nebraska Public Advocate. October 29, 2009. Issues: revenue decoupling, inflation trackers, infrastructure replacement riders, customer adjustment rider, weather normalization rider, weather normalization adjustments, estimation of normal weather for ratemaking purposes.
  88. Expert Report and Deposition. Before the 23<sup>rd</sup> Judicial District Court, Parish of Assumption, State of Louisiana. On the Behalf of Dow Hydrocarbons and Resources, Inc. September 1, 2009. (Deposition, November 23-24, 2009). Issues: replacement and repair costs for underground salt cavern hydrocarbon storage.
  89. Expert Testimony. D.P.U. 09-39. Before the Massachusetts Department of Public Utilities. (2009). Investigation Into the Propriety of Proposed Tariff Changes for Massachusetts Electric Company and Nantucket Electric Company (d./b./a. National Grid). On the Behalf of the Office of the Attorney General, Office of Ratepayer Advocacy. Issues: Revenue decoupling; infrastructure rider; performance-based regulation; inflation adjustment mechanisms; revenue distribution; and rate design.
  90. Expert Testimony. D.P.U. 09-30. Before the Massachusetts Department of Public Utilities. (2009). In the Matter of Bay State Gas Company Request for Increase in Rates. On the Behalf of the Office of the Attorney General, Office of Ratepayer Advocacy. Issues: Revenue decoupling; target infrastructure replacement program rider; revenue distribution; and rate design.
  91. Expert Testimony. Docket EO09030249. (2009). Before the New Jersey Board of Public Utilities. In the Matter of the Petition of Public Service Electric and Gas Company for Approval of a Solar Loan II Program and An Associated Cost Recovery Mechanism. On the Behalf of the Department of the Public Advocate, Division of Rate Counsel. Issues: solar energy market design, renewable portfolio standards, solar energy, and renewable financing/loan program design.
  92. Expert Testimony. Docket EO0920097. (2009). Before the New Jersey Board of Public Utilities. In the Matter of the Verified Petition of Rockland Electric Company for Approval of an SREC-Based Financing Program and An Associated Cost Recovery Mechanism. On the Behalf of the Department of the Public Advocate, Division of Rate Counsel. Issues: solar energy market design; renewable energy portfolio standards; solar energy.
  93. Expert Rebuttal Report. Civil Action No.: 2:07-CV-2165. (2009). Before the U.S. District Court, Western Division of Louisiana, Lake Charles Division. Prepared on the Behalf of the Transcontinental Pipeline Corporation. Issues: expropriation and industrial use of property.
  94. Expert Testimony. Docket EO06100744. (2008). Before the New Jersey Board of Public Utilities. In the Matter of the Renewable Portfolio Standard – Amendments to the Minimum

## Attachment A

- filing Requirements for Energy Efficiency, Renewable Energy, and Conservation Programs and For Electric Distribution Company Submittals of Filings in connection with Solar Financing (Atlantic City Electric Company). On the Behalf of the Department of the Public Advocate, Division of Rate Counsel. Issues: Solar energy market design; renewable energy portfolio standards; solar energy. (Rebuttal and Surrebuttal)
95. Expert Testimony. Docket EO08090840. (2008). Before the New Jersey Board of Public Utilities. In the Matter of the Renewable Portfolio Standard – Amendments to the Minimum filing Requirements for Energy Efficiency, Renewable Energy, and Conservation Programs and For Electric Distribution Company Submittals of Filings in connection with Solar Financing (Jersey Central Power & Light Company). On the Behalf of the Department of the Public Advocate, Division of Rate Counsel. Issues: Solar energy market design; renewable energy portfolio standards; solar energy. (Rebuttal and Surrebuttal)
  96. Expert Testimony. Docket UG-080546. (2008). Before the Washington Utilities and Transportation Commission. On the Behalf of the Washington Attorney General (Public Counsel Section). Issues: Rate Design, Cost of Service, Revenue Decoupling, Weather Normalization.
  97. Congressional Testimony. (2008). Senate Republican Conference: Panel on Offshore Drilling in the Restricted Areas of the Outer Continental Shelf. September 18, 2008.
  98. Expert Testimony. Appeal Number 2007-125 and 2007-299. (2008). Before the Louisiana Tax Commission. On the Behalf of Jefferson Island Storage and Hub, LLC (AGL Resources). Issues: Valuation Methodologies, Underground Storage Valuation, LTC Guidelines and Policies, Public Purpose of Natural Gas Storage. July 15, 2008 and August 20, 2008.
  99. Expert Testimony. Docket Number 07-057-13. (2008). Before the Utah Public Service Commission. In the Matter of the Application of Questar Gas Company to File a General Rate Case. On the Behalf of the Utah Committee of Consumer Services. Issues: Cost of Service, Rate Design. August 18, 2008 (Direct, Rebuttal, Surrebuttal).
  100. Rulemaking Testimony. (2008). Before the Louisiana Tax Commission. Examination of Replacement Cost Tables, Depreciation and Useful Lives for Oil and Gas Properties. Chapter 9 (Oil and Gas Properties) Section. August 5, 2008.
  101. Legislative Testimony. (2008). Examination of Proposal to Change Offshore Natural Gas Severance Taxes (HB 326 and Amendments). Joint Finance and Appropriations Committee of the Alabama Legislature. March 13, 2008.
  102. Public Testimony. (2007). Issues in Environmental Regulation. Testimony before Gubernatorial Transition Committee on Environmental Regulation (Governor-Elect Bobby Jindal). December 17, 2007.
  103. Public Testimony. (2007). Trends and Issues in Alternative Energy: Opportunities for Louisiana. Testimony before Gubernatorial Transition Committee on Natural Resources (Governor-Elect Bobby Jindal). December 13, 2007.
  104. Expert Report and Recommendation: Docket Number S-30336 (2007). Before the Louisiana Public Service Commission. In re: Entergy Gulf States, Inc. Application for Approval of Advanced Metering Pilot Program. Issues: pilot program for demand response programs and advanced metering systems.

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105. Expert Testimony. Docket EO07040278 (2007). Before the New Jersey Board of Public Utilities. In the Matter of the Petition of Public Service Electric & Gas Company for Approval of a Solar Energy Program and An Associated Cost Recovery Mechanism. On the Behalf of the Department of the Public Advocate, Division of Rate Counsel. Issues: renewable energy market development, solar energy development, SREC markets, rate impact analysis, cost recovery issues.
106. Expert Testimony: Docket Number 05-057-T01 (2007). Before the Utah Public Service Commission. In the Matter of: Joint Application of Questar Gas Company, the Division of Public Utilities, and Utah Clean Energy for Approval of the Conservation Enabling Tariff Adjustment Options and Accounting Orders. On the behalf of the Utah Committee of Consumer Services. Issues: Revenue Decoupling, Demand-side Management; Energy Efficiency policies. (Direct, Rebuttal, and Surrebuttal Testimony)
107. Expert Testimony (Non-sworn rulemaking testimony) Docket Number RR-2008, (2007). Before the Louisiana Tax Commission. In re: Commission Consideration of Amendment and/or Adoption of Tax Commission Real/Personal Property Rules and Regulations. Issues: Louisiana oil and natural gas production trends, appropriate cost measures for wells and subsurface property, economic lives and production decline curve trends.
108. Expert Report, Recommendation, and Proposed Rule: Docket Number R-29213 & 29213-A, ex parte, (2007). Before the Louisiana Public Service Commission. In re: In re: Investigation to determine if it is appropriate for LPSC jurisdictional electric utilities to provide and install time-based meters and communication devices for each of their customers which enable such customers to participate in time-based pricing rate schedules and other demand response programs. On the behalf of the Louisiana Public Service Commission Staff. Report and Recommendation. Issues: demand response programs, advanced meter systems, cost recovery issues, energy efficiency issues, regulatory issues.
109. Expert Report, Recommendation, and Proposed Rule: Docket Number R-29712, ex parte, (2007) Before the Louisiana Public Service Commission. In re: Investigation into the ratemaking and generation planning implications of nuclear construction in Louisiana. On the behalf of the Louisiana Public Service Commission Staff. Report and Recommendation. Issues: nuclear cost power plant development, generation planning issues, and cost recovery issues.
110. Expert Testimony, Case Number U-14893, (2006). Before the Michigan Public Service Commission. In the Matter of SEMCO Energy Gas Company for Authority to Redesign and Increase Its Rates for the Sale and Transportation of Natural Gas In its MPSC Division and for Other Relief. On the behalf of the Michigan Attorney General. Issues: Rate Design, revenue decoupling, financial analysis, demand-side management program and energy efficiency policy. (Direct and Rebuttal Testimony).
111. Expert Report, Recommendation, and Proposed Rule: Docket Number R-29380, ex parte, (2006). Before the Louisiana Public Service Commission. In re: An Investigation Into the Ratemaking and Generation Planning Implications of the U.S. EPA Clean Air Interstate Rule. On the behalf of the Louisiana Public Service Commission Staff. Report and Recommendation. Issues: environmental regulation and cost recovery; allowance allocations and air credit markets; ratepayer impacts of new environmental regulations.
112. Expert Affidavit Before the Louisiana Tax Commission (2006). On behalf of ANR Pipeline,

## Attachment A

- Tennessee Gas Transmission and Southern Natural Gas Company. Issues: Competitive nature of interstate and intrastate transportation services.
113. Expert Affidavit Before the 19<sup>th</sup> Judicial District Court (2006). Suit Number 491, 453 Section 26. On behalf of Transcontinental Pipeline Corporation, et.al. Issues: Competitive nature of interstate and intrastate transportation services.
  114. Expert Testimony: Docket Number 05-057-T01 (2006). Before the Utah Public Service Commission. In the Matter of: Joint Application of Questar Gas Company, the Division of Public Utilities, and Utah Clean Energy for Approval of the Conservation Enabling Tariff Adjustment Options and Accounting Orders. On the behalf of the Utah Committee of Consumer Services. Issues: Revenue Decoupling, Demand-side Management; Energy Efficiency policies. (Rebuttal and Supplemental Rebuttal Testimony)
  115. Legislative Testimony (2006). Senate Committee on Natural Resources. Senate Bill 655 Regarding Remediation of Oil and Gas Sites, Legacy Lawsuits, and the Deterioration of State Drilling.
  116. Expert Report: Rulemaking Docket (2005). Before the New Jersey Bureau of Public Utilities. In re: Proposed Rulemaking Changes Associated with New Jersey's Renewable Portfolio Standard. Expert Report. The Economic Impacts of New Jersey's Proposed Renewable Portfolio Standard. On behalf of the New Jersey Office of Ratepayer Advocate. Issues: Renewable Portfolio Standards, rate impacts, economic impacts, technology cost forecasts.
  117. Expert Testimony: Docket Number 2005-191-E. (2005). Before the South Carolina Public Service Commission. On behalf of NewSouth Energy LLC. In re: General Investigation Examining the Development of RFP Rules for Electric Utilities. Issues: Competitive bidding; merchant development. (Direct and Rebuttal Testimony).
  118. Expert Testimony: Docket No. 05-UA-323. (2005). Before the Mississippi Public Service Commission. On the behalf of Calpine Corporation. In re: Entergy Mississippi's Proposed Acquisition of the Attala Generation Facility. Issues: Asset acquisition; merchant power development; competitive bidding.
  119. Expert Testimony: Docket Number 050045-EI and 050188-EI. (2005). Before the Florida Public Service Commission. On the behalf of the Citizens of the State of Florida. In re: Petition for Rate Increase by Florida Power & Light Company. Issues: Load forecasting; O&M forecasting and benchmarking; incentive returns/regulation.
  120. Expert Testimony (non-sworn, rulemaking): Comments on Decreased Drilling Activities in Louisiana and the Role of Incentives. (2005). Louisiana Mineral Board Monthly Docket and Lease Sale. July 13, 2005
  121. Legislative Testimony (2005). Background and Impact of LNG Facilities on Louisiana. Joint Meeting of Senate and House Natural Resources Committee. Louisiana Legislature. May 19, 2005.
  122. Public Testimony. Docket No. U-21453. (2005). Technical Conference before the Louisiana Public Service Commission on an Investigation for a Limited Industrial Retail Choice Plan.
  123. Expert Testimony: Docket No. 2003-K-1876. (2005). On Behalf of Columbia Gas Transmission. Expert Testimony on the Competitive Market Structure for Gas

## Attachment A

- Transportation Service in Ohio. Before the Ohio Board of Tax Appeals.
124. Expert Report and Testimony: Docket No. 99-4490-J, *Lafayette City-Parish Consolidated Government, et. al. v. Entergy Gulf States Utilities, Inc. et. al.* (2005, 2006). On behalf of the City of Lafayette, Louisiana and the Lafayette Utilities Services. Expert Rebuttal Report of the Harborfront Consulting Group Valuation Analysis of the LUS Expropriation. Filed before 15<sup>th</sup> Judicial District Court, Lafayette, Louisiana.
  125. Expert Testimony: ANR Pipeline Company v. Louisiana Tax Commission (2005), Number 468,417 Section 22, 19th Judicial District Court, Parish of East Baton Rouge, State of Louisiana Consolidated with Docket Numbers: 480,159; 489,776;480,160; 480,161; 480,162; 480,163; 480,373; 489,776; 489,777; 489,778;489,779; 489,780; 489,803; 491,530; 491,744; 491,745; 491,746; 491,912;503,466; 503,468; 503,469; 503,470; 515,414; 515,415; and 515,416. In re: Market structure issues and competitive implications of tax differentials and valuation methods in natural gas transportation markets for interstate and intrastate pipelines.
  126. Expert Report and Recommendation: Docket No. U-27159. (2004). On Behalf of the Louisiana Public Service Commission Staff. Expert Report on Overcharges Assessed by Network Operator Services, Inc. Before the Louisiana Public Service Commission.
  127. Expert Testimony: Docket Number 2004-178-E. (2004). Before the South Carolina Public Service Commission. On behalf of Columbia Energy LLC. In re: Rate Increase Request of South Carolina Electric and Gas. (Direct and Surrebuttal Testimony)
  128. Expert Testimony: Docket Number 040001-EI. (2004). Before the Florida Public Service Commission. On behalf of Power Manufacturing Systems LLC, Thomas K. Churbuck, and the Florida Industrial Power Users Group. In re: Fuel Adjustment Proceedings; Request for Approval of New Purchase Power Agreements. Company examined: Florida Power & Light Company.
  129. Expert Affidavit: Docket Number 27363. (2004). Before the Public Utilities Commission of Texas. Joint Affidavit on Behalf of the Cities of Texas and the Staff of the Public Utilities Commission of Texas Regarding Certified Issues. In Re: Application of Valor Telecommunications, L.P. For Authority to Establish Extended Local Calling Service (ELCS) Surcharges For Recovery of ELCS Surcharge.
  130. Expert Report and Testimony. Docket 1997-4665-PV, 1998-4206-PV, 1999-7380-PV, 2000-5958-PV, 2001-6039-PV, 2002-64680-PV, 2003-6231-PV. (2003) Before the Kansas Board of Tax Appeals. (2003). In the Matter of the Appeals of CIG Field Services Company from orders of the Division of Property Valuation. On the Behalf of CIG Field Services. Issues: the competitive nature of natural gas gathering in Kansas.
  131. Expert Report and Testimony: Docket Number U-22407. Before the Louisiana Public Service Commission (2002). On the Behalf of the Louisiana Public Service Commission Staff. Company examined: Louisiana Gas Services, Inc. Issues: Purchased Gas Acquisition audit, fuel procurement and planning practices.
  132. Expert Testimony: Docket Number 000824-EI. Before the Florida Public Service Commission. (2002). On the Behalf of the Citizens of the State of Florida. Company examined: Florida Power Corporation. Issues: Load Forecasts and Billing Determinants for the Projected Test Year.
  133. Public Testimony: Louisiana Board of Commerce and Industry (2001). Testimony on the

- Economic Impacts of Merchant Power Generation.
134. Expert Testimony: Docket Number 24468. (2001). On the Behalf of the Texas Office of Public Utility Counsel. Public Utility Commission of Texas Staff's Petition to Determine Readiness for Retail Competition in the Portion of Texas Within the Southwest Power Pool. Company examined: AEP-SWEPCO.
  135. Expert Report. (2001) On Behalf of David Liou and Pacific Richland Products, Inc. to Review Cogeneration Issues Associated with Dupont Dow Elastomers, L.L.C. (DDE) and the Dow Chemical Company (Dow).
  136. Expert Testimony: Docket Number 01-1049, Docket Number 01-3001. (2001) On behalf the Nevada Office of Attorney General, Bureau of Consumer Protection. Petition of Central Telephone Company-Nevada D/b/a Sprint of Nevada and Sprint Communications L.P. for Review and Approval of Proposed Revised Performance Measures and Review and Approval of Performance Measurement Incentive Plans. Before the Public Utilities Commission of Nevada.
  137. Expert Affidavit: Multiple Dockets (2001). Before the Louisiana Tax Commission. On the Behalf of Louisiana Interstate Pipeline Companies. Testimony on the Competitive Nature of Natural Gas Transportation Services in Louisiana.
  138. Expert Affidavit before the Federal District Court, Middle District of Louisiana (2001). Issues: Competitive Nature of the Natural Gas Transportation Market in Louisiana. On behalf of a Consortium of Interstate Natural Gas Transportation Companies.
  139. Public Testimony: Louisiana Board of Commerce and Industry (2001). Testimony on the Economic and Ratepayer Benefits of Merchant Power Generation and Issues Associated with Tax Incentives on Merchant Power Generation and Transmission.
  140. Expert Testimony: Docket Number 01-1048 (2001). Before the Public Utilities Commission of Nevada. On the Behalf of the Nevada Office of the Attorney General, Bureau of Consumer Protection. Company analyzed: Nevada Bell Telephone Company. Issues: Statistical Issues Associated with Performance Incentive Plans.
  141. Expert Testimony: Docket 22351 (2001). Before the Public Utility Commission of Texas. On the Behalf of the City of Amarillo. Company analyzed: Southwestern Public Service Company. Issues: Unbundled cost of service, affiliate transactions, load forecasting.
  142. Expert Testimony: Docket 991779-EI (2000). Before the Florida Public Service Commission. On the Behalf of the Citizens of the State of Florida. Companies analyzed: Florida Power & Light Company; Florida Power Corporation; Tampa Electric Company; and Gulf Power Company. Issues: Competitive Nature of Wholesale Markets, Regional Power Markets, and Regulatory Treatment of Incentive Returns on Gains from Economic Energy Sales.
  143. Expert Testimony: Docket 990001-EI (1999). Before the Florida Public Service Commission. On the Behalf of the Citizens of the State of Florida. Companies analyzed: Florida Power & Light Company; Florida Power Corporation; Tampa Electric Company; and Gulf Power Company. Issues: Regulatory Treatment of Incentive Returns on Gains from Economic Energy Sales.
  144. Expert Testimony: Docket 950495-WS (1996). Before the Florida Public Service Commission. On the Behalf of the Citizens of the State of Florida. Company analyzed:

## Attachment A

- Southern States Utilities, Inc. Issues: Revenue Repression Adjustment, Residential and Commercial Demand for Water Service.
145. Legislative Testimony. Louisiana House of Representatives, Special Subcommittee on Utility Deregulation. (1997). On Behalf of the Louisiana Public Service Commission Staff. Issue: Electric Restructuring.
  146. Expert Testimony: Docket 940448-EG -- 940551-EG (1994). Before the Florida Public Service Commission. On the Behalf of the Legal Environmental Assistance Foundation. Companies analyzed: Florida Power & Light Company; Florida Power Corporation; Tampa Electric Company; and Gulf Power Company. Issues: Comparison of Forecasted Cost-Effective Conservation Potentials for Florida.
  147. Expert Testimony: Docket 920260-TL, (1993). Before the Florida Public Service Commission. On the Behalf of the Florida Public Service Commission Staff. Company analyzed: BellSouth Communications, Inc. Issues: Telephone Demand Forecasts and Empirical Estimates of the Price Elasticity of Demand for Telecommunication Services.
  148. Expert Testimony: Docket 920188-TL, (1992). Before the Florida Public Service Commission. On the Behalf of the Florida Public Service Commission Staff. Company analyzed: GTE-Florida. Issues: Telephone Demand Forecasts and Empirical Estimates of the Price Elasticity of Demand for Telecommunication Services.

### **REFEREE AND EDITORIAL APPOINTMENTS**

Contributor, 2014-Current, *Wall Street Journal*, *Journal Reports*, *Energy*

Editorial Board Member, 2015-2017, *Utilities Policy*

Referee, 2014-Current, *Utilities Policy*

Referee, 2010-Current, *Economics of Energy & Environmental Policy*

Referee, 1995-Current, *Energy Journal*

Contributing Editor, 2000-2005, *Oil, Gas and Energy Quarterly*

Referee, 2005, *Energy Policy*

Referee, 2004, *Southern Economic Journal*

Referee, 2002, *Resource & Energy Economics*

Committee Member, IAEE/USAEE Student Paper Scholarship Award Committee, 2003

### **PROPOSAL TECHNICAL REVIEWER**

California Energy Commission, Public Interest Energy Research (PIER) Program (1999).

### **PROFESSIONAL ASSOCIATIONS**

American Economic Association, American Statistical Association, Southern Economic Association, Western Economic Association, International Association of Energy Economists ("IAEE"), United States Association of Energy Economics ("USAEE"), the National Association for Business Economics ("NABE"), and the Energy Bar Association (National and Louisiana Chapter; current Board member of LA chapter).

**HONORS AND AWARDS**

National Association of Regulatory Utility Commissioners (NARUC). Best Paper Award for papers published in the *Journal of Applied Regulation* (2004).

*Baton Rouge Business Report*, Selected as “Top 40 Under 40” (2003).

Omicron Delta Epsilon (1992-Current).

Interstate Oil and Gas Compact Commission (IOGCC) "Best Practice" Award for Research on the Economic Impact of Oil and Gas Activities on State Leases for the Louisiana Department of Natural Resources (2003).

Distinguished Research Award, Academy of Legal, Ethical and Regulatory Issues, Allied Academics (2002).

Florida Public Service Commission, Staff Excellence Award for Assistance in the Analysis of Local Exchange Competition Legislation (1995).

**TEACHING EXPERIENCE**

Energy and the Environment (Survey Course)

Principles of Microeconomic Theory

Principles of Macroeconomic Theory

Lecturer, Environmental Management and Permitting. Lecture in Natural Gas Industry, LNG and Markets.

Lecturer, Electric Power Industry Environmental Issues, Field Course on Energy and the Environment. (Dept. of Environmental Studies).

Lecturer, Electric Power Industry Trends, Principles Course in Power Engineering (Dept. of Electric Engineering).

Lecturer, LSU Honors College, Senior Course on “Society and the Coast.”

Continuing Education. Electric Power Industry Restructuring for Energy Professionals.

“The Gulf Coast Energy Situation: Outlook for Production and Consumption.” Educational Course and Lecture Prepared for the Foundation for American Communications and the Society for Professional Journalists, New Orleans, LA, December 2, 2004

“The Impact of Hurricane Katrina on Louisiana’s Energy Infrastructure and National Energy Markets.” Educational Course and Lecture Prepared for the Foundation for American Communications and the Society for Professional Journalists, Houston, TX, September 13, 2005.

“Forecasting for Regulators: Current Issues and Trends in the Use of Forecasts, Statistical, and Empirical Analyses in Energy Regulation.” Instructional Course for State Regulatory Commission Staff. Institute of Public Utilities, Kellogg Center, Michigan State University. July 8-9, 2010.

“Regulatory and Ratemaking Issues with Cost and Revenue Trackers.” Michigan State University, Institute of Public Utilities. Advanced Regulatory Studies Program. September 29, 2010.

“Demand Modeling and Forecasting for Regulators.” Michigan State University, Institute of Public Utilities. Advanced Regulatory Studies Program. September 30, 2010.

## Attachment A

“Demand Modeling and Forecasting for Regulators.” Michigan State University, Institute of Public Utilities, Forecasting Workshop, Charleston, SC. March 7-9, 2011.

“Regulatory and Cost Recovery Approaches for Smart Grid Applications.” Michigan State University, Institute of Public Utilities, Smart Grid Workshop for Regulators. Charleston, SC. March 7-11, 2011.

“Regulatory and Ratemaking Issues Associated with Cost and Expense Adjustment Mechanisms.” Michigan State University, Institute of Public Utilities, Advanced Regulatory Studies Program. Lansing, Michigan. September 28, 2011.

“Utility Incentives, Decoupling, and Renewable Energy Programs.” Michigan State University, Institute of Public Utilities, Advanced Regulatory Studies Program. Lansing, Michigan. September 29, 2011.

“Regulatory and Cost Recovery Approaches for Smart Grid Applications.” Michigan State University, Institute of Public Utilities, Smart Grid Workshop for Regulators. Charleston, SC. March 6-8, 2012.

“Traditional and Incentive Ratemaking Workshop.” New Mexico Public Utilities Commission Staff. Santa Fe, NM October 18, 2012.

“Traditional and Incentive Ratemaking Workshop.” New Jersey Board of Public Utilities Staff. Newark, NJ. March 1, 2013.

“Natural Gas Issues and Recent Market Trends.” Michigan State University Institute of Public Utilities, GridSchool Regulatory Studies Program, East Lansing, Mich., March 29, 2017.

“Gas Supply Planning and Procurement: Regulatory Overview and issues.” Michigan State University Institute of Public Utilities, Basic Regulatory Studies Program, East Lansing, Mich., Aug 17, 2017.

“Natural Gas Supply Issues and Challenges.” Michigan State University Institute of Public Utilities, Basic Regulatory Studies Program, East Lansing, Mich., Aug 17, 2017.

“Incentives, Risk and Changes in the Nature of Regulation.” Michigan State University Institute of Public Utilities, Basic Regulatory Studies Program, East Lansing, Mich., Aug 18, 2017.

“Traditional and Alternative Forms of Regulation: Background and Overview.” Michigan State University Institute of Public Utilities, Advanced Regulatory Studies Program, East Lansing, Mich., October 2, 2017.

“Traditional and Alternative Forms of Regulation: Utility and policy motivations for risk and change.” Michigan State University Institute of Public Utilities, Advanced Regulatory Studies Program, East Lansing, Mich., October 2, 2017.

“Traditional and Alternative Forms of Regulation: Incentives and Formula Based Methods.” Michigan State University Institute of Public Utilities, Advanced Regulatory Studies Program, East Lansing, Mich., October 2, 2017.

**THESIS/DISSERTATIONS COMMITTEES**

Active:

1 Thesis Committee Memberships (Environmental Studies)

2 Ph.D. Dissertation Committee (Economics)

Completed:

8 Thesis Committee Memberships (Environmental Studies, Geography)

4 Doctoral Committee Memberships (Information Systems & Decision Sciences, Agricultural and Resource Economics, Economics, Education and Workforce Development).

2 Doctoral Examination Committee Membership (Information Systems & Decision Sciences, Education and Workforce Development)

1 Senior Honors Thesis (Journalism, Loyola University)

**LSU SERVICE AND COMMITTEE MEMBERSHIPS**

Committee Member, Energy Education Curriculum Committee. E.J. Ourso College of Business. LSU (2016-Current).

Chairman, LSU Energy Initiative/LSU Energy Council (2014-Current).

Co-Director & Steering Committee Member, LSU Coastal Marine Institute (2009-2014).

CES Promotion Committee, Division of Radiation Safety (2006).

Search Committee Chair (2006), Research Associate 4 Position.

Search Committee Member (2005), Research Associate 4 Position.

Search Committee Member (2005), CES Communications Manager.

LSU Graduate Research Faculty, Associate Member (1997-2004); Full Member (2004-2010); Affiliate Member with Full Directional Rights (2011-2014); Full Member (2014-current).

LSU Faculty Senate (2003-2006).

Conference Coordinator. (2005-Current) Center for Energy Studies Conference on Alternative Energy.

LSU CES/SCE Public Art Selection Committee (2003-2005).

Conference Coordinator. Center for Energy Studies Annual Energy Conference/Summit. (2003-Current).

Conference Coordinator. Center for Energy Studies Seminar Series on Electric Utility Restructuring and Wholesale Competition. (1996-2003).

Co-Chairman, Review Committee, Louisiana Port Construction and Development Priority Program Rules and Regulations, On Behalf of the LSU Ports and Waterways Institute. (1997).

LSU Main Campus Cogeneration/Turbine Project, (1999-2000).

LSU InterCollege Environmental Cooperative. (1999-2001).

LSU Faculty Senate Committee on Public Relations (1997-1999).

LSU Faculty Senate Committee on Student Retention and Recruitment (1999-2003).

**PROFESSIONAL SERVICE**

Board Member (2018). Energy Bar Association, Louisiana Chapter.

Program Committee Member (2017). Gulf Coast Power Association Conference. New Orleans, LA.

Program Committee Member (2016). Gulf Coast Power Association Conference. New Orleans, LA.

Program Committee Member (2015). Gulf Coast Power Association Workshop/Special Briefing. "Gulf Coast Disaster Readiness: A Past, Present and Future Look at Power and Industry Readiness in MISO South."

Advisor (2008). National Association of Regulatory Utility Commissioners ("NARUC"). Study Committee on the Impact of Executive Drilling Moratoria on Federal Lands.

Steering Committee Member, Louisiana Representative (2008-Current). Southeast Agriculture & Forestry Energy Resources Alliance. Southern Policies Growth Board.

Advisor (2007-Current). National Association of State Utility Consumer Advocates ("NASUCA"), Natural Gas Committee.

Program Committee Chairman (2007-2008). U.S. Association of Energy Economics ("USAEE") Annual Conference, New Orleans, LA

Finance Committee Chairman (2007-2008). USAEE Annual Conference, New Orleans, LA

Committee Member (2006), International Association for Energy Economics ("IAEE") Nominating Committee.

Founding President (2005-2007) Louisiana Chapter, USAEE.

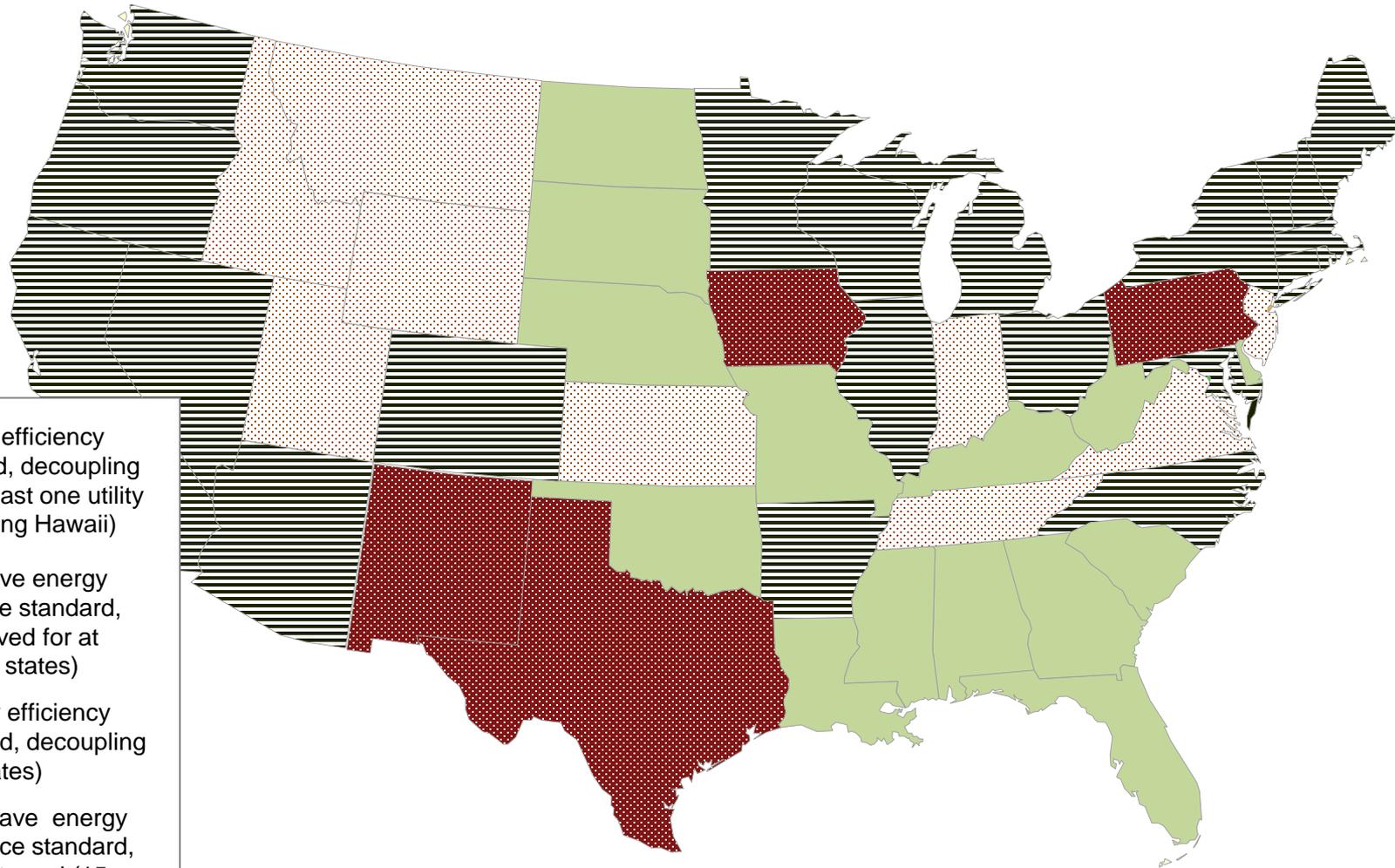
Secretary (2001) Houston Chapter, USAEE.

Advisor, Louisiana LNG Buyers/Developers Summit, Office of the Governor/Louisiana Department of Economic Development/Louisiana Department of Natural Resources, and Greater New Orleans, Inc. (2004).

## Table of Schedules

Title	Schedule
Electric and Gas Decoupling Programs	Schedule DED-1
Decoupling Adoption and Natural Gas Price Trends	Schedule DED-2
GEM Financial Impact	Schedule DED-3
PSE&G's Achieved Return on Equity (2008-2017)	Schedule DED-4
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# Electric and Gas Decoupling Programs

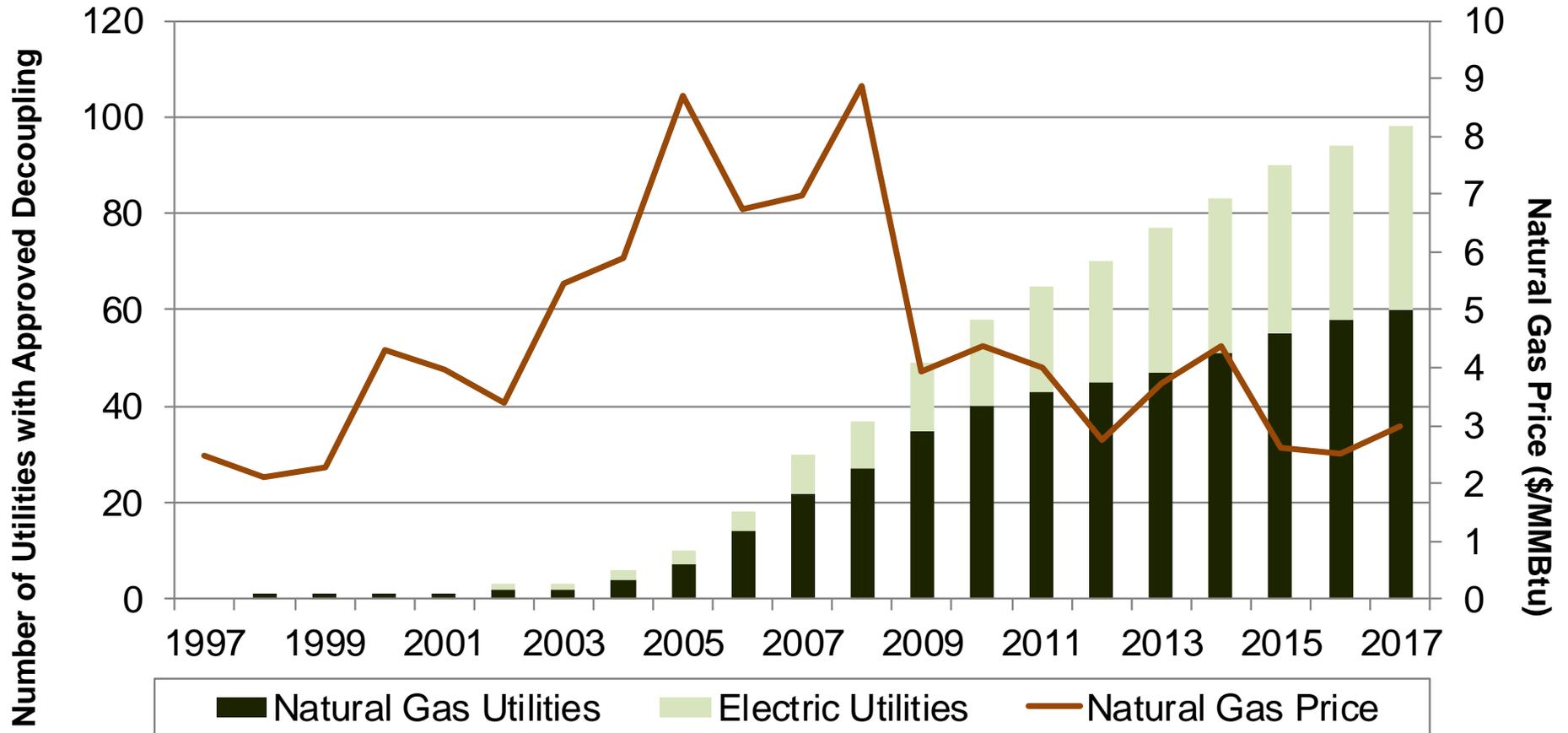


-  State has energy efficiency resource standard, decoupling approved for at least one utility (21 states, including Hawaii)
-  State does not have energy efficiency resource standard, decoupling approved for at least one utility (9 states)
-  State has energy efficiency resource standard, decoupling is not used (5 states)
-  State does not have energy efficiency resource standard, decoupling is not used (15 states, including Alaska)

Note: ACEE State EERS Policy Brief last updated in January of 2017.

Source: State Commission Orders. American Council for an Energy-Efficient Economy, State EERS Policy Brief.

# Decoupling Adoption and Natural Gas Price Trends



# GEM Financial Impact, 2012-2017

	2012	2013	2014	2015	2016	2017
<b>Electric</b>						
GEM Deferral in Revenues	(\$1,912)	\$36,393	\$64,368	\$44,292	\$41,253	\$80,430
Removal of Weather Deferral in Actuals	\$0	\$0	\$0	\$0	\$0	\$0
Change to Pre-Tax Income	(\$1,912)	\$36,393	\$64,368	\$44,292	\$41,253	\$80,430
Change to After-Tax Income	(\$1,131)	\$21,527	\$38,074	\$26,199	\$24,401	\$47,574
Equity Balance	\$2,260,288	\$2,347,940	\$2,393,628	\$2,506,585	\$2,699,884	\$2,894,924
Return on Equity Impact	-0.1%	0.9%	1.6%	1.0%	0.9%	1.6%
<b>Gas</b>						
GEM Deferral in Revenues	\$57,794	(\$14,684)	(\$39,260)	(\$27,733)	\$13,603	\$11,594
Removal of Weather Deferral in Actuals	(\$61,664)	\$6,174	\$37,542	\$3,127	(\$22,419)	(\$20,444)
Change to Pre-Tax Income	(\$3,870)	(\$8,510)	(\$1,718)	(\$24,606)	(\$8,816)	(\$8,850)
Change to After-Tax Income	(\$2,289)	(\$5,034)	(\$1,016)	(\$14,554)	(\$5,215)	(\$5,235)
Equity Balance	\$1,358,361	\$1,395,360	\$1,473,280	\$1,620,574	\$1,833,305	\$2,110,538
Return on Equity Impact	-0.2%	-0.4%	-0.1%	-0.9%	-0.3%	-0.2%
<b>Energy Efficiency Program Distribution Lost Revenue Impact</b>						
Electric Margin	(\$3,875)	(\$4,638)	(\$5,338)	(\$5,496)	(\$5,883)	(\$6,384)
Gas Margin	(\$790)	(\$951)	(\$1,313)	(\$1,389)	(\$1,521)	(\$1,713)
Total Margin	(\$4,665)	(\$5,589)	(\$6,651)	(\$6,884)	(\$7,404)	(\$8,097)

Note: The positive revenue impact would only apply up to 50 bps above the allowed ROE for the Company.

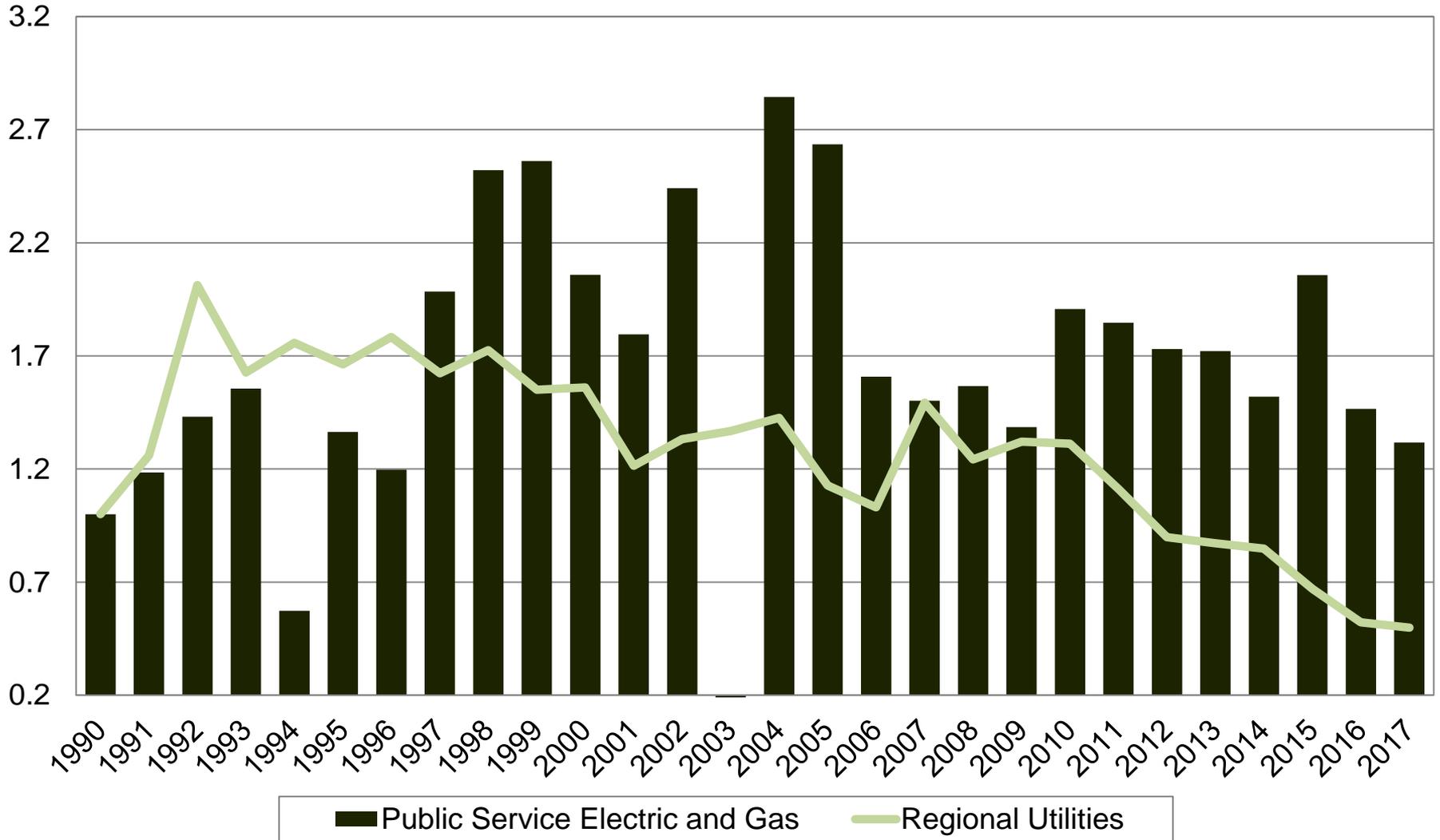
Source: Company's response to RCR-DEC-0013, Attachment RCR-DEC\_0013\_GEM Historic 2009 Rate Case to 2017.xlsx.

# PSE&G's Achieved Return on Equity (2008-2017)

	2008	2009	2010	2011	2012
Total Proprietary Capital	\$3,729,006,276	\$4,302,112,149	\$4,424,787,817	\$4,646,621,227	\$5,181,160,173
Preferred Stock (Less)	\$79,523,400	\$79,523,400	\$0	\$0	\$0
<b>Common Equity</b>	<b>\$3,649,482,876</b>	<b>\$4,222,588,749</b>	<b>\$4,424,787,817</b>	<b>\$4,646,621,227</b>	<b>\$5,181,160,173</b>
<b>Total Long-Term Debt</b>	<b>\$3,523,706,225</b>	<b>\$3,570,606,752</b>	<b>\$4,283,776,399</b>	<b>\$4,270,460,139</b>	<b>\$4,794,386,731</b>
Net Income	\$363,575,869	\$323,929,820	\$357,925,702	\$520,575,365	\$534,377,716
Equity in Earnings of Subsidiary Companies (less)	\$577,876	(\$708,328)	(\$376,611)	\$105,600	\$137,978
Declared Dividends - Preferred Stock (Less)	\$3,987,876	\$3,987,876	\$884,969	\$0	\$0
<b>Common Equity Net Income</b>	<b>\$359,010,117</b>	<b>\$320,650,272</b>	<b>\$357,417,344</b>	<b>\$520,469,765</b>	<b>\$534,239,738</b>
<b>Return on Equity</b>	<b>9.84%</b>	<b>7.59%</b>	<b>8.08%</b>	<b>11.20%</b>	<b>10.31%</b>

	2013	2014	2015	2016	2017
Total Proprietary Capital	\$5,920,315,656	\$6,835,533,489	\$7,629,005,378	\$8,774,388,796	\$9,903,935,472
Preferred Stock (Less)	\$0	\$0	\$0	\$0	\$0
<b>Common Equity</b>	<b>\$5,920,315,656</b>	<b>\$6,835,533,489</b>	<b>\$7,629,005,378</b>	<b>\$8,774,388,796</b>	<b>\$9,903,935,472</b>
<b>Total Long-Term Debt</b>	<b>\$5,566,162,652</b>	<b>\$6,312,375,094</b>	<b>\$6,861,859,145</b>	<b>\$7,862,697,345</b>	<b>\$8,637,804,639</b>
Net Income	\$639,887,463	\$739,568,185	\$794,011,742	\$895,793,948	\$979,863,657
Equity in Earnings of Subsidiary Companies (less)	\$82,984	(\$214,249)	\$151,456	(\$286,894)	(\$163,491)
Declared Dividends - Preferred Stock (Less)	\$0	\$0	\$0	\$0	\$0
<b>Common Equity Net Income</b>	<b>\$639,804,479</b>	<b>\$739,782,434</b>	<b>\$793,860,286</b>	<b>\$896,080,842</b>	<b>\$980,027,148</b>
<b>Return on Equity</b>	<b>10.81%</b>	<b>10.82%</b>	<b>10.41%</b>	<b>10.21%</b>	<b>9.90%</b>

# Number of Known Open Leaks on Company's System (1990-2017)



# Comparison of Cost per Mile

State	Company	Cost per Mile
<b>NJ</b>	<b>Public Service Electric and Gas Company</b>	<b>\$ 1,848,021</b>
MD	Baltimore Gas & Electric Company	\$ 2,648,441
PA	Philadelphia Gas Works	\$ 1,880,342
MA	Boston Gas Company (National Grid)	\$ 2,000,000
MA	NSTAR (Eversource Energy)	\$ 1,836,576

Source: Company's response to RCR-POL-0035, Attachment "Gas Infrastructure Program Costs.xlsx"; Docket No. D.P.U. 17-GSEP-03, Direct Testimony of John B. Currie, Exhibit NG-JBC-2; Pennsylvania Public Utility Commission Staff Report, Inquiry into Philadelphia Gas Works' Pipeline Replacement Program, April 21, 2015; Baltimore Gas and Electric Company Agreed-Upon Procedures Report for the STRIDE Plan for the Year Ended December 31, 2017, Appendix 3; Docket No. D.P.U. 17-GSEP-06, Direct Testimony of Robert J. Buffone Jr., PE, Exhibit ES-RJB-1.