BEFORE THE
MISSISSIPPI PUBLIC SERVICE COMMISSION

IN RE: ENCOURAGING STIPULATION OF MATTERS IN CONNECTION WITH THE KEMPER COUNTY IGCC PROJECT	))))	**DOCKET NO. 2017-AD-112**

REDACTED

DIRECT TESTIMONY OF DAVID E. DISMUKES, PH.D.

ON BEHALF OF

MISSISSIPPI PUBLIC UTILITIES STAFF

October 23, 2017

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I. INTRODUCTION AND QUALIFICATIONS

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, LLC ("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 College 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.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I have been retained by the Mississippi Public Utilities Staff ("MPUS") to provide expert analysis and opinion regarding various issues related to the August 21, 2017 Proposed Stipulation filed by Mississippi Power Company ("MPC" or the "Company"). Specifically, I was asked to examine (1) how a resolution of the regulatory issues associated with the Kemper facility's cost recovery may be viewed from a credit rating agency

perspective, (2) the relationship between a potential settlement of the Kemper facility cost recovery issues in this proceeding and the Company's historic retail rate and cost efficiencies, and (3) the economic impacts of various settlement positions advocated by the Company and the MPUS.

Q. HOW IS THE REMAINDER OF YOUR TESTIMONY ORGANIZED?

A. The balance of testimony is organized into the following sections:

- Section II: Executive Summary
- Section III: Analysis of Rating Agency Perceptions
- Section IV: Mississippi Power Company's Growing Excess Generation Capacity
- Section V: Mississippi Power Company's Retail Rate and Cost Trends
- Section VI: Economic Impacts Associated with Proposed Stipulation
- Section VII: Conclusions

Q. HAVE YOU PREPARED ANY EXHIBITS SUPPORTING YOUR DIRECT TESTIMONY?

A. Yes. Attachment A to my testimony provides a detailed discussion of the rates and operating costs of the Company relative to peer utilities. Attachment B to my testimony provides my academic vita that includes a full listing of my publications, presentations, pre-filed expert witness testimony, expert reports, expert legislative testimony, and affidavits. In addition, I have prepared 18 exhibits in support of my testimony.

II. EXECUTIVE SUMMARY

Q. PLEASE PROVIDE A SUMMARY OF YOUR TESTIMONY.

A. I discuss four important points that the Commission should consider in addressing cost recovery for the Kemper combined cycle ("CC") facility. First, I dispel the inaccurate implication in the Company's filing that only its proposed "Stipulation" would provide sufficient assurance to credit rating agencies to potentially prevent credit rating downgrades that could create additional financial uncertainty for MPC. Second, I discuss the non-trivial increase in operating capacity associated with the Kemper Project as it transitions from an Integrated Gasification Combined Cycle ("IGCC") configured facility to a CC-only facility, and how this impacts the already high amount of capacity on the Company's system relative to its current and anticipated needs. Third, I provide important context for any rate decision related to the Kemper Project by showing that the Company's current rates and operating costs are among the highest in the region. Finally, I discuss relevant impacts on the Mississippi economy, impacts of the Company's proposed Stipulation relative to other potential options, and impacts of potential future rate increases under the Performance Evaluation Plan ("PEP").

Q. WHY DOES THE COMPANY BELIEVE THAT ITS PROPOSED STIPULATION REPRESENTS A REASONABLE SOLUTION TO THE ISSUES IN THIS PROCEEDING?

A. The Company provides two general reasons why it believes its proposed Stipulation represents a reasonable compromise of the contested issues concerning the Kemper Project. First, the Company states that the proposed Stipulation would have avoided protracted litigation that was expected to be associated with the request for cost recovery of the

Kemper Gasifier related assets. Second, the Company states that the proposed Stipulation would have potentially prevented credit rating downgrades that could create additional financial uncertainty for MPC. The implication from the Company's filing is that this second rationale can only be obtained by the Commission approving **its** proposed Stipulation. This is not accurate since the rating agencies are looking for a fair and final resolution of these issues, not one that is overly biased in the direction of any party. Indeed, recent statements by rating agencies have shown that any solid resolution of the issues surrounding the Kemper Facility that is not unduly punitive towards the Company, such as the offers proposed by Staff as discussed in Mr. Larkin and Mr. Dady's testimony, would be seen as positive by the credit rating agencies.

Q. EXPLAIN HOW THE CURRENT CONFIGURATION OF THE KEMPER CC WILL LEAD TO EXCESS CAPACITY RELATIVE TO THE COMPANY'S ANTICIPATED NEEDS

A. The Commission should be mindful of the growing system capacity on the Company's system relative to its needs, a situation that is compounded by the reconfiguration of the Kemper Project from an IGCC facility to a CC only facility. The Company's current operating fleet includes many units that are 40 or more years old. These facilities have relatively poor thermal efficiencies compared to the Company's newer Kemper and Daniel power plants. With the large increase in available operating capacity due to the redesign of Kemper, the Company should be encouraged to reduce the operations of these older, inefficient units.

Q. DOES THE COMPANY ALREADY HAVE A SET OF RELATIVELY COMPETITIVE RATES AND OPERATING COSTS?

A. No. The Commission should also be mindful of the Company's currently high retail rates and operating costs relative to other utilities operating in the region. The Company's filing suggests that it needs rates to be maintained at their current levels in order to continue to provide adequate service to its customers, while failing to acknowledge what could be cost efficiency opportunities if it were to reduce its operating costs to levels comparable to regional utilities. A review of the historic trends in the Company's rates and its operating costs underscores that it is a high-cost utility, even before examining cost-recovery issues associated with Kemper. The addition of the Kemper CC's investment and operating costs will only contribute to what are already a set of above-average rates and costs relative to peer regional utilities.

Q. WHAT ARE THE ECONOMIC IMPACT IMPLICATIONS OF THE VARIOUS STIPULATION PROPOSALS BEFORE THE COMMISSION?

A. The Commission should be mindful of the real economic impacts that will occur in the Company's service territory associated with the proposed rate increases associated with the Kemper CC. The hardship to the Mississippi economy from the Company's proposed Stipulation exceeds $5.9 billion, or $2.2 billion in net present value ("NPV") terms, and reduces average per-year employment in the Company's service territory by 640 jobs per year. The Company has also communicated to the MPUS that it may seek a substantial further increases pursuant to its formula rate plan, known as the PEP.[1] I calculate that a 10

[1] Note: The Company's PEP restricts any annual increase to the PEP rate to four percent, so the assumed 10 percent increase in reality would have to be phased-in over a series of two or more annual filings. For simplicity sake, I assume the entirety of the requested 10 percent increase in the Company's PEP is fully recognized in the first year.

percent increase in the Company's overall revenue requirement through the Company's PEP would decrease economic output in the Company's service territory by an additional $5.58 billion over 40 years, or $1.9 billion on an NPV basis. Such an increase would also reduce employment by 24,575 job-years over a 40 year period, or approximately 614 jobs per year.

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.

A. I recommend that the Commission remain cognizant of (1) the factual viewpoints of the credit rating agencies in regard to a Kemper settlement; (2) the growing excess generation capacity on the Company's system; (3) the currently high rates and operating costs of the utility; and (4) the significant impacts to the Mississippi economy when making its decision as to the appropriate revenue requirement associated with the reconfigured Kemper facility. I recommend that the Commission consider the potential solutions from Staff's prior offers to MPC as discussed by Mr. Larkin and Mr. Dady and solutions offered by Dr. Craig Roach, all of which are expert witness appearing on behalf of the MPUS, in reaching its ultimate decision.

III. ANALYSIS OF RATING AGENCY PERCEPTIONS

Q. PLEASE PROVIDE SOME CONTEXT FOR THE CURRENT PROCEEDING.

A. The Company was required to file a rate case no later than June of 2017 under the context of the adopted Stipulation settling issues in the Commission's 2015 In-Service Asset Proceeding (Docket No. 2015-UN-080). Parties to Docket No. 2015-UN-080 were concerned that the Company might over-collect certain regulatory asset costs once they became fully amortized under the terms and conditions of the Stipulation.[2] In other words,

[2] Order Opening Docket, ¶ 55; citing Final Rate Order, ¶ 91.

parties were concerned that once the deferred regulatory assets were fully recovered, there would be no corresponding expense item offsetting these revenue recoveries.[3] However, beyond this, parties also expected that by June of 2017 the entirety of the Kemper Project would be placed in service, allowing the Company to file for permanent rate recovery associated with the facility. However, the IGCC component of the Kemper Project experienced numerous issues and delays throughout 2016 and the first five months of 2017. By June of 2017, the Kemper Project was still far from being fully commercially operational in an IGCC configuration.

Q. DID THE COMMISSION TAKE ACTION REGARDING THE KEMPER PROJECT AFTER IT FAILED TO BE COMMERCIALLY OPERATIONAL BY JUNE 2017?

A. Yes. After reviewing an MPC rate proposal that would give the Company additional time to place the Kemper Project in service, the Commission opened the current proceeding. In its Order, the Commission found that the Kemper Project was: (1) more than three years behind schedule;[4] (2) had an expected investment of more than $7.5 billion, compared to the $2.97 billion estimated at the time of original Certificate of Public Convenience and Necessity ("CPCN");[5] (3) was only expected to have a first-year availability factor of 35 percent versus an original estimate of 59 percent in the CPCN, with on-going availability below the levels of the CPCN until year four of operations;[6] (4) was estimated to have a heat rate of 12,160 BTU/kWh, or nearly four percent less efficient than the original

[3] Id.

[4] *Id.*, ¶ 71.

[5] *Id.*, ¶ 72.

[6] *Id.*, ¶¶ 73-74.

estimated heat rate of 11,708 BTU/kWh in the CPCN;[7] and (5) had in each of the years one through five of commercial operations an estimated IGCC maintenance capital and total non-fuel O&M range from $130 million to $201 million more than estimated in the CPCN.[8] The Commission also noted that MPC's most recent Economic Viability Analysis of the Kemper Project found that the facility was more expensive in all low and medium natural gas price scenarios than strictly running the CC component of the facility using natural gas.[9] The Commission ultimately concluded that the Kemper Project was not meeting its reasonable expectations for the provision of service.[10]

Q. WHAT WAS THE COMMISSION'S ULTIMATE DECISION REGARDING THE KEMPER PROJECT?

A. The Commission concluded that the IGCC component of the Kemper Project was "over budget, late, [and] not now commercially operable and not likely to be so in any reasonably timeframe."[11] However, the Commission also concluded that the CC component of the facility had been performing well since 2014, and that there was strong evidence supporting a conclusion that the Kemper facility operating only in a CC configuration was a "feasible alternative to the full Kemper Project."[12] The Commission thus decided that the IGCC capability of the Kemper Project, was not, and would not become, used and useful in serving Mississippi customers.[13] The Commission directed all intervening parties to find

[7] *Id.*, ¶ 75.
[8] *Id.*, ¶ 78.
[9] *Id.*, ¶ 79.
[10] *Id.*, ¶ 82.
[11] *Id.*, ¶ 86.
[12] Id.
[13] Id.

common ground and an agreeable Stipulation that resolved issues associated with the Kemper Project,[14] noting that if an appropriate settlement is not reached between the parties, it would reserve its rights to exercise full authority to resolve all outstanding Kemper-related regulatory issues, including issuing an order to show cause and establishing a subsequent proceeding, with the possibility of fully revoking the CPCN for the Kemper Project.[15]

Q. DID STAFF PROVIDE PROPOSED TERMS FOR RESOLUTION OF THE ISSUES DIRECTED BY THE COMMISSION?

A. Yes. As explained in the Direct Testimony of Ralph C. Smith and Mark S. Dady, after over a month of negotiations with the Company, on August 21, 2017, Staff filed a Proposed Term Sheet with the Commission. This term sheet does not represent a binding settlement between the Staff and the Company since it was ultimately rejected by the Company.[16] Furthermore, on September 8, 2017, Staff, Chevron, Federal Executive Agencies ("FEA"), Walmart, Chemours and First Chemical, collectively, submitted a second Coalition settlement proposal to the Company. This proposal, like the August 21, 2017, proposal, was rejected by the Company, and was not filed with the Commission. However, the terms associated with this proposal are outlined by Mr. Smith and Mr. Dady in their Direct Testimony on behalf of MPUS.

[14] *Id.*, ¶ 95.

[15] *Id.*, ¶ 97.

[16] Proposed Term Sheet (August 21, 2017), at 1

Q. HAS THE COMPANY PROVIDED A PROPOSED SETTLEMENT OF THE ISSUES DIRECTED BY THE COMMISSION?

A. Yes. On August 21, MPC also filed a Stipulation, which it had reached with a handful of interveners to the proceeding, not including the MPUS or interveners actively asserting ratepayer interest. According to the Company, depending on the differing underlying costs assumed to support the stipulated revenue requirement of $126 million for the initial year, actual allowed rate base investment could vary anywhere between approximately $915 million and $960 million.[17]

Q. WHAT RATIONALES DID THE COMPANY OFFER FOR ITS POSITON?

A. The Company provided two general reasons to support a finding that its proposed Stipulation would represent a reasonable compromise of the contested issues concerning the Kemper Project. First, the Company stated that the proposed Stipulation would have avoided protracted litigation that was expected to be associated with a request for cost recovery of the Kemper Gasifier related assets.[18] Second, the Company stated that the proposed Settlement would have potentially prevented credit rating downgrades that could create additional financial uncertainty for MPC.[19]

[17] MPC's Filed Stipulation (August 21, 2017), ¶ 51.

[18] Direct Testimony of Moses H. Feagin, 7:25-27.

[19] *Id.*, 8:1-2.

Q. HAS THE COMPANY PROVIDED ANY ADDITIONAL INFORMATION REGARDING ITS BELIEF IN THE NEED TO PREVENT POTENTIAL CREDIT RATING DOWNGRADES TO THE COMPANY?

A. Yes. In its filing supporting its proposed Stipulation the Company included a lengthy discussion on "Why Rebuilding the Company's Financial Strength is Important."[20] In this discussion, the Company noted that "…adoption of the Stipulation would be an important first step for MPC in regaining [its] financial strength."[21] Besides providing the Company with what it says is the minimum amount of revenue necessary to recover the cost of the Kemper CC facility,[22] the Company also argues that the Commission's approval of the proposed Stipulation would send a message to investors and credit rating agencies that the Company can expect constructive regulation and recovery of prudently incurred costs.[23]

Q. WHAT WERE THE COMPANY'S CREDIT RATINGS AS OF ITS AUGUST 21ST FILING?

A. As of August 21st Standard & Poors ("S&P") rated the Company BBB+ with a negative outlook.[24] Fitch rated the Company as BBB with a negative outlook; and Moody's rated the Company as Ba1, while placing it on review for downgrade.[25] Thus, the Company was rated at an investment grade by both S&P and Fitch, but as non-investment grade by Moody's.

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[20] *Id.*, 36:21-22.

[21] *Id.*, 37:3-4.

[22] *Id.*, 37:4-7.

[23] *Id.*, 37:9-12.

[24] *Id.*, 38:9-10.

[25] *Id.*, 38:11-13.

Q. HAS THE COMPANY ENCOUNTERED CREDIT RATING ISSUES BEFORE 2017?

A. Yes. Credit rating issues for MPC are not a recent phenomenon. The Company itself notes that its credit rating issues date back to 2012.[26] The Company states that this initial credit downgrade was due to the Commission denying the Company revenue increase requests associated with the Kemper Project.[27] The Company has experienced a series of additional downgrades since 2012, which the Company all attributes to an unfavorable regulatory environment.

Q. DO YOU AGREE WITH THE COMPANY'S ASSESSMENT?

A. No. The Company essentially absolves itself of its role in its deteriorating credit ratings, placing the blame on the Commission. However, this is inconsistent with the full rationale put forward by the credit rating agencies. For example, in its initial August 6th, 2012 downgrade of MPC's debt securities from A2 to A3, Moody's noted the growing problems associated with the Kemper Project. Specifically, Moody's noted that the project by that point had experienced $366 million in cost overruns, and was "pushing the total cost of the plant close to the $2.88 billion cost recovery cap approved by the [Commission]."[28] Moody's furthermore noted that the recovery of any additional costs overruns incurred prior to the assumed May 2014 commercial operation date would be uncertain as they would be subject to Commission review.[29] In the end, Moody's noted that, due to the complexity and unproven nature of an IGCC plant, it would be unlikely that the Company

[26] *See,* Direct Testimony of Moses H. Feagin, 38:23-25.

[27] *See,* Direct Testimony of Moses H. Feagin, 39:6-10.

[28] "Moody's downgrades Mississippi Power to A3; Outlook Negative," (August 6, 2012), Global Credit Research.

[29] Id.

would see a credit upgrade in the midst of such a large construction project; however, it predicted that ratings would stabilize if the Kemper Project was substantially completed without major additional delays or cost overruns. Specifically, the report stated:[30]

> A rating upgrade is unlikely while the company is in the midst of such a large construction project. Ratings could be stabilized if the project is substantially completed without major additional delays or cost overruns, if the full amount of expected investment tax credits are realized, if the regulatory environment in Mississippi remains credit supportive, and if metrics return to levels consistent with an A rating, including CFO pre-working capital to debt of at least 22% on a sustained basis.
>
> A downgrade could be considered if there are material delays, additional cost overruns, or diminished regulatory support for the project; if there is an adverse change in the overall regulatory and political environment for utilities in Mississippi; or if cash flow coverage metrics do not improve as expected from current low levels, including CFO pre-working capital to debt remaining below 20% for a sustained period.[31]

Q. DO LATER MPC CREDIT DOWNGRADES REFERENCE THE KEMPER FACILITY'S DEVELOPMENT CHALLENGES AS THE RATIONALE FOR DOWNGRADING THE COMPANY'S RATINGS ON DEBT SECURITIES?

A. Yes. In its second credit downgrade of the Company, downgrading the Company from A3 to Baa1, on August 6, 2013, Moody's again referenced the growing cost overruns and construction delays impacting the Kemper Project, and how these were impacting the larger regulatory environment facing the Company. Moody's noted that the Company had raised the cost estimate of the Kemper Project by nearly $1 billion over the three months prior to the issuance of the report, placing the cost of the project at $3.87 billion, well over the

[30] Id.

[31] Id.

$2.88 billion cost cap.[32] Likewise, Moody's cited "serious doubts," expressed by the Commission's independent monitor that the Company would be able to meet the May 2014 completion date as the Kemper Project continued to fall behind schedule, particularly with regards to the complex piping system between the Gasifier and the CC unit.[33] Even worse than these findings, Moody's noted that the Company's continual failures associated with the Kemper Project were straining the Company's regulatory relationship, leading to the increasing doubt that the Commission would allow recovery of the Company's significant cost overruns.[34]

> We believe that issues associated with the plant may have also adversely affected the regulatory environment in which the company operates, with two of the three commissioners on the Mississippi Public Service Commission (MPSC) expressing serious concerns not only about the recent cost increases, but also the level of communication and transparency exhibited by the company during the construction process. Despite a $2.88 billion cap on project costs that largely insulates Mississippi ratepayers from additional cost increases, the historically credit supportive Mississippi regulatory environment has been strained by these developments and may not fully recover over the near term, especially if the plant continues to experience problems with the remaining construction, as well as the testing and start-up phase.[35]

[32] "Moody's Downgrades Mississippi Power to Baa1; Outlook Stable," (August 6, 2013), Global Credit Research.

[33] Id.

[34] Id.

[35] Id.

Q. DID MOODY'S ISSUE ANY DOWNGRADES OF THE COMPANY'S CREDIT DURING 2015?

A. Yes. Moody's twice downgraded the Company's credit rating in 2015, first in August to Baa2,[36] and then again in November to Baa3.[37] In its November downgrade, Moody's once again noted the problems associated with the development and construction of the Kemper facility. The rating agency noted that in October of 2015, the Company increased its expected plant cost estimate by $110 million, reflecting a delay in the expected operational date of the facility from April 1, 2016, to June 30, 2016.[38] This delay caused the Company to reclassify $235 million of tax credits as a liability with the Internal Revenue Service ("IRS").[39]

> The downgrade also reflects Mississippi Power's weak liquidity and standalone financial condition, metrics that we expect to be below investment grade levels for at least one to two years, the continued cost increases and delays at the plant, the potential forfeiture of $234 million of Phase II tax credits because of these delays, and its increasing reliance on the Southern parent company for financial and liquidity support. Although Southern continues to back both Mississippi Power and the project, including making another $75 million equity contribution in September, we believe there are limits to the parent company's continued support for both the company and the Kemper project.
>
> Last month, Mississippi Power revised its plant cost estimate upward by $110 million, mostly reflecting the inclusion of projected costs from April 1, 2016 through June 30, 2016 due to its expectation that the plant will be placed into service during the first half of 2016, including a three month contingency. These cost increases, along with smaller cost increases in July and August,

[36] "Moody's Downgrades Mississippi Power to Baa2, negative; affirms Southern, stable," (August 14, 2015) Global Credit Research.

[37] "Moody's downgrades Mississippi Power to Baa3, negative outlook; affirms Southern, negative outlook," (November 5, 2015) Global Credit Research.

[38] Id.

[39] Id.

> resulted in pre-tax charge to income of approximately $150 million ($93 million after-tax) in the third quarter.
>
> The potential delay of the in-service date beyond 19 April 2016 has led Mississippi Power to reclassify $235 million of Phase II investment tax credits allocated to the project by the IRS as a current liability. Once a final determination is made on the in-service date, which Moody's expects will be later than this date, repayment of the tax credit would be made to the IRS with any funding requirements expected to be provided by Southern.[40]

Q. PLEASE DISCUSS MOODY'S MOST RECENT DOWNGRADE OF THE COMPANY.

A. On March 1, 2017, the Company received its most recent downgrade from Moody's, which lowered the Company's credit rating from Baa3 to Ba1, or non-investment grade. In its report, Moody's noted that increases in Kemper's projected operating costs and lower projected long-term natural gas prices combined to "severely hurt the [Kemper Project's] economic prospects."[41] The rating agency noted that the deteriorating economic prospect of operating the IGCC plant was causing "regulatory, political, and public scrutiny," of the project at a time when the utility was thought to be on the verge of filing for prudence and rate recovery proceedings.[42]

> A combination of lower projected long-term gas prices and a substantial increase in projected plant operating costs has severely hurt the plant's economic prospects. Compared to original projections when the plant was approved in 2010, projected operations and maintenance expenses have increased by an average $105 million annually over the first five years of operation (or approximately 350%) and maintenance capital has increased by an average of $44 million annually (or approximately 240%).

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[40] Id.

[41] "Moody's downgrades Mississippi Power, assigns Ba1 CFR, outlook negative," (March 1, 2017) Global Credit Research.

[42] Id.

Mississippi Power has also reduced its projected expectation of plant availability (the number of operational hours on syngas) during the first year to 35% from 59% originally. The plant is expected to ramp up to availability of 85% by year 5, but at a slower rate than originally anticipated. In addition, the estimate for the Plant's heat rate on syngas has also increased to 12,160 BTU/kWh from 11,708 BTU/kWh originally. The utility is likely to experience ongoing challenges operating the plant at consistent and reliable levels and is in the process of identifying projects designed to improve that performance, although the related costs have not been fully evaluated or identified, another key variable.

These developments raise questions as to the merits of operating the IGCC portion of the plant at all, which will lead to a higher degree of regulatory, political, and public scrutiny of the plant at a time when the utility intends to pursue critical rate recovery proceedings and a determination of prudency, which has not yet occurred. Mississippi Power expects several potential challenges related to these regulatory cost recovery proceedings, including those on prudence issues, financing costs, plant operating costs, as well as the 15% portion of the project originally sold to a cooperative utility partner that withdrew from the project two years ago.

(…)

Mississippi Power is required to file a rate case on the Kemper plant by 3 June 2017 and expects a negotiated settlement agreement. The construction delays, higher operating costs, and lower natural gas prices will put the Mississippi Public Service Commission in a difficult position of being asked to approve rate recovery and a return on a plant that is much less competitive and more expensive to run than originally envisioned. This is particularly sensitive given Mississippi Power's relatively high rates and demographically below average service territory compared to most other investor owned utilities in the southeast.

Whether the Kemper plant operates as originally expected or not, it has led to an inordinate amount of asset concentration risk for Mississippi Power. The $7 billion cost of the plant compares to the utility's common equity base of $2.9 billion at 31 December 2016. While Southern Company shareholders have borne the bulk of the higher costs with over $2.8 billion of pre-tax charges taken on the plant to date, Mississippi Power ratepayers could bear the brunt of higher plant operating costs in the future, depending on the outcome of the upcoming rate case proceedings. If the plant does not operate as an IGCC, the utility will also lose the generation diversity benefits

that were a key rationale for the construction of the plant originally.[43]

Q. DOES THE COMPANY IN ITS FILING NOTE THE IMPORTANCE OF IMPROVING ITS CREDIT RATING?

A. Yes. In its filing, the Company requests action on the part of the Commission to "help MPC begin rebuilding its financial strength."[44] The Company argues that approving the proposed Stipulation would in part provide reassurance to equity analysts and credit rating agencies. Specifically, approval of the proposed Stipulation would be seen as "constructive" by the equity analysts and credit rating agencies, in resolving Kemper-related issues and providing certainty.[45]

Q. DO YOU AGREE THAT RESOLUTION OF KEMPER-RELATED ISSUES WOULD PROVIDE CERTAINTY TO CREDIT RATING AGENCIES AND THUS IMPROVE THE COMPANY'S DEBT RATINGS?

A. Yes. However, the implication from the Company's filing is that this can only be obtained by the Commission approving **its** proposed Stipulation – not the case-resolution terms offered by any other party. This is not accurate since, as indicated earlier, the rating agencies are looking for a fair and final resolution of these issues, not one that is overly biased in the direction of any party. Any solid resolution of these issues that is not unduly punitive towards the Company would be seen as positive by the credit rating agencies. Indeed, independent reviewers of the Company's finances expressly discussed this view in late June 2017, after the Commission's initial indications that it intended to initiate the

[43] Id.

[44] Direct Testimony of Moses H. Feagin, 43:7-8.

[45] *Id.*, 43:16-19.

current proceeding eliminating recovery of Gasifier costs associated with the facility, but resolving all matters associated with the CC portion of the facility. Even though this represented a serious financial impact to the Company, it was largely viewed as a positive development by equity analysts, for the simple reason that it would resolve a matter of considerable regulatory uncertainty.

Q. PLEASE SUMMARIZE THE POSITIONS OF EQUITY ANALYSTS SUBSEQUENT TO THE COMMISSION'S DECISION TO CERTIFY KEMPER AS A CC-ONLY FACILITY?

A. A full summary of equity analyst statements is provided in Exhibit DED-1. As this exhibit shows, the Commission's decision was seen by many as having a neutral impact on the Company, or being a positive development. **##BEGIN CONFIDENTIAL##** [redacted] **##END CONFIDENTIAL##**

Q. PLEASE SUMMARIZE THE STATEMENTS OF THE CREDIT RATING AGENCIES REGARDING THE COMMISSION'S DECISION TO ADDRESS KEMPER AS A CC-ONLY FACILITY.

A. In a June 22, 2017, bulletin, Moody's issued a statement indicating that they were reviewing the Company for a potential downgrade after the Commission's decision, even though it did not include any overly negative language of the development in its bulletin. The agency noted that its decision would rely on developments such as whether or not a settlement could be reached by the utility and Staff and the provisions therein.[46] The next day, S&P issued a bulletin of its own, affirming that it would not be changing the Company's credit rating position due to the Commission's decision. **##BEGIN CONFIDENTIAL##** [redacted] **##END CONFIDENTIAL##**

Q. HAVE ANY OF THE CREDIT RATING AGENCIES ISSUED NEW BULLETINS RECENTLY REFLECTING THEIR IN-DEPTH REVIEW OF THE COMPANY'S CREDIT POSITION?

A. Yes. Moody's on September 21, 2017, actually upgraded its credit rating for the Company from negative outlook to stable. In its decision regarding the upgrade, Moody's noted that the Company's poor rating reflects the cumulative effect of several years of announced

[46] "Moody's places Mississippi Power ratings on review for downgrade," (June 22, 2017) Global Credit Research.

[47] "Southern Co. And Subsidiaries Ratings Are Not Affected By Potential Impairment," (June 23, 2017) S&P Global Ratings.

delays and cost overruns at Kemper.[48] However, the agency noted that the Commission's decision suspended these issues, and allows the Company to rapidly improve its cash flow coverage metrics over the next few years due to deferred tax benefits associated with the Company's massive write off.[49] Likewise, the rating agency found that the announced positions of Staff and the Company were relatively close, and that it expected full resolution by the Commission in the current proceeding.[50]

> Mississippi Power's current credit profile and Ba1 rating reflect the cumulative effect of several years of high spending and concurrent delays and cost overruns on the Kemper plant, construction of which was suspended at the direction of the Mississippi Public Service Commission (MPSC) in June 2017. As a result of the suspension order, Mississippi Power recorded an additional charge to income of $2.8 billion ($2.0 billion after tax), bringing total Kemper plant charges to $6.0 billion ($3.9 billion after tax).
>
> (...)
>
> Despite the lack of a settlement, the confirmation of Mississippi Power's ratings considers the relatively narrow gap between the two proposals and the MPUC's intention to resolve the remaining cost recovery issues over the next four months. The near-term resolution of Kemper related cost recovery issues, along with the significant recent capital contribution and continued support from the parent company, has stabilized Mississippi Power's credit profile.
>
> We expect Mississippi Power's cash flow coverage metrics, including its CFO pre-working capital to debt ratio, to improve rapidly over the next few years due for the most part to the deferred tax benefits that will result from the Kemper write-off. The utility will also return to a more normal level of capital expenditures post-Kemper. The magnitude of the increase in coverage metrics will be somewhat dependent on continued regulatory support for cost recovery under Mississippi Power's performance evaluation plan (PEP) going forward.[51]

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[48] "Moody's confirms Mississippi Power's ratings; outlook stable," (September 21, 2017) Global Credit Research.

[49] Id.

[50] Id.

[51] Id.

Q. DID THE CREDIT RATING AGENCY REFLECT NEGATIVELY ON STAFF'S PROPOSED TERMS?

A. No. As noted above, Moody's ultimately found Staff's proposed terms to not be significantly out of line with the Company's proposed Stipulation. The agency noted that it believed that the inability to reach a settlement reflected the utility's deteriorating regulatory environment, but that Staff's position probably better addresses the wishes of the Commission.[52] The agency also noted that the reality of the Company's high rates for the region and excessive reserve margins more than likely played a part in the inability to reach consensus.[53]

> We believe the inability to reach a settlement demonstrates how seriously the Kemper project has negatively affected the utility's regulatory environment. The utility proposed a stipulation that included a $126.3 million revenue requirement based on a 9.413% return on equity (ROE), which includes some performance incentives, which would have kept customer rates unchanged.
>
> The Staff proposed a $122.1 million revenue requirement based on a 9.225% ROE, which would have resulted in a rate reduction for residential customers, better addressing the wishes of the MPSC. The Staff also proposed a shorter amortization period for some regulatory assets, which would result in the utility not recovering a portion of the costs it attributes to the Kemper natural gas combined cycle units and taking an additional charge of potentially up to $250 million.
>
> We believe Mississippi Power's high customer rates (approximately 40% higher than Entergy Mississippi's retail residential rates), in a service territory with below average economic demographics, and excess reserve margins in the 50% range all played a role in the Staff's attempt to try to mitigate the impact of the Kemper natural gas plant on customer rates as much as possible. Attempts to bridge

[52] Id.

[53] Id.

the difference between the proposals of the utility and the Staff were not successful.[54]

Q. DO YOU BELIEVE THE CREDIT RATING AGENCIES, AND EQUITY ANALYSTS WILL REACT NEGATIVELY IF THE MPUS PROPOSED POSITION IS ACCEPTED?

A. No. As noted above, most Wall Street analysts are looking for closure on this issue. If closure can be reached in a fair and reasonable manner, as recommended by the MPUS, then it is highly likely that financial markets will respond favorably, not negatively, to this outcome. The options presented to the Commission by MPUS in the current proceeding are not punitive and should, therefore, not be perceived as worsening the regulatory environment that currently exists, and which has been created, in very large part by the Company, not the MPUS nor the Commission itself.

IV. MISSISSIPPI POWER COMPANY'S GROWING EXCESS GENERATION CAPACITY

Q. HAVE THE OPERATING PARAMETERS OF THE KEMPER PROJECT CHANGED SINCE THE COMMISSION'S GRANTING OF A CPCN?

A. Yes. In addition to changes in the expected heat rate of the facility, and its estimated availability factor, the change in operating design from an IGCC facility to a CC facility eliminated an arguably significant amount of previous parasitic load, in other words electricity required from the generators to power Gasifier operations and other supporting systems. As stated earlier, the Kemper Project, as an IGCC was designed to have a summer capacity of 582 MW. However, with the redesign as a CC unit operating using natural gas,

[54] Id.

the plant is now estimated to have a summer capacity of 680 MW, an increase of 98 MW, or nearly 17 percent.

Q. HAVE THERE BEEN ANY OTHER CHANGES THAT INCREASE THE AMOUNT OF ELECTRICAL CAPACITY ASSOCIATED WITH THE PLANT AVAILABLE TO SERVE THE COMPANY'S NEEDS?

A. Yes. In the Commission's initial CPCN proceeding, the Company noted that 15 – 20 percent of the Kemper Project would likely be owned by the then South Mississippi Electric Power Association ("SMEPA"), now Cooperative Energy. Subsequently, MPC and SMEPA did enter into an agreement for SMEPA to own a portion of the Kemper Project. However, on May 20, 2015, SMEPA announced that it was ending its pursuit of a 15 percent ownership interest in the Kemper Project.

Q. HAVE YOU EXAMINED THE TOTAL IMPACT OF THE INCREASE IN OPERATING CAPACITY ASSOCIATED WITH THE KEMPER FACILITY THAT IS AVAILABLE TO SERVE THE COMPANY'S NEEDS?

A. Yes. Exhibit DED-2 presents a graphic illustration of the relative increase in available operating capacity for the Company. In total, the facility's redesign plus SMEPA's withdrawal has made available to the Company over 185 MW of additional capacity. This represents more than a 27 percent increase in available capacity.

Q. IS THE GROWING AVAILABLE CAPACITY ASSOCIATED WITH THE KEMPER FACILITY CONCERNING?

A. By itself, no. However, as shown in Exhibit DED-3, the Company's operating fleet includes many older units that are 40 years or older. These facilities have relatively poor thermal efficiencies compared to the Company's new Kemper and Daniel power plants.

With the large increase in available operating capacity due to the redesign of Kemper, the Company should be encouraged to reduce the operations of these older, inefficient units.

Q. HAS THE COMPANY PROVIDED ESTIMATES OF ITS CURRENTLY PROJECTED CAPACITY RESERVE MARGIN?

A. Yes, and this is presented in Exhibit DED-4. **##BEGIN CONFIDENTIAL##** [redacted] **##END CONFIDENTIAL##**

V. MISSISSIPPI POWER COMPANY'S RETAIL RATE AND COST TRENDS

Q. DOES THE COMPANY ARGUE THAT ITS PROPOSED STIPULATION IS NEEDED TO ADEQUATELY FUND ITS OPERATIONS?

A. Yes. The Company argues that the Stipulation's revenue requirement, "provides the minimum amount of revenue necessary for the Company to recover the costs of the Kemper CC."[55] The Company furthermore argues that maintaining its current revenue requirement level (i.e. preventing its rates from declining as regulatory assets become fully amortized) is imperative in order for it to have an opportunity to properly fund operations and continue providing safe, reliable service to customers.

[55] Direct Testimony of Moses H. Feagin, 37:4-5.

Q. DO YOU AGREE WITH THE COMPANY'S ASSERTIONS?

A. No. Appendix A presents a detailed comparison of the Company's rates, plant investments, and operating costs relative to other southeastern public utilities. This analysis shows that the Company currently has rates and operating costs that are among the highest in the region. The Company's position suggests that it needs rates to be maintained at their current levels in order to continue to provide service, failing to acknowledge what could be cost efficiency opportunities if it were to reduce its operating costs to levels comparable to regional utilities. A review of the historic trends in the Company's rates and its operating costs underscores that it is a high-cost utility, even before examining cost-recovery issues associated with Kemper. The addition of the Kemper CC's investment and operating costs will only contribute to what are already a set of above-average rates and costs relative to peer regional utilities.

Q. IS IT ENVISIONED THAT THE COMPANY'S RELATIVE COSTS WILL IMPROVE IN THE NEAR-TERM RELATIVE TO OTHER REGIONAL UTILITIES?

A. No. Importantly, the Commission should recognize that the comparisons presented above are backwards-looking, and examine the Company's historic operating costs and rates relative to other regional utilities. Going forward, there is little indication that the Company's relative cost performance will improve. To the contrary, it will most likely deteriorate.

Q. WHY DO YOU BELIEVE IT IS LIKELY THAT THE COMPANY'S RELATIVE COST PERFORMANCE WILL LIKELY DETERIORATE RELATIVE TO OTHER REGIONAL UTILITIES?

A. First and foremost, the incorporation of the Kemper CC into rates, regardless of the Commission's ultimate decision in the current proceeding, will significantly increase the Company's relative plant in service and charges associated with the recovery of the Company's investment. Moreover, the Company is currently in the process of seeking a CPCN for the deployment of Advanced Metering Infrastructure ("AMI"). The Company initially requested such a CPCN in September of 2009,[56] and filed a supplemental petition in November of 2016.[57] The Commission is still investigating the Company's proposal, but if this request is eventually approved, the Company would see non-trivial increases to its distribution plant in service. Unless the capacity costs of this investment are substantially offset by savings from other operating efficiencies, they will create additional upward pressure on rates. Finally, I have been informed by the MPUS that the Company has indicated that it will seek substantial rate increases under the Company's annual PEP.

Q. DOES THE COMMISSION HAVE OPTIONS FOR REVIEWING THE COMPANY'S RELATIVELY HIGH OPERATION COSTS?

A. Yes. The Commission has multiple ways to review the Company's high operating expenses. First, the Commission could open a new proceeding for the purposes of conducting a managerial audit of the Company's high operating expenses. In such a

[56] Petition of Mississippi Power Company for a Certificate of Public Convenience and Necessity Authorizing the Acquisition, Construction and Operation of Advanced Metering Infrastructure Equipment, Technology and Related Facilities; Mississippi Docket No. 2009-UA-398; Petition for a Facilities Certificate.

[57] *Id.*, Supplemental Petition for Facility Certificate.

proceeding, the Commission and the MPUS would hire appropriate experts to review the cost efficiency of the Company's various activities and to provide recommendations for ways to reduce operating costs while maintaining customer services. Second, the Commission could request that a detailed review of the Company's expenses be conducted within the context of a general rate case.

VI. ECONOMIC IMPACTS ASSOCIATED WITH PROPOSED STIPULATION

Q. CAN UTILITY RATE INCREASES, LIKE THE ONE PROPOSED IN THIS DOCKET, HAVE NEGATIVE ECONOMIC IMPACTS ON THE SOUTHEAST MISSISSIPPI ECONOMY?

A. Yes. Negative economic impacts arise from the fact that utility revenues must be paid for by ratepayers through increases in utility rates. The rate increases required to fund the Kemper natural gas plant will ultimately reduce household disposable income and increase electricity delivery costs to southeast Mississippi businesses and industries. Reduction in household income and increases in business costs will reduce the amount of money spent on goods and services, which in turn, can lead to negative ripple or multiplier effects for the southeast Mississippi economy.

Q. HAVE YOU CONDUCTED ANY ECONOMIC IMPACT ANALYSES ASSOCIATED WITH THE KEMPER PROJECT?

A. Yes. I have been asked by the MPUS to assess the potential economic impacts associated with two retail revenue requirement cases outlined in the Direct Testimony of Dr. Craig Roach. Exhibit DED-5 provides a summary of the economic impacts of the rate increases associated with these estimated revenue requirements using the IMPLAN model.

Q. PLEASE DESCRIBE THE IMPLAN MODEL.

A. The IMPLAN model was originally developed by the U.S. Forestry Service for use in developing its five-year resource management plans; hence the name "IMPLAN" or "impact analysis for planning." The IMPLAN modeling framework was later privatized, with MIG, Inc. (formerly "Minnesota IMPLAN Group, Inc.") serving as the corporation responsible for the production, maintenance, and improvement of the modeling framework and data. The model itself is based upon "input-output accounting [that] describes commodity flows from producers to intermediate and final consumers."[58] IMPLAN has data on 536 sectors and constructs Social Accounting Matrices ("SAMs") to describe "all commodity flows, not only purchases and production of sales and commodities, but also transfer payments to and from institutions."[59] The commodity flows between industries are what drive the economic multipliers. IMPLAN utilizes data from a number of sources including the Bureau of the Census, Bureau of Labor Statistics, and the Bureau of Economic Analysis ("BEA").[60]

Q. IS IMPLAN A WELL-RESPECTED MODEL FOR EXAMINING REGIONAL ECONOMIC IMPACTS, PARTICULARLY THOSE ASSOCIATED WITH ENERGY INDUSTRIES?

A. Yes. The IMPLAN model is not only well-respected, but also has been used extensively in modeling economic impacts of energy-related projects. I personally have worked with IMPLAN in estimating economic impacts of similar energy infrastructure investments for over 20 years. IMPLAN has been utilized by the U.S. Department of the Interior's Bureau

[58] Lindall, Scott A., and Douglas C. Olson. "The IMPLAN input-output system." *Stillwater MN* (1996).

[59] IMPLAN Professional User Guide (2004), Minnesota IMPLAN Group, Inc., 3 ed, p. 74.

[60] Hartgen, David T. Traffic Congestion in North Carolina. Status, Prospects and Solutions. March 2007.

of Ocean Energy Management ("BOEM") in estimating economic impacts of holding lease sales in the Gulf of Mexico[61] as well as the MAG-PLAN Alaska model.[62] IMPLAN has also been used to model a number of non-energy based natural resource impacts by federal agencies such as the U.S. Department of Transportation ("USDOT") and the U.S. Department of Agriculture ("USDA").[63]

Q. PLEASE DESCRIBE THE STUDY AREA FOR WHICH YOU HAVE ESTIMATED THE ECONOMIC IMPACTS OF THE KEMPER-RELATED RATE CHANGES.

A. The study area used in my analysis includes the 23 counties in southeastern Mississippi serviced by the Company and therefore subject to any rate increase granted to the Company by the Commission.

Q. PLEASE DESCRIBE THE SCENARIOS FOR WHICH YOU HAVE ESTIMATED THE ECONOMIC IMPACTS OF PROPOSED RATE CHANGES.

A. Exhibit DED-5 examines two retail revenue requirement cases outlined in the Direct Testimony of Dr. Craig Roach that were provided to me for analysis. Both scenarios assume $25.5 million of annual O&M costs, escalating at two percent per year; assume retail recovery of the portion of the Kemper Facility previously assigned to SMEPA; and assume $158.7 million of Department of Energy ("DOE") grant money is credited against the capital plant. The first scenario also assumes $1.347 billion plant in service. This represents Case 5 outlined in the Direct Testimony of Dr. Craig Roach and represents a

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[61] U.S. Department of the Interior: Mineral Management Service Gulf of Mexico OCS Region. Gulf of Mexico OCS Oil and Gas Lease Sales: 2003-2007. Final Environmental Impact Statement. Volume I: Chapters 1-10.

[62] U.S. Department of the Interior: Bureau of Ocean Energy Management. *MAG-PLAN Alaska Update*. May 2012.

[63] U.S. Department of Transportation. Analyzing the Economic Impact of Transportation Projects Using RIMS II, IMPLAN, and REMI. 2000.

See http://www.nrcs.usda.gov/wps/portal/nrcs/detail/null/?cid=nrcs143_009732.

scenario most similar to the Company's proposed Stipulation. The second scenario, on the other hand, assumes $1.008 billion plant in service. This represents Case 3 outlined in the Direct Testimony of Dr. Craig Roach. This second scenario also assumes recovery of $88 million of the Company's regulatory assets, amortized over four years, as discussed in Dr. Roach's testimony. My testimony will focus on estimating negative economic consequences in the event that these rate impacts are realized.

Q. PLEASE DESCRIBE THE ECONOMIC IMPACTS OF THE FIRST SETTLEMENT SCENARIO – THE COMPANY'S PROPOSED STIPULATION.

A. Under the first scenario, electricity rates will increase by a NPV of $1.04 billion over the forty-year life of the plant. Page 1 of Exhibit DED-5 shows the expected economic impacts. Under this scenario, I estimate a total impact of over $5.9 billion in lost economic output in the Company's service territory, a loss of 25,604 job-years (or 640 jobs per year), and a loss of over $2.1 billion in labor income over the next 40 years. The NPV of lost economic output is nearly $2.2 billion, and the NPV of lost labor income is nearly $796 million.

Q. PLEASE DESCRIBE THE EXPECTED IMPACTS OF THE SECOND SCENARIO – CASE 3 OUTLINED BY DR. ROACH.

A. Under the second scenario, electricity rates will increase by a NPV of $703 million over the forty-year life of the plant, while the MPC service territory will experience $5.2 billion in lost economic output, a loss of 22,466 job-years—or about 562 jobs per year over a forty-year period), and a loss of nearly $1.9 billion in labor income over the next 40 years. The NPV of lost economic output is $1.9 billion, and the NPV of lost labor income is $699 million. These negative economic impacts are presented on page 2 of Exhibit DED-5.

Q. IS DR. ROACH'S CASE 3 SCENARIO LESS DETRIMENTAL TO THE MISSISSIPPI ECONOMY AND MISSISSIPPI RATEPAYERS WHEN COMPARED TO THE CASE 5 SCENARIO?

A. Yes. Of the two scenarios I have analyzed, the Company's proposed Stipulation is more harmful to the Mississippi economy and Mississippi ratepayers. As discussed above, under this scenario the Company's service territory will see $5.9 billion in lost economic output, a loss of 25,604 job-years (or 640 jobs per year), and a loss in labor income of $2.4 billion over the 40 year life of the facility. Under the Case 3 scenario provided to me by Dr. Roach, the Company's service territory will still see a $5.2 billion in lost economic output, a loss of 22,466 job-years (or about 562 jobs per year), and a loss to labor income of $1.9 billion over a 40 year period. In other words, the Company's proposed Stipulation would result in an additional $722 million loss in economic output, 3,138 job-years loss in employment, and $279 million loss in labor income over a 40 year period. In NPV terms, the additional hardship to the Mississippi economy from the Company's proposed Stipulation is nearly $250 million and reduces labor income by almost $97 million. On average, the Company's proposed Stipulation reduces the average per-year employment in the Company's service territory by 78 jobs per year.

Q. DO THE REVENUE REQUIREMENTS ASSOCIATED WITH DR. ROACH'S CASE 3 AND CASE 5 HIGHLIGHT THE IMPACT OF IMPORTANT DIFFERENCES BETWEEN THE TWO CASES?

A. Yes. One of the major differences between the two scenarios is the treatment of the Company's regulatory assets. The Company's requested Stipulation, approximated by Case 5, assumes the Company is allowed to recover all existing regulatory assets over a 20

year amortization period. Case 3 in contrast, allows recovery of only half of the existing regulatory assets, but allows recovery of these assets over a 4 year period. Due to the significantly shorter amortization period, the revenue requirement associated with this Case 3 scenario is actually **greater** than the Company's requested Stipulation for the first few years of recovery, specifically the first two years' retail revenue requirement for Case 3 scenario are $1.37 million and $2.0 million greater than the Case 5 scenario. However, over the long term the annual retail revenue requirement associated with the Case 3 scenario is significantly lower than that associated with the Case 5 scenario approximating the Company's requested Stipulation. For example, in year 5, the first year after the full recovery of the allowed portion of regulatory assets, the retail revenue requirement in the Case 3 scenario is $22.39 million less than that associated with the Case 5 scenario.

Q. HOW DOES THE TIMING OF RATE IMPACTS THROUGH INCREASED REVENUE REQUIREMENTS AFFECT ECONOMIC IMPACT ANALYSES?

A. Economic impact analyses, like the one summarized in Exhibit DED-5, are life-cycle analyses that examine the ongoing impacts to ratepayers throughout the life of the asset. In the particular case of the Kemper Project, I calculated regional economic impacts for a 40 year period. So, the accelerated recovery of 50 percent of existing regulatory assets provided for in the Case 3 scenario gives the Company an extra $2.8 million in allowed recovery over the first four years of operations, while giving ratepayers 36 years of reduced rate impacts after the first four years of operations. When valued on an NPV basis, the Case 3 scenario includes a full $166.9 million less in total annual revenue requirements compared to the Case 5 scenario approximating the Company's proposed stipulation.

Q. HAVE YOU ESTIMATED ANY ADDITIONAL ECONOMIC IMPACTS?

A. Yes. The MPUS has communicated to me that the Company has indicated that it plans to file relatively substantial increases to the Company's PEP. It is important that the Commission be cognizant of these potential future rate increases, as they would, if granted, put additional negative pressure on the regional economy regardless of the Commission's decision in the current proceeding related to the resolution of the Kemper Project. As the Company has yet to make a formal request for an increase to its PEP, I have been asked to calculate the economic impact associated with a ten percent permanent increase to the existing PEP.[64] To be consistent with my earlier analyses of the Kemper Project, I have restricted my examination to a 40 year life-span.

Q. PLEASE SUMMARIZE THE EXPECTED ECONOMIC IMPACTS ASSOCIATED WITH AN ASSUMED 10 PERCENT INCREASE TO THE COMPANY'S PEP?

A. As shown in Exhibit DED-6, a 10 percent increase to the Company's PEP would decrease economic output in the Company's service territory by an estimated $5.58 billion over 40 years, or $1.9 billion on an NPV basis. Likewise, the proposed increase would decrease labor income by more than $2.1 billion over a 40 year period, or $727 million on an NPV basis. The assumed increase would also reduce employment by 24,575 job-years over a 40 year period, or approximately 614 jobs per year.

[64] Note: The Company's PEP restricts any annual increase to the PEP rate to 4 percent, so the assumed 10 percent increase in reality would have to be phased-in over a series of two or more annual filings. For simplicity sake, I assume the entirety of the requested 10 percent increase in the Company's PEP is fully recognized in the first year.

VII. CONCLUSIONS

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.

A. I recommend that the Commission remain cognizant of (1) the factual viewpoints of the credit rating agencies in regard to a Kemper settlement; (2) the growing excess generation capacity on the Company's system; (3) the currently high rates and operating costs of the utility; and (4) the significant impacts to the Mississippi economy when making its decision as to the appropriate revenue requirement associated with the reconfigured Kemper facility. I recommend that the Commission consider the potential solutions from Staff's prior offers to MPC as discussed by Mr. Larkin and Mr. Dady and solutions offered by Dr. Craig Roach, another expert witness appearing on behalf of the MPUS, in reaching its ultimate decision.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY FILED OCTOBER 23, 2017?

A. Yes.

APPENDIX A – RATE AND OPERATING COST TRENDS AND COMPARISONS

Q. CAN YOU PLEASE EXPLAIN THE PURPOSE OF APPENDIX A?

A. Yes. I have been asked to examine the Company's historic retail rates and cost efficiencies. To this end, I have conducted a detailed comparison of the Company's rates, plant investments, and operating costs relative to other southeastern public utilities. My analysis shows that the Company currently has rates and operating costs that are among the highest in the region. In the current proceeding, the Company suggests that it needs rates to be maintained at their current levels in order to continue to provide just and reasonable service, failing to acknowledge potential opportunities that might enable it to reduce its operating costs to levels comparable to regional utilities. A review of the historic trends in the Company's rates and its operating costs underscores that it is a high-cost utility, even before examining cost-recovery issues associated with Kemper. The addition of the Kemper facility's investment and operating costs will exacerbate MPC's above-average rates and costs relative to peer regional utilities.

Q. PLEASE EXPLAIN THE METHOD BY WHICH YOU COMPARED THE COMPANY'S HISTORIC RATES AND OPERATING COSTS RELATIVE TO PEER SOUTHEASTERN UTILITIES.

A. My analysis started with the collection of a full decade's worth of Federal Energy Regulatory Commission ("FERC") Form 1 filings. I examined specific investment and expense trends by FERC Uniform System of Accounts ("USOA") which categorized the data by electric utility function. Thus my analysis examined the Company's long-run trends in production plant investments, transmission plant investments, distribution plant investments, as well as general plant investments. I also examined the long-run trends in

the Company's operations and maintenance ("O&M") and administrative and general ("A&G") expenses. Lastly, I "standardized" this data on a sales basis (per megawatt hour or "MWh") and by customer.

Q. HOW DID YOU DETERMINE A SET OF PEER UTILITIES TO COMPARE WITH THE COMPANY?

A. As noted before, I developed a set of peer electric IOUs on mainly a geographic basis. Specifically, I selected all IOUs that operate in what could be referred to as the southeastern United States. Specifically, I selected IOUs that operate in Mississippi and the states of Alabama, Arkansas, Louisiana, Georgia, North Carolina, and South Carolina. In addition to utilities from these states, I also included in my peer group the Company's affiliate Gulf Power Company which operates in the pan-handle of Florida. This addition was made to include all of the Company's retail electric affiliates, and because of the similar geographic location of the utility compared MPC.[65] This resulted in a total peer group of 11 retail electric utilities.

A. Rate trends and comparisons

Q. HAVE YOU PREPARED A COMPARATIVE RATE ANALYSIS?

A. Yes. I have prepared Exhibit DED-7, which summarizes the historic trends in the Company's and other peer utilities' residential rates, as measured by revenues per MWh, from the utilities' annual FERC Form 1 reports. I have also provided Exhibit DED-8, which includes residential, commercial, and industrial rate information as provided by the U.S. Energy Information Administration's EIA Form 861.

[65] Note: Peninsula-Florida utilities were excluded because of the fact that these utilities' location on a peninsula creates unique costs and challenges not faced by utilities such as MPC which are interconnected with many other utilities.

Q. WHAT DO THESE RETAIL RATE COMPARISONS SHOW?

A. Page 2 of Exhibit DED-7 shows that MPC's residential rates have been above the average reported for other peer utilities almost every year over the past decade. The Company's ten-year average of $65.33/MWh is noticeably higher than the peer group's average of ($56.34/MWh). This amount has only increased within recent years, making MPC less competitive in the region. The Company has experienced a 7.5 percent growth rate in its non-fuel residential retail rates over the past decade, and that trend has gotten worse, escalating to more than 9.3 percent over the past five years. The Company's non-fuel retail rate growth also has trended poorly compared to other regional peer utilities who show retail rate increases of 5.9 percent (ten years) and 4.1 percent (five years), respectively. As seen on page 1 of Exhibit DED-7, MPC has ranked within the bottom half of peer utilities every year since 2007, with the minor exception of 2011 when the utility had residential rates that were slightly above average for the region. Since 2013, the Company has consistently ranked in the bottom three utilities in the region. The only companies that have performed worse than MPC in any year since 2013 are its affiliates Alabama Power Company and Gulf Power Company.

Q. PLEASE EXPLAIN THE RATE ANALYSIS YOU HAVE PROVIDED IN EXHIBIT DED-8.

A. Exhibit DED-8 compares the Company's residential, commercial, and industrial rates (revenue per MWh) to a comparable set of peer utilities, using data from the EIA. Pages 2 and 4 of Exhibit DED-8 show that MPC's rates for residential and commercial customers have been higher than the average of its peers for most of the past decade. MPC's growth rates for both a ten-year and five-year time period have been nearly double that of the other

peer utilities. MPC's industrial rates have been in the lower two quartiles historically, with revenues per MWh below the peer group average. However, these rates have begun to increase over the past few years starting with the year 2013, shifting MPC's industrial retail rate ranking up to the top quartile, and above average, as seen on page 5 of Exhibit DED-8.

B. Plant investment trends and comparisons

Q. HAVE YOU COMPARED THE COMPANY'S HISTORIC PRODUCTION PLANT INVESTMENT TRENDS?

A. Yes, and that analysis is provided in Exhibit DED-9 which examines the Company's net production plant investments on a per sales (page 1) and a per customer (page 3) basis, and also provides two charts (page 2 and page 4) examining the Company's per sales and per customer production plant investment trends over time and comparing those trends to the ones reported by other comparable electric utilities.

Q. WHAT DOES THIS ANALYSIS SHOW?

A. Over the past decade, MPC's net production plant investment averaged around $106.41 per MWh which is considerably high relative to other peer utilities' average of $101.47 per MWh over the same time period. The chart provided on page 2 of Exhibit DED-9 shows that MPC's net production plant investments have greatly increased since 2013. In 2014 through 2016, MPC ranked the second highest in net production plant investments among peer utilities.

Q. HAVE YOU EXAMINED THE GROWTH RATE OF THESE HISTORIC NET PRODUCTION PLANT INVESTMENTS?

A. Yes. The Company's standardized net production plant investments have grown, on an annual average basis, at a rate of about 37.9 percent over the past decade. This rate of net investment has decelerated over the past five years to a level of about 35.8 percent on a per sales basis. The Company's net production plant investment rates are large compared with other peer utilities which report net production investment per sales at rates close to 17.4 percent over the past decade and 5.6 percent over the last five years.

Q. DOES YOUR ANALYSIS OF THE COMPANY'S NET PRODUCTION PLANT INVESTMENTS ON A PER CUSTOMER BASIS SHOW COMPARABLE RESULTS?

A. Yes. The analysis that I conducted, examining the net production plant investments, and the growth rates of those investments, on a per customer basis, follows all of the same trends discussed earlier in the per sales analysis. Over the past five years, MPC's net production plant investments have grown at a rate of about 36.2 percent, which is only slightly lower than its ten year growth rate of 39.2 percent. These investment rates are more than twice the peer group average of 5.2 percent over the past five years and 15.3 percent over the past decade.

Q. HAVE YOU COMPARED THE COMPANY'S HISTORIC TRANSMISSION PLANT INVESTMENT TRENDS?

A. Yes, and that analysis is provided in Exhibit DED-10. My analysis of the Company's historic net transmission plant investments has been provided in a framework similar to my net production investment analysis and includes a series of tables and charts comparing the

Company's historic levels and growth rates for its net transmission plant to those for other peer utilities on both a per sales and per customer basis.

Q. WHAT DOES THIS ANALYSIS SHOW?

A. Over the past decade, MPC's net transmission plant investments per MWh have averaged about $31.52, a level that is comparable with, and slightly less than other utilities, while the Company's average investment on a per customer basis is considerably higher than other utilities. The lower panel, on page 1 and 3 of Exhibit DED-10 shows the ranking of MPC's net transmission plant per MWh and per customer, respectively.

Q. HAVE YOU EXAMINED THE GROWTH RATE OF THESE HISTORIC NET TRANSMISSION PLANT INVESTMENTS?

A. Yes. Over the past decade, MPC's net transmission plant per MWh has grown at close to a 9.9 percent annual average rate, somewhat higher than the 7.7 percent growth rate seen over the most recent five-year period. Page 1 of Exhibit DED-10 suggests that MPC's net transmission plant, while higher on a per sales basis, has been growing at rates comparable to its peers. In fact, the Company's ten-year and five-year growth rates are slightly less than the peer utilities' average growth rates (12.3 percent and 10.1 percent, respectively).

Q. DOES YOUR ANALYSIS OF THE COMPANY'S NET TRANSMISSION PLANT INVESTMENTS ON A PER CUSTOMER BASIS SHOW COMPARABLE RESULTS?

A. Somewhat. MPC's net transmission investment per customer growth trends are comparable to those presented on a per MWh basis. Both the Company's ten-year and five-year growth rates on a per customer basis (10.5 percent and 8.0 percent, respectively) are slightly less than the peer utility's average growth rates (10.7 percent and 9.5 percent,

respectively). However, MPC's average net transmission investment per customer over the past decade is over 41 percent higher than the peer utilities' average over the same time period ($1,639 versus $1,160).

Q. PLEASE DISCUSS YOUR ANALYSIS OF THE COMPANY'S NET DISTRIBUTION PLANT INVESTMENT TRENDS.

A. My analysis of the Company's net distribution investment trends, and how those trends compare to peer utilities, is provided in Exhibit DED-11. The analysis is set up on a fashion comparable to the analyses I discussed earlier for net production and transmission plant.

Q. HOW DOES THE COMPANY'S HISTORIC NET DISTRIBUTION PLANT INVESTMENTS, STANDARDIZED ON A PER SALES BASIS, COMPARE TO THE TRENDS REPORTED BY PEER UTILITIES?

A. The Company's net distribution plant has been comparable in percentage terms, with those reported by other regional peer utilities. Over the past decade, regional peer utility net distribution investment per MWh has been increasing at rates higher than those observed for the Company (5.7 percent for peer utilities versus 2.0 percent for MPC). MPC's investment per MWh has been one of the lowest nearly every year in the past decade compared to the utilities in the peer group, and the Company's net distribution plant investment over the past five years, in percentage terms, is also below that of the peer utilities' average for the same time period.

Q. DOES YOUR ANALYSIS OF THE COMPANY'S NET DISTRIBUTION PLANT INVESTMENTS, ON A PER CUSTOMER BASIS, SHOW COMPARABLE RESULTS?

A. Yes, generally. These comparisons are also provided in Exhibit DED-11 (pages 3-4). Like the net transmission plant comparison, this analysis also shows that the net distribution investment trends for peer utilities are growing at rates, on a per customer basis, that have been faster, but are beginning to converge to the ones reported by the Company, as shown on the chart on page 4 of Exhibit DED-11.

Q. HAVE YOU EXAMINED THE COMPANY'S HISTORICAL GENERAL PLANT INVESTMENTS?

A. Yes, and my analysis of the Company's historic trends in net general plant investments, as well as how those trends compare to peer utilities, is provided in Exhibit DED-12. Historically, the Company reported relatively steady levels of net general plant investments up through 2012. The figure on page 2 of Exhibit DED-12 shows that these net general plant investments, on a per sales basis, greatly spiked in 2013 to over three times the amount reported in 2012. From 2009 to 2012, the Company's net general plant investments averaged around $7.63 per MWh. MPC's most recent four-year average is about $33.28 per MWh, an increase of over 336 percent.

Q. HOW DOES THE COMPANY'S STANDARDIZED NET GENERAL PLANT INVESTMENTS COMPARE TO PEER UTILITIES?

A. Historically, the Company's net general plant investments have been higher than its peers, yet comparable, on both a per MWh and per customer basis as seen in the rank order tables on pages 1 and 3 (bottom tables where lower number means lower standardized investment

level) and the charts on pages 2 and 4 of Exhibit DED-12. In recent years, however, the difference between MPC and other utilities has gotten greater, and MPC is less competitive due to an exponential increase in its net general plant investments starting after 2012. Peer utility net general plant investments per MWh have grown at a rate of about 3.8 percent over the past decade, and 2.6 percent over the past five years. The Company reports net general plant investment per MWh growth of 44.5 percent over the past decade and around 67.2 percent over the past five years.

Q. DOES YOUR ANALYSIS OF THE COMPANY'S NET GENERAL PLANT INVESTMENTS, ON A PER CUSTOMER BASIS, SHOW COMPARABLE RESULTS?

A. Yes, and these comparisons are provided in Exhibit DED-12 (pages 3-4).

C. Expense trends and comparisons

Q. HAVE YOU COMPARED THE COMPANY'S HISTORIC PRODUCTION O&M EXPENSE TRENDS?

A. Yes, and that analysis is presented in Exhibit DED-13 which has four pages. The first two pages compare the Company's, as well as the peer utility group's, historic production O&M expense trends on a per sales (MWh) basis. The second two pages of the exhibit provide similar comparisons, but standardize the Company's production O&M on a per customer basis. For clarification, fuel costs are removed in this analysis such that it only examines the Company's and the peer group's estimated non-fuel O&M expenses.

Q. WHAT DOES THIS ANALYSIS SHOW?

A. Over the past decade, the Company's production O&M expenses have moved up and down on both a per sales and per customer basis. Overall, the production O&M expenses appear

to indicate that the Company's production expenses, while falling some in recent years, are still relatively high compared to other peer utilities. In 2016 alone, the Company's production O&M expenses per MWh were 4 percent higher than those of its peers.

Q. HAVE THE COMPANY'S PRODUCTION O&M EXPENSES BEEN GROWING RATHER QUICKLY?

A. Yes. These expenses have seen an upturn in recent years as shown on pages 2 and 4 of Exhibit DED-13. Over the past decade, the Company's production O&M decreased by about 1.7 percent on an annual average basis, with an acceleration of these costs over the past five years at an annual average rate of about 3.7 percent.

Q. DOES YOUR ANALYSIS OF THE COMPANY'S PRODUCTION O&M EXPENSES ON A PER CUSTOMER BASIS SHOW COMPARABLE RESULTS?

A. Yes. That analysis, provided on pages 3 and 4 of Exhibit DED-13, shows that the Company's production O&M expenses are relatively large, as compared to peer utilities, and has been increasing at an accelerated rate over the past five years.

Q. HAVE YOU EXAMINED THE COMPANY'S HISTORIC TRANSMISSION O&M EXPENSE TRENDS?

A. Yes, and that analysis has been provided in Exhibit DED-14. The Company's historic transmission O&M expenses have been relatively stable over the past decade and even the last five years on both a per sales and per customer basis. The Company experienced a noticeable, albeit small, decrease in transmission O&M expenses in 2015, but then saw an increase in 2016 that brought transmission expenses to their highest levels within the past decade.

Q. PLEASE DISCUSS YOUR ANALYSIS OF THE COMPANY'S DISTRIBUTION O&M EXPENSES.

A. My analysis of the Company's net distribution investment trends, and how those trends compare to peer utilities, is provided in Exhibit DED-15. The analysis is set up on a fashion comparable to the analyses I discussed earlier examining production and transmission O&M expenses. As shown on pages 2 and 4 of Exhibit DED-15, the Company has consistently had distribution O&M expenses that are above average in terms of per-MWh sales and certainly above average when considered on a per-customer basis.

Q. HAVE YOU EXAMINED THE COMPANY'S A&G EXPENSE TRENDS?

A. Yes. Exhibit DED-16 examines the Company's historic A&G cost trends and compares those to the trends reported by other peer utilities. The Company's reported A&G costs per MWh have been quite high and have been rapidly increasing since about 2012. This differs considerably from peer utilities which have reported relatively stable expenses that have not been growing very rapidly over the past decade. In 2016, the Company's reported A&G expenses per MWh were 57 percent higher than the average reported for other peer utilities. MPC's A&G expenses have been in the top quartile of other regional regulated utilities in the past decade, moving up to the highest ranking in 2014 and maintaining that position through 2016.

Q. HAVE YOU DONE ANY OTHER A&G COST COMPARISONS?

A. Yes. Exhibit DED-17 examines the Company and peer utilities' historic expenses booked to FERC Account 923 -- Outside Services over the years 2007 through 2016. This analysis attempts to compare the cost efficiency of the Company's service company charges relative to other regional utilities. Page 1 of Exhibit DED-17 shows that the Company has

consistently had one of the highest outside services expenses in the region when valued on a per MWh basis. Worse, as shown on page 2 of Exhibit DED-17, the outside service costs per MWh have been increasing at a faster rate than the peer average since 2011.

Q. DOES YOUR ANALYSIS SHOW SIMILAR RESULTS WHEN VALUED ON THE BASIS OF CUSTOMERS?

A. Yes. As shown in pages 3 and 4 of Exhibit DED-17, the Company has consistently over the past decade ranked in the bottom two utilities, along with its affiliate Alabama Power Company, for having the highest outside service expenses per customer. Indeed, in 2016 the Company's outside services per customer were over 4 times the regional average. As shown in my analysis examining outside services on a per MWh basis, these expenses have been increasing at a faster rate than the peer average since 2011.

Q. HAVE YOU CONDUCTED AN ANALYSIS OF THE COMPANY'S SERVICE COMPANY EXPENSES RELATIVE TO OTHER LARGE MULTI-STATE HOLDING COMPANIES?

A. Yes. Exhibit DED-18 compares the Company's outside service expenses to other large utility holding companies with at least four electric retail operating companies across the U.S. This includes American Electric Power ("AEP"), Duke Energy, Entergy, Eversource Energy, Exelon-PHI, First Energy, and the Company's Southern Company affiliates. Pages 1 and 2 of this analysis shows that the Company's outside service expenses when valued on a per MWh basis have been decidedly below average over the past decade, often ranking in the bottom quartile of utilities. This is especially true in recent years since 2012, after which the Company's outside service expenses have increased at a faster rate compared to its peers. Worse, pages 3 and 4 of Exhibit DED-18 show that the Company's

outside service expenses have been consistently ranked at or near the bottom of other large utility operations over the past decade when valued on a per-customer basis.

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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

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 &
Florida Solar Energy Industries Association, 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.

PUBLICATIONS: PEER REVIEWED ACADEMIC JOURNALS

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2. "Economies of Scale, Learning Effects and Offshore Wind Development Costs" (2015). With Gregory B. Upton, Jr. *Renewable Energy.* 61-66.
3. "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.*
4. "An Empirical Analysis of Differences in Interstate Oil and Natural Gas Drilling Activity." (2012). With Mark J. Kaiser and Christopher J. Peters. *Exploration & Production: Oil and Gas Review.* 30(1): 18-22.
5. "The Value of Lost Production from the 2004-2005 Hurricane Seasons in the Gulf of Mexico." (2009). With Mark J. Kaiser and Yunke Yu. *Journal of Business Valuation and Economic Loss Analysis.* 4(2).
6. "Estimating the Impact of Royalty Relief on Oil and Gas Production on Marginal State Leases in the US." (2006). With Jeffrey M. Burke and Dmitry V. Mesyanzhinov. *Energy Policy* 34(12): 1389-1398.
7. "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*)
8. "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.
9. "Reflections on the U.S. Electric Power Production Industry: Precedent Decisions Vs. Market Pressures." (2003). With Robert F. Cope III and John W. Yeargain. *Journal of Legal, Ethical, and Regulatory Issues.* Volume 6, Number 1.
10. "A is for Access: A Definitional Tour Through Today's Energy Vocabulary." (2001) *Public Resources Law Digest.* 38: 2.
11. "A Comment on the Integration of Price Cap and Yardstick Competition Schemes in Electrical Distribution Regulation." (2001). With Steven A. Ostrover. *IEEE Transactions on Power Systems.* 16 (4): 940 -942.
12. "Modeling Regional Power Markets and Market Power." (2001). With Robert F. Cope. *Managerial and Decision Economics.* 22:411-429.

13. "A Data Envelopment Analysis of Levels and Sources of Coal Fired Electric Power Generation Inefficiency" (2000). With Williams O. Olatubi. *Utilities Policy.* 9 (2): 47-59.

14. "Cogeneration and Electric Power Industry Restructuring" (1999). With Andrew N. Kleit. *Resource and Energy Economics*. 21:153-166.

15. "Capacity and Economies of Scale in Electric Power Transmission" (1999). With Robert F. Cope and Dmitry Mesyanzhinov. *Utilities Policy* 7: 155-162.

16. "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.

17. "A Comment on Cost Savings from Nuclear Regulatory Reform" (1997). *Southern Economic Journal*. 63:1108-1112.

18. "The Demand for Long Distance Telephone Communication: A Route-Specific Analysis of Short-Haul Service." (1996). *Studies in Economics and Finance* 17:33-45.

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 7th International Conference on Environmental Science and Technology*. Volume1 of 2: edited by George A. Sorial and Jihua Hong. (Houston, TX: American Science Press, ISBN: 978-0976885368): 42-46.

2. "Economic and Policy Issues in Sustaining an Adequate Oil Spill Contingency Fund in the Aftermath of a Catastrophic Incident." (2014). With Stephen R. Barnes and Gregory B. Upton. *Proceedings of the Thirty-seventh AMOP Technical Seminar on Environmental contamination and Response*. June: 506-524.

3. "Technology Based Ethical Issues Surrounding the California Energy Crisis." (2002). With Robert F. Cope III and John Yeargain. *Proceedings of the Academy of Legal, Ethical, and Regulatory Issues*. September: 17-21.

4. "Electric Utility Restructuring and Strategies for the Future." (2001). With Scott W. Geiger. *Proceedings of the Southwest Academy of Management*. March.

5. "Applications for Distributed Energy Resources in Oil and Gas Production: Methods for Reducing Flare Gas Emissions and Increasing Generation Availability" (2000). With Ritchie D. Priddy. *Proceedings of the International Energy Foundation – ENERGEX 2000*. July.

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.

9. "Comparing the Safety and Environmental Records of Firms Operating Offshore Platforms in the Gulf of Mexico." (1996). With Allan Pulsipher, Omowumi Iledare, Dmitry Mesyanzhinov, William Daniel, and Bob Baumann. *Proceedings of the American Society of Mechanical Engineers: Offshore and Arctic Operations 1996*, January.

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1. "A Collaborative Investigation of Baseline and Scenario Information for Environmental Impact Statements" (2005). *Proceedings of the 23rd Annual Information Technology Meetings*. U.S. Department of the Interior, Minerals Management Service, Gulf Coast Region, New Orleans, LA. January 12, 2005.
2. "Trends and Issues in the Natural Gas Industry and the Development of LNG: Implications for Louisiana. (2004) *Proceedings of the 51st Mineral Law Institute*, Louisiana State University, Baton Rouge, LA. April 2, 2004.
3. "Competitive Bidding in the Electric Power Industry." (2003). *Proceedings of the Association of Energy Engineers*. December 2003.
4. "The Role of ANS Gas on Southcentral Alaskan Development." (2002). With William Nebesky and Dmitry Mesyanzhinov. *Proceedings of the International Association for Energy Economics: Energy Markets in Turmoil: Making Sense of It All*. October.
5. "A New Consistent Approach to Modeling Regional Economic Impacts of Offshore Oil and Gas Activities." (2002). With Vicki Zatarain. *Proceedings of the 2002 National IMPLAN Users Conference*: 241-258.
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7. "Do Deepwater Activities Create Different Impacts to Communities Surrounding the Gulf OCS?" (2001). *Proceedings of the International Association for Energy Economics: 2001: An Energy Odyssey?* April.
8. "Modeling the Economic Impact of Offshore Activities on Onshore Communities." (2000). With Williams O. Olatubi. *Proceedings of the 20th Annual Information Transfer Meeting*. U.S. Department of Interior, Minerals Management Service: New Orleans, Louisiana.
9. "Empirical Challenges in Estimating the Economic Impacts of Offshore Oil and Gas Activities in the Gulf of Mexico" (2000). With Williams O. Olatubi. *Proceedings of the International Association for Energy Economics: Transforming Energy Markets*. August.
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7. "Electric Power Generation." (2000). In the *Macmillan Encyclopedia of Energy*. Edited by John Zumerchik. New York: Macmillan Reference.

PUBLICATIONS: BOOK REVIEWS

1. Review of ***Renewable Resources for Electric Power: Prospects and Challenges***. Raphael Edinger and Sanjay Kaul. (Westport, Connecticut: Quorum Books, 2000), pp 154. ISBN 1-56720-233-0. *Natural Resources Forum*. (*2000*).

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.

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1. "The Challenges of the Regulatory Review of Diversification Mergers." (2016). With Michael W. Deupree. *Electricity Journal*. 29 (2016): 9-14.

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).

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.

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.

27. "Standardizing Wholesale Markets For Energy." (2002). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 51: 207-225.

28. "Do Economic Activities Create Different Economic Impacts to Communities Surrounding the Gulf OCS?" (2002). With Williams O. Olatubi. *IAEE Newsletter*. Second Quarter: 16-20.

29. "Will Electric Restructuring Ever Get Back on Track? Texas is not California." (2002). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 50: 943-960.

30. "An Assessment of the Role and Importance of Power Marketers." (2002). With K.E. Hughes II. *Oil, Gas and Energy Quarterly. 50: 713-731.*

31. "The EPA v. The TVA, et. al. Over New Source Review." (2001) With K.E. Hughes, II. *Oil, Gas and Energy Quarterly*. 50:531-543.

32. "Energy Policy by Crisis: Proposed Federal Changes for the Electric Power Industry." (2001). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 50:235-249.

33. "A is for Access: A Definitional Tour Through Today's Energy Vocabulary." (2001). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 49:947-973.

34. "California Dreaming: Are Competitive Markets Achievable?" (2001). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 49: 743-759.

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.

38. "The Post-Restructuring Consolidation of Nuclear-Power Generation in the Electric Power Industry." (2000) With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 49: 751-765.

39. "Issues and Opportunities for Small Scale Electricity Production in the Oil Patch." (2000). With Ritchie D. Priddy. *American Oil and Gas Reporter*. 49: 78-82.

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.

41. "Coming to a neighborhood near you: the merchant electric power plant." (1999). With K.E. Hughes II. *Oil, Gas, and Energy Quarterly*. 48:433-441.

42. "Slow as molasses: the political economy of electric restructuring in the south." (1999). With K.E. Hughes II. *Oil, Gas, and Energy Quarterly*. 48: 163-183.

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44. "Reliability or profit? Why Entergy quit the Southwest Power Pool." (1998). With Fred I. Denny. *Public Utilities Fortnightly*. February 1: 30-33.

45. "Electric utility mergers and acquisitions: a regulator's guide." (1996). With Kimberly H. Dismukes. *Public Utilities Fortnightly*. January 1.

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1. "Taxing energy infrastructure." (2017). *10/12 Industry Report*. Baton Rouge Business Report. Q:4 (forthcoming).

2. "A summer of discontent." (2017). *10/12 Industry Report*. Baton Rouge Business Report. Q:3.

3. "Low cost hydrocarbons continue to benefit the Gulf Coast." (2017). *10/12 Industry Report*. Baton Rouge Business Report. Q:2.

4. "Reading the tea leaves for 2017's crude oil markets." (2017). *10/12 Industry Report*. Baton Rouge Business Report. Q:1.

5. "The unappreciated role of energy infrastructure." (2016). *10/12 Industry Report*. Baton Rouge Business Report. Q:4.

6. "Other ways in which the energy world is changing." (2016). *10/12 Industry Report*. Baton Rouge Business Report. Q:3.

7. "Are oil prices bouncing back?" (2016). *Baton Rouge Business Report*, May 10 edition.

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8. "Are we there yet? Have energy prices started to rebound?" (2016). *10/12 Industry Report*. Baton Rouge Business Report. Q:2.

9. Challenging Times for the South Louisiana Energy Economy. (2016). *10/12 Industry Report*. Baton Rouge Business Report. Q:1.

10. "Reading the Signs for the Energy Complex" (2015). *10/12 Industry Report*. Baton Rouge Business Report. Q:1.

11. "Louisiana's Export Opportunities." (2015). *10/12 Industry Report*. Baton Rouge Business Report. September, 15.

12. "Don't Kill Hydraulic Fracturing: It's the Golden Goose." (2015). *Mobile Press Register*. May 22. Also carried by Alabama Media Group and the following newspapers: *Birmingham News*, *Huntsville Times*, and *Birmingham Magazine*.

13. "The Least Effective Way to Invest in Green Energy." (2014). *Wall Street Journal*. Journal Reports: Energy. New York: Dow Jones & Company, October 2.

14. "Stop Picking Winners and Losers." (2013). *Wall Street Journal*. Journal Reports: Energy. New York: Dow Jones & Company, June 18.

PUBLICATIONS: REPORTS AND OTHER MANUSCRIPTS

1. *The Potential Economic Impacts of the Washington Parish Energy Center*. With Gregory B. Upton, Jr. Report prepared on behalf of Calpine Corporation. 5 pp. *(forthcoming)*

2. *The Potential Economic Impacts of the Bayou Bridge Project*. (2017). With Gregory B. Upton, Jr. Report prepared on behalf of Energy Transfer, LLC. 23 pp.

3. *Economic Impact and Re-Employment Assessment of PES Philadelphia Refining Complex*. (2017). Report prepared on behalf of Philadelphia Energy Solutions, 43 pp.

4. *Potential Economic Impacts of the Lake Charles Methanol Project*. (2017). Report prepared on behalf of the Lake Charles Methanol Project, LLC. 68 pp.

5. *Beyond the Energy Roadmap: Starting Mississippi's Energy-Based Economic Development Venture.* (2014). Report prepared on behalf of the Mississippi Energy Institute, 310 pp.

6. Combined Heat and Power in Louisiana: Status, Potentials, and Policies. Phase # Report: Policy and Market Opportunities and Challenges for CHP Development. (2013). Louisiana Department of Natural Resources, Baton Rouge, Louisiana. 17 pp.

7. 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.

8. 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.

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10. *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.

11. *Unconventional Resources and Louisiana's Manufacturing Development Renaissance* (2013). Baton Rouge, LA: LSU Center for Energy Studies, 93 pp.

12. *Removing Big Wind's "Training Wheels:" The Case for Ending the Production Tax Credit* (2012). Washington, DC: American Energy Alliance, 19 pp.

13. *The Impact of Legacy Lawsuits on Conventional Oil and Gas Drilling in Louisiana.* (2012). Baton Rouge, LA: LSU Center for Energy Studies, 62 pp.

14. *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.

15. *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.

16. *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.

17. *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.

18. *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.

19. *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.

20. *Opportunities for Geo-pressured Thermal Energy in Southwestern Louisiana.* (2010). Report prepared on behalf of Louisiana Geothermal, L.L.C, 41 pp.

21. *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.

22. *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.

23. *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.

24. *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.

25. *Economic Impact Analysis of the Proposed Lake Charles Gasification Project.* (2007). Report Prepared on Behalf of Leucadia Corporation.

26. *The Economic Impacts of New Jersey's Proposed Renewable Portfolio Standard.* (2005) Report Prepared on Behalf of the New Jersey Division of Ratepayer Advocate.

27. *The Importance of Energy Production and Infrastructure in Plaquemines Parish.* (2006). Report Prepared on Behalf of Project Rebuild Plaquemines.

28. *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.

29. *Comparison of Methods for Estimating the NO_x 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.

30. *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.

31. *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.

32. *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.

33. *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.

34. *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.

35. *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.

36. *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.

37. *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.

38. *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.

39. *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.

40. *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.

41. *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.

42. *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. *Principal Investigator*. Understanding MISO long term infrastructure needs and stakeholder positions. Midcontinent Independent System Operator. Total Project: $9,500, six months. Status: In Progress.

2. *Principal Investigator*. Offshore oil and gas activity impacts on ecosystem services in the Gulf of Mexico. With Brian F, Snyder. U.S. Department of the Interior, Bureau of Ocean Energy Management. Total Project: $240,982, two years. Status: In Progress.

3. *Principal Investigator*. Economic Impacts of the Bayou Bridge pipeline. With Gregory B, Upton, Jr., Energy Transfer Corporation. $9,900. Status: Completed.

4. *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: In Progress.

5. *Principal Investigator*. GOM energy infrastructure trends and factbook update. (2016). 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.

6. *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: In progress.

7. *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.

8. *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: In progress.

9. *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: In progress.

10. *Principal Investigator.* Combined Heat and Power Stakeholder Meeting. (2016). Southeastern Energy Efficiency Council. Total Project $9,160, two months. Status: Completed.

11. *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: In Progress.

12. *Principal Investigator.* "Coastal Marine Institute Administrative Grant" (2104). U.S. Department of the Interior. Total Project $45,000. Status: In Progress.

13. *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.

14. *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, and Kelley Pace. National Science Foundation. Total Project: $1.5 million. Status: In Progress (Sept 2012-Feb 2017).

15. *Principal Investigator.* "Examination of Unconventional Natural Gas and Industrial Economic Development" (2012). America's Natural Gas Alliance. Total Project: $48,210. Status: Completed.

16. *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.

17. *Principal Investigator.* "Analysis of the Federal Wind Energy Production Tax Credit." American Energy Alliance. Total Project: $20,000. Status: Completed.

18. *Principal Investigator.* "Energy Sector Impacts Associated with the Deepwater Horizon Oil Spill." Louisiana Department of Economic Development. Total Project: approximately $50,000. Status: Completed.

19. *Principal Investigator.* "Economic Contributions and Benefits Support by the Port of Venice." Port of Venice Coalition. Total Project: $20,000. Status: Completed.

20. *Principal Investigator.* "Energy Policy Development in Louisiana." Louisiana Department of Natural Resources. Total Project: $150,000. Status: Completed.

21. *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.

22. *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.

23. *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.

24. *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.

25. *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.

26. *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.

27. *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.

28. *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.

29. *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.

30. *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.

31. *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.

32. *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.

33. *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.

34. *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.

35. *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.

36. *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.

37. *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.

38. *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.

39. *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.

40. *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.

41. *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 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.

2. "The Impact of Infrastructure Cost Recovery Mechanisms on Pipeline Replacements and Leaks" (2015). With Gregory Upton. 38th IAEE International Conference, Antalya, Turkey. May 26.

3. "Modifying Renewables Policies to Sustain Positive Economic and Environmental Change" (2015). IEEE Annual Green Technologies ("Greentech") Conference. April 17.

4. "The Gulf Coast Industrial Investment Renaissance and New CHP Development Opportunities." (2014). Industrial Energy and Technology Conference, New Orleans, Louisiana. May 20.

5. "Estimating Critical Energy Infrastructure Value at Risk from Coastal Erosion" (2014). With Siddhartha Narra. American's Estuaries: 7th Annual Summit on Coastal and Estuarine Habitat Restoration. Washington, D.C., November 3-6.

6. "Economies of Scale, Learning Curves, and Offshore Wind Development Costs" (2012). With Gregory Upton. Southern Economic Association Annual Conference, New Orleans, LA November 17.

7. "Analysis of Risk and Post-Hurricane Reaction." (2009). 25th Annual Information Transfer Meeting. U.S. Department of the Interior, Minerals Management Service. January 7.

8. "Legacy Litigation, Regulation, and Other Determinants of Interstate Drilling Activity Differentials." (2008). With Christopher Peters and Mark Kaiser. 28th Annual USAEE/IAEE North American Conference: Unveiling the Future of Future of Energy Frontiers. New Orleans, LA, December 3.

9. "Gulf Coast Energy Infrastructure Renaissance: Overview." (2008). 28th Annual USAEE/IAEE North American Conference: Unveiling the Future of Future of Energy Frontiers. New Orleans, LA, December 3.

10. "Understanding the Impacts of Katrina and Rita on Energy Industry Infrastructure." (2008). American Chemical Society National Meetings, New Orleans, Louisiana. April 7.

11. "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.

12. "Regulatory Issues in Rate Design, Incentives, and Energy Efficiency." (2007). 34th Annual Public Utilities Research Center Conference, University of Florida. Gainesville, FL. February 16.

13. "An Examination of LNG Development on the Gulf of Mexico." (2007). With Kristi A.R. Darby. US Department of the Interior, Minerals Management Service. 24th Annual Information Technology Meeting. New Orleans, LA. January 9.

14. "OCS-Related Infrastructure on the GOM: Update and Summary of Impacts." (2007). U.S. Department of the Interior, Minerals Management Service. 24th Annual Information Technology Meeting. New Orleans, LA. January 10.

15. "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.

16. "The Impact of Implementing a 20 Percent Renewable Portfolio Standard in New Jersey." (2006). With Seth E. Cureington. Mid-Continent Regional Science Association 37th Annual Conference, Purdue University, Lafayette, Indiana, June 9.

17. "The Impacts of Hurricane Katrina and Rita on Energy infrastructure Along the Gulf Coast." (2006). Environment Canada: 2006 Artic and Marine Oilspill Program. Vancouver, British Columbia, Canada.

18. "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. 29th Annual IAEE International Conference, Potsdam, Germany, June 9.

19. "An Examination of the Opportunities for Drilling Incentives on State Leases in Louisiana." (2005). With Kristi A.R. Darby. 28th Annual IAEE International Conference, Taipei, Taiwan (June).

20. "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).

21. "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.

22. "Are There Any In-State Uses for Alaska Natural Gas?" (2002). With Dmitry V. Mesyanzhinov and William E. Nebesky. IAEE/USAEE 22nd Annual North American Conference: "Energy Markets in Turmoil: Making Sense of It All." Vancouver, British Columbia, Canada. October 7.

23. "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.

24. "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.

25. "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.

26. "Distributed Energy Resources, Energy Efficiency, and Electric Power Industry Restructuring." (1999). American Society of Environmental Science Fourth Annual Conference. Baton Rouge, Louisiana. December.

27. "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.

28. "Applied Approaches to Modeling Regional Power Markets." (1999.) With Robert F. Cope. Southern Economic Association Sixty-ninth Annual Conference. New Orleans, November 1999.

29. "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.

30. "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.

31. "Modeling Regional Power Markets and Market Power." (1999). With Robert F. Cope. Western Economic Association Annual Conference. San Diego, California. July.

32. "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.

33. "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.

34. "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.

35. "Benchmarking Electric Utility Distribution Performance." (1998) With Robert F. Cope and Dmitry Mesyanzhinov. Western Economic Association, Seventy-sixth Annual Conference. Lake Tahoe, Nevada. June.

36. "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.

37. "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.

38. "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.

39. "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

40. "Cogeneration and Electric Power Industry Restructuring." (1997). With Andrew N. Kleit. Western Economic Association, Seventy-fifth Annual Conference. Seattle, Washington. July 9-13.

41. "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.

42. "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.

43. "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.

44. "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.

45. "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.

46. "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.

47. "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.

48. "Empirical Determinants of Nuclear Power Plant Disallowances." (1995). Southern Economic Association, Sixty-Fifth Annual Conference. New Orleans, Louisiana.

49. "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 53rd 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) 51st 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, McNesse 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. "Critical energy infrastructure: the big picture on resiliency research." (2017). National Academies of Science, Engineering, and Medicine. New Orleans, LA. September 18.
2. "The changing nature of Gulf of Mexico energy infrastructure." (2017). Session 3B: New Directions in Social Science Research. 27th Gulf of Mexico Region Information Technology Meetings. New Orleans, LA. August 24.
3. "Crude oil and natural gas outlook: Where are we and where are we going?" (2017). CCREDC Economic Trends Panel. Corpus Christi, TX, June 15.
4. "Navigating through the energy landscape." (2017). Baton Rouge Rotary Luncheon. Baton Rouge, LA, May 24.
5. "The 2017-2018 Louisiana energy outlook." (2017). Junior Achievement of Greater New Orleans, JA BizTown Speaker Series. New Orleans, LA, May 12.
6. "The Gulf Coast energy economy: trends and outlook." (2017). Society for Municipal Analysts. New Orleans, LA, April 21.
7. "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.
8. "How supply, demand and prices have influenced unconventional development." (2016). Energy Annual Meeting, CLEER-University Advisory Board Lecture. New Orleans, LA, September 17.
9. "The Basics of Natural Gas Production, Transportation, and Markets." (2016). Center for Energy Studies. Baton Rouge, LA, August 1.
10. "Gulf Coast industrial development: trends and outlook." (2016). Investor Relations Group Meeting, Edison Electric Institute. New Orleans, LA, June 23.
11. "The future of policy and regulation: Unlocking the Treasures of Utility Regulation." (2016). Annual Meeting, National Conference of Regulatory Attorneys. Tampa, FL, June 20.
12. "Utility mergers: where's the beef?". (2016). National Association of State Utility Consumer Advocates Mid-Year Meetings. New Orleans, LA, June 6.
13. "Overview of the Clean Power Plan and its application to Louisiana." (2016). Shell Oil Company Internal Meeting. April 12.
14. "Energy and economic development on the Gulf Coast: trends and emerging challenges." (2016). Gas Processors Association Meeting. New Orleans, LA, April 11.
15. "Unconventional Oil and Gas Drilling Trends and Issues." (2016). French Delegation Visit, LSU Center for Energy Studies. March 16.
16. "Gulf Coast Industrial Growth: Passing clouds or storms on the horizon?" (2016). Gulf Coast Power Association Meetings. New Orleans, LA, February 18.

17. "The Transition to Crisis: What do the recent changes in energy markets mean for Louisiana?" (2016). Louisiana Independent Study Group. February 2.

18. "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.

19. "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.

20. "Trends and Issues in Net Metering and Solar Generation." (2015). Louisiana Rural Electric Cooperative Meeting. November 5.

21. "Electric Power: Industry Overview, Organization, and Federal/State Distinctions." (2015). EUCI. October 16.

22. "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.

23. "Update and General Business Matters." (2015). CES Industry Associates Meeting. Baton Rouge, Louisiana. Fall 2015.

24. "The Impact of Infrastructure Cost Recovery Mechanisms on Pipeline Replacements and Leaks." (2015). 38th IAEE 2015 International Conference. Antalya, Turkey. May 26.

25. "Industry on the Move – What's Next?" (2015). Event Sponsored by Regional Bank and 1012 Industry Report. May 5.

26. "The State of the Energy Industry and Other Emerging Issues." (2015). Lex Mundi Energy & Natural Resources Practice Group Global Meeting. May 5.

27. "Energy, Louisiana, and LSU." (2015). LSU Science Café. Baton Rouge, Louisiana. April 28.

28. "Energy Market Changes and Impacts for Louisiana." (2015). Kinetica Partners Shippers Meeting, New Orleans, Louisiana. April 22.

29. "Incentives, Risk and the Changing Nature of Utility Regulation." (2015). NARUC Staff Subcommittee on Accounting and Finance Meetings, New Orleans, Louisiana. April 22.

30. "Modifying Renewables Policies to Sustain Positive and Economic Change." (2015). IEEE Annual Green Technologies ("Greentech Conference"). April 17.

31. "Louisiana's Changing Energy Environment." (2015). John P. Laborde Energy Law Center Advisory Board Spring Meeting, Baton Rouge, Louisiana. March 27.

32. "The Latest and the Long on Energy: Outlooks and Implications for Louisiana." (2015). Iberia Bank Advisory Board Meeting, Baton Rouge, Louisiana. February 23.

33. "A Survey of Recent Energy Market Changes and their Potential Implications for Louisiana." (2015). Vistage Group, New Orleans, Louisiana. February 4.

34. "Energy Prices and the Outlook for the Tuscaloosa Marine Shale." (2015). Baton Rouge Rotary Club, Baton Rouge, Louisiana. January 28.

35. "Trends in Energy & Energy-Related Economic Development." (2014). Miller and

Thompson Presentation, Baton Rouge, Louisiana. December 30.

36. "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.

37. "Overview EPA's Proposed Clean Power Plan and Impacts for Louisiana." (2014). Clean Cities Coalition Meeting, Baton Rouge, Louisiana. November 5.

38. "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.

39. "A Look at America's Growing Demand for Natural Gas." (2014). Louisiana Chemical Association Annual Meeting, New Orleans, Louisiana. October 23.

40. "Trends in Energy & Energy-Related Economic Development." (2014). 2014 Government Finance Officer Association Meetings, Baton Rouge, Louisiana. October 9.

41. "The Conventional Wisdom Associated with Unconventional Resource Development." (2014). National Association for Business Economics Annual Conference, Chicago, Illinois. September 28.

42. Unconventional Oil & Natural Gas: Overview of Resources, Economics & Policy Issues. (2014). Society of Environmental Journalists Annual Meeting. New Orleans, Louisiana. September 4.

43. "Natural Gas Leveraged Economic Development in the South." (2014). Southern Governors Association Meeting, Little Rock, Arkansas. August 16.

44. "The Past, Present and Future of CHP Development in Louisiana." (2014). Louisiana Public Service Commission CHP Workshop, Baton Rouge, Louisiana. June 25.

45. "Regional Natural Gas Demand Growth: Industrial and Power Generation Trends." (2014). Kinetica Partners Shippers Meeting, New Orleans, Louisiana. April 30.

46. "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.

47. "Industry Investments and the Economic Development of Unconventional Development." (2014). Tuscaloosa Marine Shale Conference & Expo, Natchez, Mississippi. March 31.

48. Discussion Panelist. Energy Outlook 2035: The Global Energy Industry and Its Impact on Louisiana, (2014). Grow Louisiana Coalition, Baton Rouge, Louisiana. March 18.

49. "Natural Gas and the Polar Vortex: Has Recent Weather Led to a Structural Change in Natural Gas Markets?" (2014). National Association of Statue Utility Consumer Advocates Monthly Gas Committee Meeting. February 19.

50. "Some Unconventional Thoughts on Regional Unconventional Gas and Power Generation Requirements." (2014). Gulf Coast Power Association Special Briefing, New Orleans, Louisiana. February 6.

51. "Leveraging Energy for Industrial Development." (2013). 2013 Governor's Energy Summit, Jackson, Mississippi. December 5.

52. "Natural Gas Line Extension Policies: Ratepayer Issues and Considerations." (2013).

National Association of Statue Utility Consumer Advocates Annual Meeting, Orlando, Florida. November 19.

53. "Replacement, Reliability & Resiliency: Infrastructure & Ratemaking Issues in the Power & Natural Gas Distribution Industries." (2013). Louisiana State Bar, Public Utility Section Meetings. November 15.

54. "Natural Gas Markets: Leveraging the Production Revolution into an Industrial Renaissance." (2013). International Technical Conference, Houston, TX. October 11.

55. "Natural Gas, Coal & Power Generation Issues and Trends." (2013). Southeast Labor and Management Public Affairs Committee Conference, Chattanooga, Tennessee. September 27.

56. "Recent Trends in Pipeline Replacement Trackers." (2013). National Association of Statue Utility Consumer Advocates Monthly Gas Committee Meeting. September 19.

57. Discussion Panelist (2013). Think About Energy Summit, America's Natural Gas Alliance, Columbus Ohio. September 16-17.

58. "Future Test Years: Issues to Consider." (2013). National Regulatory Research Institute, Teleseminar on Future Test Years. August 28.

59. "Industrial Development Outlook for Louisiana." (2013). Louisiana Water Synergy Project Meetings, Jones Walker Law Firm, Baton Rouge, Louisiana. July 30.

60. "Natural Gas & Electric Power Coordination Issues and Challenges." (2013). Utilities State Government Organization Conference, Pointe Clear, Alabama. July 9.

61. "Natural Gas Market Issues & Trends." (2013). Western Conference of Public Service Commissioners, Santa Fe, New Mexico. June 3.

62. "Louisiana Unconventional Natural Gas and Industrial Redevelopment." (2013). Louisiana Chemical Association/Louisiana Chemical Industry Allianace Annual Legislative Conference, Baton Rouge, Louisiana. May 8.

63. "Infrastructure Cost Recovery Mechanism: Overview of Issues." (2013). Energy Bar Association Annual Meeting, Washington, D.C. May 1.

64. "GOM Offshore Oil and Gas." (2013). Energy Executive Roundtable, New Orleans, Louisiana. March 27.

65. "Louisiana Unconventional Natural Gas and Industrial Redevelopment." (2013). Risk Management Association Luncheon, March 21.

66. "Natural Gas Market Update and Emerging Issues." (2013). NASUCA Gas Committee Conference Call/Webinar, March 12.

67. "Unconventional Resources and Louisiana's Manufacturing Development Renaissance." (2013). Baton Rouge Press Club, De La Ronde Hall, Baton Rouge, LA, January 28.

68. "New Industrial Operations Leveraged by Unconventional Natural Gas." (2013) American Petroleum Institute-Louisiana Chapter. Lafayette, LA, Petroleum Club, January 14.

69. "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.

70. "Trends, Issues, and Market Changes for Crude Oil and Natural Gas." (2012). East Iberville Community Advisory Panel Meeting. St. Gabriel, LA. September 26.

71. "Game Changers in Crude and Natural Gas Markets." (2012). Chevron Community Advisory Panel Meeting. Belle Chase, LA, September 17.

72. "The Outlook for Renewables in a Changing Power and Natural Gas Market." (2012). Louisiana Biofuels and Bioprocessing Summit. Baton Rouge, LA. September 11.

73. "The Changing Dynamics of Crude and Natural Gas Markets." (2012). Chalmette Refining Community Advisory Panel Meeting. Chalmette, LA, September 11.

74. "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.

75. "The Impact of Changing Natural Gas Prices on Renewables and Energy Efficiency." (2012). NASUCA Gas Committee Conference Call/Webinar. 12 June 2012.

76. "Issues in Gas-Renewables Coordination: How Changes in Natural Gas Markets Potentially Impact Renewable Development" (2012). Energy Bar Association, Louisiana Chapter, Annual Meeting, New Orleans, LA. April 12, 2012.

77. "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.

78. "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.

79. "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.

80. "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.

81. "EPA's Recently Proposed Cross State Air Pollution Rule ("CSAPR") and Its Impacts on Louisiana." (2011). Bossier Chamber of Commerce. November 18, 2011.

82. "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.

83. "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.

84. "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.

85. "Energy Market Changes and Policy Challenges." (2011). Southeast Manpower Tripartite Alliance ("SEMTA") Summer Conference. Nashville, TN September 2, 2011.

86. "EPA Regulations, Rates & Costs: Implications for U.S. Ratepayers." (2011). Workshop:

"A Smarter Approach to Improving Our Environment." 38th Annual American Legislative Exchange Council ("ALEC") Meetings. New Orleans, LA. August 5, 2011.

87. Panelist/Moderator. Workshop: "Why Wait? Start Energy Independence Today." 38th Annual American Legislative Exchange Council ("ALEC") Meetings. New Orleans, LA. August 4, 2011.

88. "Facilitating the Growth of America's Natural Gas Advantage." Texas Chemical Council, Board of Directors Summer Meeting. San Antonio, TX. July 28, 2011.

89. "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.

90. "Energy Market Trends and Policies: Implications for Louisiana." (2011). Lakeshore Lion's Club Monthly Meeting. Baton Rouge, Louisiana. June 20, 2011.

91. "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.

92. "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.

93. "Louisiana Energy Outlook and Trends." (2011). Executive Briefing. Counsul General of Canada. LSU Center for Energy Studies, Baton Rouge, Louisiana. May 24, 2011.

94. "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.

95. "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.

96. "Regulatory Issues in Inflation Adjustment Mechanisms and Allowances." (2011). Gas Committee, National Association of State Utility Consumer Advocates ("NASUCA"). February 15, 2011.

97. "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.

98. "How Current and Proposed Energy Policy Impacts Consumers and Ratepayers." (2010). 122nd Annual Meeting, National Association of Regulatory Utility Commissioners ("NARUC"), Omni at CNN Center, Atlanta, Georgia, November 15, 2010.

99. "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.

100. "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.

101. "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.

102. "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.

103. "Overview and Issues Associated with the Deepwater Horizon Accident." (2010). Global Interdependence Meeting on Energy Issues. Baton Rouge, LA. August 12, 2010.

104. "Overview and Issues Associated with the Deepwater Horizon Accident." (2010). Regional Roundtable Webinar. National Association for Business Economics. August 10, 2010.

105. "Deepwater Moratorium: Overview of Impacts for Louisiana." Louisiana Association of Business and Industry Meeting. Baton Rouge, LA. June 25, 2010.

106. 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.

107. "The Energy Outlook: Trends and Policies Impacting Southeastern Natural Gas Supply and Demand Growth." Second Annual Local Economic Analysis and Research Network ("LEARN") Conference. Federal Reserve Bank of Atlanta. March 29, 2010.

108. "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.

109. "Potential Impacts of Federal Greenhouse Gas Legislation on Louisiana Industry." LCA Government Affairs Committee Meeting. November 10, 2009. Baton Rouge, LA

110. "Regulatory and Ratemaking Issues Associated with Cost and Revenue Tracker Mechanisms." National Association of State Utility Consumer Advocates ("NASUCA") Annual Meeting. November 10, 2009.

111. "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.

112. "Gulf Coast Energy Outlook: Issues and Trends." Women's Energy Network, Louisiana Chapter. September 17, 2009. Baton Rouge, LA.

113. "Gulf Coast Energy Outlook: Issues and Trends." Natchez Area Association of Energy Service Companies. September 15, 2009, Natchez, MS.

114. "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.

115. "Carbon Legislation and Clean Energy Markets: Policy and Impacts." National Association of Conservation Districts, South Central Region Meeting. August 14, 2009. Baton Rouge, LA.

116. "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

117. "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.

118. "Natural Gas Outlook." (2009). Briefing before the Louisiana Public Service Commission. Business and Executive Meeting, May 12, 2009. Baton Rouge, LA.

119. "Gulf Coast Energy Outlook: Issues and Trends." (2009). ISA-Lafayette Technical Conference & Expo. Cajundome Conference Center. Lafayette, Louisiana. March 12, 2009.

120. "The Cost of Energy Independence, Climate Change, and Clean Energy Initiatives on Utility Ratepayers." (2009). National Association of Business Economics (NABE). 25th Annual Washington Economic Policy Conference: Restoring Financial and Economic Stability. Arlington, VA March 2, 2009.

121. Panelist, "Expanding Exploration of the U.S. OCS" (2009). Deep Offshore Technology International Conference and Exhibition. PennWell. New Orleans, Louisiana. February 4, 2009.

122. "Gulf Coast Energy Outlook." (2008.) Atmos Energy Regional Management Meeting. Louisiana and Mississippi Division. New Orleans, Louisiana. October 8, 2008.

123. "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.

124. "Greenhouse Gas Regulations and Policy: Implications for Louisiana." (2008). Presentation before the Praxair Customer Seminar. Houston, Texas, August 14, 2008.

125. "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.

126. "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.

127. "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.

128. "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.

129. "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.

130. "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.

131. "Recent Trends in Natural Gas Markets." (2006). National Association of Regulatory

Utility Commissioners, 118th Annual Convention. Miami, FL November 14, 2006.

132. "Energy Markets: Recent Trends, Issues & Outlook." (2006). Association of Energy Service Companies (AESC) Meeting. Petroleum Club, Lafayette, LA, November 8, 2006.

133. "Energy Outlook" (2006). National Business Economics Issues Council. Quarterly Meeting, Nashville, TN, November 1-2, 2006.

134. "Global and U.S. Energy Outlook." (2006). Energy Virginia Conference. Virginia Military Institute, Lexington, VA October 17, 2006.

135. "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.

136. "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.

137. "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.

138. "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.

139. "Energy Sector Outlook." (2006). Baton Rouge Country Club Meeting. Baton Rouge, Louisiana. July 11, 2006.

140. "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.

141. "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.

142. "LNG—A Premier." (2006). Presentation Given to the U.S. Department of Energy's "LNG Forums." Los Angeles, California. June 1, 2006.

143. "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.

144. "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.

145. "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.

146. "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.

147. "LNG—A Premier." Presentation Given to the U.S. Department of Energy's "LNG Forums." Astoria, Washington. April 28, 2006.

148. Natural Gas Market Outlook. Invited Presentation Given to the Georgia Public Service Commission and Staff. Georgia Institute of Technology, Atlanta, Georgia. March 10, 2006.

149. 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.

150. 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

151. 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.

152. "Putting Our Energy Infrastructure Back Together Again." Presentation Before the 117th Annual Convention of the National Association of Regulatory Utility Commissioners (NARUC). November 15, 2005. Palm Springs, CA

153. "Hurricanes and the Outlook for Energy Markets." Presentation before the Baton Rouge Rotary Club. November 9, 2005, Baton Rouge, LA.

154. "Hurricanes, Energy Supplies and Prices." Presentation before the Louisiana Department of Natural Resources and Atchafalaya Basin Committee Meeting. November 8, 2005. Baton Rouge, LA.

155. "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.

156. "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.

157. "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.

158. "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.

159. "Louisiana Power Industry Overview." Presentation before the Clean Air Interstate Rule Implementation Stakeholders Meeting. August 11, 2005. Louisiana Department of Environmental Quality.

160. "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.

161. "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.

162. "The Outlook for Energy." Lagniappe Studies Continuing Education Course. Baton Rouge, LA. July 11, 2005.

163. "The Outlook for Energy." Sunshine Rotary Club. Baton Rouge, LA. April 27, 2005.

164. "Background and Overview of LNG Development." Energy Council Workshop on LNG/CNG. Biloxi, Ms: Beau Rivage Resort and Hotel, April 9, 2005.

165. "Natural Gas Supply, Prices, and LNG: Implications for Louisiana Industry." Cytec Corporation Community Advisory Panel. Fortier, LA January 14, 2005.

166. "The Economic Opportunities for a Limited Industrial Retail Choice Plan." Louisiana Department of Economic Development. Baton Rouge, Louisiana. November 19, 2004.

167. "Energy Issues for Industrial Customers of Gas and Power." Louisiana Association of Business and Industry, Energy Council Meeting. Baton Rouge, Louisiana. October 11, 2004.

168. "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.

169. "Energy Issues for Industrial Customers of Gas and Power." American Institute of Chemical Engineers – New Orleans Section. New Orleans, LA. September 22, 2004.

170. "Natural Gas Supply, Prices and LNG: Implications for Louisiana Industry." Dow Chemical Company Community Advisory Panel Meeting. Plaquemine, LA. August 9, 2004.

171. "Energy Issues for Industrial Customers of Gas and Power." Louisiana Chemical Association Post-Legislative Meeting. Springfield, LA. August 9, 2004.

172. "LNG In Louisiana." Joint Meeting of the Louisiana Economic Development Council and the Governors Cabinet Advisory Council. Baton Rouge, LA. August 5, 2004.

173. "Louisiana Energy Issues." Louisiana Mid-Continent Oil and Gas Association Post Legislative Meetings. Sandestin, Florida. July 28, 2004.

174. "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.

175. "Natural Gas and LNG Issues for Louisiana." Presentation before the Rhodia Community Advisory Panel. May 20, 2004, Baton Rouge, LA.

176. "The Economic Opportunities for LNG Development in Louisiana." Presentation before the Louisiana Chemical Association Plant Managers Meeting. May 27, 2004. Baton Rouge, LA.

177. 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.

178. "The Economic Opportunities for LNG Development in Louisiana." Presentation before the Petrochemical Industry Cluster, Greater New Orleans, Inc. May 19, 2004, Destrehan, LA.

179. "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.

180. "The Economic Opportunities for LNG Development in Louisiana." Presentation before the Board of Directors, Greater New Orleans, Inc. May 13, 2004, New Orleans, LA.

181. "Natural Gas Outlook: Trends and Issues for Louisiana." Presentation before the Louisiana Joint Agricultural Association Meetings. January 14, 2004, Hotel Acadiana, Lafayette, Louisiana.

182. "Natural Gas Outlook" Presentation before the St. James Parish Community Advisory Panel Meeting. January 7, 2004, IMC Production Facility, Convent, Louisiana.

183. "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.

184. "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.

185. "Affordable Energy: The Key Component to a Strong Economy." Presentation before the National Association of Regulatory Utility Commissioners ("NARUC"), November 18, 2003, Atlanta, Georgia.

186. "Natural Gas Outlook." Presentation before the Louisiana Chemical Association, October 17, 2003, Pointe Clear, Alabama.

187. "Issues and Opportunities with Distributed Energy Resources." Presentation before the Louisiana Biomass Council. April 17, 2003, Baton Rouge, Louisiana.

188. "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.

189. "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.

190. "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.

191. "Power Plant Siting Issues in Louisiana." Presentation before 24th Annual Conference on Waste and the Environment. Sponsored by the Louisiana Department of Environmental Quality. Lafayette, Louisiana, Cajundome. March 12, 2002.

192. "Merchant Power and Deregulation: Issues and Impacts." Presentation before the Air and Waste Management Association Annual Meeting. Baton Rouge, LA, November 15, 2001.

193. "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.

194. "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.

195. "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.

196. "The Changing Nature of the Electric Power Business in Louisiana." Presentation before the Louisiana Department of Environmental Quality. Baton Rouge, LA, August 27, 2001.

197. "Power Business in Louisiana: Background and Issues." Presentation before the Louisiana Interagency Group on Merchant Power Development . Baton Rouge, LA, July 16, 2001.

198. "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.

199. "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.

200. "The Economic Impacts of Merchant Power Plant Development In Mississippi." Presentation before the Mississippi Public Service Commission. Jackson, Mississippi, March 20, 2001.

201. "Energy Conservation and Electric Restructuring." With Ritchie D. Priddy. Presentation before the Louisiana Department of Natural Resources. Baton Rouge, Louisiana, October 23, 2000.

202. "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.

203. "Electric Reliability and Merchant Power Development Issues." Technical Meetings of the Louisiana Public Service Commission. Baton Rouge, LA. August 29, 2000.

204. "A Introduction to Distributed Energy Resources." Summer Meetings, Southeastern Association of Regulatory Utility Commissioners (SEARUC). New Orleans, LA. June 27, 2000.

205. Roundtable Moderator/Discussant. Mid-South Electric Reliability Summit. U.S. Department of Energy. New Orleans, Louisiana. April 24, 2000.

206. "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.

207. "LSU/CES Distributed Energy Resources Initiatives." Los Alamos National Laboratories. Office of Energy and Sustainable Systems. Los Alamos, New Mexico. February 16, 2000.

208. "Distributed Energy Resources Initiatives." Louisiana State University, Center for Energy Studies Industry Associates Meeting. Baton Rouge, Louisiana. December 15, 1999.

209. "Merchant Power Opportunities in Louisiana." Louisiana Mid-Continent Oil and Gas Association (LMOGA) Power Generation Committee Meetings. Baton Rouge, Louisiana. November 10, 1999.

210. 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.

211. "The Political Economy of Electric Restructuring In the South" Southeastern Electric Exchange, Rate Section Annual Conference. New Orleans, Louisiana. May 7, 1999.

212. "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.

213. "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.

214. "What's Happened to Electricity Restructuring in Louisiana?" Louisiana State University, Center for Energy Studies Industry Associates Meeting. March 22, 1999.

215. "A Short Course on Electric Restructuring." Central Louisiana Electric Company. Sales and Marketing Division. Mandeville, Louisiana, October 22, 1998.

216. "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.

217. "How Will Utility Deregulation Affect Tourism." Louisiana Travel Promotion Association Annual Meeting, Alexandria, Louisiana. January 15, 1998.

218. "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.

219. "Electric Utility Restructuring in Louisiana." Hammond Chamber of Commerce, Hammond, Louisiana. October 30, 1997.

220. "Electric Utility Restructuring." Louisiana Association of Energy Engineers. Baton Rouge, Louisiana. September 11, 1997.

221. "Electric Utility Restructuring: Issues and Trends for Louisiana." Opelousas Chamber of Commerce, Opelousas, Louisiana. June 24, 1997.

222. "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.

223. "Electric Restructuring: Louisiana Issues and Outlook for 1997." Louisiana State University, Center for Energy Studies Industry Associates Meeting, Baton Rouge, Louisiana, January 15, 1997.

224. "Restructuring the Electric Utility Industry." Louisiana Propane Gas Association Annual Meeting, Alexandria, Louisiana, December 12, 1996.

225. "Deregulating the Electric Utility Industry." Eighth Annual Economic Development Summit, Baton Rouge, Louisiana, November 21, 1996.

226. "Electric Utility Restructuring in Louisiana." Jennings Rotary Club, Jennings, Louisiana, November 19, 1996.

227. "Electric Utility Restructuring in Louisiana." Entergy Services, Transmission and Distribution Division, Energy Centre, New Orleans, Louisiana, September 12, 1996

228. "Electric Utility Restructuring" L ouisiana Electric Cooperative Association, Baton Rouge, Louisiana, August 27, 1996.

229. "Electric Utility Restructuring -- Background and Overview." Louisiana Public Service Commission, Baton Rouge, Louisiana, August 14, 1996.

230. "Electric Utility Restructuring." Sunshine Rotary Club Meetings, Baton Rouge, Louisiana, August 8, 1996.

231. 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.

232. 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. Formal Case No. 11142. (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.

2. 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.

3. 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.

4. 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.

5. 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.

6. 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.

7. 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.

8. 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 Citizens of the State of Florida. Issue: revenue stabilization mechanism, revenue decoupling.

9. Expert Testimony. Docket No. 15-015-U. 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.

10. 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.

11. 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.

12. 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.

13. 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.

14. 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.

15. 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.

16. 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.

17. 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 Attorney General. Issues: economic development riders and production plant cost allocation.

18. 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.

19. 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.

20. 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.

21. 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 Unitil 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.

22. 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.

23. 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.

24. 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.

25. Expert Testimony. D.P.U. 14-134 (2015). Before the Massachusetts Department of Public 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.

26. 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.

27. 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.

28. 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.

29. 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.

30. 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.

31. 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.

32. 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.

33. 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.

34. 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 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.

35. 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.

36. 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.

37. 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.

38. 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.

39. 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

40. 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.

41. 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.

42. Expert Testimony. Case No. 9311 (2013). Before the Public Service Commission of 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.

43. 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.

44. 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.

45. 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.

46. 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.

47. 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.

48. 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.

49. 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.

50. 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.

51. 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.

52. 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.

53. 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.

54. 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.

55. 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.

56. 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.

57. 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.

58. 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 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.

59. 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.

60. 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)

61. 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.

62. 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.

63. 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.

64. 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.

65. 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.

66. 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.

67. 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.

68. 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.

69. 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.

70. 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.

71. 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.

72. 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.

73. 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.

74. 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.

75. 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.

76. 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.

77. 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.

78. Expert Report and Deposition. Before the 23rd 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.

79. 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.

80. 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.

81. 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.

82. 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.

83. 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.

84. 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 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)

85. 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)

86. 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.

87. Congressional Testimony. (2008). Senate Republican Conference: Panel on Offshore Drilling in the Restricted Areas of the Outer Continental Shelf. September 18, 2008.

88. 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.

89. 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).

90. 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.

91. 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.

92. Public Testimony. (2007). Issues in Environmental Regulation. Testimony before Gubernatorial Transition Committee on Environmental Regulation (Governor-Elect Bobby Jindal). December 17, 2007.

93. 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.

94. 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.

95. 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.

96. 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)

97. 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.

98. 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.

99. 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.

100. 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).

101. 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.

102. Expert Affidavit Before the Louisiana Tax Commission (2006). On behalf of ANR Pipeline, Tennessee Gas Transmission and Southern Natural Gas Company. Issues: Competitive nature of interstate and intrastate transportation services.

103. Expert Affidavit Before the 19th 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.

104. 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)

105. 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.

106. 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.

107. 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).

108. 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.

109. 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.

110. 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

111. 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.

112. 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.

113. Expert Testimony: Docket No. 2003-K-1876. (2005). On Behalf of Columbia Gas Transmission. Expert Testimony on the Competitive Market Structure for Gas Transportation Service in Ohio. Before the Ohio Board of Tax Appeals.

114. 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 15th Judicial District Court, Lafayette, Louisiana.

115. 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.

116. 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.

117. 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)

118. 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.

119. 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.

120. 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.

121. 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.

122. 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.

123. Public Testimony: Louisiana Board of Commerce and Industry (2001). Testimony on the Economic Impacts of Merchant Power Generation.

124. 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.

125. 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).

126. 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.

127. 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.

128. 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.

129. 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.

130. 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.

131. 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.

132. 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.

133. 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.

134. 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: Southern States Utilities, Inc. Issues: Revenue Repression Adjustment, Residential and Commercial Demand for Water Service.

135. Legislative Testimony. Louisiana House of Representatives, Special Subcommittee on Utility Deregulation. (1997). On Behalf of the Louisiana Public Service Commission Staff. Issue: Electric Restructuring.

136. 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.

137. 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.

138. 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-Current, *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.

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.

"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.

THESIS/DISSERTATIONS COMMITTEES

Active:
2 Thesis Committee Memberships (Environmental Studies)
1 Ph.D. Dissertation Committee (Economics)
Completed:
6 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

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).

STATE OF LOUISIANA)

PARISH OF EAST BATON ROUGE)

DAVID E. DISMUKES, PH.D., a consulting economist with the Acadian Consulting Group, LLC, 5800 One Perkins Place Drive, Suite 5-F, Baton Rouge, Louisiana, being first duly sworn, deposes and says that the statements contained in his direct testimony before the Mississippi Public Service Commission, in Docket No. 2017-AD-112 are true and correct to the best of his knowledge, information and belief.

David E. Dismukes, Ph.D.

Subscribed and sworn to before me this the 19th day of October, 2017.

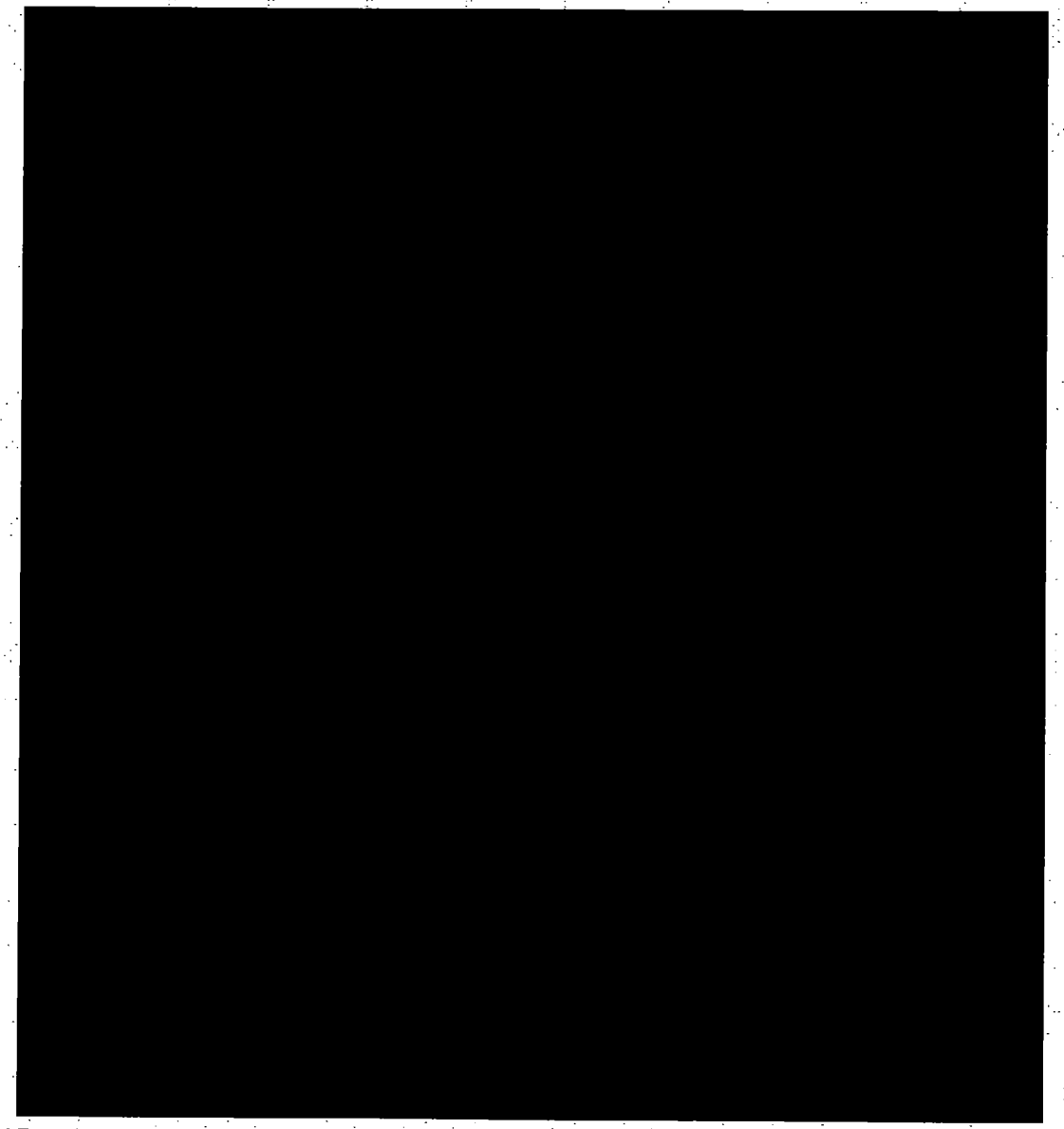
Notary Public Elizabeth A. Bardeleon
Bar # 18127

My Commission Expires: for life

Table of Exhibits

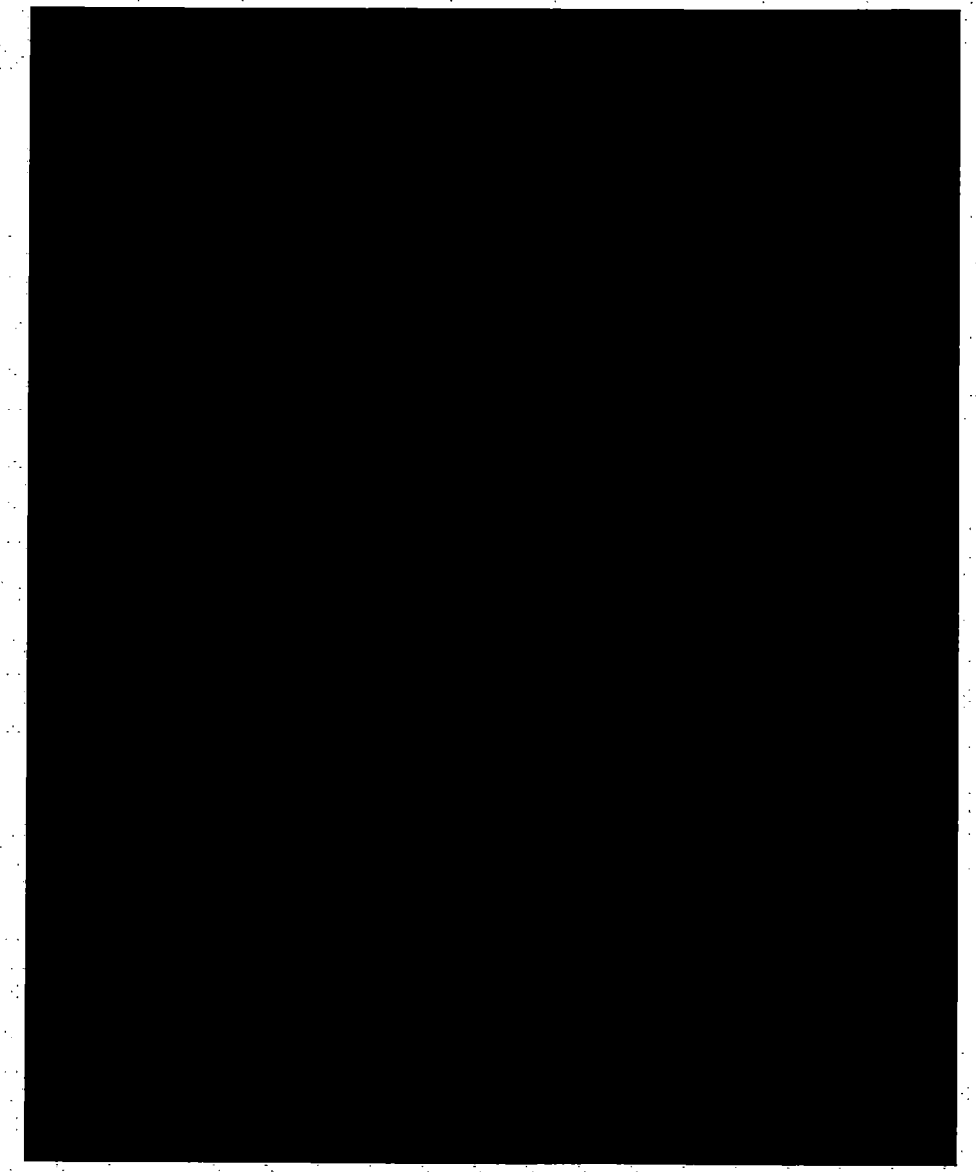
Title	Exhibit
Rate and Operating Cost Trends and Comparisons	Attachment A
David E. Dismukes, Ph.D. Academic Vitae	Attachment B
Summary of Equity Analyst Statements	CONFIDENTIAL Exhibit DED - 1
Comparison of CPCN and Post-CPCN Kemper Operating Capacity	Exhibit DED - 2
MPCo Generation Fleet Operating Statistics	CONFIDENTIAL Exhibit DED - 3
MPCo Capacity Reserve Margins	CONFIDENTIAL Exhibit DED - 4
Summary of Economic Impacts from Potential Kemper Resolutions	Exhibit DED - 5
Summary of Economic Impacts from Potential Future PEP Increases	Exhibit DED - 6
Comparison of Residential Rates per FERC Form 1	Exhibit DED - 7
Comparison of Utility Rates per EIA Form 860	Exhibit DED - 8
Comparison of Net Production Plant Investments	Exhibit DED - 9
Comparison of Net Transmission Plant Investments	Exhibit DED - 10
Comparison of Net Distribution Plant Investments	Exhibit DED - 11
Comparison of Net General Plant Investments	Exhibit DED - 12
Comparison of Production O&M Expenses	Exhibit DED - 13
Comparison of Transmission O&M Expenses	Exhibit DED - 14
Comparison of Distribution O&M Expenses	Exhibit DED - 15
Comparison of Administrative and General Expenses	Exhibit DED - 16
Comparison of Service Company Expenses	Exhibit DED - 17
Comparison of Service Company Expenses – Nation-wide	Exhibit DED - 18

Summary of Equity Analyst Statements



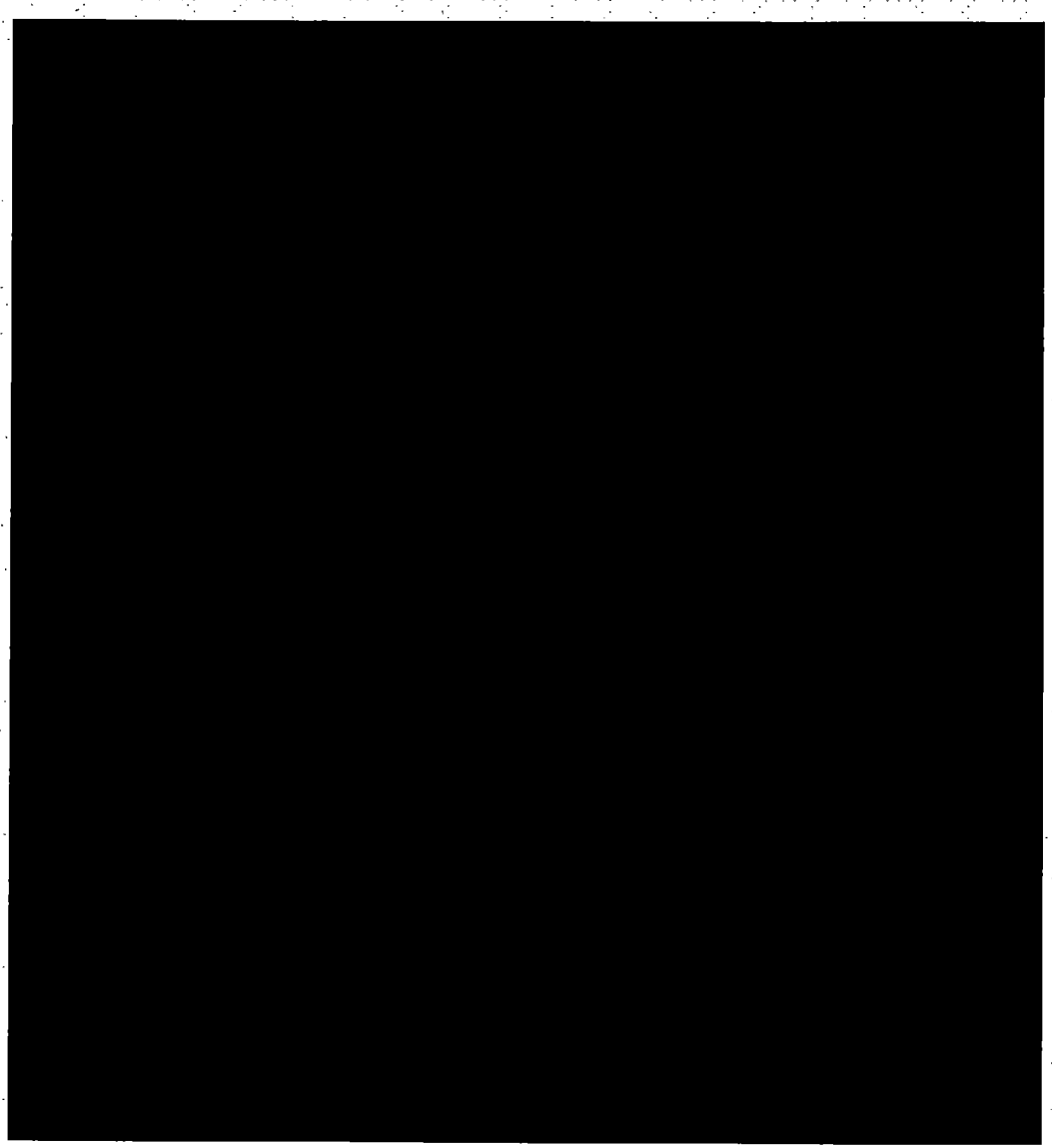
Source: Response to Informal Data Request MPUS-IDR 9-27, Attachment A.

Summary of Equity Analyst Statements



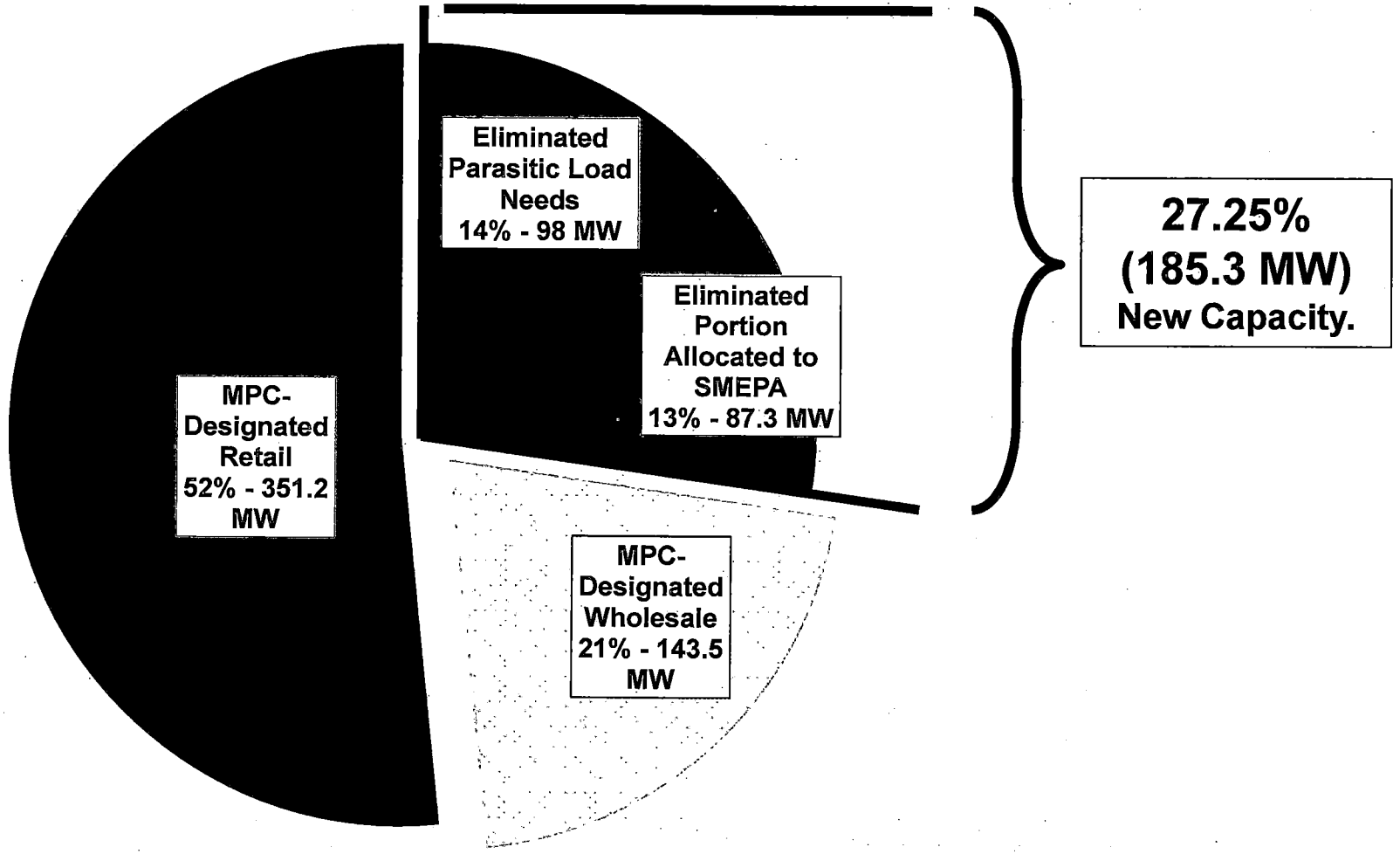
Source: Response to Informal Data Request MPUS-IDR 9-27, Attachment A.

Summary of Equity Analyst Statements



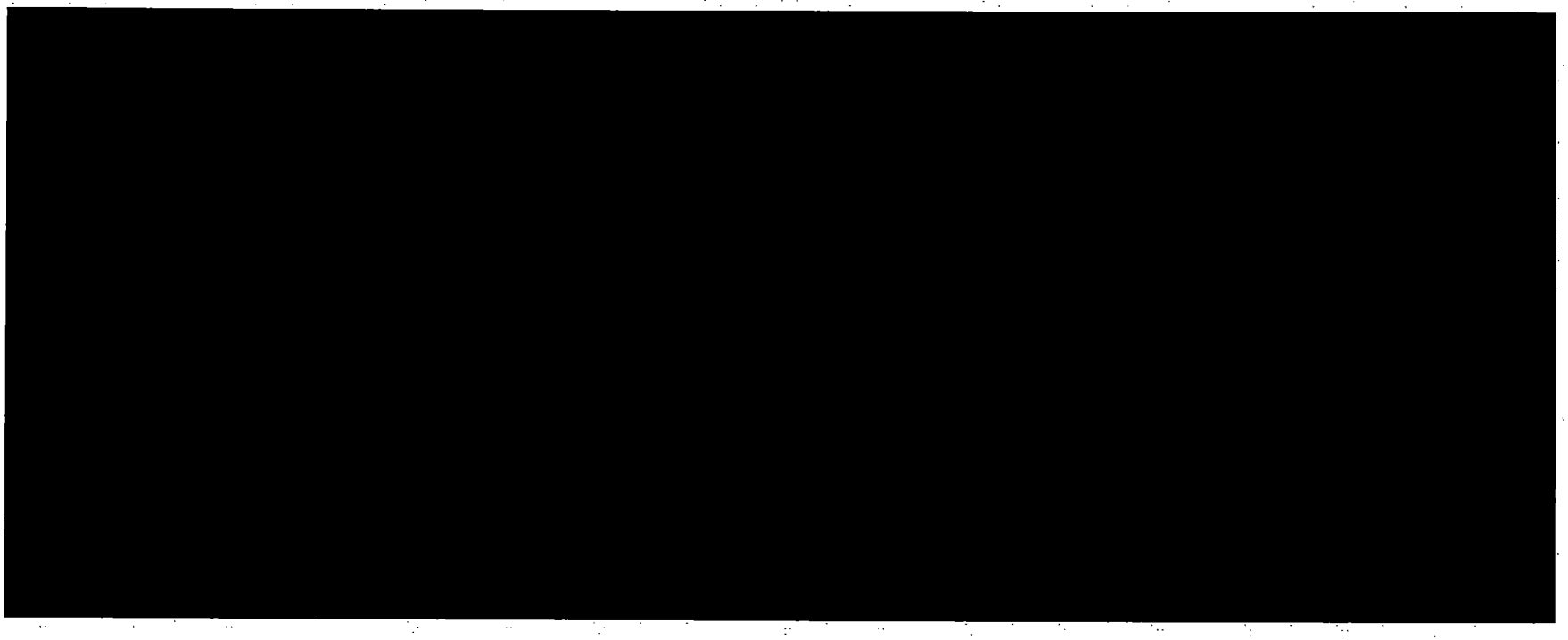
Source: Response to Informal Data Request MPUS-IDR 9-27, Attachment A.

Comparisons of CPCN and Post-CPCN Kemper Operating Capacity



Source: Petition of Mississippi Power Company for a Certification of Public Convenience and Necessity Authorizing the Acquisition, Construction, and Operation of an Electric Generating Plant, Associated Transmission Facilities, Associated Gas Pipeline Facilities, Associated Rights-Of-Way, and Related Facilities in Kemper, Lauderdale, Clarke, and Jasper Counties, Docket No. 2009-UA-14, Final Order on Remand Granting a Certificate of Public Convenience and Necessity, Authorizing Application of Baseload Act, and Approving Prudent Pre-Construction Costs; In Re: Notice of Intent of Mississippi Power Company for a Change in Rates Supported by a Conventional Rate Filing or, in the Alternative, by a Rate Mitigation Plan in Connection with the Kemper County IGCC Project; Mississippi Docket No. 2015-UN-80, Final Order; and Company's Confidential Response to MPUS 1-20.

Mississippi Power Company
Generation Fleet Operating Statistics



Source: Response to Informal Data Request 7-10-17, Attachment A – MPC Generating Units and Attachment B – Net Book Values.

Mississippi Power Company
Capacity Reserve Margins

[redacted]

Note: Kemper CC was estimated to have 695 MW of net summer capacity in Company workpapers.

Source: Response to Informal Data Request MPUS-MPC-IDR 9-31, Attachment A.

Summary of Economic Impacts from Proposed Kemper Resolutions
Case 5 – Approximation of Company's Proposal

Impact Type		Output	Employment	Labor Income
Direct Effect	$	(3,987.90)	(11,788)	$ (1,615.50)
Indirect Effect		(962.05)	(6,164)	(251.04)
Induced Effect		(999.96)	(7,652)	(277.19)
Total Effect	$	(5,949.91)	(25,604)	$ (2,143.73)
NPV	$	(2,176.12)		$ (795.86)

Summary of Economic Impacts from Proposed Kemper Resolutions
Case 3 – Example of Potential Alternative

Impact Type	Output	Employment	Labor Income
Direct Effect	$ (3,505.75)	(10,359)	$ (1,401.21)
Indirect Effect	(853.03)	(5,460)	(222.39)
Induced Effect	(869.09)	(6,647)	(240.96)
Total Effect	$ (5,227.87)	(22,466)	$ (1,864.57)
NPV	$ (1,926.23)		$ (699.25)

Summary of Economic Impacts from Potential Future PEP Increases

Impact Type		Output	Employment		Labor Income
Direct Effect	$	(3,725.51)	(11,412)	$	(1,628.72)
Indirect Effect		(853.21)	(5,519)		(224.54)
Induced Effect		(996.43)	(7,644)		(275.94)
Total Effect	$	(5,575.15)	(24,575)	$	(2,129.21)
NPV	$	(1,903.52)		$	(726.97)

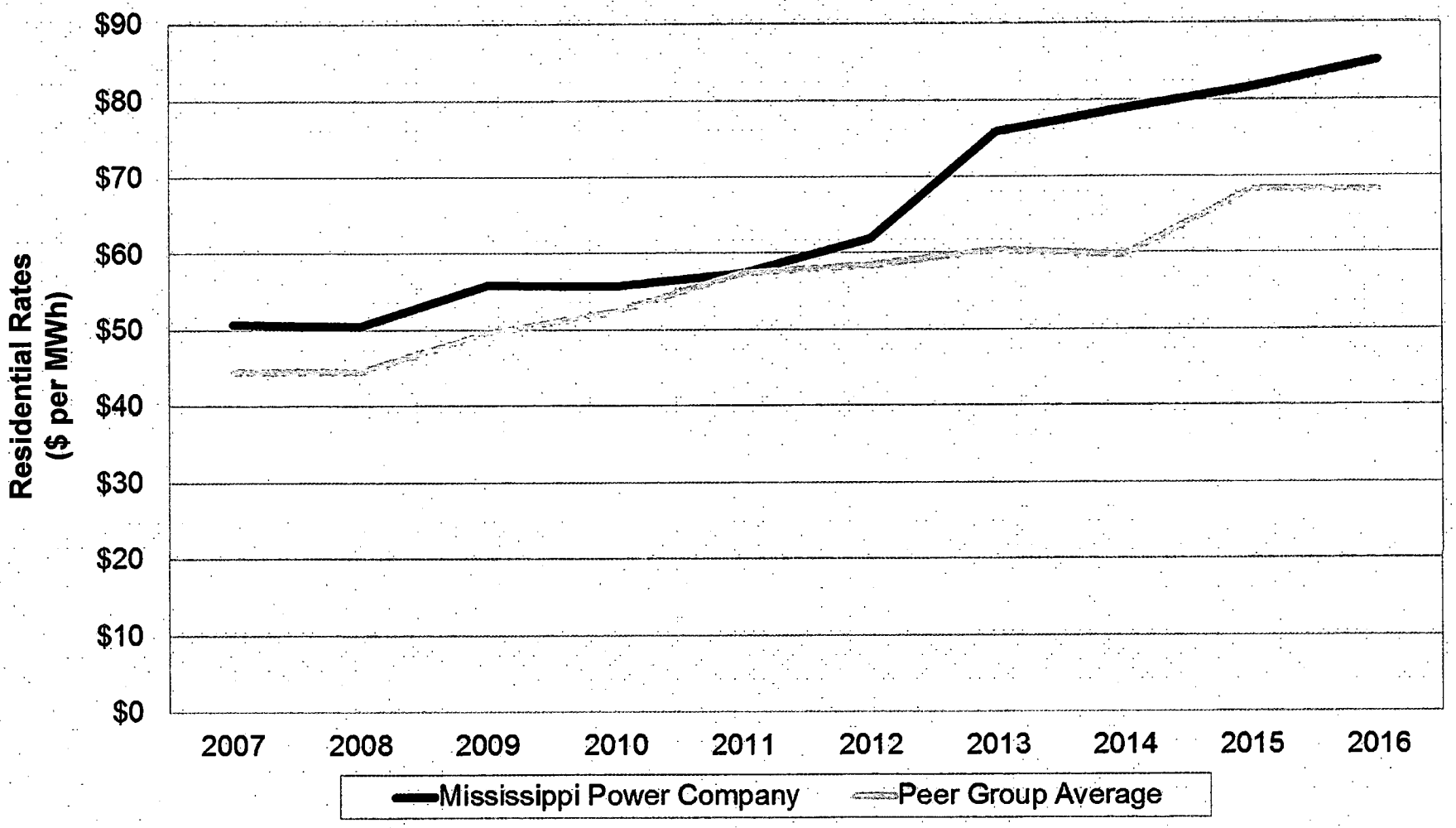
Comparison of Residential Rates per FERC Form 1

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/MWh)									
Mississippi Power Company	**$ 50.72**	**$ 50.41**	**$ 55.81**	**$ 55.75**	**$ 57.39**	**$ 61.91**	**$ 75.83**	**$ 78.83**	**$ 81.56**	**$ 85.06**
Alabama Power Company	$ 55.92	$ 58.41	$ 65.77	$ 70.92	$ 74.24	$ 78.79	$ 76.17	$ 76.91	$ 84.86	$ 90.65
Cleco Power, LLC	$ 39.26	$ 36.40	$ 38.75	$ 63.24	$ 68.10	$ 67.40	$ 72.97	$ 62.78	$ 66.51	$ 67.72
Duke Energy Carolinas, LLC	$ 56.72	$ 53.47	$ 58.25	$ 59.99	$ 61.21	$ 71.67	$ 70.31	$ 73.47	$ 78.82	$ 78.92
Duke Energy Progress, LLC	$ 57.91	$ 56.60	$ 63.73	$ 61.31	$ 61.71	$ 61.56	$ 63.08	$ 59.27	$ 67.43	$ 69.91
Entergy Arkansas, Inc.	$ 41.37	$ 44.72	$ 50.60	$ 54.74	$ 45.96	$ 58.88	$ 56.66	$ 47.70	$ 65.57	$ 68.50
Entergy Louisiana, LLC	$ 38.05	$ 37.86	$ 30.89	$ 36.98	$ 38.21	$ 33.91	$ 42.22	$ 40.66	$ 45.65	$ 48.68
Entergy Mississippi, Inc.	$ 30.00	$ 29.73	$ 39.00	$ 31.54	$ 36.79	$ 36.18	$ 40.93	$ 47.93	$ 56.55	$ 40.76
Georgia Power Company	$ 45.69	$ 50.69	$ 50.89	$ 50.56	$ 89.14	$ 70.48	$ 71.96	$ 73.12	$ 79.91	$ 80.59
Gulf Power Company	$ 48.27	$ 44.58	$ 63.14	$ 56.28	$ 60.44	$ 65.34	$ 62.51	$ 69.17	$ 83.62	$ 79.40
Southwestern Electric Power Company	$ 31.64	$ 32.45	$ 34.47	$ 37.76	$ 38.65	$ 40.53	$ 47.51	$ 46.62	$ 53.81	$ 56.17
Peer Group Average	$ 44.48	$ 44.49	$ 49.55	$ 52.33	$ 57.44	$ 58.47	$ 60.43	$ 59.76	$ 68.27	$ 68.13

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**8**	**7**	**7**	**6**	**5**	**6**	**10**	**11**	**9**	**10**
Alabama Power Company	9	11	11	11	10	11	11	10	11	11
Cleco Power, LLC	4	3	3	10	9	8	9	6	5	4
Duke Energy Carolinas, LLC	10	9	8	8	7	10	7	9	7	7
Duke Energy Progress, LLC	11	10	10	9	8	5	6	5	6	6
Entergy Arkansas, Inc.	5	6	5	5	4	4	4	3	4	5
Entergy Louisiana, LLC	3	4	1	2	2	1	2	1	1	2
Entergy Mississippi, Inc.	1	1	4	1	1	2	1	4	3	1
Georgia Power Company	6	8	6	4	11	9	8	8	8	9
Gulf Power Company	7	5	9	7	6	7	5	7	10	8
Southwestern Electric Power Company	2	2	2	3	3	3	3	2	2	3

Source: FERC Form 1.

Comparison of Residential Rates per FERC Form 1



Source: FERC Form 1.

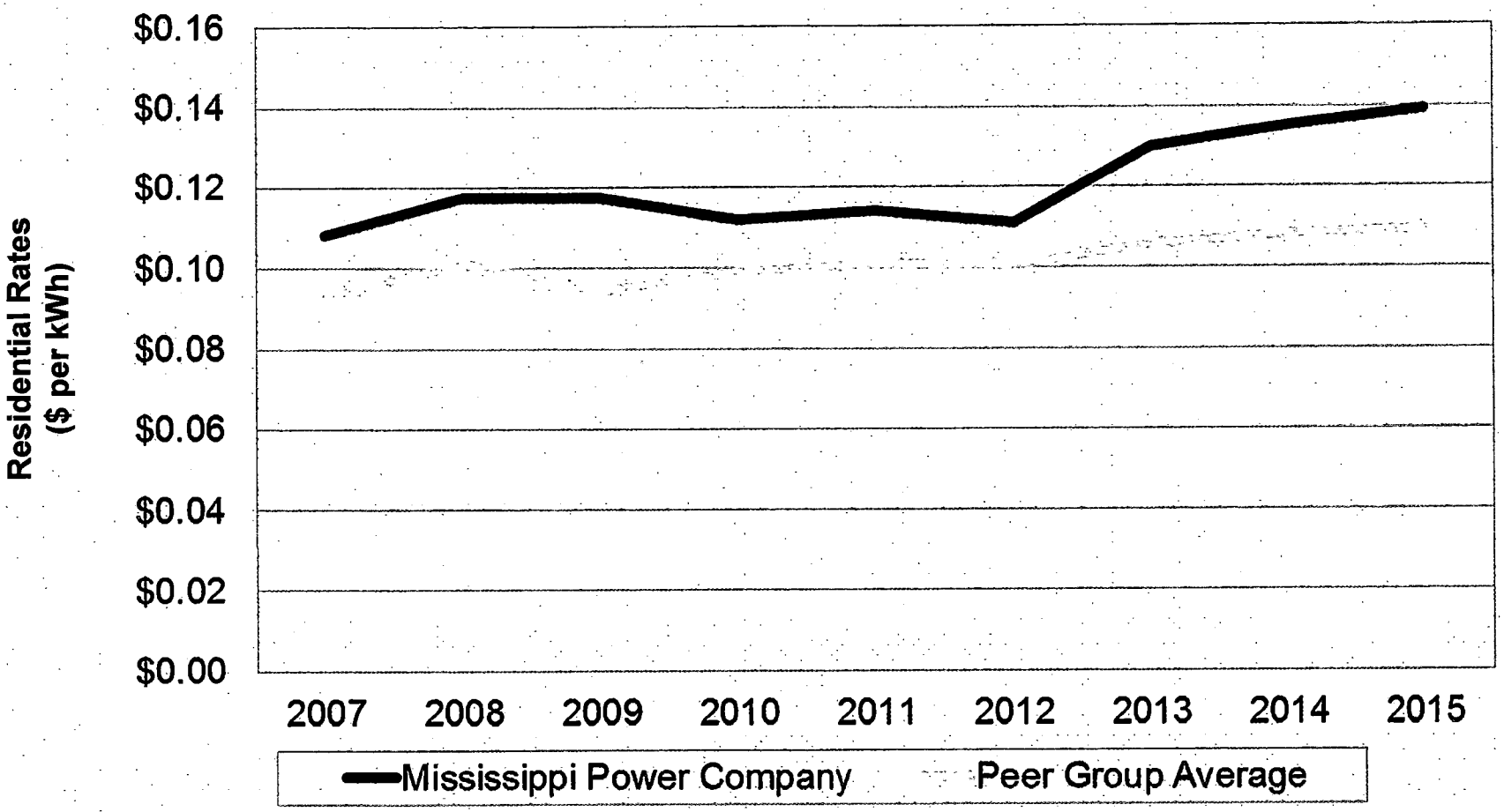
Comparison of Utility Rates per EIA Form 860
Residential

Utility	2007	2008	2009	2010	2011	2012	2013	2014	2015
	($/kWh)								
Mississippi Power Company	**$ 0.1081**	**$ 0.1172**	**$ 0.1173**	**$ 0.1119**	**$ 0.1140**	**$ 0.1109**	**$ 0.1300**	**$ 0.1350**	**$ 0.1392**
Alabama Power Company	0.0971	0.1087	0.1086	0.1118	0.1149	0.1174	0.1160	0.1180	0.1220
Cleco Power, LLC	0.1137	0.1176	0.0959	0.1166	0.1182	0.1107	0.1170	0.1162	0.1132
Duke Energy Carolinas, LLC	0.0807	0.0814	0.0834	0.0886	0.0913	0.1013	0.1005	0.1056	0.1073
Duke Energy Progress, LLC	0.0939	0.0958	0.1035	0.1025	0.1009	0.1037	0.1053	0.1048	0.1090
Entergy Arkansas, Inc.	0.0893	0.0984	0.1030	0.0907	0.0909	0.0965	0.0965	0.0926	0.1018
Entergy Louisiana LLC	0.0995	0.1137	0.0771	0.0888	0.0889	0.0767	0.0924	0.0936	0.0891
Entergy Mississippi, Inc.	0.0914	0.1038	0.0871	0.0837	0.0838	0.0817	0.0936	0.1032	0.0999
Georgia Power Company	0.0910	0.1024	0.1014	0.1028	0.1190	0.1160	0.1200	0.1237	0.1215
Gulf Power Company	0.0982	0.1088	0.1119	0.1251	0.1201	0.1206	0.1243	0.1300	0.1369
Southwestern Electric Power Company	0.0752	0.0813	0.0735	0.0780	0.0806	0.0809	0.0927	0.0931	0.0937
Peer Group Average	$ 0.0930	$ 0.1012	$ 0.0945	$ 0.0989	$ 0.1009	$ 0.1005	$ 0.1058	$ 0.1081	$ 0.1094

	2007	2008	2009	2010	2011	2012	2013	2014	2015
	(Rank)								
Mississippi Power Company	**10**	**10**	**11**	**9**	**7**	**8**	**11**	**11**	**11**
Alabama Power Company	7	7	9	8	8	10	7	8	9
Cleco Power, LLC	11	11	5	10	9	7	8	7	7
Duke Energy Carolinas, LLC	2	2	3	3	5	5	5	6	5
Duke Energy Progress, LLC	6	3	8	6	6	6	6	5	6
Entergy Arkansas, Inc.	3	4	7	5	4	4	4	1	4
Entergy Louisiana LLC	9	9	2	4	3	1	1	3	1
Entergy Mississippi, Inc.	5	6	4	2	2	3	3	4	3
Georgia Power Company	4	5	6	7	10	9	9	9	8
Gulf Power Company	8	8	10	11	11	11	10	10	10
Southwestern Electric Power Company	1	1	1	1	1	2	2	2	2

Source: EIA Form EIA-860.

Comparison of Utility Rates per EIA Form 860
Residential



Source: EIA Form EIA-860.

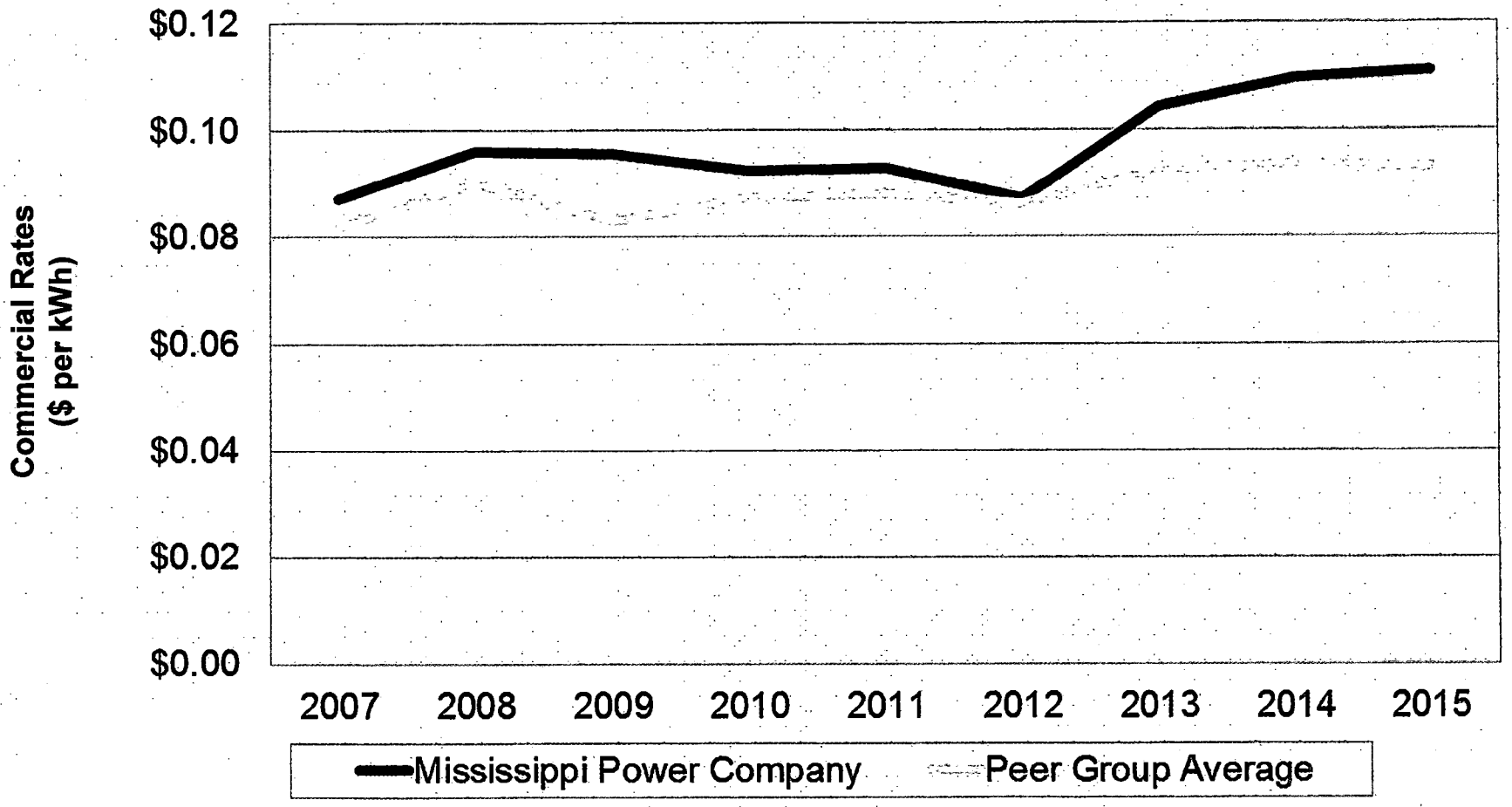
Comparison of Utility Rates per EIA Form 860
Commercial

Utility	2007	2008	2009	2010	2011	2012	2013	2014	2015
	($/kWh)								
Mississippi Power Company	**$ 0.0871**	**$ 0.0961**	**$ 0.0957**	**$ 0.0923**	**$ 0.0929**	**$ 0.0872**	**$ 0.1044**	**$ 0.1097**	**$ 0.1110**
Alabama Power Company	0.0892	0.1006	0.1010	0.1041	0.1058	0.1071	0.1067	0.1089	0.1113
Cleco Power, LLC	0.1073	0.1120	0.0907	0.1092	0.1100	0.1012	0.1108	0.1092	0.1043
Duke Energy Carolinas, LLC	0.0660	0.0663	0.0687	0.0714	0.0721	0.0798	0.0799	0.0806	0.0800
Duke Energy Progress, LLC	0.0779	0.0800	0.0861	0.0862	0.0831	0.0853	0.0866	0.0860	0.0872
Entergy Arkansas, Inc.	0.0687	0.0787	0.0815	0.0716	0.0735	0.0773	0.0785	0.0770	0.0848
Entergy Louisiana LLC	0.0962	0.1099	0.0745	0.0851	0.0849	0.0726	0.0877	0.0900	0.0841
Entergy Mississippi, Inc.	0.0884	0.1002	0.0839	0.0819	0.0812	0.0785	0.0908	0.1008	0.0958
Georgia Power Company	0.0787	0.0906	0.0869	0.0886	0.0988	0.0929	0.0973	0.1022	0.0956
Gulf Power Company	0.0835	0.0937	0.0970	0.1104	0.1048	0.1016	0.1041	0.1062	0.1105
Southwestern Electric Power Company	0.0619	0.0685	0.0595	0.0640	0.0664	0.0662	0.0806	0.0778	0.0778
Peer Group Average	$ 0.0818	$ 0.0900	$ 0.0830	$ 0.0872	$ 0.0881	$ 0.0862	$ 0.0923	$ 0.0939	$ 0.0931

	2007	2008	2009	2010	2011	2012	2013	2014	2015
	(Rank)								
Mississippi Power Company	**7**	**7**	**9**	**8**	**7**	**7**	**9**	**11**	**10**
Alabama Power Company	9	9	11	9	10	11	10	9	11
Cleco Power, LLC	11	11	8	10	11	9	11	10	8
Duke Energy Carolinas, LLC	2	1	2	2	2	5	2	3	2
Duke Energy Progress, LLC	4	4	6	6	5	6	4	4	5
Entergy Arkansas, Inc.	3	3	4	3	3	3	1	1	4
Entergy Louisiana LLC	10	10	3	5	6	2	5	5	3
Entergy Mississippi, Inc.	8	8	5	4	4	4	6	6	7
Georgia Power Company	5	5	7	7	8	8	7	7	6
Gulf Power Company	6	6	10	11	9	10	8	8	9
Southwestern Electric Power Company	1	2	1	1	1	1	3	2	1

Source: EIA Form EIA-860.

Comparison of Utility Rates per EIA Form 860
Commercial



Source: EIA Form EIA-860.

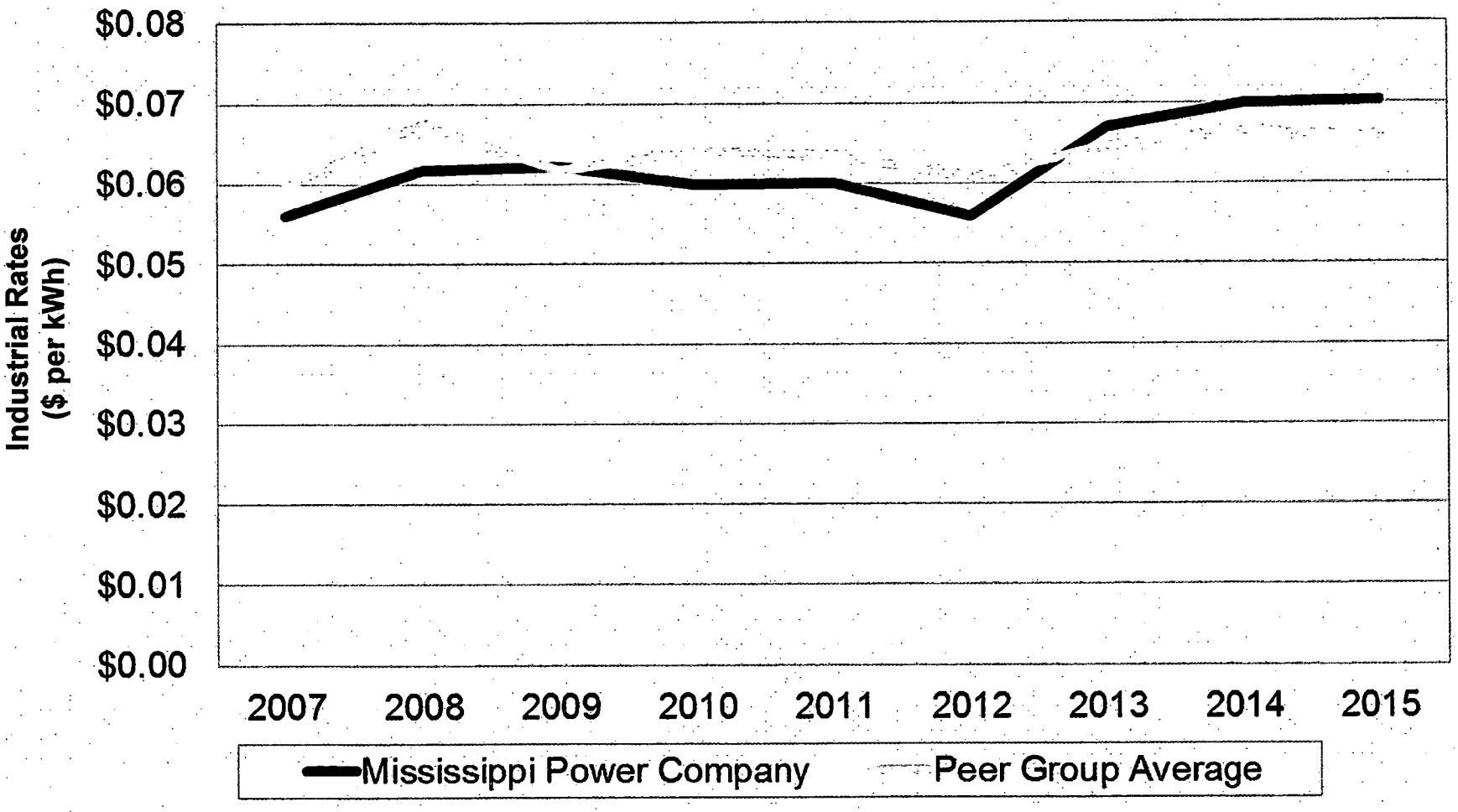
Comparison of Utility Rates per EIA Form 860
Industrial

Utility	2007	2008	2009	2010	2011	2012	2013	2014	2015
	($/kWh)								
Mississippi Power Company	**$ 0.0561**	**$ 0.0617**	**$ 0.0622**	**$ 0.0599**	**$ 0.0601**	**$ 0.0559**	**$ 0.0669**	**$ 0.0699**	**$ 0.0702**
Alabama Power Company	0.0543	0.0626	0.0582	0.0599	0.0603	0.0607	0.0598	0.0622	0.0614
Cleco Power, LLC	0.0759	0.0803	0.0667	0.0765	0.0753	0.0676	0.0763	0.0760	0.0770
Duke Energy Carolinas, LLC	0.0466	0.0465	0.0501	0.0510	0.0512	0.0572	0.0564	0.0586	0.0597
Duke Energy Progress, LLC	0.0603	0.0639	0.0678	0.0676	0.0652	0.0655	0.0648	0.0646	0.0647
Entergy Arkansas, Inc.	0.0548	0.0640	0.0680	0.0585	0.0595	0.0630	0.0635	0.0618	0.0688
Entergy Louisiana LLC	0.0669	0.0804	0.0499	0.0561	0.0546	0.0440	0.0564	0.0578	0.0509
Entergy Mississippi, Inc.	0.0668	0.0778	0.0673	0.0642	0.0627	0.0585	0.0688	0.0760	0.0717
Georgia Power Company	0.0551	0.0686	0.0601	0.0616	0.0658	0.0572	0.0603	0.0648	0.0548
Gulf Power Company	0.0660	0.0749	0.0800	0.0935	0.0880	0.0814	0.0815	0.0820	0.0864
Southwestern Electric Power Company	0.0513	0.0569	0.0500	0.0521	0.0538	0.0520	0.0586	0.0608	0.0595
Peer Group Average	$ 0.0598	$ 0.0676	$ 0.0618	$ 0.0641	$ 0.0636	$ 0.0607	$ 0.0646	$ 0.0665	$ 0.0655

	2007	2008	2009	2010	2011	2012	2013	2014	2015
	(Rank)								
Mississippi Power Company	**6**	**3**	**6**	**6**	**5**	**3**	**8**	**8**	**8**
Alabama Power Company	3	4	4	5	6	7	4	5	5
Cleco Power, LLC	11	10	7	10	10	10	10	9	10
Duke Energy Carolinas, LLC	1	1	3	1	1	4	1	2	4
Duke Energy Progress, LLC	7	5	9	9	8	9	7	6	6
Entergy Arkansas, Inc.	4	6	10	4	4	8	6	4	7
Entergy Louisiana LLC	10	11	1	3	3	1	2	1	1
Entergy Mississippi, Inc.	9	9	8	8	7	6	9	10	9
Georgia Power Company	5	7	5	7	9	5	5	7	2
Gulf Power Company	8	8	11	11	11	11	11	11	11
Southwestern Electric Power Company	2	2	2	2	2	2	3	3	3

Source: EIA Form EIA-860.

Comparison of Utility Rates per EIA Form 860
Industrial



Source: EIA Form EIA-860.

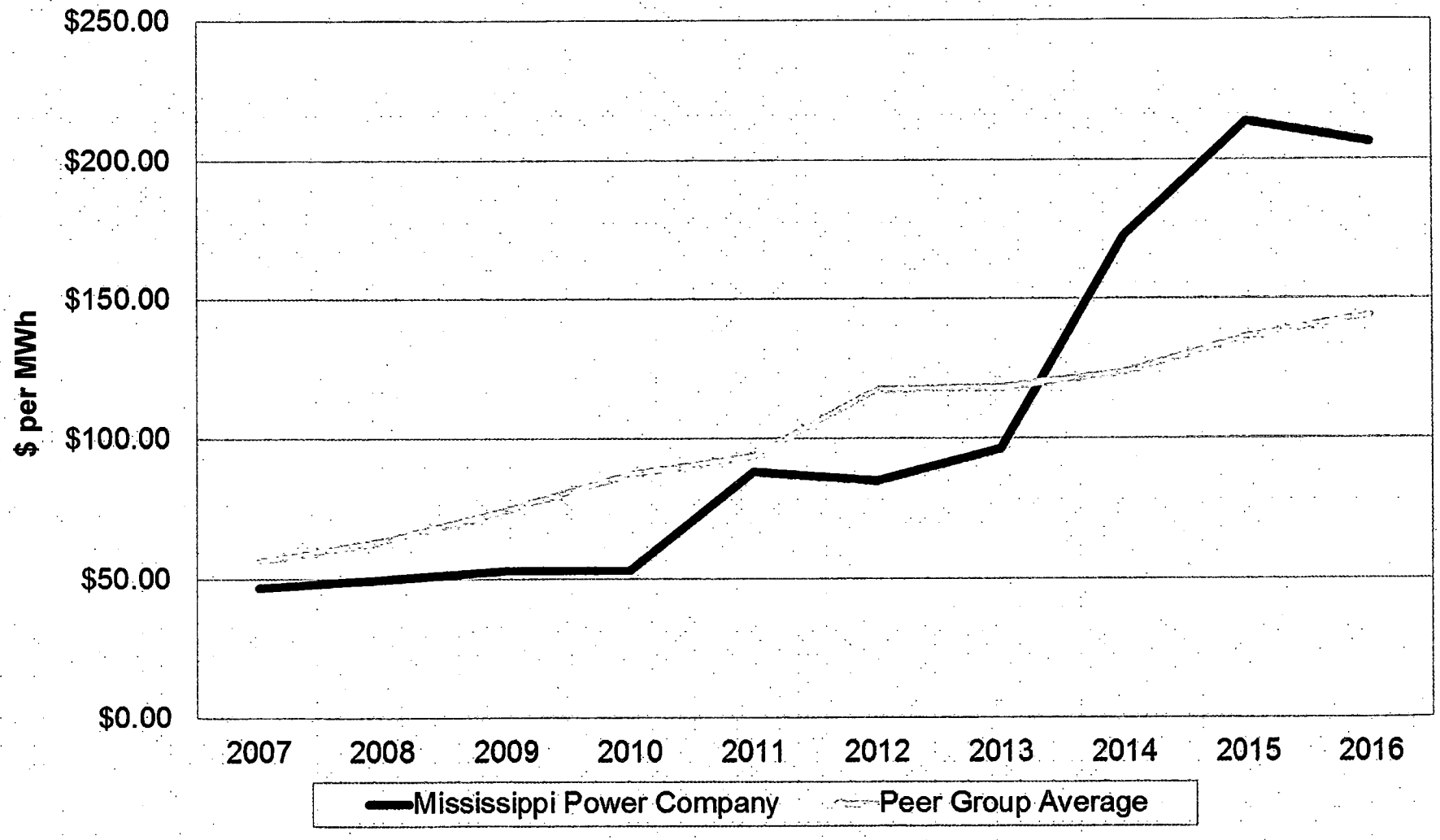
Comparison of Net Production Plant Investments
Net Production Plant per MWh

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/MWh)									
Mississippi Power Company	**$ 46.73**	**$ 49.77**	**$ 53.10**	**$ 52.84**	**$ 87.92**	**$ 84.85**	**$ 96.50**	**$ 172.32**	**$ 213.81**	**$ 206.25**
Alabama Power Company	85.89	95.22	109.59	113.12	117.87	117.36	114.85	113.70	134.00	150.26
Cleco Power, LLC	15.88	15.65	15.75	144.26	146.69	148.07	145.47	172.03	177.31	177.47
Duke Energy Carolinas, LLC	76.61	83.42	99.38	93.16	110.28	144.90	143.64	152.88	162.43	160.62
Duke Energy Progress, LLC	78.37	83.58	90.50	91.63	107.79	139.49	156.08	178.74	216.80	217.89
Entergy Arkansas, Inc.	64.91	76.80	75.67	68.56	69.79	79.81	82.54	83.67	88.28	100.30
Entergy Louisiana, LLC	51.15	70.41	74.45	67.99	71.56	83.26	82.41	89.69	89.32	98.33
Entergy Mississippi, Inc.	23.47	25.34	26.53	25.08	24.92	36.27	35.93	35.48	35.68	35.97
Georgia Power Company	59.11	73.52	83.76	83.30	94.68	111.40	111.70	110.36	115.65	124.06
Gulf Power Company	66.78	69.07	125.27	126.80	137.81	166.87	164.18	153.63	190.67	182.72
Southwestern Electric Power Company	37.63	40.04	41.85	61.37	58.03	147.57	146.50	147.30	151.95	190.91
Peer Group Average	$ 55.98	$ 63.30	$ 74.28	$ 87.53	$ 93.94	$ 117.50	$ 118.33	$ 123.75	$ 136.21	$ 143.85

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**4**	**4**	**4**	**2**	**5**	**4**	**4**	**10**	**10**	**10**
Alabama Power Company	11	11	10	9	9	6	6	5	5	5
Cleco Power, LLC	1	1	1	11	11	10	8	9	8	7
Duke Energy Carolinas, LLC	9	9	9	8	8	8	7	7	7	6
Duke Energy Progress, LLC	10	10	8	7	7	7	10	11	11	11
Entergy Arkansas, Inc.	7	8	6	5	3	2	3	2	2	3
Entergy Louisiana, LLC	5	6	5	4	4	3	2	3	3	2
Entergy Mississippi, Inc.	2	2	2	1	1	1	1	1	1	1
Georgia Power Company	6	7	7	6	6	5	5	4	4	4
Gulf Power Company	8	5	11	10	10	11	11	8	9	8
Southwestern Electric Power Company	3	3	3	3	2	9	9	6	6	9

Source: FERC Form 1.

Comparison of Net Production Plant Investments
Net Production Plant per MWh



Source: FERC Form 1.

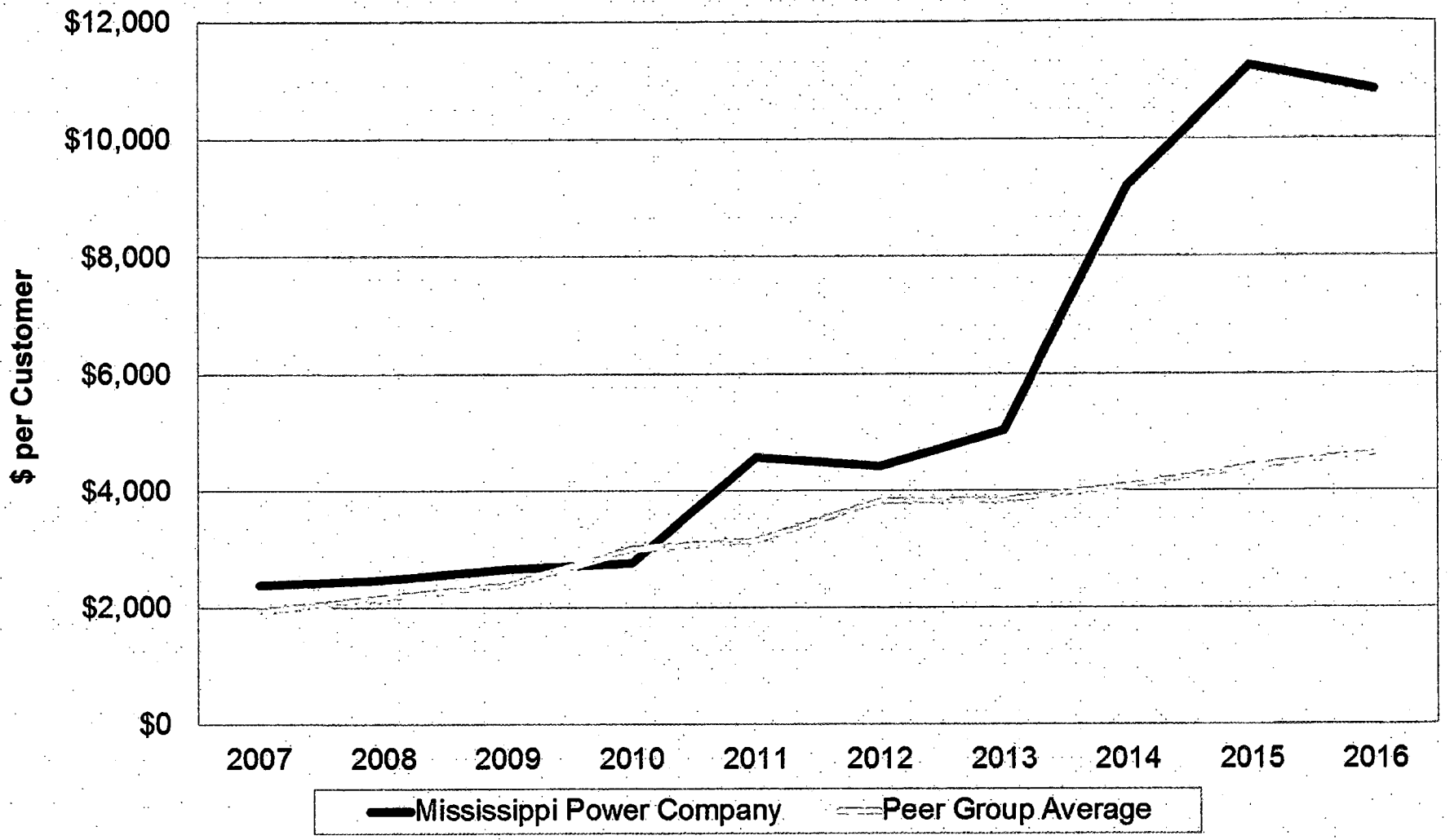
Comparison of Net Production Plant Investments
Net Production Plant per Customer

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/Customer)									
Mississippi Power Company	**$ 2,389**	**$ 2,464**	**$ 2,659**	**$ 2,771**	**$ 4,571**	**$ 4,422**	**$ 5,038**	**$ 9,209**	**$ 11,241**	**$ 10,819**
Alabama Power Company	3,413	3,662	3,896	4,409	4,495	4,395	4,366	4,455	5,123	5,622
Cleco Power, LLC	536	513	482	4,646	4,715	4,570	4,526	5,310	5,329	5,215
Duke Energy Carolinas, LLC	2,597	2,725	3,112	3,103	3,507	4,522	4,487	4,860	5,162	5,066
Duke Energy Progress, LLC	2,450	2,529	2,661	2,910	3,253	4,071	4,578	5,299	6,271	6,262
Entergy Arkansas, Inc.	2,024	2,345	2,184	2,173	2,166	2,414	2,463	2,512	2,653	2,929
Entergy Louisiana, LLC	2,275	3,158	3,317	3,275	3,507	4,025	4,007	4,488	4,583	5,016
Entergy Mississippi, Inc.	735	769	774	787	772	1,095	1,069	1,060	1,068	1,083
Georgia Power Company	2,189	2,641	2,894	3,077	3,381	3,841	3,798	3,835	3,973	4,265
Gulf Power Company	1,799	1,857	3,190	3,350	3,519	4,096	3,984	3,846	4,723	4,468
Southwestern Electric Power Company	1,400	1,465	1,425	2,249	2,078	5,117	5,056	5,109	5,123	6,231
Peer Group Average	$ 1,942	$ 2,166	$ 2,393	$ 2,998	$ 3,139	$ 3,815	$ 3,833	$ 4,078	$ 4,401	$ 4,616

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**8**	**6**	**5**	**4**	**10**	**8**	**10**	**11**	**11**	**11**
Alabama Power Company	11	11	11	10	9	7	6	5	7	8
Cleco Power, LLC	1	1	1	11	11	10	8	10	9	7
Duke Energy Carolinas, LLC	10	9	8	7	7	9	7	7	8	6
Duke Energy Progress, LLC	9	7	6	5	4	5	9	9	10	10
Entergy Arkansas, Inc.	5	5	4	2	3	2	2	2	2	2
Entergy Louisiana, LLC	7	10	10	8	6	4	5	6	4	5
Entergy Mississippi, Inc.	2	2	2	1	1	1	1	1	1	1
Georgia Power Company	6	8	7	6	5	3	3	3	3	3
Gulf Power Company	4	4	9	9	8	6	4	4	5	4
Southwestern Electric Power Company	3	3	3	3	2	11	11	8	6	9

Source: FERC Form 1.

Comparison of Net Production Plant Investments
Net Production Plant per Customer



Source: FERC Form 1.

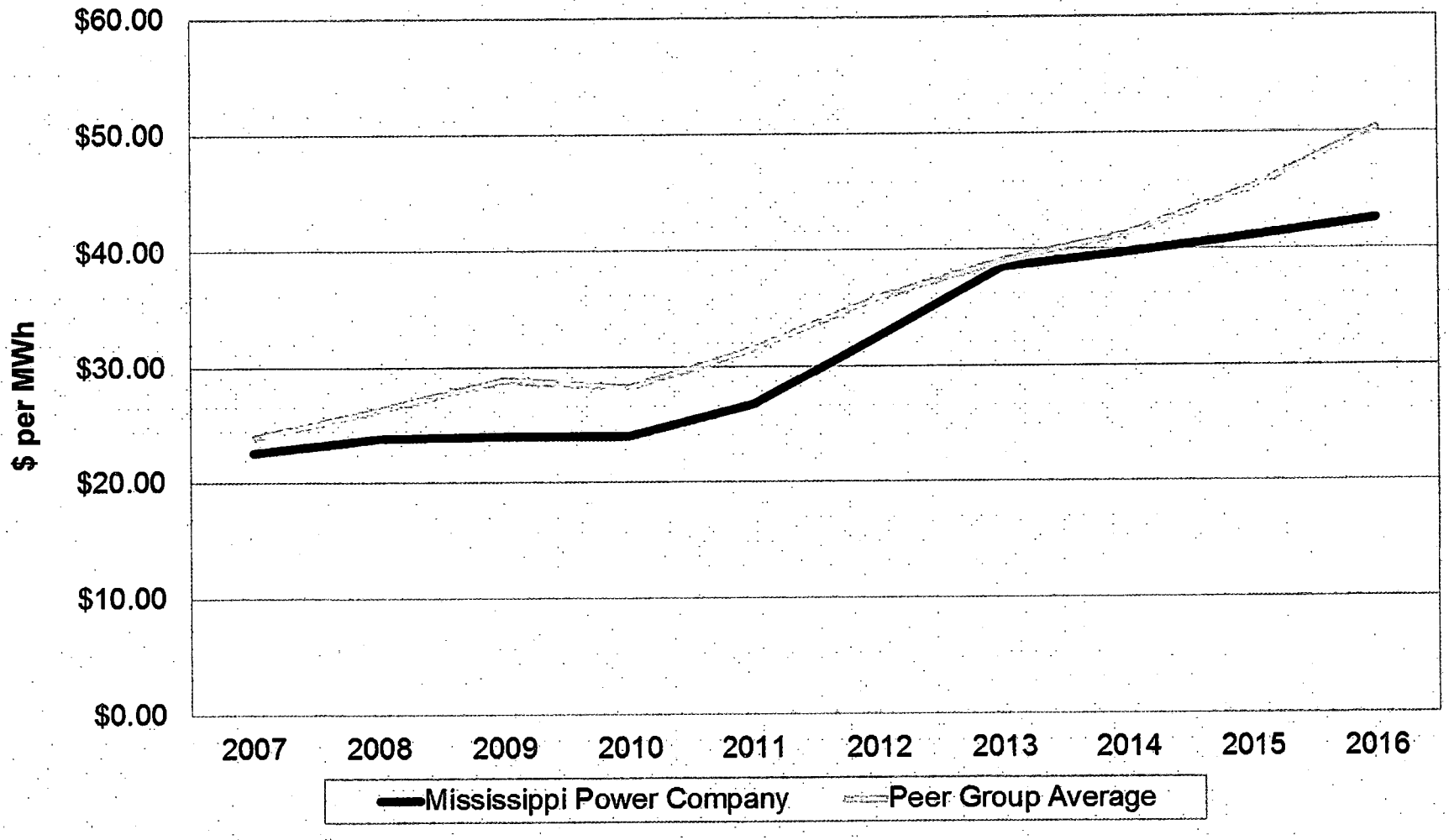
Comparison of Net Transmission Plant Investments
Net Transmission Plant per MWh

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/MWh)									
Mississippi Power Company	**$ 22.48**	**$ 23.72**	**$ 23.94**	**$ 23.93**	**$ 26.65**	**$ 32.50**	**$ 38.50**	**$ 39.76**	**$ 41.16**	**$ 42.57**
Alabama Power Company	28.68	30.82	35.10	33.18	36.07	37.86	38.84	42.74	46.29	48.63
Cleco Power, LLC	25.40	28.31	30.00	30.80	37.10	41.90	47.90	48.24	52.30	58.36
Duke Energy Carolinas, LLC	14.91	16.04	17.48	17.74	19.87	21.49	23.85	24.34	26.11	27.42
Duke Energy Progress, LLC	17.76	19.72	21.19	21.27	26.11	29.47	32.89	34.94	36.55	38.60
Entergy Arkansas, Inc.	33.16	35.89	39.51	36.69	42.60	48.10	51.47	55.64	58.85	73.91
Entergy Louisiana, LLC	12.94	18.40	21.43	20.14	22.40	24.46	26.28	28.17	30.17	34.45
Entergy Mississippi, Inc.	33.91	35.40	36.58	33.99	37.52	44.04	48.97	49.03	49.83	55.27
Georgia Power Company	30.15	32.30	34.16	34.90	37.62	41.36	44.70	45.87	48.95	51.74
Gulf Power Company	15.54	17.26	19.05	19.60	22.68	29.81	33.98	36.32	51.81	51.77
Southwestern Electric Power Company	26.04	28.22	33.52	32.95	33.04	39.94	41.60	47.55	51.84	63.17
Peer Group Average	$ 23.85	$ 26.24	$ 28.80	$ 28.13	$ 31.50	$ 35.84	$ 39.05	$ 41.28	$ 45.27	$ 50.33

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**4**	**4**
Alabama Power Company	8	8	9	8	7	6	6	6	5	5
Cleco Power, LLC	6	7	6	6	8	9	9	9	10	9
Duke Energy Carolinas, LLC	2	1	1	1	1	1	1	1	1	1
Duke Energy Progress, LLC	4	4	3	4	4	3	3	3	3	3
Entergy Arkansas, Inc.	10	11	11	11	11	11	11	11	11	11
Entergy Louisiana, LLC	1	3	4	3	2	2	2	2	2	2
Entergy Mississippi, Inc.	11	10	10	9	9	10	10	10	7	8
Georgia Power Company	9	9	8	10	10	8	8	7	6	6
Gulf Power Company	3	2	2	2	3	4	4	4	8	7
Southwestern Electric Power Company	7	6	7	7	6	7	7	8	9	10

Source: FERC Form 1.

Comparison of Net Transmission Plant Investments
Net Transmission Plant per MWh



Source: FERC Form 1.

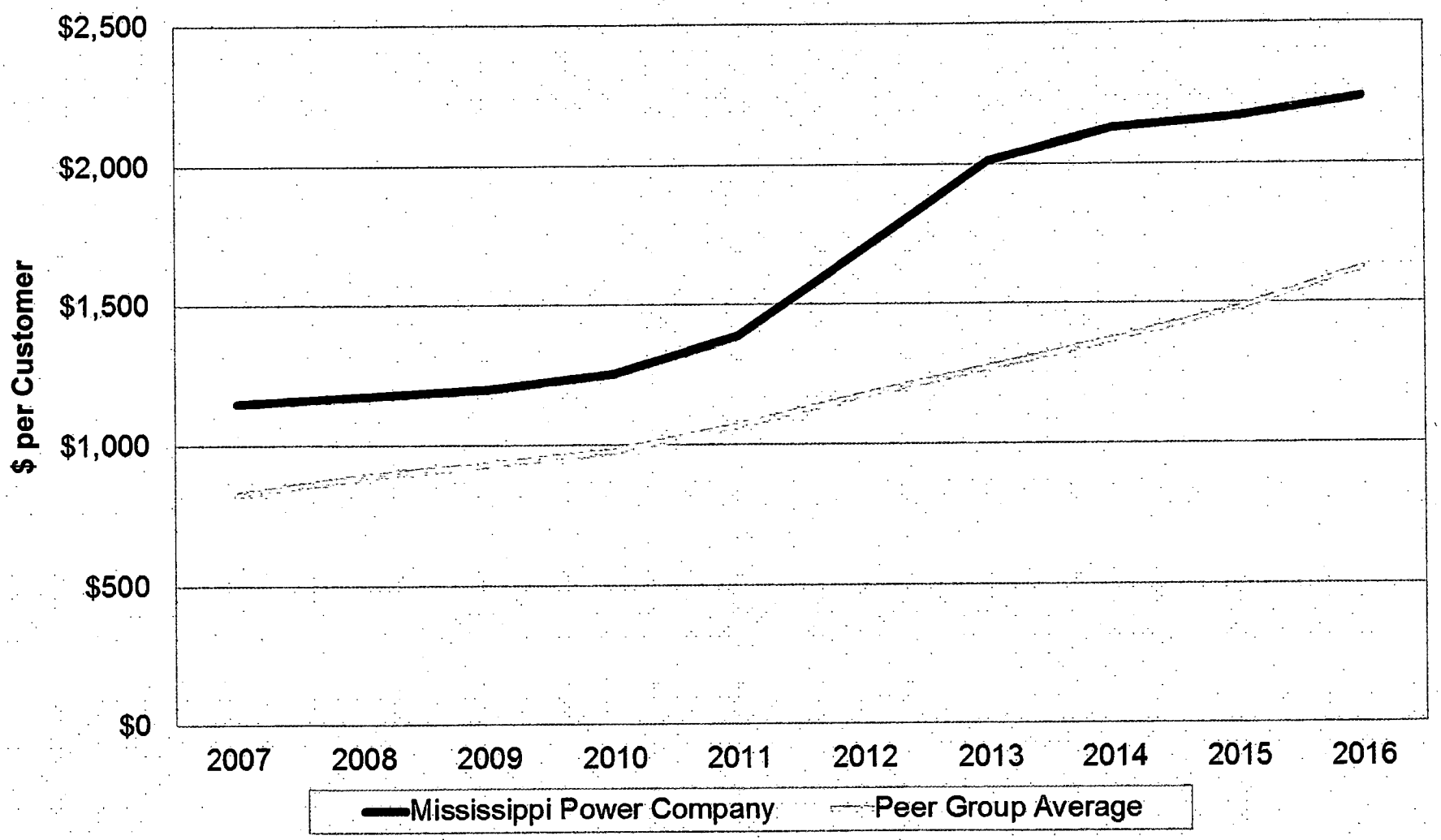
Comparison of Net Transmission Plant Investments
Net Transmission Plant per Customer

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/Customer)									
Mississippi Power Company	**$ 1,149**	**$ 1,174**	**$ 1,199**	**$ 1,255**	**$ 1,385**	**$ 1,694**	**$ 2,010**	**$ 2,125**	**$ 2,164**	**$ 2,233**
Alabama Power Company	1,140	1,185	1,248	1,293	1,376	1,418	1,477	1,675	1,770	1,820
Cleco Power, LLC	857	928	918	992	1,192	1,293	1,490	1,489	1,572	1,715
Duke Energy Carolinas, LLC	505	524	548	591	632	671	745	774	830	865
Duke Energy Progress, LLC	555	597	623	676	788	860	965	1,036	1,057	1,109
Entergy Arkansas, Inc.	1,034	1,096	1,140	1,163	1,322	1,455	1,536	1,671	1,768	2,158
Entergy Louisiana, LLC	576	825	955	970	1,098	1,183	1,278	1,409	1,548	1,757
Entergy Mississippi, Inc.	1,062	1,075	1,067	1,067	1,163	1,329	1,457	1,464	1,491	1,663
Georgia Power Company	1,116	1,160	1,180	1,289	1,344	1,426	1,520	1,594	1,682	1,779
Gulf Power Company	419	464	485	518	579	732	824	909	1,283	1,266
Southwestern Electric Power Company	968	1,033	1,141	1,207	1,183	1,385	1,436	1,649	1,748	2,062
Peer Group Average	$ 823	$ 889	$ 931	$ 977	$ 1,068	$ 1,175	$ 1,273	$ 1,367	$ 1,475	$ 1,619

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**11**	**10**	**10**	**9**	**11**	**11**	**11**	**11**	**11**	**11**
Alabama Power Company	10	11	11	11	10	8	7	10	10	8
Cleco Power, LLC	5	5	4	5	7	5	8	6	6	5
Duke Energy Carolinas, LLC	2	2	2	2	2	1	1	1	1	1
Duke Energy Progress, LLC	3	3	3	3	3	3	3	3	2	2
Entergy Arkansas, Inc.	7	8	7	7	8	10	10	9	9	10
Entergy Louisiana, LLC	4	4	5	4	4	4	4	4	5	6
Entergy Mississippi, Inc.	8	7	6	6	5	6	6	5	4	4
Georgia Power Company	9	9	9	10	9	9	9	7	7	7
Gulf Power Company	1	1	1	1	1	2	2	2	3	3
Southwestern Electric Power Company	6	6	8	8	6	7	5	8	8	9

Source: FERC Form 1.

Comparison of Net Transmission Plant Investments
Net Transmission Plant per Customer



Source: FERC Form 1.

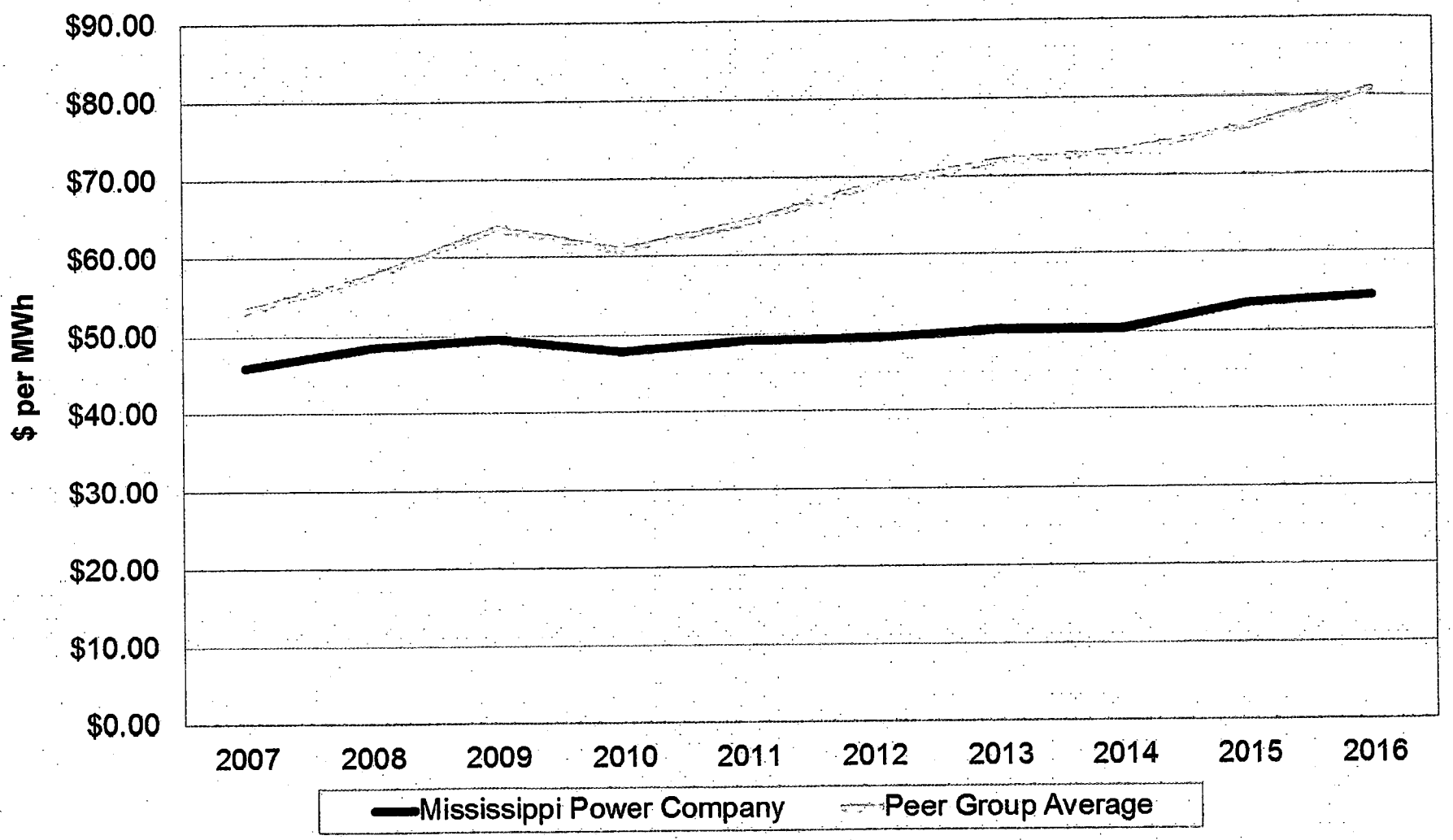
Comparison of Net Distribution Plant Investments
Net Distribution Plant per MWh

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/MWh)									
Mississippi Power Company	**$ 45.89**	**$ 48.57**	**$ 49.54**	**$ 47.91**	**$ 49.14**	**$ 49.42**	**$ 50.36**	**$ 50.25**	**$ 53.41**	**$ 54.29**
Alabama Power Company	52.38	56.52	64.15	60.76	65.52	67.73	68.39	69.25	72.84	76.87
Cleco Power, LLC	57.81	62.40	72.87	72.55	78.84	86.36	95.27	98.90	104.83	110.13
Duke Energy Carolinas, LLC	56.90	60.66	65.49	62.88	66.79	69.67	71.62	71.91	74.10	77.92
Duke Energy Progress, LLC	56.08	57.23	58.17	54.97	58.35	60.41	60.48	59.64	63.44	68.08
Entergy Arkansas, Inc.	66.58	70.53	78.24	71.07	75.52	79.81	85.52	90.39	93.54	104.07
Entergy Louisiana, LLC	29.01	41.81	48.64	41.19	41.88	47.43	45.70	45.42	45.42	48.17
Entergy Mississippi, Inc.	67.30	71.45	78.43	75.10	78.53	85.05	88.94	91.22	93.86	98.97
Georgia Power Company	51.76	56.39	62.49	59.77	64.10	68.45	70.62	71.00	73.41	76.24
Gulf Power Company	47.96	48.45	52.87	52.98	57.98	63.32	67.19	66.68	67.94	69.68
Southwestern Electric Power Company	46.10	50.35	55.56	55.93	55.52	60.60	64.92	66.29	70.84	76.11
Peer Group Average	$ 53.19	$ 57.58	$ 63.69	$ 60.72	$ 64.30	$ 68.88	$ 71.86	$ 73.07	$ 76.02	$ 80.62

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**2**	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
Alabama Power Company	6	6	7	7	7	6	6	6	6	7
Cleco Power, LLC	9	9	9	10	11	11	11	11	11	11
Duke Energy Carolinas, LLC	8	8	8	8	8	8	8	8	8	8
Duke Energy Progress, LLC	7	7	5	4	5	3	3	3	3	3
Entergy Arkansas, Inc.	10	10	10	9	9	9	9	9	9	10
Entergy Louisiana, LLC	1	1	1	1	1	1	1	1	1	1
Entergy Mississippi, Inc.	11	11	11	11	10	10	10	10	10	9
Georgia Power Company	5	5	6	6	6	7	7	7	7	6
Gulf Power Company	4	2	3	3	4	5	5	5	4	4
Southwestern Electric Power Company	3	4	4	5	3	4	4	4	5	5

Source: FERC Form 1.

Comparison of Net Distribution Plant Investments
Net Distribution Plant per MWh



Source: FERC Form 1.

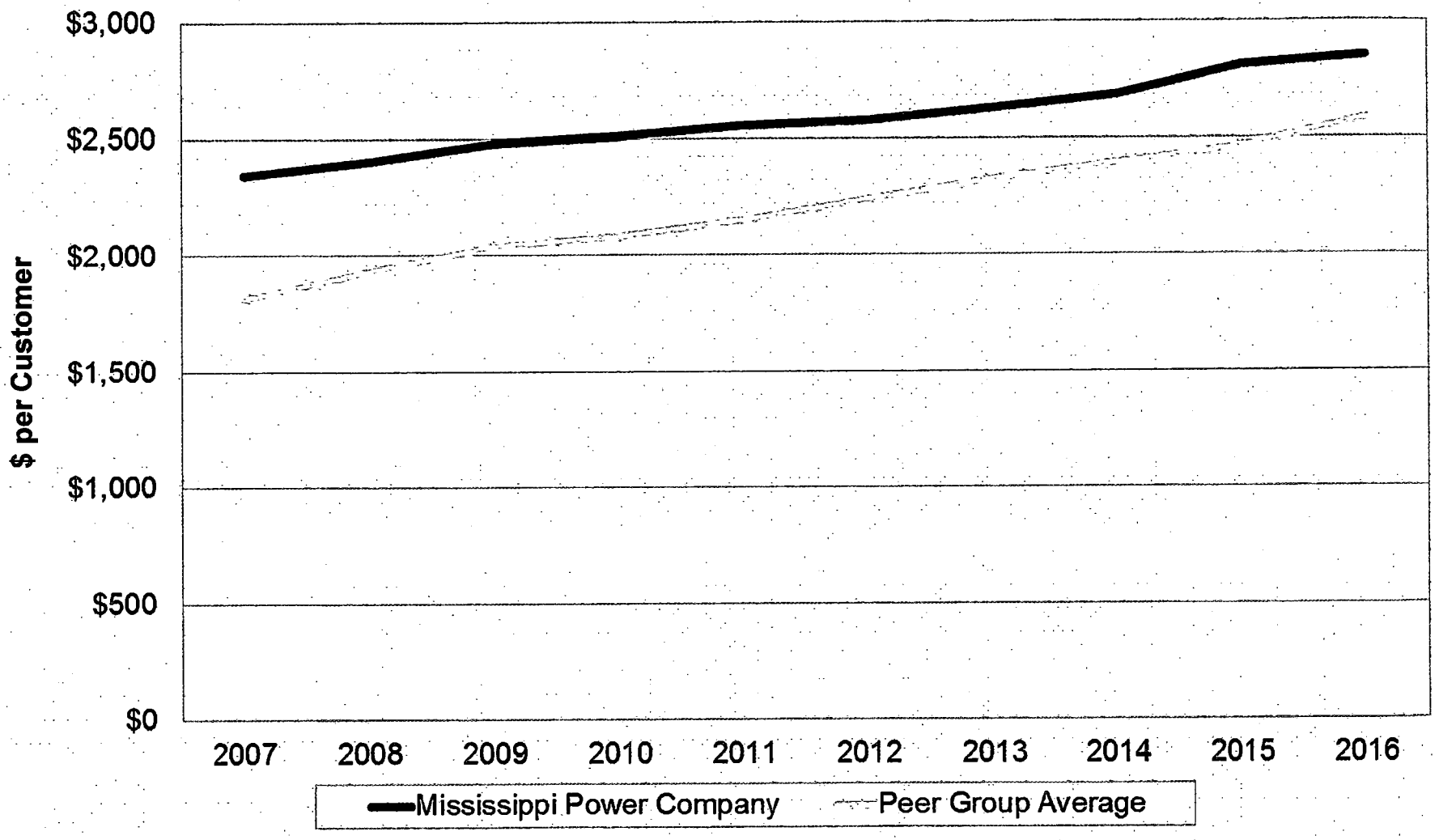
Comparison of Net Distribution Plant Investments
Net Distribution Plant per Customer

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/Customer)									
Mississippi Power Company	**$ 2,346**	**$ 2,404**	**$ 2,481**	**$ 2,512**	**$ 2,555**	**$ 2,576**	**$ 2,629**	**$ 2,685**	**$ 2,808**	**$ 2,848**
Alabama Power Company	2,082	2,174	2,280	2,368	2,499	2,537	2,600	2,714	2,785	2,876
Cleco Power, LLC	1,952	2,045	2,230	2,337	2,534	2,666	2,964	3,053	3,150	3,237
Duke Energy Carolinas, LLC	1,929	1,982	2,051	2,094	2,124	2,174	2,237	2,286	2,355	2,458
Duke Energy Progress, LLC	1,753	1,731	1,710	1,746	1,761	1,763	1,774	1,768	1,835	1,956
Entergy Arkansas, Inc.	2,076	2,154	2,258	2,253	2,344	2,414	2,552	2,714	2,811	3,039
Entergy Louisiana, LLC	1,291	1,875	2,167	1,984	2,052	2,293	2,222	2,273	2,331	2,458
Entergy Mississippi, Inc.	2,109	2,170	2,289	2,358	2,433	2,566	2,645	2,725	2,808	2,978
Georgia Power Company	1,917	2,026	2,159	2,208	2,289	2,360	2,401	2,467	2,522	2,621
Gulf Power Company	1,292	1,303	1,346	1,399	1,480	1,554	1,630	1,669	1,683	1,704
Southwestern Electric Power Company	1,715	1,843	1,892	2,049	1,988	2,102	2,241	2,299	2,388	2,484
Peer Group Average	$ 1,811	$ 1,930	$ 2,038	$ 2,080	$ 2,150	$ 2,243	$ 2,327	$ 2,397	$ 2,467	$ 2,581

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**11**	**11**	**11**	**11**	**11**	**10**	**9**	**7**	**8**	**7**
Alabama Power Company	9	10	9	10	9	8	8	8	7	8
Cleco Power, LLC	7	7	7	8	10	11	11	11	11	11
Duke Energy Carolinas, LLC	6	5	4	5	5	4	4	4	4	4
Duke Energy Progress, LLC	4	2	2	2	2	2	2	2	2	2
Entergy Arkansas, Inc.	8	8	8	7	7	7	7	9	10	10
Entergy Louisiana, LLC	1	4	6	3	4	5	3	3	3	3
Entergy Mississippi, Inc.	10	9	10	9	8	9	10	10	9	9
Georgia Power Company	5	6	5	6	6	6	6	6	6	6
Gulf Power Company	2	1	1	1	1	1	1	1	1	1
Southwestern Electric Power Company	3	3	3	4	3	3	5	5	5	5

Source: FERC Form 1.

Comparison of Net Distribution Plant Investments
Net Distribution Plant per Customer



Source: FERC Form 1.

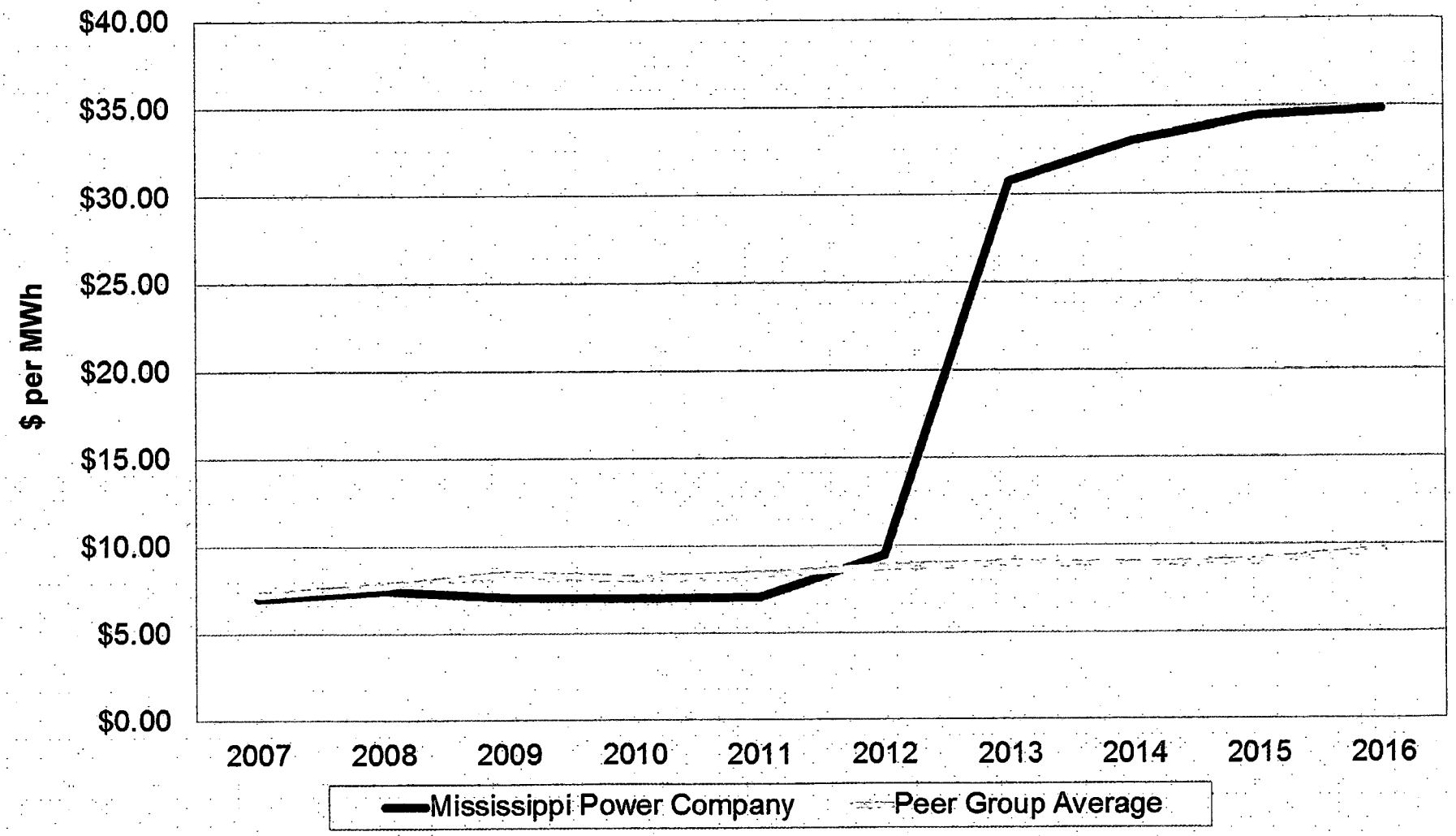
Comparison of Net General Plant Investments
Net General Plant per MWh

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/MWh)									
Mississippi Power Company	**$ 6.95**	**$ 7.44**	**$ 7.04**	**$ 6.98**	**$ 7.05**	**$ 9.44**	**$ 30.79**	**$ 33.07**	**$ 34.45**	**$ 34.81**
Alabama Power Company	9.41	9.87	10.98	10.43	10.71	11.54	11.60	11.34	11.75	13.05
Cleco Power, LLC	9.50	9.60	10.69	11.92	12.12	13.08	14.11	15.20	15.10	17.13
Duke Energy Carolinas, LLC	6.75	6.82	6.84	6.17	7.68	7.73	7.25	7.13	6.72	6.88
Duke Energy Progress, LLC	7.22	6.98	7.47	7.15	7.84	8.51	9.94	8.58	8.93	8.87
Entergy Arkansas, Inc.	3.26	4.05	4.99	4.52	4.23	4.45	5.20	4.74	5.37	7.36
Entergy Louisiana, LLC	3.08	4.62	5.29	4.83	4.92	5.27	5.15	4.90	5.32	5.45
Entergy Mississippi, Inc.	9.08	10.52	11.71	11.63	11.68	11.89	12.12	11.93	12.42	12.29
Georgia Power Company	7.15	7.49	7.81	7.23	7.24	7.54	7.61	7.64	7.69	7.66
Gulf Power Company	7.28	7.85	8.61	8.41	8.76	9.15	9.16	9.98	9.72	10.17
Southwestern Electric Power Company	9.34	9.62	10.00	8.88	8.29	8.16	7.85	7.46	7.45	7.58
Peer Group Average	$ 7.21	$ 7.74	$ 8.44	$ 8.12	$ 8.35	$ 8.73	$ 9.00	$ 8.89	$ 9.05	$ 9.64

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**4**	**5**	**4**	**4**	**3**	**8**	**11**	**11**	**11**	**11**
Alabama Power Company	10	10	10	9	9	9	8	8	8	9
Cleco Power, LLC	11	8	9	11	11	11	10	10	10	10
Duke Energy Carolinas, LLC	3	3	3	3	5	4	3	3	3	2
Duke Energy Progress, LLC	6	4	5	5	6	6	7	6	6	6
Entergy Arkansas, Inc.	2	1	1	1	1	1	2	1	2	3
Entergy Louisiana, LLC	1	2	2	2	2	2	1	2	1	1
Entergy Mississippi, Inc.	8	11	11	10	10	10	9	9	9	8
Georgia Power Company	5	6	6	6	4	3	4	5	5	5
Gulf Power Company	7	7	7	7	8	7	6	7	7	7
Southwestern Electric Power Company	9	9	8	8	7	5	5	4	4	4

Source: FERC Form 1.

Comparison of Net General Plant Investments
Net General Plant per MWh



Source: FERC Form 1.

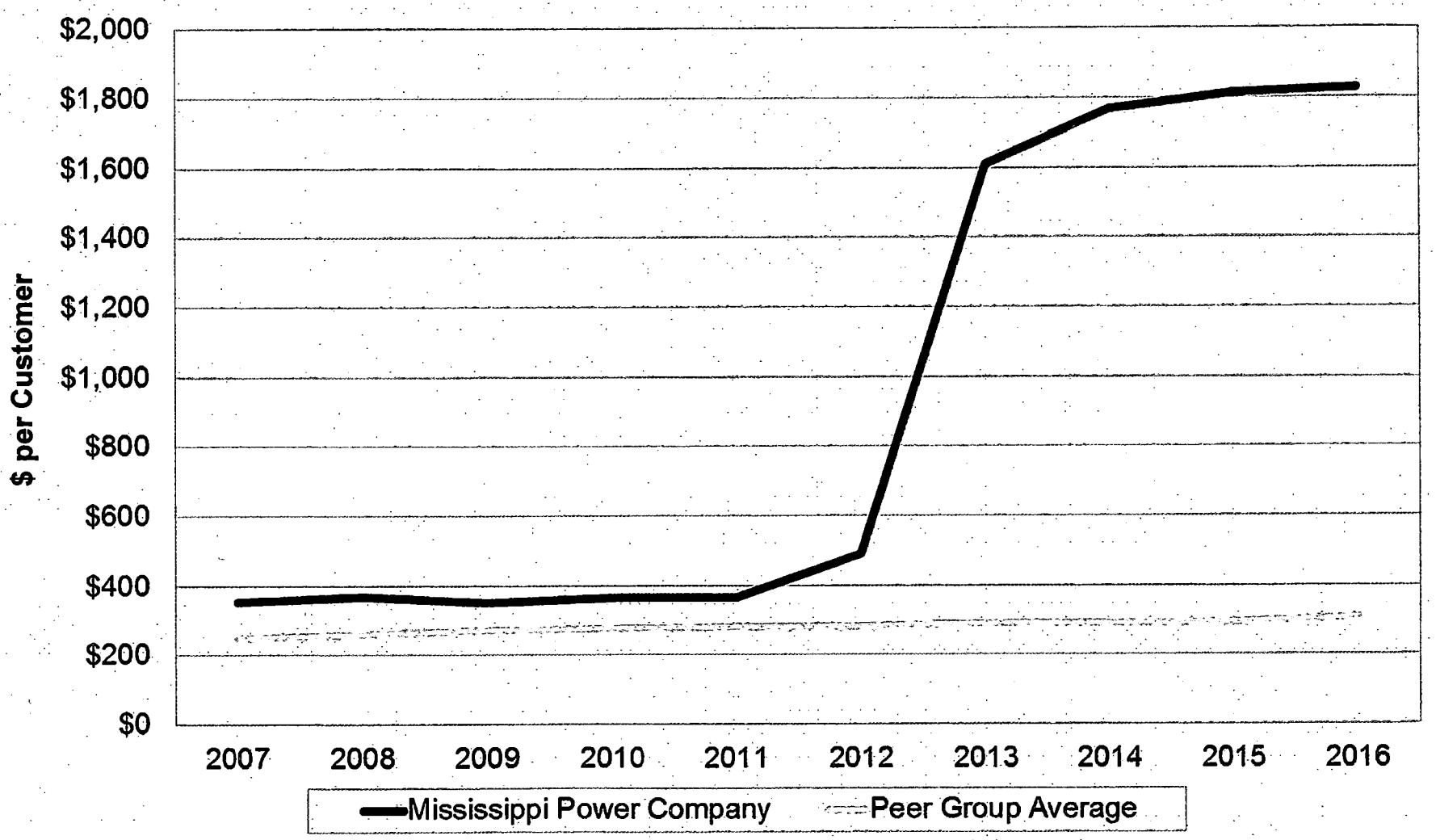
Comparison of Net General Plant Investments
Net General Plant per Customer

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/Customer)									
Mississippi Power Company	**$ 355**	**$ 368**	**$ 353**	**$ 366**	**$ 367**	**$ 492**	**$ 1,608**	**$ 1,767**	**$ 1,811**	**$ 1,826**
Alabama Power Company	374	380	390	406	408	432	441	445	449	488
Cleco Power, LLC	321	315	327	384	390	404	439	469	454	504
Duke Energy Carolinas, LLC	229	223	214	206	244	241	226	227	214	217
Duke Energy Progress, LLC	226	211	220	227	237	248	292	254	258	255
Entergy Arkansas, Inc.	102	124	144	143	131	135	155	142	161	215
Entergy Louisiana, LLC	137	207	236	233	241	255	251	245	273	278
Entergy Mississippi, Inc.	284	319	342	365	362	359	360	356	371	370
Georgia Power Company	265	269	270	267	259	260	259	266	264	263
Gulf Power Company	196	211	219	222	224	225	222	250	241	249
Southwestern Electric Power Company	347	352	340	325	297	283	271	259	251	247
Peer Group Average	$ 248	$ 261	$ 270	$ 278	$ 279	$ 284	$ 292	$ 291	$ 294	$ 309

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**10**	**10**	**10**	**9**	**9**	**11**	**11**	**11**	**11**	**11**
Alabama Power Company	11	11	11	11	11	10	10	9	9	9
Cleco Power, LLC	8	7	7	10	10	9	9	10	10	10
Duke Energy Carolinas, LLC	5	5	2	2	5	3	3	2	2	2
Duke Energy Progress, LLC	4	4	4	4	3	4	7	5	5	5
Entergy Arkansas, Inc.	1	1	1	1	1	1	1	1	1	1
Entergy Louisiana, LLC	2	2	5	5	4	5	4	3	7	7
Entergy Mississippi, Inc.	7	8	9	8	8	8	8	8	8	8
Georgia Power Company	6	6	6	6	6	6	5	7	6	6
Gulf Power Company	3	3	3	3	2	2	2	4	3	4
Southwestern Electric Power Company	9	9	8	7	7	7	6	6	4	3

Source: FERC Form 1.

Comparison of Net General Plant Investments
Net General Plant per Customer



Source: FERC Form 1.

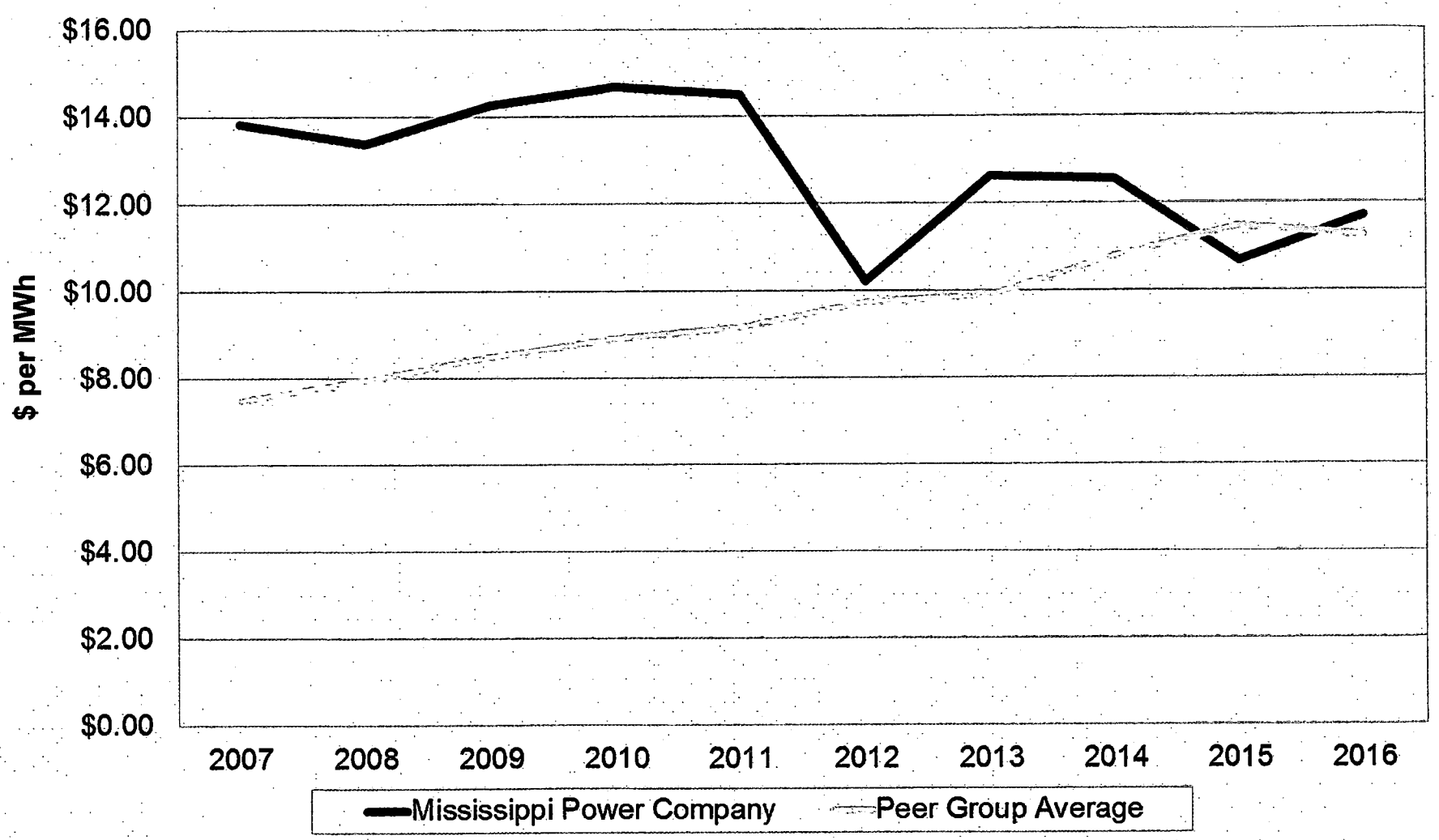
Comparison of Production O&M Expenses
Net Production O&M per MWh

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/MWh)									
Mississippi Power Company	**$ 13.84**	**$ 13.38**	**$ 14.28**	**$ 14.68**	**$ 14.49**	**$ 10.20**	**$ 12.61**	**$ 12.56**	**$ 10.67**	**$ 11.71**
Alabama Power Company	8.45	9.57	10.08	10.79	10.01	10.43	10.30	12.14	12.25	12.79
Cleco Power, LLC	3.52	3.41	4.29	7.07	7.61	7.94	9.09	10.68	10.19	11.17
Duke Energy Carolinas, LLC	9.19	9.99	9.89	9.82	11.10	11.75	10.73	11.90	12.25	11.81
Duke Energy Progress, LLC	11.66	11.87	12.73	13.05	12.90	17.94	16.67	17.70	19.27	17.57
Entergy Arkansas, Inc.	9.93	10.46	12.12	10.91	11.42	11.90	12.82	13.44	16.13	16.84
Entergy Louisiana, LLC	6.05	7.08	7.51	7.56	7.42	7.49	7.76	7.75	7.90	8.11
Entergy Mississippi, Inc.	3.74	4.02	4.77	4.22	3.97	4.02	6.54	5.60	6.11	5.32
Georgia Power Company	7.19	7.62	6.96	7.96	8.41	7.80	7.40	8.55	10.33	8.29
Gulf Power Company	8.19	8.68	9.62	10.80	11.74	11.26	10.05	12.11	11.92	11.38
Southwestern Electric Power Company	6.71	6.55	6.96	6.71	6.97	6.60	7.42	7.91	8.30	9.04
Peer Group Average	$ 7.46	$ 7.92	$ 8.49	$ 8.89	$ 9.15	$ 9.71	$ 9.88	$ 10.78	$ 11.47	$ 11.23

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**11**	**11**	**11**	**11**	**11**	**6**	**9**	**9**	**6**	**7**
Alabama Power Company	7	7	8	7	6	7	7	8	8	9
Cleco Power, LLC	1	1	1	3	4	5	5	5	4	5
Duke Energy Carolinas, LLC	8	8	7	6	7	9	8	6	9	8
Duke Energy Progress, LLC	10	10	10	10	10	11	11	11	11	11
Entergy Arkansas, Inc.	9	9	9	9	8	10	10	10	10	10
Entergy Louisiana, LLC	3	4	5	4	3	3	4	2	2	2
Entergy Mississippi, Inc.	2	2	2	1	1	1	1	1	1	1
Georgia Power Company	5	5	4	5	5	4	2	4	5	3
Gulf Power Company	6	6	6	8	9	8	6	7	7	6
Southwestern Electric Power Company	4	3	3	2	2	2	3	3	3	4

Source: FERC Form 1.

Comparison of Production O&M Expenses
Net Production O&M per MWh



Source: FERC Form 1.

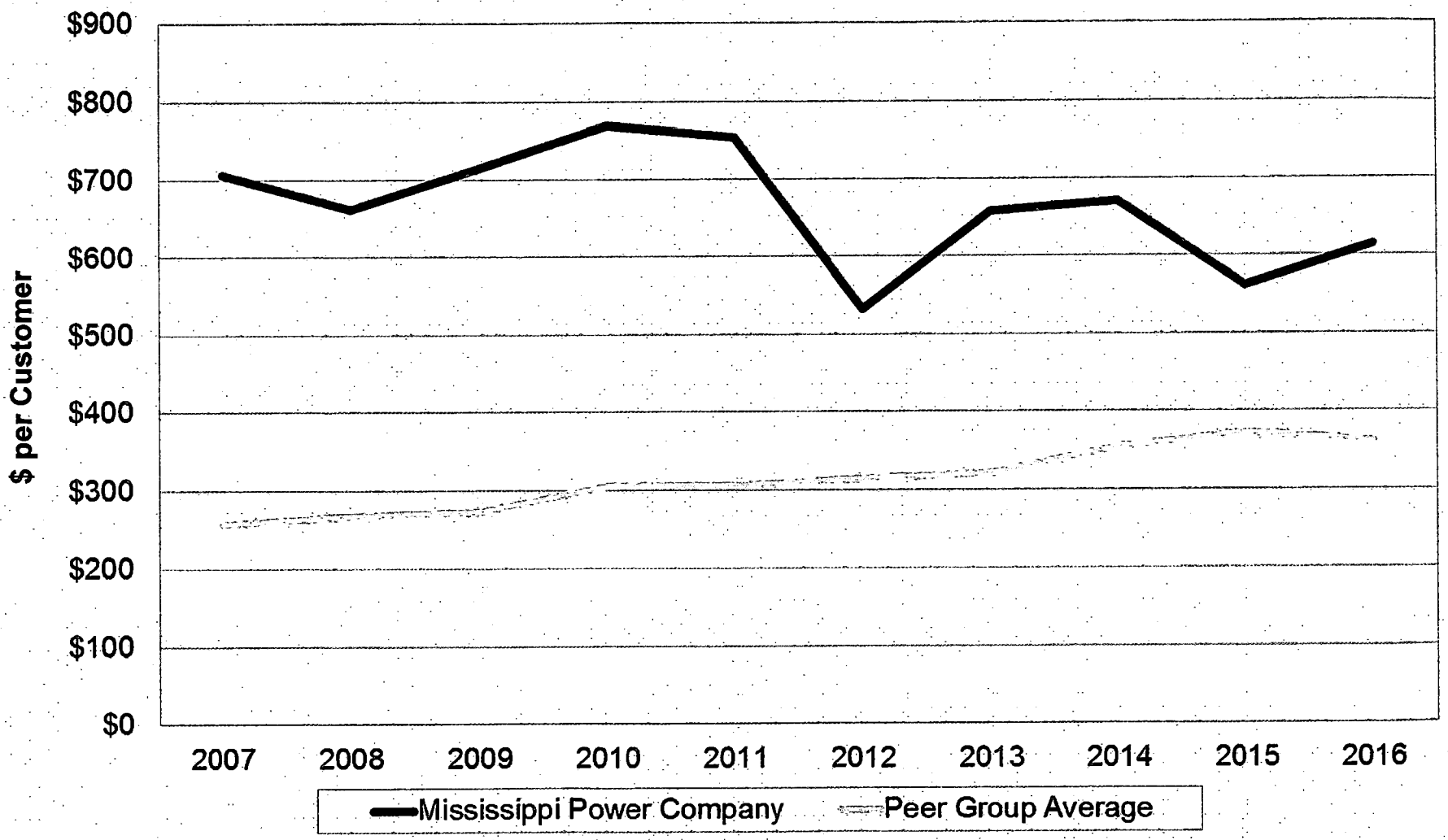
Comparison of Production O&M Expenses
Net Production O&M per Customer

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/Customer)									
Mississippi Power Company	**$ 707**	**$ 662**	**$ 715**	**$ 770**	**$ 754**	**$ 532**	**$ 658**	**$ 671**	**$ 561**	**$ 614**
Alabama Power Company	336	368	358	420	382	391	391	476	468	479
Cleco Power, LLC	119	112	131	228	244	245	283	330	306	328
Duke Energy Carolinas, LLC	311	326	310	327	353	367	335	378	389	372
Duke Energy Progress, LLC	365	359	374	414	389	524	489	525	557	505
Entergy Arkansas, Inc.	310	319	350	346	354	360	383	404	485	492
Entergy Louisiana, LLC	269	318	335	364	363	362	377	388	406	414
Entergy Mississippi, Inc.	117	122	139	133	123	121	194	167	183	160
Georgia Power Company	266	274	241	294	300	269	252	297	355	285
Gulf Power Company	221	233	245	285	300	276	244	303	295	278
Southwestern Electric Power Company	250	240	237	246	250	229	256	274	280	295
Peer Group Average	$ 256	$ 267	$ 272	$ 306	$ 306	$ 314	$ 320	$ 354	$ 372	$ 361

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**
Alabama Power Company	9	10	9	10	9	9	9	9	8	8
Cleco Power, LLC	2	1	1	2	2	3	5	5	4	5
Duke Energy Carolinas, LLC	8	8	6	6	6	8	6	6	6	6
Duke Energy Progress, LLC	10	9	10	9	10	10	10	10	10	10
Entergy Arkansas, Inc.	7	7	8	7	7	6	8	8	9	9
Entergy Louisiana, LLC	6	6	7	8	8	7	7	7	7	7
Entergy Mississippi, Inc.	1	2	2	1	1	1	1	1	1	1
Georgia Power Company	5	5	4	5	5	4	3	3	5	3
Gulf Power Company	3	3	5	4	4	5	2	4	3	2
Southwestern Electric Power Company	4	4	3	3	3	2	4	2	2	4

Source: FERC Form 1.

Comparison of Production O&M Expenses
Net Production O&M per Customer



Source: FERC Form 1.

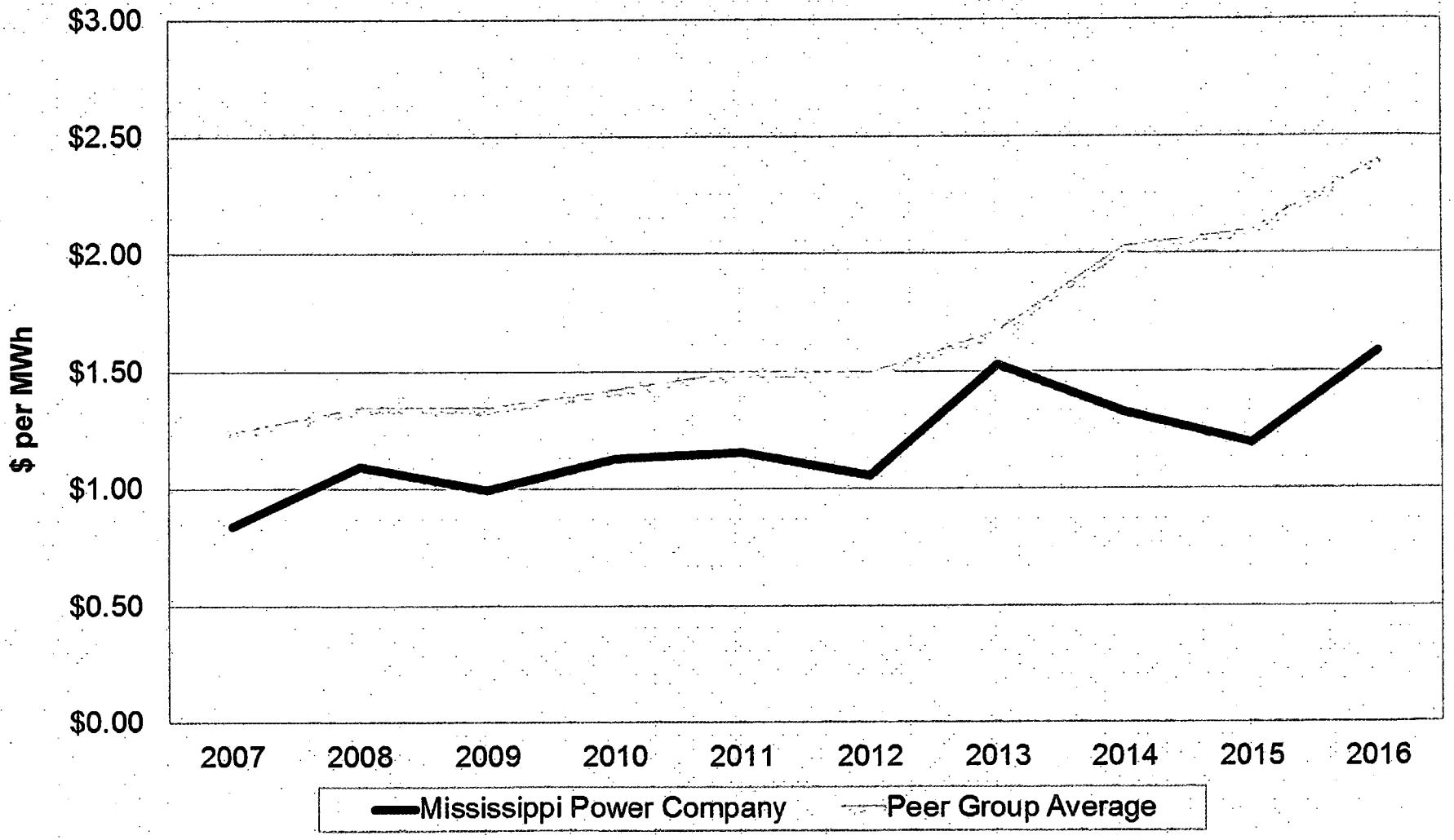
Comparison of Transmission O&M Expenses
Transmission O&M per MWh

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/MWh)									
Mississippi Power Company	**$ 0.84**	**$ 1.09**	**$ 0.99**	**$ 1.13**	**$ 1.15**	**$ 1.05**	**$ 1.52**	**$ 1.32**	**$ 1.19**	**$ 1.58**
Alabama Power Company	1.17	1.43	1.43	1.69	1.28	1.15	1.10	1.29	1.28	1.49
Cleco Power, LLC	1.78	1.80	1.71	1.87	1.98	2.11	2.14	3.34	3.57	4.48
Duke Energy Carolinas, LLC	0.49	0.73	0.60	0.64	0.70	0.78	0.73	0.72	0.73	0.72
Duke Energy Progress, LLC	1.27	1.33	1.38	1.37	1.71	1.55	1.42	1.23	0.89	1.06
Entergy Arkansas, Inc.	1.41	1.63	1.53	1.44	1.51	1.36	1.45	2.06	2.07	1.95
Entergy Louisiana, LLC	1.08	1.41	1.40	1.39	1.69	1.14	1.24	1.60	1.65	1.54
Entergy Mississippi, Inc.	1.21	1.29	1.40	1.38	1.54	1.55	1.57	1.66	1.64	1.60
Georgia Power Company	1.23	1.15	1.17	1.35	1.30	1.16	1.32	1.58	1.29	1.64
Gulf Power Company	0.86	0.77	0.86	1.08	1.37	1.57	1.96	2.28	2.33	2.43
Southwestern Electric Power Company	1.81	1.81	1.84	1.91	1.81	2.48	3.63	4.40	5.42	6.93
Peer Group Average	$ 1.23	$ 1.33	$ 1.33	$ 1.41	$ 1.49	$ 1.48	$ 1.66	$ 2.02	$ 2.09	$ 2.38

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**2**	**3**	**3**	**3**	**2**	**2**	**7**	**4**	**3**	**5**
Alabama Power Company	5	8	8	9	3	4	2	3	4	3
Cleco Power, LLC	10	10	10	10	11	10	10	10	10	10
Duke Energy Carolinas, LLC	1	1	1	1	1	1	1	1	1	1
Duke Energy Progress, LLC	8	6	5	5	9	8	5	2	2	2
Entergy Arkansas, Inc.	9	9	9	8	6	6	6	8	8	8
Entergy Louisiana, LLC	4	7	7	7	8	3	3	6	7	4
Entergy Mississippi, Inc.	6	5	6	6	7	7	8	7	6	6
Georgia Power Company	7	4	4	4	4	5	4	5	5	7
Gulf Power Company	3	2	2	2	5	9	9	9	9	9
Southwestern Electric Power Company	11	11	11	11	10	11	11	11	11	11

Source: FERC Form 1.

Comparison of Transmission O&M Expenses
Transmission O&M per MWh



Source: FERC Form 1.

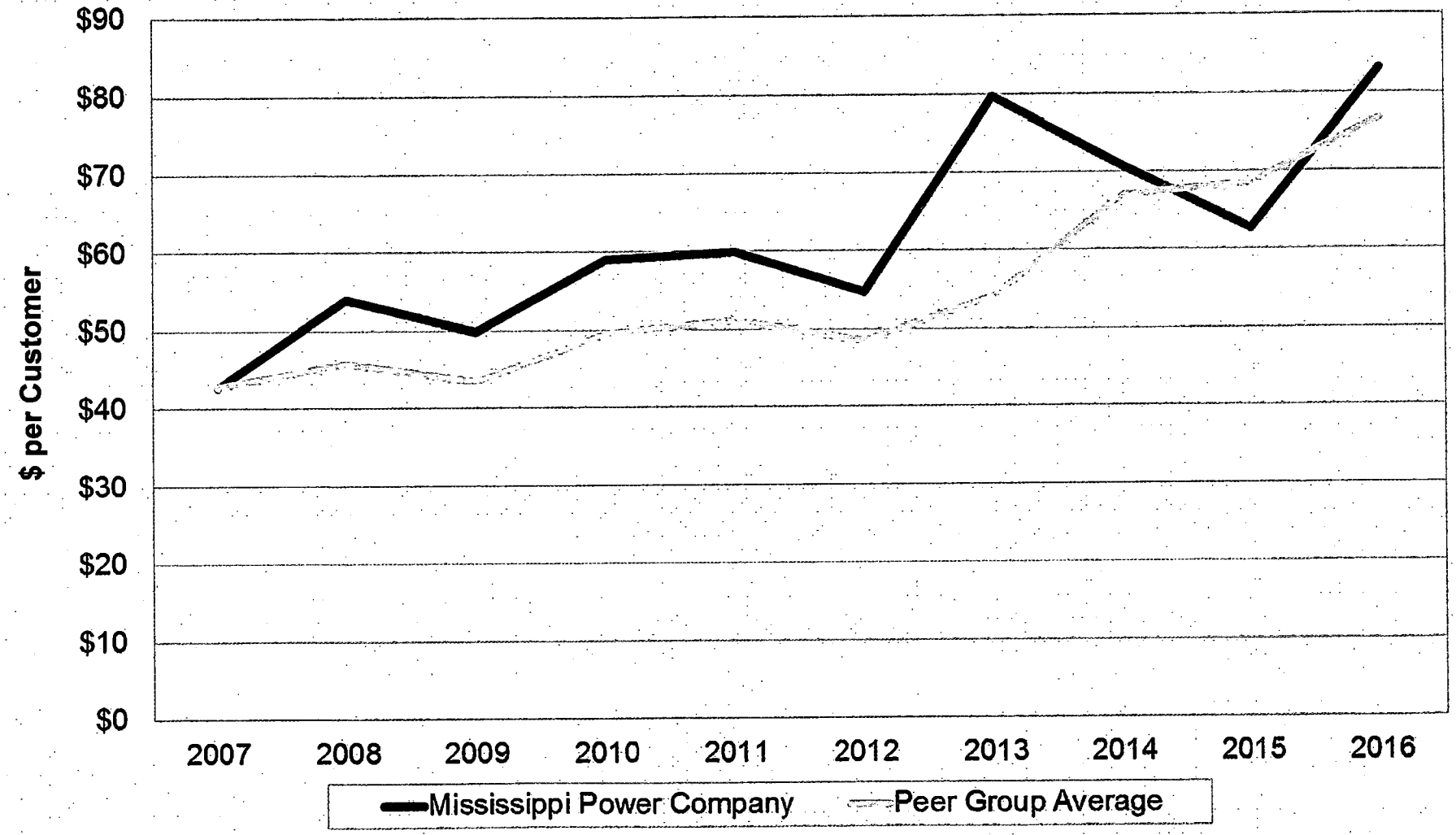
Comparison of Transmission O&M Expenses
Transmission O&M per Customer

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/Customer)									
Mississippi Power Company	**$ 43**	**$ 54**	**$ 50**	**$ 59**	**$ 60**	**$ 55**	**$ 80**	**$ 71**	**$ 63**	**$ 83**
Alabama Power Company	46	55	51	66	49	43	42	51	49	56
Cleco Power, LLC	60	59	52	60	64	65	67	103	107	132
Duke Energy Carolinas, LLC	17	24	19	21	22	24	23	23	23	23
Duke Energy Progress, LLC	40	40	40	44	51	45	42	37	26	30
Entergy Arkansas, Inc.	44	50	44	46	47	41	43	62	62	57
Entergy Louisiana, LLC	48	63	62	67	83	55	60	80	85	78
Entergy Mississippi, Inc.	38	39	41	43	48	47	47	50	49	48
Georgia Power Company	45	41	41	50	46	40	45	55	44	56
Gulf Power Company	23	21	22	28	35	38	48	57	58	59
Southwestern Electric Power Company	67	66	63	70	65	86	125	153	183	226
Peer Group Average	$ 43	$ 46	$ 43	$ 50	$ 51	$ 49	$ 54	$ 67	$ 69	$ 77

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**5**	**7**	**7**	**7**	**8**	**8**	**10**	**8**	**8**	**9**
Alabama Power Company	8	8	8	9	6	5	3	4	5	4
Cleco Power, LLC	10	9	9	8	9	10	9	10	10	10
Duke Energy Carolinas, LLC	1	2	1	1	1	1	1	1	1	1
Duke Energy Progress, LLC	4	4	3	4	7	6	2	2	2	2
Entergy Arkansas, Inc.	6	6	6	5	4	4	4	7	7	6
Entergy Louisiana, LLC	9	10	10	10	11	9	8	9	9	8
Entergy Mississippi, Inc.	3	3	5	3	5	7	6	3	4	3
Georgia Power Company	7	5	4	6	3	3	5	5	3	5
Gulf Power Company	2	1	2	2	2	2	7	6	6	7
Southwestern Electric Power Company	11	11	11	11	10	11	11	11	11	11

Source: FERC Form 1.

Comparison of Transmission O&M Expenses
Transmission O&M per Customer



Source: FERC Form 1.

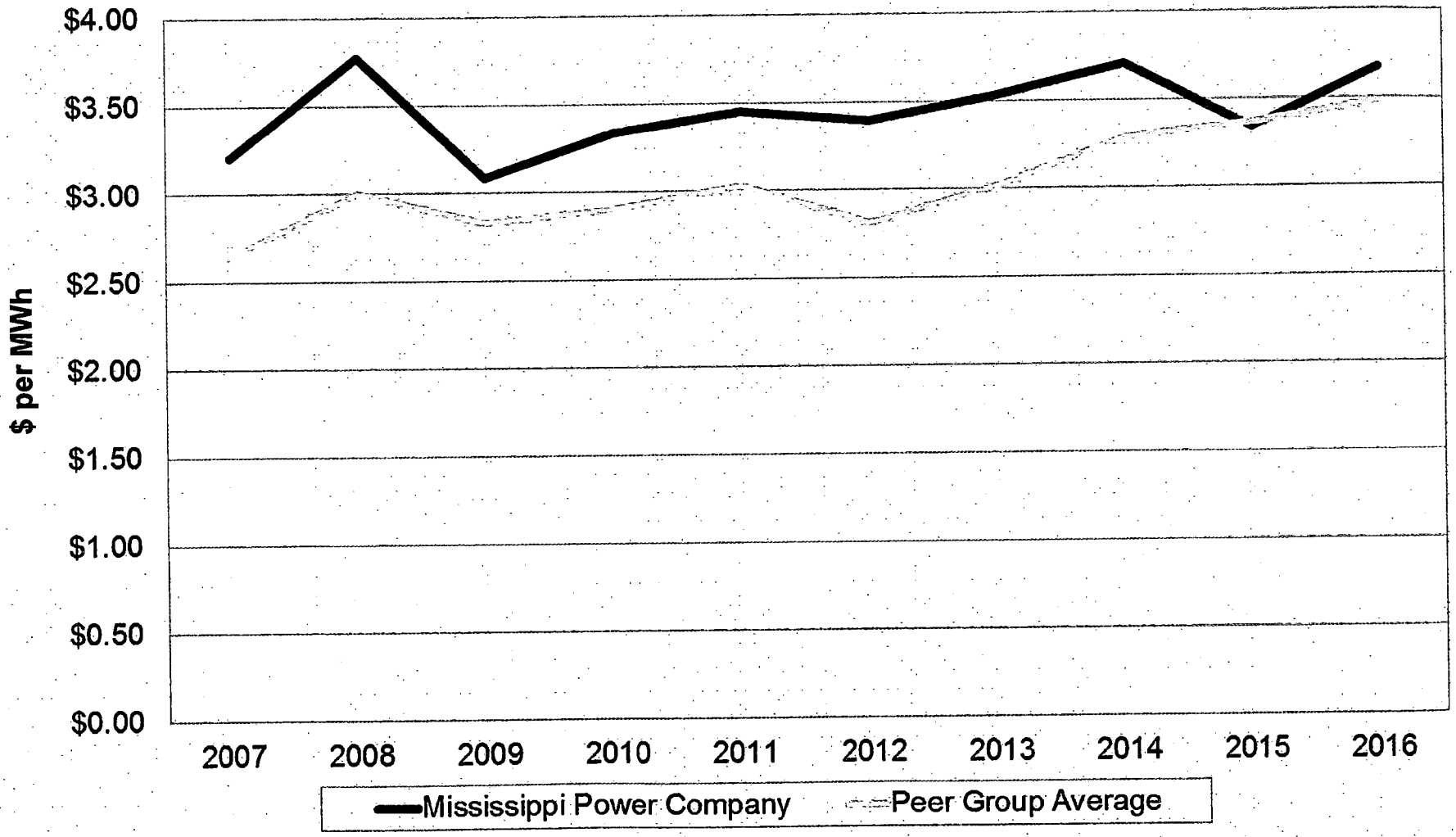
Comparison of Distribution O&M Expenses
Distribution O&M per MWh

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/MWh)									
Mississippi Power Company	**$ 3.21**	**$ 3.77**	**$ 3.09**	**$ 3.34**	**$ 3.45**	**$ 3.39**	**$ 3.53**	**$ 3.70**	**$ 3.34**	**$ 3.67**
Alabama Power Company	3.37	3.59	4.01	4.30	3.40	3.00	3.10	3.32	3.18	3.35
Cleco Power, LLC	2.76	2.65	2.93	3.06	3.21	3.20	3.24	3.29	3.55	3.59
Duke Energy Carolinas, LLC	2.16	2.28	2.46	2.42	2.69	2.26	2.53	3.13	3.10	3.41
Duke Energy Progress, LLC	2.51	2.41	2.75	2.53	3.31	2.91	3.02	4.05	3.18	3.78
Entergy Arkansas, Inc.	2.35	5.40	3.36	2.58	2.81	2.66	2.83	3.27	3.97	3.76
Entergy Louisiana, LLC	1.63	1.45	1.44	1.42	1.42	1.39	1.47	1.43	1.55	1.48
Entergy Mississippi, Inc.	2.28	2.49	2.21	2.36	2.40	2.37	3.23	2.55	3.03	3.32
Georgia Power Company	2.95	2.87	2.63	3.05	3.15	2.93	2.93	3.61	3.30	3.56
Gulf Power Company	3.37	3.20	3.40	3.51	3.92	3.82	4.04	4.23	4.12	4.10
Southwestern Electric Power Company	3.02	3.64	3.04	3.78	3.98	3.59	3.80	4.01	4.71	4.45
Peer Group Average	$ 2.64	$ 3.00	$ 2.82	$ 2.90	$ 3.03	$ 2.81	$ 3.02	$ 3.29	$ 3.37	$ 3.48

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**9**	**10**	**8**	**8**	**9**	**9**	**9**	**8**	**7**	**7**
Alabama Power Company	11	8	11	11	8	7	6	6	4	3
Cleco Power, LLC	6	5	6	7	6	8	8	5	8	6
Duke Energy Carolinas, LLC	2	2	3	3	3	2	2	3	3	4
Duke Energy Progress, LLC	5	3	5	4	7	5	5	10	5	9
Entergy Arkansas, Inc.	4	11	9	5	4	4	3	4	9	8
Entergy Louisiana, LLC	1	1	1	1	1	1	1	1	1	1
Entergy Mississippi, Inc.	3	4	2	2	2	3	7	2	2	2
Georgia Power Company	7	6	4	6	5	6	4	7	6	5
Gulf Power Company	10	7	10	9	10	11	11	11	10	10
Southwestern Electric Power Company	8	9	7	10	11	10	10	9	11	11

Source: FERC Form 1.

Comparison of Distribution O&M Expenses
Distribution O&M per MWh



Source: FERC Form 1.

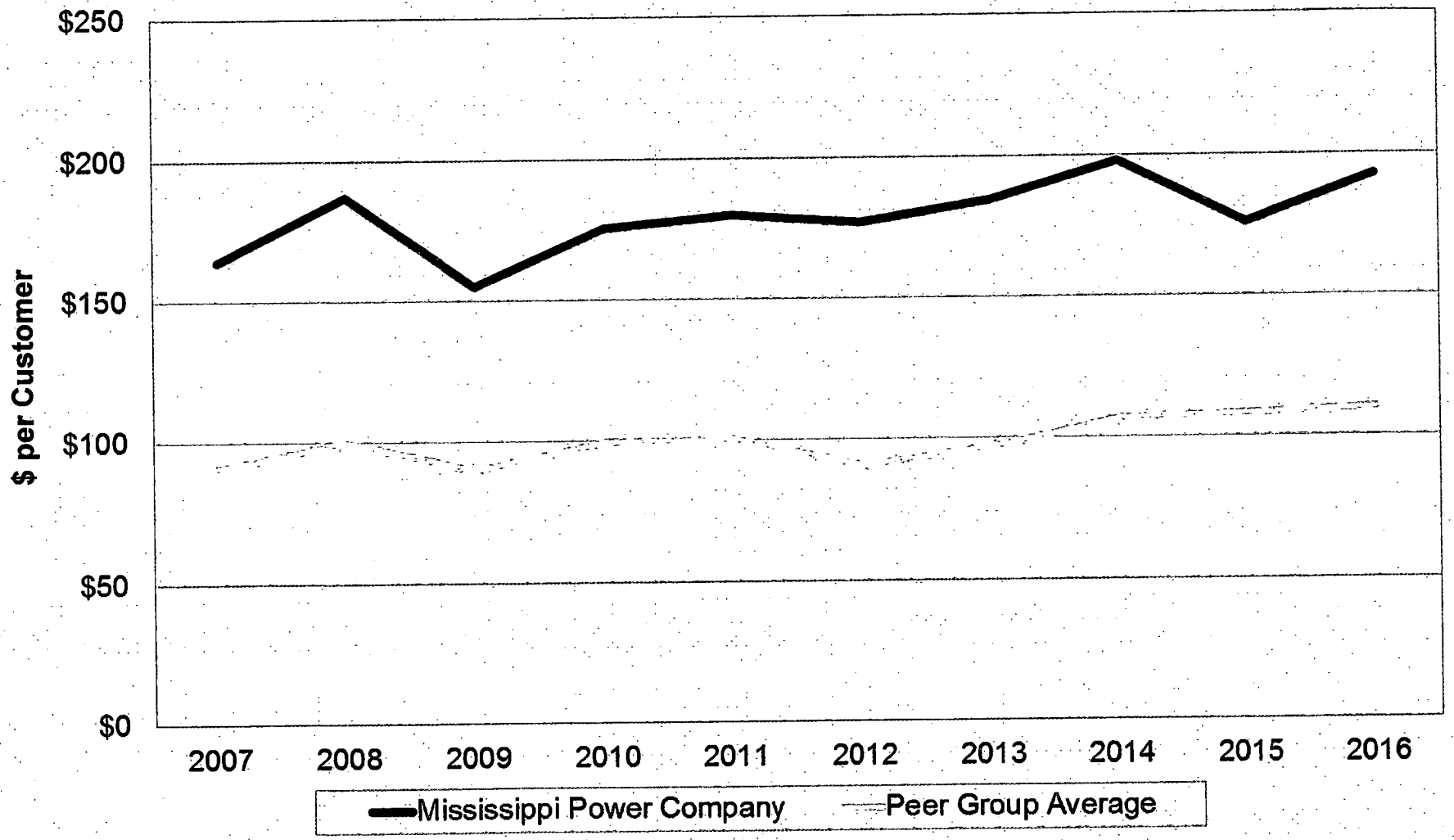
Comparison of Distribution O&M Expenses
Distribution O&M per Customer

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/Customer)									
Mississippi Power Company	**$ 164**	**$ 187**	**$ 155**	**$ 175**	**$ 180**	**$ 177**	**$ 184**	**$ 198**	**$ 175**	**$ 193**
Alabama Power Company	134	138	143	168	130	112	118	130	121	125
Cleco Power, LLC	93	87	90	98	103	99	101	102	107	105
Duke Energy Carolinas, LLC	73	75	77	81	86	71	79	100	99	107
Duke Energy Progress, LLC	79	73	81	80	100	85	89	120	92	109
Entergy Arkansas, Inc.	73	165	97	82	87	80	84	98	119	110
Entergy Louisiana, LLC	72	65	64	69	70	67	71	71	79	75
Entergy Mississippi, Inc.	71	75	64	74	74	72	96	76	91	100
Georgia Power Company	109	103	91	113	113	101	100	125	113	122
Gulf Power Company	91	86	87	93	100	94	98	106	102	100
Southwestern Electric Power Company	112	133	104	139	142	125	131	139	159	145
Peer Group Average	$ 91	$ 100	$ 90	$ 100	$ 100	$ 90	$ 97	$ 107	$ 108	$ 110

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**
Alabama Power Company	10	9	10	10	9	9	9	9	9	9
Cleco Power, LLC	7	6	6	7	7	7	8	5	6	4
Duke Energy Carolinas, LLC	4	3	3	4	3	2	2	4	4	5
Duke Energy Progress, LLC	5	2	4	3	5	5	4	7	3	6
Entergy Arkansas, Inc.	3	10	8	5	4	4	3	3	8	7
Entergy Louisiana, LLC	2	1	1	1	1	1	1	1	1	1
Entergy Mississippi, Inc.	1	4	2	2	2	3	5	2	2	2
Georgia Power Company	8	7	7	8	8	8	7	8	7	8
Gulf Power Company	6	5	5	6	6	6	6	6	5	3
Southwestern Electric Power Company	9	8	9	9	10	10	10	10	10	10

Source: FERC Form 1.

Comparison of Distribution O&M Expenses
Distribution O&M per Customer



Source: FERC Form 1.

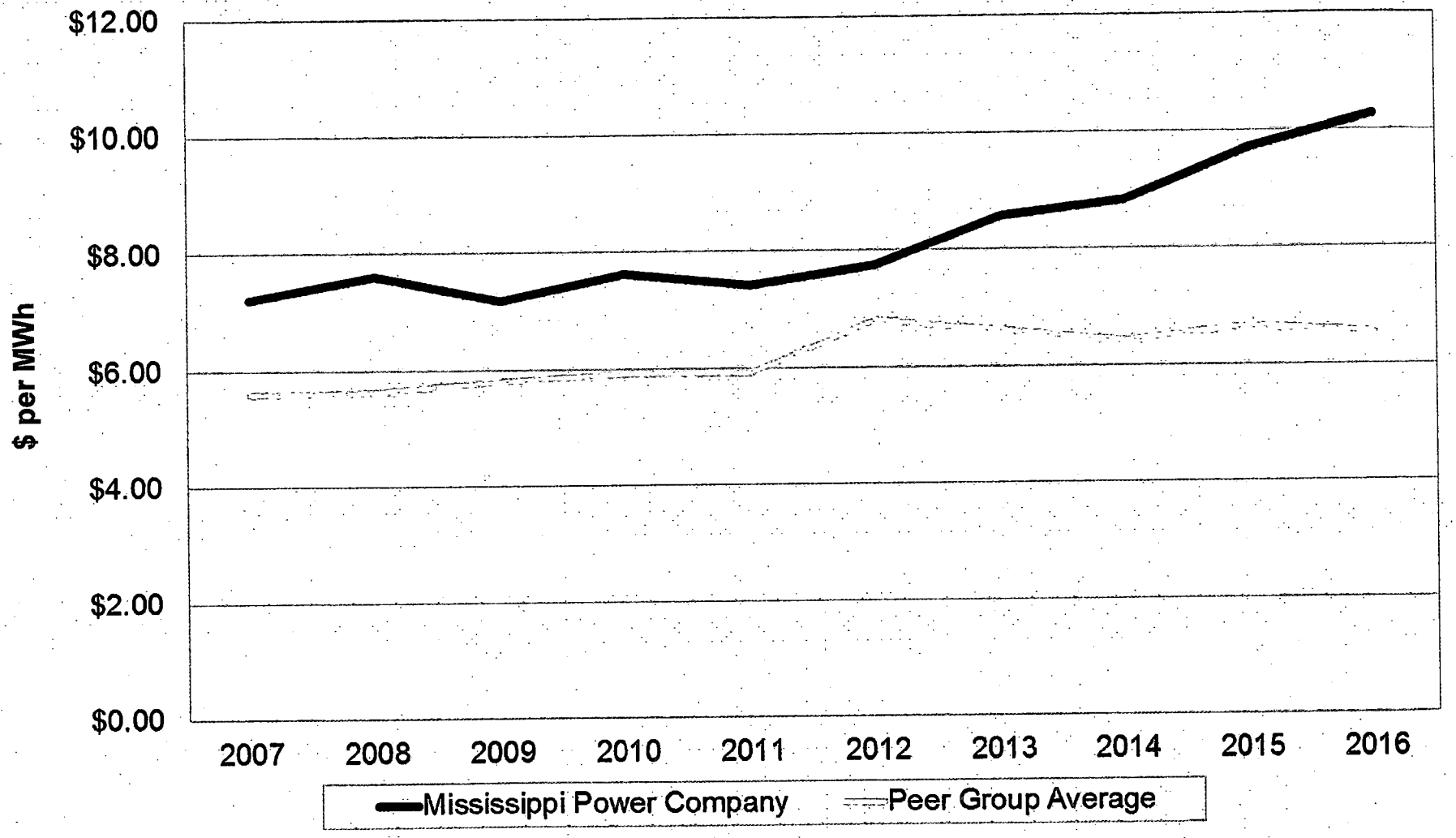
Comparison of Administrative and General Expenses
A&G per MWh

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/MWh)									
Mississippi Power Company	**$ 7.21**	**$ 7.61**	**$ 7.17**	**$ 7.62**	**$ 7.41**	**$ 7.75**	**$ 8.56**	**$ 8.83**	**$ 9.70**	**$ 10.26**
Alabama Power Company	5.29	5.30	5.48	6.04	5.68	6.58	6.40	6.34	7.41	7.04
Cleco Power, LLC	4.99	4.63	5.55	5.47	5.71	5.76	6.12	6.51	7.02	6.58
Duke Energy Carolinas, LLC	6.57	6.61	6.45	8.02	7.13	7.18	7.59	6.39	6.75	6.18
Duke Energy Progress, LLC	6.16	6.61	6.57	6.61	6.99	9.99	8.11	7.48	6.87	7.77
Entergy Arkansas, Inc.	6.65	6.06	6.77	7.18	7.51	8.95	9.11	8.61	9.31	8.99
Entergy Louisiana, LLC	5.27	5.23	4.54	4.72	4.82	5.14	5.93	5.28	5.51	5.21
Entergy Mississippi, Inc.	5.24	6.02	6.34	5.83	5.87	8.38	6.28	7.07	5.97	5.99
Georgia Power Company	4.36	4.40	4.84	4.51	4.79	4.97	5.49	5.35	5.54	5.57
Gulf Power Company	7.74	7.62	6.75	6.29	6.57	7.12	7.54	7.38	8.26	7.69
Southwestern Electric Power Company	3.63	3.82	4.64	4.49	4.05	3.86	3.56	3.96	3.94	4.35
Peer Group Average	$ 5.59	$ 5.63	$ 5.79	$ 5.92	$ 5.91	$ 6.79	$ 6.61	$ 6.44	$ 6.66	$ 6.54

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**10**	**10**	**11**	**10**	**10**	**8**	**10**	**11**	**11**	**11**
Alabama Power Company	6	5	4	6	4	5	6	4	8	7
Cleco Power, LLC	3	3	5	4	5	4	4	6	7	6
Duke Energy Carolinas, LLC	8	8	7	11	9	7	8	5	5	5
Duke Energy Progress, LLC	7	9	8	8	8	11	9	9	6	9
Entergy Arkansas, Inc.	9	7	10	9	11	10	11	10	10	10
Entergy Louisiana, LLC	5	4	1	3	3	3	3	2	2	2
Entergy Mississippi, Inc.	4	6	6	5	6	9	5	7	4	4
Georgia Power Company	2	2	3	2	2	2	2	3	3	3
Gulf Power Company	11	11	9	7	7	6	7	8	9	8
Southwestern Electric Power Company	1	1	2	1	1	1	1	1	1	1

Source: FERC Form 1.

Comparison of Administration and General Expenses A&G per MWh



Source: FERC Form 1.

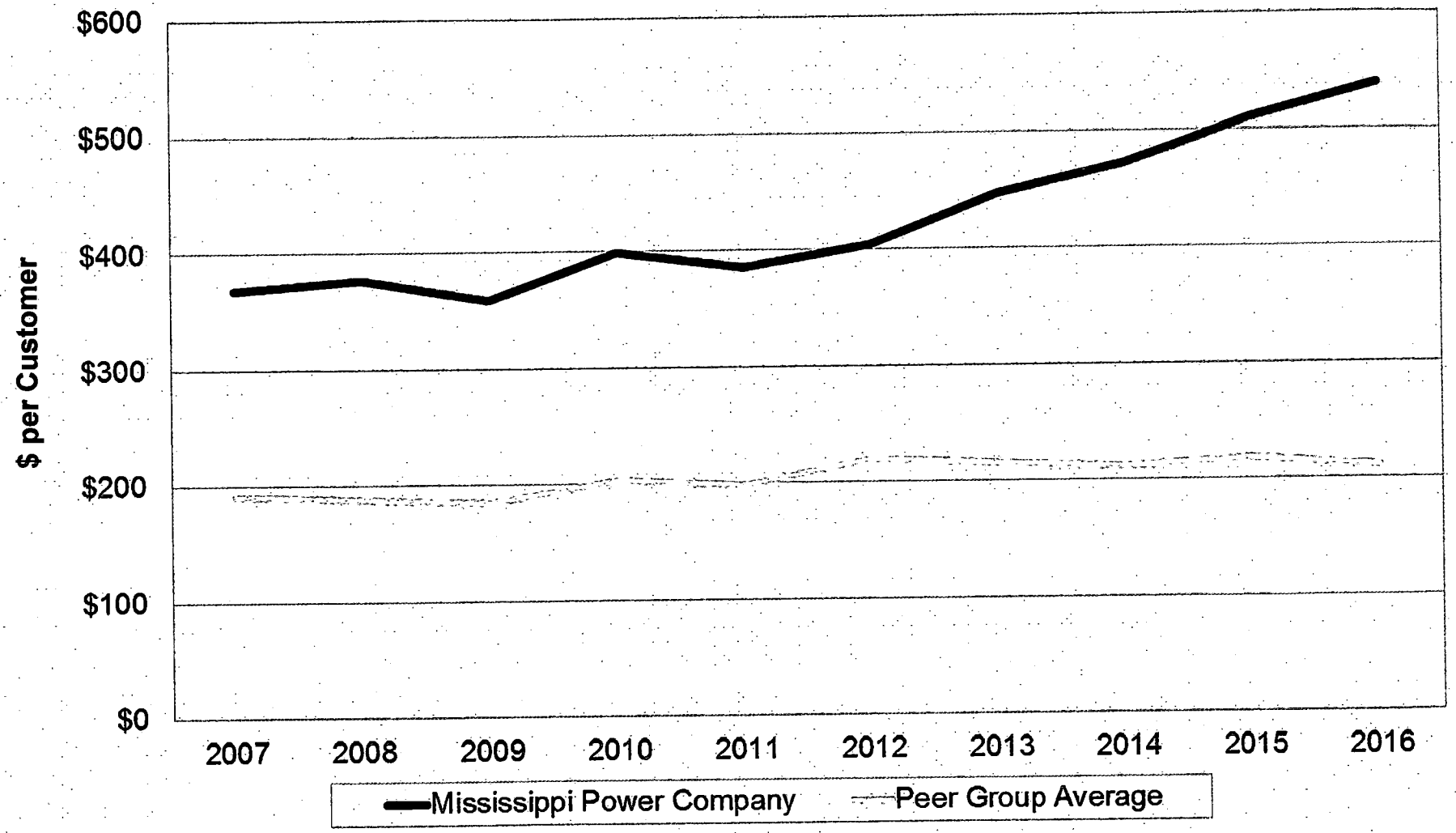
Comparison of Administrative and General Expenses
A&G per Customer

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/Customer)									
Mississippi Power Company	**$ 368**	**$ 377**	**$ 359**	**$ 399**	**$ 385**	**$ 404**	**$ 447**	**$ 472**	**$ 510**	**$ 538**
Alabama Power Company	210	204	195	235	217	247	243	248	283	264
Cleco Power, LLC	169	152	170	176	184	178	190	201	211	193
Duke Energy Carolinas, LLC	223	216	202	267	227	224	237	203	214	195
Duke Energy Progress, LLC	193	200	193	210	211	292	238	222	199	223
Entergy Arkansas, Inc.	207	185	195	227	233	271	272	258	280	262
Entergy Louisiana, LLC	234	235	202	227	236	249	288	264	283	266
Entergy Mississippi, Inc.	164	183	185	183	182	253	187	211	179	180
Georgia Power Company	161	158	167	167	171	171	187	186	190	192
Gulf Power Company	208	205	172	166	168	175	183	185	205	188
Southwestern Electric Power Company	135	140	158	164	145	134	123	137	133	142
Peer Group Average	$ 191	$ 188	$ 184	$ 202	$ 197	$ 219	$ 215	$ 212	$ 218	$ 211

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**
Alabama Power Company	8	7	7	9	7	6	8	8	10	9
Cleco Power, LLC	4	2	3	4	5	4	5	4	6	5
Duke Energy Carolinas, LLC	9	9	9	10	8	5	6	5	7	6
Duke Energy Progress, LLC	5	6	6	6	6	10	7	7	4	7
Entergy Arkansas, Inc.	6	5	8	8	9	9	9	9	8	8
Entergy Louisiana, LLC	10	10	10	7	10	7	10	10	9	10
Entergy Mississippi, Inc.	3	4	5	5	4	8	4	6	2	2
Georgia Power Company	2	3	2	3	3	2	3	3	3	4
Gulf Power Company	7	8	4	2	2	3	2	2	5	3
Southwestern Electric Power Company	1	1	1	1	1	1	1	1	1	1

Source: FERC Form 1.

Comparison of Administration and General Expenses
A&G per Customer



Source: FERC Form 1.

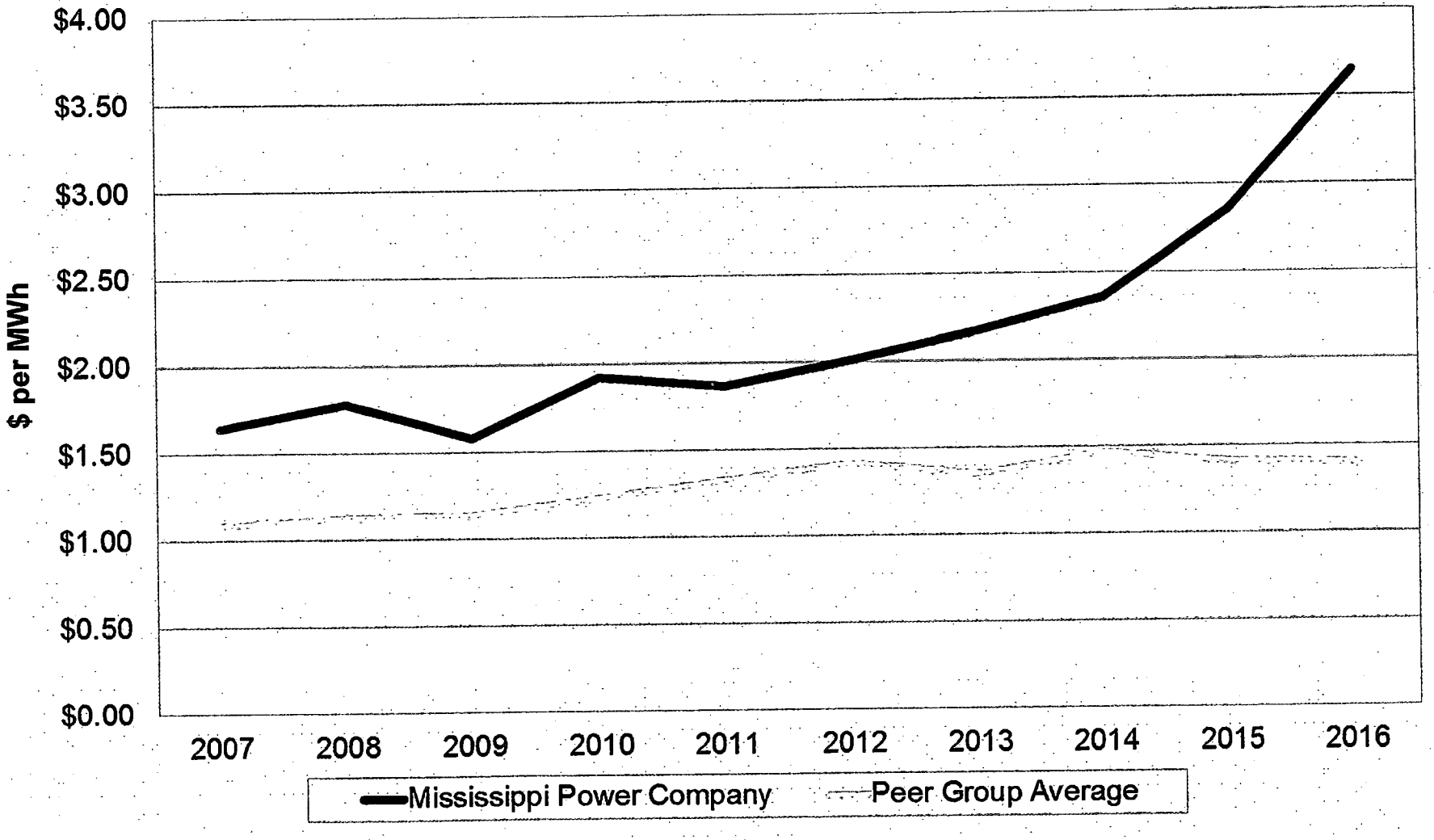
Comparison of Service Company Expenses
Outside Services per MWh

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/MWh)									
Mississippi Power Company	**$ 1.64**	**$ 1.77**	**$ 1.58**	**$ 1.92**	**$ 1.86**	**$ 2.00**	**$ 2.16**	**$ 2.35**	**$ 2.85**	**$ 3.65**
Alabama Power Company	2.17	2.18	2.41	2.69	2.64	2.61	2.47	2.62	2.90	3.00
Cleco Power, LLC	1.16	1.14	1.12	1.42	1.22	1.24	1.58	1.73	1.85	1.80
Duke Energy Carolinas, LLC	0.84	1.16	1.15	1.19	1.45	1.46	1.75	1.58	1.24	0.86
Duke Energy Progress, LLC	0.86	0.93	0.81	1.01	0.84	1.04	1.57	1.66	1.41	1.05
Entergy Arkansas, Inc.	0.93	0.61	0.60	0.75	1.10	1.42	1.04	1.28	1.14	1.51
Entergy Louisiana, LLC	0.46	0.53	0.43	0.46	0.60	0.55	0.61	0.89	0.65	0.99
Entergy Mississippi, Inc.	0.53	0.77	0.76	0.44	0.87	1.39	1.05	1.03	1.04	1.03
Georgia Power Company	1.40	1.40	1.61	1.66	1.77	1.81	1.68	1.72	1.78	1.66
Gulf Power Company	1.39	1.36	1.42	1.66	1.69	1.67	1.53	1.56	1.62	1.71
Southwestern Electric Power Company	1.10	1.17	1.04	0.99	1.02	0.96	0.21	0.56	0.45	0.38
Peer Group Average	$ 1.08	$ 1.12	$ 1.13	$ 1.23	$ 1.32	$ 1.41	$ 1.35	$ 1.46	$ 1.41	$ 1.40

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**10**	**10**	**9**	**10**	**10**	**10**	**10**	**10**	**10**	**11**
Alabama Power Company	11	11	11	11	11	11	11	11	11	10
Cleco Power, LLC	7	5	6	7	6	4	7	9	9	9
Duke Energy Carolinas, LLC	3	6	7	6	7	7	9	6	5	2
Duke Energy Progress, LLC	4	4	4	5	2	3	6	7	6	5
Entergy Arkansas, Inc.	5	2	2	3	5	6	3	4	4	6
Entergy Louisiana, LLC	1	1	1	2	1	1	2	2	2	3
Entergy Mississippi, Inc.	2	3	3	1	3	5	4	3	3	4
Georgia Power Company	9	9	10	9	9	9	8	8	8	7
Gulf Power Company	8	8	8	8	8	8	5	5	7	8
Southwestern Electric Power Company	6	7	5	4	4	2	1	1	1	1

Source: FERC Form 1.

Comparison of Service Company Expenses
Outside Services per MWh



Source: FERC Form 1.

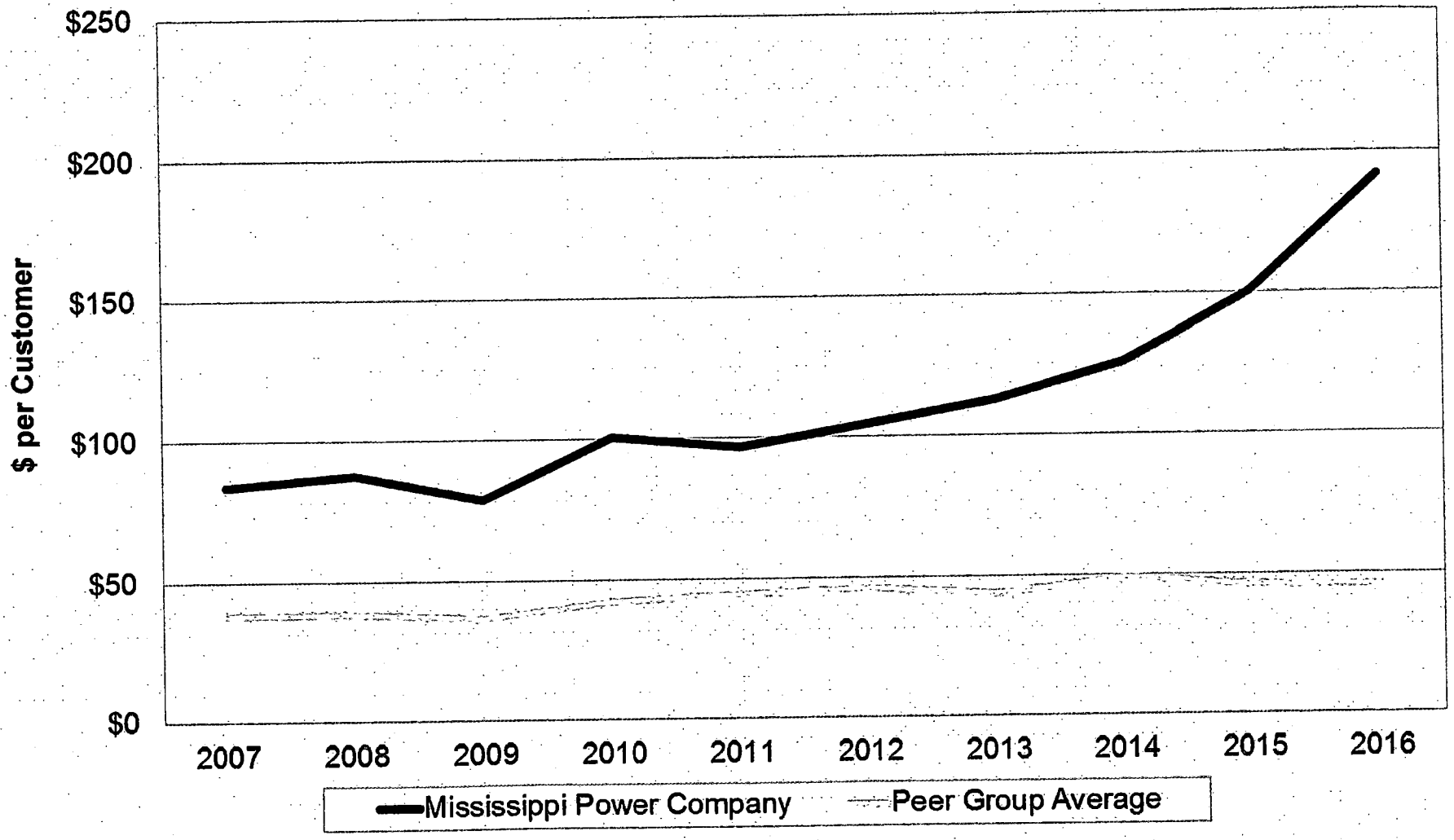
Comparison of Service Company Expenses
Outside Services per Customer

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	($/Customer)									
Mississippi Power Company	**$ 84**	**$ 88**	**$ 79**	**$ 101**	**$ 97**	**$ 104**	**$ 113**	**$ 126**	**$ 150**	**$ 191**
Alabama Power Company	86	84	86	105	101	98	94	103	111	112
Cleco Power, LLC	39	37	34	46	39	38	49	53	56	53
Duke Energy Carolinas, LLC	28	38	36	39	46	45	55	50	39	27
Duke Energy Progress, LLC	27	28	24	32	25	30	46	49	41	30
Entergy Arkansas, Inc.	29	18	17	24	34	43	31	38	34	44
Entergy Louisiana, LLC	21	24	19	22	29	27	30	45	34	50
Entergy Mississippi, Inc.	17	23	22	14	27	42	31	31	31	31
Georgia Power Company	52	50	55	61	63	62	57	60	61	57
Gulf Power Company	37	36	36	44	43	41	37	39	40	42
Southwestern Electric Power Company	41	43	36	36	36	33	7	19	15	12
Peer Group Average	$ 38	$ 38	$ 37	$ 42	$ 44	$ 46	$ 44	$ 49	$ 46	$ 46

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	(Rank)									
Mississippi Power Company	**10**	**11**	**10**	**10**	**10**	**11**	**11**	**11**	**11**	**11**
Alabama Power Company	11	10	11	11	11	10	10	10	10	10
Cleco Power, LLC	7	6	5	8	6	4	7	8	8	8
Duke Energy Carolinas, LLC	4	7	7	6	8	8	8	7	5	2
Duke Energy Progress, LLC	3	4	4	4	1	2	6	6	7	3
Entergy Arkansas, Inc.	5	1	1	3	4	7	3	3	4	6
Entergy Louisiana, LLC	2	3	2	2	3	1	2	5	3	7
Entergy Mississippi, Inc.	1	2	3	1	2	6	4	2	2	4
Georgia Power Company	9	9	9	9	9	9	9	9	9	9
Gulf Power Company	6	5	8	7	7	5	5	4	6	5
Southwestern Electric Power Company	8	8	6	5	5	3	1	1	1	1

Source: FERC Form 1.

Comparison of Service Company Expenses
Outside Services per Customer



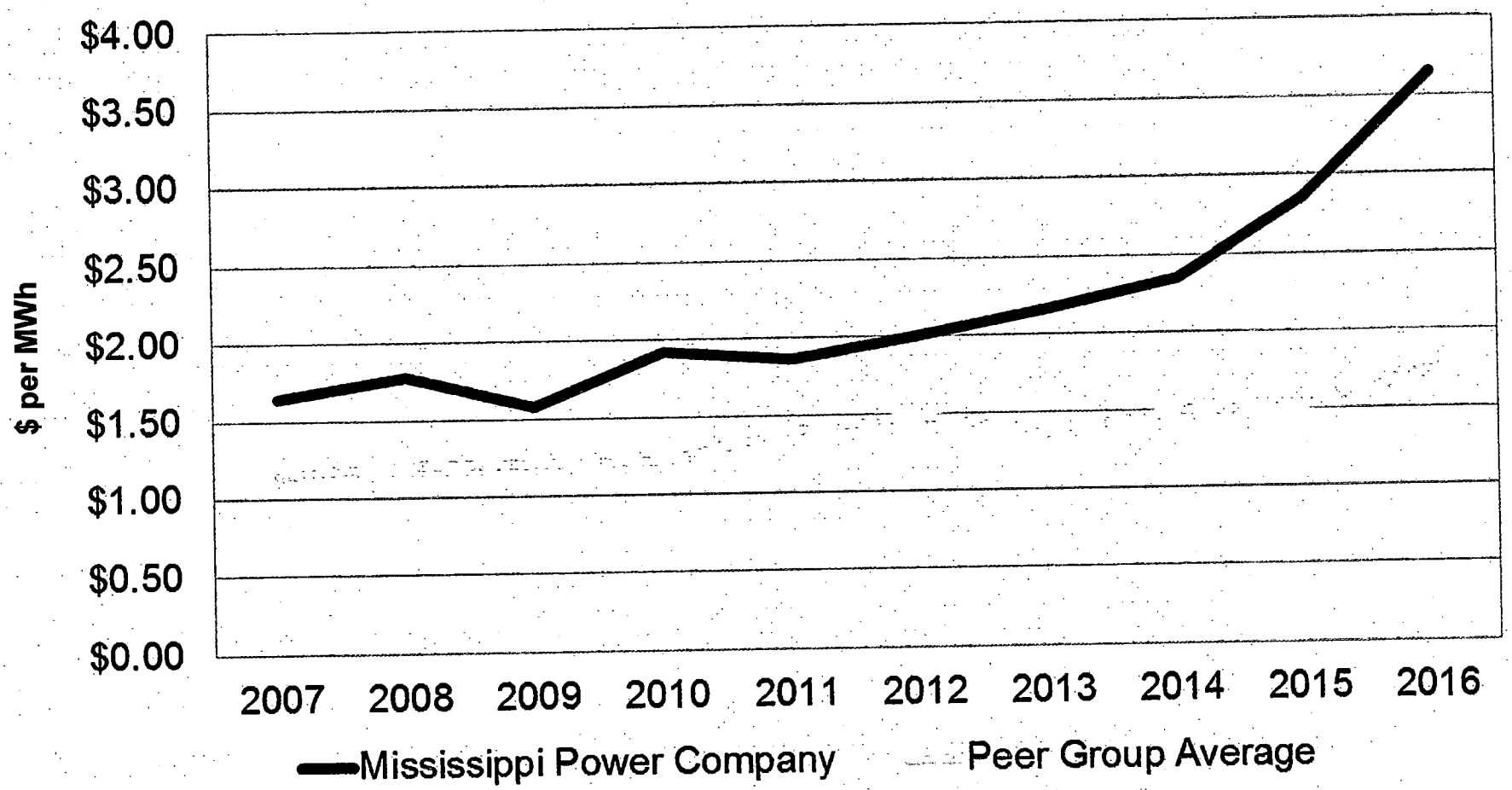
Source: FERC Form 1.

Comparison of Service Company Expenses – Nation-wide
Outside Services per MWh

Parent	Company	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
		(Rank)									
Southern Company	**Mississippi Power Company**	**30**	**37**	**30**	**37**	**33**	**35**	**37**	**36**	**38**	**40**
AEP	Appalachian Power Company	19	16	16	15	17	12	7	4	6	6
AEP	Indiana Michigan Power Company	29	34	27	33	26	22	8	12	10	10
AEP	Kentucky Power Company	12	12	9	9	6	6	5	3	5	7
AEP	Kingsport Power Company	4	2	1	2	1	1	2	1	1	1
AEP	Ohio Power Company	15	15	13	17	13	18	9	6	2	2
AEP	Public Service Company of Oklahoma	18	19	14	14	7	5	3	5	4	3
AEP	Southwestern Electric Power Company	23	23	23	20	18	13	4	7	7	8
AEP	Wheeling Power Company	3	3	2	1	3	2	1	2	3	4
Duke Energy	Duke Energy Carolinas, LLC	14	22	24	24	27	26	31	26	20	12
Duke Energy	Duke Energy Florida, LLC	17	13	18	30	15	17	22	21	16	15
Duke Energy	Duke Energy Indiana, LLC	22	30	28	22	29	20	20	15	13	11
Duke Energy	Duke Energy Kentucky, Inc.	8	24	21	12	8	11	15	9	9	9
Duke Energy	Duke Energy Ohio, Inc.	24	39	38	31	22	14	21	8	8	5
Duke Energy	Duke Energy Progress, LLC	16	14	15	21	10	16	26	28	22	17
Entergy	Entergy Arkansas, Inc.	20	6	7	10	20	24	16	20	17	22
Entergy	Entergy Louisiana, LLC	6	5	4	6	5	4	10	13	12	14
Entergy	Entergy Mississippi, Inc.	7	10	12	5	12	23	17	16	15	16
Entergy	Entergy New Orleans, Inc.	1	18	8	11	23	8	14	14	14	20
Entergy	Entergy Texas, Inc.		8	11	13	11	15	19	11	11	13
Eversource Energy	Connecticut Light and Power Company	11	17	19	19	16	7	12	17	29	29
Eversource Energy	NSTAR Electric Company	5	4	3	3	2	3	6	10	18	24
Eversource Energy	Public Service Company of New Hampshire	10	20	20	18	19	9	13	27	35	32
Eversource Energy	Western Massachusetts Electric Company	21	21	17	16	14	10	11	19	31	36
Exelon-PHI	Atlantic City Electric Company	41	43	43	43	43	43	43	43	43	43
Exelon-PHI	Baltimore Gas and Electric Company	2	1	5	4	4	36	39	40	40	39
Exelon-PHI	Commonwealth Edison Company	36	33	33	29	28	34	30	31	32	35
Exelon-PHI	Delmarva Power & Light Company	42	42	42	42	41	42	42	42	42	42
Exelon-PHI	PECO Energy Company	37	32	32	32	34	37	35	34	33	31
Exelon-PHI	Potomac Electric Power Company	40	41	40	40	40	41	41	41	41	41
FirstEnergy	Cleveland Electric Illuminating Company	32	25	29	25	25	21	18	18	19	19
FirstEnergy	Jersey Central Power & Light Company	39	36	37	38	36	33	33	35	25	33
FirstEnergy	Metropolitan Edison Company	34	38	39	39	42	40	38	37	36	34
FirstEnergy	Monongahela Power Company	28	27	25	26	35	28	34	25	26	26
FirstEnergy	Ohio Edison Company	31	29	31	28	30	25	24	23	23	21
FirstEnergy	Pennsylvania Electric Company	33	31	36	36	39	38	36	39	37	37
FirstEnergy	Pennsylvania Power Company	27	9	22	27	37	27	28	33	34	30
FirstEnergy	Potomac Edison Company	13	11	10	8	21	31	29	30	28	27
FirstEnergy	Toledo Edison Company	35	35	35	23	24	19	23	22	21	18
FirstEnergy	West Penn Power Company	9	7	6	7	9	30	32	32	30	28
Southern Company	Alabama Power Company	38	40	41	41	38	39	40	38	39	38
Southern Company	Georgia Power Company	26	28	34	35	32	32	27	29	27	23
Southern Company	Gulf Power Company	25	26	26	34	31	29	25	24	24	25

Source: FERC Form 1.

Comparison of Service Company Expenses – Nation-wide Outside Services per MWh



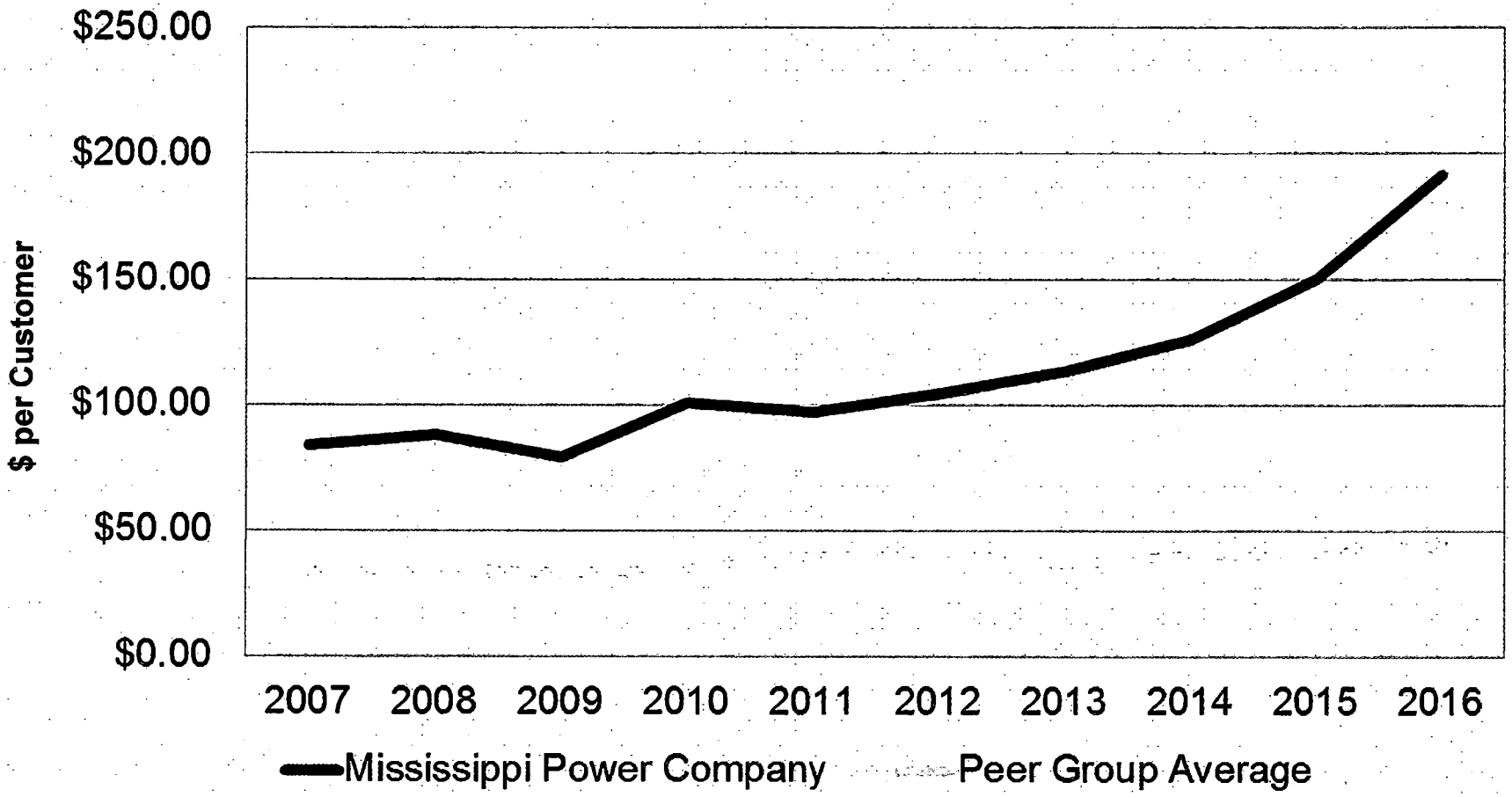
Source: FERC Form 1.

Comparison of Service Company Expenses – Nation-wide Outside Services per Customer

Parent	Company	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
		(Rank)									
Southern Company	**Mississippi Power Company**	**41**	**43**	**41**	**42**	**41**	**42**	**43**	**43**	**43**	**43**
AEP	Appalachian Power Company	20	20	19	18	17	12	7	3	4	5
AEP	Indiana Michigan Power Company	37	35	33	36	29	25	12	14	9	9
AEP	Kentucky Power Company	21	19	18	19	15	14	8	5	5	8
AEP	Kingsport Power Company	6	3	2	3	3	2	1	1	1	1
AEP	Ohio Power Company	17	17	16	15	13	9	6	2	2	2
AEP	Public Service Company of Oklahoma	19	22	17	17	11	8	3	4	3	3
AEP	Southwestern Electric Power Company	25	32	26	28	24	17	5	9	7	7
AEP	Wheeling Power Company	11	5	5	7	7	6	2	7	10	11
Duke Energy	Duke Energy Carolinas, LLC	16	29	27	30	31	31	35	32	25	13
Duke Energy	Duke Energy Florida, LLC	13	10	13	22	8	10	15	16	12	12
Duke Energy	Duke Energy Indiana, LLC	24	38	36	33	34	28	25	20	14	10
Duke Energy	Duke Energy Kentucky, Inc.	8	31	22	14	10	11	16	11	8	6
Duke Energy	Duke Energy Ohio, Inc.	23	39	37	31	22	15	22	8	6	4
Duke Energy	Duke Energy Progress, LLC	15	16	15	23	12	16	29	31	27	15
Entergy	Entergy Arkansas, Inc.	18	7	9	12	19	26	19	22	23	27
Entergy	Entergy Louisiana, LLC	12	14	11	11	16	13	17	26	20	29
Entergy	Entergy Mississippi, Inc.	7	13	14	4	14	23	20	18	17	16
Entergy	Entergy New Orleans, Inc.	1	18	12	13	27	7	13	15	15	22
Entergy	Entergy Texas, Inc.		15	21	25	21	21	27	19	13	21
Eversource Energy	Connecticut Light and Power Company	5	6	8	10	6	4	10	10	18	18
Eversource Energy	NSTAR Electric Company	3	2	1	1	1	1	4	6	11	14
Eversource Energy	Public Service Company of New Hampshire	4	4	6	6	5	3	11	13	24	20
Eversource Energy	Western Massachusetts Electric Company	9	9	7	8	4	5	9	12	22	25
Exelon-PHI	Atlantic City Electric Company	34	36	39	37	37	39	39	39	39	40
Exelon-PHI	Baltimore Gas and Electric Company	2	1	3	2	2	34	37	38	38	38
Exelon-PHI	Commonwealth Edison Company	32	27	30	21	20	30	24	24	28	33
Exelon-PHI	Delmarva Power & Light Company	39	40	40	40	39	40	40	40	40	41
Exelon-PHI	PECO Energy Company	35	28	32	27	32	35	33	30	31	32
Exelon-PHI	Potomac Electric Power Company	40	41	42	41	42	43	42	42	41	42
FirstEnergy	Cleveland Electric Illuminating Company	31	21	29	20	23	18	14	17	16	17
FirstEnergy	Jersey Central Power & Light Company	30	24	25	32	26	20	21	25	19	26
FirstEnergy	Metropolitan Edison Company	33	33	34	39	40	38	36	37	37	36
FirstEnergy	Monongahela Power Company	28	30	23	24	33	29	34	27	32	30
FirstEnergy	Ohio Edison Company	26	23	24	16	25	19	18	21	21	19
FirstEnergy	Pennsylvania Electric Company	29	25	31	35	38	36	32	36	35	37
FirstEnergy	Pennsylvania Power Company	27	12	20	26	35	27	30	34	34	35
FirstEnergy	Potomac Edison Company	14	11	10	9	18	33	28	29	30	28
FirstEnergy	Toledo Edison Company	38	37	35	29	30	24	26	28	29	24
FirstEnergy	West Penn Power Company	10	8	4	5	9	32	31	33	33	31
Southern Company	Alabama Power Company	42	42	43	43	43	41	41	41	42	39
Southern Company	Georgia Power Company	36	34	38	38	36	37	38	35	36	34
Southern Company	Gulf Power Company	22	26	28	34	28	22	23	23	26	23

Source: FERC Form 1.

Comparison of Service Company Expenses – Nation-wide Outside Services per Customer



Source: FERC Form 1.