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RICHARD CORCORAN
Speaker of the House of Representatives

February 5, 2018

Ms. Carlotta Stauffer, Commission Clerk
Office of Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850

Re: Docket No. 20170179-GU
Petition for rate increase and approval of depreciation study by Florida City Gas

Dear Ms. Stauffer:

It has come to our attention that the Redacted Public Version of the prefiled testimony of David E. Dismukes, Ph.D. (DN 00951-2018) submitted earlier today inadvertently omitted page numbers. Accordingly, please substitute the enclosed Redacted Public Version of the prefiled testimony of Dr. Dismukes for that filed earlier today.

Please contact me with any questions or concerns regarding this filing.

Thank you for your assistance.

Sincerely,

/s/ *Virginia Ponder*

Virginia Ponder
Associate Public Counsel

cc: Parties of record

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing was furnished by e-mail on this 5th day of February, 2018 to:

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Re: Docket No. 20170179-GU
Petition for rate increase and approval of depreciation study by Florida City Gas

Dear Ms. Stauffer:

Enclosed for filing in the above docket on behalf of the Office of Public Counsel (OPC) is the Redacted Public Version of the prefiled testimony of David E. Dismukes, Ph.D.

On February 1, 2018, the OPC submitted one copy of the prefiled original testimony of Dr. Dismukes. This confidential filing was an interim measure, allowing OPC to adhere to the procedural schedule while providing Florida City Gas an opportunity to review the testimony and redact the material that it regards as confidential. The enclosed Redacted Version reflects Florida City Gas' review. Counsel for Florida City Gas has provided its request for confidentiality, including the highlighted confidential material and the accompanying detailed justification, in a separate filing on February 2, 2018.

The original testimony of Dr. Dismukes filed on February 1, 2018, is the evidence the OPC intends to introduce into evidence at the hearing. We have verified the confidential version filed by Florida City Gas on February 2, 2018, is identical to the original testimony filed on February 1, 2018, in all respects except for the yellow highlighting indicating the scope of its claim of confidentiality. The OPC has likewise verified the public version of Dr. Dismukes' testimony filed here is identical in all respects except for the redactions and the stamped indications of redaction. The public version will be served on all parties and the yellow highlighted confidential version filed by Florida City Gas will be available by request under appropriate arrangements.

Thank you for your assistance.

Sincerely,

/s/ *Virginia Ponder*

Virginia Ponder
Associate Public Counse

cc: Parties of record

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing was furnished by e-mail on this 5th day of February, 2018 to:

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/s/ *Virginia Ponder*
Virginia Ponder
Associate Public Counsel

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition for rate increase and approval of depreciation study by Florida City Gas _____/	Docket No. 20170179-GU Filed: February 1, 2018

~~**(FCG PRELIMINARY CONFIDENTIAL DESIGNATION)**~~
PUBLIC VERSION

DIRECT TESTIMONY

OF

DAVID E. DISMUKES, PH.D.

ON BEHALF OF THE CITIZENS OF THE STATE OF FLORIDA

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of the State of Florida

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EXHIBITS

DIRECT TESTIMONY

OF

OF DAVID E. DISMUKES, PH.D.

On Behalf of the Office of Public Counsel

Before the

Florida Public Service Commission

Docket No. 20170179-GU

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

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

Q. DO YOU HOLD ANY ACADEMIC POSITIONS?

A. Yes. I am a full Professor, Executive Director, and Director of Policy Analysis at the Center for Energy Studies, Louisiana State University ("LSU"). I am also a full

Professor in the Department of Environmental Sciences and the Director of the Coastal Marine Institute in the College of the Coast and Environment at LSU. I also serve as an Adjunct Professor in the E. J. Ourso College of Business (Department of Economics), and I am a member of the graduate research faculty at LSU. Attachment A provides my academic vitae, which includes a list all of my publications, presentations, pre-filed expert witness testimony, expert reports, expert legislative testimony, and affidavits.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I have been retained by the Florida Office of Public Counsel ("OPC"), on behalf of the Citizens of the State of Florida ("Citizens"), to provide an expert opinion to the Florida Public Service Commission (the "Commission" or "FPSC") on the Florida City Gas ("FCG" or the "Company") proposals to secure additional firm natural gas transportation service capacity and the development of a liquefied natural gas ("LNG") facility (or collectively, the Company's "natural gas capacity proposals").

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS REGARDING THE COMPANY'S NATURAL GAS CAPACITY PROPOSALS.

A. I recommend that the Commission reject the Company's natural gas capacity proposals. The Company's sole justification for these capacity proposals is speculative and anecdotal, resting on a belief that under an extreme weather event, "essential use" transportation customers would have no capacity access, and would return, in droves,

to full retail service.[1] The Company's natural gas capacity proposals are unnecessary since the Company is not required to provide back-up capacity under the provisions of its current tariff, and the additional capacity resources will likely be subsidized by other non-transportation customers. As I will discuss later in my testimony, the Company possesses adequate transportation capacity to meet the natural gas capacity needs of its retail customers and the Company has been unable to provide adequate record evidence showing otherwise. The Company has failed to present any marketing studies, customer surveys, or comparable past historic documentation of events that support the Company's position that it needs this dual capacity insurance (i.e., both transportation and LNG vaporization capacity) to meet the so-called "essential use" transportation customers' needs. Allowing this capacity to be secured and developed will result in the Company holding excess capacity, relative to its firm service needs, which in turn, will lead to an unnecessary increase in rates. Furthermore, the Company's own analysis shows that the development of a LNG storage facility is not the most economical way of meeting its retail load requirements, even if there was a natural gas capacity shortfall.

Q HOW IS THE REMAINDER OF YOUR TESTIMONY ORGANIZED?

A. My testimony is organized into the following sections:

I. Introduction

II. Overview of Company Proposals

III. The Company's Capacity Challenge

IV. The Company's Need Analysis is Deficient

[1] See, Direct Testimony of Gregory Becker, 12:23 to 14:5.

V. Cost Recovery and Rate Design Implications

VI. Conclusions and Recommendations

II. OVERVIEW OF THE COMPANY'S PROPOSAL

A. Summary of the Company's Capacity Proposals

Q. PLEASE SUMMARIZE THE COMPANY'S PROPOSAL.

A. On October 23, 2017, the Company filed a petition with the Commission to approve an increase in its rates by $19.3 million.[2] The Company identifies three key issues driving its rate increase request: (1) safety and reliability-related capital investments; (2) capacity challenges (and their corresponding costs); and (3) challenges associated with an aging workforce and the costs associated with proactively addressing the pending skills and knowledge gap.[3]

Q. PLEASE DISCUSS THE COMPANY'S PURPORTED CAPACITY CHALLENGES.

A. The Company, by its own admission, clearly has enough capacity to serve its firm service retail customers.[4] What the Company purports to not have, however, is enough natural gas capacity to serve **both** the projected capacity needs of its firm retail sales customers and a portion of its transportation service customers, primarily those designated as "essential use" transportation customers.[5]

[2] Petition for Approval of Rate Increase, Request for Approval of Depreciation Study, and Request for Interim Rate Relief by Florida City Gas, ¶7.
[3] Petition for Approval of Rate Increase, Request for Approval of Depreciation Study, and Request for Interim Rate Relief by Florida City Gas, ¶8.
[4] Direct Testimony of Gregory Becker, 14:17-18.
[5] Direct Testimony of Gregory Becker, 15:6-10.

Q. WHY IS THE COMPANY REQUESTING TO ADD BOTH NEW TRANSPORTATION AND LNG CAPACITY?

A. The Company claims that capacity on the Florida Gas Transmission ("FGT") interstate pipeline is currently limited and any remaining uncontracted capacity is expensive.[6] The Company argues that these FGT constraints, combined with the ever-increasing costs of developing new natural gas transmission pipelines, are the primary sources of its capacity challenges.[7] The Company states that it is also concerned about future growth on its system and the transition of transportation customers back to the utility for full retail service.[8]

Q. HOW DOES THE COMPANY PROPOSE TO ADDRESS ITS PERCEIVED CAPACITY CHALLENGES?

A. The Company proposes a two-pronged approach involving the purchase of additional pipeline transmission capacity and the development of a new LNG facility. Under the transmission capacity proposal, the Company is requesting Commission approval to secure an additional 20,000 dekatherms per day ("Dth/d") of natural gas transportation capacity on what it refers to as a new FGT system expansion.[9] The Company is also requesting the ability to add storage capacity, through the development of a 10,000 Dth/d LNG facility that will likely be located somewhere in Dade County.[10] The Company argues that this 30,000 Dth/d of total capacity additions will allow it to meet

[6] Direct Testimony of Carolyn Bermudez, 24:8-9.
[7] Direct Testimony of Carolyn Bermudez, 24:14-16.
[8] Direct Testimony of Carolyn Bermudez, 24:17-19.
[9] Direct Testimony of Gregory Becker, 20:14-18.
[10] Direct Testimony of Gregory Becker, 16:19-21; and Direct Testimony of Stephen Wassell, 4:18-22.

the design day requirements of both its retail customers and transportation customers the Company refers to as essential use.[11]

Q. PLEASE DISCUSS THE DETAILS OF THE COMPANY'S LNG FACILITY PROPOSAL.

A. The Company characterizes its proposed LNG facility as the "cornerstone" of its capacity-related solutions.[12] The Company claims that it has investigated several capacity options and has determined that the development of an LNG facility is the most cost-effective solution.[13] The Company is currently evaluating a specific location for the proposed facility, but appears to have narrowed the choice to an area along FCG's 6-inch Jet Fuel Line somewhere between Cutler Ridge and Homestead in Dade County.[14] The LNG plant is anticipated to be comprised of three liquids tanks, each holding a total of 270,000 gallons, with a design vaporization rate of 10 million standard cubic feet per day ("MMscfd").[15]

Q. DOES THIS "JET FUEL LINE" MOVE NATURAL GAS OR LIQUIDS?

A. The Jet Fuel Line currently operates as a high pressure natural gas pipeline supporting the Company's distribution system. This 6-inch fuel line originally transported jet fuel from Miami International Airport ("MIA") to Homestead Air Reserve Base near the coast east of Homestead on the extreme southern end of the Miami metropolitan area.

[11] Direct Testimony of Gregory Becker, 16:13-23.
[12] Petition for Approval of Rate Increase, Request for Approval of Depreciation Study, and Request for Interim Rate Relief by Florida City Gas, ¶12.
[13] Petition for Approval of Rate Increase, Request for Approval of Depreciation Study, and Request for Interim Rate Relief by Florida City Gas, ¶12.
[14] Direct Testimony of Stephen Wassell, 4:18-22.
[15] Direct Testimony of Stephen Wassell, 5:24-25.

The line was originally taken out of service after Hurricane Andrew in 1992 but was purchased by FCG and converted to natural gas service in 2010 even though it retains its original name.[16]

Q. HOW WILL THIS LNG FACILITY BE UTILIZED?

A. The Company anticipates that the LNG facility will be used as a peaking or winter gas supply resource.[17] Importantly, the Company does not anticipate designing the facility, at least in its initial development, with a liquefaction unit, and will rely on purchased LNG transported to the facility from sources that have not been clearly identified. The Company proposes to utilize the facility as an alternative to holding firm transmission on pipeline facilities throughout the year to meet infrequent "needle-peak" load events.[18] The Company also states that locating the facility in the southern part of the Company's system, in relative close proximity to customer needs in the south Miami area, would assist the Company in meeting local winter peaking needs, allowing it to redirect, or optimize, interstate pipeline deliveries to other parts of its system.[19]

Q. FROM WHERE WILL THE COMPANY SOURCE ITS LNG?

A. The Company states it has determined that there are three facilities in the Company's service territory, or in close proximity to its system that could effectively supply LNG to the proposed facility. The first is New Fortress, which has a facility in Miami. The second is Eagle LNG, which has a facility in Jacksonville. The final is Pivotal LNG,

[16] Direct Testimony of Stephen Wassell, 5:1-8.
[17] Direct Testimony of Gregory Becker, 19:1-2.
[18] Direct Testimony of Gregory Becker, 17:8-16.
[19] Direct Testimony of Gregory Becker, 18:21-25.

which has access to facilities in Jacksonville, as well as a facility in Trussville, Alabama, and three facilities in Georgia.[20] Pivotal LNG, however, is a company affiliate. While the Company appears to propose that all potential future purchases of LNG will be obtained through competitive bidding,[21] this affiliate relationship is of potential concern.

B. Capacity Proposal Rationale

Q. WHAT REASONS DOES THE COMPANY PROVIDE FOR ITS CAPACITY PROPOSALS?

A. The Company states that it cannot provide capacity to both its firm retail service and what it refers to as essential use transportation customers, particularly on its coldest design day.[22] The Company states that "essential use" transportation customers, such as hospitals, water treatment facilities, and segments of the hospitality industry, rely on third party suppliers or marketers to deliver natural gas to the Company to serve these customers' gas supply needs.[23] Implicit in this argument is what appears to be a concern by the Company that the third party providers to these "essential use" customers have inadequate capacity resources/arrangements to meet their own customers' extreme weather day requirements.[24] The Company, however, has provided no record evidence directly supporting this belief as I will discuss in more detail later in my testimony.

[20] Direct Testimony of Stephen Wassell, 4:2-11.
[21] Direct Testimony of Stephen Wassell, 4:10-11.
[22] Direct Testimony of Gregory Becker, 15:6-10 and 16:1-8.
[23] Direct Testimony of Gregory Becker, 16:1-8.
[24] Direct Testimony of Gregory Becker, 12:23 to 13:13.

Q. HOW DOES THE COMPANY FORECAST ITS NATURAL GAS RESOURCE NEEDS?

A. The Company's planning department prepares an annual design day load analysis which estimates the overall gas supply the system will need on an abnormally cold day when natural gas consumption for the Company's customers is at its highest.[25] The Company's analysis divides its system into two areas: (1) the southern Miami-Dade County portion of its system and (2) the northern Brevard County portion of its system. The Company's design day load analysis assumes an average daily temperature of 36 degrees Fahrenheit in the Miami-Dade County portion of the system, and a concurrent average daily temperature of 28 degrees Fahrenheit in the Brevard County portion of the system.[26] The Company states that the Miami-Dade region experienced an average daily temperature of 36 degrees on December 24, 1989. Likewise, the Brevard County region experienced an average daily temperature of 28 degrees on December 25, 1983, and again on January 21, 1985.[27]

Q. EXPLAIN HOW THE COMPANY INCLUDES GROWTH INTO THIS PEAK DAY FORECAST.

A. The Company anticipates an increase of 953 customers from 2018 levels to 2019 levels,[28] on top of a projected growth of 874 customers from 2017 levels to 2018 levels.[29] The Company's 2018 to 2019 growth is broken down primarily into

[25] Direct Testimony of Gregory Becker, 6:2-9.
[26] Direct Testimony of Gregory Becker, 6:9-13.
[27] Direct Testimony of Gregory Becker, 6:19-23.
[28] Direct Testimony of Gregory Becker, 14:8-9.
[29] Company's Response to OPC ROG 16.

residential (826 customers) and commercial (127 customers) customers, or 0.82 percent increase for residential customers and 1.65 percent increase for commercial customers.[30] In terms of design day requirements, the Company estimates that its current design day requirements associated with its sales customers is 47,187 Dth/d, mainly concentrated in the northern portion of its system in Brevard County which is forecasted to have a design day requirement of 30,478 Dth/d. The Company states that in addition to these growth expectations, it anticipates the transportation portion of its customer base to grow, predominantly in the Miami-Dade portion of the system. The Company notes that it estimates as much as 4,500 Dth/day of incremental design day load for the 2017-2018 period associated with the growth in transportation customers.[31]

Q. PLEASE DISCUSS THE COMPANY'S TRANSPORTATION CUSTOMER GROWTH FORECAST.

A. The Company forecasts a growth in requirements for what it calls "essential use" transportation customers in the Miami-Dade region to the amount of 4,551 Dth/day.[32] The Company cites as an example of transportation customer load growth in the Miami-Dade region a recent resolution by the Miami-Dade County Department of Transportation and Public Works ("DTPW") to buy 300 compressed natural gas ("CNG") powered buses along with the development of two publicly-accessible CNG fueling stations.[33]

[30] Direct Testimony of Gregory Becker, 14:8-13.
[31] Direct Testimony of Gregory Becker, 14:21-25.
[32] Direct Testimony of Gregory Becker, Exhibit GB-3.
[33] Direct Testimony of Gregory Becker, 21:1-5.

C. Capacity Proposals Cost

Q. PLEASE DISCUSS THE COMPANY'S TRANSMISSION SERVICE PROPOSAL.

A. The Company proposes to secure an additional 20,000 Dth/d of firm transmission capacity on the "east leg" portion of FGT's system.[34] The additional capacity is being made available through what the Company characterizes as a "minor expansion project."[35] The Company's intent is to secure the added firm transmission service before the end of 2017 for service starting in 2020.[36]

Q. HAS THE COMPANY PROVIDED ANY ADDITIONAL INFORMATION ON THE PROPOSED ADDITIONAL CAPACITY RESERVED ON THE FGT SYSTEM?

A. No additional information was provided with the Company's filing in this rate case. However, the Company has provided, via responses to OPC's discovery requests, the correspondence it has undertaken with various pipeline representatives inquiring about securing additional capacity.[37]

Q. WHAT DO THESE COMMUNICATIONS REVEAL ABOUT THE COMPANY'S TRANSMISSION CAPACITY PROPOSAL?

A. The Company's investigation into the potential for reserving additional firm transmission capacity appears to be a recent endeavor. After a single inquiry to

[34] Direct Testimony of Gregory Becker, 25:11-15.
[35] Direct Testimony of Gregory Becker, 20:10, 14-17.
[36] Direct Testimony of Gregory Becker, 25:15-16.
[37] Company's response to OPC POD-74.

Gulfstream on March 5, 2015,[38] the Company did not investigate the potential for reserving additional capacity until early spring 2017, when it received a term sheet for the reservation of 20,000 Dth/d of firm transmission capacity from Energy Transfer, the operator of the FGT system, on April 21, 2017.[39] Discussions between the two entities continued from this period through at least the end of November 2017, when Energy Transfer sent a map outlining what it referred to as the "Southeast Expansion" of the FGT.[40]

Q. PLEASE DESCRIBE THE SOUTHEAST EXPANSION.

A. The Southeast Expansion appears to be a proposed upgrade to a portion of the FGT system expanding upon prior upgrades made under the Phase VIII Expansion Project that was placed into service on April 1, 2011.[41] The Phase VIII Expansion Project included upgrades across the FGT system and will be discussed in more detail later in my testimony. However, the upgrade included additional investments in what was identified at the time as the Arcadia to Martin Plant Lateral greenfield pipeline. This was a 90.6 mile 30-inch-diameter pipeline connecting the FGT pipeline system north of Fort Myers in Desoto County to the FPL Martin Clean Energy Center in Martin County.[42] This expansion also included a new compressor station in Highlands County.[43] The proposed Southeast Expansion appears to add two new loops to this

[38] Company's response to OPC POD-74, Attachment POD 74.1a.
[39] Company's response to OPC POD-74, Attachment POD 74.1b.
[40] Company's response to OPC POD-74, Attachment POD 74.20a and 74.20b.
[41] New natural gas pipeline capacity adds service into Florida (May 25, 2011), Today in Energy, U.S. Energy Information Administration.
[42] 73 Fed. Reg. 102, p. 30387 (May 27, 2008).
[43] 73 Fed. Reg. 102, p. 30387 (May 27, 2008).

pipeline in Polk County just east of Tampa, and an additional loop in Martin County just north of the FPL power plant.[44]

Q. HAS THE COMPANY OR FGT PROVIDED ANY INFORMATION ON THE ADDITIONAL CAPACITY THAT WILL BE MADE AVAILABLE BY THE SOUTHEAST EXPANSION?

A. No. However, it appears that the proposed upgrade would allow for additional west to east natural gas flows through the Arcadia to Martin Plant Lateral pipeline segment of the FGT system. This pipeline segment was added as part of the Phase VIII Expansion Project and provides additional pipeline capacity connecting FGT's Gulf of Mexico system in south Florida with FGT's Atlantic Ocean system in southern Florida beyond the historical branch in the FGT system occurring just south of Orlando.

Q. PLEASE DISCUSS THE AVAILABLE CAPACITY OFFERED UNDER THIS NEW FGT EXPANSION.

A. The Company states that it will secure 20,000 Dth/d of firm transportation capacity with the additional loops to the FGT system.[45] This corresponds with documents provided by the Company outlining internal communications between the Company and Energy Transfer.[46] This potential commitment represents two-thirds (20,000 Dth/d out of 30,000 Dth/d) of the Company's proposed capacity plans, and will provide twice the incremental system capabilities of the Company's proposed LNG storage facility

[44] Company's response to OPC POD-74, Attachment POD 74.20b.
[45] Direct Testimony of Gregory Becker, 16:19-21.
[46] Company's response to OPC POD-74, Attachment POD 74.1b.

despite the fact that the Company characterizes its proposed LNG facility as the "cornerstone" of its capacity-related solutions.[47]

Q HOW MUCH IS THE COMPANY ANTICIPATING PAYING FOR THIS ADDITIONAL FGT TRANSMISSION CAPACITY?

A. **##BEGIN CONFIDENTIAL##**The Company states that its quoted reservation cost for incremental capacity on the FGT pipeline is [redacted][48] The Company also states that on an annualized basis, this translates to total amount of [redacted][49] This implies that the total cost associated with the proposed reservation of an incremental 20,000 Dth/d will be [redacted] **##END CONFIDENTIAL##**.

Q. HAS THE COMPANY PROVIDED AN ESTIMATE OF THE COSTS ASSOCIATED WITH THE CONSTRUCTION OF THE LNG FACILITY?

A. Yes. The Company estimates that the proposed facility will cost $58 million.[50] Exhibit DED-1 presents a detailed breakdown of the total cost and individual cost components. The current cost estimate importantly does not include any contingency, which is commonly included in estimates of major capital projects. The Company, however, notes that its current cost estimate is not fixed and that the accuracy of the cost estimate will improve as the project gets closer to completion.[51]

[47] Petition for Approval of Rate Increase, Request for Approval of Depreciation Study, and Request for Interim Rate Relief by Florida City Gas, ¶12.
[48] Direct Testimony of Gregory Becker, Exhibit GB-2.
[49] Direct Testimony of Gregory Becker, Exhibit GB-2.
[50] Direct Testimony of Stephen Wassell, 9:1-9.
[51] Direct Testimony of Stephen Wassell, 9:12-13.

Q. HOW LONG WILL IT TAKE TO DEVELOP THE COMPANY'S PROPOSED LNG FACILITY?

A. The Company states that engineering design work has already started, and would continue through May 2018. Equipment procurement would begin in January 2018 and continue through October of 2018. Finally, construction would start in May 2018, with final completion and commission done in January 2019.[52]

III. THE COMPANY'S CAPACITY CHALLENGE

A. The Company's proposal is inconsistent with current transportation tariffs.

Q. PLEASE DISCUSS THE COMPANY'S PURPORTED CAPACITY CHALLENGES.

A. The Company clearly notes that it has enough capacity to serve its retail customers.[53] What the Company purports to not have, however, is enough natural gas capacity to serve **both** the projected capacity needs of its retail sales and a portion of its transportation service customers, primarily those designated as "essential use" transportation customers.[54]

Q. PLEASE EXPLAIN THE DIFFERENCE BETWEEN THE CAPACITY NEEDS OF RETAIL CUSTOMERS VERSUS TRANSPORTATION CUSTOMERS.

[52] Direct Testimony of Stephen Wassell, 8:13-16.
[53] Direct Testimony of Gregory Becker, 14:17-18.
[54] Direct Testimony of Gregory Becker, 15:6-10.

A. The Company's customers can be generalized into two types: (1) those taking full retail service and (2) those taking what is known as "transportation-only" service. Full retail service customers pay both a distribution charge and a commodity charge for their retail natural gas service. The distribution charge can be thought of as the base costs of providing retail distribution service. The Company also secures natural gas and transportation service for delivery at some fixed point (or points) on its system. These natural gas commodity and transportation costs are then passed along to retail customers through the Company's purchased gas adjustment ("PGA") clause. A transportation customer, on the other hand, is a customer that secures its own natural gas commodity and the transportation service, usually through a third party, to get that natural gas commodity to the Company's various delivery points. These transportation customers utilize the Company's distribution network as a common carrier, and pay a fee to the Company to use that distribution network in order to deliver natural gas to the customer's premises.

Q. WHAT DOES THE COMPANY MEAN BY AN "ESSENTIAL USE" TRANSPORTATION CUSTOMER?

A. The Company identifies a certain subset of its transportation customers as "essential use" given the fact that these customers require natural gas service for health and safety reasons. The Company provides as examples a hospital, a hotel, or the National Aeronautics and Space Administration ("NASA") facilities as "essential use" transportation customers in its service territory.[55]

[55] Direct Testimony of Gregory Becker, 9:7-10.

Q. WHAT REASON DOES THE COMPANY PROVIDE FOR INCLUDING SO-CALLED "ESSENTIAL USE" TRANSPORTATION CUSTOMERS IN ITS DESIGN DAY FORECAST?

A. The Company provides a couple of reasons for including "essential use" transportation customers in its design day forecast. First, the Company states that it holds capacity for these "essential use" customers as a backup supply due to their critical use needs.[56] Second, the Company states that it factors in an adjustment for the "essential use" transportation customer load to reflect "new opportunities from customers that have recently come onto the system or that have a high probability of becoming a customer."[57]

Q. WHY DOES THE COMPANY STATE THAT IT HOLDS CAPACITY FOR SO-CALLED "ESSENTIAL USE" CUSTOMERS AS A BACKUP SUPPLY?

A. The Company states that third party suppliers or marketers provide gas supply to meet the needs of their transportation customers.[58] However, FCG states that interstate pipelines, and FGT in particular, are fully subscribed unless and until the pipeline embarks on an expansion project. Therefore, the Company states that it cannot be certain as to the adequacy of a third-party supplier's acquisition of firm capacity, and the ability of third party suppliers to fully meet the needs of a growing transportation service load.[59]

[56] Direct Testimony of Gregory Becker, 10:4-8.
[57] Direct Testimony of Gregory Becker, 10:9-12.
[58] Direct Testimony of Gregory Becker, 12:3-7.
[59] Direct Testimony of Gregory Becker, 12:12-19.

> Thus, as this market grows, particularly the transportation load, and the customers require greater amounts of natural gas supply to be delivered to the FCG system, FCG lacks any degree of certainty as to whether third party suppliers or marketers have actually secured the firm capacity necessary to make these deliveries on behalf of their customers on the FCG system. This lack of certainty causes FCG concern as to the ability of these third party suppliers to fully meet the capacity needs of the growing transportation service load.[60]

Q. DOES THE COMPANY HAVE ANY FIRST HAND KNOWLEDGE REGARDING HOW THIRD PARTY SUPPLIERS OR MARKETERS ARE CURRENTLY SECURING THEIR NATURAL GAS CAPACITY REQUIREMENTS?

A. The Company claims to have no specific knowledge of how third party suppliers and marketers are securing their capacity on the FGT pipeline.[61] Instead, the purported need associated with the Company's capacity proposals relies on anecdotes, including their belief that third party suppliers and marketers must be utilizing capacity available in secondary markets after being released or made available to a replacement shipper.[62] The Company's proposal seems to be entirely based on this anecdote since it claims that replacement shippers "will not always have a firm right to deliver gas to the FCG system."[63] Thus, according to FCG's supposition, in cold weather FGT is more likely to curtail third party suppliers' or marketers' use of secondary capacity than a shipper with firm primary delivery rights to the FCG system.[64] Hence, the purported need for the Company's dual pronged capacity strategy.

[60] Direct Testimony of Gregory Becker, 12:12-19.
[61] Direct Testimony of Gregory Becker, 12:23-24.
[62] Direct Testimony of Gregory Becker, 13:1-4.
[63] Direct Testimony of Gregory Becker, 13:5-7.
[64] Direct Testimony of Gregory Becker, 13:9-13.

Q. IS IT POSSIBLE FOR FGT PIPELINE CUSTOMERS LACKING FIRM TRANSMISSION RIGHTS TO IMPACT THE COMPANY'S RETAIL SALES CUSTOMER'S SERVICE QUALITY?

A. No. The Company holds enough firm transmission capacity on the FGT pipeline to meet the Company's design day needs. Per FGT general terms and conditions, the pipeline undertakes a nomination and scheduling process that is designed to ensure that entities like FCG are given priority over customers not serving essential loads like the Company's retail sales customer base.

Q. PLEASE DESCRIBE FGT'S NOMINATION AND SCHEDULING PROCESS.

A. Nomination is the process by which customers of the pipeline specify the quantity of natural gas for a given day the customer requires. The customer specifies the quantity of natural gas required per day in dekatherms, the specified point or points on the FGT system the customer seeks receipt of natural gas, and the upstream entity from which the customer is purchasing natural gas.[65] FGT has a variety of nomination cycles, but generally, nominations clear the day prior to gas flow, or sometime prior to gas flow on the same day in intraday nomination cycles.[66] Promptly upon the close of the nomination deadline for each day, FGT evaluates all timely nominations in light of the estimated demand for service and the capacity expected to be available on affected segments of its system.[67] Included within the parameters evaluated by FGT are

[65] Florida Gas Transmission Company, FERC Gas Tariff, Fifth Revised Volume No. 1, General Terms and Conditions, §10 (A)(1).
[66] Florida Gas Transmission Company, FERC Gas Tariff, Fifth Revised Volume No. 1, General Terms and Conditions, §10 (A)(2).
[67] Florida Gas Transmission Company, FERC Gas Tariff, Fifth Revised Volume No. 1, General Terms and Conditions, §10 (B).

contractual delivery pressure obligations and, more importantly, whether or not the requested nomination would affect other customer's firm transportation rights.[68] FGT's tariff lists a scheduling priority to the extent FGT does not have the system capabilities to satisfy all requested nominations.[69]

Q. PLEASE DISCUSS FGT'S SCHEDULING PRIORITY IN CONDITIONS WHERE THE PIPELINE DOES NOT HAVE SUFFICIENT CAPABILITIES TO SATISFY ALL REQUESTED NOMINATIONS.

A. FGT's scheduling priority gives priority to those customers that take service from the pipeline under a firm transportation service tariff, and whose requested nomination is within the reserved maximum daily transport quantities specified in the customer's service agreement.[70] In other words, in conditions where demand for pipeline transportation service exceeds the pipeline's capabilities, the pipeline prioritizes service to firm transport customers before other customers. Interruptible transportation service customers are given a lower service priority, while "park 'n ride" service customers are given an even lower priority.[71]

[68] Florida Gas Transmission Company, FERC Gas Tariff, Fifth Revised Volume No. 1, General Terms and Conditions, §10 (C).
[69] Florida Gas Transmission Company, FERC Gas Tariff, Fifth Revised Volume No. 1, General Terms and Conditions, §10 (C)(1).
[70] Florida Gas Transmission Company, FERC Gas Tariff, Fifth Revised Volume No. 1, General Terms and Conditions, §10 (C)(1).
[71] Florida Gas Transmission Company, FERC Gas Tariff, Fifth Revised Volume No. 1, General Terms and Conditions, §10 (C)(1).

Q. HAS THE COMPANY PROVIDED ANY EXAMPLES OF CURTAILMENTS TO THIRD PARTY SUPPLIERS OR MARKETERS DUE TO INCLEMENT WEATHER?

A. No. The Company responded to discovery that it was unaware of any specific curtailments in the last ten years due to inclement weather. The Company also noted that it does not rely on secondary capacity for delivery of natural gas to its system, and that specific information on curtailments would be in the sole possession of the interstate pipeline.[72]

> Pipeline Capacity. For the purposes of this interrogatory, please refer to the Direct Testimony of Gregory Becker, page 13 lines 9 through 13, where he states:
>
> > If there is cold weather, the pipeline will be used at a high level. In such instances, FGT may curtail deliveries, in which case, the third party supplier's or marketer's use of this secondary capacity is more likely to be cut by FGT than would a shipper with firm primary delivery rights to the FCG system.
>
> Please provide all examples the Company is aware of occurring within the past 10 years, 2007 through 2016, where a marketer's use of capacity reserved through the secondary markets was curtailed or cut by an interstate pipeline operating in Florida due to inclement weather.
>
> **Company Response:**
>
> Florida City Gas does not rely on secondary capacity for delivery of natural gas to its system. The Company is also not aware of specific curtailments due to inclement weather, but that nominations can be, and have been, curtailed for any number of reasons, including inclement weather. Specific information on curtailments would be in the sole possession of the interstate pipeline.[73]

[72] Company's response to OPC ROG-115.
[73] Company's response to OPC ROG-115.

Q HOW LARGE ARE THE SO-CALLED "ESSENTIAL USE" TRANSPORTATION CUSTOMERS' SYSTEM REQUIREMENTS RELATIVE TO THE OVERALL TRANSPORTATION CLASS?

A. The Company identifies the "essential use" transportation customers' aggregate system design day capacity at 26,801 Dth/d, or approximately 43.2 percent of total transportation system design requirements.[74] This estimated "essential use" transportation design day capacity represents nearly 57 percent of the Company's overall sales customers' load requirement, or more than 24.5 percent, or nearly a quarter, of the Company's proposed design day requirement (i.e., combined retail sales and transportation requirements).[75]

Q. IS THE TERM "ESSENTIAL USE" CURRENTLY DEFINED IN THE COMPANY'S TARIFFS?

A. No. The Company's tariffs have not previously identified nor explicitly defined "essential use" transportation customers as a special class, sub-class, or for any other distinguishing purpose.[76] Furthermore, the Company's transportation service tariff clearly establishes that it is the third party, and not the Company, who is responsible for securing upstream pipeline capacity associated with these transportation customers' use.[77]

> [Third Party Suppliers] will be required to obtain firm interstate pipeline capacity into the Company's distribution system at points designated by the Company at a quantity equivalent to their Customers' aggregate

[74] Direct Testimony of Gregory Becker, Exhibit GB-3.
[75] Direct Testimony of Gregory Becker, Exhibit GB-3.
[76] The Company's tariff does note that, pursuant to its Gas Curtailment Plan, it will endeavor to provide adequate notice of any curtailments to those customers will medical necessity requiring natural gas use.
[77] Florida City Gas, FPSC Natural Gas Tariff, Volume No. 8 Sheet 59, Third Party Suppliers (TPS).

> [Average Daily Delivery Quantity]. [Third Party Suppliers] that do not demonstrate sufficient interstate firm capacity will be required to accept assignment of such capacity from the Company. The Company will assign each of its firm Interstate pipeline capacity contracts in proportion to the Company's total capacity portfolio at the current Federal Energy Regulatory Commission approved rates.[78]

Q. HOW DOES THE COMPANY DEFINE "ESSENTIAL USE" TRANSPORTATION CUSTOMERS?

A. The Company states that its definition of "essential use" transportation customers reflects the same health and safety prioritizations identified by FGT.[79] As part of its filing, the Company proposes to modify the definitions used within its tariffs to include the term "essential use." The Company proposes that the term be consistent with the term "Priority 1 Use" as used within FGT's tariff.[80] However, FGT defines "Priority 1 Use" customers as residential customers, including apartment buildings, hotels that utilize natural gas for purposes other than heating pools and spas, small commercial customers who use natural gas for non-manufacturing purposes, schools or hospitals, and minimum use for sanitation facility and policy and fire protection.[81] In curtailment events, where FGT does not have sufficient capabilities to satisfy the needs of all of its firm transport customers, all capacity serving "exempt uses" are curtailed first, followed by Priority 2 customers with Priority 1 customers being the last ones curtailed.[82]

[78] Florida City Gas, FPSC Natural Gas Tariff, Volume No. 8 Sheet 59, Third Party Suppliers (TPS).
[79] Direct Testimony of Gregory Becker, 9:9-10.
[80] Petition for Approval of Rate Increase, Request for Approval of Depreciation Study, and Request for Interim Rate Relief by Florida City Gas, Attachment A, Permanent Increase Tariff Sheets, Volume No. 9, Sheet 7.
[81] Florida Gas Transmission Company, FERC Gas Tariff, Fifth Revised Volume No. 1, General Terms and Conditions, §17(A)(2)(m).
[82] Florida Gas Transmission Company, FERC Gas Tariff, Fifth Revised Volume No. 1, General Terms and Conditions, §17(A)(3)(b)(iii).

Q. IN THE EVENT OF CAPACITY CURTAILMENTS, ARE TRANSPORTATION CUSTOMERS WHICH THE UTILITY REFERS TO AS "ESSENTIAL USE" WHOLLY WITHOUT RECOURSE?

A. No, since the Company also prioritizes service interruptions as part of its own gas curtailment plan. The Company's gas tariff states that it will "endeavor" to provide adequate notice of any curtailments if any customer has notified the Company of a medical necessity requiring gas use.[83] Presumably, this would include hospitals.

Q. DOES THE COMPANY INCLUDE CAPACITY ASSOCIATED WITH SO-CALLED "NON-ESSENTIAL USE" TRANSPORTATION CUSTOMERS IN ITS DESIGN DAY FORECAST?

A. Yes. The Company's proposal goes to great lengths to tie the need for its two new capacity additions to "essential use" transportation customers. However, only a small portion of the Company's proposed 30,000 Dth/d of new natural gas capacity will be used by these "essential use" customers. For instance, the Company forecasts that it only needs 7,392 Dth/d of incremental design day capabilities to adequately serve both retail customers and all "essential-use" transportation customers' needs (including reserves).[84] The remainder of this newly proposed capacity (roughly 22,600 Dth/d) would presumably be utilized by non-essential transportation customers' needs.

[83] Florida City Gas, FPSC Natural Gas Tariff, Volume No. 8 Sheet 20, §14.
[84] Direct Testimony of Gregory Becker, Exhibit GB-3.

Q. WHY DOES THE COMPANY INCLUDE THIS ADDITIONAL NON-ESSENTIAL USE CAPACITY REQUIREMENT IN ITS DESIGN DAY FORECAST?

A. The Company claims it includes load associated with these non-essential use transportation customers in its design day forecast to capture the fact that FCG's system is utilized to deliver contracted natural gas to transportation customers even on cold days.[85] So, non-essential transportation use is included, despite the fact that, as noted earlier, the Company is not obligated to provide capacity, per the explicit terms of its tariff, to any transportation customer, much less one that is not identified as being "essential use."

B. The Company has adequate system capacity.

Q. HAS THE COMPANY PROVIDED A COMPARISON OF ITS EXISTING GAS SUPPLY CAPABILITIES WITH ITS FORECASTED DESIGN DAY NEEDS?

A. Yes. As part of the Company's filing, the Company provided a comparison of its forecasted design day requirements compared to its existing gas supply capabilities.[86] Exhibit DED-2 summarizes the Company's comparison for each of its three service territory regions: Brevard County; Vero Beach; and Miami-Dade County. The exhibit clearly shows, and the Company has readily admitted, that it possesses sufficient capacity to meet the forecasted requirements of all of its sales customers, with at least a five percent reserve margin, for all three regions, with the exception of Brevard County, where the Company estimates a 1.5 percent reserve margin over its sales

[85] Direct Testimony of Gregory Becker, 10:15-23.
[86] Direct Testimony of Gregory Becker, Exhibit GB-3.

customers' forecasted requirements.[87] In both the Vero Beach and the Miami-Dade regions, the Company is forecasted to have ample capacity resources to serve not only all of the Company's forecasted sales customers' needs, but also a portion of its transportation customers' needs. The Company's capabilities in the Miami-Dade region are positioned the best within its entire system, with sufficient capabilities to serve all of its forecasted sales customers' needs, all of its forecasted "essential use" transportation customers' needs, and a portion of requirements from non-essential transportation customers.

Q. PLEASE DISCUSS THE COMPANY'S CLAIMED CAPACITY SHORTAGE.

A. It is important to note the Company has made clear that it currently has adequate capacity to serve the existing and future needs of its retail sales customers.[88] The Company's purported capacity deficiency only arises when it considers the capacity needs of **both** its retail sales and some of its transportation customers.[89] The Company clams it needs approximately 43,000 Dth/d of **additional** aggregate gas supply capabilities to meet the need for both its retail sales and so called "essential use" transportation customers.[90] This represents 62 percent of the Company's existing firm transportation capacity (68,955 Dth/d) it holds on the FGT pipeline.[91] The Company indicates that it needs this new gas supply capacity primarily in the Brevard County, Vero Beach, and Miami-Dade County portions of its system.[92] Schedule DED-2,

[87] Direct Testimony of Gregory Becker, Exhibit GB-3.
[88] Direct Testimony of Gregory Becker, 14:17-18.
[89] Direct Testimony of Gregory Becker, 15:6-10.
[90] Direct Testimony of Gregory Becker, 15:13-15.
[91] Direct Testimony of Gregory Becker, 15:18-21.
[92] Direct Testimony of Gregory Becker, 23:21-23.

discussed earlier, compares the Company's forecasted design day needs to its existing capacity for each of the Company's three identified supply territory regions.

Q. DOES THE COMPANY PLACE GREATER IMPORTANCE ON ITS SUPPLY NEEDS IN ANY ONE OF THESE THREE AREAS?

A. Yes. The Company projects transportation customer load growth to be predominately located in the Miami-Dade portion of its system.[93] The Company estimates that it will need as much as 4,500 Dth/day of incremental system requirements in the Miami-Dade region associated with the growth in transportation customer load growth possibly as early as the 2017-2018 heating season.[94] As support, the Company cites a recent resolution by the Miami-Dade County Department of Transportation and Public Works ("DTPW") to buy 300 CNG powered buses, along with the development of two publicly-accessible CNG fueling stations.[95] The Company defines this load within its filing as "essential use" transportation load.[96]

Q. DO YOU AGREE THAT THE COMPANY HAS A CAPACITY DEFICIENCY?

A. No, I do not. The Company has ample capacity, holding enough firm capacity on interstate pipelines, to meet all of the projected needs of its sales customers, and approximately 72 percent of the projected requirements of purported essential use transportation customers[97] despite the fact that the Company's own tariff requirements

[93] Direct Testimony of Gregory Becker, 14:21-23.
[94] Direct Testimony of Gregory Becker, 14:23-25.
[95] Direct Testimony of Gregory Becker, 21:1-5.
[96] See, Direct Testimony of Gregory Becker, Exhibit GB-3.
[97] Direct Testimony of Gregory Becker, 29:11-14.

do not require it to secure upstream transportation capacity for **any** transportation service customers, "essential use" or not.

Q. HAS THE COMPANY IDENTIFIED ANY REGULATION OR REGULATORY RULE THAT REQUIRES IT TO MAINTAIN BACKUP NATURAL GAS CAPACITY TO SUPPLY "ESSENTIAL USE" TRANSPORTATION CUSTOMERS?

A. No. In response to discovery, the Company provided no references to rules or regulations that required it to maintain backup natural gas capacity to supply so-called "essential use" transportation customers.[98] The Company's sole response was to discuss the potential that such customers may become full retail customers of the utility with no notice to the utility due to there being no such notice requirement currently in the Company's tariff.[99] It should be noted, however, that nowhere in the Company's filing does the Company discuss the potential to address such a problem through a change to its tariff.

Q. WHAT DOES THE ANALYSIS OF THE INDIVIDUAL GEOGRAPHIC REGIONS SHOW ABOUT THE COMPANY'S CURRENT CAPACITY POSITION?

A. The Company identifies the Miami-Dade region as being of particular concern[100] despite the fact that its own analysis, as clearly indicated earlier, does not support this

[98] Company's response to OPC POD-113.
[99] Company's response to OPC ROG-161.
[100] See, Direct Testimony of Gregory Becker, 14:21-23.

concern (nor capacity need). The Company's analysis shows that it not only possesses enough reserved firm transmission capacity on the FGT pipeline to serve all of its projected design day load associated with its sales customers, but that it also maintains a five percent reserve margin. Furthermore, the Company's analysis finds that the Company is currently able to fully serve all "essential use" transportation customers, including the additional 4,500 Dth/d of incremental "essential use" transportation capacity discussed earlier. The potential capacity deficiency arises only when you consider non-essential use transportation customers, which the Company is not obligated to serve (from an upstream commodity and transportation service perspective). However, even in this case, the Company is currently projected to be able to serve 13.7 percent of this unrequired capacity.[101]

Q. IS THERE EVIDENCE THAT THE NORTHERN PORTION OF THE COMPANY'S SYSTEM MAY REQUIRE ADDITIONAL NATURAL GAS CAPACITY?

A. Potentially, at least more so than the southern portion of the system serving the Miami-Dade region. The Company's analysis of its current system capabilities compared with projected customer needs shows that the Company has sufficient regional capabilities to serve all of its projected design day load associated with its sales customers in the Vero Beach and Brevard County region. Furthermore, the Company estimates that it will have sufficient reserves to be able to serve nearly 60 percent of what it considers "essential use" transportation customers' needs, even though the Company is under no

[101] See, Direct Testimony of Gregory Becker, Exhibit GB-2.

obligation to reserve capacity for these customers. However, the Company projects that it would only be able to maintain a 1.5 percent reserve margin over design day conditions associated with the Company's sales customers in the Brevard County region of its system.[102]

Q. WHAT WEATHER ASSUMPTIONS DOES THE COMPANY MAKE IN DEVELOPING ITS PEAK CAPACITY REQUIREMENTS?

A. The Company bases its design day requirements off of an assumed single cold winter day event having an average daily temperature of 36 degrees in the Miami-Dade region, and a concurrent average daily temperature of 28 degrees in the Brevard County portion of the State.[103] This represents the coldest weather seen in 28 years for the Miami-Dade region, and 32 years for the Brevard County region.[104] Statistically, this event could be viewed as having approximately a three percent chance of occurring in any given winter. To ensure it has the capabilities to cover such unexpected events on a design day, the Company furthermore has a policy of including a five percent reserve margin over this amount.[105]

Q. WHAT IS THE PROBABILITY THAT THE COMPANY'S DESIGN DAY REQUIREMENTS FOR ITS SALES CUSTOMERS IS INADEQUATE?

A. Extremely low. The Company's design day analysis seeks to ensure that it maintains a five percent reserve margin over estimated natural gas usage that is already calculated

[102] See, Direct Testimony of Gregory Becker, Exhibit GB-2.
[103] Direct Testimony of Gregory Becker, 6:9-13.
[104] Direct Testimony of Gregory Becker, 6:19-23.
[105] Direct Testimony of Gregory Becker, 31:17-19.

using weather conditions that are abnormally cold for the region. The Company's design day parameters represent extremely conservative estimates. Furthermore, the Company notes that its design day is based upon abnormally cold weather, because it is its "responsibility to plan for these events, even if they occur few and far between."[106]

Q. HOW MUCH ADDITIONAL CAPACITY WOULD BE REQUIRED TO ENSURE THAT THE COMPANY MAINTAINS APPROPRIATE RESERVE MARGINS IN BREVARD COUNTY?

A. According to the Company's analysis, it would require approximately 1,080 Dth/d of incremental capacity to ensure it maintains appropriate reserves in the Brevard County portion of the Company's system.[107] Importantly, this is a small fraction of the approximately 43,000 Dth/d of additional aggregate gas supply capabilities the Company claims is required to meet the forecasted needs on its system, or the 30,000 Dth/d of additional gas supply capacity the Company's proposes to secure as an element of this proceeding.

C. Florida capacity markets are amply supplied.

Q. DOES THE COMPANY PLACE GREATER IMPORTANCE ON ITS SUPPLY NEEDS IN ANY OF ITS THREE PLANNING AREAS?

A. Yes. As mentioned previously, the Company projects transportation customer load growth to be predominately located in the Miami-Dade portion of its system.[108]

[106] Direct Testimony of Gregory Becker, 7:1-2.
[107] See, Direct Testimony of Gregory Becker, Exhibit GB-2.
[108] Direct Testimony of Gregory Becker, 14:21-23.

However, as also noted earlier, the Company's analysis of design day capabilities demonstrates that the Company currently has sufficient system capabilities to serve its customers' needs in the Miami-Dade portion of its system. On the other hand, the Company's analysis also shows that FCG may require additional upstream capacity in the northern portion of its system.[109] I will, therefore, address market capacity in the Company's northern and southern portions of its system in turn.

Q. ARE THERE INDICATIONS THAT NATURAL GAS CAPACITY IS BECOMING MORE CONSTRAINED IN THE MIAMI-DADE REGION?

A. No. The Company proposes to construct an LNG storage facility to assist in its service needs in the Miami-Dade region; however, there are no indications that existing pipeline resources in the region are becoming more constrained. As part of the process for ensuring that local distribution companies, marketers, and large industrial customers have adequate capabilities to serve their needs, these parties annually reserve appropriate transportation capacity on the interstate pipelines. If one of those parties later realizes that it has reserved excess transportation capacity, that party can sell or "release" the excess capacity back into the market. If capacity in the region was becoming more constrained, one would expect to see falling amounts of natural gas capacity released into the markets each year.

Q. HAVE YOU EXAMINED THE HISTORIC TRENDS IN CAPACITY RELEASES ON THE FGT PIPELINE?

[109] Direct Testimony of Gregory Becker, Exhibit GB-3.

A. Yes, I have. Exhibit DED-3 presents historic capacity releases for the counties served by the Company for the years 2013 through 2017. The analysis shows that in 2013, nearly 811,000 Dth/d of capacity were released into the market. This annual release pattern has been maintained in subsequent years. In 2014, more than 1,209,000 Dth/d of capacity was released, and in 2015 approximately 1,229,000 Dth/d of capacity was released. As of December 1, nearly 865,000 Dth/d of capacity has been released in 2017. The sole exception is 2016; however, the year still saw nearly 533,433 Dth/d of capacity released by pipeline customers.

Q. DOES THIS ANALYSIS OF HISTORIC CAPACITY RELEASES ON THE FGT SYSTEM PROVIDE ANY ADDITIONAL INFORMATION RELEVANT TO THE COMPANY'S PROPOSAL?

A. Yes, it does. The Commission should recognize that a substantial amount of historic capacity that has been released on the FGT system has been released in the extreme southern portion of the system, specifically in the Broward and Miami-Dade regions of the system. The Company proposes to construct an LNG facility to assist in providing service in the Miami-Dade region, yet this region in particular appears to be currently well-served by existing pipeline service.

Q. IS THERE OTHER EVIDENCE SUPPORTING THE EXISTENCE OF AVAILABLE CAPACITY ON THE FGT PIPELINE?

A. Yes, there is. Exhibit DED-4 presents the average scheduled delivery quantities at each delivery location on the Company's system compared to the operating capacity of the

location since September 2017. The analysis shows that there exists significant operationally available capacity on the system. The most utilized location in the Company's service territory is North Vero Beach, followed closely by Port St. Lucie. However, even these locations have approximately 33 percent of their system capabilities available.

D. Summary

Q. IS THERE ANY INDICATION THAT THE COMPANY DOES NOT POSSESS SUFFICIENT CAPACITY ON ITS SYSTEM TO MEET ITS SYSTEM REQUIREMENTS?

A. No, there is not. The Company has made clear that it currently has adequate capacity to serve the existing and future needs of its retail sales customers.[110] The Company's purported capacity deficiency only arises when it considers the capacity needs of **both** its retail sales and what it calls "essential use" transportation customers.[111] However, the Company's forecasts show that it currently possesses enough capacity to meet the needs of its sales customers, and approximately 72 percent of the projected requirements of "essential use" transportation customers.[112] This despite the fact that the Company's own tariff requirements provide no obligation for the Company to secure upstream transportation capacity for any transportation service customers, "essential use" or not.

[110] Direct Testimony of Gregory Becker, 14:17-18.
[111] Direct Testimony of Gregory Becker, 15:6-10.
[112] Direct Testimony of Gregory Becker, 29:11-14.

Q. IF THE COMPANY REQUIRES ADDITIONAL CAPACITY, IS THERE ANY INDICATION THAT IT WOULD BE UNABLE TO PROCURE THE NEEDED CAPACITY FROM THE EXISTING PIPELINE CURRENTLY SERVING THE COMPANY?

A. No, there is not. Even if it is assumed that the Company does require additional capacity resources, the Company did not demonstrate that it could not adequately meet these needs through additional firm transmission reservations on either the FGT system or another pipeline. The Company's proposal goes to great lengths to tie the need for its two new capacity additions to "essential use" transportation customers. However, the Company forecasts that it would need only 7,392 Dth/d of incremental design day capabilities to adequately serve all of its existing and future needs of its retail sales customers and its "essential use" transportation customers.[113] This is less than half, and nearly a third, of the proposed additional capacity provided by FGT's "minor" expansion project.[114]

Q. IS THERE ANY INDICATION THAT THE COMPANY REQUIRES AN LNG FACILITY TO PROVIDE ADDITIONAL CAPACITY RESOURCES ON THE SOUTHERN PORTION OF ITS SYSTEM?

A. No, there is not. The Company identifies the Miami-Dade region as being of particular concern[115] despite the fact that its own analysis does not support this concern (nor capacity need). The Company's analysis shows that it possesses enough reserved firm

[113] Direct Testimony of Gregory Becker, Exhibit GB-3.
[114] Direct Testimony of Gregory Becker, 16:15-21.
[115] See, Direct Testimony of Gregory Becker, 14:21-23.

transmission capacity on the FGT pipeline to serve all of its projected design day load associated with its sales customers utilizing a five percent reserve margin.[116] The Company's analysis even shows that the Company currently has sufficient capacity to fully serve all "essential use" transportation customers,[117] including the additional 4,500 Dth/d of incremental "essential use" transportation capacity provided by the Company as an example of its large expected growth in this sector.[118] There has simply been no evidence provided by the Company that it possesses a material supply deficiency in the southern portion of its system.

IV. THE COMPANY'S NEED ANALYSIS IS DEFICIENT

A. The Company's proposal is inconsistent with recent changes to the Florida transportation market.

Q. HAS NATURAL GAS SERVICE BEEN CHANGING IN CENTRAL AND SOUTH-CENTRAL FLORIDA IN THE PAST FEW YEARS?

A. Yes, it has. When the Company filed its last rate case 14 years ago in 2003, there existed only one established pipeline serving central and south-central Florida (FGT). In May 2002, just prior to the filing of the Company's last rate case, the Gulfstream pipeline was placed in service.[119] This 1.3 billion cubic feet per day ("Bcf/d") interstate pipeline transports natural gas from the Mississippi-Alabama border region across the Gulf of Mexico into Tampa, eventually terminating in south-central Florida.[120] It

[116] Direct Testimony of Gregory Becker, Exhibit GB-3.
[117] Direct Testimony of Gregory Becker, Exhibit GB-3.
[118] Direct Testimony of Gregory Becker, 14:21-25.
[119] "About Gulfstream," Gulfstream Natural Gas System L.L.C., available online at: http://wp.gulfstreamgas.com/
[120] "About Gulfstream," Gulfstream Natural Gas System L.L.C., available online at: http://wp.gulfstreamgas.com/

interconnects with the FGT pipeline in Port St. Lucie, and at the Martin Clean Energy Center in Martin County operated by Florida Power and Light ("FPL"). Gulfstream also directly interconnects with a portion of FCG's system in Palm Beach County.[121]

Q. HAVE OTHER PIPELINES RECENTLY BEEN DEVELOPED TO SERVE THE NEEDS OF CENTRAL AND SOUTH-CENTRAL FLORIDA?

A. Yes. A few months ago on July 3, 2017, phase 1 of the Sabal Trail pipeline was placed into full commercial service.[122] The Sabal Trail pipeline is a joint venture between Spectra Energy Partners, FPL's parent company (NextEra Energy), and Duke Energy. The Sabal Trail currently is a 810 million cubic feet per day ("MMcf/d") interstate pipeline[123] that connects natural gas service from the Transco pipeline in Alabama to a new Central Florida Hub in Osceola County along Interstate 4 east of Kissimmee.[124] To fulfill its needs associated with the Sabal Trail pipeline, NextEra Energy commenced commercial operations in June 2017 of the Florida Southeast Connection ("FSC") pipeline.[125] The FSC pipeline is a 640 MMcf/d pipeline[126] that transports natural gas from the new Central Florida Hub in Osceola County to FPL's Martin Clean Energy Center in Martin County.[127]

[121] See. Direct Testimony of Gregory Becker, Exhibit GB-1.
[122] "Sabal Trail Is…," Sabal Trail Transmission, LLC, available online at: http://www.sabaltrailtransmission.com/
[123] "Sabal Trail Is…," Sabal Trail Transmission, LLC, available online at: http://www.sabaltrailtransmission.com/
[124] See. Direct Testimony of Gregory Becker, Exhibit GB-1.
[125] "Welcome to the Florida Southeast Connection, LLC," Florida Southeast Connection, LLC, available online at: http://www.floridasoutheastconnection.com/
[126] "Florida's Sabal Trail pipeline and associated natural gas pipeline project begin service," (July 10, 2017), Today in Energy, U.S. Energy Information Administration.
[127] See. Direct Testimony of Gregory Becker, Exhibit GB-1.

Q. HAS ANY PIPELINE SERVING CENTRAL AND SOUTH FLORIDA UNDERTAKEN NOTABLE CAPACITY EXPANSION EFFORTS SINCE THE COMPANY'S PRIOR RATE CASE?

A. Yes. The FGT pipeline undertook a significant expansion effort to its system starting in at least 2008. This expansion, called the Phase VIII Expansion project, included a number of different upgrades across the pipeline's system. Specifically, the proposed expansion included 11 separate loop segments of varying diameter and lengths added to the pipeline – two added in Alabama with the remaining nine added to separate parts of the pipeline in Florida.[128] The upgrade also improved eight existing compressor stations on the system – one in Alabama with the remaining seven upgrades to compressor stations in Florida.[129] Finally, the expansion included the acquisition from FPL of a 20-inch diameter pipeline located in Martin County previously serving as a lateral from the FGT mainline to the Martin Clean Energy Center, the installment of three new greenfield pipeline segments, and the installation of a new compressor station and three metering and regulation ("M&R") stations to support the new pipeline segments.[130] All of the new pipeline segments were installed in Florida.

Q. PLEASE DESCRIBE THE GREENFIELD PIPELINE ADDITIONS FGT MADE TO ITS SYSTEM AS PART OF THE PHASE VIII EXPANSION PROJECT.

[128] 73 Fed. Reg. 102, p. 30387 (May 27, 2008).
[129] 73 Fed. Reg. 102, p. 30387 (May 27, 2008).
[130] 73 Fed. Reg. 102, p. 30387 (May 27, 2008).

A. The first of the three greenfield pipeline additions was the Suwannee Lateral, which added approximately 8 miles of pipeline loop in Lafayette County, and about 14 miles of greenfield pipeline in Madison and Suwannee Counties.[131] The second greenfield pipeline addition added about 90.6 miles of 30-inch-diameter pipeline in Desoto, Highlands, Okeechobee, and Martin Counties, and connected the pipeline's Gulf of Mexico pipeline in Desoto County near the town of Arcadia with the Martin Plant Lateral, and thus the pipeline's Atlantic Ocean pipeline, in Martin County.[132] The third greenfield pipeline addition, called the Manatee Lateral, added approximately 16.5 miles of 24-inch-diameter pipeline in Manatee County.[133] To support the new pipeline segments, FGT installed a new compressor station in Okeechobee County along the Arcadia to Martin Plant Lateral line, and added three new M&R stations. One M&R station was added in Suwannee County at the site of a new power plant operated at the time by Progress Energy; the other two M&R stations were added in Manatee and Martin Counties, at the site of two separate power plants operated by FPL.[134]

Q. WHAT WAS THE TOTAL EFFECT OF THE PHASE VIII EXPANSION TO THE FGT PIPELINE SYSTEM?

A. The Phase VIII Expansion project was completed and placed into service on February 14, 2011. In total, the Phase VIII Expansion project cost upwards of $2.4 billion and consisted of 483 miles of new or upgraded pipeline to the FGT system.[135] The entire

[131] 73 Fed. Reg. 102, p. 30387 (May 27, 2008).
[132] 73 Fed. Reg. 102, p. 30387 (May 27, 2008).
[133] 73 Fed. Reg. 102, p. 30387 (May 17, 2008).
[134] 73 Fed. Reg. 102, p. 30388 (May 17, 2008).
[135] "U.S. Natural Gas Pipeline Projects" (May 11, 2017), U.S. Energy Information Administration, available online at: https://www.eia.gov/naturalgas/data.cfm#pipelines.

expansion project added 820 MMcf/d of additional capacity to the system.[136] In comparison, this upgrade provided more than 63 percent of the incremental capacity provided by the installation of the Gulfstream pipeline, and provides slightly more incremental capacity when compared to the new Sabal Trail pipeline recently placed into service.

Q. ARE THERE PROPOSALS TO EXPAND THE AVAILABLE CAPACITY OF THESE PIPELINES?

A. Yes. There are multiple proposals in Florida to expand the reach and available capacity of the pipelines connected with the FSC pipeline. First, there are two additional phases associated with the Sabal Trail pipeline. Phase II, scheduled for completion in 2020, will add an additional 170 MMcf/d of available capacity with the addition of two new compressor stations.[137] Likewise, Phase III, scheduled for completion in 2021, will add an additional 70 MMcf/d of available capacity through the expansion of existing compressor stations.[138] The FSC is building a 5.2 mile lateral in Okeechobee County to connect itself to the Okeechobee Clean Energy Center operated by FPL.[139]

Q. ARE THERE PROPOSALS OUTSIDE OF FLORIDA TO EXPAND AVAILABLE CAPACITY TO THE SABAL TRAIL AND FSC PIPELINE?

[136] "U.S. Natural Gas Pipeline Projects" (May 11, 2017), U.S. Energy Information Administration, available online at: https://www.eia.gov/naturalgas/data.cfm#pipelines.
[137] "Florida's Sabal Trail pipeline and associated natural gas pipeline project begin service," (July 10, 2017), Today in Energy, U.S. Energy Information Administration.
[138] "Florida's Sabal Trail pipeline and associated natural gas pipeline project begin service," (July 10, 2017), Today in Energy, U.S. Energy Information Administration.
[139] "Welcome to the Florida Southeast Connection, LLC," Florida Southeast Connection, LLC, available online at: http://www.floridasoutheastconnection.com/

A. Yes, there are. Transco has upgraded its capability through the Hillabee Expansion in Alabama to allow for an additional 800 MMcf/d of capacity to serve the Sabal Trail pipeline.[140] This is only Phase I of the expansion, which will be completed in three parts. Phase II of the expansion will add an additional 200 MMcf/d of system capabilities, and is scheduled to be operational in 2020.[141] Likewise, Phase III of the Hillabee Expansion will provide an additional 100 MMcf/d of system capabilities, and is scheduled to be operational in 2021.[142]

Q. ARE THERE ANY OTHER PROPOSALS TO EXPAND NATURAL GAS TRANSPORTATION CAPABILITIES IN FLORIDA?

A. Yes, there are. Additional capacity will be made available on the FGT system through FGT's proposed Jacksonville Expansion Project.[143] This expansion project consists of the construction of 3.0 miles of new pipeline and associated facilities in Suwannee and Columbia Counties, and approximately 5.7 miles of new pipeline and associated facilities in Bradford and Clay Counties. FGT also proposes to construct a new compressor unit and regulation station in Bradford County. While the Jacksonville Expansion Project is to FGT's system in northern Florida, the proposed expansion will add approximately 75,000 Dth/d of natural gas capacity at various amounts throughout

[140] "Florida's Sabal Trail pipeline and associated natural gas pipeline project begin service," (July 10, 2017), Today in Energy, U.S. Energy Information Administration.
[141] "Florida's Sabal Trail pipeline and associated natural gas pipeline project begin service," (July 10, 2017), Today in Energy, U.S. Energy Information Administration.
[142] "Florida's Sabal Trail pipeline and associated natural gas pipeline project begin service," (July 10, 2017), Today in Energy, U.S. Energy Information Administration.
[143] See, "U.S. natural gas pipeline projects," U.S. Energy Information Administration, available online at: https://www.eia.gov/naturalgas/data.cfm#pipelines

the FGT system in Florida.[144] This project was projected to be completed sometime in 2017; therefore, it is reasonable to believe that the project is currently in its final phases of development.[145]

Q. WHAT HAS DRIVEN THE LARGE GROWTH IN NATURAL GAS TRANSPORTATION CAPABILITIES IN CENTRAL AND SOUTH-CENTRAL FLORIDA IN THE PAST FEW YEARS?

A. Much of the additional natural gas capabilities are associated with serving natural gas electric power generation facilities. Since the beginning of 2016, Florida leads the nation with the addition of 3.4 gigawatts of natural gas-fired electric generation capacity. Additionally, there are plans to add 3.9 gigawatts of natural gas-fired electric generation capacity over the next six years.[146] Florida is not located in a natural gas production region, nor is the subsurface geology conducive to underground storage. Therefore, the additional buildout of new natural gas electric generation units has facilitated the need for additional transportation facilities by pipeline owners.[147]

Q. IS THERE AVAILABLE CAPACITY ON EITHER THE GULFSTREAM, SABAL TRAIL, OR FSC PIPELINES?

[144] Florida Gas Transmission Company, LLC; Federal Energy Regulatory Commission, Docket No. CP15-144-000, Notice of Availability of the Environmental Assessment for the Proposed Jacksonville Expansion Project, p. 1.
[145] See, "U.S. natural gas pipeline projects," U.S. Energy Information Administration, available online at: https://www.eia.gov/naturalgas/data.cfm#pipelines
[146] "Florida's Sabal Trail pipeline and associated natural gas pipeline project begin service," (July 10, 2017), Today in Energy, U.S. Energy Information Administration.
[147] "Florida's Sabal Trail pipeline and associated natural gas pipeline project begin service," (July 10, 2017), Today in Energy, U.S. Energy Information Administration.

A. Yes, there is. While these pipelines have been constructed to support electric generation, there exists unsubscribed capacity on each of the FGT alternatives. Specifically, Gulfstream posted on November 1, 2017, the availability of 18,000 Dth/d of unsubscribed capacity in its Florida region.[148] Being relatively new pipelines, the Sabal Trail and FSC pipelines have even greater amounts of unsubscribed capacity. The Sabal Trail pipeline, for example, had 712,000 Dth/d of unsubscribed capacity as of December 1, 2017, in the Osceola County region.[149] Likewise, the FSC pipeline had 240,000 Dth/d of unsubscribed capacity in the region of the FPL Martin Clean Energy Center.[150] It is clear that, while new natural gas electric generation units are driving a great deal of natural gas pipeline investment in the State, there appears to be additional capacity on these pipelines not currently being reserved by power plants.

Q. HAS THE COMMISSION REVIEWED THE MERITS OF ANY OF THESE PROPOSED PIPELINES?

A. Yes, it has. On July 26, 2013, FPL filed a petition with the Commission for a determination of the prudence associated with its proposals to construct the Sabal Trail and FSC pipelines in conjunction with its partners to supply, in part, FPL's power plants.[151] In its filing, FPL specifically referenced the ability of these pipelines to create

[148] "Gulfstream – Unsubscribed Capacity" (November 1, 2017), TSP/TSP Name: 017738746 Gulfstream Natural Gas System, L.L.C., Gulfstream.
[149] "Unsubscribed Capacity" (December 1, 2017), Sabal Trail Transmission, LLC (930373670), Enbridge.
[150] "Unsubscribed Capacity" (December 1, 2017), Florida Southeast Connection (080371679), Florida Southeast Connection.
[151] In re: Florida Power & Light Company's Petition for Prudence Determination Regarding New Pipeline System; Docket No. 13-0198-EI; Petition.

a more reliable and liquid market for capacity and supply within the state through the creation of a Central Florida Hub.[152]

> In addition to providing a backup source of supply to maintain operations during potential outage conditions on any of the connected pipelines, the Central Florida Hub also has the potential to provide all consumers within the state of Florida with direct pipeline access to shale gas supplies via the Sabal Trail system. As the Sabal Trail project will be connected to both FGT and Gulfstream at the hub, Florida consumers will have the ability to purchase capacity on Sabal Trail and then direct their gas from Sabal Trail into FGT and/or Gulfstream at the hub for ultimate delivery to downstream markets.
>
> Because the hub will be connected to each of the four pipelines in this area (i.e., FGT, Gulfstream, Sabal Trail and FSC), it will also provide an opportunity for Florida market participants to purchase and sell natural gas and create a liquid marketplace for spot market transactions within the state. This added opportunity for price competition should benefit FPL and its customers as well as all other gas consumers in Florida.[153]

Q. IN SUMMARY, DO THESE TRENDS YOU HAVE DISCUSSED SUPPORT THE COMPANY'S CLAIMS OF LIMITED CAPACITY OPTIONS?

A. No, they do not. There does not appear to be any evidence to suggest that the Company would be unable to secure additional capacity on the FGT pipeline at reasonable prices, or seek interconnection with competing pipelines newly providing service to Central and South-Central Florida.

[152] In re: Florida Power & Light Company's Petition for Prudence Determination Regarding New Pipeline System; Docket No. 13-0198-EI; Direct Testimony of Timothy C. Sexton, 47:8-22.
[153] In re: Florida Power & Light Company's Petition for Prudence Determination Regarding New Pipeline System; Docket No. 13-0198-EI; Direct Testimony of Timothy C. Sexton, 47:8-22.

B. The Company's proposed LNG facility is inconsistent with recent additions in LNG capacity in Florida

Q. WHAT BENEFIT DOES THE COMPANY STATE WOULD BE PROVIDED BY THE PROPOSED LNG STORAGE FACILITY?

A. The Company states that developing and operating an LNG storage facility will provide a number of benefits. First, the Company asserts that the LNG storage facility could augment system reliability on the coldest of days, as well as any other day of the year, should the need arise.[154] The Company also asserts that its storage facility will be able to take advantage of multiple LNG sources, thus expands supply resources beyond natural gas pipeline deliveries like those provided by FGT.[155]

Q. DOES THE COMPANY PROVIDE ANY EXAMPLE OF A SITUATION WHERE THE PRESENCE OF LNG STORAGE MAY ASSIST THE COMPANY IN ADDRESSING RELIABILITY CONCERNS?

A. Yes. The Company identifies, as an example, a Mothers' Day, 2015 accident that led to a system outage in the Port St. Lucie area.[156] This outage occurred when a vehicle traveling at a high rate of speed collided with a Company regulator station located approximately 75 feet from the road.[157] The accident heavily damaged the Company's facilities and FGT equipment, leaving approximately 6,000 FCG customers without natural gas service.[158]

[154] Direct Testimony of Gregory Becker, 19:8-10.
[155] Direct Testimony of Gregory Becker, 19:13-18.
[156] Direct Testimony of Gregory Becker, 19:22-25.
[157] Company's response to OPC POD-87.
[158] Direct Testimony of Gregory Becker, 19:25 to 20:2.

Q. HOW DID THE COMPANY RESPOND TO THE MOTHER'S DAY 2015 INCIDENT?

A. Due to the damage sustained to FGT system and the Company's own systems, the Company could not rely on pipeline natural gas for the duration of the outage.[159] The Company utilized approximately 400 Mcf of LNG transported to the Port St. Lucie area via semi-trucks from Georgia.[160] The Company also arranged for the delivery of approximately 156 Mcf of compressed natural gas ("CNG") from Marlin CNG Services during the outage.[161] This CNG was delivered via truck to a local hospital in the area.[162]

Q. WHAT SOURCES OF LNG DOES THE COMPANY STATE COULD SUPPLY THE COMPANY'S PROPOSED LNG STORAGE FACILITY?

A. The Company states that there are three supply sources that can effectively deliver LNG to South Florida. These three are New Fortress, which has a facility in Miami, Eagle LNG, which has a facility in Jacksonville, and Pivotal LNG, which has access to facilities in Jacksonville; Trussville, Alabama; and three separate plants in Georgia.[163]

Q. HAVE YOU REVIEWED THE STATUS OF LNG FACILTIES OPERATING IN FLORIDA AND THE SURROUNDING REGION?

[159] Company's response to OPC POD-87.
[160] Company's response to OPC POD-96.
[161] Company's response to OPC POD-96.
[162] Company's response to OPC POD-96.
[163] Direct Testimony of Stephen Wassell, 4:3-7.

A. Yes. This survey is presented in Exhibit DED-5. Exhibit DED-5 documents the capabilities of LNG facilities operating in the states of Alabama, Florida, and Georgia. This exhibit was developed from information reported to the U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration ("PHMSA").[164] Florida-specific information was supplemented by facility development/capacity announcements made available in news reports and press releases.

Q. WHAT DOES YOUR SURVEY OF SOUTHEASTERN LNG FACILITIES DEMONSTRATE?

A. Exhibit DED-5 shows that prior to 2016, Florida did not contain a single LNG facility. Today, however, there are a total of five separate facilities in Florida that are currently operating, or under construction. In 2016, Fortress Energy's Miami LNG facility commenced operations. This facility located in Hialeah, Florida, within the Miami metropolitan area, has liquefaction capabilities of 100,000 gallons of LNG per day, and storage capabilities of 270,000 gallons. Fortress Energy also commenced operations in 2017 of the Titusville LNG facility in Titusville located in Brevard County. This large facility has liquefaction capabilities of one million gallons of LNG per day, and storage capabilities of five million gallons. In addition to these two facilities, two facilities have commenced operations in the Jacksonville area, with an additional facility currently under construction.

[164] See, 49 CFR Part 191.

Q. PLEASE DESCRIBE THE LNG OPERATIONS IN THE JACKSONVILLE AREA.

A. In addition to Fortress Energy's operations in South Florida, Eagle LNG commenced operations in the Jacksonville area in 2017, with a second facility currently under construction and scheduled to commence operations in 2019. The existing facility has planned liquefaction capabilities of 200,000 gallons of LNG per day, and storage capabilities of one million gallons. The second facility under construction will have liquefaction capabilities of 1.5 million gallons of LNG per day, and storage capabilities of 12 million gallons. In addition to these two facilities, the Company's affiliate, Pivotal LNG, has commenced operations of the JAX LNG facility in the Jacksonville area. This facility has liquefaction capabilities of 120,000 gallons of LNG per day, and storage capabilities of two million gallons.

Q. WHAT DOES THE DEVELOPMENT OF LNG FACILITIES IN FLORIDA INDICATE ABOUT THE COMPANY'S PROPOSAL TO CONSTRUCT AN LNG STORAGE FACILITY IN THE MIAMI AREA?

A. An examination of the current state of LNG development in the State shows that there are several alternatives available to the Company if it believes that it needs reliable access to LNG supplies as an alternative to pipeline-supplied natural gas. In particular, Fortress Energy's Miami LNG facility is located less than 20 miles from where the Company has indicated that it is interested in constructing an LNG storage facility. Fortress Energy's Miami LNG facility has liquefaction capabilities, unlike the Company's proposed facility, and comparable storage capacity to that proposed by the

Company. The Company, however, does not appear to have explored these options through commercial inquiries or any competitive bidding process.[165]

Q. PLEASE DISCUSS THE LNG SUPPLIER/STORAGE OPTIONS OUTSIDE OF THE MIAMI AREA.

A. Florida East Coast Railway ("FECR") has previously announced that it received a waiver from the Federal Railroad Administration ("FRA") to transport LNG as a commodity. FECR is owned by Fortress Equity Partners, and its railway runs from Jacksonville in the north to Miami in the south, and includes connections with both of its Fortress affiliate's LNG facilities in Titusville and Miami. The stated purpose of this capability is to promote the dispatch ability of LNG tanks from both of Fortress LNG's facilities and the facilities in the Jacksonville area to anywhere on the Eastern seaboard of Florida.[166]

C. The Company did not solicit the market for the purported capacity need.

Q. PLEASE EXPLAIN THE OPTIONS THE COMPANY CONSIDERED RELATIVE TO ITS DUAL CAPACITY PROPOSALS.

A. The Company states that it identified the ongoing need for additional gas supply capabilities as a part of its most recent design day study.[167] FCG further claims that it "investigated several options to address this need," before determining that the proposed construction of an LNG facility, and presumably the proposed increased firm

[165] See, Company's response to OPC ROG-109.
[166] Corkhill, Mike (April 12, 2016), "Florida LNG set to enjoy its day in the sun," LNG World Shipping, available online at: http://www.lngworldshipping.com/news/view,florida-lng-set-to-enjoy-its-day-in-the-sun_42546.htm.
[167] Company's response to OPC POD-71.

transport capacity reservations on the FGT system represented the most effective and cost effective means to address its capacity needs for the near future.[168]

Q. HAS THE COMPANY PROVIDED ANY ADDITIONAL INFORMATION ON ITS CAPACITY ALTERNATIVES ANALYSIS?

A. Only to an extent. The Company states that it is aware of three pipelines serving the state of Florida near FCG's service territory besides FGT: Gulfstream; Sabal Trail; and the associated FSC.[169] The Company, however, concluded that seeking capacity on any of these pipelines would not be wise for varying reasons.

Q. WHY DID THE COMPANY REJECT SECURING CAPACITY ON GULFSTREAM AS AN ALTERNATIVE TO ITS PROPOSAL?

A. The Company states that it currently does not have a physical connection with the Gulfstream pipeline, and any extension would require meaningful distribution infrastructure improvements.[170] In addition, the Company states that the pipeline's FERC-approved tariff requires that all "winter only" firm transmission capacity be reserved on a year-to-year basis.[171]

[168] Petition for Approval of Rate Increase, Request for Approval of Depreciation Study, and Request for Interim Rate Relief by Florida City Gas, ¶ 12.
[169] Direct Testimony of Gregory Becker, 22:7-11.
[170] Direct Testimony of Gregory Becker, 22:19-22.
[171] Direct Testimony of Gregory Becker, 22: 22 through 23:2.

Q. HAS THE COMPANY PROVIDED AN ANALYSIS OF THE COSTS ASSOCIATED WITH EXTENDING THE GULFSTREAM PIPELINE TO FCG'S SYSTEM?

A. No, it has not. The Company has failed to provide a detailed analysis comparing the relative costs of connecting to the Gulfstream system.[172] Furthermore, the Company apparently has not discussed this potential with Gulfstream for many years. The only correspondence the Company provided with individuals associated with the Gulfstream pipeline was an email on March 5, 2015, providing details on 18,000 Dth/d of available capacity available on a year-to-year basis.[173]

Q. WHAT REASON DOES THE COMPANY PROVIDE FOR STATING THAT RESERVING CAPACITY ON THE SABAL TRAIL OR FSC PIPELINES WOULD NOT BE FEASIBLE?

A. The Company states that the Sabal Trail pipeline does not reach far enough south into Florida to deliver natural gas to FCG. Therefore, the Company states that it would have to reserve capacity on both the Sabal Trail and FSC pipelines to provide firm transportation capacity closer to the Company's system. However, the Company states that it would still require a material amount of infrastructure to bridge the gap between those pipelines and the areas on FCG's system where additional supply is needed.

[172] Company's response to OPC POD 141.
[173] Company's response to OPC POD 74, Attachment POD 74.1a.

Q. DOES THE COMPANY PROVIDE A DETAILED ANALYSIS OF THE COSTS ASSOCIATED WITH EXTENDING THE SABAL TRAIL AND FSC PIPELINES TO ITS SYSTEM?

A. No. The Company has failed to provide a detailed analysis comparing the relative costs of connecting to either the Sabal Trail or FSC systems.[174] However, the Company provides a "rough estimate" within its testimony that extending these pipelines to the Miami-Dade area would require an addition of at least 95 miles.[175] Using a rule-of-thumb estimate of $3.0 to $5.0 million per mile, the Company claims that this investment would be cost prohibitive.

Q. DO YOU AGREE WITH THE COMPANY'S "ROUGH ESTIMATE"?

A. No, I do not. It is unclear why the Company suggests that interconnecting with the Sabal Trail or FSC system would require the installation of an additional 95 miles of pipeline, and the Company has provided no detailed analysis supporting this supposition.[176] The FSC terminates near FPL's Martin County Clean Energy Facility in Martin County. While this does not extend to the Miami-Dade region, it does reach into St. Lucie County and just west of Indian River County, which includes the city of Vero Beach. The Company has not demonstrated why this pipeline could not support additional pipeline capacity needs in the Company's Brevard County and Vero Beach regions. Furthermore, Gulfstream, FSC, and FGT all connect near FPL's Martin

[174] Company's response to OPC POD 143.
[175] Direct Testimony of Gregory Becker, 24:13-18.
[176] Company's response to OPC POD 143.

County Clean Energy Facility in Martin County, and should be available to support deliveries of natural gas north or south of this location.

Q. DID THE COMPANY CONSIDER ANY OTHER POTENTIAL ALTERNATIVES TO ADDRESS ITS CAPACITY ISSUE?

A. Yes. However, the Company states that it is unable to publicly disclose the specifics of one alternative option considered, since the alternative was subject to a non-disclosure agreement. According to the Company, that option also proved not to be cost-effective.[177]

Q. DID THE COMPANY ASSESS THE POTENTIAL COSTS ASSOCIATED WITH THE PROPOSED CONSTRUCTION OF AN LNG FACILITY RELATIVE TO OTHER POTENTIAL OPTIONS?

A. To an extent. The Company states that it evaluated three alternatives, but these alternatives were predominantly restricted to other variations of the basic LNG plant configuration.[178] For instance, the first alternative examined by the Company was the potential to utilize a portable vaporization plant that would vaporize trucked LNG into the Company's system. This system would have no storage capacity, but was the least expensive option at an estimated cost of $4 million.[179] The second alternative was a plant with liquefaction capabilities in addition to storage and vaporization capabilities. The facility would be able to liquefy natural gas during summer months without an

[177] Direct Testimony of Gregory Becker, 24:22 to 25:2.
[178] Direct Testimony of Stephen Wassell, 9:16-17.
[179] Direct Testimony of Stephen Wassell, 9:19 to 10:2.

LNG supplier, but the facility was estimated to cost $96 million.[180] The last alternative included the development of a CNG facility, an approach that differs from the use of LNG and regasification/vaporization units. The Company states that it is unaware of any facility that has ever been constructed on the scale necessary to provide the level of supply needed, and additionally estimated that it would cost $63 million.[181]

Q. HAS THE COMPANY ISSUED A REQUEST FOR PROPOSAL ("RFP") OR COMPARABLE SOLICITATION FOR SERVICES THAT COULD BE USED AS A SUBSTITUTE FOR THE PROPOSED LNG FACILITY?

A. No, it has not. The Company claims that an RFP for a third party supplier to deliver a quantity of natural gas on its available interstate capacity is not equal to the proposed LNG facility.[182] The Company claims that it would need the incremental supply for the same reason the primary capacity holder would need to retain their contracted capacity on a cold winter day.[183] The Company states that its proposed LNG peaking facility would bypass the market constraint and provide gas supply needed for its customers.

Q. DO YOU AGREE WITH THE COMPANY'S POSITION ON THE LACK OF A NEED FOR A COMPETITIVE SOLICITATION?

A. No, I do not. Such a solicitation for potential replacement service would determine both the availability and cost associated with various capacity alternatives. Such a

[180] Direct Testimony of Stephen Wassell, 10:13-17.
[181] Direct Testimony of Stephen Wassell, 10:19-24.
[182] Company's response to OPC POD-88.
[183] Company's response to OPC POD-88.

request can be viewed as a "market test" to validate a cost-benefit analysis associated with proposed LNG facility, and furthermore the overall need to secure on-system storage capacity. Such a process would ensure that the Company's decisions are consistent with a policy of ensuring that the utility secures services and resources at least cost.

Q. IS A COMPETITIVE BIDDING PROCESS OFTEN CONSIDERED A GOOD MARKET TEST FOR REGULATORS IN ASCERTAINING THE REASONABLENESS OF A UTILITY ACQUISITION OR ASSET DEVELOPMENT?

A. Yes, it is. Under FERC regulations, any new capacity or proposed upgrade must post an "open season" process to check whether the new capacity is sustainable in the market.[184] In this, the FERC regulations utilize market mechanisms to prevent over-capitalization by prohibiting expanded capacity ability if the demand for the new capacity is not present:

> The Commission has a two-step process for determining whether the market finds an expansion project economically viable. The first step, which occurs prior to the certificate application, is for the pipeline to conduct an open season in which existing customers are given an opportunity to permanently relinquish their capacity. This first step ensures that a pipeline will not expand capacity if the demand for that capacity can be filled by existing shippers relinquishing their capacity. The open season policy was not changed by the recent Policy Statement. The second step is that the expansion shippers must be willing to

[184] See, 65 FR 32, Certification of New Interstate Natural Gas Pipeline Facilities; Order Clarifying Statement of Policy, FERC Docket No. PL99–3–001, p. 7864; see also, 72 FR 226, Promotion of a More Efficient Capacity Release Market, FERC Docket No. RM08-1-000.

purchase capacity at a rate that pays the full costs of the project, without subsidy from existing shippers through rolled-in pricing.[185]

Q. HAS THE COMMISSION ESTABLISHED POLICIES REQUIRING COMPETITIVE SOLICITATIONS FOR CERTAIN ACTIVITIES IN THE PAST?

A. Yes. In the early 1990s, in response to the National Energy Policy Act of 1992, the Commission implemented a rulemaking proceeding to develop a rule establishing the procedures by which electric utilities in the State would select between competing providers of capacity and energy.[186] The Commission's rule, as currently amended, requires that electric utilities evaluate supply-side alternatives to any planned generating unit by issuing a Request for Proposals ("RFP") prior to petitioning the Commission for a determination of need.[187] The Commission's rules also set parameters for public notification of such a solicitation,[188] the minimum time-frame for respondents to issue responses,[189] and even a requirement that utilities provide an opportunity for interested parties to seek clarification of RFP requirements through a meeting,[190] among other items.

[185] Carr, Thomas (January 19, 2005), Memorandum to Transmission Regulatory Principles Work Group RE: FERC's Natural Gas Pipeline "Open Season" Policy, Western Interstate Energy Board, p. 2.
[186] In Re: Investigation of the National Energy Policy Act, Section 712, Exempt Wholesale Generator (EWG) Standards; Docket No. 930331-EU, Order No. PSC-93-0710-FOF-EU; and In Re: Amendment of Rule 25-22.081, F.A.C., Contents of Petition; and Adoption of Rule 25-22.082, F.A.C., Section of Generating Capacity, Docket No. 921288-EU, Order No. PSC-93-1846-FOF-EU.
[187] F.A.C. 25-22.082(3).
[188] F.A.C. 25-22.082(7).
[189] F.A.C. 25-22.082(13).
[190] F.A.C. 25-22.082(11).

D. The Company did not conduct a cost-benefit analysis.

Q. HAS THE COMPANY CONDUCTED A COMPREHENSIVE ANALYSIS OF COSTS AND BENEFITS OF THE PROPOSED EXPANSION IN GAS SYSTEM CAPABILITIES AGAINST POTENTIAL ALTERNATIVES?

A. No, the Company has not provided documentation of any such comprehensive analysis. The Company states that it "investigated several options to address this need and determined that constructing an LNG facility, to be included in rate base, is the most effective – and cost effective – means to address its capacity needs for the near future."[191] However, when queried, the Company was unable to provide any additional studies or documentation associated with these investigations outside of its most recent design day study.[192] In fact, the entirety of the Company's analytical endeavors appear to be restricted to the following excerpt:

> LNG Facility. For the purposes of this request, please refer to the Company's petition paragraph 12, where the Company states it part:
>
> > FCG has investigated several options to address this need and determined that constructing an LNG facility, to be included in rate base, is the most effective – and cost effective – means to address its capacity needs for the near future.
>
> Please provide copies of all studies the Company has conducted internally or by a third party on its behalf, which examines the relative effectiveness, including cost effectiveness, of potential options to address the Company's ability to meet the needs of its customers. Provide the requested documents in electronic format with all formulas and linked spreadsheets intact source data used, and explain all assumptions and calculations used.
>
> **Company Response:**
>
> The Capacity Planning team identified the ongoing need for additional gas supply capability as a part of performing an update to its Design

[191] Petition for Approval of Rate Increase, Request for Approval of Depreciation Study, and Request for Interim Rate Relief by Florida City Gas, ¶12.
[192] Company's response to OPC POD-71.

Day study. That most recent study is provided in the Company's response to POD 72. The comparison of the available options were described and provided in witness Becker's testimony and exhibits.[193]

Q. DID THE COMPANY PROVIDE A COMPARISON OF THE POTENTIAL COSTS ASSOCIATED WITH DIFFERENT SUPPLY ALTERNATIVES?

A. Yes, as part of its filing, the Company provided what it characterizes as a comparison of the potential costs associated with different potential supply alternatives.[194] This analysis compares four potential supply options to provide the Company with an incremental 10,000 Dth/d of supply capability. The first three potential supply options examined by the Company were the annual reservation costs on the (1) Gulfstream pipeline, (2) Sabal Trail and FSC pipelines, and (3) FGT pipeline. The fourth potential supply option examined by the Company was the annual revenue requirement associated with the proposed LNG storage facility.[195] It should be noted that the Company's analysis is of limited value because it does not include costs associated with establishing connections to pipelines to which it is not currently interconnected.

Q. WHAT DID THIS LIMITED SCOPE COST COMPARISON SHOW?

A. The Company's analysis finds that incremental reservations on the Gulfstream pipeline would result in the lowest cost for incremental capacity. Indeed, the Company calculated that an additional 10,000 Dth/d of capacity would only cost $2.59 million per year to reserve on this pipeline.[196] **##BEGIN CONFIDENTIAL##** [redacted]

[193] Company's response to OPC POD-71.
[194] Direct Testimony of Gregory Becker, Exhibit GB-2.
[195] Direct Testimony of Gregory Becker, Exhibit GB-2.
[196] Direct Testimony of Gregory Becker, Exhibit GB-2.

[redacted][197] **##END CONFIDENTIAL##** The proposed LNG storage facility is slightly more expensive than incremental reservations on the FGT system, and is estimated to be slightly more than $5.745 million per year.[198]

Q. DID THE COMPANY EXPLAIN WHY IT DID NOT PURSUE RESERVATIONS ON THE GULFSTREAM SYSTEM?

A. The Company stated that it felt that Gulfstream's tariff precluded it from transacting on seasonably-available firm transport capacity on a long-term basis.[199] Furthermore, the Company's cost comparison notes that it does not include any costs associated with infrastructure to deliver gas to the FCG system. The Company made no attempt to investigate whether purchases from the Gulfstream system would be economical with the installation of needed infrastructure to interconnect the pipeline to the Company's system.

Q. IN SUMMARY, WHAT DOES THE COMPANY'S LIMITED SCOPE COST COMPARISON SHOW?

A. Contrary to the Company's assertion that construction of the proposed LNG storage facility represents the "most effective and cost effective" option, the Company's analysis shows that at least the acquisition of additional supply capabilities from the

[197] Direct Testimony of Gregory Becker, Exhibit GB-2.
[198] Direct Testimony of Gregory Becker, Exhibit GB-2.
[199] Direct Testimony of Gregory Becker, 23:1-2.

FGT system would be more cost effective than the proposed facility. Likewise, the Company's analysis also shows that it is possible service from other pipeline systems may be less expensive than acquisition of incremental capacity on the FGT system.

V. COST RECOVERY AND RATE DESIGN IMPLICATIONS

Q. HOW WILL THE COSTS ASSOCIATED WITH THE COMPANY'S CAPACITY PROPOSALS BE RECOVERED?

A. The Company states that it currently recovers all of its capacity reservations fees through its PGA.[200] The cost of adding 20,000 Dth/d of firm transmission from the FGT system would increase customer PGA-related costs from $7.285 per Dth to $9.622 per Dth, or by 32 percent.[201] This PGA-related rate increase does not include any of the costs associated with developing the LNG regasification facility. The Company expresses some concerns about the manner in which capacity costs are currently allocated to transportation customers since the current practice will result in very little of these new capacity-related costs being allocated to the transportation customers who will be receiving the sole benefit of these capacity additions.[202] The Company, therefore, proposes to modify the existing methods for allocating these PGA-related costs to transport customers and third-party suppliers.[203]

Q. HOW DOES THE COMPANY PROPOSE TO ALLOCATE CAPACITY COSTS ACROSS CUSTOMER CLASSES?

[200] Direct Testimony of Gregory Becker, 30:5-7.
[201] Direct Testimony of Gregory Becker, 27:22-25.
[202] Direct Testimony of Gregory Becker, 30:7-8.
[203] Direct Testimony of Gregory Becker, 30:17-20.

A. The Company proposes to implement a capacity allocation methodology that will spread interstate pipeline capacity and its associated costs to all sales customer classes, transportation customers, and third party energy marketers.[204] Allocations will be based first on the customer type (sales vs. transportation) and second on transportation load type ("essential use" or non-essential use). Capacity required to serve firm service customers (plus a five percent reserve margin) will be allocated first.[205] The five percent reserve margin assigned to these customer requirements will include the costs of peaking supplies like LNG and the sculpted nature of the Company's current gas supply portfolio.[206] The remaining capacity and other peaking costs would be allocated to what the Company has designated as "essential use" transportation customers and non-essential transportation customers, in that order, as available.[207]

Q. DOES THE COMPANY PROPOSE A TARIFF CHANGE TO ACCOMMODATE THE PROPOSED CHANGE TO CAPACITY COST ALLOCATION?

A. Yes. The Company proposes to include language in its tariff that will codify that, for firm service customers, it will be responsible for holding capacity to meet customer needs plus a reserve margin of no less than five percent.[208] The remaining interstate capacity would then be released to service, on an equal access, nondiscriminatory basis, to the Company's third party suppliers based upon the Average Daily Delivery

[204] Direct Testimony of Gregory Becker, 31:6-9.
[205] Direct Testimony of Gregory Becker, 31:12-19.
[206] Direct Testimony of Gregory Becker, 31:13-17.
[207] Direct Testimony of Gregory Becker, 32:6-9.
[208] Minimum Filing Requirement Schedule E-9, Sheet Nos. 22-23.

Quantity ("ADDQ") and the Demand Charge Quantity ("DCQ") of the transportation customers served by the third party suppliers identified as "essential use."[209] Any remaining interstate pipeline capacity will then be released per the proposed changes in tariff language to third party suppliers based upon their respective non-essential use market shares.[210]

Q. DOES THE COMPANY PROPOSE ANY OTHER TARIFF LANGUAGE MODIFICATIONS?

A. Yes, it does. The Company proposes new language addressing service migration for transportation customers seeking to change to full firm retail service. The Company is proposing language that will attempt, where possible, to provide firm gas delivery service to all future sales customers who were transportation customers prior to August 1, 2018. However, the proposed changes note that if sufficient interstate pipeline capacity is not available to serve these customers, they may not be able to immediately switch to firm gas delivery service.[211]

Q. HOW WILL THIRD PARTY PROVIDER COSTS CHANGE AS A RESULT OF THE COMPANY'S CAPACITY COST RECOVERY PROPOSALS?

A. The Company proposes to increase the charge to each third party provider for each transportation customer served from $5.92 per month to $6.07 per month, or $1.80 per

[209] Minimum Filing Requirement Schedule E-9, Sheet Nos. 22-23.
[210] Minimum Filing Requirement Schedule E-9, Sheet Nos. 22-23.
[211] Minimum Filing Requirement Schedule E-9, Sheet No. 23.

customer per year.[212] This proposed rate increase is associated with an annual cost of service of $265,022.[213]

Q. HAS THE COMPANY PROVIDED THE INCREMENTAL IMPACTS ASSOCIATED WITH THE PROPOSED LNG FACILITY?

A. Yes. The proposed facility will add, in total, approximately $29 million in incremental rate base and have an annual 2018 revenue requirement of slightly more than $4.3 million.[214] The proposed facility will have negligible impacts for third party suppliers; however, the proposal will add nearly $9.4 million in incremental rate base to residential classes, and nearly $19.6 million in incremental rate base to general service classes.[215] For 2018, the proposed facility will add an incremental revenue requirement of over $1.4 million for residential customers, and over $2.9 million for general service customers.[216]

Q. WILL FCG SALES CUSTOMERS SEE ANY INCREMENTAL BENEFITS ASSOCIATED WITH THE COMPANY'S PROPOSED EXPANSION TO UPSTREAM SYSTEM CAPABILITIES?

A. No, they will not. The Company clearly notes that it has enough capacity to serve its retail customers' current and projected capacity needs.[217] What the Company purports to not have, however, is enough natural gas capacity to serve **both** the projected

[212] Petition for Approval of Rate Increase, Request for Approval of Depreciation Study, and Request for Interim Rate Relief by Florida City Gas, Attachment A, p. 210.
[213] Company's response to OPC POD-83, Attachment.
[214] Company's response to OPC POD-83.
[215] Company's response to OPC POD-83, Attachment.
[216] Company's response to OPC POD-83, Attachment.
[217] Direct Testimony of Gregory Becker, 14:17-18.

capacity needs of its retail sales and a portion of its transportation service customers, primarily those designated as "essential use" transportation customers.[218] However, only a small portion of the Company's proposed 30,000 Dth/d of new natural gas capacity will be used by these "essential use" customers alone. For instance, the Company forecasts that it only needs 7,392 Dth/d of design day capabilities to adequately serve both retail customers and all purported "essential use" transportation customers' needs (including reserves).[219] The remainder of this newly proposed capacity (roughly 22,600 Dth/d) would be utilized by non-essential transportation customers' needs.

Q. DOES THE COMPANY'S PROPOSED COST ALLOCATION FOLLOW THE INCREMENTAL SYSTEM NEED REQUIREMENT?

A. No, it does not. Under the Company's proposed allocation, incremental pipeline capacity reservations will be allocated in the same manner as existing reservations used primarily to serve retail customers. Likewise, the Company proposes to include the proposed LNG storage facility in the Company's overall rate base.[220] Thus, all customers, including retail customers, will be required to pay for the facility, even though it is not required to serve retail customers' needs. Specifically, nearly $9.4 million in incremental rate base of the nearly $29 million facility, or over 32 percent,

[218] Direct Testimony of Gregory Becker, 15:6-10.
[219] Direct Testimony of Gregory Becker, Exhibit GB-3.
[220] Petition for approval of rate increase, request for approval of depreciation study, and request for interim rate relief by Florida City Gas, ¶12.

will be allocated to residential classes who do not require the facility for the Company to continue to adequately serve these customers.[221]

Q. WHAT WOULD BE A MORE EQUITABLE ALLOCATION OF COSTS ASSOCIATED WITH THE PROPOSED EXPANSION TO UPSTREAM SYSTEM CAPABILITIES?

A. As demonstrated earlier, the Company does not need the proposed additional pipeline capacity reservations or the proposed LNG storage facility to provide reliable service to its retail customers. However, if in the alternative the Commission does believe that the proposed system upgrades are warranted, then the costs associated with these facilities should be allocated in a manner that is consistent with the principles of cost causation. The Company clearly notes that it has enough capacity to serve its retail customers,[222] and thus these upgrades would only be needed to provide service to the Company's transportation customers. Indeed, examining the details of the Company's current system capabilities, these additional assets will be ill-proportionally allocated to serving non-essential transport loads, contrary to the Company's assertions on the matter. It would be completely inequitable to saddle retail customers with a large rate increase for system assets that are fundamentally not required to provide them with adequate and reliable service.

[221] Company's Response to OPC POD-83, Attachment.
[222] Direct Testimony of Gregory Becker, 14:17-18.

Q. ARE THERE ANY OTHER PROBLEMS ASSOCIATED WITH THE COMPANY'S PROPOSED RATE ALLOCATION OF THE PROPOSED EXPANSION TO UPSTREAM SYSTEM CAPABILITIES?

A. Yes, there are. The Company's proposal would allocate system capacity to the Company's retail sales customers, and then to transport customers, prioritizing newly christened "essential use" transport customers. The Company estimates that it needs approximately 43,000 Dth/d of aggregate gas supply capability to fully meet the forecasted needs of its transportation service customers.[223] Yet, the Company only proposes an additional 30,000 Dth/d of incremental supply capability, from an additional 20,000 Dth/d in capacity reservations on the FGT system and an additional 10,000 Dth/d from the proposed LNG storage facility.[224] This means that the Company will only allocate 22,608 Dth/d of total system capabilities to non-essential transportation customers, even though the Company estimates that it would require 35,292 Dth/d of system peak capabilities to fully serve these customers.[225] In other words, the Company will be only charging non-essential transport customers 64 percent of the required system capacity requirements relative to either retail sales or "essential use" transport customers.

Q. DOES THE COMPANY DEMONSTRATE ANY BENEFIT ASSOCIATED WITH THE DISCOUNTED SERVICE PROVIDED TO NON-ESSENTIAL TRANSPORTATION SERVICE CUSTOMERS?

[223] Direct Testimony of Gregory Becker, 15:13-15.
[224] Direct Testimony of Gregory Becker, 16:19-23.
[225] Direct Testimony of Gregory Becker, Exhibit GB-3.

A. To an extent. The Company states that, if sufficient interstate pipeline capacity is not available, it will not provide these customers with firm gas delivery service.[226] In other words, it appears that the Company would establish something akin to an interruptible service arrangement with these non-essential transport customers, even though the Company will partially reserve firm transport capacity for these customers. Importantly however, the Company is not allocating costs to these customers in terms normally ascribed to interruptible service arraignments. Even though the entirety of the proposed system capability upgrades are associated with serving transportation customers, and the majority of these upgrades are associated with serving the needs of non-essential transport customers, these exact customers will be allocated costs associated with the Company's system capabilities at a lower percentage relative to other company customers.

Q CAN YOU PLEASE SUMMARIZE YOUR RECOMMENDATIONS REGARDING THE COMPANY'S PROPOSED COST ALLOCATIONS?

A. I recommend that, if the Commission approves some version of the Company's proposal, the Commission should reject the Company's proposed cost allocation associated with the proposed LNG facility. Retail customers will see no incremental benefit associated with the proposed facility, as the Company clearly notes that it has enough capacity to serve its retail customers.[227] However, under the Company's proposal, over $9.1 million in incremental rate base of the $29 million facility, or over 31 percent, will be allocated to residential classes who do not require the facility for

[226] Direct Testimony of Gregory Becker, 32:20-21.
[227] Direct Testimony of Gregory Becker, 14:17-18.

the Company to continue to adequately serve these customers. Similarly, I recommend the Commission reject the Company's proposed cost allocation associated with the incremental pipeline capacity reservations, as the Company's proposal would allocate a significant amount of the costs of these reservations to retail classes that do not require the additional capacity.

VI. CONCLUSIONS AND RECOMMENDATIONS

Q. WHAT ARE YOUR RECOMMENDATIONS ASSOCIATED WITH THE COMPANY'S PROPOSAL TO EXPAND ITS SYSTEM CAPABILITIES?

A. I recommend that the Commission reject the Company's proposal. FCG has made clear it currently has adequate capacity to serve the existing and future needs of its retail sales customers.[228] The Company's purported capacity deficiency only arises when it considers the capacity needs of **both** its retail sales and the "essential use" transportation customers.[229] However, the Company's forecasts show that it currently possesses enough capacity to meet the needs of its sales customers, and approximately 72 percent of the projected requirements of "essential use" transportation customers.[230] This despite the fact that the Company's own tariff requirements do not require it to secure upstream transportation capacity for any transportation service customers, "essential use" or not.

[228] Direct Testimony of Gregory Becker, 14:17-18.
[229] Direct Testimony of Gregory Becker, 15:6-10.
[230] Direct Testimony of Gregory Becker, 29:11-14.

Q. IF THE COMPANY REQUIRES ADDITIONAL CAPACITY, DO YOU RECOMMEND THE CONSTRUCTION OF THE PROPOSED LNG STORAGE FACILITY?

A. No, I do not. The Company has not adequately performed its due diligence to support the need for its proposed LNG storage facility, including performing a market test to determine the cost and availability of market alternatives and associated cost-benefit analysis of the proposed facility. Further, the Company has not sufficiently demonstrated the need for the proposed facility. Even if it is assumed that the Company does require additional capacity resources, the Company did not demonstrate that it could not adequately meet these needs through additional firm transmission reservations on either the FGT system or another pipeline. The Company requires only a minor addition in system capabilities to meet the forecasted needs of all of its retail customers and all "essential use" transportation customers. This is especially true with respect to the Company's southern portion of its system, where it currently has sufficient capacity to fully serve all of its forecasted retail and "essential use" transportation customers' needs.[231] There has simply been no evidence provided by the Company that it possesses a material supply deficiency in the southern portion of its system.

Q. DO YOU HAVE ANY ALTERNATIVE RECOMMENDATIONS?

A. Yes, I do. If the Commission decides to either accept the Company's proposal to secure additional pipeline capacity reservations or its proposal to construct an LNG storage

[231] Direct Testimony of Gregory Becker, Exhibit GB-3.

facility, I recommend that the Commission apply the principles of cost causation when it assigns costs associated with these system additions. Retail customers will see no incremental benefit associated with the proposed LNG facility or proposed expansion in pipeline capacity reservations, as the Company clearly notes that it has enough capacity to serve its retail customers.[232]

Q. DOES THIS CONCLUDE YOUR TESTIMONY FILED FEBRUARY 1ST 2018?

A. Yes.

[232] Direct Testimony of Gregory Becker, 14:17-18.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing (FCG Preliminary CONFIDENTIAL Designation) Direct Testimony and Exhibits of David E. Dismukes, PH.D. has been furnished to the following parties by hand delivery on this 1st day of February, 2018.

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

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

ACADEMIC APPOINTMENTS

Louisiana State University, Baton Rouge, Louisiana

Center for Energy Studies

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

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

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

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

Florida State University, Tallahassee, Florida

College of Social Sciences, Department of Economics

1995 Instructor

PROFESSIONAL EXPERIENCE

Acadian Consulting Group, Baton Rouge, Louisiana

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

Econ One Research, Inc., Houston, Texas

1999-2001 Senior Economist

Florida Public Service Commission, Tallahassee, Florida

Division of Communications, Policy Analysis Section

1995 Planning & Research Economist

Division of Auditing & Financial Analysis, Forecasting Section

1993 Planning & Research Economist
1992-1993 Economist

Project for an Energy Efficient Florida &
Florida Solar Energy Industries Association, Tallahassee, Florida

1994 Energy Economist

Ben Johnson Associates, Inc., Tallahassee, Florida

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

GOVERNMENT APPOINTMENTS

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

2001-2003 Member, Louisiana Comprehensive Energy Policy Commission.

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GRANT RESEARCH

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

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

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

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

5. *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.

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

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

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

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Department of Natural Resources. Total Project: $150,000. Status: Completed.

22. *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.

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29. *Principal Investigator*. "Post-Hurricane Assessment of OCS-Related Infrastructure and Communities in the Gulf of Mexico Region." (2006). U.S. Department of the Interior, Minerals Management Service. Total Project Funding: $244,837. Status: In Progress.

30. *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.

31. *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.

32. *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.

33. *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.

34. *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.

35. *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.

36. *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.

37. *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.

38. *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.

39. *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.

40. *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.

41. *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.

42. *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. "The Impact of Infrastructure Cost Recovery Mechanisms on Pipeline Replacements and Leaks." (2015). With Gregory Upton. Southern Economic Association Meeting 2015. New Orleans, Louisiana. November 23.
4. "The Impact of Infrastructure Cost Recovery Mechanisms on Pipeline Replacements and Leaks" (2015). With Gregory Upton. 38th IAEE International Conference, Antalya, Turkey. May 26.
5. "Modifying Renewables Policies to Sustain Positive Economic and Environmental Change" (2015). IEEE Annual Green Technologies ("Greentech") Conference. April 17.
6. "The Gulf Coast Industrial Investment Renaissance and New CHP Development Opportunities." (2014). Industrial Energy and Technology Conference, New Orleans, Louisiana. May 20.
7. "Estimating Critical Energy Infrastructure Value at Risk from Coastal Erosion" (2014). With Siddhartha Narra. American's Estuaries: 7th Annual Summit on Coastal and Estuarine Habitat Restoration. Washington, D.C., November 3-6.
8. "Economies of Scale, Learning Curves, and Offshore Wind Development Costs" (2012). With Gregory Upton. Southern Economic Association Annual Conference, New Orleans, LA November 17.
9. "Analysis of Risk and Post-Hurricane Reaction." (2009). 25th Annual Information Transfer Meeting. U.S. Department of the Interior, Minerals Management Service. January 7.
10. "Legacy Litigation, Regulation, and Other Determinants of Interstate Drilling Activity Differentials." (2008). With Christopher Peters and Mark Kaiser. 28th Annual USAEE/IAEE North American Conference: Unveiling the Future of Future of Energy Frontiers. New Orleans, LA, December 3.
11. "Gulf Coast Energy Infrastructure Renaissance: Overview." (2008). 28th Annual USAEE/IAEE North American Conference: Unveiling the Future of Future of Energy Frontiers. New Orleans, LA, December 3.
12. "Understanding the Impacts of Katrina and Rita on Energy Industry Infrastructure." (2008). American Chemical Society National Meetings, New Orleans, Louisiana. April 7.
13. "Determining the Economic Value of Coastal Preservation and Restoration on Critical Energy Infrastructure." (2007). With Kristi A. R. Darby and Michelle Barnett. International Association for Energy Economics, Wellington, New Zealand, February 19.

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

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

16. "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.

17. "The Economic Value of Coastal Preservation and Restoration on Critical Energy Infrastructure." (2006). With Michelle Barnett. Third National Conference on Coastal and Estuarine Habitat Restoration. Restore America's Estuaries. New Orleans, Louisiana, December 11.

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

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

20. "Hurricanes, Energy Markets, and Energy Infrastructure in the Gulf of Mexico: Experiences and Lessons Learned." (2006). With Kristi A.R. Darby and Seth E. Cureington. 29th Annual IAEE International Conference, Potsdam, Germany, June 9.

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

22. "Fiscal Mechanisms for Stimulating Oil and Gas Production on Marginal Leases." (2004). With Jeffrey M. Burke. International Association of Energy Economics Annual Conference, Washington, D.C. (July).

23. "GIS and Applied Economic Analysis: The Case of Alaska Residential Natural Gas Demand." (2003). With Dmitry V. Mesyanzhinov. Presented at the Joint Meeting of the East Lakes and West Lakes Divisions of the Association of American Geographers in Kalamazoo, MI, October 16-18.

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

25. "The Economic Impact of State Oil and Gas Leases on Louisiana." (2002). With Dmitry V. Mesyanzhinov. 2002 National IMPLAN Users' Conference. New Orleans, Louisiana, September 4-6.

26. "Moving to the Front of the Lines: The Economic Impact of Independent Power Plant Development in Louisiana." (2002). With Dmitry V. Mesyanzhinov and Williams O.

Olatubi. 2002 National IMPLAN Users' Conference. New Orleans, Louisiana, September 4-6.

27. "New Consistent Approach to Modeling Regional Economic Impacts of Offshore Oil and Gas Activities in the Gulf of Mexico." (2002). With Vicki Zatarain. 2002 National IMPLAN Users' Conference. New Orleans, Louisiana, September 4-6.

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

29. "Estimating Efficiency Opportunities for Coal Fired Electric Power Generation: A DEA Approach." (1999). With Williams O. Olatubi. Southern Economic Association Sixty-ninth Annual Conference. New Orleans, November.

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

31. "Parametric and Non-Parametric Approaches to Measuring Efficiency Potentials in Electric Power Generation." (1999). With Williams O. Olatubi. International Atlantic Economic Society Annual Conference, Montreal, October.

32. "Asymmetric Choice and Customer Benefits: Lessons from the Natural Gas Industry." (1999). With Rachelle F. Cope and Dmitry Mesyanzhinov. International Association of Energy Economics Annual Conference. Orlando, Florida. August.

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

34. "Economic Impact of Offshore Oil and Gas Activities on Coastal Louisiana" (1999). With Dmitry Mesyanzhinov. Annual Meeting of the Association of American Geographers. Honolulu, Hawaii. March.

35. "Empirical Issues in Electric Power Transmission and Distribution Cost Modeling." (1998). With Robert F. Cope and Dmitry Mesyanzhinov. Southern Economic Association. Sixty-Eighth Annual Conference. Baltimore, Maryland. November.

36. "Modeling Electric Power Markets in a Restructured Environment." (1998). With Robert F. Cope and Dan Rinks. International Association for Energy Economics Annual Conference. Albuquerque, New Mexico. October.

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

38. "Power System Operations, Control, and Environmental Protection in a Restructured Electric Power Industry." (1998). With Fred I. Denny. IEEE Large Engineering Systems Conference on Power Engineering. Nova Scotia, Canada. June.

39. "Benchmarking Electric Utility Transmission Performance." (1997). With Robert F. Cope and Dmitry Mesyanzhinov. Southern Economic Association, Sixty-seventh Annual Conference. Atlanta, Georgia. November 21-24.

40. "A Non-Linear Programming Model to Estimate Stranded Generation Investments in a Deregulated Electric Utility Industry." (1997). With Robert F. Cope and Dan Rinks. Institute for Operations Research and Management Science Annual Conference. Dallas Texas. October 26-29.

41. "New Paradigms for Power Engineering Education." (1997). With Fred I. Denny. International Association of Science and Technology for Development, High Technology in the Power Industry Conference. Orlando, Florida. October 27-30

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

43. "The Unintended Consequences of the Public Utilities Regulatory Policies Act of 1978." (1997). National Policy History Conference on the Unintended Consequences of Policy Decisions. Bowling Green State University. Bowling Green, Ohio. June 5-7.

44. "Assessing Environmental and Safety Risks of the Expanding Role of Independents in E&P Operations on the Gulf of Mexico OCS." (1996). With Allan Pulsipher, Omowumi Iledare, Dmitry Mesyanzhinov, and Bob Baumann. U.S. Department of Interior, Minerals Management Service, 16th Annual Information Transfer Meeting. New Orleans, Louisiana.

45. "Empirical Modeling of the Risk of a Petroleum Spill During E&P Operations: A Case Study of the Gulf of Mexico OCS." (1996). With Omowumi Iledare, Allan Pulsipher, and Dmitry Mesyanzhinov. Southern Economic Association, Sixty-Sixth Annual Conference. Washington, D.C.

46. "Input Price Fluctuations, Total Factor Productivity, and Price Cap Regulation in the Telecommunications Industry" (1996). With Farhad Niami. Southern Economic Association, Sixty-Sixth Annual Conference. Washington, D.C.

47. "Recovery of Stranded Investments: Comparing the Electric Utility Industry to Other Recently Deregulated Industries" (1996). With Farhad Niami and Dmitry Mesyanzhinov. Southern Economic Association, Sixty-Sixth Annual Conference. Washington, D.C.

48. "Spatial Perspectives on the Forthcoming Deregulation of the U.S. Electric Utility Industry." (1996) With Dmitry Mesyanzhinov. Southwest Association of American Geographers Annual Meeting. Norman, Oklahoma.

49. "Comparing the Safety and Environmental Performance of Offshore Oil and Gas Operators." (1995). With Allan Pulsipher, Omowumi Iledare, Dmitry Mesyanzhinov, William Daniel, and Bob Baumann. U.S. Department of Interior, Minerals Management Service, 15th Annual Information Transfer Meeting. New Orleans, Louisiana.

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

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

ACADEMIC SEMINARS AND PRESENTATIONS

1. "Air Emissions Regulation and Policy: The Recently Proposed Cross State Air Pollution Rule and the Implications for Louisiana Power Generation." Lecture before School of the Coast & Environment. November 5, 2011.
2. "Energy Regulation: Overview of Power and Gas Regulation." Lecture before School of the Coast & Environment, Course in Energy Policy and Law. October 5, 2009.
3. "Trends and Issues in Renewable Energy." Presentation before the School of the Coast & Environment, Louisiana State University. Spring Guest Lecture Series. May 4, 2007.
4. "CES Research Projects and Status." Presentation before the U.S. Department of the Interior, Minerals Management Service, Outer Continental Shelf Scientific Committee Meeting, New Orleans, LA May 22, 2007.
5. "Hurricane Impacts on Energy Production and Infrastructure." Presentation Before the 53rd Mineral Law Institute, Louisiana State University. April 7, 2006.
6. "Trends and Issues in the Natural Gas Industry and the Development of LNG: Implications for Louisiana. (2004) 51st Mineral Law Institute, Louisiana State University, Baton Rouge, LA. April 2, 2004.
7. "Electric Restructuring and Conservation." (2001). Presentation before the Department of Electrical Engineering, McNesse State University. Lake Charles, Louisiana. May 2, 2001.
8. "Electric Restructuring and the Environment." (1998). Environment 98: Science, Law, and Public Policy. Tulane University. Tulane Environmental Law Clinic. March 7, New Orleans, Louisiana.
9. "Electric Restructuring and Nuclear Power." (1997). Louisiana State University. Department of Nuclear Science. November 7, Baton Rouge, Louisiana.
10. "The Empirical Determinants of Co-generated Electricity: Implications for Electric Power Industry Restructuring." (1997). With Andrew N. Kleit. Florida State University. Department of Economics: Applied Microeconomics Workshop Series. October 17, Tallahassee, Florida.

PROFESSIONAL AND CIVIC PRESENTATIONS

1. "The outlook for natural gas and energy development on the Gulf Coast." (2017). Louisiana Chemical Association, Annual Meeting, New Orleans, LA. October 26, 2017.
2. "Critical energy infrastructure: the big picture on resiliency research." (2017). National Academies of Science, Engineering, and Medicine. New Orleans, LA. September 18.
3. "Crude oil and natural gas outlook: Where are we and where are we going?" (2017). CCREDC Economic Trends Panel. Corpus Christi, TX, June 15.
4. "Navigating through the energy landscape." (2017). Baton Rouge Rotary Luncheon. Baton Rouge, LA, May 24.

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

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

7. "Recent trends in energy: overview and impact for the banking community." (2017). Oil and Gas Industry Update, Louisiana Bankers Association. Baton Rouge, LA, March 24.

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

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

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

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

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

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

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

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

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

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

18. "Regulatory and Ratepayer Issues in the Analysis of Utility Natural Gas Reserves Purchases" (2016). National Association of State Utility Consumer Advocates Gas Consumer Monthly Meeting. January 25.

19. "Emerging Issues in Fuel Procurement: Opportunities & Challenges in Natural Gas Reserves Investment." (2015). National Association of State Utility Consumer Advocates Annual Meeting. Austin, Texas. November 9.

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

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

22. "Natural Gas 101: The Basics of Natural Gas Production, Transportation, and Markets."

(2015). Council of State Governments Special Meeting on Gas Markets. New Orleans, LA. October 14.

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

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

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

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

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

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

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

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

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

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

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

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

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

36. "Overview EPA's Proposed Rule Under Section 111(d) of the Clean Air Act: Impacts for Louisiana." (2014). Louisiana State Bar: Utility Section CLE Annual Meeting, Baton Rouge, Louisiana. November 7.

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

38. "Impacts on Louisiana from EPA's Proposed Clean Power Plan." (2014). Air & Waste Management Annual Environmental Conference (Louisiana Chapter), Baton Rouge, Louisiana. October 29, 2014.

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

40. "Trends in Energy & Energy-Related Economic Development." (2014). 2014

Government Finance Officer Association Meetings, Baton Rouge, Louisiana. October 9.

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

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

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

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

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

46. "The Technical and Economic Potential for CHP in Louisiana and the Impact of the Industrial Investment Renaissance on New CHP Capacity Development." (2014). Electric Power 2014, New Orleans, Louisiana. April 1.

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

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

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

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

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

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

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

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

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

56. "Recent Trends in Pipeline Replacement Trackers." (2013). National Association of

Statue Utility Consumer Advocates Monthly Gas Committee Meeting. September 19.

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

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

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

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

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

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

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

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

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

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

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

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

69. "What's Going on with Energy? How Unconventional Oil and Gas Development is Impacting Renewables, Efficiency, Power Markets, and All that Other Stuff." (2012). Atlanta Economics Club Monthly Meeting. Atlanta, GA. December 11.

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

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

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

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

74. "The Really Big Game Changer: Crude Oil Production from Shale Resources and the

Tuscaloosa Marine Shale." (2012). Baton Rouge Chamber of Commerce Board Meeting. Baton Rouge, LA, June 27.

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

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

77. "Issues in Natural Gas End-Uses: Are We Really Focusing on the Real Opportunities?" (2012). Energy Bar Association, Louisiana Chapter, Annual Meeting, New Orleans, LA. April 12, 2012.

78. "The Impact of Legacy Lawsuits on Conventional Oil and Gas Drilling in Louisiana." (2012). Louisiana Oil and Gas Association Annual Meeting, Lake Charles, LA. February 27, 2012.

79. "The Impact of Legacy Lawsuits on Conventional Oil and Gas Drilling in Louisiana." (2012) Louisiana Oil and Gas Association Annual Meeting. Lake Charles, Louisiana. February 27, 2012.

80. "Louisiana's Unconventional Plays: Economic Opportunities, Policy Challenges. Louisiana Mid-Continent Oil and Gas Association 2012 Annual Meeting. (2012) New Orleans, Louisiana. January 26, 2012.

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

82. "Facilitating the Growth of America's Natural Gas Advantage." (2011). BASF U.S. Shale Gas Workshop Management Meeting. Florham Park, New Jersey. November 1, 2011.

83. "CSAPR and EPA Regulations Impacting Louisiana Power Generation." (2011). Air and Waste Management Association (Louisiana Section) Fall Conference. Environmental Focus 2011: a Multi-Media Forum. Baton Rouge, LA. October 25, 2011.

84. "Natural Gas Trends and Impact on Industrial Development." (2011). Central Gulf Coast Industrial Alliance Conference. Arthur R. Outlaw Convention Center. Mobile, AL. September 22, 2011.

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

86. "EPA Regulations, Rates & Costs: Implications for U.S. Ratepayers." (2011). Workshop: "A Smarter Approach to Improving Our Environment." 38th Annual American Legislative Exchange Council ("ALEC") Meetings. New Orleans, LA. August 5, 2011.

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

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

89. "Creating Ratepayer Benefits by Reconciling Recent Gas Supply Opportunities with Past

Policy Initiatives." National Association of State Utility Consumer Advocates ("NASUCA"), Monthly Gas Committee Meeting. July 12, 2011.

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

91. "America's Natural Gas Advantage: Securing Benefits for Ratepayers Through Paradigm Shifts in Policy." Southeastern Association of Regulatory Commissioners ("SEARUC") Annual Meeting. Nashville, Tennessee. June 14, 2011.

92. "Learning Together: Building Utility and Clean Energy Industry Partnerships in the Southeast." (2011). American Solar Energy Society National Solar Conference. Raleigh Convention Center, Raleigh, North Carolina. May 20, 2011.

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

94. "Louisiana's Natural Gas Advantage: Can We Hold It? Grow It? Or Do We Need to be Worrying About Other Problems?" (2011). Louisiana Chemical Association Annual Legislative Conference, Baton Rouge, Louisiana, May 5, 2011.

95. "Energy Outlook and Trends: Implications for Louisiana. (2011). Executive Briefing, Legislative Staff, Congressman William Cassidy. LSU Center for Energy Studies, Baton Rouge, Louisiana. March 25, 2011.

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

97. "Regulatory Issues in Inflation Adjustment Mechanisms and Allowances." (2010). 2010 Annual Meeting, National Association of State Utility Consumer Advocates ("NASUCA"), Omni at CNN Center, Atlanta, Georgia, November 16, 2010.

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

99. "Energy Outlook: Trends and Policies." (2010). 2010 Tri-State Member Service Conference; Arkansas, Louisiana, and Mississippi Electric Cooperatives. L'Auberge du Lac Casino Resort, Lake Charles, Louisiana, October 14, 2010.

100. "Deepwater Moratorium and Louisiana Impacts." (2010). The Energy Council Annual Meeting. Gulf of Mexico Deepwater Horizon Accident, Response, and Policy. Beau Rivage Conference Center. Biloxi, Mississippi. September 25, 2010.

101. "Overview on Offshore Drilling and Production Activities in the Aftermath of Deepwater Horizon." (2010) Jones Walker Banking Symposium. The Oil Spill: What Will it Mean for Banks in the Region? New Orleans, Louisiana. August 31, 2010.

102. "Long-Term Energy Sector Impacts from the Oil Spill." (2010). Second Annual Louisiana Oil & Gas Symposium. The BP Gulf Oil Spill: Long-Term Impacts and Strategies. Baton Rouge Geological Society. August 16, 2010.

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

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

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

106. Moderator. Senior Executive Roundtable on Industrial Energy Efficiency. U.S. Department of Energy Conference on Industrial Efficiency. Office of Renewable Energy and Energy Efficiency. Royal Sonesta Hotel, New Orleans, LA. May 21, 2010.

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

108. "Natural Gas Supply Issues: Gulf Coast Supply Trends and Implications for Louisiana." Energy Bar Association, New Orleans Chapter Meeting. Jones Walker Law Firm. January 28, 2010, New Orleans, LA.

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

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

111. "Louisiana's Stakes in the Greenhouse Gas Debate." Louisiana Chemical Association and Louisiana Chemical Industry Alliance Annual Meeting: The Billing Dollar Budget Crisis: Catastrophe or Change? New Orleans, LA.

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

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

114. "The Small Picture: The Cost of Climate Change to Louisiana." Louisiana Association of Business and Industry, U.S. Chamber of Commerce, Louisiana Oil and Gas Association, and LSU Center for Energy Studies Conference: Can Louisiana Make a Buck After Climate Change Legislation? August 21, 2009. Baton Rouge, LA.

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

116. "Evolving Carbon and Clean Energy Markets." The Carbon Emissions Continuum: From Production to Consumption." Jones Walker Law Firm and LSU Center for Energy Studies Workshop. June 23, 2009. Baton Rouge, LA

117. "Potential Impacts of Cap and Trade on Louisiana Ratepayers: Preliminary Results." (2009). Briefing before the Louisiana Public Service Commission. Business and Executive Meeting, May 12, 2009. Baton Rouge, LA.

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

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

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

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

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

123. "Background, Issues, and Trends in Underground Hydrocarbon Storage." (2008). Presentation before the LSU Center for Energy Studies Industry Advisory Board Meeting. Baton Rouge, Louisiana. August 27, 2008.

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

125. "Market and Regulatory Issues in Alternative Energy and Louisiana Initiatives." (2008). Presentation before the 2008 Statewide Clean Cities Coalition Conference: Making Sense of Alternative Fuels and Advanced Technologies. New Orleans, Louisiana, March 27, 2008.

126. "Regulatory Issues in Rate Design, Incentives, and Energy Efficiency." (2007) Presentation before the New Hampshire Public Utilities Commission. Workshop on Energy Efficiency and Revenue Decoupling. November 7, 2007.

127. "Regulatory Issues for Consumer Advocates in Rate Design, Incentives, and Energy Efficiency." (2007). National Association of State Utility Consumer Advocates, Mid-Year Meeting. June 12, 2007.

128. "Regulatory and Policy Issues in Nuclear Power Plant Development." (2007). LSU Center for Energy Studies Industry Advisory Council Meeting. Baton Rouge, LA. March 23, 2007.

129. "Oil and Gas in the Gulf of Mexico: A North American Perspective." (2007). Canadian Consulate, Heads of Mission EnerNet Workshop, Houston, Texas. March 20, 2007.

130. "Regulatory Issues for Consumer Advocates in Rate Design, Incentives & Energy Efficiency. (2007). National Association of State Utility Consumer Advocates ("NASUCA") Gas Committee Monthly Meeting. February 13, 2006.

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

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

133. "Energy Outlook" (2006). National Business Economics Issues Council. Quarterly

Meeting, Nashville, TN, November 1-2, 2006.

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

135. "Interdependence of Critical Energy Infrastructure Systems." (2006). Cross Border Forum on Energy Issues: Security and Assurance of North American Energy Systems. Woodrow Wilson Center for International Scholars. Washington, DC, October 13, 2006.

136. "Determining the Economic Value of Coastal Preservation and Restoration on Critical Energy Infrastructure." (2006) The Economic and Market Impacts of Coastal Restoration: America's Wetland Economic Forum II. Washington, DC September 28, 2006.

137. "Relationships between Power and Other Critical Energy Infrastructure." (2006). Rebuilding the New Orleans Region: Infrastructure Systems and Technology Innovation Forum. United Engineering Foundation. New Orleans, LA, September 24-25, 2006.

138. "Outlook, Issues, and Trends in Energy Supplies and Prices." (2006.) Presentation to the Southern States Energy Board, Associate Members Meeting. New Orleans, Louisiana. July 14, 2006.

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

140. "Oil and Gas Industry Post 2005 Storm Events." (2006). American Petroleum Institute, Teche Chapter. Production, Operations, and Regulations Annual Meeting. Lafayette, Louisiana. June 29, 2006.

141. "Concentration of Energy Infrastructure in Hurricane Regions." (2006). Presentation before the National Commission on Energy Policy Forum: Ending the Stalemate on LNG Facility Siting. Washington, DC. June 21, 2006.

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

143. "Regional Energy Infrastructure, Production and Outlook." (2006). Executive Briefing for Board of Directors, Louisiana Oil and Gas Plc., Enhanced Exploration, Inc. and Energy Self-Service, Inc. Covington, Louisiana, May 12, 2006.

144. "The Impacts of the Recent Hurricane Season on Energy Production and Infrastructure and Future Outlook." Presentation before the Industrial Energy Technology Conference 2006. New Orleans, Louisiana, May 9, 2006.

145. "Update on Regional Energy Infrastructure and Production." (2006). Executive Briefing for Delegation Participating in U.S. Department of Commerce Gulf Coast Business Investment Mission. Baton Rouge, Louisiana May 5, 2006.

146. "Hurricane Impacts on Energy Production and Infrastructure." (2006). Presentation before the Interstate Natural Gas Association of America Mid-Year Meeting. Hyatt Regency Hill Country. April 21, 2006.

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

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

149. The Impacts of Hurricanes Katrina and Rita on Louisiana's Energy Industry. Presentation to the Louisiana Economic Development Council. Baton Rouge, Louisiana. March 8, 2006.

150. Energy Markets: Hurricane Impacts and Outlook. Presentation to the 2006 Louisiana Independent Oil and Gas Association Annual Conference. L'Auberge du Lac Resort and Casino. Lake Charles, Louisiana. March 6, 2006

151. Energy Market Outlook and Update on Hurricane Damage to Energy Infrastructure. Presentation to the Energy Council 2005 Global Energy and Environmental Issues Conference. Santa Fe, New Mexico, December 10, 2005.

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

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

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

155. "The Impact of the Recent Hurricane's on Louisiana's Energy Industry." Presentation before the Louisiana Independent Oil and Gas Association Board of Directors Meeting. November 8, 2005. Baton Rouge, LA.

156. "The Impact of the Recent Hurricanes on Louisiana's Infrastructure and National Energy Markets." Presentation before the Baton Rouge City Club Distinguished Speaker Series. October 13, 2005. Baton Rouge, LA.

157. "The Impact of the Recent Hurricanes on Louisiana's Infrastructure and National Energy Markets." Presentation before Powering Up: A Discussion About the Future of Louisiana's Energy Industry. Special Lecture Series Sponsored by the Kean Miller Law Firm. October 13, 2005. Baton Rouge, LA.

158. "The Impact of Hurricane Katrina on Louisiana's Energy Infrastructure and National Energy Markets." Special Lecture on Hurricane Impacts, LSU Center for Energy Studies, September 29, 2005.

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

160. "CES 2005 Legislative Support and Outlook for Energy Markets and Policy." Presentation before the LMOGA/LCA Annual Post-Session Legislative Committee Meeting. August 10-13, 2005. Perdido Key, Florida.

161. "Electric Restructuring: Past, Present, and Future." Presentation to the Southeastern Association of Tax Administrators Annual Conference. Sheraton Hotel and Conference Facility. New Orleans, LA July 12, 2005.

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

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

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

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

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

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

168. "Energy Issues for Industrial Customers of Gas and Power." Annual Meeting of the Louisiana Chemical Association and the Louisiana Chemical Industry Alliance. Point Clear, Alabama. October 8, 2004.

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

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

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

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

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

174. "The Gulf South: Economic Opportunities Related to LNG." Presentation before the Energy Council's 2004 State and Provincial Energy and Environmental Trends Conference. Point Clear, AL, June 26, 2004.

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

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

177. The Economic Opportunities for LNG Development in Louisiana." Presentation before the Louisiana Chemical Association/Louisiana Chemical Industry Alliance Legislative Conference. May 26, 2004. Baton Rouge, LA.

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

179. "Industry Development Issues for Louisiana: LNG, Retail Choice, and Energy." Presentation before the LSU Center for Energy Studies Industry Associates. May 14, 2004, Baton Rouge, LA.

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

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

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

183. "Competitive Bidding in the Electric Power Industry." Presentation before the Association of Energy Engineers. Business Energy Solutions Expo. December 11-12, 2003, New Orleans, Louisiana.

184. "Regional Transmission Organization in the South: The Demise of SeTrans" Presentation before the LSU Center for Energy Studies Industry Associates Advisory Council Meeting. December 9, 2003. Baton Rouge, Louisiana.

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

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

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

188. "What's Happened to the Merchant Energy Industry? Issues, Challenges, and Outlook" Presentation before the LSU Center for Energy Studies Industry Associates Advisory Council Meeting. November 12, 2002. Baton Rouge, Louisiana.

189. "An Introduction to Distributed Energy Resources." Presentation before the U.S. Department of Energy, Office of Renewable Energy and Energy Efficiency, State Energy Program/Rebuild America Conference, August 1, 2002, New Orleans, Louisiana.

190. "Merchant Energy Development Issues in Louisiana." Presentation before the Program Committee of the Center for Legislative, Energy, and Environmental Research (CLEER), Energy Council. April 19, 2002.

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

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

193. "Moving to the Front of the Lines: The Economic Impact of Independent Power Production in Louisiana." Presentation before the LSU Center for Energy Studies Merchant Power Generation and Transmission Conference, Baton Rouge, LA. October 11, 2001.

194. "Economic Impacts of Merchant Power Plant Development in Mississippi." Presentation before the U.S. Oil and Gas Association Annual Oil and Gas Forum. Jackson, Mississippi. October 10, 2001.

195. "Economic Opportunities for Merchant Power Development in the South." Presentation before the Southern Governor's Association/Southern State Energy Board Meetings. Lexington, KY. September 9, 2001.

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

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

198. "The Changing Nature of the Electric Power Business in Louisiana: Background and Issues." Presentation before the Louisiana Office of the Governor. Baton Rouge, LA, July 16, 2001.

199. "The Changing Nature of the Electric Power Business in Louisiana: Background and Issues." Presentation before the Louisiana Department of Economic Development. Baton Rouge, LA, July 3, 2001.

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

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

202. "Pricing and Regulatory Issues Associated with Distributed Energy." Joint Conference by Econ One Research, Inc., the Louisiana State University Distributed Energy Resources Initiative, and the University of Houston Energy Institute: "Is the Window Closing for Distributed Energy?" Houston, Texas, October 13, 2000.

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

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

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

206. "Electricity 101: Definitions, Precedents, and Issues." Energy Council's 2000 Federal Energy and Environmental Matters Conference. Loews L'Enfant Plaza Hotel, Washington, D.C. March 11-13, 2000.

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

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

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

210. Roundtable Discussant. "Environmental Regulation in a Restructured Market" The Big E: How to Successfully Manage the Environment in the Era of Competitive Energy. PUR Conference. New Orleans, Louisiana. May 24, 1999.

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

212. "The Dynamics of Electric Restructuring in Louisiana." Joint Meeting of the American Association of Energy Engineers and the International Association of Facilities Managers. Metairie, Louisiana. April 29, 1999.

213. "The Implications of Electric Restructuring on Independent Oil and Gas Operations." Petroleum Technology Transfer Council Workshop: Electrical Power Cost Reduction Methods in Oil and Gas Field Operations. Lafayette, Louisiana, March 24, 1999.

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

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

216. "The Implications of Electric Restructuring on Independent Oil and Gas Operations." Petroleum Technology Transfer Council Workshop: Electrical Power Cost Reduction Methods in Oil and Gas Field Operations. Shreveport, Louisiana, October 13, 1998.

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

218. "Reflections and Predictions on Electric Utility Restructuring in Louisiana." With Fred I. Denny. Louisiana State University, Center for Energy Studies Industry Associates Meeting. November 20, 1997.

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

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

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

222. "The Electric Utility Restructuring Debate In Louisiana: An Overview of the Issues." Annual Conference of the Public Affairs Research Council of Louisiana. Baton Rouge, Louisiana. March 25, 1997.

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

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

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

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

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

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

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

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

231. Roundtable Moderator, "Stakeholder Perspectives on Electric Utility Stranded Costs." Louisiana State University, Center for Energy Studies Seminar on Electric Utility Restructuring in Louisiana, Baton Rouge, May 29, 1996.

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

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

1. Expert Testimony. Docket No. 18-KCPE-095-MER. Before the Corporation Commission of the State of Kansas. *In the Matter of the Application of Great Plains Energy Incorporated, Kansas City Power & Light Company, and Westar Energy, Inc. for Approval of the Merger of Westar Energy, 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.

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

3. 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.

4. 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.

5. 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.

6. 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.

7. 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.

8. 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.

9. 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.

10. 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.

11. 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.

12. 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.

13. Expert Testimony. Docket Nos. 160021-EI, 160061-EI, 160062-EI, and 160088-EI. (2016). Before the Florida Public Service Commission. *In re: Petition for rate increase by Florida Power & Light Company (consolidated).* On behalf of the Office of Consumer Advocate, Iowa Department of Justice. Issue: load forecasting.

14. 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.

15. 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.

16. 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.

17. 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.

18. 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.

19. 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.

20. 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.

21. 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.

22. 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.

23. 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.

24. 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.

25. 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.

26. 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.

27. 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.

28. 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.

29. 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.

30. 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.

31. 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.

32. 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.

33. 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.

34. 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.

35. 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.

36. 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.

37. 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.

38. 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.

39. 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.

40. 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.

41. 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.

42. 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

43. 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.

44. 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.

45. 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.

46. 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.

47. 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.

48. 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.

49. 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.

50. 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.

51. 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.

52. 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.

53. 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.

54. 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.

55. 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.

56. 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.

57. 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.

58. 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.

59. 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.

60. 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.

61. 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.

62. 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.

63. 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)

64. 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.

65. 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.

66. 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.

67. 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.

68. 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.

69. 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.

70. 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.

71. 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.

72. 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.

73. 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.

74. 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.

75. 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.

76. 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.

77. 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.

78. 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.

79. 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.

80. 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.

81. 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.

82. 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.

83. 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.

84. 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.

85. 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.

86. 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.

87. 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)

88. 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)

89. 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.

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

91. 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.

92. 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).

93. 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.

94. 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.

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

96. 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.

97. 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.

98. 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.

99. 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)

100. 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.

101. 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.

102. 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.

103. 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).

104. 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.

105. 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.

106. 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.

107. 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)

108. 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.

109. 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.

110. 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).

111. 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.

112. 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.

113. 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

114. 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.

115. 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.

116. 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.

117. 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.

118. 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.

119. 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.

120. 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)

121. 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.

122. 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.

123. 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.

124. 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.

125. 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.

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

127. 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.

128. 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).

129. 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.

130. 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.

131. 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.

132. 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.

133. 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.

134. 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.

135. 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.

136. 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.

137. 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.

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

139. 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.

140. 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.

141. Expert Testimony: Docket 920188-TL, (1992). Before the Florida Public Service Commission. On the Behalf of the Florida Public Service Commission Staff. Company analyzed: GTE-Florida. Issues: Telephone Demand Forecasts and Empirical Estimates of the Price Elasticity of Demand for Telecommunication Services.

REFEREE AND EDITORIAL APPOINTMENTS

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

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

Referee, 2014-Current, *Utilities Policy*

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

Referee, 1995-Current, *Energy Journal*

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

Referee, 2005, *Energy Policy*

Referee, 2004, *Southern Economic Journal*

Referee, 2002, *Resource & Energy Economics*

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

PROPOSAL TECHNICAL REVIEWER

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

PROFESSIONAL ASSOCIATIONS

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

HONORS AND AWARDS

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

Baton Rouge Business Report, Selected as "Top 40 Under 40" (2003).

Omicron Delta Epsilon (1992-Current).

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

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

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

TEACHING EXPERIENCE

Energy and the Environment (Survey Course)

Principles of Microeconomic Theory

Principles of Macroeconomic Theory

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

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

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

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

Continuing Education. Electric Power Industry Restructuring for Energy Professionals.

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

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

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

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

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

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

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

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

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

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

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

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

THESIS/DISSERTATIONS COMMITTEES

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

LSU SERVICE AND COMMITTEE MEMBERSHIPS

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

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

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

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

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

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

Search Committee Member (2005), CES Communications Manager.

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

LSU Faculty Senate (2003-2006).

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

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

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

Conference Coordinator. Center for Energy Studies Seminar Series on Electric Utility

Restructuring and Wholesale Competition. (1996-2003).

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

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

LSU InterCollege Environmental Cooperative. (1999-2001).

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

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

PROFESSIONAL SERVICE

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

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

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

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

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

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

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

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

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

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

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

Secretary (2001) Houston Chapter, USAEE.

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

Table of Exhibits

Cost Components of the Proposed LNG Facility

Construction Components		Cost ($ Millions)	Percent of Total
LNG Tanks and Regasification System	$	8.0	13.8%
Boil-Off Gas System		1.0	1.7%
LNG Truck Unloading Station		1.8	3.1%
Site Works, Civil/Structural Works and Buildings		4.4	7.6%
Electrical, Instrumentation & Control Systems		2.3	4.0%
Balance of Plant		9.2	15.9%
Land Costs		12.5	21.6%
Engineering and other indirect costs		18.8	32.4%
Total	**$**	**58.0**	**100.0%**

Source: Direct Testimony of Stephen Wassell, p. 9.

Comparison of Forecasted Design Day Requirements

	FCG Total System		
	Design Day Load	Design Day Capacity	Percent of Requirement
	(Dth)		
Sales Customers	**47,187**	**49,546**	**105%**
Transportation Customers			
Essential Use			
Existing Customers	22,250	19,409	87%
New Customers	4,551	0	0%
	26,801	19,409	72%
Non-Essential Use	35,292	0	0%
Total System	**109,280**	**68,955**	**63%**

	FCG System Capabilities by Region								
	Brevard			Vero Beach			Miami		
	Design Day Load	Design Day Capacity	Percent of Requirement	Design Day Load	Design Day Capacity	Percent of Requirement	Design Day Load	Design Day Capacity	Percent of Requirement
	(Dth)			(Dth)			(Dth)		
Sales Customers	**30,478**	**30,922**	**101%**	**4,725**	**4,961**	**105%**	**11,983**	**12,583**	**105%**
Transportation Customers									
Essential Use									
Existing Customers	6,307	0	0%	3,373	2,007	60%	12,570	12,570	100%
New Customers	0	0	-	0	0	-	4,551	4,551	100%
	6,307	0	0%	3,373	2,007	60%	17,121	17,121	100%
Non-Essential Use	1,608	0	0%	23,778	0	0%	9,906	1,361	14%
Total System	**38,393**	**30,922**	**81%**	**31,876**	**6,968**	**22%**	**39,010**	**31,065**	**80%**

Source: Direct Testimony of Gregory Becker, Exhibit GB-3.

Historic Capacity Releases, 2013-2017

County	Total Capacity Released (Dth per day)				
	2013	2014	2015	2016	2017
Brevard	34,200	227,432	155,614	192,600	55,500
Indian River	3,000	-	70,000	-	-
St. Lucie	220,000	342,000	282,000	130,000	182,000
Glades	-	-	-	-	-
Hendry	-	-	-	-	-
Palm Beach	346,285	374,115	382,161	149,094	215,599
Broward	63,696	105,200	110,773	36,261	101,387
Dade	143,793	160,602	228,696	25,478	310,336
Total	**810,974**	**1,209,349**	**1,229,244**	**533,433**	**864,822**

Note: Schedule does not include capacity releases made at FGT locations since discontinued by the pipeline.

Source: Energy Transfer, Florida Gas Transmission Company Index of Customers.

Operating Capacity and Scheduled Quantity Delivery

	Design Capacity	Operating Capacity	Total Scheduled Quantity (Delivery)	Operationally Available Capacity	Percent of Design Capacity Operationally Available
	(Dth per day)				
Indian River	9,000	9,000	4,935	4,065	45.2%
Melbourne	3,000	3,000	533	2,467	82.2%
Eau Gallie	7,700	7,700	1,384	6,316	82.0%
Cocoa	10,600	15,330	9,412	5,919	55.8%
Vero Beach North	4,900	4,900	3,302	1,598	32.6%
Vero Beach South	4,900	4,900	875	4,025	82.1%
Port St. Lucie	2,400	2,400	1,606	794	33.1%
Lake Forest	7,400	6,550	2,616	3,934	53.2%
Opa Locka	16,100	12,000	4,383	7,617	47.3%
NW Hialeah	19,200	15,000	4,358	10,643	55.4%
SE Hialeah	15,000	13,000	4,125	8,875	59.2%
West Miami	7,300	7,300	521	6,779	92.9%
Cutler Ridge	7,800	7,500	2,310	5,191	66.5%
South Miami	7,800	7,800	1,395	6,405	82.1%

Source: Energy Transfer, Florida Gas Transmission Company Operationally Available Capacity.
http://fgttransfer.energytransfer.com/ipost/FGT/capacity/operationally-available

Southeast LNG Facilities

Facility Name	City	State	Facility Operator	Initial Year of Operation	LNG Storage Capacity (000 gallons)	LNG Liquifaction Capabilities (000 gallons per day)
Pinson LNG Facility	Birmingham	Alabama	Alabama Gas	1965	14,700	144
Coosada LNG Facility	Coosada	Alabama	Alabama Gas	1972	7,350	24
Trussville LNG	Trussville	Alabama	Pivotal LNG	1978	4,906	60
Riverdale	Riverdale	Georgia	Atlanta Gas Light (Pivotal)	1972	31,080	120
Cherokee	Ball Ground	Georgia	Atlanta Gas Light (Pivotal)	1988	25,200	120
Macon	Macon	Georgia	Atlanta Gas Light (Pivotal)	1977	18,900	120
Miami LNG	Hialeah	Florida	American LNG (Fortress Energy)	2016	270	100
Titusville LNG	Titusville	Florida	American LNG (Fortress Energy)	2017	5,000	1,000
Eagle Maxville	Jacksonville	Florida	Eagle LNG	2017	1,000	200 (87 initially)
JAX LNG	Jacksonville	Florida	JAX LNG (Pivotal)	2017	2,000	120
Eagle Jacksonville	West Jacksonville	Florida	Eagle LNG	2019	12,000	1,500

Note: Statistics converted from reported using 42 gallons in Bbl, and 12 LNG gallons per MMBtu.

Source: U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration ("PHMSA"), Form PHMSA F 7100.3-1; FE Docket No. 14-209-LNG, DOE/FE Order No. 3601; Operator Websites; and News Reports.