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May 26, 2020

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

**Re: Docket No. 20200071-EI**

Dear Mr. Teitzman,

Please find enclosed for filing in the above referenced docket the Direct Testimony and Exhibits of Ralph Smith, CPA. This filing is being made via the Florida Public Service Commission's Web Based Electronic Filing portal.

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

Sincerely,

*/s/Patricia A. Christensen*  
Patricia A. Christensen  
Associate Public Counsel

cc: All Parties of Record

**BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

**IN RE: REVIEW OF 2020-2029 STORM PROTECTION PLAN PURSUANT TO  
RULE 25-6.030, F.A.C., FLORIDA POWER & LIGHT COMPANY,  
DOCKET NO. 20200071-EI**

**DIRECT TESTIMONY**

**OF**

**RALPH SMITH, CPA**

**ON BEHALF OF THE CITIZENS OF THE STATE OF FLORIDA**

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## TABLE OF CONTENTS

I.	INTRODUCTION.....	1
II.	THE CONCEPTS OF "RESILIENCY" AND "RELIABILITY" .....	3
III.	PRINCIPLES TO BE APPLIED WHEN REVIEWING FPL'S PROPOSED SPP.....	7
IV.	SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS .....	9

**DIRECT TESTIMONY**

**OF**

**RALPH SMITH**

On Behalf of the Office of Public Counsel

Before the

Florida Public Service Commission

20200071-EI

1           **I. INTRODUCTION**

2   **Q. WHAT ARE YOUR NAME, OCCUPATION, AND BUSINESS ADDRESS?**

3   A. My name is Ralph Smith. I am a Certified Public Accountant licensed in the State of  
4 Michigan and a senior regulatory consultant at the firm Larkin & Associates, PLLC,  
5 Certified Public Accountants, with offices at 15728 Farmington Road, Livonia, Michigan,  
6 48154.

7

8   **Q. PLEASE DESCRIBE THE FIRM LARKIN & ASSOCIATES, PLLC.**

9   A. Larkin & Associates, PLLC, ("Larkin") is a Certified Public Accounting and Regulatory  
10 Consulting Firm. The firm performs independent regulatory consulting primarily for  
11 public service/utility commission staffs and consumer interest groups (public counsels,  
12 public advocates, consumer counsels, attorneys general, etc.). Larkin has extensive  
13 experience in the utility regulatory field as expert witnesses in over 600 regulatory  
14 proceedings, including numerous electric, water and wastewater, gas and telephone utility  
15 cases.

1 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE FLORIDA PUBLIC**  
2 **SERVICE COMMISSION?**

3 A. Yes, I have testified before the Florida Public Service Commission (“PSC” or  
4 “Commission”) previously. I have also testified before several other state regulatory  
5 commissions.

6  
7 **Q. HAVE YOU PREPARED AN EXHIBIT DESCRIBING YOUR QUALIFICATIONS**  
8 **AND EXPERIENCE?**

9 A. Yes. I have attached Exhibit RCS-1, which is a summary of my regulatory experience and  
10 qualifications.

11

12 **Q. ON WHOSE BEHALF ARE YOU APPEARING?**

13 A. Larkin & Associates, PLLC, was retained by the Florida Office of Public Counsel (“OPC”)  
14 to review Florida Power & Light’s (“FPL” or “Company”) proposed 2020-2029 Storm  
15 Protection Plan (“SPP” or “Plan”) on behalf of the OPC. Accordingly, I am appearing on  
16 behalf of the Citizens of the State of Florida.

17

18 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

19 A. I am presenting my expert opinion regarding issues raised in FPL’s proposed 2020-2029  
20 Storm Protection Plan.

21

22 **Q. WHAT INFORMATION DID YOU REVIEW IN PREPARATION OF YOUR**  
23 **TESTIMONY?**

24 A. I reviewed the Company’s filing, including the direct testimony and exhibits. I also  
25 reviewed the Company’s responses to OPC’s discovery, the Company’s responses to PSC

1 Staff's discovery, and other materials pertaining to the SPP and its impacts on the  
2 Company. In addition, I reviewed Rule 25-6.030, Florida Administrative Code ("F.A.C."),  
3 concerning approval of a Transmission and Distribution Storm Protection Plan that covers  
4 a utility's immediate 10-year planning period.

5  
6 **Q. PLEASE DESCRIBE HOW THE REMAINDER OF YOUR TESTIMONY IS**  
7 **ORGANIZED.**

8 A. I first discuss Rule 25-6.030, F.A.C., and the concept of "resiliency" and distinguish the  
9 concepts of "resiliency" and "reliability". I then discuss principles I applied when  
10 reviewing FPL's proposed SPP. In the discussion of the principles I applied, I include  
11 criteria that, in my expert opinion, the Commission must weigh to properly evaluate the  
12 sufficiency of each SPP under the statutes and rules governing the SPPs.

13  
14 **II. THE CONCEPTS OF "RESILIENCY" AND "RELIABILITY"**

15 **Q. PLEASE DISCUSS RULE 25-6.030, F.A.C.**

16 A. Rule 25-6.030, F.A.C., provides that each utility must file an updated SPP at least every  
17 three years that covers the utility's immediate ten-year planning period. Rule 25-6.030,  
18 F.A.C., also specifies the information to be included in each utility's SPP. The Florida  
19 Legislature directed the Commission to adopt rules to specify the elements that must be  
20 included in each utility's SPP. The Florida Legislature found that it was in the State's  
21 interest to "strengthen electric utility infrastructure to withstand extreme weather  
22 conditions by promoting the overhead hardening of electrical transmission and distribution  
23 facilities, the undergrounding of certain electrical distribution lines, and vegetation  
24 management," and for each electric utility to "mitigate restoration costs and outage times  
25 to utility customers when developing transmission and distribution storm protection plans."

1 Section 366.96(1)(c) and (e), F.S. These objectives of mitigating restoration costs and  
2 outage times by strengthening electric utility infrastructure to withstand extreme weather  
3 events appear to relate to resiliency, which, as explained below, should be distinguished  
4 from reliability, for developing specific criteria to be applied in evaluating utility proposed  
5 SPP expenditures.

6  
7 **Q. PLEASE DISCUSS THE CONCEPT OF "RESILIENCY".**

8 A. The term "resilience" means the ability to prepare for and adapt to changing conditions,  
9 and withstand and recover rapidly from disruptions.<sup>1</sup> Resilience measures can be designed  
10 to address infrequently occurring, high-consequence events that apply stress to a system  
11 over a large scale, such as disruptions to electric supply resulting from extreme weather  
12 events such as hurricanes. Grid modernization activities cite resilience (sometimes called  
13 resiliency) as a key electric power grid characteristic to be improved or maximized, and so  
14 it is crucial for the development of resilient grid architectures that the concept of grid  
15 resilience be clear and quantifiable.<sup>2</sup> As described in *Electric Grid Resilience and*  
16 *Reliability for Grid Architecture*<sup>3</sup> at page 3:

17 A key concept here is that resilience is *an intrinsic characteristic of a grid*  
18 *or portion of a grid. A perfectly resilient grid would not experience outages*  
19 *and so any definition or metric that is based on measuring outage*  
20 *frequencies, times, extents, or impacts on customers or systems does not get*  
21 *at the essence of resilience. Resilience applies to the grid under stress: how*  
22 *it resists losing capabilities or gracefully degrades is the essence of*  
23 *resilience. This explains why reliability measures are not useful for*  
24 *quantifying resilience. Resilience is in large part about what does **not***  
25 *happen. (Emphasis in original.)*

26  

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<sup>1</sup> See, <https://www.nrel.gov/resilience-planning-roadmap/pdfs/defining-resilience-exercise.pdf>.

<sup>2</sup> See, [https://gridarchitecture.pnnl.gov/media/advanced/Electric\\_Grid\\_Resilience\\_and\\_Reliability\\_v4.pdf](https://gridarchitecture.pnnl.gov/media/advanced/Electric_Grid_Resilience_and_Reliability_v4.pdf). JD Taft, Ph.D., March 2018, prepared for the U.S. Department of Energy by Pacific Northwest National Laboratory under Contract DE-AC05-76RL01830 at page 1.

<sup>3</sup> *Id.* at page 3.

1 Q. PLEASE DISCUSS THE CONCEPT OF "RELIABILITY"

2 A. The term "reliability" refers to maintaining the delivery of electric power when there is  
3 "routine uncertainty in operating conditions" according to the DOE's Grid Modernization  
4 Laboratory Consortium.<sup>4</sup> There have been developed an array of well-defined, reported  
5 metrics for the bulk power system (e.g., loss of load expectation), and electricity  
6 distribution system (e.g., SAIDI<sup>5</sup>, SAIFI<sup>6</sup>, and CAIDI<sup>7</sup>) to measure reliability. As noted in  
7 a May 2, 2018 report concerning *Electric Reliability and Power System Resilience* at page  
8 2, prepared for the Congressional Research Service<sup>8</sup>:

9 In the United States, there are two main indices used to measure reliability.  
10 The system average interruption duration index (SAIDI) represents *the*  
11 *average amount of time per year that power supply to a customer is*  
12 *interrupted*, expressed in minutes per customer per year. The system  
13 average interruption frequency index (SAIFI) represents *the average*  
14 *number of times per year that the supply to a customer is interrupted*,  
15 expressed as interruptions per customer per year. However, there is a lack  
16 of consistency in how the inputs to these indices are measured, since some  
17 jurisdictions consider storm-related outages as "extreme" or unusual events,  
18 and thus do not include these in power outage statistics. (Emphasis in  
19 original.)

20  
21 As stated in *Electric Grid Resilience and Reliability for Grid Architecture*<sup>9</sup> at page 3:

22 Reliability on the other hand, is a measure of *behavior once resilience has*  
23 *broken*. Standard reliability metrics fall into two categories: frequency  
24 indices (CAIFI, SAIFI, etc.) and duration indices (CAIDI, SAIDI, etc.).  
25 Frequency indices are very roughly related to resilience in the sense that  
26 they reflect to some degree how often resilience is broken (but in a non-  
27 normalized fashion, making them unusable as resilience measures).  
28 Duration indices measure how well a utility responds to broken resilience

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<sup>4</sup> See, [https://gmlc.doe.gov/sites/default/files/resources/GMLC1%201%20Reference Manual2%20final20170601v4wPNNLNo1.pdf](https://gmlc.doe.gov/sites/default/files/resources/GMLC1%201%20Reference%20Manual2%20final20170601v4wPNNLNo1.pdf).

<sup>5</sup> System Average Interruption Duration Index (SAIDI), which is stated in minutes per customer, and is commonly reported with and without major events, such as severe storms.

<sup>6</sup> System Average Interruption Frequency Index (SAIFI)

<sup>7</sup> Customer Average Interruption Duration Index (CAIDI) stated in hours per customer

<sup>8</sup> [https://www.everycrsreport.com/files/20180502\\_IN10895\\_b74bbaf13d1c87cf3bcd377022a1596667834782.pdf](https://www.everycrsreport.com/files/20180502_IN10895_b74bbaf13d1c87cf3bcd377022a1596667834782.pdf), accessed on May 15, 2020.

<sup>9</sup> *Supra* [https://gridarchitecture.pnnl.gov/media/advanced/Electric Grid Resilience and Reliability v4.pdf](https://gridarchitecture.pnnl.gov/media/advanced/Electric%20Grid%20Resilience%20and%20Reliability%20v4.pdf). JD Taft, Ph.D., March 2018, prepared for the U.S. Department of Energy by Pacific Northwest National Laboratory under Contract DE-AC05-76RL01830.

(also in a non-normalized fashion). This is why recovery, as mentioned in the EPRI resilience definition, actually belongs in the reliability domain. The dividing line is clear: for electricity delivery, the start of a sustained outage is the transition point from the domain of resilience to the domain of reliability. An understanding of this concept is necessary for the development of resilient grid architectures.

The following diagrams, from pages 3 and 7 of *Electric Grid Resilience and Reliability for Grid Architecture*, respectively, may be helpful in illustrating the relationship and distinguishing factors between the concepts of resilience and reliability:

Figure 1: Resilience and Reliability Domains

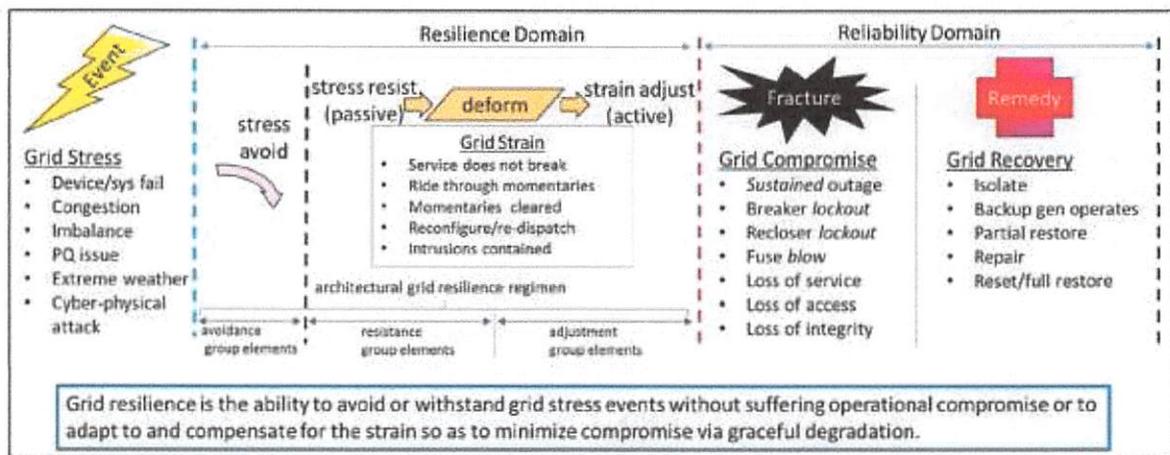
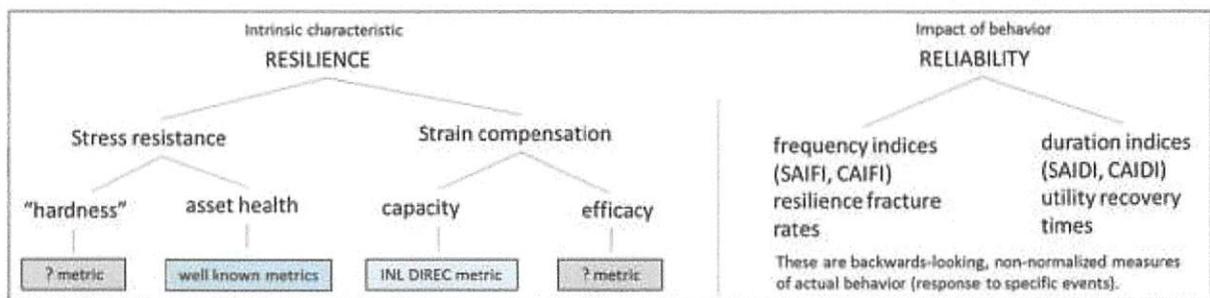


Figure 2: Resilience and Reliability Metrics Taxonomies



**Q. WHY IS IT IMPORTANT TO DISTINGUISH BETWEEN RESILIENCY AND RELIABILITY IN EVALUATING UTILITY-PROPOSED SPP INVESTMENTS?**

**A.** Utility proposals to regulators for resilience spending are growing as indicated by the SPP proposals filed by FPL and other Florida electric utilities. It will, therefore be important to

1 develop standards to evaluate whether the SPP proposals being made by FPL and the other  
2 Florida electric utilities are cost justified. Standards will be needed to evaluate the value  
3 and cost-effectiveness of the utility proposed SPP programs and how they differ from  
4 traditional reliability investments that would be included and recovered in utility base rates.  
5 Using traditional reliability measures to evaluate utility proposed system hardening  
6 expenditures to improve resiliency may not be adequate. As noted above, resilience and  
7 reliability are distinguishable concepts and the expenditures to address improvements in  
8 each would appear to require their own specialized evaluation criteria. There is not yet a  
9 clear and widely accepted "value of resilience" metric, so appropriate evaluation standards  
10 will need to be developed in the initial reviews of utility SPP proposals. Moreover, while  
11 traditional measurements of reliability have been in use for many years and are widely-  
12 accepted, there are not yet widely-accepted standards for measuring resiliency,  
13 measurements for reliability related to resiliency or widely-accepted standards for  
14 determining the value of system hardening expenditures intended to improve resiliency.  
15 Without such criteria, expenditures may be undertaken by the utility for SPP programs that  
16 are not cost effective or do not have a favorable cost-benefit ratio.

17 **III. PRINCIPLES TO BE APPLIED WHEN REVIEWING FPL'S**  
18 **PROPOSED SPP**

19 **Q. HAVE YOU IDENTIFIED A SET OF RECOMMENDED PRINCIPLES THAT**  
20 **SHOULD BE APPLIED WHEN REVIEWING FPL'S (AND THE OTHER**  
21 **FLORIDA ELECTRIC UTILITIES') PROPOSED SPP EXPENDITURES?**

22 **A.** Yes. Working in conjunction with the OPC and various other OPC experts, I have  
23 identified the following principles that should be applied when reviewing utility proposed  
24 SPP expenditures to ensure that the approved projects meaningfully improve resiliency and  
25 reliability, are cost-effective, and minimizes adverse customer rate impacts:

- 1) determine standard resiliency and reliability metrics baselines to assess improvements from SPP projects;
- 2) determine consistent cutoff resiliency and reliability metrics that would apply to and limit SPP projects;
- 3) ensure that the SPP projects are incremental and do not include projects for which costs are currently being recovered through base rates or other surcharges;
- 4) insist on clearly defined and verifiable cost/benefit analyses and metrics to ensure that customers obtain beneficial value for discretionary investments;
- 5) determine consistent cutoff cost/benefit metrics that would apply to any proposed SPP projects;
- 6) determine standard revenue requirement and rate impact methodologies;
- 7) determine consistent cutoff revenue requirement metrics to limit SPP projects, e.g., limit the effect on overall rates to the rate of inflation or some other benchmark;
- 8) ensure that the utility is held accountable for the assumptions used to justify the SPP projects based on actual improvements in reliability metrics and reductions in costs, among others;
- 9) ensure that savings in expenses from the SPP projects are captured as an offset to the incremental costs included in the SPP Cost Recovery Clause ("SPPCRC");
- 10) ensure that the decrements in revenue requirements as the result of declining cost curves on SPP projects already included in base rates or other surcharges are captured as an offset to the incremental SPP expenditures that would be recovered in the SPPCRC;
- 11) establish clear criteria for determining whether and when each utility's resiliency and reliability improvement objectives have been attained; and

1 12) ensure that the SPP is not approved for prudency until it can be determined that  
2 resiliency and reliability improvement objectives have been obtained including but not  
3 limited to cost-effectiveness and rate impact as required by Rule 25.6.030, F.A.C.

4 **Q. IS ANOTHER WITNESS FOR THE OPC ADDRESSING SPECIFICS ABOUT**  
5 **SOME OF THESE PRINCIPLES AND HOW THEY SHOULD BE APPLIED TO**  
6 **THE SPP EXPENDITURE PROPSALS OF FPL?**

7 A. Yes. OPC witness Kevin Mara's Direct Testimony provides additional specifics about  
8 some of these principles and how they should be applied to the SPP expenditure proposals  
9 of FPL.

10 **IV. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS**

11 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS.**

12 A. I agree generally that the public could benefit from improvements in grid resiliency and  
13 reliability, but would caution that the improvements made should be cost-justified. I agree  
14 that there may be merit in selective and cost-effective system hardening and resiliency  
15 enhancing expenditures. However, prior to approving utility SPP spending proposals, the  
16 Commission must clearly define performance metrics and formulations for cost-benefit  
17 analyses. Rather than proceeding apace with accelerated investments that have not been  
18 adequately cost-justified, the Commission should require the utilities in the state, such as  
19 FPL, to provide adequate cost-justification before additional investments in grid resiliency  
20 are approved for rate recovery or charged to ratepayers. In addition, there are concerns  
21 regarding whether SPP surcharge recovery is necessary or appropriate for FPL for various  
22 types of proposed SPP expenditures, such as vegetation management, which traditionally  
23 and appropriately has been addressed and the costs recovered through base rates. A clear

1 and specific delineation between (1) base rate recoverable and (2) SPP surcharge  
2 recoverable expenditures is needed to facilitate accounting and auditing and prevent abuse  
3 and double-recovery. FPL's experience suggests that enhanced vegetation management  
4 costs could be effectively accommodated in the context of a traditional base rate case.

5 FPL's SPP expenditure proposals fail to link the costs to clear and verifiable  
6 resilience and reliability performance indicators. As a result, FPL's proposal would assure  
7 investors of earnings on investments and recovery of certain specific O&M expenses  
8 between rate cases, but customers would be left with the risk and burden of having  
9 inadequate or unquantifiable benefits relating to SPP expenditures for which they will be  
10 paying. Once the SPP expenditures have been made, documenting imprudence,  
11 inefficiency or lack of adequate cost-benefit from such expenditures after the fact is a  
12 burden that should not be placed on ratepayers and their representatives. I would thus urge  
13 caution and require further cost-benefit analyses for FPL's SPP projects, including a clear  
14 delineation of the expected improvements in resiliency and reliability and a clear method  
15 for how these will be measured, prior to authorizing and having the utility embark upon  
16 what could be an unjustifiably costly endeavor to enhance system resiliency.

17  
18 **Q. DOES THIS COMPLETE YOUR PREFILED TESTIMONY?**

19 **A.** Yes, it does.

20

**CRTIFICATE OF SERVICE**

**Docket No. 20200071-EI**

**I HEREBY CERTIFY** that a true and correct copy of the foregoing has been furnished  
by electronic mail on this 26<sup>th</sup> day of May 2020, to the following:

Mr. Ken Hoffman  
Florida Power & Light Company  
134 West Jefferson Street  
Tallahassee FL 32301-1713  
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**/s/Patricia A. Christensen**  
Patricia A. Christensen  
Associate Public Counsel

## QUALIFICATIONS OF RALPH C. SMITH

### Accomplishments

Mr. Smith's professional credentials include being a Certified Financial Planner™ professional, a Certified Rate of Return Analyst, a licensed Certified Public Accountant and attorney. He functions as project manager on consulting projects involving utility regulation, regulatory policy and ratemaking and utility management. His involvement in public utility regulation has included project management and in-depth analyses of numerous issues involving telephone, electric, gas, and water and sewer utilities.

Mr. Smith has performed work in the field of utility regulation on behalf of industry, public service commission staffs, state attorney generals, municipalities, and consumer groups concerning regulatory matters before regulatory agencies in Alabama, Alaska, Arizona, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Hawaii, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, New Jersey, New Mexico, New York, Nevada, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Puerto Rico, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Washington DC, West Virginia, Canada, Federal Energy Regulatory Commission and various state and federal courts of law. He has presented expert testimony in regulatory hearings on behalf of utility commission staffs and intervenors on several occasions.

Project manager in Larkin & Associates' review, on behalf of the Georgia Commission Staff, of the budget and planning activities of Georgia Power Company; supervised 13 professionals; coordinated over 200 interviews with Company budget center managers and executives; organized and edited voluminous audit report; presented testimony before the Commission. Functional areas covered included fossil plant O&M, headquarters and district operations, internal audit, legal, affiliated transactions, and responsibility reporting. All of our findings and recommendations were accepted by the Commission.

Key team member in the firm's management audit of the Anchorage Water and Wastewater Utility on behalf of the Alaska Commission Staff, which assessed the effectiveness of the Utility's operations in several areas; responsible for in-depth investigation and report writing in areas involving information systems, finance and accounting, affiliated relationships and transactions, and use of outside contractors. Testified before the Alaska Commission concerning certain areas of the audit report. AWWU concurred with each of Mr. Smith's 40 plus recommendations for improvement.

Co-consultant in the analysis of the issues surrounding gas transportation performed for the law firm of Cravath, Swaine & Moore in conjunction with the case of Reynolds Metals Co. vs. the Columbia Gas System, Inc.; drafted in-depth report concerning the regulatory treatment at both state and federal levels of issues such as flexible pricing and mandatory gas transportation.

Lead consultant and expert witness in the analysis of the rate increase request of the City of Austin - Electric Utility on behalf of the residential consumers. Among the numerous ratemaking issues addressed were the economies of the Utility's employment of outside services; provided both written and oral testimony outlining recommendations and their bases. Most of Mr. Smith's recommendations were adopted by the City Council and Utility in a settlement.

Key team member performing an analysis of the rate stabilization plan submitted by the Southern Bell Telephone & Telegraph Company to the Florida PSC; performed comprehensive analysis of the Company's projections and budgets which were used as the basis for establishing rates.

Lead consultant in analyzing Southwestern Bell Telephone separations in Missouri; sponsored the complex technical analysis and calculations upon which the firm's testimony in that case was based. He has also assisted in analyzing changes in depreciation methodology for setting telephone rates.

Lead consultant in the review of gas cost recovery reconciliation applications of Michigan Gas Utilities Company, Michigan Consolidated Gas Company, and Consumers Power Company. Drafted recommendations regarding the appropriate rate of interest to be applied to any over or under collections and the proper procedures and allocation methodology to be used to distribute any refunds to customer classes.

Lead consultant in the review of Consumers Power Company's gas cost recovery refund plan. Addressed appropriate interest rate and compounding procedures and proper allocation methodology.

Project manager in the review of the request by Central Maine Power Company for an increase in rates. The major area addressed was the propriety of the Company's ratemaking attrition adjustment in relation to its corporate budgets and projections.

Project manager in an engagement designed to address the impacts of the Tax Reform Act of 1986 on gas distribution utility operations of the Northern States Power Company. Analyzed the reduction in the corporate tax rate, uncollectibles reserve, ACRS, unbilled revenues, customer advances, CIAC, and timing of TRA-related impacts associated with the Company's tax liability.

Project manager and expert witness in the determination of the impacts of the Tax Reform Act of 1986 on the operations of Connecticut Natural Gas Company on behalf of the Connecticut Department of Public Utility Control - Prosecutorial Division, Connecticut Attorney General, and Connecticut Department of Consumer Counsel.

Lead Consultant for The Minnesota Department of Public Service ("DPS") to review the Minnesota Incentive Plan ("Incentive Plan") proposal presented by Northwestern Bell Telephone Company ("NWB") doing business as U S West Communications ("USWC"). Objective was to express an opinion as to whether current rates addressed by the plan were appropriate from a Minnesota intrastate revenue requirements and accounting perspective, and to assist in developing recommended modifications to NWB's proposed Plan.

Performed a variety of analytical and review tasks related to our work effort on this project. Obtained and reviewed data and performed other procedures as necessary (1) to obtain an understanding of the Company's Incentive Plan filing package as it relates to rate base, operating income, revenue requirements, and plan operation, and (2) to formulate an opinion concerning the reasonableness of current rates and of amounts included within the Company's Incentive Plan filing. These procedures included requesting and reviewing extensive discovery, visiting the Company's offices to review data, issuing follow-up information requests in many instances, telephone and on-site discussions with Company representatives, and frequent discussions with counsel and DPS Staff assigned to the project.

Lead Consultant in the regulatory analysis of Jersey Central Power & Light Company for the Department of the Public Advocate, Division of Rate Counsel. Tasks performed included on-site review and audit of Company, identification and analysis of specific issues, preparation of data requests, testimony, and cross examination questions. Testified in Hearings.

Assisted the NARUC Committee on Management Analysis with drafting the Consultant Standards for Management Audits.

Presented training seminars covering public utility accounting, tax reform, ratemaking, affiliated transaction auditing, rate case management, and regulatory policy in Maine, Georgia, Kentucky, and Pennsylvania. Seminars were presented to commission staffs and consumer interest groups.

### Previous Positions

With Larkin, Chapski and Co., the predecessor firm to Larkin & Associates, was involved primarily in utility regulatory consulting, and also in tax planning and tax research for businesses and individuals, tax return preparation and review, and independent audit, review and preparation of financial statements.

Installed computerized accounting system for a realty management firm.

### Education

Bachelor of Science in Administration in Accounting, with distinction, University of Michigan, Dearborn, 1979.

Master of Science in Taxation, Walsh College, Michigan, 1981. Master's thesis dealt with investment tax credit and property tax on various assets.

Juris Doctor, cum laude, Wayne State University Law School, Detroit, Michigan, 1986. Recipient of American Jurisprudence Award for academic excellence.

Continuing education required to maintain CPA license and CFP® certificate.

Passed all parts of CPA examination in first sitting, 1979. Received CPA certificate in 1981 and Certified Financial Planning certificate in 1983. Admitted to Michigan and Federal bars in 1986.

Michigan Bar Association.

American Bar Association, sections on public utility law and taxation.

Partial list of utility cases participated in:

79-228-EL-FAC	Cincinnati Gas & Electric Company (Ohio PUC)
79-231-EL-FAC	Cleveland Electric Illuminating Company (Ohio PUC)
79-535-EL-AIR	East Ohio Gas Company (Ohio PUC)
80-235-EL-FAC	Ohio Edison Company (Ohio PUC)
80-240-EL-FAC	Cleveland Electric Illuminating Company (Ohio PUC)
U-1933	Tucson Electric Power Company (Arizona Corp. Commission)
U-6794	Michigan Consolidated Gas Co. --16 Refunds (Michigan PSC)
81-0035TP	Southern Bell Telephone Company (Florida PSC)
81-0095TP	General Telephone Company of Florida (Florida PSC)
81-308-EL-EFC	Dayton Power & Light Co.- Fuel Adjustment Clause (Ohio PUC)
810136-EU	Gulf Power Company (Florida PSC)
GR-81-342	Northern States Power Co. -- E-002/Minnesota (Minnesota PUC)
Tr-81-208	Southwestern Bell Telephone Company (Missouri PSC)
U-6949	Detroit Edison Company (Michigan PSC)
8400	East Kentucky Power Cooperative, Inc. (Kentucky PSC)
18328	Alabama Gas Corporation (Alabama PSC)
18416	Alabama Power Company (Alabama PSC)
820100-EU	Florida Power Corporation (Florida PSC)
8624	Kentucky Utilities (Kentucky PSC)
8648	East Kentucky Power Cooperative, Inc. (Kentucky PSC)
U-7236	Detroit Edison - Burlington Northern Refund (Michigan PSC)
U6633-R	Detroit Edison - MRCS Program (Michigan PSC)
U-6797-R	Consumers Power Company -MRCS Program (Michigan PSC)
U-5510-R	Consumers Power Company - Energy conservation Finance Program (Michigan PSC)
82-240E	South Carolina Electric & Gas Company (South Carolina PSC)
7350	Generic Working Capital Hearing (Michigan PSC)
RH-1-83	Westcoast Transmission Co., (National Energy Board of Canada)
820294-TP	Southern Bell Telephone & Telegraph Co. (Florida PSC)
82-165-EL-EFC (Subfile A)	Toledo Edison Company(Ohio PUC)
82-168-EL-EFC	Cleveland Electric Illuminating Company (Ohio PUC)
830012-EU	Tampa Electric Company (Florida PSC)
U-7065	The Detroit Edison Company - Fermi II (Michigan PSC)
8738	Columbia Gas of Kentucky, Inc. (Kentucky PSC)
ER-83-206	Arkansas Power & Light Company (Missouri PSC)
U-4758	The Detroit Edison Company – Refunds (Michigan PSC)
8836	Kentucky American Water Company (Kentucky PSC)
8839	Western Kentucky Gas Company (Kentucky PSC)
83-07-15	Connecticut Light & Power Co. (Connecticut DPU)
81-0485-WS	Palm Coast Utility Corporation (Florida PSC)
U-7650	Consumers Power Co. (Michigan PSC)
83-662	Continental Telephone Company of California, (Nevada PSC)
U-6488-R	Detroit Edison Co., FAC & PIPAC Reconciliation (Michigan PSC)
U-15684	Louisiana Power & Light Company (Louisiana PSC)
7395 & U-7397	Campaign Ballot Proposals (Michigan PSC)
820013-WS	Seacoast Utilities (Florida PSC)
U-7660	Detroit Edison Company (Michigan PSC)
83-1039	CP National Corporation (Nevada PSC)
U-7802	Michigan Gas Utilities Company (Michigan PSC)
83-1226	Sierra Pacific Power Company (Nevada PSC)
830465-EI	Florida Power & Light Company (Florida PSC)
U-7777	Michigan Consolidated Gas Company (Michigan PSC)
U-7779	Consumers Power Company (Michigan PSC)

U-7480-R	Michigan Consolidated Gas Company (Michigan PSC)
U-7488-R	Consumers Power Company – Gas (Michigan PSC)
U-7484-R	Michigan Gas Utilities Company (Michigan PSC)
U-7550-R	Detroit Edison Company (Michigan PSC)
U-7477-R**	Indiana & Michigan Electric Company (Michigan PSC)
18978	Continental Telephone Co. of the South Alabama (Alabama PSC)
R-842583	Duquesne Light Company (Pennsylvania PUC)
R-842740	Pennsylvania Power Company (Pennsylvania PUC)
850050-EI	Tampa Electric Company (Florida PSC)
16091	Louisiana Power & Light Company (Louisiana PSC)
19297	Continental Telephone Co. of the South Alabama (Alabama PSC)
76-18788AA	
&76-18793AA	
	Detroit Edison - Refund - Appeal of U-4807 (Ingham County, Michigan Circuit Court)
85-53476AA	
& 85-534785AA	
	Detroit Edison Refund - Appeal of U-4758 (Ingham County, Michigan Circuit Court)
U-8091/U-8239	Consumers Power Company - Gas Refunds (Michigan PSC)
TR-85-179**	United Telephone Company of Missouri (Missouri PSC)
85-212	Central Maine Power Company (Maine PSC)
ER-85646001	
& ER-85647001	
850782-EI &	New England Power Company (FERC)
850783-EI	
R-860378	Florida Power & Light Company (Florida PSC)
R-850267	Duquesne Light Company (Pennsylvania PUC)
851007-WU	Pennsylvania Power Company (Pennsylvania PUC)
& 840419-SU	
G-002/GR-86-160	Florida Cities Water Company (Florida PSC)
7195 (Interim)	Northern States Power Company (Minnesota PSC)
87-01-03	Gulf States Utilities Company (Texas PUC)
87-01-02	Connecticut Natural Gas Company (Connecticut PUC))
	Southern New England Telephone Company (Connecticut Department of Public Utility Control)
3673-	Georgia Power Company (Georgia PSC)
29484	Long Island Lighting Co. (New York Dept. of Public Service)
U-8924	Consumers Power Company – Gas (Michigan PSC)
Docket No. 1	Austin Electric Utility (City of Austin, Texas)
Docket E-2, Sub 527	Carolina Power & Light Company (North Carolina PUC)
870853	Pennsylvania Gas and Water Company (Pennsylvania PUC)
880069**	Southern Bell Telephone Company (Florida PSC)
U-1954-88-102	Citizens Utilities Rural Company, Inc. & Citizens Utilities Company, Kingman Telephone Division (Arizona CC)
T E-1032-88-102	Illinois Bell Telephone Company (Illinois CC)
89-0033	Puget Sound Power & Light Company (Washington UTC))
U-89-2688-T	Philadelphia Electric Company (Pennsylvania PUC)
R-891364	Potomac Electric Power Company (District of Columbia PSC)
F.C. 889	Niagara Mohawk Power Corporation, et al Plaintiffs, v. Gulf+Western, Inc. et al, defendants (Supreme Court County of Onondaga, State of New York)
Case No. 88/546	Duquesne Light Company, et al, plaintiffs, against Gulf+ Western, Inc. et al, defendants (Court of the Common Pleas of Allegheny County, Pennsylvania Civil Division)
	Florida Power & Light Company (Florida PSC)
87-11628	Gulf Power Company (Florida PSC)
	Jersey Central Power & Light Company (BPU)
890319-EI	Hawaiian Electric Company (Hawaii PUCs)
891345-EI	
ER 8811 0912J	
6531	

R0901595	Equitable Gas Company (Pennsylvania Consumer Counsel)
90-10	Artesian Water Company (Delaware PSC)
89-12-05	Southern New England Telephone Company (Connecticut PUC)
900329-WS	Southern States Utilities, Inc. (Florida PSC)
90-12-018	Southern California Edison Company (California PUC)
90-E-1185	Long Island Lighting Company (New York DPS)
R-911966	Pennsylvania Gas & Water Company (Pennsylvania PUC)
I.90-07-037, Phase II	(Investigation of OPEBs) Department of the Navy and all Other Federal Executive Agencies (California PUC)
U-1551-90-322	Southwest Gas Corporation (Arizona CC)
U-1656-91-134	Sun City Water Company (Arizona RUCO)
U-2013-91-133	Havasu Water Company (Arizona RUCO)
91-174***	Central Maine Power Company (Department of the Navy and all Other Federal Executive Agencies)
U-1551-89-102	Southwest Gas Corporation - Rebuttal and PGA Audit (Arizona Corporation Commission)
& U-1551-89-103	Hawaiian Electric Company (Hawaii PUC)
Docket No. 6998	Intrastate Access Charge Methodology, Pool and Rates
TC-91-040A and	Local Exchange Carriers Association and South Dakota
TC-91-040B	Independent Telephone Coalition
9911030-WS &	General Development Utilities - Port Malabar and
911-67-WS	West Coast Divisions (Florida PSC)
922180	The Peoples Natural Gas Company (Pennsylvania PUC)
7233 and 7243	Hawaiian Nonpension Postretirement Benefits (Hawaiian PUC)
R-00922314	
& M-920313C006	Metropolitan Edison Company (Pennsylvania PUC)
R00922428	Pennsylvania American Water Company (Pennsylvania PUC)
E-1032-92-083 &	
U-1656-92-183	Citizens Utilities Company, Agua Fria Water Division (Arizona Corporation Commission)
92-09-19	Southern New England Telephone Company (Connecticut PUC)
E-1032-92-073	Citizens Utilities Company (Electric Division), (Arizona CC)
UE-92-1262	Puget Sound Power and Light Company (Washington UTC))
92-345	Central Maine Power Company (Maine PUC)
R-932667	Pennsylvania Gas & Water Company (Pennsylvania PUC)
U-93-60**	Matanuska Telephone Association, Inc. (Alaska PUC)
U-93-50**	Anchorage Telephone Utility (Alaska PUC)
U-93-64	PTI Communications (Alaska PUC)
7700	Hawaiian Electric Company, Inc. (Hawaii PUC)
E-1032-93-111 &	Citizens Utilities Company - Gas Division
U-1032-93-193	(Arizona Corporation Commission)
R-00932670	Pennsylvania American Water Company (Pennsylvania PUC)
U-1514-93-169/	Sale of Assets CC&N from Contel of the West, Inc. to
E-1032-93-169	Citizens Utilities Company (Arizona Corporation Commission)
7766	Hawaiian Electric Company, Inc. (Hawaii PUC)
93-2006- GA-AIR	The East Ohio Gas Company (Ohio PUC)
94-E-0334	Consolidated Edison Company (New York DPS)
94-0270	Inter-State Water Company (Illinois Commerce Commission)
94-0097	Citizens Utilities Company, Kauai Electric Division (Hawaii PUC)
PU-314-94-688	Application for Transfer of Local Exchanges (North Dakota PSC)
94-12-005-Phase I	Pacific Gas & Electric Company (California PUC)
R-953297	UGI Utilities, Inc. - Gas Division (Pennsylvania PUC)
95-03-01	Southern New England Telephone Company (Connecticut PUC)
95-0342	Consumer Illinois Water, Kankakee Water District (Illinois CC)
94-996-EL-AIR	Ohio Power Company (Ohio PUC)
95-1000-E	South Carolina Electric & Gas Company (South Carolina PSC)

Non-Docketed Staff Investigation E-1032-95-473 E-1032-95-433	Citizens Utility Company - Arizona Telephone Operations (Arizona Corporation Commission) Citizens Utility Co. - Northern Arizona Gas Division (Arizona CC) Citizens Utility Co. - Arizona Electric Division (Arizona CC) Collaborative Ratemaking Process Columbia Gas of Pennsylvania (Pennsylvania PUC)
GR-96-285 94-10-45 A.96-08-001 et al.	Missouri Gas Energy (Missouri PSC) Southern New England Telephone Company (Connecticut PUC) California Utilities' Applications to Identify Sunk Costs of Non- Nuclear Generation Assets, & Transition Costs for Electric Utility Restructuring, & Consolidated Proceedings (California PUC)
96-324 96-08-070, et al.	Bell Atlantic - Delaware, Inc. (Delaware PSC) Pacific Gas & Electric Co., Southern California Edison Co. and San Diego Gas & Electric Company (California PUC)
97-05-12 R-00973953	Connecticut Light & Power (Connecticut PUC) Application of PECO Energy Company for Approval of its Restructuring Plan Under Section 2806 of the Public Utility Code (Pennsylvania PUC)
97-65	Application of Delmarva Power & Light Co. for Application of a Cost Accounting Manual and a Code of Conduct (Delaware PSC)
16705 E-1072-97-067 Non-Docketed Staff Investigation PU-314-97-12 97-0351 97-8001	Entergy Gulf States, Inc. (Cities Steering Committee) Southwestern Telephone Co. (Arizona Corporation Commission) Delaware - Estimate Impact of Universal Services Issues (Delaware PSC) US West Communications, Inc. Cost Studies (North Dakota PSC) Consumer Illinois Water Company (Illinois CC) Investigation of Issues to be Considered as a Result of Restructuring of Electric Industry (Nevada PSC)
U-0000-94-165	Generic Docket to Consider Competition in the Provision of Retail Electric Service (Arizona Corporation Commission)
98-05-006-Phase I 9355-U 97-12-020 - Phase I U-98-56, U-98-60, U-98-65, U-98-67 (U-99-66, U-99-65, U-99-56, U-99-52) Phase II of	San Diego Gas & Electric Co., Section 386 costs (California PUC) Georgia Power Company Rate Case (Georgia PUC) Pacific Gas & Electric Company (California PUC) Investigation of 1998 Intrastate Access charge filings (Alaska PUC) Investigation of 1999 Intrastate Access Charge filing (Alaska PUC)
97-SCCC-149-GIT PU-314-97-465 Non-docketed Assistance Contract Dispute	Southwestern Bell Telephone Company Cost Studies (Kansas CC) US West Universal Service Cost Model (North Dakota PSC) Bell Atlantic - Delaware, Inc., Review of New Telecomm. and Tariff Filings (Delaware PSC) City of Zeeland, MI - Water Contract with the City of Holland, MI (Before an arbitration panel)
Non-docketed Project Non-docketed Project	City of Danville, IL - Valuation of Water System (Danville, IL) Village of University Park, IL - Valuation of Water and Sewer System (Village of University Park, Illinois)

E-1032-95-417	Citizens Utility Co., Maricopa Water/Wastewater Companies et al. (Arizona Corporation Commission)
T-1051B-99-0497	Proposed Merger of the Parent Corporation of Qwest Communications Corporation, LCI International Telecom Corp., and US West Communications, Inc. (Arizona CC)
T-01051B-99-0105	US West Communications, Inc. Rate Case (Arizona CC)
A00-07-043	Pacific Gas & Electric - 2001 Attrition (California PUC)
T-01051B-99-0499	US West/Quest Broadband Asset Transfer (Arizona CC)
99-419/420	US West, Inc. Toll and Access Rebalancing (North Dakota PSC)
PU314-99-119	US West, Inc. Residential Rate Increase and Cost Study Review (North Dakota PSC)
98-0252	Ameritech - Illinois, Review of Alternative Regulation Plan (Illinois CUB)
00-108	Delmarva Billing System Investigation (Delaware PSC)
U-00-28	Matanuska Telephone Association (Alaska PUC)
Non-Docketed	Management Audit and Market Power Mitigation Analysis of the Merged Gas System Operation of Pacific Enterprises and Enova Corporation (California PUC)
00-11-038	Southern California Edison (California PUC)
00-11-056	Pacific Gas & Electric (California PUC)
00-10-028	The Utility Reform Network for Modification of Resolution E-3527 (California PUC)
98-479	Delmarva Power & Light Application for Approval of its Electric and Fuel Adjustments Costs (Delaware PSC)
99-457	Delaware Electric Cooperative Restructuring Filing (Delaware PSC)
99-582	Delmarva Power & Light dba Conectiv Power Delivery Analysis of Code of Conduct and Cost Accounting Manual (Delaware PSC)
99-03-04	United Illuminating Company Recovery of Stranded Costs (Connecticut OCC)
99-03-36	Connecticut Light & Power (Connecticut OCC)
Civil Action No.	
98-1117	West Penn Power Company vs. PA PUC (Pennsylvania PSC)
Case No. 12604	Upper Peninsula Power Company (Michigan AG)
Case No. 12613	Wisconsin Public Service Commission (Michigan AG)
41651	Northern Indiana Public Service Co Overearnings investigation (Indiana UCC)
13605-U	Savannah Electric & Power Company – FCR (Georgia PSC)
14000-U	Georgia Power Company Rate Case/M&S Review (Georgia PSC)
13196-U	Savannah Electric & Power Company Natural Gas Procurement and Risk Management/Hedging Proposal, Docket No. 13196-U (Georgia PSC)
Non-Docketed	Georgia Power Company & Savannah Electric & Power FPR Company Fuel Procurement Audit (Georgia PSC)
Non-Docketed	Transition Costs of Nevada Vertically Integrated Utilities (US Department of Navy)
Application No.	Post-Transition Ratemaking Mechanisms for the Electric Industry
99-01-016,	Restructuring (US Department of Navy)
Phase I	
99-02-05	Connecticut Light & Power (Connecticut OCC)
01-05-19-RE03	Yankee Gas Service Application for a Rate Increase, Phase I-2002-IERM (Connecticut OCC)
G-01551A-00-0309	Southwest Gas Corporation, Application to amend its rate Schedules (Arizona CC)
00-07-043	Pacific Gas & Electric Company Attrition & Application for a rate increase (California PUC)

97-12-020	Pacific Gas & Electric Company Rate Case (California PUC)
Phase II	United Illuminating Company (Connecticut OCC)
01-10-10	Georgia Power FCR (Georgia PSC)
13711-U	Verizon Delaware § 271(Delaware DPA)
02-001	Blue Valley Telephone Company Audit/General Rate Investigation (Kansas CC)
02-BLVT-377-AUD	S&T Telephone Cooperative Audit/General Rate Investigation (Kansas CC)
02-S&TT-390-AUD	Sunflower Telephone Company Inc., Audit/General Rate Investigation (Kansas CC)
01-SFLT-879-AUD	Bluestem Telephone Company, Inc. Audit/General Rate Investigation (Kansas CC)
01-BSTT-878-AUD	
P404, 407, 520, 413 426, 427, 430, 421/ CI-00-712	Sherburne County Rural Telephone Company, dba as Connections, Etc. (Minnesota DOC)
U-01-85	ACS of Alaska, dba as Alaska Communications Systems (ACS), Rate Case (Alaska Regulatory Commission PAS)
U-01-34	ACS of Anchorage, dba as Alaska Communications Systems (ACS), Rate Case (Alaska Regulatory Commission PAS)
U-01-83	ACS of Fairbanks, dba as Alaska Communications Systems (ACS), Rate Case (Alaska Regulatory Commission PAS)
U-01-87	ACS of the Northland, dba as Alaska Communications Systems (ACS), Rate Case (Alaska Regulatory Commission PAS)
96-324, Phase II	Verizon Delaware, Inc. UNE Rate Filing (Delaware PSC)
03-WHST-503-AUD	Wheat State Telephone Company (Kansas CC)
04-GNBT-130-AUD	Golden Belt Telephone Association (Kansas CC)
Docket 6914	Shoreham Telephone Company, Inc. (Vermont BPU)
Docket No. E-01345A-06-009	Arizona Public Service Company (Arizona Corporation Commission)
Case No. 05-1278-E-PC-PW-42T	Appalachian Power Company and Wheeling Power Company both d/b/a American Electric Power (West Virginia PSC)
Docket No. 04-0113	Hawaiian Electric Company (Hawaii PUC)
Case No. U-14347	Consumers Energy Company (Michigan PSC)
Case No. 05-725-EL-UNC	Cincinnati Gas & Electric Company (PUC of Ohio)
Docket No. 21229-U	Savannah Electric & Power Company (Georgia PSC)
Docket No. 19142-U	Georgia Power Company (Georgia PSC)
Docket No. 03-07-01RE01	Connecticut Light & Power Company (CT DPUC)
Docket No. 19042-U	Savannah Electric & Power Company (Georgia PSC)
Docket No. 2004-178-E	South Carolina Electric & Gas Company (South Carolina PSC)
Docket No. 03-07-02	Connecticut Light & Power Company (CT DPUC)
Docket No. EX02060363, Phases I&II	Rockland Electric Company (NJ BPU)
Docket No. U-00-88	ENSTAR Natural Gas Company and Alaska Pipeline Company (Regulatory Commission of Alaska)
Phase 1-2002 IERM, Docket No. U-02-075	Interior Telephone Company, Inc. (Regulatory Commission of Alaska)
Docket No. 05-SCNT- 1048-AUD	South Central Telephone Company (Kansas CC)
Docket No. 05-TRCT- 607-KSF	Tri-County Telephone Company (Kansas CC)
Docket No. 05-KOKT- 060-AUD	Kan Okla Telephone Company (Kansas CC)
Docket No. 2002-747	Northland Telephone Company of Maine (Maine PUC)

Docket No. 2003-34	Sidney Telephone Company (Maine PUC)
Docket No. 2003-35	Maine Telephone Company (Maine PUC)
Docket No. 2003-36	China Telephone Company (Maine PUC)
Docket No. 2003-37	Standish Telephone Company (Maine PUC)
Docket Nos. U-04-022, U-04-023	Anchorage Water and Wastewater Utility (Regulatory Commission of Alaska)
Case 05-116-U/06-055-U	Entergy Arkansas, Inc. EFC (Arkansas Public Service Commission)
Case 04-137-U	Southwest Power Pool RTO (Arkansas Public Service Commission)
Case No. 7109/7160	Vermont Gas Systems (Department of Public Service)
Case No. ER-2006-0315	Empire District Electric Company (Missouri PSC)
Case No. ER-2006-0314	Kansas City Power & Light Company (Missouri PSC)
Docket No. U-05-043,44	Golden Heart Utilities/College Park Utilities (Regulatory Commission of Alaska)
A-122250F5000	Equitable Resources, Inc. and The Peoples Natural Gas Company, d/b/a Dominion Peoples (Pennsylvania PUC)
E-01345A-05-0816	Arizona Public Service Company (Arizona CC)
Docket No. 05-304	Delmarva Power & Light Company (Delaware PSC)
05-806-EL-UNC	Cincinnati Gas & Electric Company (Ohio PUC)
U-06-45	Anchorage Water Utility (Regulatory Commission of Alaska)
03-93-EL-ATA,	
06-1068-EL-UNC	Duke Energy Ohio (Ohio PUC)
PUE-2006-00065	Appalachian Power Company (Virginia Corporation Commission)
G-04204A-06-0463 et. al	UNS Gas, Inc. (Arizona CC)
U-06-134	Chugach Electric Association, Inc. (Regulatory Commission of Alaska)
Docket No. 2006-0386	Hawaiian Electric Company, Inc (Hawaii PUC)
E-01933A-07-0402	Tucson Electric Power Company (Arizona CC)
G-01551A-07-0504	Southwest Gas Corporation (Arizona CC)
Docket No.UE-072300	Puget Sound Energy, Inc. (Washington UTC)
PUE-2008-00009	Virginia-American Water Company (Virginia SCC)
PUE-2008-00046	Appalachian Power Company (Virginia SCC)
E-01345A-08-0172	Arizona Public Service Company (Arizona CC)
A-2008-2063737	Babcock & Brown Infrastructure Fund North America, LP. and The Peoples Natural Gas Company, d/b/a Dominion Peoples (Pennsylvania PUC)
08-1783-G-42T	Hope Gas, Inc., dba Dominion Hope (West Virginia PSC)
08-1761-G-PC	Hope Gas, Inc., dba Dominion Hope, Dominion Resources, Inc., and Peoples Hope Gas Companies (West Virginia PSC)
Docket No. 2008-0083	Hawaiian Electric Company, Inc. (Hawaii PUC)
Docket No. 2008-0266	Young Brothers, Limited (Hawaii PUC)
G-04024A-08-0571	UNS Gas, Inc. (Arizona CC)
Docket No. 09-29	Tidewater Utilities, Inc. (Delaware PSC)
Docket No. UE-090704	Puget Sound Energy, Inc. (Washington UTC)
09-0878-G-42T	Mountaineer Gas Company (West Virginia PSC)
2009-UA-0014	Mississippi Power Company (Mississippi PSC)
Docket No. 09-0319	Illinois-American Water Company (Illinois CC)
Docket No. 09-414	Delmarva Power & Light Company (Delaware PSC)
R-2009-2132019	Aqua Pennsylvania, Inc. (Pennsylvania PUC)
Docket Nos. U-09-069, U-09-070	ENSTAR Natural Gas Company (Regulatory Commission of Alaska)
Docket Nos. U-04-023, U-04-024	Anchorage Water and Wastewater Utility - Remand (Regulatory Commission of Alaska)
W-01303A-09-0343 & SW-01303A-09-0343	Arizona-American Water Company (Arizona CC)
09-872-EL-FAC & 09-873-EL-FAC	Financial Audits of the FAC of the Columbus Southern Power Company and the Ohio Power Company - Audit I (Ohio PUC)

2010-00036 E-04100A-09-0496 E-01773A-09-0472 R-2010-2166208, R-2010-2166210, R-2010-2166212, & R-2010-2166214 PSC Docket No. 09-0602	Kentucky-American Water Company (Kentucky PSC) Southwest Transmission Cooperative, IHnc. (Arizona CC) Arizona Electric Power Cooperative, Inc. (Arizona CC)
10-0713-E-PC Docket No. 31958 Docket No. 10-0467 PSC Docket No. 10-237 U-10-51	Pennsylvania-American Water Company (Pennsylvania PUC) Central Illinois Light Company D/B/A AmerenCILCO; Central Illinois Public Service Company D/B/A AmerenCIPS; Illinois Power Company D/B/A AmerenIP (Illinois CC) Allegheny Power and FirstEnergy Corp. (West Virginia PSC) Georgia Power Company (Georgia PSC) Commonwealth Edison Company (Illinois CC) Delmarva Power & Light Company (Delaware PSC) Cook Inlet Natural Gas Storage Alaska, LLC (Regulatory Commission of Alaska)
10-0699-E-42T	Appalachian Power Company and Wheeling Power Company (West Virginia PSC)
10-0920-W-42T A.10-07-007 A-2010-2210326 09-1012-EL-FAC	West Virginia-American Water Company (West Virginia PSC) California-American Water Company (California PUC) TWP Acquisition (Pennsylvania PUC) Financial, Management, and Performance Audit of the FAC for Dayton Power and Light – Audit 1 (Ohio PUC)
10-268-EL FAC et al.	Financial Audit of the FAC of the Columbus Southern Power Company and the Ohio Power Company – Audit II (Ohio PUC)
Docket No. 2010-0080 G-01551A-10-0458 10-KCPE-415-RTS PUE-2011-00037 R-2011-2232243 U-11-100	Hawaiian Electric Company, Inc. (Hawaii PUC) Southwest Gas Corporation (Arizona CC) Kansas City Power & Light Company – Remand (Kansas CC) Virginia Appalachian Power Company (Commonwealth of Virginia SCC) Pennsylvania-American Water (Pennsylvania PUC) Power Purchase Agreement between Chugach Association, Inc. and Fire Island Wind, LLC (Regulatory Commission of Alaska)
A.10-12-005 PSC Docket No. 11-207 Cause No. 44022	San Diego Gas & Electric Company (California PUC) Artesian Water Company, Inc. (Delaware PSC) Indiana-American Water Company, Inc. (Indiana Utility Regulatory Commission)
PSC Docket No. 10-247	Management Audit of Tidewater Utilities, Inc. Affiliate Transactions (Delaware Public Service Commission)
G-04204A-11-0158 E-01345A-11-0224 UE-111048 & UE-111049	UNS Gas, Inc. (Arizona Corporation Commission) Arizona Public Service Company (Arizona CC) Puget Sound Energy, Inc. (Washington Utilities and Transportation Commission)
Docket No. 11-0721 11AL-947E U-11-77 & U-11-78	Commonwealth Edison Company (Illinois CC) Public Service Company of Colorado (Colorado PSC) Golden Heart Utilities, Inc. and College Utilities Corporation (The Regulatory Commission of Alaska)
Docket No. 11-0767 PSC Docket No. 11-397 Cause No. 44075 Docket No. 12-0001 11-5730-EL-FAC	Illinois-American Water Company (Illinois CC) Tidewater Utilities, Inc. (Delaware PSC) Indiana Michigan Power Company (Indiana Utility Regulatory Commission) Ameren Illinois Company (Illinois CC) Financial, Management, and Performance Audit of the FAC for Dayton Power and Light – Audit 2 (Ohio PUC)
PSC Docket No. 11-528 11-281-EL-FAC et al.	Delmarva Power & Light Company (Delaware PSC) Financial Audit of the FAC of the Columbus Southern Power Company and the Ohio Power Company – Audit III (Ohio PUC)

Cause No. 43114-IGCC-4S1	Duke Energy Indiana, Inc. (Indiana Utility Regulatory Commission)
Docket No. 12-0293	Ameren Illinois Company (Illinois CC)
Docket No. 12-0321	Commonwealth Edison Company (Illinois CC)
12-02019 & 12-04005	Southwest Gas Corporation (Public Utilities Commission of Nevada)
Docket No. 2012-218-E	South Carolina Electric & Gas (South Carolina PSC)
Docket No. E-72, Sub 479	Dominion North Carolina Power (North Carolina Utilities Commission)
12-0511 & 12-0512	North Shore Gas Company and The Peoples Gas Light and Coke Company (Illinois CC)
E-01933A-12-0291	Tucson Electric Power Company (Arizona CC)
Case No. 9311	Potomac Electric Power Company (Maryland PSC)
Cause No. 43114-IGCC-10	Duke Energy Indiana, Inc. (Indiana Utility Regulatory Commission)
Docket No. 36498	Georgia Power Company (Georgia PSC)
Case No. 9316	Columbia Gas of Maryland, Inc. (Maryland PSC)
Docket No. 13-0192	Ameren Illinois Company (Illinois CC)
12-1649-W-42T	West Virginia-American Water Company (West Virginia PSC)
E-04204A-12-0504	UNS Electric, Inc. (Arizona CC)
PUE-2013-00020	Virginia and Electric Power Company (Virginia SCC)
R-2013-2355276	Pennsylvania-American Water Company (Pennsylvania PUC)
Formal Case No. 1103	Potomac Electric Power Company (District of Columbia PSC)
U-13-007	Chugach Electric Association, Inc. (The Regulatory Commission of Alaska)
12-2881-EL-FAC	Financial, Management, and Performance Audit of the FAC for Dayton Power and Light – Audit 3 (Ohio PUC)
Docket No. 36989	Georgia Power Company (Georgia PSC)
Cause No. 43114-IGCC-11	Duke Energy Indiana, Inc. (Indiana Utility Regulatory Commission)
UM 1633	Investigation into Treatment of Pension Costs in Utility Rates (Oregon PUC)
13-1892-EL FAC	Financial Audit of the FAC and AER of the Ohio Power Company – Audit I (Ohio PUC)
E-04230A-14-0011 & E-01933A-14-0011	Reorganization of UNS Energy Corporation with Fortis, Inc. (Arizona CC)
14-255-EL RDR	Regulatory Compliance Audit of the 2013 DIR of Ohio Power Company (Ohio PUC)
U-14-001	Chugach Electric Association, Inc. (The Regulatory Commission of Alaska)
U-14-002	Alaska Power Company (The Regulatory Commission of Alaska)
PUE-2014-00026	Virginia Appalachian Power Company (Commonwealth of Virginia SCC)
14-0117-EL-FAC	Financial, Management, and Performance Audit of the FAC and Purchased Power Rider for Dayton Power and Light – Audit 1 (Ohio PUC)
14-0702-E-42T	Monongahela Power Company and The Potomac Edison Company (West Virginia PSC)
Formal Case No. 1119	Merger of Exelon Corporation, Pepco Holdings, Inc., Potomac Electric Power Company, Exelon Energy Delivery Company, LLC, and New Special Purpose Entity, LLC (District of Columbia PSC)
R-2014-2428742	West Penn Power Company (Pennsylvania PUC)
R-2014-2428743	Pennsylvania Electric Company (Pennsylvania PUC)
R-2014-2428744	Pennsylvania Power Company (Pennsylvania PUC)
R-2014-2428745	Metropolitan Edison Company (Pennsylvania PUC)
Cause No. 43114-IGCC-12/13	Duke Energy Indiana, Inc. (Indiana Utility Regulatory Commission)
14-1152-E-42T	Appalachian Power Company and Wheeling Power Company (West Virginia PSC)
WS-01303A-14-0010	EPCOR Water Arizona, Inc. (Arizona CC)
2014-000396	Kentucky Power Company (Kentucky PSC)
15-03-45 <sup>A</sup>	Iberdrola, S.A. Et Al, and UIL Holdings Corporation merger (Connecticut PURA)
A.14-11-003	San Diego Gas & Electric Company (California PUC)
U-14-111	ENSTAR Natural Gas Company (Regulatory Commission of Alaska)

2015-UN-049	Atmos Energy Corporation (Mississippi PSC)
15-0003-G-42T	Mountaineer Gas Company (West Virginia PSC)
PUE-2015-00027	Virginia Electric and Power Company (Commonwealth of Virginia SCC)
Docket No. 2015-0022	Hawaiian Electric Company, Inc., Hawaii Electric Light Company, Inc., Maui Electric Company Limited, and NextEra Energy, Inc. (Hawaii PUC)
15-0676-W-42T	West Virginia-American Water Company (West Virginia PSC)
15-07-38^^	Iberdrola, S.A. Et Al, and UIL Holdings Corporation merger (Connecticut PURA)
15-26^^	Iberdrola, S.A. Et Al, and UIL Holdings Corporation merger (Massachusetts DPU)
15-042-EL-FAC	Management/Performance and Financial Audit of the FAC and Purchased Power Rider for Dayton Power and Light (Ohio PUC)
2015-UN-0080	Mississippi Power Company (Mississippi PSC)
Docket No. 15-00042	B&W Pipeline, LLC (Tennessee Regulatory Authority)
WR-2015-0301/SR-2015-0302	Missouri American Water Company (Missouri PSC)
U-15-089, U-15-091, & U-15-092	Golden Heart Utilities, Inc. and College Utilities Corporation (The Regulatory Commission of Alaska)
Docket No. 16-00001	Kingsport Power Company d/b/a AEP Appalachian Power (Tennessee Regulatory Authority)
PUE-2015-00097	Virginia-American Water Company (Commonwealth of Virginia SCC)
15-1854-EL-RDR	Management/Performance and Financial Audit of the Alternative Energy Recovery Rider of Duke Energy Ohio, Inc. (Ohio PUC)
P-15-014	PTE Pipeline LLC (Regulatory Commission of Alaska)
P-15-020	Swanson River Oil Pipeline, LLC (Regulatory Commission of Alaska)
Docket No. 40161	Georgia Power Company – Integrated Resource Plan (Georgia PSC)
Formal Case No. 1137	Washington Gas Light Company (District of Columbia PSC)
160021-EI, et al.	Florida Power Company (Florida PSC)
R-2016-2537349	Metropolitan Edison Company (Pennsylvania PUC)
R-2016-2537352	Pennsylvania Electric Company (Pennsylvania PUC)
R-2016-2537355	Pennsylvania Power Company (Pennsylvania PUC)
R-2016-2537359	West Penn Power Company (Pennsylvania PUC)
16-0717-G-390P	Hope Gas, Inc., dba Dominion Hope (West Virginia PSC)
15-1256-G-390P	
(Reopening)/16-0922-G-390P	Mountaineer Gas Company (West Virginia PSC)
16-0550-W-P	West Virginia-American Water Company (West Virginia PSC)
CEPR-AP-2015-0001	Puerto Rico Electric Power Authority (Puerto Rico Energy Commission)
E-01345A-16-0036	Arizona Public Service Company (Arizona CC)
Docket No. 4618	Providence Water Supply Board (Rhode Island PUC)
Docket No. 46238	Joint Report and Application of Oncor Electric Delivery Company LLC and NextEra Energy Inc. (Texas State Office of Administrative Hearings; Texas PUC)
U-16-066	ENSTAR Natural Gas Company (Regulatory Commission of Alaska)
Case No. 2016-00370	Kentucky Utilities Company (Kentucky PSC)
Case No. 2016-00371	Louisville Gas and Electric Company (Kentucky PSC)
P-2015-2508942	Metropolitan Edison Company (Pennsylvania PUC)
P-2015-2508936	Pennsylvania Electric Company (Pennsylvania PUC)
P-2015-2508931	Pennsylvania Power Company (Pennsylvania PUC)
P-2015-2508948	West Penn Power Company (Pennsylvania PUC)
E-04204A-15-0142*	UNS Electric, Inc. (Arizona CC)
E-01933A-15-0322*	Tucson Electric Power Company (Arizona CC)
UE-170033 & UG-170034*	Puget Sound Energy, Inc. (Washington UTC)
Case No. U-18239	Consumers Energy Company (Michigan PSC)
Case No. U-18248	DTE Electric Company (Michigan PSC)

Case No. 9449	Merger of AltaGas Ltd. and WGL Holdings (Maryland PSC)
Formal Case No. 1142	Merger of AltaGas Ltd. and WGL Holdings (District of Columbia PSC)
Case No. 2017-00179	Kentucky Power Company (Kentucky PSC)
Docket No. 29849	Georgia Power Plant Vogtle Units 3 and 4, VCM 17 (Georgia PSC)
Docket No. 2017-AD-112	Mississippi Power Company (Mississippi PSC)
Docket No. D2017.9.79	Montana-Dakota Utilities Co. (Montana PSC)
SW-01428A-17-0058 et al	Liberty Utilities (Litchfield Park Water & Sewer) Corp. (Arizona CC)
U-18-021 & U-18-033	Chugach Electric Association, Inc. (Regulatory Commission of Alaska)
Docket No. 4800	Suez Water Rhode Island Inc. (Rhode Island PUC)
General Order No. 236.1	In the Matter of the Effects on Utilities of the 2017 Tax Cuts and Jobs Act (West Virginia PSC)
20180047-EI	Duke Energy Florida, LLC. (Florida PSC)
20180046-EI	Florida Power & Light Company (Florida PSC)
20180048-EI	Florida Public Utilities Company – Electric (Florida PSC)
20180052-GU	Florida Public Utilities Company – Indiantown (Florida PSC)
20180054-GU	Florida Division of Chesapeake Utilities Corporation (Florida PSC)
20180051-GU	Florida Public Utilities Company – Gas Division (Florida PSC)
20180053-GU	Florida Public Utilities Company - Fort Meade (Florida PSC)
Cause No. 45032 S4	Indiana American Water Company, Inc. Phase 2 (Indiana Utility Regulatory Commission)
Docket No. D2018.1.6	Montana-Dakota Utilities Co. (Montana PSC)
Docket No. D2018.4.24	NorthWestern Energy (Montana PSC)
Docket No. D2018.4.22	Montana-Dakota Utilities Co. (Montana PSC)
18-0573-W-42T & 18-0576-S-42T	West Virginia-American Water Company (West Virginia PSC)
18-0646-E-42T & 18-0645 E-D	Appalachian Power Company and Wheeling Power Company (West Virginia PSC)
18-0049-GA-ALT, 18-0298-GA-AIR, & 18-0299-GA-ALT	Vectren Energy Delivery of Ohio, Inc. (Ohio PUC)
R-2018-3003558, R-2018-3003561	Aqua Pennsylvania, Inc. and Aqua Pennsylvania Wastewater, Inc. (Pennsylvania PUC)
Cause No. 45142	Indiana-American Water Company, Inc. (Indiana Utility Regulatory Commission)
U-18-043	Cook Inlet Natural Gas Storage Alaska, LLC (Regulatory Commission of Alaska)
T-03214-17-0305	Citizens Telecommunications Company of The White Mountains, Inc. d/b/a Frontier Communications of The White Mountains (Arizona CC)
Docket No. D2018.9.60	Montana-Dakota Utilities Co. (Montana PSC)
Docket No. 4890	Narragansett Bay Commission (Rhode Island PUC)
PUR-2018-00131	Columbia Gas of Virginia (Virginia SCC)
EL18-152-000	Louisiana PSC v. System Energy Resources, Inc. and Entergy Services, Inc. (FERC)
PUR-2018-00175	Virginia-American Water Company (Virginia SCC)
A-2018-3006061, A-2018-3006062 and A-2018-3006063	Aqua America, Inc., Aqua Pennsylvania, Inc., Aqua Pennsylvania Wastewater, Inc., Peoples Natural Gas Company LLC, Peoples Gas Company LLC (Pennsylvania PUC)
Docket No. 42310	Georgia Power Company – Integrated Resource Plan (Georgia PSC)
U-18-102	Municipality of Anchorage d/b/a Municipal Light & Power Department (Regulatory Commission of Alaska)
PUC Docket No. 49494	AEP Texas, Inc. (Texas PUC)

Application 18-12-009	Pacific Gas and Electric Company (California PUC)
19-0316-G-42T	Mountaineer Gas Company (West Virginia PSC)
19-0051-EL-RDR	Management/Performance and Financial Audit of the Alternative Energy Recovery Rider of Duke Energy Ohio, Inc. (Ohio PUC)
ER-18-1182-001	System Energy Resources, Inc. (FERC)

\* Testimony filed, examination not completed

\*\* Issues stipulated

\*\*\* Company withdrew case

^ Testimony filed, case withdrawn after proposed decision issued

^^ Issues stipulated before testimony was filed