**STATE OF INDIANA**

**INDIANA UTILITY REGULATORY COMMISSION**

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| **PETITION OF INDIANAPOLIS POWER & LIGHT COMPANY D/B/A AES INDIANA ("AES INDIANA") FOR AUTHORITY TO INCREASE RATES AND CHARGES FOR ELECTRIC UTILITY SERVICE, AND FOR APPROVAL OF RELATED RELIEF, INCLUDING (1) REVISED DEPRECIATION RATES, (2) ACCOUNTING RELIEF, INCLUDING DEFERRALS AND AMORTIZATIONS, (3) INCLUSION OF CAPITAL INVESTMENTS, (4) RATE ADJUSTMENT MECHANISM PROPOSALS, INCLUDING NEW ECONOMIC DEVELOPMENT RIDER, (5) REMOTE DISCONNECT/RECONNECT PROCESS, AND (6) NEW SCHEDULES OF RATES, RULES AND REGULATIONS FOR SERVICE.** | ) | **CAUSE NO. 45911** |

**INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR**

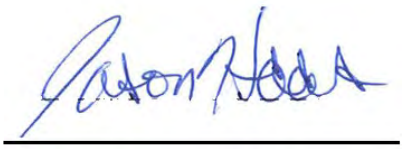
**PUBLIC'S EXHIBIT NO. 12**

**TESTIMONY OF OUCC WITNESS**

**DAVID E. DISMUKES**

**OCTOBER 12, 2023**

Respectfully submitted,



T. Jason Haas
Attorney No. 34983-29
Deputy Consumer Counselor

**STATE OF INDIANA**

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DIRECT TESTIMONY OF

**DAVID E. DISMUKES, PH.D.**

ON BEHALF OF

INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR

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October 12, 2023

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## TABLE OF EXHIBITS

## I. INTRODUCTION

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

A. I am a consulting economist with the Acadian Consulting Group ("ACG").

**Q. PLEASE DESCRIBE ACG AND ITS AREAS OF EXPERTISE.**

A. ACG is 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 located in Baton Rouge, Louisiana.

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

A. Yes. I am a professor emeritus at Louisiana State University ("LSU"). Prior to my retirement this past January, I served as a full professor, executive director, and director of policy analysis at the LSU Center for Energy Studies and as a full professor in the Department of Environmental Sciences and the director of the Coastal Marine Institute in the LSU College of the Coast and Environment. I also served as a senior fellow at the Institute of Public Utilities at Michigan State University, where I taught energy regulatory staff and other utility stakeholders about principles, trends, and issues in the electric and natural gas industries.

**Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE INDIANA UTILITY REGULATORY COMMISSION?**

A. Yes. My academic vitae is attached as Appendix A. It includes a list of the Indiana Utility Regulatory Commission ("Commission" or "IURC") proceedings in which I have testified, a list of all my publications, presentations, pre-filed expert witness testimony in other jurisdictions, expert reports, expert legislative testimony, and affidavits.

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

A. I have been retained by the Indiana Office of Utility Consumer Counselor ("OUCC") to address certain regulatory and policy issues related to the general rate case filed by Indianapolis Power & Light Company D/B/A AES Indiana ("AES Indiana," or "the Company"). I specifically have been asked to address the Company's proposed allocated cost of service study ("ACOSS"), revenue distribution, rate design, rate adjustment proposals and related tracker-mechanisms.

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

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

- Section II: Summary of Recommendations
- Section III: Allocated Cost of Service Study
- Section IV: Revenue Distribution
- Section V: Rate Design
- Section VI: Tracker Mechanisms
- Section VII: Conclusion and Recommendations

**Q. WHAT EXHIBITS SUPPORT YOUR DIRECT TESTIMONY?**

A. The following exhibits were prepared under my direction and control:

- Exhibit DED-1: Results of IN AES's Class Cost of Service Study
- Exhibit DED-2: IN AES's Historic System Load Factors, 2018-2022
- Exhibit DED-3: Analysis of IN AES's Electric Generation Unit Capacity Factors, 2022
- Exhibit DED-4: Analysis of IN AES's Electric Generation Unit Costs to MISO Planning Reserve Auction
- Exhibit DED-5: Summary of the Results of Minimum System Study

- Exhibit DED-6: Results of Alternative Class Cost of Service Study
- Exhibit DED-7: Company's Proposed Revenue Distribution
- Exhibit DED-8: Alternative Proposed Revenue Distribution
- Exhibit DED-9: Comparison of Current and Proposed Customer Charges
- Exhibit DED-10: Customer Charge Revenues to Costs
- Exhibit DED-11: Survey of Regional Customer Charges
- Exhibit DED-12: Analysis of Residential Rate Impact at Different Usage Levels
- Exhibit DED-13: Comparison of Proposed and Recommended Rates
- Exhibit DED-14: IN AES 7-Year TDSIC Planned Capital Expenditures by Project
- Exhibit DED-15: Historic and Projected TDSIC Annual Revenue Requirement

## II. SUMMARY OF RECOMMENDATIONS

**Q. PLEASE SUMMARIZE YOUR ACOSS FINDINGS.**

A. I find that the Company's ACOSS incorrectly classifies fixed costs associated with production plant assets as exclusively demand-related. This is inconsistent with the role these production/generation assets play in serving the Company's system requirements, and deviates from commonly accepted cost allocation practices. I also disagree with the Company's reliance on the results of its minimum system study ("MSS") to classify a portion of its distribution plant assets as being customer related. The effect of these two errors in the Company's ACOSS is that it favors large customers with relatively higher load factors over residential and small commercial customers with relatively lower load factors.

**Q. WHAT IS YOUR RECOMMENDATION REGARDING THE COMPANY'S PROPOSED REVENUE DISTRIBUTION?**

A. I recommend the Commission adopt a revenue distribution allocation method based on my alternative ACOSS results. I furthermore recommend the Commission limit rate increases to any single rate class to no more than 1.15 times the overall system average increase. This proposed revenue distribution methodology reduces the maximum total base revenue increase of any single

rate class to 10.26 percent, compared to the Company's proposed maximum rate increase of 13.39 percent.

**Q. WHAT ARE YOUR CUSTOMER CHARGE RECOMMENDATIONS AND CONCLUSIONS?**

A. I recommend the Commission reject the Company's proposed increase in customer charges. The Company's proposal would detrimentally impact the public policy goals of promoting energy efficiency. Likewise, it would burden low-use customers with a greater than average portion of any proposed increase in the case. My specific customer charge recommendations are provided within Exhibit DED-13.

**Q. WHAT IS YOUR RECOMMENDATION REGARDING THE COMPANY'S TRANSMISSION, DISTRIBUTION, AND STORAGE IMPROVEMENT CHARGE?**

A. I recommend the Commission continue to closely scrutinize capital investments made by the Company through the Transmission, Distribution, and Storage Improvement Charge to ensure they are reasonable, prudent, and necessary. Capital investments supported by the mechanism already constitute a significant portion of the Company's rate base, and this is only projected to grow through the remainder of the existing TDSIC Plan.

## III. ALLOCATED COST OF SERVICE

### A. Introduction

**Q. WHAT IS THE PURPOSE OF AN ALLOCATED COST OF SERVICE STUDY?**

A. A Class Cost of Service Study or Allocated Cost of Service Study ("ACOSS") is a modeling approach that reconciles utility costs and revenues across different customer classes. The goal of an ACOSS is to evaluate the cost of providing service and revenue responsibility for each individual customer class. ACOSS results are used to estimate class specific rates of return and can serve as a guidepost for class revenue responsibilities and ultimately rates.

**Q. HOW IS AN ACOSS PREPARED?**

A. An ACOSS utilizes a set of historic or projected cost information which is (1) "functionalized," (2) "classified," and (3) "allocated." The functionalization process simply categorizes costs based upon the functions they serve within a utility's overall operations (i.e. production, transmission, and distribution). The classification process characterizes costs by "type" including those that are (1) demand-related, (2) commodity-related, or (3) customer-related. The last step of the process "allocates" each of these costs to a respective jurisdiction or customer class as appropriate.

**Q. PLEASE EXPLAIN DEMAND-RELATED COSTS.**

A. Demand-related costs are associated with meeting maximum electricity demands. At the distribution level, electric substations and line transformers are designed, in part, to meet the maximum customer demand requirements. The most common demand allocation factors used in an ACOSS are those related to system Coincident Peaks ("CP") or Non-Coincident Peaks ("NCP"). At the production level, most power plants, also referred to as production plants, or electric generation units ("EGU"), are typically viewed as being designed to serve both the energy and demand/capacity needs of the utility. The exact degree of this split between energy and demand depends on the individual EGU in question and how that unit is dispatched with more

baseload units serving more of the utility's energy needs and more peak units serving more of the utility's capacity or demand needs. Therefore, it is not uncommon to develop composite energy and demand allocators to allocate plant-in-service costs associated with a utility's generation fleet.

**Q. HOW ARE ENERGY-RELATED COSTS DEFINED?**

A. Energy-related costs are defined as those that tend to change with the amount or volume of electricity (i.e., kilowatt-hour ("kWh")) sold. Electric generation costs and high-voltage transmission lines, for instance, can be allocated, in part, based on some measure of electricity sales.

**Q. WHAT ABOUT CUSTOMER-RELATED COSTS?**

A. Customer-related costs are those associated with connecting customers to the distribution system, metering household or business usage, and performing a variety of other customer support functions.

**Q. IS THIS A RELATIVELY SIMPLE PROCESS?**

A. No. Some costs can be clearly identified and directly assigned to a function or category, while other costs are more ambiguous and difficult to assign. The primary challenge in conducting an ACOSS is the treatment of what are known as "joint and common" costs. Given their shared or integrated nature, these joint and common costs can often be difficult to compartmentalize. Therefore, unique allocation factors are utilized in a class cost of service study ("CCOSS") to classify joint and common costs. The process of developing these cost allocation factors can become subjective and is often imbued with policy considerations.

**Q. HOW DOES AN ACOSS RELATE TO COMMONLY QUOTED ECONOMIC PRINCIPLES?**

A. An ACOSS is referred to as a "fully allocated cost study" since it allocates test year revenues, rate base, expenses, and depreciation to various jurisdictions and customer classes based upon a series of different allocation factors. The purpose of the ACOSS is to develop cost responsibilities estimates for each customer class, which in turn, can be used to develop rates. An ACOSS is based upon a set of historic utility book costs that have accumulated over decades. Rates are, therefore, based upon historic average costs; whereas economic theory suggests that the most efficient form of pricing in perfectly competitive markets should be based upon marginal costs. However, regulated Indiana electric utilities do not operate in competitive markets and, by their very nature, are natural monopolies. Thus, reaching the ideal pricing formula outlined in economic theory is impossible since the nature of natural monopolies makes pricing in the presence of declining average costs, coupled with the presence of joint and common costs, difficult.

**Q. ARE THERE ANY OTHER CONFOUNDING PROBLEMS THAT CAN ARISE WITH AN ACOSS?**

A. Yes. The problems listed above are confounded by the fact that the cost information utilized in an ACOSS is usually historic and static, not dynamic, and forward-looking. These analytic deficiencies undermine many experts' cost causation/pricing claims. As a result, in regular practice there is no single correct answer that is revealed in an ACOSS. It is often up to regulators to exercise an appropriate level of judgment regarding the nature of these costs, the results of the ACOSS, and the implications both have in setting fair, just, and reasonable rates. This is one of the reasons why many regulators use ACOSS results as a "guide" in setting rates and are not unnecessarily bound by their results.

**Q. WHAT CONTROVERSIES ARISE IN THE ANALYSIS AND COMPARISON OF VARIOUS ACOSS METHODOLOGIES?**

A. The ACOSS process is significantly different than the revenue requirement or cost of capital phase of a typical rate case, which focus on determining how much revenue will be recovered through rates. However, the ACOSS process determines how those costs (revenue requirements) will be distributed and recovered from various customer classes through customer rates. The primary controversy with the evaluation of various ACOSS results often rests with determining whether costs (revenue requirements) will be recovered by the relative customer share of each class, the peak load contributions of each customer class, or whether and how the approach will be tempered through the use of customer, peak, and off-peak usage considerations. Methodologies that are heavily skewed toward customer and peak considerations, for instance, can tend to shift costs more than proportionally to relatively lower load-factor customers, such as residential and small commercial customers, and less costs to larger high load factor customer classes and off-peak customers. These approaches can also fail to capture the service being provided by the utility (i.e., electric service in this case), and how the value of that service varies by the amount purchased by different customer classes.

**Q. PLEASE EXPLAIN THE BIAS IN METHODOLOGIES THAT ARE SKEWED TOWARD PEAK CONSIDERATIONS.**

A. Residential and small commercial customer electricity loads are typically weather sensitive. Larger industrial customers, on the other hand, use electricity in processes that are generally not weather sensitive, and tend not to cycle up and down, but rather run on a more continuous basis. Because of this, daily and annual usage patterns for these two customer classes are significantly different. The peak loads for residential and small commercial customers tend to

be more "peaked" than those for industrial customers, which are steadier and more evenly distributed across peak and non-peak hours. For example, an average residential customer may have relatively little electricity use during overnight hours and during weekday daytime working hours. Residential customers do exhibit relatively significant use during early summer evening hours corresponding to returning home from work, and potentially during chilly early winter morning hours if the customer uses electric resistance heating. Similarly, small commercial customers see limited electricity use outside of workday hours. Thus, residential and small commercial customers tend to have relatively lower load factors than large industrial customers.

**Q. PLEASE DEFINE WHAT IS MEANT BY A "LOAD FACTOR."**

A. A load factor is defined as the ratio of the average load in kilowatt hours supplied during a designated period to the peak or maximum load in kilowatts occurring in that period. The load factor is expressed as a percentage and may be derived by taking the energy used during a period and dividing it by the product of the maximum demand and the number of hours in the period. A system that is estimated to have a high load factor is often thought to be utilizing electricity more efficiently since usage is consistent and does not swing largely between average and peak periods. Conversely, systems with low load factors must maintain idle capacity in order to meet the relatively large swings in load between average and peak periods.

**Q. DOES A HIGH LOAD FACTOR INDICATE GREATER SYSTEM EFFICIENCY?**

A. Yes, since a higher system load factor can be indicative of, or lead to better system resource utilization, other things being equal. However, it should be recognized that all utilities inherently have customers with different load profiles due to differences in how customers use electricity. Furthermore, the development of integrated wholesale bulk electricity transmission systems has allowed utilities to collectively diversify generation resources and individual system demands,

which has reduced the impact of individual system load characteristics on generation needs in recent years. While rates should recognize and promote the efficient utilization of utility system resources, one should use caution in placing too much emphasis on this principle of rewarding high load factor industrial customers to the detriment of low load factor residential and small commercial customers.

**Q. WHAT IMPACT DOES COST ALLOCATION HAVE ON REVENUE RECOVERY?**

A. Higher use customers, such as industrial customers, are inherently more price sensitive than lower use customers due to the relative impact increases in rates can have on these customers' total utility bills and the margins of produced goods. These higher use industrial customers tend to have more energy supply alternatives that can include fuel switching and self-generation which is part of the reason why they are more price sensitive. These considerations can result in differences in revenue generation given the differences in the price elasticities of demand (i.e., price sensitivities) for the two sets of customers (residential, industrial).

**Q. EXPLAIN HOW SOME ACOSS METHODS CAN BE BIASED AGAINST LOWER LOAD-FACTOR CUSTOMERS.**

A. Utilities by their nature are capital intensive industries with high levels of capital expenditures required to develop systems to generate and transmit power to customers. Therefore, deciding the appropriate allocation of costs associated with utility capital investments (e.g., utility "plant in service") largely affects the cost of providing service. Utilities can often over-emphasize peak demand factors in allocating these large plant costs in order to assign more costs away from their price sensitive customers. Likewise, utilities can emphasize non-diversified single CP demands, NCP demands, and individual customer demands in allocating costs associated with

transmission and distribution plant facilities to favor high-load factor customers relative to low-load factor customers. Finally, utilities can over-emphasize customer connection aspects of lower voltage distribution facilities to favor high-use customers relative to low-use customers.

### B. Overview of Company's ACOSS

**Q. PLEASE DESCRIBE AES INDIANA'S ACOSS APPROACH.**

A. The Company utilizes the traditional three-step approach to ACOSS. First the Company functionalizes its costs to five separate functions: production; transmission; primary distribution; secondary distribution; and customer accounts and services.[1] Second, the Company classifies these functionalized costs to three separate purposes: customer costs; demand costs; and energy costs.[2] Finally, the Company defines a series of individual allocators to allocate these functionalized and classified costs to individual rate classes.[3]

**Q. PLEASE DESCRIBE THE COMPANY'S ALLOCATION OF PRODUCTION AND TRANSMISSION DEMAND-RELATED COSTS.**

A. The Company utilizes the coincident peaks during each of the twelve months of the test period ("12CP") to allocate production and transmission facility demand-related costs.[4] The Company notes that it utilizes this 12CP approach because (1) this is the same method the Company used in its two most recent rate cases,[5] and (2) its in-state load characteristics satisfy two of the three tests used by the Federal Energy Regulatory Commission ("FERC") to verify if 12CP is the most appropriate demand measure relative to alternative measures of CP demands.[6]

[1] Direct Testimony of Bickey Rimal at 7:5-8.
[2] *Id.* at 7:15-17.
[3] *Id.* at 9:6-18.
[4] *Id.* at 21:1-2.
[5] *Id.* at 21:3.
[6] *Id.* at 21:3-7.

**Q. PLEASE EXPLAIN HOW THE COMPANY FUNCTIONALIZES AND CLASSIFIES ITS DISTRIBUTION PLANT INVESTMENTS.**

A. The Company uses two subsidiary studies to its ACOSS to functionalize and classify its distribution plant investments. First is a primary-secondary study to functionalize primary and secondary distribution that are not specifically identified in financial accounting records as exclusively assigned to primary voltage (480 V to 34.5 kV) or secondary voltage (less than 480 V).[7] This includes distribution poles, which are functionalized between primary and secondary voltage using AES Indiana's Geographic Information System ("GIS") data to determine the number, height, and type of poles on secondary and primary voltage circuits and replacement costs,[8] and distribution conductors, which are functionalized by using length of conductors and replacement costs of conductors serving primary versus secondary distribution circuits.[9] The second subsidiary study the Company uses to classify its distribution plant investment is a Minimum System Study ("MSS"), which is used by the Company to define the portion of its distribution system classified as customer-related rather than demand-related.[10]

**Q. HAVE YOU EXAMINED THE COMPANY'S ACOSS RESULTS?**

A. Yes. Exhibit DED-1 presents the results of the Company's ACOSS which estimates an overall test year rate of return ("ROR") at current rates of 4.34 percent. Estimated individual class returns range from a negative 13.71 percent for the Protected Lighting ("APL") class to 28.71 percent for the Municipal Device ("MD") class. The Residential ("RS") rate class is estimated by the Company to have achieved an ROR of 2.00 percent during the test year under current rates, which is 0.46 of the system average on a relative rate of return ("RORR") basis.

[7] *Id.* at 15:1-5.
[8] *Id.* at 15:6-13.
[9] *Id.* at 15:14-21.
[10] *Id.* at 16:1-11.

**Q. DO YOU DISAGREE WITH ANY OF THE ASSUMPTIONS OR ALLOCATION FACTORS INCORPORATED IN THE COMPANY'S PROPOSED ACOSS?**

A. Yes. I disagree with the Company's classification of fixed production costs as exclusively demand-related. I also disagree with the Company's reliance on the results of its MSS to classify a portion of its distribution plant assets as being customer related. I will discuss each of these disagreements in greater detail in the following sections of my testimony.

### C. Classification of Production Plant

**Q. PLEASE DESCRIBE HOW THE COMPANY CLASSIFIES AND ALLOCATES PRODUCTION PLANT COSTS.**

A. The Company classifies 100 percent of its fixed production plant costs as being entirely demand-related, and the Company proposes to allocate fixed production plant costs based on each classes' relative test year 12 month CP demand ("12CP").[11]

**Q. PLEASE EXPLAIN THE CONCERNS YOU HAVE WITH THIS COST ALLOCATION PROCESS.**

A. I disagree with the Company's classification of production plant assets as only supporting the Company's maximum system demands. This is inconsistent with the role these production/generation assets play in serving the Company's system requirements, and deviates from commonly accepted cost allocation practices.

**Q. HOW DOES THE COMPANY'S ALLOCATION OF PRODUCTION PLANT DEVIATE FROM COMMONLY ACCEPTED COST ALLOCATION PRACTICES?**

A. EGUs are typically viewed as serving both energy and demand/capacity needs of a utility. The exact degree of this demand/energy split, however, varies by individual utility depending on

[11] *Id.* at 21:1-6.

its composition of generation plants and the role each generating plant plays in system dispatch. Historically, "baseload" generation units were used to serve steady, consistent, multi-hour energy loads, whereas natural gas turbines and other "peakers" were used as demand changed in any given day. It is not uncommon, therefore, to develop composite energy and demand allocators that represent this mixed use and classification.

**Q. HAVE OTHER REGULATORY AGENCIES RECOGNIZED THIS JOINT ENERGY AND DEMAND ROLE FOR PRODUCTION PLANT ASSETS?**

A. Yes. Other regulatory agencies, such as the Michigan Public Service Commission ("MPSC"), have recognized that energy loads are an important contributing factor of production plant costs and classify a portion of these production costs as energy-related.[12] As an example, in a 2015 review of cost of service allocations for DTE Electric Company ("DTE Electric"), the MPSC explained that utilities do not directly design generation to meet the needs of its various customer types for only a few hours of the year, but rather utilize a variety of generators to both provide sufficient capacity and provide low-cost energy to customers.

> The Commission agrees with the Staff, the Attorney General, Energy Michigan, and [Environmental and Consumer Advocates] that DTE Electric's production system was not designed and built solely for the purpose of providing capacity for four hours a year. Indeed, if that were the case, DTE Electric's generation asset portfolio would be very different and would certainly include far fewer of the large base load units that comprise much of the company's current fleet. Instead of building a system to simply meet demand, the company developed its production plant to both deliver energy and provide capacity at the lowest overall cost to all customers who use the system. Thus, DTE Electric's generating system includes a mix of base load plants that were significant investments, but that provide abundant, reliable, and low-cost energy to all customers, and peaking plants, with low fixed production costs and typically higher fuel costs than the base

[12] *In the matter, on the Commission's own motion to commence a proceeding to implement the provisions of Public Act 169 of 2014; MCL 460.11 (3) et seq., with regard to DTE Electric Company*. Case No. 17689, Opinion and Order, dated June 15. 2015.

load units. These peaking plants are the units that are used to meet peak demand in the summer months.[13]

**Q. CAN YOU PROVIDE SOME EXAMPLES OF COMMONLY USED CLASSIFICATION METHODS THAT REFLECT THE DIVERSITY OF PRODUCTION PLANT USE?**

A. Yes. Examples of these composite energy and demand allocators include the Average and Peak ("A&P") cost allocation methodology, also called the Peak and Average cost allocation methodology, and the Average and Excess ("A&E") cost allocation methodology.

**Q. EXPLAIN HOW THE A&P METHOD CLASSIFIES PRODUCTION PLANT COSTS.**

A. The A&P method is a subset of the larger category of production plant cost allocation methods categorized by the NARUC Electric Utility Cost Allocation Manual as "Judgmental Energy Weightings."[14] The A&P method has two components. The first component, referred to as the "average" component, represents each customer class's average hourly energy consumption throughout the test year, and is calculated by simply dividing annual energy consumption for each customer class by 8,760, the number of hours in a year. The second component, referred to as the "peak" component, represents each class's contribution to system peak demand. Judgment is used to determine the appropriate weighting of each of these two components,[15] though one empirical way in which these weightings can be derived is based on a utility's system load factor. In this way the average component is weighted by the utility's overall system load factor while the excess

[13] *Id.*
[14] Electric Utility Cost Allocation Manual (January 1992), National Association of Regulatory Utility Commissioners ("NARUC"), pp. 57-59.
[15] *Id.* at 57.

component is weighted by the inverse of the system load factor (i.e., one minus the system load factor).

**Q. HAVE YOU CALCULATED THE SYSTEM LOAD FACTOR FOR THE COMPANY?**

A. Yes. Exhibit DED-2 shows the Company's system load factor for 2022 using the 12 CP measure of peak demand. My analysis shows that the Company's system load factor is 66.4 percent when using a 12 CP measure of peak demand.

**Q. ARE THE RESULTS OF YOUR ANALYSIS TIME SPECIFIC?**

A. No. Exhibit DED-2 shows that the historic trends in the Company's system load factors for a five-year period 2017 through 2022 tended to be relatively stable, between 63.4 and 66.5 percent.

**Q. WHAT DO THE COMPANY'S SYSTEM LOAD FACTORS FOR THE TEST YEAR IMPLY?**

A. The results of the analysis presented in Exhibit DED-2 suggest the current 12 CP classification of demand-related production costs is too heavily weighted toward demand considerations relative to energy when compared to the Company's actual reported data.

**Q. ARE THERE WAYS TO EMPIRICALLY ASSESS THE FUNCTION INDIVIDUAL GENERATION UNITS PROVIDE TO A UTILITY'S ELECTRICAL SYSTEM?**

A. Yes. The most basic method is an examination of individual units' "capacity factor." The capacity factor is a measure of a generation plant's utilization. Units with a high-capacity factor are said to be operating at high utilization (like a baseload generation plant), whereas a low-

capacity factor unit is typically one held in reserve to meet peak loads that are typically stimulated by weather.

**Q. HAVE YOU ANALYZED THE COMPANY'S GENERATOR-SPECIFIC CAPACITY FACTORS?**

A. Yes. Exhibit DED-3 presents the result of an analysis associated with each of the Company's non-renewable EGUs, and each unit's capacity factor during the test year to characterize the role the unit serves in the Company's dispatch of electricity. All facilities with annual capacity factors less than 15 percent were assumed to be fully classified as serving the utility's demand requirements, while most other facilities were divided between energy and demand classifications. This means that the Company's Eagle Valley combined-cycle gas turbine ("CCGT") facility, which had a 67.65 percent capacity factor during 2022, was classified as 67.65 percent energy-related and 32.35 percent demand-related.

**Q. WHAT ARE THE RESULTS OF YOUR ANALYSIS OF THE RELATIVE CLASSIFICATION OF INDIVIDUAL COMPANY GENERATION UNITS?**

A. Exhibit DED-3 finds that a substantial portion of the Company's 2022 gross plant in service was devoted to the provision of energy and not directly associated with meeting the Company's demand-needs. Specifically, I find that 48.36 percent of the Company's 2022 gross plant in service is appropriately classified as being energy-related, and 51.64 percent appropriately classified as being demand-related. The Company's methodology, however, would classify 100 percent of this gross generation plant in service as necessary to meet its peak demand requirements, regardless of how those units are typically utilized.

**Q. ARE THERE OTHER WAYS TO ANALYZE GENERATION FUNCTIONS?**

A. Yes. Besides examination of individual capacity factors, one can also examine the levelized cost of each generation unit relative to established market analyses. For instance, Exhibit DED-4 presents the results of an analysis that examines the levelized annual cost for each of the Company's non-renewable EGUs compared with the "Cost of New Entry" (or "CONE") prices estimated by MISO in its most recent analysis of the 2023/2024 Planning Resource Auction ("PRA") results.[16] All costs less than the MISO CONE price can be classified as demand-related whereas prices above the MISO CONE can be classified as energy-related.

**Q. WHAT ARE THE RESULTS OF YOUR CONE ANALYSIS?**

A. Exhibit DED-4 finds that, at most, 44.28 percent of the Company's production plant in service could be classified as being associated with the provision of demand functions. This again is significantly different than the Company's proposed methods, which classifies 100 percent of its production plant as demand-related.

**Q. PLEASE DESCRIBE AN A&E COST ALLOCATION METHODOLOGY.**

A. Conceptually, A&E classification methods involve developing two components that are combined by the use of a weighted average.[17] The first component, referred to as the "average" component, represents each rate class's average hourly energy consumption throughout the test year, and is calculated by simply dividing annual energy consumption for each rate class by 8,760, the number of hours in a year. The second component, referred to as the "excess" component, represents each rate class's contribution to the sum of each customer class's maximum annual peak demand, or NCP. These components are combined through the use of a weighted average. The average component is weighted by the utility's overall system load factor while the excess

[16] 2023/2024 Planning Resource Auction (PRA) Results; (April 14, 2023); MISO.
[17] See, Electric Utility Cost Allocation Manual (January 1992), National Association of Regulatory Utility Commissioners, pp. 49-51.

component is weighted by the inverse of the system load factor (*i.e.*, 1 minus the system load factor).

**Q. WHAT IS THE BASIS FOR THE "EXCESS DEMAND" DEMAND MEASURE VERSUS FULL PEAK DEMAND?**

A. Superficially, the A&E method appears to develop a hybrid weighted energy and demand allocation factor, recognizing the joint energy and demand functions of production plant. However, it should not be confused with a simple weighting of class demand and energy requirements, similar to the previously referenced A&P methodology.[18] Proponents of the A&E cost allocation approach, typically large/industrial customer groups, argue that using full class peak demand "double counts" class energy use during periods. These stakeholders often argue that the use of "excess demand" rather than total demand solves this purported "double counting problem." However, in using the excess component only, the A&E methodology directly places a higher emphasis on each class's demand contribution relative to energy. Thus, the A&E method, itself, suffers from a bias that favors relatively higher load factor classes like industrial customers and at lower load factor classes' expense (such as residential and small commercial customers).

**Q. DO YOU AGREE WITH CLAIMS ABOUT THE SUPERIORITY OF THE A&E METHODOLOGY?**

A. No, such arguments incorrectly conflate the concepts of energy and demand and the roles each of these play in utility system planning. These arguments are also faulty since they effectively presume that utilities design systems to first meet the needs of baseload customers and only later develop resources dedicated to customers that have peaking requirements. In other words, it assumes utilities plan one set of generation plants for one group of customers (i.e., industrial), and

[18] *Id.* at 57-58.

an entirely different set of plants to serve another (i.e., residential and small commercial). All of these arguments are incorrect since, in reality, demand and energy reflect separate and differing utility planning parameters and system planners develop resources to meet all of their load requirements, not separately to meet individual, or class-specific requirement.

**Q. PLEASE EXPLAIN WHAT YOU MEAN BY CONFLATING THE CONCEPTS OF ENERGY AND DEMAND AS IT RELATES TO UTILITY SYSTEM PLANNING.**

A. This conflation presumes that energy and peak energy use are virtually consubstantial, with energy being part of peak energy use, and presumable peak being a part of energy. Peak energy usage, for instance, can be divided into a portion representing its average annual system requirement, and a second portion representing its load requirement in excess of this requirement. However, this conflation does not reflect the reality of utility system planning wherein a utility is required to plan for energy and capacity system requirements as independent, not a single consubstantial system parameter. A utility must ensure that it has enough generating capacity to meet its peak system requirements (i.e., its coincident peak), as well as assure that the plant it develops to meet its load requirements are least cost in nature.

**Q. CAN YOU PROVIDE AN EXAMPLE OF THIS LOGICAL ERROR?**

A. Yes. Consider a customer class with a 100 percent load factor. The A&E methodology will assign the "excess demand" component of the calculation a zero value, since peak demand requirements equal average demand requirements, effectively considering the class as having no peak demand requirements. However, customer classes with a 100 percent load factor utilize system resources during all hours, both peak and off-peak. Thus, the A&E methodology effectively views the utility role in system planning as first serving the needs of its high load factor customers through baseload generation units, and then serving the needs of lower load factor

customers through more expensive peaker generation units. The utility considers its needs on a total system basis, ensuring that it has sufficient resources to supply its customers during peak demand periods and sufficient baseload generation resources to supply its customers with relatively inexpensive energy during base demand periods.

**Q. ARE THERE OTHER CONCERNS ASSOCIATED WITH AN A&E COST ALLOCATION METHODOLOGY?**

A. Yes. There is a mathematical error that arises in the use of the A&E method underscoring its weakness. In order to "make the math work," the A&E method cannot use a traditional CP measure of demand (like the Company, and most utilities use), but instead must use an NCP measure.

**Q. PLEASE EXPLAIN THIS MATHEMATICAL ISSUE.**

A. The NARUC Manual notes that use of a 1 CP demand measure within A&E calculations will result in estimates that are identical to a general 1 CP demand-only measure which effectively undermines the entire purpose of developing a hybrid demand-energy classification.[19] In order to prevent this outcome from occurring, the NARUC Manual suggests using an NCP demand measure:

> If your objective is – as it should be using [an A&E] method – to reflect the impact of average demand on production plant costs, then it is a mistake to allocate the excess demand with a coincident peak allocation factor because it produces allocation factors that are identical to those derived using a CP method. Rather, use the NCP to allocate the excess demands.[20]

**Q. IS THE USE OF NCP AN APPROPRIATE MEASURE OF PEAK DEMAND FOR ALLOCATING COSTS RELATED TO PRODUCTION PLANT ASSETS?**

[19] Electric Utility Cost Allocation Manual (January 1992), National Association of Regulatory Utility Commissioners, p. 50.
[20] *Id.*

A. No. First, utilities typically do not use NCP measures in planning, developing, or operating generation units since an NCP assumes a low level of load diversity thus amplifying customer peak demand requirements on the utility's system. In other words, if a utility did use an NCP measure for planning purposes, it would have to develop a unique set of generation plants for each of its major customer classes – something that clearly does not happen. While the use of an NCP may be appropriate for distribution facilities which serve isolated segments of a utility's system, it is not appropriate for generation assets that serve regional system demands with high levels of load diversity.[21] The observed computational problem inherent in the A&E method does not support its use and, if anything, suggests the need to use an alternative classification method that avoids this computation error.

**Q. WHAT IS YOUR RECOMMENDATION REGARDING THE APPROPRIATE CLASSIFICATION OF COSTS RELATED TO PRODUCTION PLANT?**

A. I recommend the Commission reject the Company's proposal to classify all production plant assets as being 100 percent demand-related. The Company's proposal is inconsistent with customer demands placed on its system, inconsistent with the function generation serves as recognized by the Commission and other regulatory commissions in the past, and inconsistent with the historic cost allocation methodologies used by the Company and approved by the Commission which recognize dual generation functions. Instead, I recommend the Commission rely on the results of my alternative ACOSS which uses an A&P method to classify production plant costs. My proposed A&P method classifies 78.3 percent of the Company's production plant costs as being energy-related, with the inverse (21.7 percent) being classified as demand related for the test year.

[21] *See*, *Id.* at 97.

### D. Use of a Minimum System Study to Classify Distribution Plant Costs

**Q. PLEASE DESCRIBE HOW THE COMPANY CLASSIFIES THE CUSTOMER AND DEMAND COMPONENTS OF ITS DISTRIBUTION PLANT COSTS.**

A. The Company relies on the results of an MSS to identify the customer component of its primary and secondary voltage distribution plant facilities, with the remainder of such costs being functionalized as demand-related.[22] Specifically, the Company classifies primary and secondary plant investments included in FERC Account 364 – Poles, Towers, and Fixtures; FERC Account 365 – Overhead Conductors and Devices; FERC Account 366 – Underground Conduits; and FERC Account 367 – Underground Conductors and Devices as containing both demand-related and customer-related functions.[23]

**Q. HAVE YOU EXAMINED THE RESULTS OF THE COMPANY'S MSS?**

A. Yes. Exhibit DED-5 presents a summary of the Company's MSS results. The Company's MSS in general defines a non-trivial portion of costs included in FERC Accounts 364-367 as customer-related. Customer-related portions of costs in these accounts range from a low of 27.3 percent associated with primary-voltage overhead conductors to a high of 90.3 percent associated with secondary-voltage utility poles. In total, the Company assigns more than $471 million of its distribution plant in service, or more than 23.1 percent of the Company's total distribution plant in service, as being customer-related.[24]

**Q. PLEASE EXPLAIN THE THEORETIC BASIS FOR A "MINIMUM SYSTEM" STUDY OR ANALYSIS.**

[22] Direct Testimony of Bickey Rimal at 16:1-11.
[23] Company's Response to Data Request OUCC DR 9-19, Attachment "AES Indiana BR Workpaper 2.2 – 2.3 Pole_Conductor_Study.xlsx;" and AES Indiana Workpaper BR-1.3.
[24] Workpaper BR-1.3.

A. Such studies are often advocated by those holding the view that higher level distribution plant investments are made to serve a dual-nature: one consisting of meeting system load requirements, the other being focused on customer interconnection or access that requires a customer-based allocation component. This minimum system component is determined through a MSS or a related Zero-Intercept Study.

**Q. WHAT ARE MSS AND ZERO-INTERCEPT STUDIES?**

A. MSS and zero-intercept studies are cost allocation methodologies that attempt to estimate separate customer-related versus load-related costs. An MSS does this by estimating the hypothetical costs of developing a "minimum" system that only provides customers with connection to a utility's electric distribution system, but not a system sufficient to actually serve the customer's electrical requirements. Likewise, a zero-intercept study utilizes regression analysis techniques to estimate the relationship between the electric demand requirements on a system and costs associated with installation of new distribution plant assets. Using these regression analyses, a zero-intercept study then calculates a hypothetical minimum cost by calculating the costs of the distribution plant assets given zero demand requirements.

**Q. PLEASE DESCRIBE THE MECHANICS OF AN MSS.**

A. Many distribution system assets can be classified as having both a customer and an energy component. For instance, distribution substations are built to serve customers, but are often expanded to meet increases in customer loads. An MSS attempts to separate the customer-related portion of total system costs from those associated with serving loads (or service volumes). An MSS estimates the hypothetical costs of developing a minimum system to serve customers with no load. These calculations involve subjectivity since they use accounting and engineering analyses to develop assumptions about the minimum sizes and costs associated with various

distribution system components, while still satisfying system requirements such as pole height and efficient conductor and transformer sizes. The costs associated with these "minimum" components are then added together to derive the total minimum costs associated with the hypothetical system with no energy usage. This estimate is then divided by total actual system costs to approximate the customer-related share of overall distribution system costs.

**Q. ARE THERE ANY THEORETICAL SHORTCOMINGS TO USING MSS AND ZERO-INTERCEPT STUDIES FOR CLASSIFICATION OF DISTRIBUTION PLANT ASSETS?**

A. Yes. Both MSS and zero-intercept studies depend on deeply flawed counterfactual theoretical premises. MSS-based analyses deal in hypotheticals that do not exist in the real world, including the assumption that somehow there is an electric distribution system out there in the world that could or would be plausibly built to serve customers but not load. No such system exists, making the underlying assumptions and modeling of a "minimum system" difficult, if not impossible, to verify. Even if a minimum electric distribution system could be constructed in real life, it would still have the ability to service at least a portion of customers' loads, undermining this modeling approach's fundamental premise.

**Q. DOES THE NARUC COST ALLOCATION MANUAL RECOGNIZE THESE CHALLENGES?**

A. Yes. The NARUC Electric Cost Allocation Manual ("NARUC Manual") recognized this fundamental failing of MSS approaches in its discussion of the approach.

> Cost analysts disagree on how much of the demand costs should be allocated to customers when the minimum-size distribution method is used to classify distribution plant. When using this distribution method, the analyst must be aware that the minimum-size

distribution equipment has a certain load-carrying capability, which can be viewed as a demand-related cost.[25]

**Q. WHAT ARE THE THEORETICAL FAILINGS OF ZERO-INTERCEPT-BASED STUDIES?**

A. A zero-intercept-based approach is simply a statistically-based MSS approach and suffers, conceptually, from the same shortcomings. A zero-intercept analysis attempts to model an empirical relationship that does not exist. One should recognize that the argument that electric distribution costs are related to the number of customers on a utility's system is not a new argument, and the academic literature in utility regulation has questioned for quite some time the use of both MSS and zero-intercept studies.

**Q. HOW HAS THE ACADEMIC LITERATURE IN UTILITY REGULATION QUESTIONED THE USE OF MSS AND ZERO-INTERCEPT STUDIES?**

A. Dr. James Bonbright, in his seminal work on public utility regulation, published originally in the 1970s, raises a number of questions about the use of MSS and zero-intercept methodologies in classifying costs. Dr. Bonbright's primary concern was the lack of empirical support in the academic literature for a causal relationship between distribution system costs and the number of customers. The true driving factors of utility distribution system costs are much more complicated and depend on a host of other factors, such as the size of a service territory and the population density within. The incremental costs of constructing an appropriate distribution system to serve an additional customer within an urban area with existing nearby infrastructure is substantially less than the costs to extend an existing utility system by potentially miles to serve an additional customer located in a rural area, a fact inherently ignored by MSS and Zero-Intercept methodologies.

[25] Electric Utility Cost Allocation Manual (January 1992), NARUC, p. 95.

> …the annual costs of this phantom, minimum-sized distribution system are treated as customer costs and are deducted from the annual costs of the existing system, only the balance being included among those demand-related costs to be mentioned in the following section. Their [minimum distribution costs] inclusion among the customer costs is defended on the ground that, since they vary directly with the area of the distribution system (or else with the lengths of the distribution lines, depending on the type of distribution system), they therefore vary directly with the number of customers. Alternatively, they are calculated by the "zero-intercept" method whereby regression equations are run relating cost to various sizes of equipment and eventually solving for the cost of a zero-sized system (Sterzinger, 1981).
>
> What this last-named cost imputation overlooks, of course, is the very weak correlation between the area (or the mileage) of a distribution system and the number of customers served by this system. For it makes no allowance for the density factor (customers per linear mile or per square mile). Our casual empiricism is supported by a more systematic regression analysis in (Lessels, 1980) where no statistical association was found between distribution costs and number of customers. Thus, if the company's entire service area stays fixed, an increase in number of customers does not necessarily betoken any increase whatever in the costs of a minimum-sized distribution system.[26]

**Q. WHAT WAS DR. BONBRIGHT'S CONCLUSION REGARDING THE USE OF MSS AND ZERO-INTERCEPT STUDIES?**

A. Dr. Bonbright found attempts to classify costs associated with a minimum-sized distribution system, whether determined through the use of an MSS or a Zero-Intercept Study, as something other than demand-related as potentially of merit. However, he ultimately concluded that classifying these costs as customer-related as AES has done in the current proceeding is "clearly indefensible,"[27] due to the lack of a relationship between changes in number of customers on a utility system and its distribution costs.

**Q. HAVE OTHER JURISDICTIONS REJECTED THE USE OF AN MSS?**

[26] James C. Bonbright, *et al*. Principles of Public Utility Rates. 1988 Edition. Arlington, VA: Public Utilities Reports, Inc., p. 491.
[27] *Id.*, p. 492.

A. Yes. In 2021, the Michigan Public Service Commission rejected a proposal that Consumers Energy be required to submit an MSS in its next rate case.[28] Likewise, in 2010, the Rhode Island Public Utilities Commission rejected a request that it require the use of a minimum system study for Narragansett Electric Company D/B/A National Grid.[29]

**Q. IS IT COMMON FOR UTILITIES TO USE AN MSS FOR CLASSIFYING DISTRIBUTION PLANT AS CUSTOMER AND DEMAND RELATED?**

A. No. It is my experience that most utilities do not use an MSS in classifying distribution plant, instead opting to classify all distribution plant, exclusive of customer-related distribution plant such as meters and service drops, as solely serving customer demand requirements.

**Q. WHAT IS YOUR RECOMMENDATION REGARDING THE RELIANCE ON AN MSS TO ALLOCATE COSTS ASSOCIATED WITH DISTRIBUTION PLANT ASSETS?**

A. I recommend the Commission reject the Company's proposed MSS approaches in the classification of distribution plant. MSS and related Zero-Intercept approaches are fundamentally flawed and provide little to no value as to the just and reasonable setting of rates. Research has shown that these methods are flawed, and some state regulatory commissions have gone so far as to reject their use. Further, MSS while used by some utilities, is not commonly used by all utilities. Thus, I recommend the Commission appropriately classify assets included in distribution plant accounts 364-367 as 100 percent demand-related.

### E. Summary of ACOSS Findings

**Q. PLEASE SUMMARIZE YOUR ACOSS FINDINGS.**

[28] *In the Matter of the Application of Consumers Energy Company for Authority to Increase its Rates for the Generation and Distribution of Electricity and for Other Relief*. Case No. U-20963, Order, dated December 22, 2021.
[29] *In re: the Application of The Narragansett Electric Company D/B/A National Grid For Approval of A Change in Electric Base Distribution Rates*. Docket No. 4065, Decision and Order, dated April 29, 2010.

A. Exhibit DED-6 presents the results of my alternative ACOSS which utilizes an A&P cost allocation approach to allocate costs associated with production plant assets and appropriately classifies costs associated with higher-order distribution plant assets as 100 percent demand-related. My alternative CCOSS analyses show that the Company's incorrect classification of production plant and higher-order distribution plant assets skews the allocation of costs and revenue responsibilities away from larger customers and onto residential and small commercial customers. I recommend the Commission rely on the results of my alternative ACOSS as a fair and reasonable estimation of relative costs of service between Company customer classes.

## IV. REVENUE DISTRIBUTION

**Q. PLEASE EXPLAIN THE PURPOSE OF THE REVENUE DISTRIBUTION PROCESS IN SETTING RATES.**

A. The revenue distribution process allocates a utility's overall revenue deficiency across customer classes, which in turn, is used to establish a new set of retail rates. The revenue distribution process often uses the results from the CCOSS as its starting point, but not necessarily as its ending point. Class-specific revenue responsibilities are established by allocating the system-wide revenue deficiency to classes that are under-earning, relative to their estimated rate of return ("ROR"), and assigning, at least in theory, revenue decreases to those classes that are over-earning relative to their CCOSS-estimated class returns. The final class revenue responsibilities are then used, in conjunction with each class's billing determinants, to determine rates. In summary, the revenue distribution process can be thought of as the initial step taken to establish rates.

**Q. DOES THE REVENUE DISTRIBUTION PROCESS INCLUDE ANY POLICY CONSIDERATIONS?**

A. Yes. Allocating the overall system-wide revenue deficiency entirely on a full cost of service basis can result in a very significant and adverse rate impact for certain under-earning classes. To avoid such a result, regulators often temper the revenue responsibilities assigned to various customer classes in order to meet a set of broad ratemaking policy goals.

**Q. WHAT ARE THOSE BROADER RATEMAKING POLICY GOALS?**

A. There are several generally accepted ratemaking principles used in utility regulation that include:

1) Rates should be fair, just, and reasonable, and not unduly discriminatory.
2) To the extent possible, gradualism should be used to protect customers from rate shock.
3) Rate continuity should be maintained.
4) Rates should be informed by costs, but class cost of service results need not be the only factor used in rate development.
5) Rates should be understandable to customers.

**Q. HOW ARE THE ABOVE PRINCIPLES APPLIED IN DEVELOPING RATES FOR A REGULATED UTILITY?**

A. It is important to consider all the principles I mentioned above. However, any principle's relative weight can change depending upon the importance of certain policy goals. Rate design should strike a balance between policy goals and resulting rates that are fair, just, and reasonable. There is no pre-set or universally accepted formula for developing rates and, as a result, sound judgment is necessary to formulate a rate design that meets these objectives.

**Q. PLEASE EXPLAIN HOW THE COMPANY PROPOSES TO DISTRIBUTE ITS CLASS REVENUE REQUIREMENTS.**

A. The Company proposes a revenue allocation approach using two criteria: (1) that no rate schedule should receive a rate increase in excess of 1.5 times the overall system increase, and (2)

that no rate schedule should receive a rate reduction in the current proceeding.[30] Exhibit DED-7 presents the Company's estimated current class rates of return and its proposed revenue distribution. The Company notes that it arrived at this proposed approach after considering other revenue allocation approaches such as the subsidy reduction approach used by the Commission in prior AES Indiana and other utility rate cases but determined that this approach was unfeasible given the supposed current wide disparity in relative rate of returns ("RROR").[31]

**Q. WHAT DO YOU MEAN BY A RROR?**

A. The RROR effectively standardizes the class-specific rate of return estimated by a CCOSS to the overall system average. In other words, it divides the estimated class ROR by the estimated system ROR. For instance, assume that the residential class is earning a class-specific eight percent ROR, and further assume that the system-wide average ROR estimated by the same CCOSS is also eight percent. The residential class, in this example, can be said to be earning a 1.0 RROR if the estimated ROR is the same as the overall system (*i.e.*, eight percent divided by eight percent equals 1.0). Put another way, any class earning a 1.0 RROR can be said to be making its full contribution to the system's overall ROR (*i.e.*, there is no cross-subsidy). A RROR that is greater than 1.0 indicates that a particular class is contributing more than the system average contribution to the Company's overall return. Likewise, a class that earns a RROR less than 1.0 but greater than zero can be said to be making a less-than-average contribution to the overall system.

**Q. DO YOU AGREE THAT A CLASS RROR LESS THAN 1.0 IS PROBLEMATIC OR INEQUITABLE?**

[30] Direct Testimony of Bickey Rimal at 30:6-8.
[31] *Id.* at 30:12 to 31:2.

A. Not necessarily. Consistent with the principles identified above, there may be policy reasons to support such a result that does not result in an inequitable cross-subsidization. For example, the presence and/or continuation of a RROR below 1.0 could be the result of a prior agreed-upon rate freeze that prevents class rates from increasing to correct the revenue deficiency (relative to cost of service). In this example, the presence of a RROR below 1.0 is simply a function of a prior policy decision, not necessarily the result of some arbitrary or intentionally designed inequity.

**Q. WHAT ARE THE CLASS RATE INCREASES UNDER THE COMPANY'S PROPOSED REVENUE DISTRIBUTION?**

A. The Company proposes to increase base rates by 8.92 percent on a system-wide average basis. However, under the Company's proposed revenue distribution, residential, water heating, and lighting customers would all receive a 13.39 percent increase in rates.[32]

**Q. DO YOU AGREE WITH THE COMPANY'S PROPOSED REVENUE DISTRIBUTIONS?**

A. No. The Company's proposed revenue distributions suffer from two major deficiencies. First, the Company's proposal is based on the results of a faulty ACOSS that overstates the extent of any current subsidy from high-load factor industrial customers to low-load factor residential and small commercial customers. Second, the Company's proposal to cap proposed rate increases at 1.5 times the proposed system average rate increase is inconsistent with rate gradualism.

**Q. WHAT IS YOUR RECOMMENDATION REGARDING THE COMPANY'S PROPOSED REVENUE DISTRIBUTION.**

[32] Direct Testimony of Bickey Rimal, BR Attachment 6.

A. I recommend the Commission adopt a more reasonable revenue distribution allocation method based on my alternative ACOSS results that also limits the rate increase to any single customer class to 1.15 times the overall system average increase. This reduces the maximum total base revenue increase of any single rate class to 10.26 percent, compared to the Company's proposed maximum rate increase of 13.39 percent.

**Q. HAVE YOU PREPARED A SUMMARY OF THE EFFECTS OF YOUR PROPOSED REVENUE DISTRIBUTION?**

A. Yes. Exhibit DED-8 presents an illustrative summary of the effects of my proposed revenue distribution under the Company's proposed system average rate increase of 8.92 percent. My proposed revenue distribution would increase base rates for the residential class by 8.55 percent, compared to the Company's proposal which would increase such rates by 13.39 percent.

## V. RATE DESIGN

**Q. HOW SHOULD POLICY BALANCE COST ASSIGNMENTS BETWEEN CUSTOMER CHARGES AND VOLUMETRIC RATES?**

A. Modern utility pricing theory is primarily concerned with the development of optimal tariff design, which over the years has become dominated by a form of pricing referred to as a "two-part tariff," sometimes referred to more technically as a non-linear (or non-uniform) pricing approach. Once a class revenue requirement is established, the goal for regulators should be one that sets the most appropriate rates based upon various efficiency and equity considerations. Balancing the weight of how costs are recovered between fixed rates, variable rates, block rates, and seasonal rates are all integrated parts of that process.

**Q. WHAT IS THE APPROPRIATE ROLE OF COSTS IN SETTING RATES FOR A TWO-PART TARIFF?**

A. Costs can be instructive in establishing a baseline upon which prices may be set, but costs do not need to serve as the sole or exclusive basis for rates in order for them to be set optimally (*i.e.,* fixed charges do not need to strictly equal fixed costs, variable rates need not strictly equal variable costs). Unfortunately, the "fixed charge-equals-fixed cost" philosophy gets repeated so often that it can often drown out meaningful discussions about other equally important considerations in setting rates in imperfect markets. In fact, appropriate rate setting in the context of a two-part tariff typically has more to do with consumer demand than it does with cost.

**Q. PLEASE DISCUSS THE COMPANY'S CUSTOMER CHARGE PROPOSALS.**

A. A summary of the Company's current and proposed customer charges has been provided in Exhibit DED-9. The Company proposes to increase the standard residential customer charge from $16.75 to $25.00 per month, or by approximately 49 percent.[33] The Company also proposes to increase the residential customer charge for low use customers (less than 325 kWh per month) from $12.31 to $16.50 per month, or by 34 percent.[34]

**Q. HAVE YOU PREPARED AN ANALYSIS OF COMMON CUSTOMER-RELATED COSTS TO CURRENT CUSTOMER CHARGES?**

A. Yes, and this analysis is provided in Exhibit DED-10. Customer-related costs included in this analysis include: a return of and on electric meters and service drops; meter operating expenses (i.e. removing and setting meters); meter maintenance expenses; and customer account expenses such as meter reading expenses, customer records expenses and customer billing and accounting expenses. The analysis shows that residential and most major small commercial and industrial rate classes fully recover, if not over-recover, customer-related expenses through the current customer charge. In fact, the residential and small secondary rate classes currently recover 121.1

[33] Direct Testimony of Bickey Rimal, BR Attachment 7.
[34] *Id.*

and 127.9 percent, respectively, of customer-related expenses through current customer charges. This result does not demonstrate a need to increase residential and small commercial customer charges on a cost-causation basis.

**Q. HAVE YOU COMPARED THE COMPANY'S PROPOSED RESIDENTIAL CUSTOMER CHARGES TO OTHER REGIONAL ELECTRIC UTILITIES?**

A. Yes, and this analysis is presented in Exhibit DED-11, which surveys current residential and small commercial customer charges for major electric utility companies operating in Indiana and surrounding states. The Company's current residential customer charge of $16.75 per month is above the average residential customer charge of $9.80 for other regional utilities. This survey shows that there is only one peer electric utility (out of 18) in the survey with a residential customer charge greater than the Company's current charge of $16.75 per month. The Company's proposed residential customer charge of $25.00 per month would be the highest residential customer charge in the region.

**Q. HAVE YOU COMPARED THE COMPANY'S SMALL COMMERCIAL CUSTOMER CHARGE TO OTHER REGIONAL ELECTRIC UTILITIES?**

A. Yes. The Company's current small commercial customer charge of $39.40 per month is above the average commercial customer charge of $18.30 for other regional utilities. Indeed, the Company's current and proposed small commercial customer charge is the highest in the region with the exception of Kentucky Utilities Co. which currently has a small commercial customer charge of $41.06.

**Q. IS THE COMPANY'S PROPOSAL TO INCREASE ITS RESIDENTIAL AND COMMERCIAL CUSTOMER CHARGES CONSISTENT WITH THE PROMOTION OF ENERGY EFFICIENCY AND CONSERVATION?**

A. No. The Company's rate design proposal is inconsistent with energy efficiency since it reduces economic incentives for ratepayers to control monthly utility bills through energy efficiency and conservation efforts, because only the variable component of bills is avoidable.

**Q. HAVE OTHER REGULATORS RECOGNIZED THE NEGATIVE IMPACTS THAT CUSTOMER CHARGE INCREASES CAN HAVE FOR ENERGY EFFICIENCY?**

A. Yes. In rejecting a request by Baltimore Gas and Electric ("BGE") to increase customer charges as part of a larger rate design proposal, the Maryland Public Service Commission ("MD PSC") recognized the need to allow customers the opportunity to control their monthly bills by reducing energy usage.

> Even though this issue was virtually uncontested by the parties, we find we must reject Staff's proposal to increase the fixed customer charge from $7.50 to $8.36. Based on the reasoning that ratepayers should be offered the opportunity to control their monthly bills to some degree by controlling their energy usage, we instead adopt the Company's proposal to achieve the entire revenue requirement increase through volumetric and demand charges. This approach also is consistent with and supports our EmPOWER Maryland goals.[35]

**Q. CAN YOU POINT TO ANY OTHER REGULATORY EXAMPLES?**

A. Yes. The Montana Public Service Commission ("MT PSC") previously rejected a proposed straight fixed variable rate design for Energy West Montana citing several reasons, including the impact of the proposal on energy conservation efforts. MT PSC stated in its decision that:

> The Commission agrees that most distribution costs are not avoidable, and that volumetric distribution charges may encourage conservation actions that, all other things being equal, reduce the utility's embedded cost recovery between rate cases and contribute to future rate increases.

[35] Maryland Public Service Commission Case No. 9299, In the Matter of the Application of Baltimore Gas and Electric Company for Adjustment in its Electric and Gas Base Rates (*"Case No. 9299"*). Order No. 85374 at 99, rel. February 22, 2013.

…

> The Commission agrees that an SFV rate design is a clean and administratively inexpensive way to decouple revenue from volume. An often-cited public policy justification for revenue decoupling is to remove the volume disincentive for cost-effective conservation investment by a gas distribution company, which through SFV and other decoupling methods is rendered indifferent to the volume of gas consumed. Yet, SFV rates decouple revenue at the cost of decreasing returns to conservation investment by customers. For this reason the net conservation benefit of revenue decoupling via SFV rates is not clear, and may be negative.[36]

**Q. ARE THERE OTHER REGULATORY EXAMPLES YOU ARE AWARE OF WHERE A COMMISSION REJECTED A PROPOSED INCREASE IN FIXED CUSTOMER CHARGES DUE TO THE DETRIMENTAL EFFECT ON EFFORTS TO CONSERVE ELECTRICITY?**

A. Yes. In 2012, the Missouri Public Service Commission ("MO PSC") rejected Ameren Missouri's proposed increases in customer charges for residential and small service classes. The Commission expressed it was against shifting costs from volumetric rates to fixed customer charges because it would send the erroneous message to customers that the Commission is discouraging efforts to conserve electricity:

> Shifting customer costs from variable volumetric rates, which a customer can reduce through energy efficiency efforts, to fixed customer charges, that cannot be reduced through energy efficiency efforts, will tend to reduce a customer's incentive to save electricity. Admittedly, the effect on payback periods associated with energy efficiency efforts would be small, but increasing customer charges at this time would send exactly [the] wrong message...[37]

[36] *In The Matter Of Energy West Montana, Application To Establish Increased Service Rates In Its Great Falls, Cascade, And West Yellowstone Service Areas*, Montana Public Service Commission, Docket No. D2010.9.90, Order No, 7132c, at 29–30.

[37] Missouri Public Service Commission, Report and Order, In the Matter of Union Electric Company Tariff to Increase Its Annual Revenues for Electric Service, File No. ER-2012-0166, December 12, 2012, pages 110-111.

**Q. IS THERE A MORE RECENT EXAMPLE OF A REGULATORY COMMISSION REJECTING A PROPOSED INCREASE IN RESIDENTIAL AND SMALL COMMERCIAL CUSTOMER CHARGES?**

Yes. In rejecting a request by Northern States Power Company to increase customer charges[38] as part of a larger rate design proposal, the Minnesota Public Utilities Commission ("MPUC") recognized the need to allow customers the opportunity to control their monthly bills by reducing energy usage.

> Monthly customer charges are an important component of the Company's Residential and Small General Service rates by facilitating recovery of the costs caused by each customer that do not vary with the amount of energy used. However, higher fixed customer charges discourage customers from conserving energy and investing in renewable energy by reducing the impact of these efforts on the customers' bills. Customer charges also tend to confuse and alienate customers by impairing customer understanding of their energy bills. The Commission notes that Minn. Stat. §216B.03 requires the Commission to design rates to encourage energy conservation and renewable-energy use to "the maximum reasonable extent." Considering this statutory mandate and the evidence submitted by the parties, the Commission agrees with the ALJ that it is reasonable and appropriate to lower the monthly customer charge for the Residential and Small General Service classes to $ 6.00.[39]

**Q. ARE THE THESE COMMISSIONS ALONE IN THEIR BELIEF THAT HIGH FIXED CHARGES DISCOURAGE EFFICIENT USE OF ENERGY?**

A. No. A research document presented for consideration by the membership of the National Association of Regulatory Utility Commissioners ("NARUC") lists a straight-fixed variable ("SFV") rate design as an alternative to delink utility revenue from sales. An SFV places all fixed

[38] I*n re the Appl. of Northern States Power Co., for Authority to Increase Rates for Elec. Serv. in the State of Minn.*, Docket E-002/GR-21-630, Findings of Fact, Conclusions, and Order, at 114 (MPUC July 17, 2023).
[39] *Id.* at 116-117.

costs into fixed charges while relegating only variable costs to volumetric rates. The Company's current customer charge proposal, which attempts to recover an additional level of class revenue responsibilities through the customer charge, regardless of costs, could be thought of as a pricing proposal consistent with these SFV principles. However, the NARUC research noted this type of rate design was problematic because of its effects on customer incentives to conserve energy:

> **Straight-Fixed Variable Rate Design.** This mechanism eliminates all variable distribution charges and costs are recovered through a fixed delivery services charge or an increase in the fixed customer charge alone. With this approach, it is assumed that a utility's revenues would be unaffected by changes in sales levels if all its overhead or fixed costs are recovered in the fixed portion of customers' bills. This approach has been criticized for having the unintended effect of reducing customers' incentive to use less electricity or gas by eliminating their volumetric charges and billing a fixed monthly rate, regardless of how much customers consume.[40]

**Q. HAS ANY NATIONAL PUBLIC POLICY ANALYSIS NOTED THE EFFICIENCY DISINCENTIVES ASSOCIATED WITH SFV-TYPE RATE DESIGNS?**

A. Yes. The National Action Plan for Energy Efficiency ("NAPEE"), a joint venture of the U.S. Department of Energy and U.S. Environmental Protection Agency, published a whitepaper on various rate design effects on encouraging energy efficient behaviors. The NAPEE postulated that SFV had a detrimental effect on economic signals to encourage customers to change energy usage behavior and investments in energy efficiency devices, and specifically noted that such disincentives persist even when applied to individual components of a customer's utility bill, such as SFV for strictly distribution services:

> Because [SFV] tends to shift costs out of volumetric charges, it tends to reduce customers' efficiency incentive, because the marginal price of additional consumption is reduced. While SFV rates are being considered to better reflect the utility's costs behind the rate,

[40] "Decoupling for Electric & Gas Utilities: Frequently Asked Questions (FAQ)" Grants & Research Department, National Association of Regulatory Utility Commissioners, at 5 (Sept. 2007) (emphasis added), https://www.maine.gov/mpuc/legislative/archive/2006legislation/DecouplingRpt-AttachC.pdf.

> these rates do not encourage customers to change energy usage behavior or invest in efficiency technologies. Such customer disincentives persist even when SFV rates are applied to individual components of the bill, such as charges for distribution service.[41]

**Q. CAN HIGH CUSTOMER CHARGES LEAD TO OTHER PROBLEMS?**

A. Yes. In addition to disincentivizing energy efficiency, increased customer charges also shift the rate burden within a customer class to lower-use customers. Lower-use customers have been shown to be consistently associated with lower income households in empirical research.

**Q. ARE THERE ANY OTHER PROBLEMS WITH THE COMPANY'S CUSTOMER CHARGE PROPOSALS?**

A. Yes. The proposals, even if they were cost-based (which they are not), run afoul of the Commission's prior policies on rate gradualism, particularly as they related to increases in residential and small commercial customer charges. For instance, the Commission noted in a 2022 Decision that a proposed settlement agreement between parties was reasonable and in the public interest because the proposed increase to customer charges represented a "very gradual movement" rather than a significant increase.[42]

**Q. HAVE YOU PREPARED ANY RESIDENTIAL TYPICAL BILL ANALYSES ASSOCIATED WITH THE COMPANY'S RATE DESIGN PROPOSALS?**

[41] Customer Incentives for Energy Efficiency Through Electric and Natural Gas Rate Design, National Action Plan for Energy Efficiency at 13-14, prepared by William Prindle, ICF International, Inc. (Sept. 2009) (emphasis added), https://www.epa.gov/sites/production/files/2015-08/documents/rate_design.pdf.
[42] *Petition of Northern Indiana Public Service Company LLC for (1) Authority to Modify its Rates and Charges for Gas Utility Service Through a Phase in of Rates; (2) Approval of New Schedules of Rates and Charges, General Rules and Regulations, and Riders; (3) Approval of Revised Depreciation Rates Applicable to its Gas Plant in Service; (4) Approval of Mechanism to Modify Rates Prospectively for Changes in Federal or State Income Tax Rates, Utility Receipts Tax Rates, and Public Utility Fee Rates; (5) Approval of Necessary and Appropriate Accounting Relief; and (6) Authority to Implement Temporary Rates Consistent with the Provisions of Ind. Code § 8-1-2-42.7;* Cause No. 45621, Order of the Commission at 20.

A. Yes. Exhibit DED-12 illustrates various total base rate changes for residential customers of varying monthly usage levels. Three types of illustrative customers are identified in this analysis. Customer 1 represents a customer taking service under the standard residential service class who uses an average of 748 kWh per month. Customer 2 represents a smaller customer using an average of only 499 kWh per month, approximately a third less than the hypothetical system average. Customer 3 represents a larger customer using an average of 997 kWh per month, approximately a third more than the hypothetical system average. The schedule shows that residential customers using close to the class average would see an increase of 22.4 percent in their bill. Those customers using greater than the residential class average would incur a smaller increase of 21.4 percent. Low-use residential customers would see their bill increase by 24.5 percent.

**Q. WHAT ARE YOUR CUSTOMER CHARGE RECOMMENDATIONS AND CONCLUSIONS?**

A. I recommend the Commission reject the Company's proposed increase in customer charges. The Company's proposal would detrimentally impact the public policy goals of promoting energy efficiency. Likewise, it would burden low-use customers with a greater than average portion of any proposed increase in the case. My specific customer charge recommendations are provided within Exhibit DED-13.

## VI. TRACKER MECHANISMS

### A. Overview of Tracker Mechanisms

**Q. WHAT ARE TRACKER MECHANISMS?**

A. These are cost recovery mechanisms that allow for the more periodic recovery of certain individually identified costs. Cost trackers are also called "cost recovery riders" and allow utilities

to recover certain costs outside a traditional base rate case.[43] Cost tracker examples include fuel and purchased power expenses (through "fuel adjustment clauses" or "FACs"), bad debt expenses, or can be designed to allow for utility recovery of incremental capital investments in specific areas like gas reliability surcharges or environmental retrofit riders.

**Q. CAN COST TRACKER MECHANISMS LEAD TO ANY REGULATORY PROBLEMS OR DISINCENTIVES?**

A. Yes. Trackers of all types eliminate the positive incentives typically arising from regulatory lag, the delay in the recovery of increases in costs occurring since the most recent rate case. It is a basic economic fact that rational utility management has little incentive to enhance efficiencies (operational and capital) if it has no effect on the utility's profits.[44] This is precisely the situation that can arise when a utility is guaranteed revenues and can pass higher costs through to ratepayers with minimal consequences on sales and profits. Such an approach is completely at odds with traditional regulatory principles and ratemaking practices.

**Q. HOW DO TRACKERS UNDO THESE EFFICIENCY-CREATING INCENTIVES?**

A. Trackers reduce these resource efficiency incentives in two ways. First, if trackers do in fact reduce the tendency for rate cases, as many of its proponents would suggest, then the mechanism would reduce the potential use of disallowances in tempering bad expenditure and investment decisions. Second, if utilities are given the ability to change, and generally increase their rates, then the discipline typically imposed by the regulatory process until a utility's next base rate case ("regulatory lag") is removed.

[43] Costello, Ken (September 2009), "How Should Regulators View Cost Trackers?" National Regulatory Research Institute at 2.
[44] *See* Alfred Kahn, *The Economics of Regulation: Principles and Institutions*, p. 48 (1988) Cambridge, MA: MIT Press: Vol. 2 (Institutional Issues).

**Q. WHAT CRITERIA ARE USED TO EVALUATE THE ADOPTION OF COST RECOVERY RIDERS?**

A. Regulators often use three separate criteria to evaluate cost tracker proposals that include examining whether the proposed expense or capital investment is: (1) largely outside the control of a utility; (2) unpredictable and volatile; and (3) substantial and recurring.[45] These criteria resulted from a popular research paper published by the National Regulatory Research Institute ("NRRI"), the research organization supporting the National Association of Regulatory Utility Commissioners. It is important to note that the NRRI-recommended evaluation criteria are minimum criteria, as they pertain to the threshold issue regarding the characteristics of costs suitable for recovery via a tracker. Thus, in the event that the NRRI-recommended criteria are satisfied, the next step is to determine whether the tracker proposal contains flaws unrelated to the characteristics of the costs intended for recovery.

**Q. PLEASE DISCUSS THE COMPANY'S CURRENT TRACKERS.**

A. The Company has 26 separate rate riders, seven of which are cost recovery riders. This includes the: Transmission, Distribution and Storage System Improvement Charge ("TDSIC"); Fuel Cost Adjustment ("FAC"); Environmental Compliance Cost Recovery ("ECR") Adjustment; Demand-Side Management ("DSM") Adjustment; Capacity ("CAP") Adjustment; Off-System Sales ("OSS") Margin Adjustment; and Regional Transmission Organization ("RTO") Adjustment.

**Q. DOES THE COMPANY PROPOSE ANY NEW RIDERS IN THE CURRENT PROCEEDING?**

[45] Costello, Ken (September 2009), "How Should Regulators View Cost Trackers?" National Regulatory Research Institute at 8.

A. Yes. The Company proposes a new Economic Development Rider ("EDR"). The EDR will be open and available to large commercial and industrial customers who bring material economic development to the Company's service territory in exchange for a five-year reduction in utility charges.[46] Discounts through the proposed EDR will start at 40 percent of base rate charges in year 1 and decrease by 5 percent each year until the final year where the discount will only equal 15 percent of base rate charges.[47] The EDR will be addressed in the testimony of OUCC witness Derek Leader.

### B. Transmission, Distribution, and Storage System Improvement Charge

**Q. PLEASE DESCRIBE THE TDSIC.**

A. The TDSIC is a Commission-approved cost tracker facilitated by a state statute of the same name.[48] The TDSIC statute allows electric and natural gas utilities in Indiana to request periodic adjustment of base rates to recover 80 percent of approved capital investments, including return on investment, made between rate cases if these investments are for the purposes of "safety, reliability, system modernization, or economic development, including the extension of gas service to rural areas,"[49] and were outlined in an initial TDSIC plan filed with the Commission.[50]

**Q. EXPLAIN THE AES INDIANA'S CURRENT TDSIC PLAN.**

A. The Company's current plan, which received Commission approval in 2020, is a wide-ranging seven-year plan to replace, rebuild, upgrade, redesign and modernize aging transmission and distribution system assets.[51] The TDSIC Plan is comprised of $1.2 billion in two investment

[46] Direct Testimony of Austin Baker at 16:17-21.
[47] *Id.* at page 18, Table 2.
[48] IC 8-1-39.
[49] IC 8-1-39-2 (a)(1).
[50] IC 8-1-39-9 (a)(2).
[51] *Petition of Indianapolis Power & Light Company Pursuant to Ind. Cod Pursuant to Ind. Code § 8-1-39-9 for: (1) Approval of an Adjustment to Its Electric Service Rates Through Its Transmission, Distribution, and Storage System Improvement Charge ("TDSIC") Rate Schedule, Standard Contract Rider No. 3; and (2)*

categories: (1) "age and condition" and (2) "deliverability."[52] Age and condition investments include the replacement and rebuilding of substations and overhead circuits, the rehabilitation and repair of underground residential circuits, and rebuilding portions of the central business district.[53] Deliverability investments include the deployment of new technologies associated with advance distribution management; new substation equipment to meet growth-driven capacity requirements; and system and operating efficiencies through deployment of automation, control functions and other advanced infrastructure.[54] Exhibit DED-15 presents the Company's most recent projected annual capital costs associated with the TDSIC Plan.

**Q. WHAT IS THE CURRENT ANNUAL REVENUE REQUIREMENT ASSOCIATED WITH THE TDSIC?**

A. The annual revenue requirement associated with the TDSIC as of December 31, 2022, was more than $48 million,[55] of which $38.4 million was recovered through the TDSIC. Furthermore, this charge was associated with nearly $341 million in new plant in service through the mechanism since its inception.[56] To put this into context, the Company's total net utility plant in service as of December 31, 2022, was $3.3 billion,[57] meaning that capital investments made pursuant the TDSIC represent more than 10 percent of the Company's total utility plant in service. Likewise, Company test year base revenues were approximately $1.31 billion,[58] meaning that the current TDSIC represents nearly 3.7 percent of total base revenues.

*Authority to Defer 20% of the Approved Capital Expenditures and TDSIC Costs for Recovery in Petitioner's Next General Rate Case*; Cause No. 45264, Verified Petition, Exhibit A at 1.
[52] *Id.*
[53] *Id.*
[54] *Id.*
[55] AES Indiana Exhibit 1, Schedule REV5-WP8.
[56] *Id.*
[57] AES Indiana Exhibit 1, Schedule FS1.
[58] AES Indiana Exhibit 1, Schedule REV3-WP1.

**Q. IS THE ANNUAL REVENUE REQUIREMENT ASSOCIATED WITH THE TDSIC PROJECTED TO GROW OVER TIME?**

A. Yes. Exhibit DED-16 shows the Company's most recent projection of TDSIC annual revenue requirement. Exhibit DED-16 shows that annual revenues allowed to be recovered through the TDSIC are projected to grow from the current $38.4 million to nearly $107 million by 2027, with a residential assignment of more than $58.1 million. Indeed, the Company projects that by 2027, the estimated TDSIC rate for residential customers will be more than 1.0 cent per kWh, or $10 a month for the average customer using 1000 kWh per month.

**Q. IS RATE BASE SUPPORTED BY THE TDSIC PROJECTED TO INCREASE THROUGH THE REMAINDER OF THE TDSIC PLAN?**

A. Yes. As shown by Exhibit DED-15, the current $341 million of rate base supported by the TDSIC is projected to grow through the remainder of the TDSIC Plan such that projected capital investments supported by the mechanism are estimated to reach nearly $1.1 billion by 2027. This means that rate base supported by the TDSIC is projected to comprise nearly a quarter of the Company's total utility plant in service by 2027.

**Q. WHAT IS YOUR RECOMMENDATION REGARDING THE COMPANY'S TDSIC?**

A. I recommend the Commission continue to closely scrutinize capital investments made by the Company through the TDSIC. Capital investments supported by the mechanism already constitute a significant portion of the Company's rate base, and this is only projected to grow through the remainder of the existing TDSIC Plan.

## VII. CONCLUSIONS AND RECOMMENDATIONS

**Q. PLEASE SUMMARIZE YOUR ACOSS FINDINGS.**

A. I find that the Company's ACOSS incorrectly classifies fixed costs associated with production plant assets as exclusively demand-related. This is inconsistent with the role these production/generation assets play in serving the Company's system requirements, and deviates from commonly accepted cost allocation practices. I also disagree with the Company's reliance on the results of its minimum system study ("MSS") to classify a portion of its distribution plant assets as being customer related. The effect of these two errors in the Company's ACOSS is that it favors large customers with relatively higher load factors over residential and small commercial customers with relatively lower load factors.

**Q. WHAT IS YOUR RECOMMENDATION REGARDING THE COMPANY'S PROPOSED REVENUE DISTRIBUTION?**

A. I recommend the Commission adopt a revenue distribution allocation method based on my alternative ACOSS results. I furthermore recommend the Commission limit rate increases to any single rate class to no more than 1.15 times the overall system average increase. This proposed revenue distribution methodology reduces the maximum total base revenue increase of any single rate class to 10.26 percent, compared to the Company's proposed maximum rate increase of 13.39 percent.

**Q. WHAT ARE YOUR CUSTOMER CHARGE RECOMMENDATIONS AND CONCLUSIONS?**

A. I recommend the Commission reject the Company's proposed increase in customer charges. The Company's proposal would detrimentally impact the public policy goals of promoting energy efficiency. Likewise, it would burden low-use customers with a greater than average portion of any proposed increase in the case. My specific customer charge recommendations are provided within Exhibit DED-13.

**Q. WHAT IS YOUR RECOMMENDATION REGARDING THE COMPANY'S TRANSMISSION, DISTRIBUTION, STORAGE IMPROVEMENT CHARGE?**

A. I recommend the Commission continue to closely scrutinize capital investments made by the Company through the TDSIC to ensure they are reasonable, prudent, and necessary. Capital investments supported by the mechanism already constitute a significant portion of the Company's rate base, and this is only projected to grow through the remainder of the existing TDSIC Plan.

**Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

A. Yes.

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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**

| | |
|---|---|
| 2023-Current | Professor Emeritus |
| 2014-2023 | Executive Director (Retired in 2023) |
| 2007-2023 | Director, Division of Policy Analysis |
| 2006-2023 | 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)**

| | |
|---|---|
| 2014-2023 | Professor (Joint Appointment with CES) |
| 2010-2023 | Director, Coastal Marine Institute |
| 2010-2014 | Adjunct Professor |

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

| | |
|---|---|
| 2006-2023 | Adjunct Professor |
| 2001-2006 | Adjunct Associate Professor |
| 1999-2000 | Adjunct Assistant Professor |

Michigan State University, East Lansing, Michigan

**Institute of Public Utilities**

2018-Current Senior Fellow

Florida State University, Tallahassee, Florida

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

1995 Instructor

## PROFESSIONAL EXPERIENCE

Acadian Consulting Group, Baton Rouge, Louisiana

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

Econ One Research, Inc., Houston, Texas

1999-2001 Senior Economist

Florida Public Service Commission, Tallahassee, Florida

**Division of Communications, Policy Analysis Section**

1995 Planning & Research Economist

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

1993 Planning & Research Economist
1992-1993 Economist

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

1994 Energy Economist

Ben Johnson Associates, Inc., Tallahassee, Florida

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

## GOVERNMENT & ADVISORY APPOINTMENTS

2023 – Current Distinguished Fellow & Senior Economist
Institute For Energy Research
Washington, D.C.

2017 -- Current Member, National Petroleum Council.
U.S. Department of Energy.

2020-2023 Co-Chairperson, Energy Advisory Committee, World Trade Center
New Orleans, Louisiana.

2007-2023 Louisiana Representative, Interstate Oil and Gas Compact
Commission; Energy Resources, Research & Technology

| | |
|---|---|
| | Committee. |
| 2007-2023 | 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. *Energy and Environment: The Grand Challenges of 21st Century.* (2022). With Chris F. D'Elia and Bryan F. Snyder. New York: Kendell Hunt Publishers. Pp. 153.
2. *Power System Operations and Planning in a Competitive Market*. (2002). With Fred I. Denny. New York: CRC Press. Pp. 133.
3. *Distributed Energy Resources: A Practical Guide for Service.* (2000). With Ritchie Priddy. London: Financial Times Energy. Pp. 60.

**PUBLICATIONS: PEER REVIEWED ACADEMIC JOURNALS**

1. "Anticipating and Adapting to the Future Impacts of Climate Change on the Health, Security, and Welfare of Low Elevation Coastal Zone (LECZ) Communities in Southeastern USA" (2021). With Thomas Allen, Joshua Behr, Anamaria Bukvic, Ryan S.D. Calder, Kiki Caruson, Charles Connor, Christopher D'Elia, Robin Ersing, Rima Franklin, Jesse Goldstein, Jonathon Goodall, Scott Hemmerling, Jennifer Irish, Steven Lazarus, Derek Loftis Mark Luther, Leigh McCallister, Karen McGlathery, Molly Mitchell, William Moore, Carhles Reid Nichols, Karinna Nunez, Matthew Reidenbach, Julie Shortridge, Robert Weisberg, Robert Weiss, Lynn Donelson Wright, Meng Xia, Kehui Xu, Donald Young, Gary Zarillo, and Julie C. Zinnert. *Journal of Marine Science and Engineering.* 9 (11) 1196.
2. "The Potential Impact of the U.S. Carbon Capture and Storage Tax Credit Expansion on the Economic Feasibility of Industrial Carbon Capture and Storage" (2021). With Brittany Tarufelli and Brian Snyder. *Energy Policy*. Vol. 149.
3. "Current Trends and Issues in Reforming State-level Solar Net Energy Metering Policies." (2020). *Journal of Energy Law and Resources*. Vol. VIII: 419-451.
4. "A cash flow model of an integrated industrial CCS-EOR project in a petrochemical corridor: a case study in Louisiana. (2019). With Brian Snyder and Michael Layne. *International Journal of Greenhouse Gas Control*. 93(08).
5. "Understanding the challenges of industrial carbon capture and storage: An example in a U.S. petrochemical corridor." (2019). With Michael Layne and Brian Snyder. *International Journal of Sustainable Energy* 38(1):13-23.
6. "Understanding the Mississippi River Delta as a coupled natural-human system: research

methods, challenges, and prospects. (2018). With Nina S.N. Lam, Y. Jun Xu, Kam-Biu Liu, Margaret Reams, R. Kelly Pace, Yi Qiang, Siddhartha Narra, Kenan Li, Thomas Blanchette, Heng Cei, Lei Zou, and Volodymyr Mihunov. *Water*. 10(8).

7. "Understanding the challenges of industrial carbon capture and storage: an example in a U.S. petrochemical corridor." (2018). With Brian Snyder and Michael Layne. *International Journal of Sustainable Energy*. 38(1):1-11

8. "Sea level rise and coastal inundation: a case study of the Gulf Coast energy infrastructure." (2018). With Siddhartha Narra. *Natural Resources*. 9: 150-174.

9. "The energy pillars of society: perverse interactions among human resource use, the economy and environmental degradation." (2018). With Adrian R.H. Wiegman, John W. Day, Christopher F. D'Elia, Jeffrey S. Rutherford, Charles Hall. *BioPhysical Economics and Resource Quality*. 3(2) 1-16.

10. "Modeling the impacts of sea-level rise, oil price, and management strategy on the costs of sustaining Mississippi delta marshes with hydraulic dredging." (2018). with Adrian R.H. Wiegman, John W. Day, Christopher F. D'Elia, Jeffrey S. Rutherford, James T. Morris, Eric D. Roy, Robert R. Lane, and Brian F. Snyder. *Science of the Total Environment* 618 (2018): 1547-1559.

11. "Identifying Vulnerabilities of Working Coasts Supporting Critical Energy Infrastructure." (2016). With Siddhartha Narra. *Water*. 8(1).

12. "Economies of Scale, Learning Effects and Offshore Wind Development Costs" (2015). With Gregory B. Upton, Jr. *Renewable Energy*. 61-66.

13. "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*.

14. "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.

15. "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).

16. "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.

17. "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*).

18. "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.

19. "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.

20. "A is for Access: A Definitional Tour Through Today's Energy Vocabulary." (2001) *Public Resources Law Digest*. 38: 2.

21. "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.

22. "Modeling Regional Power Markets and Market Power." (2001). With Robert F. Cope. *Managerial and Decision Economics.* 22:411-429.

23. "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.

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

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

26. "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.

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

28. "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.

**PUBLICATIONS: OTHER SCHOLARLY PROCEEDINGS**

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.

6. "Analysis of the Economic Impact Associated with Oil and Gas Activities on State Leases." (2002). With Dmitry Mesyanzhinov, Robert H. Baumann, and Allan G. Pulsipher. *Proceedings of the 2002 National IMPLAN Users Conference*: 149-155.

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.

10. "Asymmetric Choice and Customer Benefits: Lessons from the Natural Gas Industry." (1999). With Rachelle F. Cope and Dmitry Mesyanzhinov. *Proceedings of the International Association for Energy Economics: The Only Constant is Change* August: 444-452.

11. "Modeling Electric Power Markets in a Restructured Environment" (1998). With Robert F. Cope and Dan Rinks. *Proceedings of the International Association for Energy Economics: Technology's Critical Role in Energy and Environmental Markets*. October: 48-56.

12. "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, Bob Baumann, and Dmitry Mesyanzhinov. *Proceedings of the 16th Annual Information Transfer Meeting*. U.S. Department of Interior, Minerals Management Service: New Orleans, Louisiana: 162-166.

13. "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. *Proceedings of the 15th Annual Information Transfer Meeting*. U.S. Department of Interior, Minerals Management Service: New Orleans, Louisiana.

**PUBLICATIONS: BOOK CHAPTERS**

1. "The Role of Distributed Energy Resources in a Restructured Power Industry." (2006). In *Electric Choices: Deregulation and the Future of Electric Power*. Edited by Andrew N. Kleit. Oakland, CA: The Independent Institute (Rowman & Littlefield Publishers, Inc.), 181-208.

2. "The Road Ahead: The Outlook for Louisiana Energy." (2006). In *Commemorating Louisiana Energy: 100 Years of Louisiana Natural Gas Development*. Houston, TX: Harts Energy Publications, 68-72.

3. "Competitive Power Procurement An Appropriate Strategy in a Quasi-Regulated World." (2004). In *Electric and Natural Gas Business: Using New Strategies, Understanding the Issues.* With Elizabeth A. Downer. Edited by Robert Willett. Houston, TX: Financial Communications Company, 91-104.

4. "Alaskan North Slope Natural Gas Development." (2003). In *Natural Gas and Electric Industries Analysis 2003.* With William E. Nebesky, Dmitry Mesyanzhinov, and Jeffrey M. Burke. Edited by Robert Willett. Houston, TX: Financial Communications Company, 185-205.

*5.* "Challenges and Opportunities for Distributed Energy Resources in the Natural Gas Industry." (2002). In *Natural Gas and Electric Industries Analysis 2001-2002*. Edited by Robert Willett. With Martin J. Collette, Ritchie D. Priddy, and Jeffrey M. Burke. Houston, TX: Financial Communications Company, 114-131.

6. "The Hydropower Industry of the United States." (2000). With Dmitry Mesyanzhinov. In *Renewable Energy: Trends and Prospects*. Edited by E.W. Miller and A.I. Panah. Lafayette, PN: The Pennsylvania Academy of Science, 133-146.
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.

**PUBLICATIONS: TRADE AND PROFESSIONAL JOURNALS**

1. "The Impact of Globalization, Decarbonization, and Politicization: Forecasting the outlook for the energy and energy transition along the Gulf Coast. *Landman* (2023, Forthcoming, Fall Edition).
2. "Opportunities for Carbon Capture, Utilization and Storage in Louisiana." (2020). *LOGA Industry Report*. Summer: 18-21.
3. "The Challenges of the Regulatory Review of Diversification Mergers." (2016). With Michael W. Deupree. *Electricity Journal*. 29 (2016): 9-14.
4. "Unconventional Natural Gas and the U.S. Manufacturing Renaissance" (2013). *BIC Magazine*. Vol. 30: No. 2, p. 76 (March).
5. "Louisiana's Tuscaloosa Marine Shale Development: Emerging Resource and Economic Potentials" (2012). *Spectrum*. January-April: 18-20.
6. "The Impact of Legacy Lawsuits on Louisiana's Conventional Drilling Activity" (2012). *LOGA Industry Report*. Spring 2012: 27-34.
7. "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).
8. "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).
9. "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).
10. "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
11. "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.

12. "Renewable Portfolio Standards in the Electric Power Industry." With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 54(3): 693-706.
13. "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.
14. "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.
15. "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.
16. "Can LNG Preserve the Gas-Power Convergence?" (2005). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 53 (3):783-796.
17. "Competitive Bidding as a Means of Securing Opportunities for Efficiency." (2004). With Elizabeth A. Downer. *Electricity and Natural Gas* 21 (4): 15-21.
18. "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.
19. "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.
20. "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.
21. "Will Competitive Bidding Make a Comeback?" (2004). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. 52: 659-674.
22. "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.
23. "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.
24. "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.
25. "Economic Displacement Opportunities in Southeastern Power Markets." (2003). With Dmitry V. Mesyanzhinov. *USAEE Dialogue*. 11: 20-24.
26. "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.
27. "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.
28. "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.

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

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

31. "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.

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

33. "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.

34. "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.

35. "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.

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

37. "Distributed Energy Must Be Watched As Opportunity for Gas Companies." (2001). With Martin Collette, and Ritchie D. Priddy. *Natural Gas Journal*. January: 9-16.

38. "Clean Air, Kyoto, and the Boy Who Cried Wolf." (2000). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. December: 529-540.

39. "Energy Conservation Programs and Electric Restructuring: Is There a Conflict?" (2000). With K.E. Hughes II. *Oil, Gas and Energy Quarterly*. September: 211-224.

40. "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.

41. "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.

42. "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.

43. "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.

44. "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.

45. "Stranded investment and non-utility generation." (1999). With Michael T. Maloney. *Electricity Journal*. 12: 50-61.

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

47. "Electric utility mergers and acquisitions: a regulator's guide." (1996). With Kimberly H.

Dismukes. *Public Utilities Fortnightly.* January 1.

**PUBLICATIONS: OPINION AND EDITORIAL ARTICLES**

1. "Disappointing offshore wind lease sale is first step, but development process will be long." *Baton Rouge Advocate*. Friday, September 8, 2023.
2. "Irreparable changes are coming to American oil and gas industry". (2020). *10/12 Industry Report. Baton Rouge Business Report, Q1.*
3. "An exceptionally uncertain time for energy markets." (2019). *10/12 Industry Report. Baton Rouge Business Report*, Q4.
4. "LNG's changing fortunes." (2019). *10/12 Industry Report. Baton Rouge Business Report*, Q3.
5. "A tenuous recovery." (2019). *10/12 Industry Report. Baton Rouge Business Report*, Q2.
6. "The 2019 Gulf Coast Energy Outlook." (2019). *10/12 Industry Report. Baton Rouge Business Report*, Q1.
7. "Why an offshore recovery may never happen." (2018). *10/12 Industry Report. Baton Rouge Business Report*, Q4.
8. "The dangers of trade protectionism for Louisiana energy development." (2018). *10/12 Industry Report. Baton Rouge Business Report*, Q3.
9. "The irrelevance of energy dominance." (2018). *10/12 Industry Report. Baton Rouge Business Report*, Q2.
10. "The whys and hows of maintaining the oil price rise." (2018). *10/12 Industry Report. Baton Rouge Business Report*, Q1.
11. "Taxing energy infrastructure." (2017). *10/12 Industry Report*. Baton Rouge Business Report. Q:4.
12. "A summer of discontent." (2017). *10/12 Industry Report*. Baton Rouge Business Report. Q:3.
13. "Low cost hydrocarbons continue to benefit the Gulf Coast." (2017). *10/12 Industry Report*. Baton Rouge Business Report. Q:2.
14. "Reading the tea leaves for 2017's crude oil markets." (2017). *10/12 Industry Report*. Baton Rouge Business Report. Q:1.
15. "The unappreciated role of energy infrastructure." (2016). *10/12 Industry Report*. Baton Rouge Business Report. Q:4.
16. "Other ways in which the energy world is changing." (2016). *10/12 Industry Report*. Baton Rouge Business Report. Q:3.
17. "Are oil prices bouncing back?" (2016). *Baton Rouge Business Report*, May 10 edition. (reprint of Industry Report article).
18. "Are we there yet? Have energy prices started to rebound?" (2016). *10/12 Industry Report*. Baton Rouge Business Report. Q:2.
19. Challenging Times for the South Louisiana Energy Economy. (2016). *10/12 Industry*

*Report*. Baton Rouge Business Report. Q:1.

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

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

22. "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*.

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

24. "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 economic implications of carbon capture and sequestration for the Gulf Coast economy: a case study of Gulf Coast Sequestration*. (2022). With Gregory B. Upton and Ron Minsk. Baton Rouge, LA: LSU Center for Energy Studies, July, 2022. Pp. 54. Report prepared on behalf of Gulf Coast Sequestration.

2. *Atlantic Fact Book update: onshore oil and gas infrastructure to support development in the Atlantic Outer Continental Shelf region*. (2022). New Orleans (LA): US Department of the Interior, Bureau of Ocean Energy Management. 528 p. Contract No.: 140M0119C0008. Report No.: BOEM 2022-076.

3. *The national importance of post-storm electricity restoration to critical energy infrastructure*. (2022). With Gregory B. Upton. Baton Rouge, LA: LSU Center for Energy Studies, March 31, 2022. Pp. 55. Report prepared on the behalf of Entergy Corporation.

4. *2022 Gulf Coast Energy Outlook*. (2020). With Gregory B. Upton. Baton Rouge, LA: LSU Center for Energy Studies, November 2021, 29 Pp.66.

5. *Louisiana 2021 Greenhouse Gas Inventory*. David Dismukes (2021). On Behalf of the Governor's Office of Coastal Activities; LSU Center for Energy Studies. October 2021.

6. The economic impacts of Koch Methanol St. James – M1 (2021). Report prepared on behalf of Koch Methanol St. James. With Gregory B. Upton. October 2021. Baton Rouge, LA: LSU Center for Energy Studies.

7. *The economic impacts of Koch Methanol St. James – M2*. (2021). Report prepared on behalf of Koch Methanol St. James. With Gregory B. Upton. October 2021. Baton Rouge LA: LSU Center for Energy Studies.

8. *Use and Limits of Ecosystem Services Valuations in the Gulf of Mexico.* With Brian Snyder, Valentine Gomez, and Sid Narra. (2020). New Orleans (LA): Department of the Interior, Bureau of Ocean Energy Management. Contract No.: M17AC00018, Report No.: OCS Study BOEM 2020-0xx. 80 Pp.

9. *2021 Gulf Coast Energy Outlook*. (2020). With Gregory B. Upton. Baton Rouge, LA: LSU Center for Energy Studies, November 2020, 29 Pp.66.

10. *2020 Gulf Coast Energy Outlook*. (2019). With Gregory B. Upton. Baton Rouge, LA: LSU Center for Energy Studies, Fall 2019, 29 Pp.
11. *The Urgency of PURPA Reform to Assure Ratepayer Protection*. (2019). Institute of Energy Research, 24 Pp.
12. *Integrated carbon capture and storage in the Louisiana chemical corridor.* (2019). With Mehdi Zeidouni, Muhammad Zulqarnain, Richard G Hughes, Keith B Hall, Brian F. Snyder, Michael Layne, Juan M Lorenzo, Chacko John, Brian Harder. National Energy Technology Laboratories/U.S. Department of Energy. 151 Pp.
13. *Actual Benefits of Distributed Generation in Mississippi.* (2019). Report prepared on the behalf of the Mississippi Public Service Commission. 191 Pp.
14. *2019 Gulf Coast Energy Outlook*. (2018). Baton Rouge, LA: LSU Center for Energy Studies, Fall 2018, 28 pp.
15. *MISO Grid 2033: Preparing for the Transmission Grid of the Future.* (2018). Baton Rouge, LA: LSU Center for Energy Studies, May 7, 87 pp.
16. *Opportunities and challenges in using industrial CHP as a resiliency measure in Louisiana*. (2017). Baton Rouge, LA: Louisiana Department of Natural Resources, December 17, 52 pp.
17. *Efficiency and emissions reduction opportunities at existing Louisiana combined heat and power applications*. (2017). Baton Rouge, LA: Louisiana Department of Natural Resources, December 17, 44 pp.
18. *Louisiana industrial combined heat and power applications: status and operations*. (2017). Baton Rouge, LA: Louisiana Department of Natural Resources, December 17, pp. 54.
19. *The potential economic impacts of the Washington Parish Energy Center*. (2017). With Gregory B. Upton, Jr. Report prepared on behalf of Calpine Corporation. 5 pp.
20. *Economic impact and re-employment assessment of PES Philadelphia refining complex.* (2017). Report prepared on behalf of Philadelphia Energy Solutions. August 31, 43 pp.
21. *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.
22. *Gulf Coast energy outlook (2017)*. With Christopher Coombs, Dek Terrell, and Gregory B. Upton. Center for Energy Studies/Applied Economics Group, 18 pp.
23. *Potential economic impacts of the Lake Charles methanol projec*t. (2017). Report prepared on behalf of the Lake Charles Methanol Project, LLC. 68 pp.
24. *Estimating the Impact of Net Metering on LPSC Jurisdictional Ratepayers. (2015). Louisiana Public Service Commission, In re: Examination of the Comprehensive Costs and Benefits of Net Metering in Louisiana, Docket No. X-33192. Notice of Issuance of Final Report dated September 11, 2015,* 187 pp.
25. *Beyond the Energy Roadmap: Starting Mississippi's Energy-Based Economic Development Venture.* (2014). Report prepared on behalf of the Mississippi Energy Institute, 310 pp.
26. *Combined Heat and Power in Louisiana: Status, Potentials, and Policies*. Phase 4 Report:

*Policy and Market Opportunities and Challenges for CHP Development*. (2013). Louisiana Department of Natural Resources, Baton Rouge, Louisiana. 17 pp.

27. *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.

28. *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.

29. *Combined Heat and Power in Louisiana: Status, Potentials, and Policies. Phase 1 Report: Resource Characterization and Database*. (2013). Louisiana Department of Natural Resources, Baton Rouge, Louisiana. 62 pp.

30. *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.

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

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

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

34. *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.

35. *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.

36. *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.

37. *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.

38. *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.

39. *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.

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

41. *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.

42. *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.

43. *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.

44. *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.

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

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

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

48. *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.

49. *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.

50. *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.

51. *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.

52. *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.

53. *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.

54. *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.

55. *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.

56. *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.

57. *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.

58. *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.

59. *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.

60. *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.

61. *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.

62. *Restructuring the Electric Utility Industry: Implications for Louisiana.* (1996). With Allan Pulsipher and Kimberly H. Dismukes. Baton Rouge, LA: Louisiana State University, Center for Energy Studies.

## GRANT RESEARCH

1. *Co-Principal Investigator* (2022). With Gregory B. Upton, Jr. Estimating the benefits of electricity restoration to critical energy infrastructure. Funded by Entergy Corporation. Total Funding: $56,088. Status: Completed.

2. *Co-Principal Investigator*. (2021). With Gregory B. Upton Jr. Estimating the benefits of underground carbon dioxide storage investments. Funded by Gulf Coast Sequestration. Total Funding: $124,835. Status: In Progress.

3. *Principal Investigator*. (2021). Louisiana Greenhouse Gas Inventory Update and Report.

Governor's Office of Coastal Affairs. Total Funding $65,830. Status: Completed.

4. *Principal Investigator*. (2021). Estimating Louisiana's power generation greenhouse gas emissions. The Nature Conservancy. Total Funding: $9,994. Status: Completed.

5. *Co-Principal Investigator*. (2021). With Gregory B. Upton. Estimating the economic impacts of methanol investments in St. James Parish. Koch Industries. Total Funding: $37,457. Status: Completed.

6. *Co-Principal Investigator*. (2019). With Gregory B. Upton Estimating the economic impact of TransCanada pipeline investments. TransCanada Pipelines. Total Funding: $40,798. Status: Completed.

7. *Co-Principal Investigator*. (2018). With Gregory B. Upton. Estimating the economic impact of Enable Pipeline Investments. Total Funding: $49,798. Status: Completed.

8. *Co-investigator*. Estimating offshore Gulf of Mexico carbon capture, sequestration, and utilization opportunities. (2018). With Southern States Energy Board, Advanced Resources International, Argonne Laboratories, University of Alabama, University of South Carolina, and Oklahoma State University. U.S. Department of Energy, National Energy Technology Laboratory. Total funding: $731,031 (LSU share of $4.0 million project, three years, in progress).

9. *Co-Principal Investigator*. Planning Grant: Engineering Research Center for Resiliency Enhancement and Disaster-Impact Interception ("READII") in the Manufacturing Sector. (2018). With Mahmoud El-Halwagi, Mark Stadtherr, Heshmat Aglan, Efstratos Postikopoulus. National Science Foundation (#1840512). Total Funding: $100,000 (one year). Status: Completed.

10. *Principal Investigator*. Understanding MISO long term infrastructure needs and stakeholder positions. (2017). Midcontinent Independent System Operator. Total Project: $9,500, six months. Status: Completed.

11. *Principal Investigator*. Offshore oil and gas activity impacts on ecosystem services in the Gulf of Mexico. (2017). With Brian F, Snyder. U.S. Department of the Interior, Bureau of Ocean Energy Management. Total Project: $240,982, two years. Status: Completed.

12. *Principal Investigator*. Economic Impacts of the Bayou Bridge pipeline. (2017). With Gregory B, Upton, Jr., Energy Transfer Corporation. $9,900. Status: Completed.

13. *Principal Investigator*. Integrated carbon capture, storage and utilization in the Louisiana chemical corridor. (2017). U.S, Department of Energy/National Energy Technology Laboratory. Total funding: $1,300,000 (18 months). Status: Completed.

14. *Co-Principal Investigator*. Gulf coast energy outlook and analysis. (2016). With Gregory B. Upton and Mallory Vachon. Regions Bank. Total funding: $20,000, one year. Status: Completed.

15. *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.

16. *Principal Investigator*. Examining Louisiana's Industrial Carbon Sequestration Potential. Phase 2: Follow-up and estimation. (2016). With Brian F. Snyder. Southern States

Energy Board. Total Project: $69,990, three months. Status: Completed.

17. *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.

18. *Principal Investigator*. Energy efficiency building codes for Louisiana. (2016). With Brian F. Snyder. Louisiana Department of Natural Resources. Total Project: $50,000, one year. Status: Completed.

19. *Principal Investigator*. An update of Louisiana's combined heat and power potentials, current utilizations, and barriers to improved operating efficiencies. (2016). Louisiana Department of Natural Resources. Total Project: $90,000, one year. Status: Completed.

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

21. *Co-Investigator*. "Expanding Ecosystem Service Provisioning from Coastal Restoration to Minimize Environmental and Energy Constraints" (2015). With John Day and Chris D'Elia. Gulf Research Program. Total Project: $147,937. Status: Completed.

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

23. *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.

24. *Co-Investigator*. "CNH: A Tale of Two Louisianas: Coupled Natural-Human Dynamics in a Vulnerable Coastal System" (2013) With Nina Lam, Margaret Reams, Kam-Biu Liu, Victor Rivera, Yi-Jun Xu and Kelley Pace. National Science Foundation. Total Project: $1.5 million. Status: Completed (Sept 2012-Feb 2017).

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

26. *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.

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

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

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

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

31. *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.

32. *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.

33. *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.

34. *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.

35. *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, Completed.

36. *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.

37. *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, Completed.

38. *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: Completed.

39. *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.

40. *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.

41. *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.

42. *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.

43. *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.

44. *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.

45. *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.

46. *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.

47. *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.

48. *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.

49. *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.

50. *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.

51. *Co-Principal Investigator*. "Assessing the Environmental and Safety Risks of the Expanded Role of Independents in Oil and Gas E&P Operations on the U.S. Gulf of Mexico OCS." (1996). With Allan Pulsipher, Omowumi Iledare, Dmitry Mesyanzhinov, William Daniel, and Bob Baumann. U.S. Department of Interior, Minerals Management Service, Grant Number 95-0056. Total Project Funding: $109,361. Status: Completed.

## ACADEMIC CONFERENCE PAPERS/PRESENTATIONS

1. "The changing nature of Gulf of Mexico energy infrastructure." (2017). Session 3B: New Directions in Social Science Research. 27th Gulf of Mexico Region Information Technology Meetings. U.S. Department of the Interior, Bureau of Ocean Energy Management, Environmental Studies Program. New Orleans, LA. August 24.

2. "Capacity utilization, efficiency trends, and economic risks for modern CHP installations."

(2017). U.S. Department of Energy, 2017 Industrial Energy Technology Conference, New Orleans, LA June 21.

3. "Vulnerability assessment of the central Gulf of Mexico coast using a multi-dimensional approach." (2016). With Siddhartha Narra. Eighth International Conference on Environmental Science and Technology. June 6-10, Houston, TX.

4. "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.

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

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

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

8. "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.

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

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

11. "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.

12. "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.

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

14. "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.

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

16. "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.

17. "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.

18. "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.

19. "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.

20. "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.

21. "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.

22. "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).

23. "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).

24. "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.

25. "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.

26. "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.

27. "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.

28. "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.

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

30. "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.

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

32. "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.

33. "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.

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

35. "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.

36. "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.

37. "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.

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

39. "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.

40. "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.

41. "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.

42. "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

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

44. "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.

45. "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.

46. "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.

47. "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.

48. "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.

49. "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.

50. "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.

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

52. "A Cross-Sectional Model of IntraLATA MTS Demand." (1995). Southern Economic Association, Sixty-Fifth Annual Conference. New Orleans, Louisiana.

## ACADEMIC SEMINARS AND PRESENTATIONS

1. Panelist. "Fuel Security, Resource Adequacy & Value of Transmission." (2019). 6th Annual Electricity Dialogue at Northwestern University: Energy and Capacity: Transitions? Northwestern University Center of Law, Regulation, and Economic Growth.

2. "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.

3. "Energy Regulation: Overview of Power and Gas Regulation." Lecture before School of the Coast & Environment, Course in Energy Policy and Law. October 5, 2009.
4. "Trends and Issues in Renewable Energy." Presentation before the School of the Coast & Environment, Louisiana State University. Spring Guest Lecture Series. May 4, 2007.
5. "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.
6. "Hurricane Impacts on Energy Production and Infrastructure." Presentation Before the 53rd Mineral Law Institute, Louisiana State University. April 7, 2006.
7. "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.
8. "Electric Restructuring and Conservation." (2001). Presentation before the Department of Electrical Engineering, McNesse State University. Lake Charles, Louisiana. May 2, 2001.
9. "Electric Restructuring and the Environment." (1998). Environment 98: Science, Law, and Public Policy. Tulane University. Tulane Environmental Law Clinic. March 7, New Orleans, Louisiana.
10. "Electric Restructuring and Nuclear Power." (1997). Louisiana State University. Department of Nuclear Science. November 7, Baton Rouge, Louisiana.
11. "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. "Gulf cost energy outlook: traditional resources and the energy transition." (2023). AAPL/Gulf Coast Land Institute Meetings. April 26, 2023.
2. "Ratepayer considerations in the promotion of clean energy." (2023). Public Utility Law Section Roundtable Discussion. April 21, 2023.
3. "Gulf coast energy outlook: traditional resources and the energy transition." (2023). Louisiana Engineering Society. April 19, 2023.
4. "Carbon capture & storage: three thoughts and considerations." (2023). Gulf Coast Power Association. 9th Annual MISO/SPP Conference. March 9, 2023.
5. "Natural gas markets: prices; trends; and ratepayer impacts." (2023). Maryland Energy Advocates Virtual Monthly Meeting. February 17, 2023.
6. "Hydrogen overview and its role in Louisiana decarbonization." (2022). Louisiana Public Service Commission Monthly Business & Executive Meeting. November 17, 2022.

7. "High winter natural gas prices and ratepayer impacts." (2022). National Association of State Utility Consumer Advocates ("NASUCA") Annual Conference. November 14, 2022.
8. "Facing the future together: the Louisiana energy transition, industrial decarbonization, and capital formation trends." (2022). Louisiana Chemical Association: Annual Meeting 2022. October 27, 2022.
9. "Louisiana and the energy transition: reconciling industrial decarbonization, capital formation, and growth." (2022). Louisiana Air and Waste Management 2022 Annual Meeting. October 26, 2022.
10. "The Louisiana energy transition, industrial decarbonization, and industrial capital formation trends." (2022). Postlethwaite & Netterville: 2022 Governmental Update. August 4, 2022.
11. "Identifying and mapping regulatory requirements for CCUS projects." (2022). SECARB Offshore GOM Gulf Regulator Workshop. New Orleans LA. May 16, 2022.
12. "Louisiana industrial decarbonization opportunities." (2022). Louisiana Chemical Association/Louisiana Chemical Industry Alliance Legislative Meeting. May 11, 2022. Baton Rouge, LA.
13. "Natural Gas outlook, 2022: supply, demand, and geopolitical considerations." (2022). National Association of State Utility Consumer Advocates ("NASUCA") Monthly Natural Gas Committee Webinar. March 30, 2022.
14. "Louisiana industrial decarbonization opportunities." (2022). LSU Law School, Journal of Energy Law and Resources Symposium on Energy Transitions. February 4, 2022. Baton Rouge, LA.
15. Panelist. Grid Resiliency in the Era of Extreme Weather. Gulf Coast Power Association 8th Annual MISO/SPP Regional Meeting. February 9, 2022. New Orleans, LA.
16. Panelist. Natural Gas Industry Update. (2022). National Association of State Utility Consumer Advocates Annual Meeting. (virtual). November 8, 2021.
17. "Overview of Louisiana's greenhouse gas emissions and trends." (2021). Louisiana Energy Users Group ("LEUG") Meeting. November 11, 2021.
18. "State of energy in Louisiana: a preview of the 2021 Gulf Coast Energy Outlook." (2021). Financial Planning Association of Baton Rouge. November 10, 2021.
19. "Replacing natural gas and industrial decarbonization: utility and ratemaking issues." (2021). Virtual Joint Annual Meeting: Virginia Committee for Fair Utility Rates, Old Dominion Committee for Fair Utility Rates, and Virginia Industrial Gas Users Group Workshop. September 8, 2021.
20. "Louisiana 2021 GHG Inventory: Update and summary of preliminary findings." (2021). Presentation before the Climate Initiative Task Force. July 29, 2021.
21. "Opportunities for the development of a hydrogen economy in Louisiana." (2021). Louisiana Energy Climate Solutions Workshop. June 15, 2021.
22. "Natural gas: Building gas system resilience. Overview of the 2021 polar vortex and its implications for gas resiliency." (2021). National Association of State Utility Consumer Advocates ("NASUCA"). Virtual mid-year meeting. June 14, 2021.

23. “Status and briefing on the Louisiana greenhouse gas inventory and emissions analysis.” (2021). Scientific Advisory Group (“SAG”) Meeting, Governor’s Climate Initiative Task Force. March 29, 2021.

24. “Louisiana carbon capture: sinks; sources; and the role of transportation in industrial applications.” (2021). LSU Journal of Energy Law & Resources Symposium on Carbon Capture and Solutions. February 5, 2021.

25. “Natural gas outlook, 2021: production, demand, pandemic and policy.” (2021). National Association of State Utility Consumer Advocates (“NASUCA”) Monthly Natural Gas Committee Webinar. January 20, 2021.

26. “Consumer Perspectives on the Rate Design of the Future.” (2020). National Association of State Utility Consumer Advocates (“NASUCA”). Annual Conference, November 10.

27. “Evaluation of Louisiana’s Depleted Gas Reservoirs for Geological Carbon Sequestration.” (2020). Louisiana Mid-Continent Oil and Gas Association (“LMOGA”) Carbon Capture and Underground Storage (“CCUS”) Committee Meeting. August 25.

28. “The 2020 Gulf Coast Energy Outlook: COVID-19 update.” (2020). Baton Rouge Area Chamber of Commerce Business Webinar. COVID-19 and Global Supply Impacts on the Capital Region and Louisiana Economies. Baton Rouge, LA. June 3.

29. “Ratepayer benefits of reforming PURPA”. (2020). Harvard Electricity Policy Group Webinar. PURPA: A time to reform or reduce its role? March 26.

30. “Pipeline industry: economic trends and outlook”. (2020). Joint Industry Association Annual Meeting. Louisiana Mid-Continent Oil and Gas Association (“LMOGA”) and the Louisiana Oil and Gas Association (“LOGA”). Lake Charles, LA March 5.

31. “The outlook for natural gas: storm clouds ahead?” (2020). National Association of State Utility Consumer Advocates (“NASUCA”). Natural Gas Committee Webinar, February 26.

32. “The 2020 Gulf Coast Energy Outlook”. (2020). University of Louisiana Lafayette, Southern Unconventional Resources Center for Excellence. Lafayette, LA February 16.

33. “Opportunities for carbon capture, utilization, and storage in the Louisiana chemical corridor”. (2020). Air and Waste Management Association, Louisiana Section Luncheon. Gonzales, LA January 16.

34. Panelist. (2020). Baton Route Advocate, 2020 Economic Outlook Summit. Baton Rouge Advocate. January 8.

35. “2020 Louisiana business climate outlook: the view from the energy sector.” (2019). American Council of Engineering Companies Fall Conference. November 21, 2019. Baton Rouge, LA

36. “The urgency of PURPA reform in protecting ratepayers.” (2019). Americans for Tax Reform, Fall 2019 Coalition Leaders Summit, November 14, 2019. New Orleans, LA.

37. “Louisiana’s coast and the energy industry.” (2019). 2019 API Delta Chapter Joint Society Luncheon Meeting. November 12, 2019, New Orleans, LA.

38. “Reforming PURPA: implications for ratepayers.” (2019). Thomas Jefferson Institute for Public Policy, Annual Energy Summit, State Policy Network Annual Meeting. Colorado Springs, CO, October 28.

39. "Natural gas outlook: supply, demand and prices." (2019). National Association of State Utility Consumer Advocates, Natural Gas Committee Monthly Meeting. July 30, 2019.

40. "The economic impacts and outlook for LNG development on the Gulf Coast." (2019). 73rd Annual Meeting of the Southern Legislative Conference of the Council of State Governments. New Orleans, LA, July 14. (prepared presentation, hurricane cancellation)

41. "Natural gas outlook: supply, demand, and prices." (2019). NASUCA Mid-Year Meeting. Portland, OR, June 20.

42. "Overview of Louisiana LNG issues and trends." (2019). Berlin: LNG, Energy Security, and Diversity Reporting Tour, LSU Center for Energy Studies. Baton Rouge, LA, May 9.

43. "Overview of Louisiana energy issues and outlook." (2019). Australian Media Visit, Greater New Orleans, Inc./Baton Rouge Area Foundation. Baton Rouge, LA, April 29.

44. "Gulf Coast Energy Outlook 2019: Regional trends and outlook." (2019). Women's Energy Network. Baton Rouge, LA, April 23.

45. "MISO Grid Vision 2033." (2019). 2019 Spring Regulator and Policymaker Forum. New Orleans, LA, April 15-16.

46. "Ratepayer benefits of reforming PURPA." (2019). LSU Center for Energy Studies Industry Advisory Council Meeting. March 27.

47. "Incentives, risk, and the changing nature of regulation." (2019). NASUCA Water Committee monthly meeting/webinar. March 13.

48. "Gulf Coast Energy Outlook 2019: Production, trade and infrastructure trends." (2019). 66th Annual Mineral Board Institute Meetings. Baton Rouge, LA, March 14.

49. "A golden age: energy outlook 2019." (2019). Engineering News Record Webinar. February 13.

50. Panelist. (2019). Baton Route Advocate, 2019 Economic Outlook Summit. Baton Rouge Advocate. January 8.

51. "MISO Grid Vision 2033." (2018). 2018 Winter Regulatory and Policymaker Forum. New Orleans, LA, December 11.

52. "Gulf Coast Energy Outlook 2019." (2018). LSU Center for Energy Studies, Baton Rouge, LA, Fall 2018.

53. "How LNG is transforming Louisiana's energy economy." (2018). Louisiana State Bar Association, Public Utility Section. Baton Rouge, LA, November 30.

54. "Overview of Louisiana LNG issues and trends." (2018). Kean Miller Law Firm: Energy and Environmental Practice Group. Baton Rouge, LA, November 28.

55. "Infrastructure and capacity: challenges for development." (2018). Society of Utility and Regulatory Financial Analysts (SURFA) Annual Meeting, New Orleans, LA, April 20.

56. "Louisiana industrial cogeneration trends." (2018). Annual Louisiana Solid Waste Association Conference, Lafayette, LA, March 16.

57. "Gulf Coast industrial development: overview of trends and issues." (2018). Gulf Coast Power Association Meetings, New Orleans, LA, February 8.

58. "Energy outlook – reflection on market trends and Louisiana implications." (2017). IberiaBank Corporation Bank Board of Directors Meeting, New Orleans, LA. November 15.

59. "Integrated carbon capture and storage in the Louisiana chemical corridor." (2017). Industry Associates Advisory Council Meeting, Baton Rouge, LA. November 7.

60. "The outlook for natural gas and energy development on the Gulf Coast." (2017). Louisiana Chemical Association, Annual Meeting, New Orleans, LA. October 26.

61. "Critical energy infrastructure: the big picture on resiliency research." (2017). National Academies of Science, Engineering, and Medicine. New Orleans, LA. September 18.

62. "The changing nature of Gulf of Mexico energy infrastructure." (2017). 27th Gulf of Mexico Region Information Technology Meetings, New Orleans, LA, August 24.

63. "Capacity utilization, efficiency trends, and economic risks for modern CHP installations." (2017). Industrial Energy Technology Conference, New Orleans, LA. June 21.

64. "Crude oil and natural gas outlook: Where are we and where are we going?" (2017). CCREDC Economic Trends Panel. Corpus Christi, TX, June 15.

65. "Navigating through the energy landscape." (2017). Baton Rouge Rotary Luncheon. Baton Rouge, LA, May 24.

66. "The 2017-2018 Louisiana energy outlook." (2017). Junior Achievement of Greater New Orleans, JA BizTown Speaker Series. New Orleans, LA, May 12.

67. "The Gulf Coast energy economy: trends and outlook." (2017). Society for Municipal Analysts. New Orleans, LA, April 21.

68. "Gulf coast energy outlook." (2017). E.J. Ourso College of Business, Dean's Advisory Council, Energy Committee Meeting. Baton Rouge, LA, March 31.

69. "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.

70. "How supply, demand and prices have influenced unconventional development." (2016). Energy Annual Meeting, CLEER-University Advisory Board Lecture. New Orleans, LA, September 17.

71. "The Basics of Natural Gas Production, Transportation, and Markets." (2016). Center for Energy Studies. Baton Rouge, LA, August 1.

72. "Gulf Coast industrial development: trends and outlook." (2016). Investor Relations Group Meeting, Edison Electric Institute. New Orleans, LA, June 23.

73. "The future of policy and regulation: Unlocking the Treasures of Utility Regulation." (2016). Annual Meeting, National Conference of Regulatory Attorneys. Tampa, FL, June 20.

74. "Utility mergers: where's the beef?". (2016). National Association of State Utility Consumer Advocates Mid-Year Meetings. New Orleans, LA, June 6.

75. "Overview of the Clean Power Plan and its application to Louisiana." (2016). Shell Oil Company Internal Meeting. April 12.

76. "Energy and economic development on the Gulf Coast: trends and emerging challenges." (2016). Gas Processors Association Meeting. New Orleans, LA, April 11.

77. "Unconventional Oil and Gas Drilling Trends and Issues." (2016). French Delegation Visit, LSU Center for Energy Studies. March 16.

78. "Gulf Coast Industrial Growth: Passing clouds or storms on the horizon?" (2016). Gulf Coast Power Association Meetings. New Orleans, LA, February 18.

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

80. "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.

81. "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.

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

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

84. "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.

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

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

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

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

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

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

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

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

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

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

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

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

97. "Trends in Energy & Energy-Related Economic Development." (2014). Miller and Thompson Presentation, Baton Rouge, Louisiana. December 30.

98. "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.

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

100. "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.

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

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

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

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

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

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

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

108. "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.

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

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

111. "Natural Gas and the Polar Vortex: Has Recent Weather Led to a Structural Change in

Natural Gas Markets?" (2014). National Association of State Utility Consumer Advocates Monthly Gas Committee Meeting. February 19.

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

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

114. "Natural Gas Line Extension Policies: Ratepayer Issues and Considerations." (2013). National Association of State Utility Consumer Advocates Annual Meeting, Orlando, Florida. November 19.

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

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

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

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

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

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

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

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

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

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

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

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

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

128. "Natural Gas Market Update and Emerging Issues." (2013). NASUCA Gas Committee

Conference Call/Webinar, March 12.

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

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

131. "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.

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

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

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

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

136. "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.

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

138. "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.

139. "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.

140. "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.

141. "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.

142. "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.

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

144. "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.

145. "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.

146. "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.

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

148. "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.

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

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

151. "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.

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

153. "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.

154. "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.

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

156. "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.

157. "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.

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

159. "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.

160. "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.

161. "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.

162. "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.

163. "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.

164. "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.

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

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

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

168. 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.

169. "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.

170. "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.

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

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

173. "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.

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

175. "Gulf Coast Energy Outlook: Issues and Trends." Natchez Area Association of Energy

Service Companies. September 15, 2009, Natchez, MS.

176. "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.

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

178. "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

179. "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.

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

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

182. "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.

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

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

185. "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.

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

187. "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.

188. "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.

189. "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.

190. "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.

191. "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.

192. "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.

193. "Recent Trends in Natural Gas Markets." (2006). National Association of Regulatory Utility Commissioners, 118th Annual Convention. Miami, FL November 14, 2006.

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

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

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

197. "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.

198. "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.

199. "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.

200. "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.

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

202. "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.

203. "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.

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

205. "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.

206. "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.

207. "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.

208. "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.

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

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

211. 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.

212. 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

213. 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.

214. "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

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

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

217. "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.

218. "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.

219. "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.

220. "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.

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

222. "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.

223. "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.

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

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

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

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

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

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

230. "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.

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

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

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

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

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

236. "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.

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

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

239. 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.

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

241. "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.

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

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

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

245. "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.

246. "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.

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

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

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

250. "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.

251. "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.

252. "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.

253. "Merchant Power Plants and Deregulation: Issues and Impacts." Presentation before 24th Annual Conference on Waste and the Environment. Sponsored by the Louisiana Department of Environmental Quality. Lafayette, Louisiana, Cajundome. March 18, 2002.

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

255. "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.

256. "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.

257. "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.

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

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

260. "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.

261. "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.

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

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

264. "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.

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

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

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

268. "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.

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

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

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

272. 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.

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

274. "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.

275. "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.

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

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

278. "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.

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

280. "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.

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

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

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

284. "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.

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

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

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

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

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

290. "Electric Utility Restructuring" Louisiana Electric Cooperative Association, Baton Rouge, Louisiana, August 27, 1996.

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

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

293. 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.

294. Panelist, "Deregulation and Competition." American Nuclear Society: Second Annual Joint Louisiana and Mississippi Section Meetings, Baton Rouge, Louisiana, April 20, 1996.

**EXPERT WITNESS, LEGISLATIVE, AND PUBLIC TESTIMONY; EXPERT REPORTS, RECOMMENDATIONS, AND AFFIDAVITS**

1. Expert Testimony. Docket No. 23-06007. (2023). Before the Public Utilities Commission of Nevada. *In the Matter of the Application by Nevada Power Company D/B/A NV Energy, filed pursuant to NRS 704.110(3) and NRS 704.110(4), addressing its annual revenue requirement for general rates charged to all classes of electric customers.* On Behalf of the Nevada Bureau of Consumer Protection. Issues: marginal cost of service study, embedded cost of service study, revenue distribution, rate design.

2. Expert Testimony. Docket No. UE-230172. (2023). Before the Washington Utilities and Transportation Commission. *Washington Utilities and Transportation Commission, Complainant v. Pacificorp dba Pacific Power & Light Company, Respondent.* On Behalf of the Washington State Office of the Attorney General Public Counsel Unit. Issues: rate design, revenue distribution, cost of service.

3. Expert Testimony. Case No. U-21389. (2023). Before the Michigan Public Service Commission. *In the Matter of the Application of Consumers Energy Company for Authority to Increase its Rates for the Generation and Distribution of Electricity and for other Relief*. On Behalf of the Michigan Department of the Attorney General. Issues: capital expenditure adjustments, overview of proposal.

4. Expert Report. Case No. 22-1094-WW-AIR. (2023). *Audit of the Application to Increase Rates of Aqua Ohio, Inc. For the Period July 1, 2022 through June 30, 2023.* Prepared for the Public Utilities Commission of Ohio. Issues: cost of service, billing determinants, revenue distribution, rate design.

5. Expert Report. Case No. 22-1096-ST-AIR. (2023). *Audit of the Application to Increase Rates of Aqua Ohio Wastewater, Inc. For the period July 1, 2022 through June 30, 2023*. Prepared for the Public Utilities Commission of Ohio. Issues: cost of service, billing determinants, revenue distribution, rate design.

6. Expert Testimony. Docket No. 2023-70-G. (2023). Before the Public Service Commission of South Carolina. *In the Matter of: Dominion Energy South Carolina, Inc's application for adjustments in its natural gas rate schedules and tariffs.* On Behalf of the South Carolina Department of Consumer Affairs. Issues: revenue credit, revenue distribution, rate design. Direct and Surrebuttal.

7. Expert Testimony. Docket No. E-01345A-22-0144. (2023). Before the Arizona Corporation Commission. *In the Matter of the Application of Arizona Public Service Company for a hearing to determine the fair value of the utility property of the company for ratemaking purposes, to fix a just and reasonable rate of return thereon, and to approve rate schedules designed to develop such return. On Behalf of the Utilities Division Arizona Corporation Commission.* Issues: cost of service, revenue distribution, rate design. Direct and Surrebuttal.

8. Expert Testimony. Docket No. 23-0068 (consol.) 23-0069. (2023). Before the Illinois Commerce Commission. *North Shore Gas Company, The Peoples Gas Light and Coke Company Proposed general increase in rates and revisions to service classifications, riders and terms and conditions of service.* On Behalf of the People of the State of Illinois. Issues: integrity management, infrastructure metrics, natural gas policy, state gas policy.

9. Expert Testimony. Docket No. 23-067. (2023). Before the Illinois Commerce Commission. *Ameren Illinois Company Proposed general increase in gas delivery service rates.* On Behalf of the Illinois Attorney General. Issues: integrity management, infrastructure metrics, natural gas policy, state gas policy.

10. Expert Testimony. Docket No. 23-066. (2023). Before the Illinois Commerce Commission. *Northern Illinois Gas Company d/b/a Nicor Gas Company Proposed general increase in gas rates.* On Behalf of the People of the State of Illinois. Issues: integrity management, infrastructure metrics, natural gas policy, state gas policy.

11. Expert Testimony. Docket No. U-22-081. (2023). Before the Regulatory Commission of

Alaska. *In the Matter of the Revenue Requirement Study Designated as TA334-4 Filed by Enstar Natural Gas Company, A Division of SEMCO Energy, Inc.* On Behalf of the Attorney General, Regulatory Affairs & Public Advocacy Section. Issues: cost of service, rate design, revenue distribution.

12. Expert Testimony. Docket No. U-22-078. (2023). Before the Regulatory Commission of Alaska. *In the Matter of the Revenue Requirement Study and Tariff Filing Designated as TA510-1 Filed by Alaska Electric Light & Power Company.* On Behalf of the Office of the Attorney General, Regulatory Affairs & Public Advocacy Section. Issues: cost of service, rate design, seasonal rates, revenue allocation, customer charge.

13. Expert Testimony. Docket No. 2022.11.099. (2023). Before the Department of Public Service Regulation. *In the Matter of Montana-Dakota Utilities Co. for Authority to Establish Increased Rates for Electric Service.* On Behalf of the Montana Consumer Counsel. Direct and Cross-Answering. Issues: rate increase, cost of service study, marginal cost of service, revenue allocation, rate design.

14. Expert Testimony. Docket No. U-22-078. (2023). Before the Regulatory Commission of Alaska. *In the Matter of the Revenue Requirement Study and Tariff Filing Designated as TA510-1 Filed by Alaska Electric Light & Power Company.* On Behalf of the Office of the Attorney General, Regulatory Affairs & Public Advocacy Section. Issues: rate design, cost of service, revenue allocation, seasonal rates.

15. Expert Testimony. Docket No. U-21193. (2023). Before the Michigan Public Service Commission. *In the matter of the Application of DTE Electric Company for Approval of its Integrated Resource Plan pursuant to MCL 460.6t, and for other relief.* On Behalf of the Michigan Department of the Attorney General. Issues: Resource planning, coal retirements, asset amortization, financial compensation mechanism.

16. Expert Testimony. Docket No. RP22-1033. (2023). Before the Federal Energy Regulatory Commission. *Northern Natural Gas Company.* On Behalf of the Northern Municipal Distributors Group and the Midwest Region Gas Task Force Association. Issues: tariff provisions, rate analysis, discount adjustment.

17. Expert Testimony. Docket No. 22-061-U. (2023). Before the Arkansas Public Service Commission. *In the Matter of an Investigation into Potential Cost Shifting Associated with Net Metering.* On Behalf of the Office of Tim Griffin, Attorney General of Arkansas. Issues: policy, net metering background.

18. Expert Testimony. Docket No. 22F-0263EG. (2023). Before the Public Utility Commission of the State of Colorado. *Olson's Greenhouses of Colorado, LLC. Complainant, v. Public Service Company of Colorado Respondent*. On Behalf of Olson's Greenhouses of Colorado, LLC. Issues: reliability, system upgrades, weather normalization.

19. Expert Testimony. Docket No. 2022.07.078. (2022). Before the Public Service Commission of the State of Montana. *In the Matter of NorthWestern Energy's Application for Authority to Increase Retail Electric and Natural Gas Utility Rates and for Approval of Electric and Natural Gas Service Schedules and Rules and Allocated Cost of Service and Rate Design.* On Behalf of the Montana Consumer Counsel. Direct and Cross-Intervenor. Issues: riders, fixed cost recovery mechanism, power cost adjustment, cost of service, revenue distribution.

20. Expert Testimony. Docket No 2022-254-E. (2022). Before the Public Service Commission

of South Carolina. *In the Matter of: Application of Duke Energy Progress, LLC for Authority to Adjust and Increase its Electric Rates and Charges.* On Behalf of South Carolina Department of Consumer Affairs. Direct and Surrebuttal. Issues: Cost of service, revenue allocation, rate design.

21. Expert Testimony Docket No. 22-06014. (2022). *Before the Public Utilities Commission of Nevada. In the Matter of the Application by Sierra Pacific Power Company D/B/A NV Energy, filed pursuant to NRS 704.110(3) and NRS 704.110(4), addressing its annual revenue requirement for general rates charged to all classes of electric customers*. On Behalf of the Nevada Bureau of Consumer Protection. Issues: rate design, cost of services, marginal cost of service, revenue distribution.

22. Expert Testimony Docket No. 2022.06.067. (2022). *Before the Public Service Commission of the State of Montana. In RE NorthWestern Energy's Application for an Advanced Metering Opt-Out Tariff.* On Behalf of the Montana Consumer Counsel. Direct and Rebuttal. Issues: meter issues, opt-out fees, tariffs options.

23. Expert Testimony Docket No. 16-036-FR. (2022). *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 Arkansas Attorney General Leslie Rutledge.* Issues: Rate design, netting adjustment, performance standards, projected year adjustments.

24. Expert Testimony Formal Case No. 1169. (2022). *Before the Public Service Commission of the District of Columbia. In the Matter of the application of Washington Gas Light Company for authority to increase existing rates and charges for gas service.* On Behalf of the People's Counsel for the District of Columbia. Direct and Rebuttal. Issues: Revenue allocation, weather normalization, rate design.

25. Expert Testimony Case No. U-21224. (2022). *Before the Michigan Public Service Commission. In the Matter of the Application of Consumers Energy Company for authority to increase its rates for the generation and distribution of electricity and for other relief*. On Behalf of the Michigan Department of the Attorney General. Issues: cost of service, revenue distribution, policy overview.

26. Expert Report. Case No. 695287. (2022). Before the Nineteenth Judicial District Court, The Parish of East Baton Rouge, State of Louisiana. *Washington-St. Tammany Electric Cooperative, Inc. and Claiborne Electric Cooperative, Inc., Plaintiff v. Louisiana Generating, L.L.C., Defendant.* On Behalf of Louisiana Generating, L.L.C. Issues: environmental regulations, re-fueling, regulatory rules, collateral benefits.

27. Expert Report. Case No. 0:20-cv-60981-AMC. (2022). *Café, Gelato & Panini LLC, d/b/a Café Gelato Panini, on behalf of itself and all others similarly situated, Plaintiff v. Simon Property Group, Inc., Simon Property Group, L.P., M. S. Management Associates, Inc. And The Town Center at Boca Raton Trust, Defendant.* On Behalf of Simon Property Group, Inc.

28. Expert Testimony Case No. U-20836. (2022). *Before the Michigan Public Service Commission. In the Matter of the Application of DTE Electric Company for authority to increase its rates, amend its rate schedules and rules governing the distribution and supply of electric energy, and for miscellaneous accounting authority.* On Behalf of the Michigan Department of the Attorney General. Issues: cost of service, revenue

distribution, peer comparison.

29. Expert Testimony. D.P.U. 22-22. (2022*). Before the Department of Public Utilities of the Commonwealth of Massachusetts. Petition of NSTAR Electric Company d/b/a Eversource Energy for Approval of a Performance-Based Ratemaking Plan and 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 Massachusetts Office of the Attorney General Office of Ratepayer Advocacy. Issues: rate design, TFP analysis, rate increases, benchmark analysis, revenue distribution. Direct and Surrebuttal.

30. Expert Testimony. Docket No. 21-097-U. (2022). In the Matter of the Application of Black Hills Energy Arkansas, Inc. for Approval of a General Change in Rates and Tariffs. On Behalf of the Office of Arkansas Attorney General. Issues: cost of service, rate design, reliability, billing determinant adjustment.

31. Expert Testimony. Docket No. 2021-361-G. (2022). Before the Public Service Commission of South Carolina. *In the Matter of: Dominion Energy South Carolina, Inc.'s Request for Approval of New Natural Gas Energy Efficiency Programs*. On Behalf of South Carolina Department of Consumer Affairs. Issues: DSM Rider, energy efficiency, shared savings. Direct and Surrebuttal.

32. Expert Report. Case No. 21-596-ST-AIR. (2022). *Audit of the Application to Increase Rates of Aqua Ohio Wastewater, Inc. For the Period January 1, 2021 through December 31, 2021*. Prepared for Public Utilities Commission of Ohio. Issues: rate design, cost of service, revenue distribution.

33. Expert Report. Case No. 21-595-WW-AIR. (2022). *Audit of the Application to Increase Rates of Aqua Ohio, Inc. For the Period January 1, 2021 through December 31, 2021.* Prepared for Public Utilities Commission of Ohio. Issues: rate design, cost of service, revenue distribution.

34. Expert Testimony. Docket No. 2021.09.112. (2022). *Before the Public Service Commission of the State of Montana. In the Matter of NorthWestern Energy's Annual PCCAM Filing and Application for Approval of Tariff Changes.* On Behalf of the Montana Consumer Counsel. Issues: wholesale energy hedging, market exposure, overview of PCCAM filing, demand side management costs.

35. Expert Affidavit. Docket No. 2:21-cv-1074. (2021). In the United States District Court for the Western District of Louisiana. *The State of Louisiana by and through its Attorney General, Jeff Landry et al. Plantiffs, v. Joseph R. Biden, Jr., in his official capacity as President of the United States; et al., Defendants.* On Behalf of the Attorney General of Louisiana. Issues: social cost of carbon, carbon tax, environmental policy.

36. Expert Testimony. Case No. U21090. (2021). *Before the Michigan Public Service Commission. In the matter of the application of Consumers Energy Company for approval of its Integrated Resource Plan pursuant to MCL 460.6t, certain accounting approvals, and for other relief*. On Behalf of the Michigan Department of the Attorney General. Issues: IRP, coal plant retirements, acquisition premiums, financial compensation mechanism.

37. Expert Testimony. Docket No 16-036-FR. (2021). 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 Arkansas Attorney General Leslie Rutledge. Issues: netting adjustments, rate increases, projected year

adjustments, reliability.

38. Expert Report. Docket JCCP No. 4861. (2021). Before the Superior Court of the State of California County of Los Angeles, Central Civil West. *Coordination Proceeding Special Title [Rule 3.550] Southern California Gas Leak Cases.* On Behalf of Toll Brothers. Issues: gas leak, public service obligation, integrity management.

39. Expert Testimony. Docket No. U-35927. (2021). Before the Louisiana Public Service Commission. *In Re: Application of 1803 Electric Cooperative, Inc. for Approval of Power Purchase Agreements and for Cost Recovery.* Direct and Cross-Answering. On Behalf of Cleco Cajun LLC. Issues: tolling agreements, generation acquisition, risk factors.

40. Expert Testimony. Docket No. 21-060-U. (2021). Before the Arkansas Public Service Commission. *In the Matter of Joint Application of Centerpoint Energy Resources Corp. and Summit Utilities Arkansas, Inc. For all Necessary Authorizations and Approvals for Summit Utilities Arkansas, Inc. To Acquire the Arkansas Assets of Centerpoint Energy Resources Corp. and for Approval of a Certificate of Public Convenience and necessity for Summit Utilities Arkansas, Inc.* Direct and Surrebuttal. On Behalf of the Office of Arkansas Attorney General Leslie Rutledge. Issues: asset acquisition, ratepayer benefits, acquisition synergies, Rider FRP.

41. Expert Affidavit. Civil Action No. 2:21-cv-00778 (2021). Before the United States District Court for the Western District of Louisiana. *The State of Louisiana v. Joseph R. Biden, Jr.* Issues: leasing and drilling moratorium, state revenue, coastal restoration, economic activity.

42. Expert Testimony. Docket No. 21-044-U (2021). Before the Arkansas Public Service Commission. *In the Matter of Centerpoint Energy Resources Corp. D/B/A Centerpoint Energy Arkansas Gas' Request to Extend Rider FRP.* On Behalf of the Office of Arkansas Attorney General Leslie Rutledge. Issues: ratepayer benefits, service quality, cost of service, FRP extension.

43. Expert Testimony. Docket No. 17-010-FR (2021). Before the Arkansas Public Service Commission. *In the Matter of the Formula Rate Plan Filings of Centerpoint Energy Resources Corp. D/B/A Centerpoint Energy Arkansas Gas Pursuant to APSC Docket No. 15-098-U.* On Behalf of the Office of Arkansas Attorney General Leslie Rutledge. Issues: rate increase, investment and expense trends, revenue deficiency, leak performance.

44. Expert Testimony. Case No. U-20963 (2021). Before the Michigan Public Service Commission. *In the Matter of the Application of Consumers Energy Company for authority to increase its rates for the generation and distribution of electricity and for other relief.* On Behalf of the Michigan Department of the Attorney General. Issues: cost of service, peak allocation, revenue distribution.

45. Expert Testimony. U-20-072, U-20-073, U-20-074. (2021). Before the Regulatory Commission of Alaska. *In the Matter of the Revenue Requirement study and Tariff Filing designated as TA886-2 filed by Alaska Power Company, In the Matter of the Revenue Requirement study and Tariff filing designated as TA6-521 filed by Goat Lake Hydro, Inc., In the Matter of the Revenue Requirement study and Tariff filing designated as TA4-573 filed by BBL Hydro, Inc.* On Behalf of the Alaska Office of Attorney General. Issues: rate groups, cost of service.

46. Expert Testimony. Docket No. P20-001. (2021). Before the Louisiana Pilotage Fee

Commission. *In Re: Request for Increase in Approved Pilot Complement; Increased Funding for necessary Additional Manpower; Upward Adjustment of Estimated Average Annual Pilot Compensation; and Related Relief Pursuant to LA R.S. 34:112.* On Behalf of the Louisiana Chemical Association (LCA) and Louisiana Mid-Continent Oil & Gas Association (LMOGA). Issues: unreasonable requests, fee structure, economic impact, over earnings.

47. Expert Testimony. D.P.U. 20-120. (2021). Before the Commonwealth of Massachusetts Before the Department of Public Utilities. *Petition of Boston Gas Company d/b/a National Grid Pursuant to G.L. c. 164, 94 and 220 C.M.R. 5.00 for Approval of an Increase in Base Distribution Rates and Approval of a Performance-Based Ratemaking Plan.* On Behalf of the Massachusetts Office of the Attorney General Office of Ratepayer Advocacy. Issues: rate increase, accelerated depreciation, benchmarking analysis, performance incentive mechanism.

48. Expert Testimony. RPU-2020-0001. (2020). Before the Iowa Utilities Board. *In Re: Iowa-American Water Company.* On Behalf of the Office of Consumer Advocate. Issues: rate increase, test trackers, RSM accounting ratemaking construct.

49. Expert Testimony. BPU Docket Nos. QO19010040 and GO20090622. (2020). Before the New Jersey Board of Public Utilities. *In the Matter of the Petition of New Jersey Natural Gas Company for Approval of Energy Efficiency Programs and the Associated Cost Recovery Mechanisms Pursuant to the Clean Energy Act, N.J.S.A. 48:3-87.8 et seq. and 48:3-98.1 et seq.* On behalf of the Division of Rate Counsel. Issues: CBA requirements, capacity benefits, volatility benefits.

50. Expert Testimony. Docket No. 2020-125-E. (2020). Before the Public Service Commission of South Carolina. *In the Matter of: Application of Dominion Energy South Carolina, Incorporated for Adjustments of Rates and Charges (See Commission Order No. 2020-313).* On Behalf of the South Carolina department of Consumer Affairs. Issues: cost of service, revenue allocation, rate design.

51. Answering Testimony. Before the United States of America Federal Energy Regulatory Commission. Docket No. RP20-614-000 and RP20-618-000. (2020). *Transcontinental Gas Pile Line Company, LLC.* On Behalf of the North Carolina Utilities Commission. Issues: Tariff revisions, assessment of Transco claims.

52. Expert Testimony. Docket No. 16-036-FR. (2020). *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. Direct and Surrebuttal*. On Behalf of the Arkansas Attorney General Leslie Rutledge. Issues: rate increases, investment and expenses trends, load forecast, historic year netting adjustment, reliability issues.

53. Expert Testimony. Docket No. 2019.12.101. (2020). Before the Public Service Commission of the State of Montana. *In the Matter of NorthWestern Energy's Application for Approval of Capacity Resource Acquisition.* On the Behalf of the Montana Consumer Counsel. Issues: sale of capital asset, evaluation benefits, ratepayer cost exposure, reserve fund.

54. Expert Testimony. Formal Case No. 1162. (2020). Before the Public Service Commission of the District of Columbia. *In the Matter of the Application of Washington Gas Light Company for Authority to Increase Existing Rates and Charges for Gas Service*. On Behalf

of the Office of the People's Counsel. Issues: rate increase, revenue adjustment, weather normalization, rate design, revenue distribution.

55. Expert Testimony. Docket No. E-01345A-19-0236. (2020). Before the Arizona Corporation Commission. *In the Matter of the Application of Arizona Public Service Company for Ratemaking Purposes to Fix a Just and Reasonable Rate of Return Thereon, to Approve Rate Schedules Designed to Develop such Return*. Direct and Surrebuttal. On Behalf of the Utilities Division of the Arizona Corporation Commission. Issues: Cost of Service, Revenue Distribution, Rate Design.

56. Expert Testimony. Docket No. 17-010-FR. (2020). Before the Arkansas Public Service Commission. *In the Matter of the Formula Rate Plan Filings of Centerpoint Energy Resources Corp. D/B/A Centerpoint Energy Arkansas Gas Pursuant to APSC Docket No. 15-098-U.* On Behalf of the Arkansas Attorney General Leslie Rutledge. Issues: rate increase, leak replacement and reduction, netting adjustment, revenue deficiency, accounting policy changes.

57. Expert Testimony. Case No. U-20697. (2020). Before the Michigan Public Service Commission. *In the Matter of the Application of Consumers Energy Company for authority to increase its rates for the generation and distribution of electricity and for other relief*. On Behalf of the Michigan Department of Attorney General. Issues: cost of service, revenue distribution, rate design.

58. Expert Testimony. Docket No. 2019.09.058. (2020). Before the Public Service Commission of the State of Montana. *In the Matter of NorthWestern Energy's Annual PCCAM Filing and Application for Approval of Tariff Changes*. On the Behalf of the Montana Consumer Counsel. Issues: purchase power expenses, cost sharing, PCAAM power cost.

59. Expert Testimony. Formal Case No. 1156. (2020). Before the Public Service Commission of the District of Columbia. *In the matter of Potomac Electric Power Company for authority to implement a multiyear rate plan for electric distribution service in the district of Columbia.* Direct, Rebuttal, Surrebuttal, Supplemental, and Second Supplemental. On Behalf of the Office of the People's Counsel. Issues: revenue distribution, rate design, customer charge, performance metric policies, performance metric incentives.

60. Expert Testimony. Case No. U-20561. (2019). Before the Michigan Public Service Commission. *In the matter of the Application of DTE Electric Company for authority to increase its rates, amend its rate schedules and rules governing the distribution and supply of electric energy, and for miscellaneous accounting authority*. On Behalf of the Michigan Department of Attorney General. Issues: Cost of service, allocation of production plant, allocation of sub-transmission plant, revenue distribution.

61. Expert Testimony. Cause No. 45253. (2019). Before the Indiana Utility Regulatory Commission. *Petition of Duke Energy Indiana, LLC Pursuant to Ind. Code 8-1-2-42.7 and 8-1-2-61, for (1) Authority to Modify its Rates and Charges for Electric Utility Service through a Step-In of New Rates and Charges using a Forecasted Test Period; (2) Approval of New Schedules of Rates and Charges, General Rules and Regulations, and Riders; (3) Approval of a Federal Mandate Certificate Under Ind. Code 8-1-8.4-1; (4) Approval of Revised Electric Depreciation Rates Applicable to its Electric Plant in Service; (5) Approval of Necessary and Appropriate Accounting Deferral Relief; and (6) Approval of a Revenue Decoupling Mechanism for Certain Customers Classes*. On Behalf of the Indiana Office of

Utility Consumer Counsel. Issues: Decoupling, revenue decoupling mechanism and design, commission policy, benchmarking analysis.

62. Expert Testimony. Docket 19-019-U. (2019). Before the Arkansas Public Service Commission. *In the Matter of the Petition of Entergy Arkansas, LLC for Approval of a Build-Own-Transfer Arrangement for a Renewable Resource and for all other Related Approvals.* On Behalf of the Arkansas Attorney General Leslie Rutledge. Issues: Solar investment, risk assessment, proposed rider.

63. Expert Testimony. Docket No. 16-036-FR. (2019). 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 Arkansas Attorney General Leslie Rutledge. Issues: rate design, reliability, and formula rate plan.

64. Expert Testimony. Docket No. 19-019-U. (2019). Before the Arkansas Public Service Commission. *In the Matter of the Petition of Entergy Arkansas, LLC for Approval of a Build-Own-Transfer Arrangement for a Renewable Resource and for all other Related Approvals*. On Behalf of the Arkansas Attorney General Leslie Rutledge. Issues: Solar project approval, ratepayer risk, cost allocation.

65. Expert Testimony. Docket No. 17-010-FR. (2019). Before the Arkansas Public Service Commission. *In the Matter of the Formula Rate Plan Filings of Centerpoint Energy Resources Corp. D/B/A Centerpoint Energy Arkansas Gas Pursuant to APSC Docket No. 15-098-U.* On Behalf of the Arkansas Attorney General Leslie Rutledge. Issues: retail rates, leak analysis, revenue deficiency, investments.

66. Expert Testimony. Case No. U-20471. (2019). Before the Michigan Public Service Commission. *In the matter of the Application of DTE Electric Company for approval of its Integrated Resource Plan pursuant to MCL 460.6t, and for other relief.* On Behalf of the Michigan Department of Attorney General. Issues: load forecasting, least-cost system planning.

67. Expert Report. Docket No. 18-004422. (2019). Before the State of Florida Division of Administrative Hearings. *Peoples Gas System vs. South Sumter Gas Company, LLC and the City of Leesburg.* On Behalf of the City of Leesburg. Issues: retail rates, customer growth, sales trends and forecasts, policy, cost of service, socio-economic trends and forecasts.

68. Expert Testimony. Docket Nos. GO18101112 and EO18101113. (2019). Before the New Jersey Board of Public Utilities. *In the Matter of the Public Service Electric and Gas Company for Approval of its Clean Energy Future-Energy Efficiency ("CEF-EE") Program on a Regulated Basis.* On behalf of the Division of Rate Counsel. Issues: economic impact, cost benefit analysis, decoupling mechanisms.

69. Expert Testimony. Docket Nos. EO18060629 and GO18060630. (2019). Before the New Jersey Board of Public Utilities. *In the Matter of the Public Service Electric and Gas Company for Approval of the Second Energy Strong Program (Energy Strong II)*. On behalf of the Division of Rate Counsel. Issues: economic impact, cost benefit analysis, infrastructure replacement, cost recovery tracker mechanisms.

70. Expert Report. Docket No. 2011-AD-2. (2019). On Behalf of the Mississippi Public Service Commission. *Order Establishing Docket to Investigate the Development and Implementation of Net Metering Programs and Standards.* On Behalf of the Mississippi

Public Utilities Staff. Issues: Net-metering, distributed generation.

71. Expert Testimony. Docket No. D2018.2.12. (2018). Before the Public Service Commission of the State of Montana. *In the Matter of NorthWestern Energy's Application for Authority to Increase Retail Electric Utility Service Rates and for Approval of Electric Service Schedules and Rules and Allocated Cost of Service and Rate Design.* On Behalf of the Montana Consumer Counsel. Issues: Net-metering, cost of service, revenue distribution, rate design.

72. Expert Testimony. Docket No. 19-SEPE-054-MER. (2018). Before the Kansas Corporation Commission. *In the Matter of the Joint Application of Sunflower Electric Power Corporation and Mid-Kansas Electric Company, Inc. for an Order Approving the Merger of Mid-Kansas Electric Company, Inc. into Sunflower Electric Power Corporation*. On the Behalf of the Kansas Electric Power Cooperative, Inc. Issues: merger impacts, rates, tariffs.

73. Expert Testimony. Docket No. 18-046-FR. (2018). Before the Arkansas Public Service Commission. *In the Matter of the Formula Rate Plan Filings of Oklahoma Gas and Electric Company Pursuant to APSC Docket No. 16-052-U.* On Behalf of the Arkansas Attorney General Leslie Rutledge. Issues: formula rate plan, plant investment and expenses benchmarking analysis, reliability.

74. Expert Testimony. Docket No. 16-036-FR. (2018). 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 Arkansas Attorney General Leslie Rutledge. Issues: rate design, reliability, and formula rate plan.

75. Expert Testimony. Docket No. 2017-AD-0112. (2018). Before the Mississippi Public Service Commission. *In Re: Encouraging Stipulation of Matters in Connection with the Kemper County IGCC Project.* On Behalf of the Mississippi Public Utilities Staff. Issues: cost of service and rate design.

76. Expert Affidavit. Docket No. 87011-E. (2018). Before the 16th Judicial District Court Parish of St. Martin State of Louisiana. *Bayou Bridge Pipeline, LLC versus 38.00 Acres, More or Less, Located in St. Martin Parish; Barry Scott Carline, et al.* Issues: economic impacts.

77. Expert Testimony. Docket No. QO18080843. (2018). Before the New Jersey Board of Public Utilities. *In the Matter of the Petition of Nautilus Offshore Wind, LLC for the Approval of the State Waters Wind Project and Authorizing Offshore Wind Renewable Energy Certificates.* On behalf of the Division of Rate Counsel. Issues: regulatory policy and cost-benefit analyses.

78. Expert Testimony. Docket No. ER18010029 and GR18010030. (2018). Before the New Jersey Board of Public Utilities. *In the Matter of the Petition of Public Service Electric and Gas Company for Approval of an Increase in Electric and Gas Rates and for Changes in the Tariffs for Electric and Gas Service, B.P.U.N.J. No. 16 Electric and B.P.U.N.J No. 16 Gas, and for Changes in Depreciation Rates, Pursuant to N.J.S.A. 48:2-18, N.J.S.A. 48:2-21 and N.J.S.A. 48:2-21.1, and for Other Appropriate Relief.* On behalf of the Division of Rate Counsel. Issues: rate proposal, revenue decoupling, regulatory policy, cost benchmarking.

79. Expert Testimony. Docket No. T-34695. (2018). Before the Louisiana Public Service Commission. *In re: Application for a rate increase on service originating at Grand isle and*

*termination at St. James for Crude Petroleum as currently outlined in LPSC Tariff No. 75.2*. On Behalf of Energy XXI GOM, LLC. Issues: cost of service, rate design, and alternative regulation.

80. Expert Testimony. Docket No. 17-071-U. (2018). Before the Arkansas Public Service Commission*. In the Matter of the Application of Black Hills Energy Arkansas, Inc. for Approval of a General Change in Rates and Tariffs*. On Behalf of the Arkansas Attorney General Leslie Rutledge. Issues: cost of service, rate design, billing determinates.

81. Expert Testimony. Docket No. 17-010-FR. (2018). Before the Arkansas Public Service Commission. *In the Matter of the Formula Rate Plan Filing of CenterPoint Energy Resources Corp. D/B/A CenterPoint Energy Arkansas Gas Pursuant to APSC Docket No. 15-098-U.* On Behalf of the Arkansas Attorney General Leslie Rutledge. Issues: cost of service, rate design, alternative regulation, formula rate plan.

82. Expert Testimony. Case No. PU-17-398. (2018). Before the North Dakota Public Service Commission. *In the Matter of the Application of Otter Tail Power Company for Authority to Increase Rates for Electric Utility Service in North Dakota*. On Behalf of the North Dakota Service Commission Advocacy Staff. Issues: cost of service, marginal cost of service, and rate design.

83. Expert Testimony. Docket No. 20170179-GU. (2018). Before the Florida Public Service Commission. *In re: Petition for rate increase and approval of depreciation study by Florida City Gas.* On Behalf of the Citizens of the State of Florida. Issues: policy issues concerning long-term gas capacity procurement.

84. Expert Testimony. Docket No. 18-KCPE-095-MER. (2018). Before the Kansas Corporation Commission. *In the Matter of the Joint Application of Great Plains Energy Incorporated, Kansas City Power & Light Company, and Westar Energy, Inc. for Approval of the Merger of Westar, Inc. and Great Plains Energy Incorporated.* On the Behalf of the Kansas Electric Power Cooperative, Inc. Issues: merger/acquisition policy, financial risk, and ring-fencing.

85. Expert Testimony. Docket No. GR17070776. (2018). Before the New Jersey Board of Public Utilities. In the Matter of the Petition of Public Service Electric and Gas Company for Approval of the Next Phase of the Gas System Modernization Program and Associated Cost Recovery Mechanism ("GSMP II"). On behalf of the Division of Rate Counsel. Issues: economic impact, infrastructure replacement program rider, pipeline replacement, leak rate comparisons and cost benefit analysis.

86. Expert Affidavit. Case No. 18-489. (2018). Before the Civil District Court for the Parish of Orleans, State of Louisiana. *Bayou Bridge Pipeline, LLC versus The White Castle Lumber and Shingle Company Limited and Jeanerette Lumber & Shingle CO. L.L.C.* Issues: economic impact of crude oil pipeline development.

87. Expert Testimony. Docket No. 16-036-FR. (2017). Before the Arkansas Public Service Commission. *In the Matter of the Formula Rate Plan Filings of Entergy Arkansas, Inc., Pursuant to APSC Docket No. 15-015-U*. On behalf of the Office of the Arkansas Attorney General Leslie Rutledge. Issue: cost of service, rate design, alternative regulation, formula rate plan.

88. Expert Testimony. Docket No. 2017-AD-0112. (2017). Before the Mississippi Public Service Commission. *In re: Encouraging Stipulation of Matters in Connection with the*

*Kemper County IGCC Project*. On Behalf of the Mississippi Public Utilities Staff. Issues: financial analysis, rates and cost trends, economic impacts of proposal.

89. Expert Testimony. Case No. 2017-00179. (2017). Before the Public Service Commission, Commonwealth of Kentucky. *Electronic Application of Kentucky power Company For (1) A General Adjustment of Its Rates for Electric Service; (2) An Order Approving Its 2017 Environmental Compliance Plan; (3) An Order Approving Its Tariffs and Riders; (4) An Order Approving Accounting Practices to Establish a Regulatory Asset or Liability Related to the Big Sandy 1 Operation Rider; and (5) An Order Granting All Other Required Approvals and Relief.* On Behalf of the Office of the Kentucky Attorney General. Issues: rate design, revenue allocation, economic development.

90. Expert Testimony. Docket No. 17-010-FR. (2017). Before the Arkansas Public Service Commission. *In the Matter of the Formula Rate Plan Filing of CenterPoint Energy Resources Corp. D/B/A CenterPoint Energy Arkansas Gas Pursuant to APSC Docket No. 15-098-U.* On Behalf of the Arkansas Attorney General Leslie Rutledge. Issues: cost of service, rate design, alternative regulation, formula rate plan.

91. Expert Testimony. Formal Case No. 1142. (2017). Before the Public Service Commission of the District of Columbia. *In the Matter of the Merger of AltaGas Ltd. and WGL Holdings, Inc.* On Behalf of the Office of the People's Counsel. Issues: merger/acquisition policy, financial risk, ring-fencing, and reliability.

92. 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.

93. 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.

94. 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.

95. 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.

96. 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.

97. 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.

98. 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.

99. Expert Testimony. Docket No. 15-015-U. (2016). Before the Arkansas Public Service Commission. *In the Matter of the Formula Rate Plan Filings of Entergy Arkansas, Inc., Pursuant to APSC Docket No. 15-015-U*. On behalf of the Office of the Arkansas Attorney General Leslie Rutledge. Issue: formula rate plan evaluation.

100. 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: load forecasting.

101. 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.

102. 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.

103. 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.

104. 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.

105. 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.

106. 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.

107. 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.

108. 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.

109. 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.

110. 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.

111. 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.

112. 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.

113. 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.

114. 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.

115. 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.

116. 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.

117. 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.

118. 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.

119. 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.

120. 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.

121. 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.

122. 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.

123. 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.

124. 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.

125. 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.

126. 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.

127. 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.

128. 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.

129. 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

130. 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.

131. 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.

132. 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.

133. 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.

134. 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.

135. 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.

136. 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.

137. 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.

138. 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.

139. 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.

140. 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.

141. 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.

142. 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.

143. 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.

144. 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.

145. 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.

146. 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.

147. 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.

148. 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.

149. 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.

150. 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)

151. 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.

152. 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.

153. 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.

154. 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.

155. 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.

156. 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.

157. 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.

158. 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.

159. 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.

160. 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.

161. 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.

162. 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.

163. 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.

164. 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.

165. 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.

166. Expert Report, Recommendation, and Proposed Rule: Docket Number R-29380-A, ex parte, (2009). Before the Louisiana Public Service Commission. In re: Environmental Adjustment Clause and Environmental Certification for Electric Power Generation Resources. 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 cost recovery treatment; other generation planning issues.

167. 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.

168. 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.

169. 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.

170. 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.

171. 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.

172. 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.

173. 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.

174. 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.

175. 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)

176. 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)

177. 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.

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

179. 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.

180. 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).

181. 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.

182. 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.

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

184. 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.

185. 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.

186. 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.

187. 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)

188. 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.

189. 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.

190. 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.

191. 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).

192. 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.

193. 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.

194. 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.

195. 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)

196. 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.

197. 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.

198. 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).

199. 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.

200. 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.

201. 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

202. 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.

203. 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.

204. 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.

205. 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.

206. 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.

207. 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.

208. 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)

209. 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.

210. 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.

211. 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.

212. 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.

213. 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.

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

215. 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.

216. 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).

217. 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.

218. 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.

219. 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.

220. 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.

221. 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.

222. 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.

223. 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.

224. 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.

225. 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.

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

227. 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.

228. 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.

229. 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, 2014-2018, *Wall Street Journal*, *Journal Reports*, Energy

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

Referee, 2014-Current, *Utilities Policy*

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

Referee, 1995-Current*, Energy Journal*

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

Referee, 2005, *Energy Policy*

Referee, 2004, *Southern Economic Journal*

Referee, 2002, *Resource & Energy Economics*

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

## PROPOSAL TECHNICAL REVIEWER

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

## PROFESSIONAL ASSOCIATIONS

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

## HONORS AND AWARDS

*Baton Rouge Business Report*, Selected as one of the "Capital Region 500" (2023).

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.

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

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

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

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

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

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

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

## THESIS/DISSERTATIONS COMMITTEES

Active:
1 Thesis Committee Memberships (Environmental Studies)
2 Ph.D. Dissertation Committee (Economics)
Completed:
8 Thesis Committee Memberships (Environmental Studies, Geography)
4 Doctoral Committee Memberships (Information Systems & Decision Sciences, Agricultural and Resource Economics, Economics, Education and Workforce Development).
2 Doctoral Examination Committee Membership (Information Systems & Decision Sciences, Education and Workforce Development)
1 Senior Honors Thesis (Journalism, Loyola University)

## LSU SERVICE AND COMMITTEE MEMBERSHIPS

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

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

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

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

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

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

Search Committee Member (2005), CES Communications Manager.

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

LSU Faculty Senate (2003-2006).

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

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

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

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

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

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

LSU InterCollege Environmental Cooperative. (1999-2001).

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

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

## PROFESSIONAL SERVICE

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

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

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

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. 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 Nominating Committee.

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

Secretary (2001) Houston Chapter, USAEE.

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

# Table of Exhibits

# Results of IN AES's Class Cost of Service Study



| Line No. | Account Description | Total AES-Indiana | Residential Service (RS) | Small Commercial and Industrial | | | | | | Large Commercial and Industrial | | | Lighting | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Secondary Small (SS) | Municipal Device (MD) | Space Conditioning (SH) | Space Conditioning Schools (SE) | Water Heating Controlled (CB) | Water Heating Uncontrolled (UW) | Industrial (SL) | Industrial (PL-HL) | Process Heating (PH) | Protective Lighting (APL) | Municipal Lighting (MU1) |
| 1 | **Rate Base** | | | | | | | | | | | | | |
| 2 | Plant in Service | $ 6,441,607,550 | $ 3,165,451,758 | $ 663,404,248 | $ 1,030,214 | $ 268,235,226 | $ 5,537,532 | $ 373,568 | $ 642,889 | $1,281,747,470 | $ 893,349,661 | $10,992,265 | $ 64,568,146 | $ 86,274,572 |
| 3 | Accumulated Reserve | (3,407,234,585) | (1,655,825,854) | (362,291,019) | (562,187) | (139,472,810) | (2,855,224) | (229,645) | (365,215) | (658,929,084) | (458,194,665) | (5,679,695) | (55,914,260) | (66,914,927) |
| 4 | Other Rate Base Items | 447,532,786 | 216,721,612 | 45,903,494 | 68,489 | 18,614,828 | 396,179 | 24,924 | 44,103 | 90,876,611 | 64,506,617 | 775,625 | 4,084,789 | 5,515,514 |
| 5 | **Total Rate Base** | **$ 3,481,905,751** | **$ 1,726,347,516** | **$ 347,016,723** | **$ 536,517** | **$ 147,377,244** | **$ 3,078,488** | **$ 168,847** | **$ 321,776** | **$ 713,694,997** | **$ 499,661,614** | **$ 6,088,195** | **$ 12,738,675** | **$ 24,875,160** |
| 6 | **Operating Income** | | | | | | | | | | | | | |
| 7 | **Operating Revenues at Current Rates** | | | | | | | | | | | | | |
| 8 | Retail Sales | $ 1,549,470,354 | $ 669,367,989 | $ 177,168,155 | $ 364,683 | $ 60,392,654 | $ 1,772,196 | $ 48,109 | $ 128,012 | $ 357,787,560 | $ 261,996,771 | $ 2,772,447 | $ 8,888,080 | $ 8,783,699 |
| 9 | Other Revenue | 25,440,327 | 16,281,991 | 2,003,162 | 5,498 | 684,376 | 16,441 | 934 | 4,314 | 3,600,063 | 2,544,834 | 29,536 | 118,723 | 150,456 |
| 10 | Off-System Sales Margin | 28,612,056 | 12,590,714 | 2,789,468 | 1,445 | 1,294,708 | 27,705 | 744 | 2,049 | 6,835,562 | 4,952,308 | 49,622 | 38,474 | 29,258 |
| 11 | **Total Operating Revenues** | $ 1,603,522,737 | $ 698,240,694 | $ 181,960,785 | $ 371,626 | $ 62,371,738 | $ 1,816,341 | $ 49,787 | $ 134,374 | $ 368,223,185 | $ 269,493,912 | $ 2,851,605 | $ 9,045,278 | $ 8,963,412 |
| 12 | **Operating Expenses at Current Rates** | | | | | | | | | | | | | |
| 13 | Operations & Maintenance Expenses | $ 518,818,335 | $ 266,117,779 | $ 52,750,493 | $ 93,401 | $ 19,547,857 | $ 406,371 | $ 34,741 | $ 53,598 | $ 97,226,873 | $ 65,529,861 | $ 811,553 | $ 7,787,335 | $ 8,458,473 |
| 14 | Depreciation Expense | 277,353,828 | 137,219,058 | 29,275,224 | 46,613 | 11,443,720 | 236,330 | 15,533 | 26,706 | 56,465,390 | 39,695,685 | 445,124 | 1,013,583 | 1,470,861 |
| 15 | Amortization Expense | 54,256,114 | 24,833,614 | 5,390,783 | 4,773 | 2,386,604 | 50,484 | 2,007 | 4,408 | 12,216,866 | 8,747,386 | 93,513 | 237,900 | 287,776 |
| 16 | Taxes Other than Income Taxes | 27,273,590 | 13,655,824 | 2,797,500 | 4,641 | 1,083,889 | 22,208 | 1,718 | 2,784 | 5,222,729 | 3,564,148 | 44,535 | 404,112 | 469,502 |
| 17 | Fuel Expenses | 512,591,028 | 202,546,097 | 49,177,815 | 35,374 | 19,523,504 | 608,115 | 15,388 | 42,967 | 128,504,645 | 108,037,241 | 1,029,044 | 1,725,711 | 1,345,128 |
| 18 | Non-FAC Trackable Fuel Expenses | 48,077,469 | 21,100,924 | 4,685,285 | 2,451 | 2,166,669 | 46,822 | 1,255 | 3,458 | 11,500,527 | 8,368,068 | 83,719 | 67,150 | 51,143 |
| 19 | Income Taxes | 14,111,753 | (1,751,340) | 5,209,009 | 30,316 | 464,166 | 65,740 | (4,436) | (1,320) | 7,030,440 | 4,139,403 | 34,646 | (443,691) | (661,180) |
| 20 | **Total Operating Expenses** | $ 1,452,482,118 | $ 663,721,956 | $ 149,286,108 | $ 217,568 | $ 56,616,409 | $ 1,436,071 | $ 66,206 | $ 132,601 | $ 318,167,470 | $ 238,081,792 | $ 2,542,135 | $ 10,792,099 | $ 11,421,703 |
| 21 | **Total Operating Income** | **$ 151,040,619** | **$ 34,518,738** | **$ 32,674,677** | **$ 154,058** | **$ 5,755,329** | **$ 380,270** | **$ (16,419)** | **$ 1,774** | **$ 50,055,715** | **$ 31,412,120** | **$ 309,470** | **$ (1,746,821)** | **$ (2,458,291)** |
| 22 | **Rate of Return on Rate Base ("ROR")** | **4.34%** | **2.00%** | **9.42%** | **28.71%** | **3.91%** | **12.35%** | **-9.72%** | **0.55%** | **7.01%** | **6.29%** | **5.08%** | **-13.71%** | **-9.88%** |
| 23 | **Relative Rate of Return ("RROR")** | | **0.46** | **2.17** | **6.62** | **0.90** | **2.85** | **-2.24** | **0.13** | **1.62** | **1.45** | **1.17** | **-3.16** | **-2.28** |

Source: Direct Testimony of Bickey Rimal, BR Attachment 3.

# Results of IN AES's Class Cost of Service Study



| Line No. | Account Description | Total AES-Indiana | Residential Service (RS) | Small Commercial and Industrial: Secondary Small (SS) | Small Commercial and Industrial: Municipal Device (MD) | Small Commercial and Industrial: Space Conditioning (SH) | Small Commercial and Industrial: Space Conditioning Schools (SE) | Small Commercial and Industrial: Water Heating Controlled (CB) | Small Commercial and Industrial: Water Heating Uncontrolled (UW) | Large Commercial and Industrial: Industrial (SL) | Large Commercial and Industrial: Industrial (PL-HL) | Large Commercial and Industrial: Process Heating (PH) | Lighting: Protective Lighting (APL) | Lighting: Municipal Lighting (MU1) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **Required Income Under Company's Proposed ROR** | | | | | | | | | | | | | |
| 2 | Rate Base | $ 3,481,905,751 | $ 1,726,347,516 | $ 347,016,723 | $ 536,517 | $ 147,377,244 | $ 3,078,488 | $ 168,847 | $ 321,776 | $ 713,694,997 | $ 499,661,614 | $ 6,088,195 | $ 12,738,675 | $ 24,875,160 |
| 3 | Proposed Rate of Return | 7.22% | 7.22% | 7.22% | 7.22% | 7.22% | 7.22% | 7.22% | 7.22% | 7.22% | 7.22% | 7.22% | 7.22% | 7.22% |
| 4 | **Required Operating Income @ 7.22% ROR** | **$ 251,393,643** | **$ 124,642,314** | **$ 25,054,612** | **$ 38,737** | **$ 10,640,639** | **$ 222,267** | **$ 12,191** | **$ 23,232** | **$ 51,528,789** | **$ 36,075,575** | **$ 439,568** | **$ 919,732** | **$ 1,795,987** |
| 5 | **Operating Expenses at Proposed Rates** | | | | | | | | | | | | | |
| 6 | Operations & Maintenance Expenses | $ 519,486,335 | $ 266,676,805 | $ 52,792,402 | $ 93,695 | $ 19,556,253 | $ 406,516 | $ 34,793 | $ 53,653 | $ 97,258,022 | $ 65,551,438 | $ 811,820 | $ 7,788,937 | $ 8,462,001 |
| 7 | Depreciation Expense | 277,353,828 | 137,219,058 | 29,275,224 | 46,613 | 11,443,720 | 236,330 | 15,533 | 26,706 | 56,465,390 | 39,695,685 | 445,124 | 1,013,583 | 1,470,861 |
| 8 | Amortization Expense | 54,256,114 | 24,833,614 | 5,390,783 | 4,773 | 2,386,604 | 50,484 | 2,007 | 4,408 | 12,216,866 | 8,747,386 | 93,513 | 237,900 | 287,776 |
| 9 | Taxes Other than Income | 27,273,590 | 13,655,824 | 2,797,500 | 4,641 | 1,083,889 | 22,208 | 1,718 | 2,784 | 5,222,729 | 3,564,148 | 44,535 | 404,112 | 469,502 |
| 10 | Fuel Expenses | 512,591,028 | 202,546,097 | 49,177,815 | 35,374 | 19,523,504 | 608,115 | 15,388 | 42,967 | 128,504,645 | 108,037,241 | 1,029,044 | 1,725,711 | 1,345,128 |
| 11 | Non-FAC Trackable Fuel Expenses | 48,077,469 | 21,100,924 | 4,685,285 | 2,451 | 2,166,669 | 46,822 | 1,255 | 3,458 | 11,500,527 | 8,368,068 | 83,719 | 67,150 | 51,143 |
| 12 | Income Taxes | 47,332,498 | 23,467,706 | 4,717,293 | 7,293 | 2,003,424 | 41,848 | 2,295 | 4,374 | 9,701,861 | 6,792,324 | 82,762 | 173,168 | 338,149 |
| 13 | **Total Operating Expenses at Proposed Rates** | $ 1,486,370,864 | $ 689,500,028 | $ 148,836,302 | $ 194,841 | $ 58,164,063 | $ 1,412,325 | $ 72,989 | $ 138,350 | $ 320,870,040 | $ 240,756,290 | $ 2,590,517 | $ 11,410,560 | $ 12,424,561 |
| 14 | **Total Revenue Requirement** | **$ 1,737,764,507** | **$ 814,142,342** | **$ 173,890,914** | **$ 233,577** | **$ 68,804,702** | **$ 1,634,591** | **$ 85,180** | **$ 161,582** | **$ 372,398,829** | **$ 276,831,865** | **$ 3,030,085** | **$ 12,330,292** | **$ 14,220,547** |
| 15 | **Operating Revenues at Current Rates** | | | | | | | | | | | | | |
| 16 | Retail Sales | $ 1,549,470,354 | $ 669,367,989 | $ 177,168,155 | $ 364,683 | $ 60,392,654 | $ 1,772,196 | $ 48,109 | $ 128,012 | $ 357,787,560 | $ 261,996,771 | $ 2,772,447 | $ 8,888,080 | $ 8,783,699 |
| 17 | Other Revenue (Including Reduced Other Revenue) | 21,391,965 | 14,517,577 | 1,549,500 | 4,491 | 531,330 | 11,982 | 812 | 3,991 | 2,660,377 | 1,870,953 | 22,265 | 93,329 | 125,359 |
| 18 | Off-System Sales Margin | 28,612,056 | 12,590,714 | 2,789,468 | 1,445 | 1,294,708 | 27,705 | 744 | 2,049 | 6,835,562 | 4,952,308 | 49,622 | 38,474 | 29,258 |
| 19 | **Total Operating Revenues** | $ 1,599,474,375 | $ 696,476,279 | $ 181,507,123 | $ 370,619 | $ 62,218,692 | $ 1,811,882 | $ 49,665 | $ 134,051 | $ 367,283,499 | $ 268,820,031 | $ 2,844,333 | $ 9,019,883 | $ 8,938,316 |
| 20 | **Revenue (Deficiency)/Surplus** | $ (138,290,132) | $ (117,666,063) | $ 7,616,209 | $ 137,042 | $ (6,586,010) | $ 177,291 | $ (35,515) | $ (27,531) | $ (5,115,330) | $ (8,011,834) | $ (185,751) | $ (3,310,409) | $ (5,282,231) |
| 21 | **Required Rate Increase (Decrease)** | **8.92%** | **17.58%** | **-4.30%** | **-37.58%** | **10.91%** | **-10.00%** | **73.82%** | **21.51%** | **1.43%** | **3.06%** | **6.70%** | **37.25%** | **60.14%** |
| 22 | **Relative Rate Increase** | | **1.97** | **-0.48** | **-4.21** | **1.22** | **-1.12** | **8.27** | **2.41** | **0.16** | **0.34** | **0.75** | **4.17** | **6.74** |

Source: Direct Testimony of Bickey Rimal, BR Attachment 3.

# IN AES's Historic System Load Factors, 2018-2022

Witness: Dismukes
Cause No. 45911
Exhibit DED-2

| | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|
| Total MWh Sold | 13,216,391 | 13,850,563 | 13,364,633 | 12,693,227 | 12,970,876 | 13,238,072 |
| Total Hours in Year | 8,760 | 8,760 | 8,760 | 8,784 | 8,760 | 8,760 |
| **Avg. Demand Factor** | **1,509** | **1,581** | **1,526** | **1,445** | **1,481** | **1,511** |
| 12 CP Peak Demand | 2,276 | 2,412 | 2,408 | 2,173 | 2,234 | 2,275 |
| **System Load Factor** | **66.3%** | **65.5%** | **63.4%** | **66.5%** | **66.3%** | **66.4%** |

Note: 2020 was a Leap Year.
Source: FERC Form 1

# Analysis of IN AES's Electric Generation Unit Capacity Factors, 2022

Witness: Dismukes
Cause No. 45911
Exhibit DED-3

| Station Name | Plant Type | Nameplate Capacity (MW) | 2022 Net Generation (MWh) | Capacity Factor | Allocation | | Plant in Service | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Energy | Demand | Energy | Demand | Total |
| Petersburg | Steam | 1,701 | 8,007,063 | 53.74% | 53.74% | 46.26% | $1,444,442,796 | $1,243,595,932 | $2,688,038,728 |
| Eagle Valley CCGT | Combined Cycle | 725 | 4,296,493 | 67.65% | 67.65% | 32.35% | 470,796,619 | 225,126,620 | 695,923,239 |
| Harding Street | Steam | 707 | 1,115,929 | 18.01% | 18.01% | 81.99% | 98,218,210 | 447,255,375 | 545,473,585 |
| Harding Street Gas Turbine | Gas Turbine | 393 | 255,817 | 7.43% | 0.00% | 100.00% | - | 172,651,262 | 172,651,262 |
| Georgetown | Gas Turbine | 171 | 184,553 | 12.34% | 0.00% | 100.00% | - | 61,805,548 | 61,805,548 |
| **Subtotals:** | | | | | | | **$2,013,457,625** | **$2,150,434,737** | **$4,163,892,362** |
| | | | | | **Production Plant Classification:** | | **48.36%** | **51.64%** | **100.00%** |

Source: FERC Form 1

# Analysis of IN AES's Electric Generation Unit Costs to MISO Planning Reserve Auction

Witness: Dismukes
Cause No. 45911
Exhibit DED-4

| Station Name | Plant Type | Estimated Service Life | Nameplate Capacity (MW) | Total Plant in Service | Fixed Cost ($/year) | Variable Costs ($) | Levelized Cost ($/kW-year) | MISO CONE Zone 6 ($/MW-day) | MISO CONE Zone 6 ($/kW-year) | Allocation Energy | Allocation Demand | Plant in Service Energy | Plant in Service Demand | Plant in Service Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Petersburg | Steam | 57.4 | 1701 | $2,688,038,728 | $46,829,543 | $359,312,767 | $ 239 | $ 270.11 | $ 98.59 | 58.71% | 41.29% | $1,578,109,910 | $1,109,928,818 | $2,688,038,728 |
| Eagle Valley CCGT | Combined Cycle | 58.3 | 725 | 695,923,239 | 11,940,079 | 211,105,381 | 308 | 270.11 | 98.59 | 67.95% | 32.05% | 472,905,461 | 223,017,778 | 695,923,239 |
| Harding Street | Steam | 51.9 | 707 | 545,473,585 | 10,504,917 | 122,519,861 | 188 | 270.11 | 98.59 | 47.57% | 52.43% | 259,458,542 | 286,015,043 | 545,473,585 |
| Harding Street Gas Turbine | Gas Turbine | 30.0 | 393 | 172,651,262 | 5,755,042 | 22,765,814 | 73 | 270.11 | 98.59 | 0.00% | 100.00% | - | 172,651,262 | 172,651,262 |
| Georgetown | Gas Turbine | 30.0 | 171 | 61,805,548 | 2,060,185 | 17,862,433 | 117 | 270.11 | 98.59 | 15.54% | 84.46% | 9,602,337 | 52,203,211 | 61,805,548 |
| **Subtotals:** | | | | | | | | | | | | **$2,320,076,250** | **$1,843,816,112** | **$4,163,892,362** |
| | | | | | | | | | **Production Plant Classification:** | | | **55.72%** | **44.28%** | **100.00%** |

Source: FERC Form 1 and MISO 2023/2024 PRA Results.

# Summary of Results of Minimum System Study



| Account | Demand Allocation | Customer Allocation |
|---|---|---|
| **FERC Account 364 - Poles, Towers, and Fixtures** | | |
| Primary Voltage | 34.11% | 65.89% |
| Secondary Voltage | 9.75% | 90.25% |
| **FERC Account 365 - Overhead Conductors** | | |
| Primary Voltage | 72.74% | 27.26% |
| Secondary Voltage | 66.92% | 33.08% |
| **FERC Account 366 - Underground Conduit** | | |
| Primary Voltage | 67.13% | 32.87% |
| Secondary Voltage | 55.11% | 44.89% |
| **FERC Account 367 - Underground Conductors** | | |
| Primary Voltage | 67.13% | 32.87% |
| Secondary Voltage | 55.11% | 44.89% |

Source: Direct Testimony of Bickey Rimal, Workpaper BR-2.3.

# Results of Alternative Class Cost of Service Study



| Line No. | Account Description | Total AES-Indiana | Residential Service (RS) | Small Commercial and Industrial | | | | | | Large Commercial and Industrial | | | Lighting | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Secondary Small (SS) | Municipal Device (MD) | Space Conditioning (SH) | Space Conditioning Schools (SE) | Water Heating Controlled (CB) | Water Heating Uncontrolled (UW) | Industrial (SL) | Industrial (PL-HL) | Process Heating (PH) | Protective Lighting (APL) | Municipal Lighting (MU1) |
| 1 | **Rate Base** | | | | | | | | | | | | | |
| 2 | Plant in Service | $ 6,441,607,550 | $ 2,844,962,345 | $ 656,226,040 | $ 582,225 | $ 272,150,553 | $ 6,746,360 | $ 319,298 | $ 658,852 | $1,423,260,936 | $1,059,793,483 | $13,312,863 | $ 72,515,376 | $ 91,079,217 |
| 3 | Accumulated Reserve | (3,407,234,585) | (1,579,217,318) | (359,828,390) | (566,229) | (129,866,597) | (3,210,807) | (232,560) | (382,682) | (681,773,874) | (517,603,458) | (6,163,513) | (59,056,231) | (69,332,928) |
| 4 | Other Rate Base Items | 447,532,786 | 195,894,288 | 45,435,791 | 39,529 | 18,854,835 | 474,818 | 21,419 | 45,158 | 100,057,023 | 75,351,279 | 926,318 | 4,602,886 | 5,829,442 |
| 5 | **Total Rate Base** | **$ 3,481,905,751** | **$ 1,461,639,315** | **$ 341,833,442** | **$ 55,525** | **$ 161,138,791** | **$ 4,010,372** | **$ 108,158** | **$ 321,329** | **$ 841,544,086** | **$ 617,541,304** | **$ 8,075,668** | **$ 18,062,032** | **$ 27,575,732** |
| 6 | **Operating Income** | | | | | | | | | | | | | |
| 7 | **Operating Revenues at Current Rates** | | | | | | | | | | | | | |
| 8 | Retail Sales | $ 1,549,470,354 | $ 669,367,989 | $ 177,168,155 | $ 364,683 | $ 60,392,654 | $ 1,772,196 | $ 48,109 | $ 128,012 | $ 357,787,560 | $ 261,996,771 | $ 2,772,447 | $ 8,888,080 | $ 8,783,699 |
| 9 | Other Revenue | 25,440,327 | 15,818,722 | 1,992,855 | 4,840 | 691,011 | 18,182 | 854 | 4,335 | 3,805,639 | 2,783,612 | 32,897 | 130,096 | 157,283 |
| 10 | Off-System Sales Margin | 28,612,056 | 11,585,017 | 2,754,687 | 1,859 | 1,134,304 | 32,588 | 834 | 2,322 | 7,099,626 | 5,796,196 | 55,741 | 83,756 | 65,125 |
| 11 | **Total Operating Revenues** | $ 1,603,522,737 | $ 696,771,727 | $ 181,915,697 | $ 371,383 | $ 62,217,969 | $ 1,822,966 | $ 49,797 | $ 134,670 | $ 368,692,825 | $ 270,576,579 | $ 2,861,085 | $ 9,101,932 | $ 9,006,108 |
| 12 | **Operating Expenses at Current Rates** | | | | | | | | | | | | | |
| 13 | Operations & Maintenance Expenses | $ 518,818,335 | $ 240,084,771 | $ 52,226,787 | $ 49,108 | $ 20,615,277 | $ 500,116 | $ 29,207 | $ 53,942 | $ 109,532,609 | $ 77,614,397 | $ 1,005,616 | $ 8,346,565 | $ 8,759,940 |
| 14 | Depreciation Expense | 277,353,828 | 129,650,900 | 29,027,624 | 47,667 | 10,432,587 | 271,854 | 15,914 | 28,512 | 58,657,902 | 45,679,792 | 492,510 | 1,331,328 | 1,717,237 |
| 15 | Amortization Expense | 54,256,114 | 22,656,557 | 5,326,727 | 4,002 | 2,197,619 | 60,057 | 1,963 | 4,796 | 12,953,462 | 10,279,457 | 107,825 | 317,281 | 346,369 |
| 16 | Taxes Other than Income Taxes | 27,273,590 | 12,303,022 | 2,767,969 | 2,654 | 1,109,501 | 27,259 | 1,475 | 2,840 | 5,830,123 | 4,249,002 | 54,402 | 436,626 | 488,717 |
| 17 | Fuel Expenses | 512,591,028 | 202,546,097 | 49,177,815 | 35,374 | 19,523,504 | 608,115 | 15,388 | 42,967 | 128,504,645 | 108,037,241 | 1,029,044 | 1,725,711 | 1,345,128 |
| 18 | Non-FAC Trackable Fuel Expenses | 48,077,469 | 19,454,493 | 4,628,344 | 3,129 | 1,904,071 | 54,817 | 1,402 | 3,906 | 11,932,827 | 9,749,602 | 93,736 | 141,280 | 109,862 |
| 19 | Income Taxes | 14,111,753 | 6,008,442 | 5,386,878 | 40,388 | 442,949 | 35,954 | (3,234) | (1,805) | 3,675,252 | (20,151) | (21,141) | (645,145) | (786,634) |
| 20 | **Total Operating Expenses** | $ 1,452,482,118 | $ 632,704,281 | $ 148,542,143 | $ 182,324 | $ 56,225,508 | $ 1,558,173 | $ 62,116 | $ 135,157 | $ 331,086,819 | $ 255,589,340 | $ 2,761,991 | $ 11,653,645 | $ 11,980,621 |
| 21 | **Total Operating Income** | **$ 151,040,619** | **$ 64,067,446** | **$ 33,373,554** | **$ 189,059** | **$ 5,992,462** | **$ 264,792** | **$ (12,319)** | **$ (488)** | **$ 37,606,006** | **$ 14,987,239** | **$ 99,093** | **$ (2,551,713)** | **$ (2,974,513)** |
| 22 | **Rate of Return on Rate Base ("ROR")** | **4.34%** | **4.38%** | **9.76%** | **340.49%** | **3.72%** | **6.60%** | **-11.39%** | **-0.15%** | **4.47%** | **2.43%** | **1.23%** | **-14.13%** | **-10.79%** |
| 23 | **Relative Rate of Return ("RROR")** | | **1.01** | **2.25** | **78.49** | **0.86** | **1.52** | **-2.63** | **-0.03** | **1.03** | **0.56** | **0.28** | **-3.26** | **-2.49** |

# Results of Alternative Class Cost of Service Study



| Line No. | Account Description | Total AES-Indiana | Residential Service (RS) | Small Commercial and Industrial | | | | | | Large Commercial and Industrial | | | Lighting | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Secondary Small (SS) | Municipal Device (MD) | Space Conditioning (SH) | Space Conditioning Schools (SE) | Water Heating Controlled (CB) | Water Heating Uncontrolled (UW) | Industrial (SL) | Industrial (PL-HL) | Process Heating (PH) | Protective Lighting (APL) | Municipal Lighting (MU1) |
| 1 | **Required Income Under Company's Proposed ROR** | | | | | | | | | | | | | |
| 2 | Rate Base | $ 3,481,905,751 | $ 1,461,639,315 | $ 341,833,442 | $ 55,525 | $ 161,138,791 | $ 4,010,372 | $ 108,158 | $ 321,329 | $ 841,544,086 | $ 617,541,304 | $ 8,075,668 | $ 18,062,032 | $ 27,575,732 |
| 3 | Proposed Rate of Return | 7.22% | 7.22% | 7.22% | 7.22% | 7.22% | 7.22% | 7.22% | 7.22% | 7.22% | 7.22% | 7.22% | 7.22% | 7.22% |
| 4 | **Required Operating Income @ 7.22% ROR** | **$ 251,393,643** | **$ 105,530,379** | **$ 24,680,379** | **$ 4,009** | **$ 11,634,223** | **$ 289,549** | **$ 7,809** | **$ 23,200** | **$ 60,759,495** | **$ 44,586,491** | **$ 583,063** | **$ 1,304,079** | **$ 1,990,968** |
| 5 | **Operating Expenses at Proposed Rates** | | | | | | | | | | | | | |
| 6 | Operations & Maintenance Expenses | $ 519,486,335 | $ 240,636,036 | $ 52,268,523 | $ 49,392 | $ 20,623,770 | $ 500,291 | $ 29,257 | $ 53,997 | $ 109,567,187 | $ 77,639,999 | $ 1,005,938 | $ 8,348,359 | $ 8,763,585 |
| 7 | Depreciation Expense | 277,353,828 | 129,650,900 | 29,027,624 | 47,667 | 10,432,587 | 271,854 | 15,914 | 28,512 | 58,657,902 | 45,679,792 | 492,510 | 1,331,328 | 1,717,237 |
| 8 | Amortization Expense | 54,256,114 | 22,656,557 | 5,326,727 | 4,002 | 2,197,619 | 60,057 | 1,963 | 4,796 | 12,953,462 | 10,279,457 | 107,825 | 317,281 | 346,369 |
| 9 | Taxes Other than Income | 27,273,590 | 12,303,022 | 2,767,969 | 2,654 | 1,109,501 | 27,259 | 1,475 | 2,840 | 5,830,123 | 4,249,002 | 54,402 | 436,626 | 488,717 |
| 10 | Fuel Expenses | 512,591,028 | 202,546,097 | 49,177,815 | 35,374 | 19,523,504 | 608,115 | 15,388 | 42,967 | 128,504,645 | 108,037,241 | 1,029,044 | 1,725,711 | 1,345,128 |
| 11 | Non-FAC Trackable Fuel Expenses | 48,077,469 | 19,454,493 | 4,628,344 | 3,129 | 1,904,071 | 54,817 | 1,402 | 3,906 | 11,932,827 | 9,749,602 | 93,736 | 141,280 | 109,862 |
| 12 | Income Taxes | 47,332,498 | 19,869,303 | 4,646,832 | 755 | 2,190,496 | 54,516 | 1,470 | 4,368 | 11,439,823 | 8,394,763 | 109,779 | 245,533 | 374,860 |
| 13 | **Total Operating Expenses at Proposed Rates** | $ 1,486,370,864 | $ 647,116,407 | $ 147,843,833 | $ 142,975 | $ 57,981,548 | $ 1,576,910 | $ 66,871 | $ 141,386 | $ 338,885,967 | $ 264,029,857 | $ 2,893,235 | $ 12,546,116 | $ 13,145,759 |
| 14 | **Total Revenue Requirement** | **$ 1,737,764,507** | **$ 752,646,786** | **$ 172,524,212** | **$ 146,984** | **$ 69,615,771** | **$ 1,866,459** | **$ 74,680** | **$ 164,586** | **$ 399,645,462** | **$ 308,616,347** | **$ 3,476,298** | **$ 13,850,195** | **$ 15,136,727** |
| 15 | **Operating Revenues at Current Rates** | | | | | | | | | | | | | |
| 16 | Retail Sales | $ 1,549,470,354 | $ 669,367,989 | $ 177,168,155 | $ 364,683 | $ 60,392,654 | $ 1,772,196 | $ 48,109 | $ 128,012 | $ 357,787,560 | $ 261,996,771 | $ 2,772,447 | $ 8,888,080 | $ 8,783,699 |
| 17 | Other Revenue (Including Reduced Other Revenue) | 21,391,965 | 14,054,307 | 1,539,193 | 3,833 | 537,966 | 13,723 | 732 | 4,012 | 2,865,953 | 2,109,731 | 25,626 | 104,701 | 132,187 |
| 18 | Off-System Sales Margin | 28,612,056 | 11,585,017 | 2,754,687 | 1,859 | 1,134,304 | 32,588 | 834 | 2,322 | 7,099,626 | 5,796,196 | 55,741 | 83,756 | 65,125 |
| 19 | **Total Operating Revenues** | $ 1,599,474,375 | $ 695,007,312 | $ 181,462,035 | $ 370,376 | $ 62,064,924 | $ 1,818,507 | $ 49,675 | $ 134,347 | $ 367,753,139 | $ 269,902,699 | $ 2,853,813 | $ 9,076,537 | $ 8,981,011 |
| 20 | **Revenue (Deficiency)/Surplus** | $ (138,290,132) | $ (57,639,473) | $ 8,937,823 | $ 223,392 | $ (7,550,847) | $ (47,952) | $ (25,005) | $ (30,239) | $ (31,892,323) | $ (38,713,649) | $ (622,485) | $ (4,773,658) | $ (6,155,716) |
| 21 | **Required Rate Increase (Decrease)** | **8.92%** | **8.61%** | **-5.04%** | **-61.26%** | **12.50%** | **2.71%** | **51.98%** | **23.62%** | **8.91%** | **14.78%** | **22.45%** | **53.71%** | **70.08%** |
| 22 | **Relative Rate Increase** | | **0.96** | **-0.57** | **-6.86** | **1.40** | **0.30** | **5.82** | **2.65** | **1.00** | **1.66** | **2.52** | **6.02** | **7.85** |

# Company's Proposed Revenue Distribution

Witness: Dismukes
Cause No. 45911
Exhibit DED-7

| Line No. | Account Description | Total AES-Indiana | Residential Service (RS) | Small Commercial and Industrial | | | | | | Large Commercial and Industrial | | | Lighting | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Secondary Small (SS) | Municipal Device (MD) | Space Conditioning (SH) | Space Conditioning Schools (SE) | Water Heating Controlled (CB) | Water Heating Uncontrolled (UW) | Industrial (SL) | Industrial (PL-HL) | Process Heating (PH) | Protective Lighting (APL) | Municipal Lighting (MU1) |
| 1 | **Allocated Cost of Service Study Results** | | | | | | | | | | | | | |
| 2 | Current Rates | $1,549,470,354 | $ 669,367,989 | $177,168,155 | $ 364,683 | $ 60,392,654 | $ 1,772,196 | $ 48,109 | $ 128,012 | $357,787,560 | $261,996,771 | $2,772,447 | $ 8,888,080 | $ 8,783,699 |
| 3 | Operating Income | $ 151,040,619 | $ 34,518,738 | $ 32,674,677 | $ 154,058 | $ 5,755,329 | $ 380,270 | $ (16,419) | $ 1,774 | $ 50,055,715 | $ 31,412,120 | $ 309,470 | $ (1,746,821) | $ (2,458,291) |
| 4 | Rate Base | $3,481,905,751 | $1,726,347,516 | $347,016,723 | $ 536,517 | $147,377,244 | $ 3,078,488 | $ 168,847 | $ 321,776 | $713,694,997 | $499,661,614 | $6,088,195 | $12,738,675 | $24,875,160 |
| 5 | Rate of Return | 4.34% | 2.00% | 9.42% | 28.71% | 3.91% | 12.35% | -9.72% | 0.55% | 7.01% | 6.29% | 5.08% | -13.71% | -9.88% |
| 6 | Relative Rate of Return | | 0.46 | 2.17 | 6.62 | 0.90 | 2.85 | -2.24 | 0.13 | 1.62 | 1.45 | 1.17 | -3.16 | -2.28 |
| 7 | **Proposed Revenue Increase** | | | | | | | | | | | | | |
| 8 | Proposed Rate of Return | 7.22% | | | | | | | | | | | | |
| 9 | Current Operating Revenues | $1,599,474,375 | | | | | | | | | | | | |
| 10 | Proposed Operating Revenue Increase | 138,290,132 | | | | | | | | | | | | |
| 11 | Proposed Revenue Requirement | $1,737,764,507 | | | | | | | | | | | | |
| 12 | **Proposed Revenue Allocation at Full Cost of Service** | | | | | | | | | | | | | |
| 13 | Current Rates | $1,549,470,354 | $ 669,367,989 | $177,168,155 | $ 364,683 | $ 60,392,654 | $ 1,772,196 | $ 48,109 | $ 128,012 | $357,787,560 | $261,996,771 | $2,772,447 | $ 8,888,080 | $ 8,783,699 |
| 14 | Incremental Revenues at Full Cost of Service | 138,290,132 | 117,666,063 | (7,616,209) | (137,042) | 6,586,010 | (177,291) | 35,515 | 27,531 | 5,115,330 | 8,011,834 | 185,751 | 3,310,409 | 5,282,231 |
| 15 | Percent Increase at Proposed ROR | 8.92% | 17.58% | -4.30% | -37.58% | 10.91% | -10.00% | 73.82% | 21.51% | 1.43% | 3.06% | 6.70% | 37.25% | 60.14% |
| 16 | **Step One Decrease** | | | | | | | | | | | | | |
| 17 | **Rate Decrease to Rate Schedule MD and No Increase for Rate Schedule SE** | **$ (80,132)** | **$ -** | **$ -** | **$ (80,132)** | **$ -** | **$ -** | **$ -** | **$ -** | **$ -** | **$ -** | **$ -** | **$ -** | **$ -** |
| 18 | Remaining Revenue Deficiency | $ 138,370,263 | | | | | | | | | | | | |
| 19 | **Step Two Increase** | | | | | | | | | | | | | |
| 20 | Maximum Increase at 1.50 times System Average Increase | 13.39% | 13.39% | 0.00% | 0.00% | 0.00% | 0.00% | 13.39% | 13.39% | 0.00% | 0.00% | 0.00% | 13.39% | 13.39% |
| 21 | **Step Two Revenue Increase** | **$ 92,000,962** | **$ 89,611,576** | **$ -** | **$ -** | **$ -** | **$ -** | **$ 6,441** | **$ 17,138** | **$ -** | **$ -** | **$ -** | **$ 1,189,891** | **$ 1,175,917** |
| 22 | Shortfall from Full Cost of Service | $ 34,320,787 | $ 28,054,487 | $ - | $ - | $ - | $ - | $ 29,075 | $ 10,393 | $ - | $ - | $ - | $ 2,120,518 | $ 4,106,315 |
| 23 | Uncapped Incremental Revenues at Full Cost of Service | $ 12,282,716 | - | (7,616,209) | - | 6,586,010 | - | - | - | 5,115,330 | 8,011,834 | 185,751 | - | - |
| 24 | Uncapped Classes Maximum Increase at 1.50 times System Average | 115,148,161 | - | 23,718,370 | - | 8,085,061 | - | - | - | 47,898,776 | 35,074,793 | 371,161 | - | - |
| 25 | Basis to Reallocate Step Two Shortfall | $ 102,865,445 | $ - | $ 31,334,579 | $ - | $ 1,499,051 | $ - | $ - | $ - | $ 42,783,446 | $ 27,062,959 | $ 185,410 | $ - | $ - |
| 26 | Allocation of Step Two Shortfall from Full Cost of Service | 34,320,787 | - | 10,454,700 | - | 500,155 | - | - | - | 14,274,585 | 9,029,485 | 61,862 | - | - |
| 27 | **Step Two Revenue Increase** | **$ 138,604,465** | **89,611,576** | **2,838,491** | **-** | **7,086,164** | **-** | **6,441** | **17,138** | **19,389,915** | **17,041,319** | **247,613** | **1,189,891** | **1,175,917** |
| 28 | Remaining Revenue Deficiency | $ (234,201) | | | | | | | | | | | | |
| 29 | **Step Three Increase** | | | | | | | | | | | | | |
| 30 | Uncapped Incremental Revenues From Step Two | $ 46,603,502 | $ - | $ 2,838,491 | $ - | $ 7,086,164 | $ - | $ - | $ - | $ 19,389,915 | $ 17,041,319 | $ 247,613 | $ - | $ - |
| 31 | Uncapped Classes Maximum Increase at 1.50 times System Average | 115,148,161 | - | 23,718,370 | - | 8,085,061 | - | - | - | 47,898,776 | 35,074,793 | 371,161 | - | - |
| 32 | Basis to Allocate Step Three Increase | $ 68,544,659 | $ - | $ 20,879,879 | $ - | $ 998,897 | $ - | $ - | $ - | $ 28,508,861 | $ 18,033,474 | $ 123,548 | $ - | $ - |
| 33 | **Step Three Revenue Increase** | **$ (234,201)** | **$ -** | **$ (71,342)** | **$ -** | **$ (3,413)** | **$ -** | **$ -** | **$ -** | **$ (97,408)** | **$ (61,616)** | **$ (422)** | **$ -** | **$ -** |
| 34 | **Total Proposed Revenue Increase** | **$ 138,290,132** | **$ 89,611,576** | **$ 2,767,150** | **$ (80,132)** | **$ 7,082,751** | **$ -** | **$ 6,441** | **$ 17,138** | **$ 19,292,506** | **$ 16,979,703** | **$ 247,191** | **$ 1,189,891** | **$ 1,175,917** |
| 35 | **Summary** | | | | | | | | | | | | | |
| 36 | Current Rates | $1,549,470,354 | $ 669,367,989 | $177,168,155 | $ 364,683 | $ 60,392,654 | $ 1,772,196 | $ 48,109 | $ 128,012 | $357,787,560 | $261,996,771 | $2,772,447 | $ 8,888,080 | $ 8,783,699 |
| 37 | Revenue Change ($) | 138,290,132 | 89,611,576 | 2,767,150 | (80,132) | 7,082,751 | - | 6,441 | 17,138 | 19,292,506 | 16,979,703 | 247,191 | 1,189,891 | 1,175,917 |
| 38 | **Proposed Revenue** | **$1,687,760,486** | **$ 758,979,565** | **$179,935,305** | **$ 284,552** | **$ 67,475,406** | **$ 1,772,196** | **$ 54,550** | **$ 145,150** | **$377,080,066** | **$278,976,474** | **$3,019,637** | **$10,077,971** | **$ 9,959,616** |
| 39 | **Proposed Revenue Change (%)** | **8.92%** | **13.39%** | **1.56%** | **-21.97%** | **11.73%** | **0.00%** | **13.39%** | **13.39%** | **5.39%** | **6.48%** | **8.92%** | **13.39%** | **13.39%** |
| 40 | **Relative Proposed Rate Increase** | | **1.50** | **0.18** | **(2.46)** | **1.31** | **0.00** | **1.50** | **1.50** | **0.60** | **0.73** | **1.00** | **1.50** | **1.50** |

Source: Direct Testimony of Bickey Rimal, BR Attachments 3 and 4.

# Alternative Proposed Revenue Distribution

Witness: Dismukes
Cause No. 45911
Exhibit DED-8

| Line No. | Account Description | Total AES-Indiana | Residential Service (RS) | Small Commercial and Industrial | | | | | | Large Commercial and Industrial | | | Lighting | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Secondary Small (SS) | Municipal Device (MD) | Space Conditioning (SH) | Space Conditioning Schools (SE) | Water Heating Controlled (CB) | Water Heating Uncontrolled (UW) | Industrial (SL) | Industrial (PL-HL) | Process Heating (PH) | Protective Lighting (APL) | Municipal Lighting (MU1) |
| 1 | **Allocated Cost of Service Study Results** | | | | | | | | | | | | | |
| 2 | Current Rates | $1,549,470,354 | $ 669,367,989 | $177,168,155 | $ 364,683 | $ 60,392,654 | $ 1,772,196 | $ 48,109 | $ 128,012 | $357,787,560 | $261,996,771 | $2,772,447 | $ 8,888,080 | $ 8,783,699 |
| 3 | Operating Income | $ 151,040,619 | $ 64,067,446 | $ 33,373,554 | $ 189,059 | $ 5,992,462 | $ 264,792 | $ (12,319) | $ (488) | $ 37,606,006 | $ 14,987,239 | $ 99,093 | $ (2,551,713) | $ (2,974,513) |
| 4 | Rate Base | $3,481,905,751 | $1,461,639,315 | $341,833,442 | $ 55,525 | $161,138,791 | $ 4,010,372 | $ 108,158 | $ 321,329 | $841,544,086 | $617,541,304 | $8,075,668 | $18,062,032 | $27,575,732 |
| 5 | Rate of Return | 4.34% | 4.38% | 9.76% | 340.49% | 3.72% | 6.60% | -11.39% | -0.15% | 4.47% | 2.43% | 1.23% | -14.13% | -10.79% |
| 6 | Relative Rate of Return | | 1.01 | 2.25 | 78.49 | 0.86 | 1.52 | -2.63 | -0.03 | 1.03 | 0.56 | 0.28 | -3.26 | -2.49 |
| 7 | **Proposed Revenue Increase** | | | | | | | | | | | | | |
| 8 | Proposed Rate of Return | 7.22% | | | | | | | | | | | | |
| 9 | Current Operating Revenues | $1,599,474,375 | | | | | | | | | | | | |
| 10 | Proposed Operating Revenue Increase | 138,290,132 | | | | | | | | | | | | |
| 11 | Proposed Revenue Requirement | $1,737,764,507 | | | | | | | | | | | | |
| 12 | **Proposed Revenue Allocation at Full Cost of Service** | | | | | | | | | | | | | |
| 13 | Current Rates | $1,549,470,354 | $ 669,367,989 | $177,168,155 | $ 364,683 | $ 60,392,654 | $ 1,772,196 | $ 48,109 | $ 128,012 | $357,787,560 | $261,996,771 | $2,772,447 | $ 8,888,080 | $ 8,783,699 |
| 14 | Incremental Revenues at Full Cost of Service | 138,290,132 | 57,639,473 | (8,937,823) | (223,392) | 7,550,847 | 47,952 | 25,005 | 30,239 | 31,892,323 | 38,713,649 | 622,485 | 4,773,658 | 6,155,716 |
| 15 | Percent Increase at Proposed ROR | 8.92% | 8.61% | -5.04% | -61.26% | 12.50% | 2.71% | 51.98% | 23.62% | 8.91% | 14.78% | 22.45% | 53.71% | 70.08% |
| 16 | **Step One Decrease** | | | | | | | | | | | | | |
| 17 | **Rate Decrease to Rate Schedule MD and No Increase for Rate Schedule SE** | **$ (188,069)** | **$ -** | **$ -** | **$ (188,069)** | **$ -** | **$ -** | **$ -** | **$ -** | **$ -** | **$ -** | **$ -** | **$ -** | **$ -** |
| 18 | Remaining Revenue Deficiency | $ 138,478,201 | | | | | | | | | | | | |
| 19 | **Step Two Increase** | | | | | | | | | | | | | |
| 20 | Maximum Increase at 1.15 times System Average Increase | 10.26% | 0.00% | 0.00% | 0.00% | 10.26% | 0.00% | 10.26% | 10.26% | 0.00% | 10.26% | 10.26% | 10.26% | 10.26% |
| 21 | **Step Two Revenue Increase** | **$ 35,205,641** | **$ -** | **$ -** | **$ -** | **$ 6,198,547** | **$ -** | **$ 4,938** | **$ 13,139** | **$ -** | **$ 26,890,675** | **$ 284,557** | **$ 912,250** | **$ 901,536** |
| 22 | Shortfall from Full Cost of Service | $ 22,665,958 | $ - | $ - | $ - | $ 1,352,301 | $ - | $ 20,067 | $ 17,100 | $ - | $ 11,822,974 | $ 337,928 | $ 3,861,408 | $ 5,254,179 |
| 23 | Checked by: NA 10/09/2023 | $ 80,593,974 | 57,639,473 | (8,937,823) | - | - | - | - | - | 31,892,323 | - | - | - | - |
| 24 | Uncapped Classes Maximum Increase at 1.50 times System Average | 123,608,687 | 68,702,209 | 18,184,084 | - | - | - | - | - | 36,722,395 | - | - | - | - |
| 25 | Basis to Reallocate Step Two Shortfall | $ 43,014,713 | $ 11,062,735 | $ 27,121,907 | $ - | $ - | $ - | $ - | $ - | $ 4,830,071 | $ - | $ - | $ - | $ - |
| 26 | Allocation of Step Two Shortfall from Full Cost of Service | 22,665,958 | 5,829,342 | 14,291,482 | - | - | - | - | - | 2,545,134 | - | - | - | - |
| 27 | **Step Two Revenue Increase** | **$ 138,465,572** | **63,468,816** | **5,353,659** | **-** | **6,198,547** | **-** | **4,938** | **13,139** | **34,437,457** | **26,890,675** | **284,557** | **912,250** | **901,536** |
| 28 | Remaining Revenue Deficiency | $ 12,629 | | | | | | | | | | | | |
| 29 | **Step Three Increase** | | | | | | | | | | | | | |
| 30 | Uncapped Incremental Revenues From Step Two | $ 103,259,932 | $ 63,468,816 | $ 5,353,659 | $ - | $ - | $ - | $ - | $ - | $ 34,437,457 | $ - | $ - | $ - | $ - |
| 31 | Uncapped Classes Maximum Increase at 1.50 times System Average | 123,608,687 | 68,702,209 | 18,184,084 | - | - | - | - | - | 36,722,395 | - | - | - | - |
| 32 | Basis to Allocate Step Three Increase | $ 20,348,756 | $ 5,233,393 | $ 12,830,425 | $ - | $ - | $ - | $ - | $ - | $ 2,284,938 | $ - | $ - | $ - | $ - |
| 33 | **Step Three Revenue Increase** | **$ 12,629** | **$ 3,248** | **$ 7,963** | **$ -** | **$ -** | **$ -** | **$ -** | **$ -** | **$ 1,418** | **$ -** | **$ -** | **$ -** | **$ -** |
| 34 | **Total Proposed Revenue Increase** | **$ 138,290,132** | **$ 63,472,064** | **$ 5,361,622** | **$ (188,069)** | **$ 6,198,547** | **$ -** | **$ 4,938** | **$ 13,139** | **$ 34,438,875** | **$ 26,890,675** | **$ 284,557** | **$ 912,250** | **$ 901,536** |
| 35 | **Summary** | | | | | | | | | | | | | |
| 36 | Current Rates | $1,549,470,354 | $ 669,367,989 | $177,168,155 | $ 364,683 | $ 60,392,654 | $ 1,772,196 | $ 48,109 | $ 128,012 | $357,787,560 | $261,996,771 | $2,772,447 | $ 8,888,080 | $ 8,783,699 |
| 37 | Revenue Change ($) | 138,290,132 | 63,472,064 | 5,361,622 | (188,069) | 6,198,547 | - | 4,938 | 13,139 | 34,438,875 | 26,890,675 | 284,557 | 912,250 | 901,536 |
| 38 | **Proposed Revenue** | **$1,687,760,486** | **$ 732,840,052** | **$182,529,777** | **$ 176,614** | **$ 66,591,201** | **$ 1,772,196** | **$ 53,047** | **$ 141,151** | **$392,226,435** | **$288,887,445** | **$3,057,003** | **$ 9,800,330** | **$ 9,685,235** |
| 39 | **Proposed Revenue Change (%)** | **8.92%** | **9.48%** | **3.03%** | **-51.57%** | **10.26%** | **0.00%** | **10.26%** | **10.26%** | **9.63%** | **10.26%** | **10.26%** | **10.26%** | **10.26%** |
| 40 | **Relative Proposed Rate Increase** | | **1.06** | **0.34** | **(5.78)** | **1.15** | **0.00** | **1.15** | **1.15** | **1.08** | **1.15** | **1.15** | **1.15** | **1.15** |

# Comparison of Current and Proposed Customer Charges

Witness: Dismukes
Cause No. 45911
Exhibit DED-9

| Description | Residential Service (RS) | | Small Commercial and Industrial | | | | | | Large Commercial and Industrial | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Secondary Small (SS) | | Space Conditioning (SH) | Space Conditioning Schools (SE) | Water Heating Controlled (CB) | Water Heating Uncontrolled (UW) | Industrial (SL) | Industrial (PL-HL) | Process Heating (PH) |
| | to 325 kWh | > 325 kWh | to 5,000 kWh | > 5,000 kWh | | | | | | | |
| Current Customer Charge ($/month) | $ 12.31 | $ 16.75 | $ 39.40 | $ 54.18 | $ 54.18 | $ 54.18 | $ 18.22 | $ 36.45 | $ 118.20 | $ 118.20 | $ 1,231.26 |
| Proposed Customer Charge ($/month) | $ 16.50 | $ 25.00 | $ 40.00 | $ 55.00 | $ 55.00 | $ 55.00 | $ 25.00 | $ 40.00 | $ 120.00 | $ 130.00 | $ 1,250.00 |
| **Percent Increase** | **34.04%** | **49.25%** | **1.52%** | **1.51%** | **1.51%** | **1.51%** | **37.21%** | **9.74%** | **1.52%** | **9.98%** | **1.52%** |

Source: Direct Testimony of Bickey Rimal, BR Attachment 8.

# Customer Charge Revenue to Costs

Witness: Dismukes
Cause No. 45911
Exhibit DED-10

| | Residential Service (RS) | Small Commercial and Industrial | | | |
|---|---|---|---|---|---|
| | | Secondary Small (SS) | Space Conditioning (SH) | Water Heating Controlled (CW) | Water Heating Uncontrolled (UW) |
| **Current Monthly Customer Charge** | **$ 16.75** | **$ 39.40** | **$ 54.18** | **$ 18.22** | **$ 36.45** |
| Total Customer-related Revenue Requirement | $77,533,436 | $18,909,702 | $ 1,536,262 | $ 26,612 | $ 26,612 |
| Total Customer Bills | 5,606,853 | 613,769 | 45,466 | 1,019 | 936 |
| **Total Customer-related Costs per Customer** | **$ 13.83** | **$ 30.81** | **$ 33.79** | **$ 26.12** | **$ 28.43** |
| **Percent of Customer-related Costs recovered in current Customer Charge** | **121.1%** | **127.9%** | **160.3%** | **69.8%** | **128.2%** |

Source: Direct Testimony of Bickey Rimal, BR Attachment 3.

# Survey of Regional Customer Charges

Witness: Dismukes
Cause No. 45911
Exhibit DED-11

| Company | State | Residential Customer Charge ($/month) | Small Commercial Customer Charge ($/month) |
|---|---|---|---|
| **Indianapolis Power & Light Co (Current)** | **IN** | **$ 16.75** | **$ 39.40** |
| **Indianapolis Power & Light Co (Proposed)** | **IN** | **$ 25.00** | **$ 40.00** |
| Ameren Illinois Company | IL | $ 5.57 | $ 15.43 |
| Cleveland Electric Illum Co | OH | $ 4.00 | $ 7.00 |
| Consumers Energy Co | MI | $ 8.00 | $ 20.00 |
| Dayton Power & Light Co | OH | $ 7.00 | $ 16.68 |
| DTE Electric Company | MI | $ 8.50 | $ 11.25 |
| Duke Energy Indiana, LLC | IN | $ 10.54 | $ 10.70 |
| Duke Energy Kentucky | KY | $ 12.60 | $ 15.00 |
| Duke Energy Ohio Inc | OH | $ 8.00 | $ 23.00 |
| Indiana Michigan Power Co | IN | $ 14.79 | $ 24.65 |
| Indiana Michigan Power Co | MI | $ 7.25 | $ 17.65 |
| Kentucky Power Co | KY | $ 17.50 | $ 25.00 |
| Kentucky Utilities Co | KY | $ 16.12 | $ 41.06 |
| Louisville Gas & Electric Co | KY | $ 13.69 | $ 35.28 |
| Northern Indiana Pub Serv Co | IN | $ 14.00 | $ 32.50 |
| Ohio Edison Co | OH | $ 4.00 | $ 7.00 |
| Ohio Power Co | OH | $ 10.00 | $ 9.40 |
| Southern Indiana Gas & Elec Co | IN | $ 10.84 | $ 10.84 |
| The Toledo Edison Co | OH | $ 4.00 | $ 7.00 |
| **Peer Group Average** | | **$ 9.80** | **$ 18.30** |

Notes: (1) All daily rates have been pro-rated to reflect equivalent monthly charge.
(2) For Cleveland Electric Illuminating Co. the General Service Secondary (GS) tariff is used for Small Commercial.
(3) For Indiana Michigan Power Co. in Michigan, commercial customer charge reflects GS tariff rates for demand-metered customers.
Source: Companies' Tariffs

# Analysis of Residential Rate Impact at Different Usage Levels

Witness: Dismukes
Cause No. 45911
Exhibit DED-12

| | Customer 1 Hypothetical Typical User | | Customer 2 One-Third Less Usage Than System Average | | Customer 3 One-Third Greater Usage Than System Average | |
|---|---|---|---|---|---|---|
| Average Residential Summer Usage per Month (kWh) | 748 | | 499 | | 998 | |
| | Rate | Bill Amount | Rate | Bill Amount | Rate | Bill Amount |
| **Utility Charges - Current Rates** | | | | | | |
| Monthly Customer Charge | $ 16.75 | $ 16.75 | $ 16.75 | $ 16.75 | $ 16.75 | $ 16.75 |
| Energy Charge - First 500 kWh | $ 0.0820 | $ 40.98 | $ 0.0820 | $ 40.88 | $ 0.0820 | $ 40.98 |
| Energy Charge - Remaining kWh | $ 0.0665 | $ 16.50 | $ 0.0665 | $ - | $ 0.0665 | $ 33.08 |
| Fuel Charge ($/kWh) | $ 0.0387 | $ 28.99 | $ 0.0387 | $ 19.33 | $ 0.0387 | $ 38.65 |
| DSM Charge ($/kWh) | $ 0.0027 | $ 2.05 | $ 0.0027 | $ 1.36 | $ 0.0027 | $ 2.73 |
| **Average Monthly Utility Bill Under Existing Rates** | | **$ 105.27** | | **$ 78.32** | | **$ 132.19** |
| **Utility Charges - Proposed Rates** | | | | | | |
| Monthly Customer Charge | $ 25.00 | $ 25.00 | $ 25.00 | $ 25.00 | $ 25.00 | $ 25.00 |
| Energy Charge - First 500 kWh | $ 0.0932 | $ 46.58 | $ 0.0932 | $ 46.47 | $ 0.0932 | $ 46.58 |
| Energy Charge - Remaining kWh | $ 0.0777 | $ 19.28 | $ 0.0777 | $ - | $ 0.0777 | $ 38.66 |
| Fuel Charge ($/kWh) | $ 0.0368 | $ 27.52 | $ 0.0368 | $ 18.35 | $ 0.0368 | $ 36.70 |
| DSM Charge ($/kWh) | $ 0.0027 | $ 2.05 | $ 0.0027 | $ 1.36 | $ 0.0027 | $ 2.73 |
| **Average Monthly Utility Bill Under Proposed Rates** | | **$ 120.43** | | **$ 91.18** | | **$ 149.67** |
| **Percent Increase from Existing Rates to Proposed Rates** | | **14.4%** | | **16.4%** | | **13.2%** |

Source: Direct Testimony of Bickey Rimal, Workpaper BR-5.0.

# Comparison of Proposed and Recommended Rates



| Description | Present Rate | Company's Proposal: Company's Proposed Rate | Company's Proposal: Increase from Present Rate | Alternative Proposal: Alternative Proposed Rate | Alternative Proposal: Increase from Present Rate |
|---|---|---|---|---|---|
| **Rate RS** | | | | | |
| Monthly Customer Charge | | | | | |
| 0-325 kWh | $ 12.31 | $ 16.50 | 34.04% | $ 12.31 | 0.00% |
| Over 325 kWh | $ 16.75 | $ 25.00 | 49.25% | $ 16.75 | 0.00% |
| Resid (CR/CW) | $ 18.22 | $ 25.00 | 37.21% | $ 18.22 | 0.00% |
| Energy Charge ($/kWh) | | | | | |
| First 500 kWh | $ 0.1207 | $ 0.1300 | 7.66% | $ 0.1331 | 10.27% |
| Over 500 kWh | $ 0.1052 | $ 0.1145 | 8.79% | $ 0.1176 | 11.78% |
| Over 1,000 | $ 0.0928 | $ 0.1021 | 9.96% | $ 0.1052 | 13.35% |
| Resid (CR/CW) | $ 0.0694 | $ 0.0720 | 3.72% | $ 0.0859 | 23.71% |
| **Rate SS** | | | | | |
| Monthly Customer Charge | | | | | |
| 0 to 5,000 kWh | $ 39.40 | $ 40.00 | 1.52% | $ 39.40 | 0.00% |
| Over 5,000 kWh | $ 54.18 | $ 55.00 | 1.51% | $ 54.18 | 0.00% |
| Energy Charge ($/kWh) | | | | | |
| First 5,000 kWh | $ 0.1227 | $ 0.1246 | 1.56% | $ 0.1270 | 3.51% |
| Over 5,000 kWh | $ 0.1082 | $ 0.1101 | 1.77% | $ 0.1125 | 3.98% |
| **Rate MD** | | | | | |
| Monthly Customer Charge | | | | | |
| 0 to 5,000 kWh | $ 39.40 | $ 25.00 | -36.55% | $ 25.00 | -36.55% |
| Over 5,000 kWh | $ 54.18 | $ 25.00 | -53.86% | $ 25.00 | -53.86% |
| Energy Charge ($/kWh) | | | | | |
| First 5,000 kWh | $ 0.1227 | $ 0.1363 | 11.06% | $ 0.0157 | -87.21% |
| Over 5,000 kWh | $ 0.1082 | $ 0.1363 | 25.91% | $ 0.0157 | -85.50% |

Source: Direct Testimony of Bickey Rimal, BR Attachment 8.

# Comparison of Proposed and Recommended Rates



| Description | Present Rate | Company's Proposal: Company's Proposed Rate | Company's Proposal: Increase from Present Rate | Alternative Proposal: Alternative Proposed Rate | Alternative Proposal: Increase from Present Rate |
|---|---|---|---|---|---|
| **Rate SH** | | | | | |
| Monthly Customer Charge | $ 54.18 | $ 55.00 | 1.51% | $ 54.18 | 0.00% |
| Billed kWh | | | | | |
| Energy Charge ($/kWh) | $ 0.1146 | $ 0.1288 | 12.45% | $ 0.1271 | 10.95% |
| **Rate SE** | | | | | |
| Monthly Customer Charge | $ 54.18 | $ 55.00 | 1.51% | $ 54.18 | 0.00% |
| Energy Charge ($/kWh) | | | | | |
| First 5,000 kWh | $ 0.1359 | $ 0.1359 | -0.01% | $ 0.1359 | 0.00% |
| Over 5,000 kWh | $ 0.1214 | $ 0.1214 | -0.01% | $ 0.1214 | 0.00% |
| Excess of 155 x Connected load | $ 0.1077 | $ 0.1077 | -0.01% | $ 0.1077 | 0.00% |
| **Rate UW** | | | | | |
| Monthly Customer Charge | $ 36.45 | $ 40.00 | 9.74% | $ 36.45 | 0.00% |
| Energy Charge ($/kWh) | $ 0.0837 | $ 0.0964 | 15.18% | $ 0.0958 | 14.44% |
| **Rate CB** | | | | | |
| Monthly Customer Charge | $ 18.22 | $ 25.00 | 37.21% | $ 18.22 | 0.00% |
| Energy Charge ($/kWh) | $ 0.0732 | $ 0.0720 | -1.64% | $ 0.0859 | 17.32% |
| **Rate SL** | | | | | |
| Monthly Customer Charge | $ 118.20 | $ 120.00 | 1.52% | $ 118.20 | 0.00% |
| Energy Charge ($/kWh) | $ 0.0513 | $ 0.0459 | -10.56% | $ 0.0506 | -1.43% |
| Demand Charge ($/kW) | $ 21.10 | $ 25.50 | 20.85% | $ 25.50 | 20.85% |

Source: Direct Testimony of Bickey Rimal, BR Attachment 8.

# Comparison of Proposed and Recommended Rates



| Description | Present Rate | Company's Proposal: Company's Proposed Rate | Company's Proposal: Increase from Present Rate | Alternative Proposal: Alternative Proposed Rate | Alternative Proposal: Increase from Present Rate |
|---|---|---|---|---|---|
| **Rate PL** | | | | | |
| Monthly Customer Charge | $ 118.20 | $ 130.00 | 9.98% | $ 118.20 | 0.00% |
| Energy Charge ($/kWh) | $ 0.0496 | $ 0.0447 | -9.76% | $ 0.0448 | -9.72% |
| Demand Charge ($/kW) | $ 22.88 | $ 29.59 | 29.33% | $ 29.59 | 29.33% |
| **Rate PH** | | | | | |
| Monthly Customer Charge | $ 1,231.26 | $ 1,250.00 | 1.52% | $ 1,231.26 | 0.00% |
| Billed kWh | | | | | |
| First 250 Hrs use | $ 0.0943 | $ 0.1035 | 9.69% | $ 0.1051 | 11.40% |
| Additional kWh | $ 0.0796 | $ 0.0887 | 11.48% | $ 0.0903 | 13.52% |
| **Rate HL1** | | | | | |
| Monthly Customer Charge | $ 132.98 | $ 130.00 | -2.24% | $ 130.00 | -2.24% |
| Energy Charge ($/kWh) | $ 0.0492 | $ 0.0437 | -11.29% | $ 0.0437 | -11.29% |
| Demand Charge ($/kW) | $ 22.88 | $ 29.59 | 29.33% | $ 29.59 | 29.33% |
| **Rate HL2** | | | | | |
| Monthly Customer Charge | $ 211.78 | $ 215.00 | 1.52% | $ 215.00 | 1.52% |
| Energy Charge ($/kWh) | $ 0.0490 | $ 0.0440 | -10.30% | $ 0.0440 | -10.30% |
| Demand Charge ($/kW) | $ 22.15 | $ 24.95 | 12.64% | $ 24.95 | 12.64% |
| **Rate HL3 High Load Factor** | | | | | |
| Monthly Customer Charge | $ 492.51 | $ 500.00 | 1.52% | $ 500.00 | 1.52% |
| Energy Charge ($/kWh) | $ 0.0486 | $ 0.0439 | -9.61% | $ 0.0439 | -9.61% |
| Demand Charge ($/kW) | $ 21.30 | $ 23.79 | 11.69% | $ 23.79 | 11.69% |
| **HL4** | | | | | |
| Monthly Customer Charge | $ 492.51 | $ 524.43 | 6.48% | $ 524.43 | 6.48% |
| Energy Charge ($/kWh) | $ 0.0608 | $ 0.0647 | 6.48% | $ 0.0647 | 6.48% |
| Demand Charge ($/kW) | $ 14.59 | $ 15.54 | 6.48% | $ 15.54 | 6.51% |

Source: Direct Testimony of Bickey Rimal, BR Attachment 8.

# IN AES 7-Year TDSIC Planned Capital Expenditure by Project

Witness: Dismukes
Cause No. 45911
Exhibit DED-14

| Project | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | Total |
|---|---|---|---|---|---|---|---|---|
| | ---------- ($ Millions) ---------- | | | | | | | |
| **Age and Condition Projects** | | | | | | | | |
| Circuit Rebuilds | $ 27.2 | $ 25.3 | $ 45.8 | $ 52.8 | $ 47.8 | $ 49.9 | $ 49.9 | $ 298.7 |
| Substation Assets Replacement | 16.7 | 27.0 | 39.9 | 39.2 | 34.5 | 44.3 | 46.5 | 248.1 |
| XLPE Cable Replacement | 12.2 | 11.8 | 12.5 | 12.4 | 12.3 | 12.8 | 12.3 | 86.2 |
| 4 kV Conversion | 19.7 | 13.8 | 15.4 | 15.5 | 7.6 | 12.4 | 7.5 | 92.0 |
| Tap Reliability Improvement Projects | 10.9 | 10.4 | 10.6 | 10.8 | 11.0 | 11.3 | 11.5 | 76.5 |
| Meter Replacement | 10.7 | 11.0 | 11.2 | 11.4 | 11.6 | - | - | 55.9 |
| CBD Secondary Network Upgrade | 4.6 | 5.9 | 5.3 | 5.9 | 5.0 | 5.9 | 6.4 | 39.0 |
| Static Wire Performance Improvement | 4.8 | 6.9 | 9.5 | 11.2 | 11.5 | 10.7 | 7.6 | 62.1 |
| Remote End - Breaker Relay/Upgrades | 3.0 | 2.0 | 5.6 | 1.6 | 6.2 | 3.1 | 6.4 | 28.0 |
| Pole Replacements | 3.3 | 3.3 | 3.4 | 3.5 | 3.5 | 3.6 | 3.7 | 24.2 |
| Steel Tower Life Extension | 1.1 | 1.1 | 1.1 | 0.9 | - | - | - | 4.2 |
| **Total Age and Condition Projects** | **$114.2** | **$118.6** | **$160.3** | **$165.1** | **$151.0** | **$153.9** | **$151.8** | **$1,015.0** |
| **Deliverability Projects** | | | | | | | | |
| Distribution Automation | $ 18.8 | $ 19.2 | $ 13.6 | $ 13.9 | $ 14.2 | $ 14.5 | $ 14.8 | $ 109.0 |
| Substation Design Upgrades | 3.8 | 16.2 | 15.8 | 32.9 | 6.3 | 16.8 | 2.6 | 94.5 |
| **Total Deliverability Projects** | **$ 22.6** | **$ 35.4** | **$ 29.5** | **$ 46.8** | **$ 20.5** | **$ 31.3** | **$ 17.4** | **$ 203.5** |
| **Total Planned TDSIC Capital Expenditures** | **$136.8** | **$154.0** | **$189.7** | **$212.0** | **$171.5** | **$185.2** | **$169.2** | **$1,218.5** |

Source: Cause No. 45264 TDSIC 7; AES IN Petition Exhibit A, Appendix 8.7.

# Historic and Projected TDSIC Annual Revenue Requirement

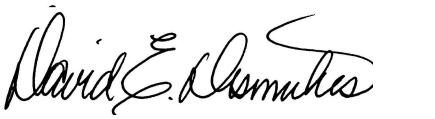
Witness: Dismukes
Cause No. 45911
Exhibit DED-15

| Rate Period | TDSIC 3<br>Nov. 21 - Oct. 22 | TDSIC 5<br>Nov. 22 - Oct. 23 | TDSIC 7<br>Nov. 23 - Oct. 24 | TDSIC 9<br>Nov. 24 - Oct. 25 | TDSIC 11<br>Nov. 25 - Oct. 26 | TDSIC 13<br>Nov. 26 - Oct. 27 | TDSIC 14<br>Nov. 27 - Oct. 28 |
|---|---|---|---|---|---|---|---|
| | | | | | ($ Millions) | | |
| **Return on TDISC Rate Base** | | | | | | | |
| Rate Base | $ 179.0 | $ 349.0 | $ 502.1 | $ 680.3 | $ 842.0 | $ 995.6 | $ 1,084.5 |
| Pre-Tax WACC | 6.68% | 6.49% | 6.65% | 6.78% | 6.78% | 6.78% | 6.78% |
| Allowed Return on TDSIC Utility Plant | $ 12.0 | $ 22.6 | $ 33.4 | $ 46.1 | $ 57.1 | $ 67.5 | $ 73.5 |
| Revenue Conversion Factor | 1.23886 | 1.23189 | 1.22796 | 1.2206 | 1.2206 | 1.2206 | 1.2206 |
| **Total Return on TDSIC Rate Base** | **$ 14.8** | **$ 27.9** | **$ 41.0** | **$ 56.3** | **$ 69.7** | **$ 82.4** | **$ 89.8** |
| **Incremental Expenses** | | | | | | | |
| Annualized Property Taxes | $ 1.5 | $ 5.6 | $ 6.8 | $ 10.4 | $ 14.3 | $ 17.8 | $ 21.2 |
| Annualized Depreciation Expenses | 3 | 7.3 | 13.6 | 18.8 | 24.4 | 28.2 | 31.6 |
| Depreciation Expenses on Retirements - Credit | (0) | (0.7) | (1.3) | (1.4) | (2.2) | (2.6) | (3.1) |
| Amortization Expense - TDSIC Plan Development Costs | 1 | 0.8 | - | - | - | - | - |
| Total Incremental Expenses before Revenue Conversion | $ 4.6 | $ 12.9 | $ 19.2 | $ 27.8 | $ 36.5 | $ 43.4 | $ 49.7 |
| Revenue Conversion Factor | 1.01995 | 1.0199 | 1.00486 | 1.00475 | 1.00475 | 1.00475 | 1.00475 |
| **Total Annual Incremental Expenses** | **$ 4.7** | **$ 13.2** | **$ 19.3** | **$ 27.9** | **$ 36.7** | **$ 43.6** | **$ 50.0** |
| **Total Annual TDISC Revenue Requirement** | **$ 19.5** | **$ 41.1** | **$ 60.3** | **$ 84.2** | **$ 106.3** | **$ 126.0** | **$ 139.7** |
| **Revenue Requirement Recoverable in TDSIC Rider (80%)** | **$ 15.6** | **$ 32.8** | **$ 48.2** | **$ 67.4** | **$ 85.1** | **$ 100.8** | **$ 111.8** |

Source: Cause No. 45264 TDSIC 1-7 Filings.

**AFFIRMATION**

I affirm, under the penalties for perjury, that the foregoing representations are true.



David E. Dismukes
Acadian Consulting Group ("ACG") for
Indiana Office of Utility Consumer Counselor

Cause No. 45911
AES Indiana

October 12, 2023
Date

## CERTIFICATE OF SERVICE

This is to certify that a copy of the ***Indiana Office of Utility Consumer Counselor's Testimony of David E. Dismukes*** has been served upon the following parties of record in the captioned proceeding by electronic service on October 12, 2023.

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