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DIRECT TESTIMONY
OF
JOHN J. REED
ON BEHALF OF
UNION ELECTRIC COMPANY
d/b/a AMEREN MISSOURI

Marlborough, Massachusetts
March, 2021

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DIRECT TESTIMONY

OF

JOHN J. REED

I. INTRODUCTION

1

2 **Q. Please state your name and business address.**

3 A. My name is John J. Reed. I am President and Chief Executive Officer of Concentric
4 Energy Advisors, Inc. ("Concentric") and CE Capital Advisors, Inc. ("CE Capital"),
5 which has its headquarters at 293 Boston Post Road West, Suite 500, Marlborough,
6 Massachusetts 01752.

7 **Q. On whose behalf are you submitting this testimony?**

8 A. I am testifying on behalf of Union Electric Company d/b/a Ameren Missouri
9 ("Ameren Missouri" or the "Company").

10 **Q. Please describe your educational background and professional experience in**
11 **the energy and utility industries.**

12 A. I have more than 40 years of experience in the energy industry and have worked as
13 an executive in, and consultant and economist to, the energy industry. Over the
14 past 32 years, I have directed the energy consulting services of Concentric,
15 Navigant Consulting, and Reed Consulting Group. I have served as Vice Chairman
16 and Co-CEO of the nation's largest publicly-traded consulting firm and as
17 Corporate Economist for the nation's largest gas utility.

1 I have provided regulatory policy and regulatory economics support to more than
2 100 energy and utility clients and have provided expert testimony on regulatory,
3 economic, and financial matters on more than 200 occasions before the Federal
4 Energy Regulatory Commission (“FERC”), Canadian regulatory agencies, state
5 regulatory agencies, various state and federal courts, and arbitration panels in the
6 United States and Canada. I have also previously appeared several times before the
7 Missouri Public Service Commission (the “Commission”) as an expert on
8 regulation and ratemaking issues including on the topic of affiliate transactions. I
9 am a graduate of the Wharton School of Business at the University of Pennsylvania,
10 and previously attended the University of Kansas. My curriculum vitae, as well as
11 a listing of my prior testimonies is provided in Schedule JJR-D1.

12 **Q. Please describe Concentric's activities in energy and utility engagements.**

13 A. Concentric provides financial, regulatory and economic advisory services to many
14 energy and utility clients across North America. Our regulatory, economic, and
15 market analysis services include utility ratemaking and regulatory advisory
16 services, energy market assessments, market entry and exit analysis, corporate and
17 business unit strategy development, demand forecasting, resource planning, and
18 energy contract negotiations. Our financial advisory activities include both buy and
19 sell side merger, acquisition and divestiture assignments, due diligence and
20 valuation assignments, project and corporate finance services, and transaction
21 support services. In addition, Concentric provides litigation support services on a

1 wide range of financial and economic issues on behalf of clients throughout North
2 America.

3 **II. PURPOSE OF TESTIMONY**

4 **Q. What is the purpose of your direct testimony?**

5 A. The purpose of my direct testimony is to provide my assessment and
6 recommendation pertaining to the reasonableness of Ameren Service Company's
7 ("AMS") services and associated costs billed to Ameren Missouri during the test
8 year (calendar year 2020), and to address Ameren Missouri's requirements from
9 the Second Non-Unanimous Stipulation and Agreement, filed on March 9, 2020 in
10 File No. ER-2019-0335.

11 **III. OVERVIEW OF AMEREN MISSOURI AND KEY AFFILIATES**
12 **FROM WHICH IT RECEIVES OR TO WHICH IT PROVIDES**
13 **SERVICES**

14 **Q. Please provide an overview of Ameren Missouri.**

15 A. Ameren Missouri is an operating energy company that is a subsidiary of Ameren
16 Corporation. The Company provides energy to approximately 1.2 million electric
17 and 130,000 natural gas customers in central and eastern Missouri. The Company's
18 service area covers 64 counties and more than 500 communities, including the
19 greater St. Louis area.

20 **Q. Please describe Ameren Corporation.**

21 A. Ameren Corporation ("AMC") is the parent company of Ameren Missouri. AMC
22 was formed in 1997 as a result of the merger of Union Electric Company and

1 Central Illinois Public Service Company (“CIPS”). In its 1997 order approving the
2 merger of Union Electric and CIPS, the Missouri Commission also approved the
3 formation of AMS, which is a centralized service company that provides various
4 corporate support services to AMC affiliates at cost.

5 In 2003, AMC acquired Cilcorp, and its operating utility Central Illinois
6 Light Company. AMC acquired Illinois Power Company from Dynegy in 2004.
7 AMC’s Illinois utilities merged to become Ameren Illinois Company (“AIC”) in
8 2010.

9 Presently, AMC’s operations consist of rate regulated utilities operating in
10 Missouri, Illinois, and in interstate commerce under the jurisdiction of the FERC.

11 **Q. Does Ameren Missouri receive services from AMC?**

12 A. No. AMC has no employees and provides no services to Ameren Missouri, but
13 Ameren Missouri shares in certain AMC-related costs and benefits arising from
14 AMC’s ownership of 100% of Ameren Missouri’s stock.

15 **IV. SERVICES PROVIDED BY AMS TO AMEREN MISSOURI**

16 **Q. Please describe AMS.**

17 A. AMS is a service company that was originally formed to take advantage of
18 synergies gained by eliminating redundant functions at both Ameren Missouri and
19 CIPS subsequent to their merger that could more cost-effectively be combined into
20 one service company.

21 **Q. Was the formation of the service company required by law?**

22 A. Yes. The Public Utility Holding Company Act of 1935 (“PUHCA”) directed the
23 United States Securities and Exchange Commission (“SEC”) to flatten the

1 corporate structure of utilities to remove unnecessary corporate layers. Individual
2 operating utility companies were required to centralize certain business operations
3 into central service companies, but all service companies would be subject to SEC
4 and Federal Power Commission regulation. In 1977, the Federal Power
5 Commission was replaced by the FERC.

6 At the time of Ameren's formation, PUHCA required the utilization of such
7 a service company and required that services be provided at cost. As a result, when
8 a state utility commission regulated a utility in a particular state, the ratepayers of
9 that state would pay only the share of any common service company expenses
10 associated with that state's electric company allocated to it under SEC-approved
11 formulas to prevent a holding company from double recovering its expenses when
12 it operates in more than one state and to ensure each state paid its fair share of costs.

13 Although PUHCA has now been largely repealed, some functions formerly
14 assigned to the SEC under PUHCA were transferred to the FERC at the time of the
15 PUHCA repeal by Congress' adoption of the Energy Policy Act of 2005. FERC
16 regulations adopted under that Act continue to require the use of cost-based pricing
17 for service companies.¹

18 **Q. Did the Missouri PSC approve the merger of Union Electric and CIPS, as well**
19 **as the formation of AMS?**

¹ 18 CFR § 35.44 – Protection against affiliate cross-subsidization. Section (b)(3) of the rule states: “A franchised public utility that has captive customers or that owns or provides transmission service over jurisdictional transmission facilities, may only purchase or receive non-power goods and services from a centralized service company at cost.”

1 A. Yes. In Case No. EM-96-149, the Missouri Commission approved the merger of
2 Ameren Missouri (then doing business as Union Electric) and CIPS that resulted in
3 the formation of AMS. The Commission's order stated:

4 In addition, the Commission finds the proposed merger transaction, as
5 reflected in the contractual agreement contained as a part of the Union
6 Electric Company filing of November 7, 1995, and subject to the conditions
7 and modifications as set out in the above Stipulation and Agreement, is not
8 detrimental to the public interest.

9 The Stipulation and Agreement approved by the order specifically
10 referenced the General Services Agreement ("GSA") under which AMS agreed to
11 provide Ameren Missouri corporate support services at cost. The Stipulation states
12 that a "Utility Service Company" will "provide administrative and general or
13 operating services to UE and [its affiliates]" and defines "Service Agreement" as
14 the GSA between AMS and its affiliates. That GSA was part of the record before
15 the Commission in the merger case. While the Commission did not explicitly use
16 the words "we hereby approve the formation of AMS," the Commission approved
17 the merger that created the corporate structure that included AMS and AMS's
18 provision of services to Ameren Missouri and the other affiliates, and clearly
19 understood that AMS would provide services under the GSA at cost.

20 **Q. What services does AMS provide to Ameren Missouri?**

21 A. AMS provides administrative support services. AMS' services include typical
22 corporate functions such as accounting, legal, environmental, building
23 management, information technology, etc. The preponderance of transactions
24 pertains to corporate shared services provided by AMS to Ameren Missouri.

25 **Q. How does Ameren Missouri determine both the services to procure from AMS,
26 and the extent of the services it will receive from AMS?**

1 A. As discussed in the direct testimony of Ameren Missouri witness Laura M. Moore,
2 Ameren Missouri and AMS follow, on an ongoing basis, a Joint Planning and
3 Procurement process and a Demand Planning process. These processes, which are
4 followed in concert with the other, are used during each budget cycle and include
5 ongoing reviews of AMS services and spend as each budget year progresses. Under
6 those processes, Ameren Missouri determines its need for various services, the
7 value of those services, and the level of the services it will receive from AMS.

8 **Q. Does Ameren Missouri also have the option to self-provide or use a third-party**
9 **to provide some or all of these services?**

10 A. Yes, except for those services that necessarily arise from AMC's status as a publicly
11 traded company that owns 100% of Ameren Missouri's stock, Ameren Missouri
12 has the option to self-provide a service, utilize the service of a non-affiliated service
13 provider, or retain AMS to provide defined services.

14 **Q. Are the services provided by AMS to Ameren Missouri necessary and**
15 **appropriate?**

16 A. Yes. The services that Ameren Missouri receives from AMS are both necessary
17 and appropriate. The manner in which the services are provided to Ameren
18 Missouri by AMS is consistent with how numerous other regulated utility
19 companies obtain such services.

20 **Q. Are the services provided by AMS to Ameren Missouri covered by a Cost**
21 **Allocation Manual ("CAM")?**

1 **A.** Yes. The manner by which AMS' services are provided and charged to Ameren
2 Missouri is set forth in the GSA, which is also included as an appendix in the
3 CAM. Among other things, the GSA or the CAM:

- 4 • Requires the services be provided at cost;
- 5 • Codifies recordkeeping and access to records requirements, including
6 documentation of affiliate transactions, and the continued provision of
7 detailed affiliate transaction reporting for all products and services provided
8 by AMS (and other affiliates), not just to Ameren Missouri, but to all AMC
9 affiliates;
- 10 • Codifies certain detailed reporting requirements;
- 11 • Requires that all affiliate transactions be conducted under a written contract
12 between Ameren Missouri and AMS; and
- 13 • Requires the formation and implementation of an Ameren Missouri CAM
14 Team to aid in Ameren Missouri's compliance with the Affiliate Transactions
15 Rules, subject to approved variances.

16 **Q.** **Are the services provided by AMS to Ameren Missouri the same as those**
17 **which AMS provides to Ameren Illinois?**

18 **A.** Yes. The services provided by AMS to Ameren Missouri and Ameren Illinois are
19 essentially the same.

20 **Q.** **Are service companies, such as AMS, common in the energy industry?**

21 **A.** Yes. As a result of industry mergers and acquisitions, many stand-alone, single
22 jurisdictional energy companies have merged or been acquired. In an effort to
23 increase efficiencies, ensure consistent practices throughout the organization, and

1 reduce costs, the post-merger integration of common functions at an affiliated
2 service company has been a common trend throughout the United States. Service
3 companies similar to AMS file Form 60 annual reports with the FERC. The Form
4 60 report is an annual regulatory support requirement under 18 CFR 369.1 for
5 centralized service companies. The report is designed to collect financial
6 information from centralized service companies subject to the jurisdiction of the
7 FERC.

8 **Q. Have you prepared a Schedule identifying the service companies which filed a**
9 **Form 60 annual report, and the affiliated companies to which the service**
10 **companies provided services, and the services provided?**

11 A. Yes, I have included this information in Schedule JJR-D2.

12 **Q. Please describe what Schedule JJR-D2 shows.**

13 A. Schedule JJR-D2 identifies the service companies and affiliated companies to
14 which services are provided, as well as the services provided to the affiliated
15 companies. Schedule JJR-D2 shows that 42 utility service companies filed FERC
16 Form 60 annual reports in 2019. Reviewing these reports, the service companies
17 provided services to 838 affiliated companies, including many regulated utilities.

18 **Q. Based upon your review of the scope of services offered by AMS to Ameren**
19 **Missouri, are the services provided consistent with those of other service**
20 **companies in the energy industry?**

21 A. Yes. In my experience, the services provided by AMS to Ameren Missouri are
22 consistent with those provided by other service companies to affiliated regulated
23 utilities. Schedule JJR-D2 further supports my experience and conclusion.

1 **Q. Based upon your experience, is the use of the shared services model prevalent**
2 **today in the energy industry?**

3 A. Yes. Based upon both my personal knowledge of the energy industry, as well as
4 the number of Form 60 reports filed with the FERC, service companies continue to
5 be widely used throughout the energy industry in the United States.

6 **Q. To what do you attribute the extensive use of service companies?**

7 A. Beyond the fact that the PUHCA required the use of service companies, many of
8 the mergers that have been consummated in the energy industry have been
9 premised, in part, upon the realization that the combined companies could produce
10 savings from the elimination of duplication in public company functions and “back
11 room”, non-customer-facing corporate functions. There are economies of scale that
12 can be achieved by eliminating duplicative roles and functions when two companies
13 merge (e.g., one accounting, human resources, information technology,
14 procurement, etc. function). Further, the merged companies would most likely be
15 able to perform required tasks with fewer staff than the individual operating
16 companies were able to achieve. This approach benefits the holding company (here
17 AMC) and the customers of its operating utilities (including Ameren Missouri)
18 alike because between rate reviews the lower overall costs the service company
19 delivers inures to the benefit of shareholders and ultimately to the benefit of
20 customers in the form of lower cost of service and rates.

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V. COST OF AMS' SERVICES

Q. Does AMS direct charge for its services when the service is only to one affiliate?

A. Yes it does.

Q. When the direct assignment of costs is not possible, are AMS' services provided to Ameren Missouri and its other affiliated companies at the fully distributed cost of providing those services?

A. Yes, they are (and that is true for directly charged services as well). All costs incurred by AMS are either directly charged (when the cost applies only to one affiliate) or allocated using a service request system, but regardless of how the cost of the services are charged, they are always priced at AMS's fully distributed cost with no mark-up or profit component. As a result of Ameren Missouri's agreement with Missouri Public Service Commission Staff in File No. EO-2017-0176, a fully distributed cost study was conducted to examine two primary items: (a) can a greater proportion of AMS costs be direct charged and (b) can improvements reasonably be made in the allocation factors used to charge allocated costs. The study is being provided as part of the workpapers in this case.

Q. How does the Commission's affiliate transaction rule, 20 CSR 4240-20.015, define "fully distributed cost" or "FDC"?

A. Section (1)(F) of the Rule defines fully distributed cost as "a methodology that examines all costs of an enterprise in relation to all the goods and services that are produced. FDC requires recognition of all costs incurred directly or indirectly used to produce a good or service. Costs are assigned either through a direct or allocated

1 approach. Costs that cannot be directly assigned or indirectly allocated (e.g.,
2 general and administrative) must also be included in the FDC calculation through
3 a general allocation.”

4 **Q. Does Ameren Services Company profit from the services provided to its**
5 **affiliated companies?**

6 A. No. All AMS charges reflect the direct cost of providing that service or product.
7 There is no profit margin built into the charges, and AMS operates on a zero-profit
8 basis.

9 **Q. Are the costs of AMS’s services the same as if Ameren Missouri were to self-**
10 **provide the services?**

11 A. The services are, at worst, the same as if Ameren Missouri were to self-provide the
12 services. It is more likely, however, that due to the economies of scale realized by
13 centralizing the shared services at AMS, the services are provided at a cost lower
14 than if Ameren Missouri were to self-provide the services on a stand-alone basis.

15 **Q. Please explain.**

16 A. There are inherent efficiencies realized by consolidating common functions at one
17 company, as opposed to requiring each operating company to individually perform
18 each service. Given that AMS provides similar services to Ameren Missouri, AIC,
19 and other affiliated companies, AMS is likely able to perform the required services
20 with fewer personnel, and thus at a lower cost, than if each AMC subsidiary were
21 to be individually fully staffed to provide all services. In other words, there are
22 economies of scale realized by consolidating similar functions across the AMC
23 companies.

1 **Q. Based upon your review of the manner by which AMS charges Ameren**
2 **Missouri for its services, can you conclude that AMS's costs are market based?**

3 A. Yes. AMS is a large scale, efficient organization which provides services at cost,
4 without mark-up or profit, where the costs consist primarily of the wages, salaries
5 and benefits of AMS employees. The wages, salaries and benefits AMS pays and
6 provides are market based. Therefore, it is reasonable to conclude that AMS's costs
7 are market based.

8 **Q. Please explain.**

9 A. The cost of goods and services provided by AMS to its affiliated companies
10 consists of two primary cost components – (1) wages and benefits of AMS
11 employees and (2) goods and materials.

12 With regard to wages and benefits, employees of AMC subsidiaries
13 receive market-based wages and benefits. To ensure that the employees are
14 provided a reasonable compensation package, the AMS Human Resources
15 Department routinely benchmarks total compensation packages (i.e., wages and
16 benefits) against local, regional and national companies. Its goal is to provide a
17 total compensation package that represents the median of the market (i.e., 50th
18 percentile). Therefore, the total cost of Ameren Missouri's and AMS' total wages
19 and benefits are reflective of the market. Ameren witness Kelly Hasenfratz
20 discussed how the Company establishes market-based total compensation and
21 benefits in her direct testimony filed in File No. ER-2019-0335 and has confirmed
22 that the testimony in that proceeding still holds true today.

1 Further, AMS provides its goods and services to Ameren Missouri at cost
2 (i.e., without mark-up or profit). All other non-affiliated service providers'
3 services would include a mark-up and/or profit component in the pricing of their
4 goods and services.

5 In addition, AMS' procurement of labor and other goods and services at market
6 prices and its subsequent charging for its services at cost means that the cost of
7 goods and services provided to Ameren Missouri by AMS can reasonably be
8 concluded to be both priced at or below market and priced at cost. This is
9 because the wages and benefits paid to all employees of the Ameren companies
10 are benchmarked at the 50th percentile of market and, similarly, AMS uses
11 procurement procedures and policies for non-employee-related costs also
12 designed to ensure that good and services are obtained at market prices.

13 **Q. What additional steps has Ameren Missouri taken to ensure the**
14 **reasonableness of the cost of services provided to it by AMS?**

15 A. Ameren Missouri has formed a CAM team and meets extensive reporting and
16 recordkeeping requirements, going well beyond existing legislative and regulatory
17 requirements, to continually oversee the dealings between AMS and Ameren
18 Missouri. In my experience, Ameren Missouri is going beyond typical practices in
19 overseeing such dealings including by use of a dedicated team to oversee CAM
20 compliance, as well as with its reporting activities to monitor and enforce
21 compliance with the requirements set forth in the CAM.

1 **Q. Do you believe that Ameren Missouri would be able to procure the services**
2 **provided by AMS from an unaffiliated company at a lower cost?**

3 **A.** No. AMS follows well-established and well-designed procurement policies and
4 procedures that provide for solicitation of competitive bids when appropriate so
5 that it is obtaining qualified service providers and other goods it needs to provide
6 its services at reasonable, market-based prices. Given that AMS provides its
7 services to Ameren Missouri at cost, and that it benchmarks its wages, salaries and
8 benefits to the market, I do not believe that Ameren Missouri could procure its
9 services at a lower cost from a non-affiliated service provider.

10 **Q. Are there examples of services that AMS has outsourced, on behalf of Ameren**
11 **Missouri, to a non-affiliated service provider?**

12 **A.** Yes. Examples of services outsourced by AMS, on behalf of Ameren Missouri,
13 include lock box services, printing and distribution of customer bills, certain
14 vegetation management services, and janitorial services. AMS also uses outside
15 services and suppliers in some instances as it provides its services to the affiliates
16 when specialized knowledge or expertise is needed, or to supplement AMS
17 employee resources when appropriate.

18 **Q. Are there Missouri legal requirements that govern a utility's transactions with**
19 **affiliated companies?**

20 **A.** Yes, 20 CSR 4240-20.015 and 20 CSR 4240-40.015 set out the Commission's rules
21 for affiliated transactions for electric and gas utilities, respectively. Ameren
22 Missouri is both an electric and gas utility, and the Company's CAM applies to
23 both electric and gas utility affiliate transactions. The rules are intended to prevent

1 regulated utilities from subsidizing their nonregulated operations. Put another way
2 and as I discuss below, the regulations are designed to prevent unfair preferential
3 treatment of affiliates to the detriment of the Company's customers. In order to
4 accomplish this objective, the rule sets forth financial and evidentiary standards and
5 recordkeeping requirements applicable to any Commission-regulated electrical
6 corporation whenever such corporation participates in transactions with any
7 affiliated entity (except with regard to HVAC services as defined in section
8 386.754, RSMo.). The rule and its effective enforcement are intended to provide
9 the public with the assurance that their rates are not adversely impacted by the
10 utilities' nonregulated activities.

11 **Q. Has the Commission described the intent of the affiliate transaction rules in**
12 **prior orders?**

13 A. Yes, on at least two occasions in recent years. In its July 1, 2008 Report and Order
14 in File No. EM-2007-0374, the Commission granted Greater Missouri Operations
15 ("GMO") and KCP&L a variance to the Affiliate Transactions Rule for all
16 transactions between GMO and KCP&L, except for wholesale power transactions,
17 which would be based on rates approved by the FERC. At page 264, of the
18 Commission's Report and Order, it noted that "the purpose of the Commission's
19 Affiliate Transactions Rule is to prevent cross-subsidization of regulated utility's
20 non-regulated operations, not to prevent transactions at cost between two regulated
21 affiliates." In 2018 when the Commission approved the merger of Great Plains
22 Energy (KCP&L's and GMO's parent) and Westar Energy, it essentially extended

1 that variance to Westar Energy, KCP&L and GMO's affiliated utility in Kansas
2 operating under the supervision of the Kansas Corporation Commission.²

3 **Q. Is it possible that by centralizing the shared services Ameren Missouri could**
4 **potentially be subsidizing non-regulated affiliates?**

5 A. No. First, AMC has no material non-regulated operations. Second, as previously
6 mentioned, AMS' services are provided at cost, which is determined by prevailing
7 wages/benefits and actual incurred expenses. Therefore, there is no issue of
8 potential subsidies from ratepayers to unregulated affiliates. The pricing of
9 affiliated services only has a material effect on which jurisdiction's customers are
10 responsible for, and benefit from, the cost of providing a service. Essentially, all
11 costs are attributable to one set of regulated customers or the other (i.e., Ameren
12 Missouri versus AIC versus ATXI). Put another way, the cost standard for affiliate
13 transactions is appropriate because the question being addressed is what costs
14 (which are in any event consistent with the market) should be included in the rates
15 for each set of customers in the AMC utility family.

16 **Q. Did the Staff of the Missouri Commission review Ameren Missouri's expenses**
17 **related to AMS charges in Ameren Missouri's most recent electric rate case**
18 **filing (File No. ER-2019-0335)?**

19 A. Yes. Staff witness Mark Oligshlaeger addressed the Staff's audit of Ameren
20 Missouri's expenses related to AMS charges in that recent electric rate case filing,
21 as Staff has done in many Ameren Missouri rate cases over the past 15 years. In
22 the audit, Staff did not find any irregularities or excessive charges to Ameren

² File No. EM-2018-0012

1 Missouri by AMS, and accordingly did not propose any disallowances of those
2 expenses consistent with previous filings.

3 **Q. Are AMS' costs billed to affiliated companies subject to regulatory review**
4 **other than by the Missouri Commission?**

5 A. Yes. AMS' costs billed to its affiliated FERC rate regulated subsidiaries have been,
6 and continue to be, reviewed by the FERC. The FERC has never challenged or
7 disallowed any of AMS' charges to the Company's transmission customers³.

8 The Illinois Commerce Commission ("ICC") also reviews AMS' charges to
9 AIC during rate proceedings. The ICC has accepted AMS' charges, as well as the
10 allocation methodology, which reflects fully distributed cost.

11 **Q. What do AMS' costs consist of?**

12 A. The majority of AMS costs are non-fuel operations and maintenance ("O&M")
13 costs, with more than 90% of those costs consisting of administrative and general
14 ("A&G") costs. AMS also performs services, the cost of which is capitalized on
15 the receiving affiliates' books.

16 **Q. In your opinion, would a reasonable manager, in possession of and with regard**
17 **for the relevant facts, select AMS to provide these services?**

18 A. Yes. In reaching that conclusion, the facts that would influence the decision maker
19 are:

20 • AMS has provided these services every year for more than 20 years and is
21 uniquely qualified to provide continuity of accounting, human resources, legal,

³ The audit in Docket No. FA10-3-000 identified two immaterial AMS accounting items affecting the Company's tariff billings. The costs disallowed were for lobbying and charitable contributions recorded to O&M accounts that should have been recorded to account 426.1, a below-the-line accounts, which is not an includible account in the Midwest ISO Attachment O template.

1 payroll, information technology and other services that if Ameren Missouri
2 were a standalone company, Ameren Missouri would have to provide for/or
3 obtain for itself;

- 4 • As explained in the next section of my testimony, AMS has achieved significant
5 reductions (in real terms) in the cost of providing these services;
- 6 • AMS provides these services on a zero-profit basis which no other provider
7 could do on a sustainable basis;
- 8 • AMS provides these services to all of Ameren Missouri's regulated affiliates
9 and no regulator has, to date, found these costs to be unreasonable or
10 imprudently incurred;
- 11 • AMS uses benchmarking to ensure that its costs are market-based and uses
12 competitive bidding in accordance with corporate policies for procurement; and
- 13 • Ameren Missouri can, if it so chooses, reduce the services it takes from AMS
14 in given areas and either self-provide a service or obtain it elsewhere.

15 Simply put, these facts provide a very compelling case that selecting AMS as the
16 service provider is not only a reasonable decision, but also the best decision that
17 the Company can make. This decision by Ameren Missouri is unquestionably
18 prudent.

1 A. Yes. I updated the benchmarking analysis performed in File No. ER-2019-0335 to
2 include an analysis of 2019. I compared Ameren Missouri's total non-fuel
3 operations and maintenance ("O&M") expense and A&G expense against three
4 peer groups:

- 5 1. National Electric Utilities with regulated generation;
- 6 2. Midwest Electric Utilities with regulated generation; and
- 7 3. National Electric Utilities with regulated generation and 500,000 to 2,000,000
8 customers.

9 **Q. What years did the benchmarking analyses review?**

10 A. The six most recent years for which data were available (i.e., 2014-2019) were used
11 to perform the analyses. This represents the years reviewed in File No. ER-2019-
12 0335 updated with current data and 2019 added to the analyses.

13 **Q. What was the source of the data used to perform the benchmarking analyses?**

14 A. The analyses utilized data obtained from the S&P Global Market Intelligence
15 platform. The source of the data was the annual FERC Form 1 filings made by
16 electric utilities.

17 **Q. Did you make any adjustments to the source data?**

18 A. No.

19 **Q. How did you normalize the benchmarking analyses to account for differences
20 in the size of the utilities?**

21 A. To normalize issues related to the size of the companies in the comparison, all costs
22 were evaluated on a per customer basis.

1 **Q. How did Ameren Missouri compare to its peers when reviewing total non-fuel**
2 **O&M cost per customer of the national electric utilities with regulated**
3 **generation peer group?**

4 A. As shown on Schedule JJR-D4, Ameren Missouri has had below (i.e., better than)
5 the national average non-fuel O&M costs in all six years analyzed. Ameren
6 Missouri's total non-fuel O&M cost per customer was 7.5% below the national
7 average in 2019.

8 **Q. How did Ameren Missouri compare to its peers when reviewing just the A&G**
9 **portion of these O&M expenses on a per customer basis?**

10 A. As shown on Schedule JJR-D5, Ameren Missouri's A&G expense per customer
11 has shown a dramatic improvement on both an absolute and relative basis over the
12 past six years. In 2014, Ameren Missouri's A&G cost per customer was 6.3%
13 above the national average, but by 2019 they were 18.5% below the national
14 average.

15 **Q. Is it possible that these results are biased by the inclusion of higher-cost**
16 **utilities on the east and west coasts, as opposed to Midwestern utilities?**

17 A. No, in fact Ameren Missouri's costs are even more competitive when compared to
18 Midwest utilities. As shown on Schedule JJR-D6, Ameren Missouri posted results
19 that were 17.8% below the average for Midwest utilities for total non-fuel O&M
20 costs in 2019 and has been considerably below the regional average each year
21 analyzed. On this basis of comparison, Ameren Missouri is a top performer.

1 **Q. How did Ameren Missouri compare to its Midwest peers when reviewing A&G**
2 **expense per customer?**

3 A. As shown on Schedule JJR-D7, Ameren Missouri's A&G cost per customer was
4 more than 25% below the regional average in 2019, and its performance advantage
5 over its peers had been widening over the past six years.

6 **Q. When the comparisons are limited to the larger utilities, which presumably**
7 **have economies of scale as AMS has been able to achieve, how does Ameren**
8 **Missouri compare to the national averages?**

9 A. As shown on Schedule JJR-D8, when compared to national electric utilities with
10 regulated generation and between 500,000 and 2 million customers, Ameren
11 Missouri achieved slightly lower-than-average cost levels for total non-fuel O&M
12 in 2019 and has achieved slightly lower-than-average cost levels for total non-fuel
13 O&M each year since 2016. Even when compared to the smaller subset of 21 other
14 large utilities, Ameren Missouri is performing well.

15 **Q. When compared to the larger companies, how did Ameren Missouri look for**
16 **just the A&G portion of O&M expense?**

17 A. As shown on Schedule JJR-D9, Ameren Missouri improved its A&G cost per
18 customer in each year examined, while the peer group average remained consistent
19 during the same period. In 2019, Ameren Missouri's A&G cost per customer was
20 below the large company peer group average by 6.9%.

21 **Q. What can be concluded from the results of these analyses?**

22 A. As a result of the mergers of Union Electric, CIPS, CILCO, and IP, the Company
23 has been able to drive down costs of the businesses. The source of reduced costs is

1 from the consolidation of common corporate and A&G functions which now reside
2 at AMS. These savings result from the elimination of duplicative positions (e.g., a
3 CEO and CFO and Treasurer at each operating company, multiple CIOs, multiple
4 General Counsels, etc.) as well as economies of scale attributable to the
5 provisioning of services by a smaller number of employees than the four individual
6 companies could have achieved separately. In addition, AMS and Ameren
7 Missouri engage in continuous improvement efforts that should be expected to
8 contribute to bringing down Ameren Missouri's largest measure of controllable
9 cost, Total Non-Fuel O&M per customer, which is in fact well below the peer group
10 average levels for all three of the peer groups I have examined. The numbers
11 indicate that these efforts have delivered significant savings for customers, while
12 maintaining compensation at competitive levels for employees working at AMC
13 subsidiaries.

14 **Q. Have you expanded the benchmarking?**

15 A. Yes. I have done some additional benchmarking to further assess Ameren
16 Missouri's financial and operational performance.

17 **Q. In general, what steps did you take in constructing this additional
18 benchmarking analysis?**

19 A. The first step of the benchmarking analysis was to define the timeframe over which
20 the analysis was to be performed. The second step was to develop the composition
21 of the peer group used to compare to Ameren Missouri. The third step was to define
22 the financial and operational metrics to be used in the benchmarking and to collect
23 the necessary data to evaluate these metrics.

1 **Q. How did you select the companies to include in your benchmarking peer**
2 **group?**

3 A. My objective in determining the peer group was to achieve the largest group of
4 companies for which consistent data were available and which were, broadly
5 speaking, operationally similar to Ameren Missouri. Because Ameren Missouri is
6 a large primarily electric utility with ownership in generating resources, I
7 established a peer group of companies with electric-only utility operations that have
8 between 500,000 and 2 million customers and own generating resources. This
9 produced a peer group of 21 comparable companies.

10 **Q. What data sources did you rely on for the performance metrics that you**
11 **developed?**

12 A. I obtained much of the data from FERC Form 1 and U.S. Securities and Exchange
13 Commission (“SEC”) Form 10-K reports (as reported by SNL Financial).

14 **Q. What metrics did you use to assess Ameren Missouri’s financial and**
15 **operational performance?**

16 A. I evaluated Ameren Missouri’s performance across a variety of financial and
17 operational metrics to evaluate the Company’s cost efficiency.

18 Regarding cost efficiency – the ability to maximize output and minimize costs, I
19 considered expense performance metrics:

- 20 • Total Non-Fuel O&M expenses
- 21 • Non-Fuel Production O&M expenses
- 22 • Transmission O&M expenses
- 23 • Distribution O&M expenses

- 1 • Administrative and General (“A&G”) expenses
2 • Customer expenses

3 **Q. Did the metrics account for companies of different sizes?**

4 A. Yes. Most metrics are calculated on an expense per customer or an expense per
5 MWh sold basis.

6 **Q. Have you provided the results of the expense performance metrics?**

7 A. Yes. Schedule JJR-D10 thru Schedule JJR-D23 provides the results of each of the
8 expense performance metrics listed above.

9 **Q. Overall how did Ameren Missouri compare to its peers in regards to the**
10 **expense performance metrics?**

11 A. In reviewing the four primary operating functions (generation, transmission,
12 distribution, and customer service), and administrative and general expenses,
13 Ameren Missouri is a strong performer in controlling its expenses per customer.
14 Ameren Missouri was below the peer group mean in every year of the analysis for
15 Non-Fuel Production O&M expenses per customer and Transmission O&M
16 expenses per customer. While Ameren Missouri was above the group mean in
17 every year of the analysis for Distribution O&M expenses per customer, its ranking
18 is improving and in 2019 ranked 12th of the 21 companies in the peer group.
19 Ameren Missouri was below the peer group mean in Administrative and General
20 expenses per customer in 2018 and 2019 and Ameren Missouri improved its A&G
21 cost per customer in each year examined, while the peer group average remained
22 consistent during the same period.

1 **Q. Which metrics provide the best indication of Ameren Missouri's overall**
2 **performance relative to the peer groups?**

3 A. While each metric is significant and may help identify particular areas of strength
4 or weakness, the best indication of Ameren Missouri's overall level of performance
5 in terms of cost control, which also provides a good indication of the reasonableness
6 of AMS costs since it provides significant services to Ameren Missouri, is Total
7 Non-Fuel O&M expenses per customer. This category covers all four primary
8 operating functions (generation, transmission, distribution, and customer service),
9 and includes all administrative and general functions which, as noted, make up
10 nearly all AMS costs. Further, this metric has the advantage of removing the effects
11 of differences in fuel costs, which can vary due to availability, location, and state
12 or local environmental policies.

13 **Q. Please discuss how Ameren Missouri compares to its peers in regards to the**
14 **Total Non-Fuel O&M expense metric.**

15 A. Ameren Missouri's performance controlling its non-fuel O&M expense per
16 customer and per MWh sold is strong in each year of my analysis coming in below
17 the peer group average in the four most recent years in the per customer analysis
18 and right around the peer group average for each year in the per MWh sold analysis.

19 **VII. REQUIREMENTS FROM STIPULATION IN FILE NO. ER-2019-0335**

20 **Q. Please summarize the information concerning affiliate transactions that**
21 **Ameren Missouri agreed to provide per the Second Stipulation in Ameren**
22 **Missouri's most recent electric rate case, File No. ER-2019-0335.**

23 A. Ameren Missouri agreed to file or provide the following items:

- 1 i. The total amount of affiliate transactions charges to Ameren Missouri and
2 affiliate transaction charges by Ameren Missouri to an affiliate in the test
3 year, by account and affiliate.
- 4 ii. The Fully Distributed Cost Study (the “FDC Study”) being conducted as
5 agreed upon with the Staff as provided in the Non-Unanimous Stipulation
6 and Agreement submitted in File No. EO-2017-0176 (the “EO-2017-0176
7 Stipulation”).
- 8 iii. To the extent the FDC Study did not study the fully distributed cost of
9 Ameren Missouri to itself perform a function currently performed by
10 Ameren Services Company (“AMS”) (legal, human resources, accounting,
11 etc.), and only studied costs to AMS, a detailed explanation for each
12 function that demonstrates why an FDC study for Ameren Missouri is not
13 necessary or reasonable.
- 14 iv. Where benchmarking is used to assess AMS costs: (1) a detailed description
15 of how Ameren performed or obtained its benchmarking; (2) identification
16 of all benchmarking results and any steps taken to address the results; and
17 (3) all associated AMS or Ameren Missouri work-papers and supporting
18 documents.
- 19 v. Identification of all affiliate transaction costs in the test year that were
20 incurred by Ameren Missouri following a request for proposal issued by or
21 on Ameren Missouri’s behalf and receipt of bids.
- 22 vi. Identification of all affiliate transaction costs in the test year that were
23 incurred by Ameren Missouri without a request for proposal issued by or on

1 Ameren Missouri's behalf and receipt of bids, and an explanation of why
2 competitive bidding was not necessary.

3 vii. Identification of Ameren Corporation board of director and investor
4 relations costs being charged to Ameren Missouri through an allocation
5 process, and a detailed explanation of the allocation factors or process by
6 which the charges are allocated to Ameren Missouri.

7 viii. The General Office Building space study as provided for in the EO-2017-
8 0176 Stipulation.

9 ix. Year-end Ameren Missouri and AMS employee organization charts
10 showing all positions at year end 2019, it being agreed that the "organization
11 charts" can consist of a spreadsheet listing all such employees and their
12 titles, by employer.

13 **Q. Has Ameren Missouri provided the data to satisfy the requirement in subpart**
14 **(i) of the Stipulation?**

15 A. Yes. In addition to providing this data each quarter to the Commission's Staff, in
16 what is generally referred to as the "CAM Report", as was agreed to by Ameren
17 Missouri several years ago, Ameren Missouri has indicated to me that it is also
18 providing such a report for the test year as part of its workpapers in this case.

19 **Q. Is the Fully Distributed Cost Study per subpart (ii) of the Stipulation provided**
20 **with the filing?**

21 A. Yes. The Fully Distributed Cost Study was conducted for Ameren Missouri by
22 KPMG as agreed between Ameren Missouri and the Staff in File No. EO-2017-
23 0176, and I am told that it is also being provided with the Company's workpapers

1 in this case. The Company has also provided the study report to me as part of my
2 engagement for this case.

3 **Q. Do you believe it is necessary for Ameren Missouri to provide a detailed**
4 **explanation for each function that demonstrates why an FDC study for**
5 **Ameren Missouri is not necessary or reasonable as described in subpart (iii)**
6 **of the Stipulation?**

7 A. No. I do not believe it is necessary or reasonable for Ameren Missouri to study the
8 fully distributed cost of Ameren Missouri to itself to perform a function currently
9 performed by AMS. As discussed above, AMS costs Ameren Missouri incurs are
10 prudent and reasonable and thru the Joint Planning and Procurement and Demand
11 Planning processes discussed by Ms. Moore in her direct testimony. Ameren
12 Missouri could, if it chose to do so, reduce the services it takes from AMS in given
13 areas and self-provide. The costs for these services received from AMS are, at
14 worst, the same as if Ameren Missouri were to self-provide the services. It is much
15 more likely, however, that due to the economies of scale realized by centralizing
16 the shared services at AMS, the services are provided at a cost lower than if Ameren
17 Missouri were to self-provide the services on a stand-alone basis. As shown by my
18 analyses in Schedule JJR-D3 thru Schedule JJR-D11, the aggregate costs of these
19 services has been materially reduced through the use of AMS.

20 **Q. Has Ameren Missouri provided the results of its benchmarking to satisfy the**
21 **requirements in subparts (iv) of the Stipulation?**

22 A. Yes. As discussed earlier, a majority of Ameren Services costs consist of salaries,
23 wages, and benefits which are benchmarked against several sources. It is my

1 understanding that those services are subscription-based and proprietary and can
2 only be made available electronically, but it is my understanding that Ameren
3 Missouri will make arrangements to provide access as needed as part of this docket,
4 as it has done in prior rate reviews. I have also provided significant benchmarking
5 results as part of this testimony.⁴

6 **Q. Have the identifications that are referenced in subparts (v) and (vi) of the**
7 **Stipulation been made?**

8 A. No, because there are no costs that fall into those categories. As has previously
9 been discussed, the Company seeks competitive bids from non-affiliated
10 companies when a lower cost or higher quality of service can reasonably be
11 expected to be achieved. Examples of such assessments that resulted in AMS
12 outsourcing the service, on behalf of Ameren Missouri, include lock box services,
13 printing and distribution of customer bills, certain vegetation management
14 services, and janitorial services and, as I also noted earlier, AMS follows
15 procurement policies and procedures (which often include using competitive
16 bidding) to acquire goods/services that it then uses to provide services to Ameren
17 affiliates, including Ameren Missouri.

18 It is important to note that there is no need to perpetually solicit bids to
19 ensure the reasonableness of the Company's wages, benefits, and cost of goods
20 and materials. In fact, if these kinds of solicitations were attempted, it would be
21 unproductive and burdensome and potential bidders would likely stop bidding
22 after a while. AMS' employees are paid prevailing wages and provide services

⁴ The primary benchmarking relevant to overall AMS costs that Ameren Missouri formerly used (the PSEG study) is no longer being done by the study sponsor.

1 without markup or profit. An unaffiliated bidder would also pay its employees a
2 prevailing wage and include a markup for profit. If an unaffiliated service
3 providers proposal was repeatedly rejected based upon price, the bidder will
4 eventually stop responding to the Company's request for proposals. Further, it is
5 important that Ameren Services attract and retain a knowledgeable, high-
6 performing, efficient, and cost-effective workforce. Perpetually requiring
7 solicitation, training, and retention of non-affiliated service providers from a for-
8 profit company would increase the total cost of AMS' services provided to
9 Ameren Missouri and attracting and retaining high-performing employees would
10 be increasingly difficult as their jobs were regularly considered for outsourcing.

11 **Q. Did Staff witness Mr. Mark Oligshlaeger discuss the requirement for Ameren**
12 **Missouri to competitively bid for all services received from AMS in the**
13 **Company's previous electric rate case?**

14 A. Yes. In Staff witness Mr. Oligshlaeger's rebuttal testimony in File No. ER-2019-
15 0335 on p. 9 ll. 17-19, he concluded that "given the inherent cost advantages and
16 efficiencies associated with service company structures, Staff views the prospect of
17 mass competitive bidding for AMS services to be not cost effective." He goes onto
18 say "in Staff's view, good cause exists for Ameren Missouri not to primarily rely
19 upon competitive bidding procedures to determine the reasonableness of obtaining
20 services from AMS".

21 **Q. Has Ameren Missouri provided the data to satisfy the requirement in subpart**
22 **(vii) of the Stipulation concerning Ameren Corporation board of director and**
23 **investor relations costs being charged to Ameren Missouri?**

1 A. Yes. The Company has identified the Ameren Corporation board of director and
2 investor relations costs charged to Ameren Missouri. Included within the data are
3 the costs being charged to Ameren Missouri and a detailed explanation of the
4 allocation process by which the charges were allocated to Ameren Missouri. It is
5 my understanding that this information is included in the Company's workpapers
6 being provided in connection with the filing of this case.

7 **Q. Is the General Office Building space study per subpart (viii) of the Stipulation**
8 **provided with the filing?**

9 A. Yes. The General Office Building space study was conducted by the Company and
10 is also being provided as part of the Company's workpapers.

11 **Q. Has the Company provided the organization charts per subpart (ix) of the**
12 **Stipulation provided with the filing?**

13 A. Yes. Organization charts for Ameren Missouri and AMS at year end 2019 as
14 stipulated are being provided as part of the Company's workpapers.

15 **VIII. CONCLUSIONS**

16 **Q. Based upon your review of AMS and the services that it provides to its**
17 **affiliated companies, what are your observations and conclusions?**

18 A. My observations and conclusions are as follows:

- 19 • The use of a shared services organizations, such as AMS, is reasonable and
20 consistent with utility industry practices and its use by Ameren Missouri for the
21 services provided in the test year was prudent and reasonable;
- 22 • The scope of services offered by AMS to its affiliated companies is consistent
23 with other utility shared services companies with which I am familiar;

- 1 • Customers of Ameren Missouri have benefited from the existence of, and
2 services provided by, AMS.

3 **Q. Please summarize what information was relied upon to form the basis of your**
4 **opinions on prudence and reasonableness.**

5 A. The support I have relied on in arriving at my opinions in this case includes:

- 6 • My own analysis of utility holding companies, service companies, Ameren
7 Missouri's A&G costs over time, and my benchmarking of Ameren Missouri's
8 non-fuel O&M and A&G costs versus national averages and Midwest utilities
9 presented in my direct testimony.
- 10 • Multiple versions of Ameren Missouri's Cost Allocation Manual
- 11 • Documentation pertinent to the Joint Planning and Procurement and Demand
12 Planning Processes for 2020 and 2021, and Ms. Moore's direct testimony in
13 this case discussing those processes.
- 14 • All the testimony submitted in Ameren Missouri's recent electric rate case (File
15 No. ER-2019-0335) on affiliate transactions, including Ameren Missouri's filed
16 testimony of Mr. Tom Byrne, Ms. Laura Moore, Mr. Ben Hasse, and Ms. Kelly
17 Hasenfratz, Staff testimony of Mr. Mark Oligshlaeger, and the testimony of the
18 Office of Public Counsel witness Mr. Schallenberg.
- 19 • All of the data requests responses provided on the topic of affiliate transaction
20 costs and compliance in the electric rate case, which includes a very large
21 volume of material on the following topics:
- 22 ○ Details of numerous affiliate transactions

- 1 ○ Ameren Missouri’s corporate policies and procedures for
- 2 purchasing such services
- 3 ○ Ameren Missouri’s and AMS’s bidding procedures
- 4 ○ Organization charts for Ameren Missouri and its affiliates
- 5 ○ Information on shared employees
- 6 ○ Ameren Missouri’s Joint Planning and Procurement procedure
- 7 ○ Vendor lists and information for Ameren Missouri and AMS
- 8 ○ Details of corporate contracts for AMS
- 9 ○ Details of real estate transactions and costs for Ameren Missouri
- 10 ○ Cost allocation methodologies
- 11 ○ Compensation studies
- 12 ○ Tax allocation agreements
- 13 ○ Employee training processes
- 14 ○ Audits of affiliate transactions
- 15 ○ Determinations of the fair market price
- 16 ○ AMS’s and Ameren Missouri’s budgeting processes
- 17 ● All of the testimony submitted in the CAM docket (File No. EO-2017-0176)
- 18 including the testimony of Mr. Hasse, Ms. Moore and Mr. Byrne
- 19 ● All of the data requests responses provided in the CAM docket, which represent
- 20 another very large volume of information on affiliate transactions, compliance
- 21 procedures, cost benchmarking and many other topics
- 22 ● All of the similar material filed in Ameren Missouri’s recent gas rate case (File
- 23 No. GR-2019-0077)

- 1 • All of the filings in the Commission’s recent affiliate transactions rule
2 workshop (File No. AW-2018-0394)
- 3 • Regulatory actions for past Ameren Missouri rate cases and in past rate cases
4 for its utility affiliates, all of which provided for cost recovery for affiliate
5 provided A&G services (e.g., File No. ER-2016-0179 and Illinois Commerce
6 Commission Docket No. 16-0262))
- 7 • The Commission’s decisions in similar cases for other Missouri utilities,
8 including cases for KCP&L (File Nos. EM-2007-0374 and EE-2017-0113),
9 Laclede Gas (File No. GR-2017-0215), and Empire District Electric (File No.
10 AO-2012-0062)
- 11 • Missouri and federal statutes relating to the treatment of costs of affiliate
12 transactions

13 In aggregate, my testimony reflects my review of thousands of pages of material
14 in preparing the opinions expressed in my testimony, and my 44 years of
15 experience in utility regulation.

16 **Q. Does this conclude your direct testimony?**

17 **A. Yes, it does.**

JOHN J. REEDChairman and Chief Executive Officer

Mr. Reed is a financial and economic consultant with more than 42 years of experience in the energy industry. Mr. Reed has also been the CEO of an NASD member securities firm, and Co-CEO of the nation's largest publicly traded management consulting firm (NYSE: NCI). He has provided advisory services in the areas of mergers and acquisitions, asset divestitures and purchases, strategic planning, project finance, corporate valuation, energy market analysis, rate and regulatory matters and energy contract negotiations to clients across North and Central America. Mr. Reed's comprehensive experience includes the development and implementation of nuclear, fossil, and hydroelectric generation divestiture programs with an aggregate valuation in excess of \$20 billion. Mr. Reed has also provided expert testimony on financial and economic matters on more than 400 occasions before the FERC, Canadian regulatory agencies, state utility regulatory agencies, various state and federal courts, and before arbitration panels in the United States and Canada. After graduation from the Wharton School of the University of Pennsylvania, Mr. Reed joined Southern California Gas Company, where he worked in the regulatory and financial groups, leaving the firm as Chief Economist in 1981. He served as executive and consultant with Stone & Webster Management Consulting and R.J. Rudden Associates prior to forming REED Consulting Group (RCG) in 1988. RCG was acquired by Navigant Consulting in 1997, where Mr. Reed served as an executive until leaving Navigant to join Concentric as Chairman and Chief Executive Officer.

REPRESENTATIVE PROJECT EXPERIENCE

Executive Management

- As an executive-level consultant, worked with CEOs, CFOs, other senior officers, and Boards of Directors of many of North America's top electric and gas utilities, as well as with senior political leaders of the U.S. and Canada on numerous engagements over the past 25 years. Directed merger, acquisition, divestiture, and project development engagements for utilities, pipelines and electric generation companies, repositioned several electric and gas utilities as pure distributors through a series of regulatory, financial, and legislative initiatives, and helped to develop and execute several "roll-up" or market aggregation strategies for companies seeking to achieve substantial scale in energy distribution, generation, transmission, and marketing.

Financial and Economic Advisory Services

- Retained by many of the nation's leading energy companies and financial institutions for services relating to the purchase, sale or development of new enterprises. These projects included major new gas pipeline projects, gas storage projects, several non-utility generation projects, the purchase and sale of project development and gas marketing firms, and utility acquisitions. Specific services provided include the development of corporate expansion plans, review of acquisition candidates, establishment of divestiture standards, due diligence on



acquisitions or financing, market entry or expansion studies, competitive assessments, project financing studies, and negotiations relating to these transactions.

Litigation Support and Expert Testimony

- Provided expert testimony on more than 400 occasions in administrative and civil proceedings on a wide range of energy and economic issues. Clients in these matters have included gas distribution utilities, gas pipelines, gas producers, oil producers, electric utilities, large energy consumers, governmental and regulatory agencies, trade associations, independent energy project developers, engineering firms, and gas and power marketers. Testimony has focused on issues ranging from broad regulatory and economic policy to virtually all elements of the utility ratemaking process. Also frequently testified regarding energy contract interpretation, accepted energy industry practices, horizontal and vertical market power, quantification of damages, and management prudence. Has been active in regulatory contract and litigation matters on virtually all interstate pipeline systems serving the U.S. Northeast, Mid-Atlantic, Midwest, and Pacific regions.
- Also served on FERC Commissioner Terzic's Task Force on Competition, which conducted an industry-wide investigation into the levels of and means of encouraging competition in U.S. natural gas markets and served on a "Blue Ribbon" panel established by the Province of New Brunswick regarding the future of natural gas distribution service in that province.

Resource Procurement, Contracting and Analysis

- On behalf of gas distributors, gas pipelines, gas producers, electric utilities, and independent energy project developers, personally managed or participated in the negotiation, drafting, and regulatory support of hundreds of energy contracts, including the largest gas contracts in North America, electric contracts representing billions of dollars, pipeline and storage contracts, and facility leases.
- These efforts have resulted in bringing large new energy projects to market across North America, the creation of hundreds of millions of dollars in savings through contract renegotiation, and the regulatory approval of a number of highly contested energy contracts.

Strategic Planning and Utility Restructuring

- Acted as a leading participant in the restructuring of the natural gas and electric utility industries over the past fifteen years, as an adviser to local distribution companies, pipelines, electric utilities, and independent energy project developers. In the recent past, provided services to most of the top 50 utilities and energy marketers across North America. Managed projects that frequently included the redevelopment of strategic plans, corporate reorganizations, the development of multi-year regulatory and legislative agendas, merger, acquisition and divestiture strategies, and the development of market entry strategies. Developed and supported merchant function exit strategies, marketing affiliate strategies, and detailed plans for the functional business units of many of North America's leading utilities.



PROFESSIONAL HISTORY

Concentric Energy Advisors, Inc. (2002 – Present)

Chairman and Chief Executive Officer

CE Capital Advisors (2004 – Present)

Chairman, President, and Chief Executive Officer

Navigant Consulting, Inc. (1997 – 2002)

President, Navigant Energy Capital (2000 – 2002)

Executive Director (2000 – 2002)

Co-Chief Executive Officer, Vice Chairman (1999 – 2000)

Executive Managing Director (1998 – 1999)

President, REED Consulting Group, Inc. (1997 – 1998)

REED Consulting Group (1988 – 1997)

Chairman, President and Chief Executive Officer

R.J. Rudden Associates, Inc. (1983 – 1988)

Vice President

Stone & Webster Management Consultants, Inc. (1981 – 1983)

Senior Consultant

Consultant

Southern California Gas Company (1976 – 1981)

Corporate Economist

Financial Analyst

Treasury Analyst

EDUCATION

Wharton School, University of Pennsylvania

B.S., Economics and Finance, 1976

Licensed Securities Professional: NASD Series 7, 63, 24, 79 and 99 Licenses

BOARDS OF DIRECTORS (PAST AND PRESENT)

Concentric Energy Advisors, Inc.

Navigant Consulting, Inc.

Navigant Energy Capital

Nukem, Inc.

New England Gas Association

R. J. Rudden Associates

REED Consulting Group



AFFILIATIONS

American Gas Association
Energy Bar Association
Guild of Gas Managers
International Association of Energy Economists
Northeast Gas Association
Society of Gas Lighters
Society of Utility and Regulatory Financial Analysts

ARTICLES AND PUBLICATIONS

“Maximizing U.S. federal loan guarantees for new nuclear energy,” Bulletin of the Atomic Scientists
(with John C. Slocum), July 29, 2009
“Smart Decoupling – Dealing with unfunded mandates in performance-based ratemaking,” Public
Utilities Fortnightly, May 2012



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Alaska Regulatory Commission				
Chugach Electric	12/86	Chugach Electric	U-86-11	Cost Allocation
Chugach Electric	5/87	Enstar Natural Gas Company	U-87-2	Tariff Design
Chugach Electric	12/87	Enstar Natural Gas Company	U-87-42	Gas Transportation
Chugach Electric	11/87 2/88	Chugach Electric	U-87-35	Cost of Capital
Anchorage Municipal Light & Power	9/17	Anchorage Municipal Light & Power	U-16-094 U-17-008	Project Prudence
Municipality of Anchorage ("MOA") d/b/a Municipal Light and Power	8/19 10/19	Municipality of Anchorage ("MOA") d/b/a Municipal Light and Power	U-18-102 U-19-020 U-19-021	Merger Standard for Approval
Alberta Utilities Commission				
Alberta Utilities (AltaLink, EPCOR, ATCO, ENMAX, FortisAlberta, AltaGas)	1/13	Alberta Utilities	Application 1566373, Proceeding ID 20	Stranded Costs
Arizona Corporation Commission				
Tucson Electric Power	7/12	Tucson Electric Power	E-01933A-12-0291	Cost of Capital
UNS Energy and Fortis Inc.	1/14	UNS Energy, Fortis Inc.	E-04230A-00011 E-01933A-14-0011	Merger
California Energy Commission				
Southern California Gas Co.	8/80	Southern California Gas Co.	80-BR-3	Gas Price Forecasting



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
California Public Utility Commission				
Southern California Gas Co.	3/80	Southern California Gas Co.	TY 1981 G.R.C.	Cost of Service, Inflation
Pacific Gas Transmission Co.	10/91 11/91	Pacific Gas & Electric Co.	App. 89-04-033	Rate Design
Pacific Gas Transmission Co.	7/92	Southern California Gas Co.	A. 92-04-031	Rate Design
San Diego Gas & Electric Company	4/19 8/19	San Diego Gas & Electric Company	A. 19-04-017	Risk Premium, Return on Equity
Colorado Public Utilities Commission				
AMAX Molybdenum	2/90	Commission Rulemaking	89R-702G	Gas Transportation
AMAX Molybdenum	11/90	Commission Rulemaking	90R-508G	Gas Transportation
Xcel Energy	8/04	Xcel Energy	031-134E	Cost of Debt
Public Service Company of Colorado	6/17	Public Service Company of Colorado	17AL-0363G	Return on Equity (Gas)
CT Public Utilities Regulatory Authority				
Connecticut Natural Gas	12/88	Connecticut Natural Gas	88-08-15	Gas Purchasing Practices
United Illuminating	3/99	United Illuminating	99-03-04	Nuclear Plant Valuation
Southern Connecticut Gas	2/04	Southern Connecticut Gas	00-12-08	Gas Purchasing Practices
Southern Connecticut Gas	4/05	Southern Connecticut Gas	05-03-17	LNG/Trunkline
Southern Connecticut Gas	5/06	Southern Connecticut Gas	05-03-17PH01	LNG/Trunkline



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Southern Connecticut Gas	8/08	Southern Connecticut Gas	06-05-04	Peaking Service Agreement
SJW Group and Connecticut Water Service	4/19	SJW Group and Connecticut Water Service	19-04-02	Customer Benefits, Public Interest
District of Columbia PSC				
Potomac Electric Power Company	3/99 5/99 7/99	Potomac Electric Power Company	945	Divestiture of Gen. Assets & Purchase Power Contracts
AltaGas Ltd./WGL Holdings	4/17 8/17 10/17	AltaGas Ltd./WGL Holdings	1142	Merger Standards, Public Interest Standard
Federal Energy Regulatory Commission				
Safe Harbor Water Power Corp.	8/82	Safe Harbor Water Power Corp.	-	Wholesale Electric Rate Increase
Western Gas Interstate Company	5/84	Western Gas Interstate Company	RP84-77	Load Forecast Working Capital
Southern Union Gas	4/87 5/87	El Paso Natural Gas Company	RP87-16-000	Take-or-Pay Costs
Connecticut Natural Gas	11/87	Penn-York Energy Corporation	RP87-78-000	Cost Allocation/Rate Design
AMAX Magnesium	12/88 1/89	Questar Pipeline Company	RP88-93-000	Cost Allocation/Rate Design
Western Gas Interstate Company	6/89	Western Gas Interstate Company	RP89-179-000	Cost Allocation/Rate Design, Open-Access Transportation
Associated CD Customers	12/89	CNG Transmission	RP88-211-000	Cost Allocation/Rate Design



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Utah Industrial Group	9/90	Questar Pipeline Company	RP88-93-000, Phase II	Cost Allocation/Rate Design
Iroquois Gas Trans. System	8/90	Iroquois Gas Transmission System	CP89-634-000/001 CP89-815-000	Gas Markets, Rate Design, Cost of Capital, Capital Structure
Boston Edison Company	1/91	Boston Edison Company	ER91-243-000	Electric Generation Markets
Cincinnati Gas and Electric Co., Union Light, Heat and Power Company, Lawrenceburg Gas Company	7/91	Texas Gas Transmission Corp.	RP90-104-000 RP88-115-000 RP90-192-000	Cost Allocation, Rate Design, Comparability of Service
Ocean State Power II	7/91	Ocean State Power II	ER89-563-000	Competitive Market Analysis, Self-dealing
Brooklyn Union/PSE&G	7/91	Texas Eastern	RP88-67, et al	Market Power, Comparability of Service
Northern Distributor Group	9/92 11/92	Northern Natural Gas Company	RP92-1-000, et al	Cost of Service
Canadian Association of Petroleum Producers and Alberta Pet. Marketing Comm.	10/92 7/97	Lakehead Pipeline Co. L.P.	IS92-27-000	Cost Allocation, Rate Design
Colonial Gas, Providence Gas	7/93 8/93	Algonquin Gas Transmission	RP93-14	Cost Allocation, Rate Design
Iroquois Gas Transmission	94	Iroquois Gas Transmission	RP94-72-000	Cost of Service, Rate Design
Transco Customer Group	1/94	Transcontinental Gas Pipeline Corporation	RP92-137-000	Rate Design, Firm to Wellhead
Pacific Gas Transmission	2/94 3/95	Pacific Gas Transmission	RP94-149-000	Rolled-In vs. Incremental Rates, Rate Design



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Tennessee GSR Group	1/95 3/95 1/96	Tennessee Gas Pipeline Company	RP93-151-000 RP94-39-000 RP94-197-000 RP94-309-000	GSR Costs
PG&E and SoCal Gas	8/96 9/96	El Paso Natural Gas Company	RP92-18-000	Stranded Costs
Iroquois Gas Transmission System, L.P.	97	Iroquois Gas Transmission System, L.P.	RP97-126-000	Cost of Service, Rate Design
BEC Energy - Commonwealth Energy System	2/99	Boston Edison Company/ Commonwealth Energy System	EC99-33-000	Market Power Analysis – Merger
Central Hudson Gas & Electric, Consolidated Co. of New York, Niagara Mohawk Power Corporation, Dynegy Power Inc.	10/00	Central Hudson Gas & Electric, Consolidated Co. of New York, Niagara Mohawk Power Corporation, Dynegy Power Inc.	EC01-7-000	Market Power 203/205 Filing
Wyckoff Gas Storage	12/02	Wyckoff Gas Storage	CP03-33-000	Need for Storage Project
Indicated Shippers/Producers	10/03	Northern Natural Gas	RP98-39-029	Ad Valorem Tax Treatment
Maritimes & Northeast Pipeline	6/04	Maritimes & Northeast Pipeline	RP04-360-000	Rolled-In Rates
ISO New England	8/04 2/05	ISO New England	ER03-563-030	Cost of New Entry
Transwestern Pipeline Company, LLC	9/06	Transwestern Pipeline Company, LLC	RP06-614-000	Business Risk



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Portland Natural Gas Transmission System	6/08	Portland Natural Gas Transmission System	RP08-306-000	Market Assessment, Natural Gas Transportation, Rate Setting
Portland Natural Gas Transmission System	5/10 3/11 4/11	Portland Natural Gas Transmission System	RP10-729-000	Business Risks, Extraordinary and Non-recurring Events Pertaining to Discretionary Revenues
Morris Energy	7/10	Morris Energy	RP10-79-000	Impact of Preferential Rate
Gulf South Pipeline	10/14	Gulf South Pipeline	RP15-65-000	Business Risk, Rate Design
BNP Paribas Energy Trading, GP South Jersey Resource Group, LLC	2/15	Transcontinental Gas Pipeline Corporation	RP06-569-008 RP07-376-005	Regulatory Policy, Incremental Rates, Stacked Rate
Tallgrass Interstate Gas Transmission, LLC	10/15 12/15	Tallgrass Interstate Gas Transmission, LLC	RP16-137-000	Market Assessment, Rate Design, Rolled-in Rate Treatment
Tennessee Valley Authority	2/21	Athens Utility Board, Gibson Electric Membership Corp., Joe Wheeler Electric Membership Corp., and Volunteer Energy Cooperative v. Tennessee Valley Authority	EL21-40-000 TX21-01-000	Public Policy, Competition, Economic Harm



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Florida Impact Estimating Conference				
Florida Power and Light Co. on behalf of the Florida Investor-Owned Utilities	2/19 3/19	Florida Power and Light Co. on behalf of the Florida Investor-Owned Utilities	Right to Competitive Energy Market for Customers of Investor-Owned Utilities; Allowing Energy Choice	Economic and Financial Impact of Deregulation on Customers and Market Design and Function
Florida Public Service Commission				
Florida Power and Light Co.	10/07	Florida Power & Light Co.	070650-EI	Need for New Nuclear Plant
Florida Power and Light Co.	5/08	Florida Power & Light Co.	080009-EI	New Nuclear Cost Recovery, Prudence
Florida Power and Light Co.	3/09 8/09	Florida Power & Light Co.	080677-EI	Benchmarking in Support of ROE
Florida Power and Light Co.	3/09 5/09 8/09	Florida Power & Light Co.	090009-EI	New Nuclear Cost Recovery, Prudence
Florida Power and Light Co.	3/10 5/10 8/10	Florida Power & Light Co.	100009-EI	New Nuclear Cost Recovery, Prudence
Florida Power and Light Co.	3/11 7/11	Florida Power & Light Co.	110009-EI	New Nuclear Cost Recovery, Prudence
Florida Power and Light Co.	3/12 7/12	Florida Power & Light Co.	120009-EI	New Nuclear Cost Recovery, Prudence
Florida Power and Light Co.	3/12 8/12	Florida Power & Light Co.	120015-EI	Benchmarking in Support of ROE
Florida Power and Light Co.	3/13 7/13	Florida Power & Light Co.	130009	New Nuclear Cost Recovery, Prudence



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Florida Power and Light Co.	3/14	Florida Power & Light Co.	140009	New Nuclear Cost Recovery, Prudence
Florida Power and Light Co.	3/15 7/15	Florida Power & Light Co.	150009	New Nuclear Cost Recovery, Prudence
Florida Power and Light Co.	10/15	Florida Power and Light Co.	150001	Recovery of Replacement Power Costs
Florida Power and Light Co.	3/16	Florida Power & Light Co.	160021-EI	Benchmarking in Support of ROE
Florida Senate Committee on Communication, Energy and Utilities				
Florida Power and Light Co.	2/09	Florida Power & Light Co.	-	Securitization
Hawai'i Public Utility Commission				
Hawaiian Electric Light Company, Inc.	6/00	Hawaiian Electric Light Company, Inc.	99-0207	Standby Charge
NextEra Energy, Inc. Hawaiian Electric Companies	4/15 8/15 10/15	Hawaiian Electric Company, Inc.; Hawaii Electric Light Company, Inc., Maui Electric Company, Ltd., NextEra Energy, Inc.	2015-0022	Merger Application
Idaho Public Utilities Commission				
Hydro One Limited and Avista Corporation	9/18 11/18	Hydro One Limited and Avista Corporation	AVU-E-17-09 AVU-G-17-05	Governance, Financial Integrity and Ring-fencing Merger Commitments



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Illinois Commerce Commission				
Renewables Suppliers (Algonquin Power Co., EDP Renewables North America, Invenergy, NextEra Energy Resources)	3/14	Renewables Suppliers	13-0546	Application for Rehearing and Reconsideration, Long-term Purchase Power Agreements
WE Energies Corporation	8/14 12/14 2/15	WE Energies/Integrays	14-0496	Merger Application
Indiana Utility Regulatory Commission				
Northern Indiana Public Service Company	10/01	Northern Indiana Public Service Company	41746	Valuation of Electric Generating Facilities
Northern Indiana Public Service Company	1/08 3/08	Northern Indiana Public Service Company	43396	Asset Valuation
Northern Indiana Public Service Company	8/08	Northern Indiana Public Service Company	43526	Fair Market Value Assessment
Indianapolis Power & Light Company	12/14	Indianapolis Power & Light Company	44576	Asset Valuation
Indianapolis Power & Light Company	12/16	Indianapolis Power & Light Company	44893	Rate Recovery for New Plant Additions, Valuation of Electric Generating Facilities
Iowa Utilities Board				
Interstate Power and Light	7/05	Interstate Power and Light and FPL Energy Duane Arnold, LLC	SPU-05-15	Sale of Nuclear Plant
Interstate Power and Light	5/07	City of Everly, Iowa	SPU-06-5	Municipalization



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Interstate Power and Light	5/07	City of Kalona, Iowa	SPU-06-6	Municipalization
Interstate Power and Light	5/07	City of Wellman, Iowa	SPU-06-10	Municipalization
Interstate Power and Light	5/07	City of Terril, Iowa	SPU-06-8	Municipalization
Interstate Power and Light	5/07	City of Rolfe, Iowa	SPU-06-7	Municipalization
Kansas Corporation Commission				
Great Plains Energy Kansas City Power and Light Company	1/17	Great Plains Energy, Kansas City Power & Light Company, and Westar Energy	16-KCPE-593-ACQ	Merger Standards, Acquisition Premium, Ring-Fencing, Public Interest Standard
Great Plains Energy Kansas City Power and Light Company	8/17 2/18	Great Plains Energy, Kansas City Power & Light Company, and Westar Energy	18-KCPE-095-MER	Merger Standards, Transaction Value, Merger Benefits, Ring-Fencing,
Maine Public Utility Commission				
Northern Utilities	5/96	Granite State and PNGTS	95-480 95-481	Transportation Service and PBR
Maine Water Company	7/19 8/19	Maine Water Company	2019-00096	Merger Standards, Net Benefits to Customers, Ring-fencing
Maryland Public Service Commission				
Eastalco Aluminum	3/82	Potomac Edison	7604	Cost Allocation
Potomac Electric Power Company	8/99	Potomac Electric Power Company	8796	Stranded Cost & Price Protection



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
AltaGas Ltd./WGL Holdings	4/17 9/17 1/18 2/18	AltaGas Ltd./WGL Holdings	9449	Merger Standards, Public Interest Standard
Washington Gas Light Company	8/20	Washington Gas Light Company	9622	Regulatory Policy
Mass. Department of Public Utilities				
Haverhill Gas	5/82	Haverhill Gas	DPU #1115	Cost of Capital
New England Energy Group	1/87	Commission Investigation	-	Gas Transportation Rates
Energy Consortium of Mass.	9/87	Commonwealth Gas Company	DPU-87-122	Cost Allocation, Rate Design
Mass. Institute of Technology	12/88	Middleton Municipal Light	DPU #88-91	Cost Allocation, Rate Design
Energy Consortium of Mass.	3/89	Boston Gas	DPU #88-67	Rate Design
PG&E Bechtel Generating Co./ Constellation Holdings	10/91	Commission Investigation	DPU #91-131	Valuation of Environmental Externalities
Coalition of Non-Utility Generators		Cambridge Electric Light Co. & Commonwealth Electric Co.	DPU 91-234 EFSC 91-4	Integrated Resource Management
The Berkshire Gas Company Essex County Gas Company Fitchburg Gas and Elec. Light Co.	5/92	The Berkshire Gas Company Essex County Gas Company Fitchburg Gas & Elec. Light Co.	DPU #92-154	Gas Purchase Contract Approval



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Boston Edison Company	7/92	Boston Edison	DPU #92-130	Least Cost Planning
Boston Edison Company	7/92	The Williams/Newcorp Generating Co.	DPU #92-146	RFP Evaluation
Boston Edison Company	7/92	West Lynn Cogeneration	DPU #92-142	RFP Evaluation
Boston Edison Company	7/92	L'Energia Corp.	DPU #92-167	RFP Evaluation
Boston Edison Company	7/92	DLS Energy, Inc.	DPU #92-153	RFP Evaluation
Boston Edison Company	7/92	CMS Generation Co.	DPU #92-166	RFP Evaluation
Boston Edison Company	7/92	Concord Energy	DPU #92-144	RFP Evaluation
The Berkshire Gas Company Colonial Gas Company Essex County Gas Company Fitchburg Gas and Electric Company	11/93	The Berkshire Gas Company Colonial Gas Company Essex County Gas Company Fitchburg Gas and Electric Co.	DPU #93-187	Gas Purchase Contract Approval
Bay State Gas Company	10/93	Bay State Gas Company	93-129	Integrated Resource Planning
Boston Edison Company	94	Boston Edison	DPU #94-49	Surplus Capacity
Hudson Light & Power Department	4/95	Hudson Light & Power Dept.	DPU #94-176	Stranded Costs
Essex County Gas Company	5/96	Essex County Gas Company	96-70	Unbundled Rates



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Boston Edison Company	8/97	Boston Edison Company	97-63	Holding Company Corporate Structure
Berkshire Gas Company	6/98	Berkshire Gas Mergeco Gas Co.	D.T.E. 98-87	Merger Approval
Eastern Edison Company	8/98	Montaup Electric Company	D.T.E. 98-83	Marketing for Divestiture of its Generation Business
Boston Edison Company	98	Boston Edison Company	D.T.E. 97-113	Fossil Generation Divestiture
Boston Edison Company	2/99	Boston Edison Company	D.T.E. 98-119	Nuclear Generation Divestiture
Eastern Edison Company	12/98	Montaup Electric Company	D.T.E. 99-9	Sale of Nuclear Plant
NStar	9/07 12/07	NStar, Bay State Gas, Fitchburg G&E, NE Gas, W. MA Electric	DPU 07-50	Decoupling, Risk
NStar	6/11	NStar, Northeast Utilities	DPU 10-170	Merger Approval
Town of Milford	1/19 3/19 5/19	Milford Water Company	DPU 18-60	Valuation Analysis
Mass. Energy Facilities Siting Council				
Mass. Institute of Technology	1/89	M.M.W.E.C.	EFSC-88-1	Least-Cost Planning
Boston Edison Company	9/90	Boston Edison	EFSC-90-12	Electric Generation Markets
Silver City Energy Ltd. Partnership	11/91	Silver City Energy	D.P.U. 91-100	State Policies, Need for Facility
Michigan Public Service Commission				
Detroit Edison Company	9/98	Detroit Edison Company	U-11726	Market Value of Generation Assets



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Consumers Energy Company	8/06 1/07	Consumers Energy Company	U-14992	Sale of Nuclear Plant
WE Energies	12/11	Wisconsin Electric Power Co	U-16830	Economic Benefits, Prudence
Consumer Energy Company	7/13	Consumers Energy Company	U-17429	Certificate of Need, Integrated Resource Plan
WE Energies	8/14 3/15	WE Energies/Integrus	U-17682	Merger Application
Minnesota Public Utilities Commission				
Xcel Energy/No. States Power	9/04	Xcel Energy/No. States Power	G002/GR-04-1511	NRG Impacts
Interstate Power and Light	8/05	Interstate Power and Light and FPL Energy Duane Arnold, LLC	E001/PA-05-1272	Sale of Nuclear Plant
Northern States Power Company d/b/a Xcel Energy	11/05	Northern States Power Company	E002/GR-05-1428	NRG Impacts on Debt Costs
Northern States Power Company d/b/a Xcel Energy	09/06 10/06 11/06	NSP v. Excelsior	E6472/M-05-1993	PPA, Financial Impacts
Northern States Power Company d/b/a Xcel Energy	11/06	Northern States Power Company	G002/GR-06-1429	Return on Equity
Northern States Power	11/08 05/09	Northern States Power Company	E002/GR-08-1065	Return on Equity
Northern States Power	11/09 6/10	Northern States Power Company	G002/GR-09-1153	Return on Equity
Northern States Power	11/10 5/11	Northern States Power Company	E002/GR-10-971	Return on Equity



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Northern States Power Company	1/16	Northern States Power Company	E002/GR-15-826	Industry Perspective
Northern States Power Company	11/19	Northern States Power Company	E002/GR-19-564	Return on Equity
Missouri House Committee on Energy and the Environment				
Ameren Missouri	3/16	Ameren Missouri	HB 2816	Performance Based Ratemaking
Missouri Public Service Commission				
Missouri Gas Energy	1/03 04/03	Missouri Gas Energy	GR-2001-382	Gas Purchasing Practices, Prudence
Aquila Networks	2/04	Aquila-MPS, Aquila L&P	ER-2004-0034 HR-2004-0024	Cost of Capital, Capital Structure
Aquila Networks	2/04	Aquila-MPS, Aquila L&P	GR-2004-0072	Cost of Capital, Capital Structure
Missouri Gas Energy	11/05 2/06 7/06	Missouri Gas Energy	GR-2002-348 GR-2003-0330	Capacity Planning
Missouri Gas Energy	11/10 1/11	KCP&L	ER-2010-0355	Natural Gas DSM
Missouri Gas Energy	11/10 1/11	KCP&L GMO	ER-2010-0356	Natural Gas DSM
Laclede Gas Company	5/11	Laclede Gas Company	CG-2011-0098	Affiliate Pricing Standards
Union Electric Company d/b/a Ameren Missouri	2/12 8/12	Union Electric Company	ER-2012-0166	Return on Equity, Earnings Attrition, Regulatory Lag
Union Electric Company d/b/a Ameren Missouri	6/14	Noranda Aluminum Inc.	EC-2014-0223	Ratemaking, Regulatory and Economic Policy



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Union Electric Company d/b/a Ameren Missouri	1/15 2/15	Union Electric Company	ER-2014-0258	Revenue Requirements, Ratemaking Policies
Great Plains Energy Kansas City Power and Light Company	8/17 2/18 3/18	Great Plains Energy, Kansas City Power & Light Company, and Westar Energy	EM-2018-0012	Merger Standards, Transaction Value, Merger Benefits, Ring-Fencing,
Union Electric Company d/b/a Ameren Missouri	6/19	Union Electric Company d/b/a Ameren Missouri	EO-2017-0176	Affiliate Transactions, Cost Allocation Manual
Union Electric Company d/b/a Ameren Missouri	7/19 1/20 2/20	Union Electric Company d/b/a Ameren Missouri	ER-2019-0335	Reasonableness of Affiliate Services and Costs
Missouri Senate Committee on Commerce, Consumer Protection, Energy and the Environment				
Ameren Missouri	3/16	Ameren Missouri	SB 1028	Performance Based Ratemaking
Montana Public Service Commission				
Great Falls Gas Company	10/82	Great Falls Gas Company	82-4-25	Gas Rate Adjustment Clause
National Energy Board (now the Canada Energy Regulator)				
Alberta-Northeast	2/87	Alberta Northeast Gas Export Project	GH-1-87	Gas Export Markets
Alberta-Northeast	11/87	TransCanada Pipeline	GH-2-87	Gas Export Markets
Alberta-Northeast	1/90	TransCanada Pipeline	GH-5-89	Gas Export Markets
Independent Petroleum Association of Canada	1/92	Interprovincial Pipeline, Inc.	RH-2-91	Pipeline Valuation, Toll
The Canadian Association of Petroleum Producers	11/93	Transmountain Pipeline	RH-1-93	Cost of Capital



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Alliance Pipeline L.P.	6/97	Alliance Pipeline L.P.	GH-3-97	Market Study
Maritimes & Northeast Pipeline	97	Sable Offshore Energy Project	GH-6-96	Market Study
Maritimes & Northeast Pipeline	2/02	Maritimes & Northeast Pipeline	GH-3-2002	Natural Gas Demand Analysis
TransCanada Pipelines	8/04	TransCanada Pipelines	RH-3-2004	Toll Design
Brunswick Pipeline	5/06	Brunswick Pipeline	GH-1-2006	Market Study
TransCanada Pipelines Ltd.	12/06 4/07	TransCanada Pipelines Ltd.: Gros Cacouna Receipt Point Application	RH-1-2007	Toll Design
Repsol Energy Canada Ltd	3/08	Repsol Energy Canada Ltd	GH-1-2008	Market Study
Maritimes & Northeast Pipeline	7/10	Maritimes & Northeast Pipeline	RH-4-2010	Regulatory Policy, Toll Development
TransCanada Pipelines Ltd	9/11 5/12	TransCanada Pipelines Ltd.	RH-3-2011	Business Services and Tolls Application
Trans Mountain Pipeline LLC	6/12 1/13	Trans Mountain Pipeline LLC	RH-1-2012	Toll Design
TransCanada Pipelines Ltd	8/13	TransCanada Pipelines Ltd	RE-001-2013	Toll Design
NOVA Gas Transmission Ltd	11/13	NOVA Gas Transmission Ltd	OF-Fac-Gas-N081-2013-1001	Toll Design
Trans Mountain Pipeline LLC	12/13	Trans Mountain Pipeline LLC	OF-Fac-Oil-T260-2013-0301	Economic and Financial Feasibility, Project Benefits



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Energy East Pipeline Ltd.	10/14	Energy East Pipeline	Of-Fac-Oil-E266-2014-01 02	Economic and Financial Feasibility, Project Benefits
NOVA Gas Transmission Ltd	5/16	NOVA Gas Transmission Ltd	GH-003-2015	Certificate of Public Convenience and Necessity
TransCanada PipeLines Limited	4/17 9/17	TransCanada PipeLines Limited	Dawn LTFP Service Application	Public Interest, Toll Design
NOVA Gas Transmission Ltd	10/17	NOVA Gas Transmission Ltd	MH-031-2017	Toll Design
NOVA Gas Transmission Ltd	3/19 11/19	NOVA Gas Transmission Ltd	RH-001-2019	Tolling Changes
Enbridge Pipelines Inc.	12/19 6/20 8/20	Enbridge Pipelines Inc.	C03823 RH-001-2020	Market and Scarcity Conditions; Reasonableness of Tolls, Terms, and Conditions; Public Interest; Open Season Process
New Brunswick Energy and Utilities Board				
Atlantic Wallboard/JD Irving Co	1/08	Enbridge Gas New Brunswick	MCTN #298600	Rate Setting for EGNB
Atlantic Wallboard/Flakeboard	9/09 6/10 7/10	Enbridge Gas New Brunswick	NBEUB 2009-017	Rate Setting for EGNB
Atlantic Wallboard/Flakeboard	1/14	Enbridge Gas New Brunswick	NBEUB Matter 225	Rate Setting for EGNB
NH Public Utilities Commission				
Bus & Industry Association	6/89	P.S. Co. of New Hampshire	DR89-091	Fuel Costs
Bus & Industry Association	5/90	Northeast Utilities	DR89-244	Merger & Acquisition Issues
Eastern Utilities Associates	6/90	Eastern Utilities Associates	DF89-085	Merger & Acquisition Issues



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
EnergyNorth Natural Gas	12/90	EnergyNorth Natural Gas	DE90-166	Gas Purchasing Practices
EnergyNorth Natural Gas	7/90	EnergyNorth Natural Gas	DR90-187	Special Contracts, Discounted Rates
Northern Utilities, Inc.	12/91	Commission Investigation	DR91-172	Generic Discounted Rates
Public Service Co. of New Hampshire	7/14	Public Service Co. of NH	DE 11-250	Prudence
Public Service Co. of New Hampshire	7/15 11/15	Public Service Co. of NH	14-238	Restructuring and Rate Stabilization
New Jersey Board of Public Utilities				
Hilton/Golden Nugget	12/83	Atlantic Electric	BPU 832-154	Line Extension Policies
Golden Nugget	3/87	Atlantic Electric	BPU 837-658	Line Extension Policies
New Jersey Natural Gas	2/89	New Jersey Natural Gas	BPU GR89030335J	Cost Allocation, Rate Design
New Jersey Natural Gas	1/91	New Jersey Natural Gas	BPU GR90080786J	Cost Allocation, Rate Design
New Jersey Natural Gas	8/91	New Jersey Natural Gas	BPU GR91081393J	Rate Design, Weather Normalization Clause
New Jersey Natural Gas	4/93	New Jersey Natural Gas	BPU GR93040114J	Cost Allocation, Rate Design
South Jersey Gas	4/94	South Jersey Gas	BRC Dock No. GR080334	Revised Levelized Gas Adjustment
New Jersey Utilities Association	9/96	Commission Investigation	BPU AX96070530	PBOP Cost Recovery
Morris Energy Group	11/09	Public Service Electric & Gas	BPU GR 09050422	Discriminatory Rates



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
New Jersey American Water Co.	4/10	New Jersey American Water Co.	BPU WR 1040260	Tariff Rates and Revisions
Electric Customer Group	1/11	Generic Stakeholder Proceeding	BPU GR10100761 ER10100762	Natural Gas Ratemaking Standards and pricing
New Mexico Public Service Commission				
Gas Company of New Mexico	11/83	Public Service Co. of New Mexico	1835	Cost Allocation, Rate Design
Southwestern Public Service Co., New Mexico	12/12	SPS New Mexico	12-00350-UT	Rate Case, Return on Equity
PNM Resources	12/13 10/14 12/14	Public Service Co. of New Mexico	13-00390-UT	Nuclear Valuation, In Support of Stipulation
New York State Public Service Commission				
Iroquois Gas Transmission	12/86	Iroquois Gas Transmission System	70363	Gas Markets
Brooklyn Union Gas Company	8/95	Brooklyn Union Gas Company	95-6-0761	Panel on Industry Directions
Central Hudson, ConEdison and Niagara Mohawk	9/00	Central Hudson, ConEdison and Niagara Mohawk	96-E-0909 96-E-0897 94-E-0098 94-E-0099	Section 70, Approval of New Facilities
Central Hudson, New York State Electric & Gas, Rochester Gas & Electric	5/01	Joint Petition of NiMo, NYSEG, RG&E, Central Hudson, Constellation and Nine Mile Point	01-E-0011	Section 70, Rebuttal Testimony



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Rochester Gas & Electric	12/03	Rochester Gas & Electric	03-E-1231	Sale of Nuclear Plant
Rochester Gas & Electric	1/04	Rochester Gas & Electric	03-E-0765 02-E-0198 03-E-0766	Sale of Nuclear Plant; Ratemaking Treatment of Sale
Rochester Gas and Electric and NY State Electric & Gas Corp	2/10	Rochester Gas & Electric NY State Electric & Gas Corp	09-E-0715 09-E-0716 09-E-0717 09-E-0718	Depreciation Policy
National Fuel Gas Corporation	9/16 9/16	National Fuel Gas Corporation	16-G-0257	Ring-fencing Policy
NextEra Energy Transmission New York	8/18	NextEra Energy Transmission New York	18-T-0499	Certificate of Need for Transmission Line, Vertical Market Power
NextEra Energy Transmission New York	2/19 8/19	NextEra Energy Transmission New York	18-E-0765	Certificate of Need for Transmission Line, Vertical Market Power
Nova Scotia Utility and Review Board				
Nova Scotia Power	9/12	Nova Scotia Power	P-893	Audit Reply
Nova Scotia Power	8/14	Nova Scotia Power	P-887	Audit Reply
Nova Scotia Power	5/16	Nova Scotia Power	2017-2019 Fuel Stability Plan	Used and Useful Ratemaking
NSP Maritime Link ("NSPML")	12/16 2/17 5/17	NSP Maritime Link ("NSPML")	M07718 NSPML Interim Cost Assessment Application	Used and Useful Ratemaking
NSP Maritime Link ("NSPML")	10/19	NSP Maritime Link ("NSPML")	M09277 NSPML 2020 Interim Assessment Application	Recovery of Depreciation and Return, Costs and Customer Benefits, Debt Service Coverage Ratio



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Nova Scotia Power	2/21	Nova Scotia Power	M10013 Annapolis Tidal Generation Station Retirement: Request for Accounting Treatment and Net Book Value Recovery	Generation Plant Cost Recovery
Oklahoma Corporation Commission				
Oklahoma Natural Gas Company	6/98	Oklahoma Natural Gas Company	PUD 980000177	Storage Issues
Oklahoma Gas & Electric Company	5/05 9/05	Oklahoma Gas & Electric Company	PUD 200500151	Prudence of McLain Acquisition
Oklahoma Gas & Electric Company	3/08	Oklahoma Gas & Electric Company	PUD 200800086	Acquisition of Redbud Generating Facility
Oklahoma Gas & Electric Company	8/14 1/15	Oklahoma Gas & Electric Company	PUD 201400229	Integrated Resource Plan
Ontario Energy Board				
Market Hub Partners Canada, L.P.	5/06	Natural Gas Electric Interface Roundtable	File No. EB-2005-0551	Market-based Rates for Storage
Ontario Power Generation	9/13 2/14 5/14	Ontario Power Generation	EB-2013-0321	Prudence Review of Nuclear Project Management Processes
Oregon Public Utilities Commission				
Hydro One Limited and Avista Corporation	8/18 10/18	Hydro One Limited and Avista Corporation	UM 1897	Reasonableness and Sufficiency of the Governance, Bankruptcy, and Financial Ring-Fencing Stipulated Settlement Commitments



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Pennsylvania Public Utility Commission				
ATOC	4/95	Equitrans	R-00943272	Rate Design, Unbundling
ATOC	3/96 4/96	Equitrans	P-00940886	Rate Design, Unbundling
Rhode Island Public Utilities Commission				
Newport Electric	7/81	Newport Electric	1599	Rate Attrition
South County Gas	9/82	South County Gas	1671	Cost of Capital
New England Energy Group	7/86	Providence Gas Company	1844	Cost Allocation, Rate Design
Providence Gas	8/88	Providence Gas Company	1914	Load Forecast, Least-Cost Planning
Providence Gas Company and The Valley Gas Company	1/01 3/02	Providence Gas Company and The Valley Gas Company	1673 1736	Gas Cost Mitigation Strategy
The New England Gas Company	3/03	New England Gas Company	3459	Cost of Capital
Texas Public Utility Commission				
Southwestern Electric	5/83	Southwestern Electric	-	Cost of Capital, CWIP
P.U.C. General Counsel	11/90	Texas Utilities Electric Company	9300	Gas Purchasing Practices, Prudence
Oncor Electric Delivery Company	8/07	Oncor Electric Delivery Company	34040	Regulatory Policy, Rate of Return, Return of Capital and Consolidated Tax Adjustment
Oncor Electric Delivery Company	6/08	Oncor Electric Delivery Company	35717	Regulatory policy
Oncor Electric Delivery Company	10/08 11/08	Oncor, TCC, TNC, ETT, LCRA TSC, Sharyland, STEC, TNMP	35665	Competitive Renewable Energy Zone



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
CenterPoint Energy	6/10 10/10	CenterPoint Energy/Houston Electric	38339	Regulatory Policy, Risk, Consolidated Taxes
Oncor Electric Delivery Company	1/11	Oncor Electric Delivery Company	38929	Regulatory Policy, Risk
Cross Texas Transmission	8/12 11/12	Cross Texas Transmission	40604	Return on Equity
Southwestern Public Service	11/12	Southwestern Public Service	40824	Return on Equity
Lone Star Transmission	5/14	Lone Star Transmission	42469	Return on Equity, Debt, Cost of Capital
CenterPoint Energy Houston Electric, LLC	6/15	CenterPoint Energy Houston Electric, LLC	44572	Distribution Cost Recovery Factor
NextEra Energy, Inc.	10/16 2/17	Oncor Electric Delivery Company LLC, NextEra Energy	46238	Merger Application, Ring-fencing, Affiliate Interest, Code of Conduct
CenterPoint Energy Houston Electric, LLC	4/19 6/19	CenterPoint Energy Houston Electric, LLC	49421	Incentive Compensation
Sun Jupiter Holdings LLC ad IIF US Holding 2 LP	11/19	Sun Jupiter Holdings LLC and IIF US Holding 2 LP Acquisition of El Paso Electric Company	49849	Public Interest Standard, Ring-fencing, Regulatory Commitments, Rate Credit and Economic Considerations, Ownership and Governance Post-closing, Tax Matters
Texas-New Mexico Power Company and Avangrid, Inc. and NM Green Holdings, Inc.	3/21	Texas-New Mexico Power Company and Avangrid, Inc. and NM Green Holdings, Inc.	51547	Merger Approval Conditions



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Texas Railroad Commission				
Western Gas Interstate Company	1/85	Southern Union Gas Company	5238	Cost of Service
Atmos Pipeline Texas	9/10 1/11	Atmos Pipeline Texas	GUD 10000	Ratemaking Policy, Risk
Atmos Pipeline Texas	1/17 4/17	Atmos Pipeline Texas	GUD 10580	Ratemaking Policy, Return on Equity, Rate Design Policy
Texas State Legislature				
CenterPoint Energy	4/13	Association of Electric Companies of Texas	SB 1364	Consolidated Tax Adjustment Clause Legislation
Utah Public Service Commission				
AMAX Magnesium	1/88	Mountain Fuel Supply Company	86-057-07	Cost Allocation, Rate Design
AMAX Magnesium	4/88	Utah P&L/Pacific P&L	87-035-27	Merger & Acquisition
Utah Industrial Group	7/90 8/90	Mountain Fuel Supply	89-057-15	Gas Transportation Rates
AMAX Magnesium	9/90	Utah Power & Light	89-035-06	Energy Balancing Account
AMAX Magnesium	8/90	Utah Power & Light	90-035-06	Electric Service Priorities
Questar Gas Company	12/07	Questar Gas Company	07-057-13	Benchmarking in Support of ROE
Vermont Public Service Board				
Green Mountain Power	8/82	Green Mountain Power	4570	Rate Attrition
Green Mountain Power	12/97	Green Mountain Power	5983	Cost of Service
Green Mountain Power	7/98 9/00	Green Mountain Power	6107	Rate Development



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Washington Utilities and Transportation Commission				
Hydro One Limited and Avista Corporation	9/18	Hydro One Limited and Avista Corporation	U-170970	Reasonableness and Sufficiency of the Governance, Bankruptcy, and Financial Ring-Fencing Stipulated Settlement Commitments
Wisconsin Public Service Commission				
WEC & WICOR	11/99	WEC	9401-YO-100 9402-YO-101	Approval to Acquire the Stock of WICOR
Wisconsin Electric Power Company	1/07	Wisconsin Electric Power Co.	6630-EI-113	Sale of Nuclear Plant
Wisconsin Electric Power Company	10/09	Wisconsin Electric Power Co.	6630-CE-302	CPCN Application for Wind Project
Northern States Power Wisconsin	10/13	Xcel Energy (dba Northern States Power Wisconsin)	4220-UR-119	Fuel Cost Adjustments
Wisconsin Electric Power Company	11/13	Wisconsin Electric Power Co.	6630-FR-104	Fuel Cost Adjustment
Wisconsin Gas LLC	5/14	Wisconsin Gas LLC	6650-CG-233	Gas Line Expansion, Reasonableness
WE Energy	8/14 1/15 3/15	WE Energy/Integrus	9400-YO-100	Merger Approval
Wisconsin Public Service Corporation	1/19	Madison Gas and Electric Company and Wisconsin Public Service Corporation	5-BS-228	Evaluation of Models Used in Resource Investment Decisions



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
American Arbitration Association				
Michael Polsky	3/91	M. Polsky vs. Indeck Energy	-	Corporate Valuation, Damages
ProGas Limited	7/92	ProGas Limited v. Texas Eastern	-	Gas Contract Arbitration
Attala Generating Company	12/03	Attala Generating Co v. Attala Energy Co.	16-Y-198-00228-03	Power Project Valuation, Breach of Contract, Damages
Nevada Power Company	4/08	Nevada Power v. Nevada Cogeneration Assoc. #2	-	Power Purchase Agreement
Sensata Technologies, Inc./EMS Engineered Materials Solutions, LLC	1/11	Sensata Technologies, Inc./EMS Engineered Materials Solutions, LLC v. Pepco Energy Services	11-198-Y-00848-10	Change in Usage Dispute, Damages
Sandy Creek Energy Associates, L.P.	9/17	Sandy Creek Energy Associates, L.P. vs. Lower Colorado River Authority	01-16-0002-6892	Power Purchase Agreement, Analysis of Damages
Dynegy Midwest Generation, LLC	1/21 2/21	BNSF Railway Company and Norfolk Southern Railway Company v. Dynegy Midwest Generation, LLC	01-18-0001-3283	Electric Generation Asset Management
Canadian Arbitration Panel				
Hydro-Québec	4/15 5/16 7/16	Hydro-Fraser et al v. Hydro-Québec	-	Electric Price Arbitration
Commonwealth of Massachusetts, Appellate Tax Board				
NStar Electric Company	8/14	NStar Electric Company	F316346 F319254	Valuation Methodology



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Western Massachusetts Electric Company	2/16	Western Massachusetts Electric Company v. Board of Assessors of The City of Springfield	315550 319349	Valuation Methodology
Commonwealth of Massachusetts, Suffolk Superior Court				
John Hancock	1/84	Trinity Church v. John Hancock	C.A. No. 4452	Damages Quantification
Court of Common Pleas of Philadelphia County, Civil Division				
Sunoco Marketing & Terminals L.P.	11/16	Sunoco Marketing & Terminals, L.P. v. South Jersey Resources Group	150302520	Damages Quantification
State of Colorado District Court, County of Garfield				
Questar Corporation, et al	11/00	Questar Corporation, et al.	00CV129-A	Partnership Fiduciary Duties
State of Delaware, Court of Chancery, New Castle County				
Wilmington Trust Company	11/05	Calpine Corporation vs. Bank of New York and Wilmington Trust Company	C.A. No. 1669-N	Bond Indenture Covenants
Illinois Appellate Court, Fifth Division				
Norweb, PLC	8/02	Indeck No. America v. Norweb	97 CH 07291	Breach of Contract, Power Plant Valuation
Independent Arbitration Panel				
Alberta Northeast Gas Limited	2/98	ProGas Ltd., Canadian Forest Oil Ltd., AEC Oil & Gas	-	
Ocean State Power	9/02	Ocean State Power vs. ProGas Ltd.	2001/2002 Arbitration	Gas Price Arbitration
Ocean State Power	2/03	Ocean State Power vs. ProGas Ltd.	2002/2003 Arbitration	Gas Price Arbitration



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Ocean State Power	6/04	Ocean State Power vs. ProGas Ltd.	2003/2004 Arbitration	Gas Price Arbitration
Shell Canada Limited	7/05	Shell Canada Limited and Nova Scotia Power Inc.	-	Gas Contract Price Arbitration
International Court of Arbitration				
Wisconsin Gas Company, Inc.	2/97	Wisconsin Gas Co. vs. Pan-Alberta	9322/CK	Contract Arbitration
Minnegasco, A Division of NorAm Energy Corp.	3/97	Minnegasco vs. Pan-Alberta	9357/CK	Contract Arbitration
Utilicorp United Inc.	4/97	Utilicorp vs. Pan-Alberta	9373/CK	Contract Arbitration
IES Utilities	97	IES vs. Pan-Alberta	9374/CK	Contract Arbitration
Mitsubishi Heavy Industries, Ltd., and Mitsubishi Nuclear Energy Systems, Inc.	12/15 2/16	Southern California Edison Company, Edison Material Supply LLC, San Diego Gas & Electric Co., and the City of Riverside vs. Mitsubishi Heavy Industries, Ltd., and Mitsubishi Nuclear Energy Systems, Inc.	19784/AGF/RD	Damages Arising Under a Nuclear Power Equipment Contract
International Chamber of Commerce				
Senvion GmbH	4/17	Senvion GmbH v. EDF Renewable Energy, Inc.	01-15-0005-4590	Breach-Related Damages, Unfair Competition, Unjust Enrichment
Senvion GmbH	9/17	Senvion GmbH v. EEN CA Lac Alfred Limited Partnership, et al.	21535	Breach-Related Damages



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Senvion GmbH	12/17	Senvion GmbH v. EEN CA Massif du Sud Limited Partnership, et al.	21536	Breach-Related Damages
EDF Inc.	3/21	Exelon Generating Company, LLC v. EDF Inc.	25479/MK	Valuation of Nuclear Power Plants
State of New Jersey, Mercer County Superior Court				
Transamerica Corp., et al.	7/07 10/07	IMO Industries Inc. vs. Transamerica Corp., et al.	L-2140-03	Breach-Related Damages, Enterprise Value
State of New York, Nassau County Supreme Court				
Steel Los III, LP	6/08	Steel Los II, LP & Associated Brook, Corp v. Power Authority of State of NY	Index No. 5662/05	Property Seizure
Province of Alberta, Court of Queen's Bench				
Alberta Northeast Gas Limited	5/07	Cargill Gas Marketing Ltd. vs. Alberta Northeast Gas Limited	Action No. 0501-03291	Gas Contracting Practices
Quebec Superior Court, District of Gaspé				
Senvion Canada and Senvion GmbH	2/19	Senvion Canada and Senvion GmbH v. Suspendem Rope Access	-	Breach-Related Damages, Reimbursement of Liquidated Damages, Reimbursement of Scheduled Maintenance Penalties
State of New Hampshire, Board of Tax and Land Appeals				
Public Service Company of New Hampshire d/b/a Eversource Energy	11/18	Appeal of Public Service Company of New Hampshire d/b/a Eversource Energy	28873-14-15-16-17PT	Valuation of Transmission and Distribution Assets



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
State of New Hampshire, Judicial Court-Rockingham Superior Court				
Public Service Company of New Hampshire d/b/a Eversource Energy	10/18	Public Service Company of New Hampshire d/b/a Eversource Energy v. City of Portsmouth	218-2016-CV-00899 218-2017-CV-00917	Valuation of Transmission and Distribution Assets
State of New Hampshire, Superior Court-Merrimack County				
Public Service Company of New Hampshire d/b/a Eversource Energy	3/18	Public Service Company of New Hampshire d/b/a Eversource Energy v. Town of Bow	217-2015-CV-00469 217-2016-CV-00474 217-2017-CV-00422	Valuation of Transmission and Distribution Assets
State of Rhode Island, Providence City Court				
Aquidneck Energy	5/87	Laroche vs. Newport	-	Least-Cost Planning
State of Texas, Hutchinson County Court				
Western Gas Interstate	5/85	State of Texas vs. Western Gas Interstate Co.	14,843	Cost of Service
State of Utah, Third District Court				
PacifiCorp & Holme, Roberts & Owen, LLP	1/07	USA Power & Spring Canyon Energy vs. PacifiCorp. et al.	Civil No. 050903412	Breach-Related Damages
U.S. Bankruptcy Court, District of New Hampshire				
EUA Power Corporation	7/92	EUA Power Corporation	BK-91-10525-JEY	Pre-Petition Solvency
U.S. Bankruptcy Court, District of New Jersey				
Ponderosa Pine Energy Partners, Ltd.	7/05	Ponderosa Pine Energy Partners, Ltd.	05-21444	Forward Contract Bankruptcy Treatment



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
U.S. Bankruptcy Court, No. District of New York				
Cayuga Energy, NYSEG Solutions, The Energy Network	09/09	Cayuga Energy, NYSEG Solutions, The Energy Network	06-60073-6-sdg	Going Concern
U.S. Bankruptcy Court, So. District of New York				
Johns Manville	5/04	Enron Energy Mktg. v. Johns Manville; Enron No. America v. Johns Manville	01-16034 (AJG)	Breach of Contract, Damages
U.S. Bankruptcy Court, Northern District of Texas				
Southern Maryland Electric Cooperative, Inc., and Potomac Electric Power Company	11/04	Mirant Corporation, et al. v. SMECO	03-4659; Adversary No. 04-4073	PPA Interpretation, Leasing
U.S. Bankruptcy Court, Southern District of Texas				
Ultra Petroleum Corp. et al	3/17	Ultra Petroleum Corp. et al	16-32202 (MI)	Valuation
U.S. Court of Federal Claims				
Boston Edison Company	7/06 11/06	Boston Edison Company v. United States	99-447C 03-2626C	Spent Nuclear Fuel Breach, Damages
Consolidated Edison Company	7/07	Consolidated Edison Company	06-305T	Evaluation of Lease Purchase Option
Consolidated Edison Company	2/08 6/08	Consolidated Edison Company v. United States	04-0033C	Spent Nuclear Fuel Breach, Damages
Vermont Yankee Nuclear Power Corporation	6/08	Vermont Yankee Nuclear Power Corporation v. United States	03-2663C	Spent Nuclear Fuel Breach, Damages



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Virginia Electric and Power Company d/b/a Dominion Virginia Power	3/19	Virginia Electric and Power Company d/b/a Dominion Virginia Power v. United States	17-464C	Double Recovery, Cost Recovery of Infrastructure Improvements
U. S. District Court, Boulder County, Colorado				
KN Energy, Inc.	3/93	KN Energy vs. Colorado GasMark, Inc.	92 CV 1474	Gas Contract Interpretation
U. S. District Court, Northern California				
Pacific Gas & Electric Co./PGT PG&E/PGT Pipeline Exp. Project	4/97	Norcen Energy Resources Limited	C94-0911 VRW	Fraud Claim
U. S. District Court, District of Connecticut				
Constellation Power Source, Inc.	12/04	Constellation Power Source, Inc. v. Select Energy, Inc.	Civil Action 304 CV 983 (RNC)	ISO Structure, Breach of Contract
U.S. District Court, Northern District of Illinois, Eastern Division				
U.S. Securities and Exchange Commission	4/12	U.S. Securities and Exchange Commission v. Thomas Fisher, Kathleen Halloran, and George Behrens	07 C 4483	Prudence, PBR
U. S. District Court, Massachusetts				
Eastern Utilities Associates & Donald F. Pardus	3/94	NECO Enterprises Inc. vs. Eastern Utilities Associates	Civil Action No. 92-10355-RCL	Seabrook Power Sales
U. S. District Court, Montana				
KN Energy, Inc.	9/92	KN Energy v. Freeport MacMoRan	CV 91-40-BLG-RWA	Gas Contract Settlement



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
U.S. District Court, New Hampshire				
Portland Natural Gas Transmission and Maritimes & Northeast Pipeline	9/03	Public Service Company of New Hampshire vs. PNGTS and M&NE Pipeline	C-02-105-B	Impairment of Electric Transmission Right-of-Way
U. S. District Court, Southern District of New York				
Central Hudson Gas & Electric	11/99 8/00	Central Hudson v. Riverkeeper, Inc., Robert H. Boyle, John J. Cronin	Civil Action 99 Civ 2536 (BDP)	Electric Restructuring, Environmental Impacts
Consolidated Edison	3/02	Consolidated Edison v. Northeast Utilities	Case No. 01 Civ. 1893 (JGK) (HP)	Industry Standards for Due Diligence
Merrill Lynch & Company	1/05	Merrill Lynch v. Allegheny Energy, Inc.	Civil Action 02 CV 7689 (HB)	Due Diligence, Breach of Contract, Damages
U. S. District Court, Eastern District of Virginia				
Aquila, Inc.	1/05 2/05	VPEM v. Aquila, Inc.	Civil Action 304 CV 411	Breach of Contract, Damages
U. S. District Court, Western District of Virginia				
Washington Gas Light Company	8/15 9/15	Washington Gas Light Company v. Mountaineer Gas Company	Civil Action No. 5:14-cv-41	Nominations and Gas Balancing, Lost and Unaccounted for Gas, Damages
U. S. District Court, Portland Maine				
ACEC Maine, Inc. et al.	10/91	CIT Financial vs. ACEC Maine	90-0304-B	Project Valuation
Combustion Engineering	1/92	Combustion Eng. vs. Miller Hydro	89-0168P	Output Modeling, Project Valuation



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
U.S. Securities and Exchange Commission				
Eastern Utilities Association	10/92	EUA Power Corporation	File No. 70-8034	Value of EUA Power
U.S. Tax Court in Illinois				
Exelon Corporation	4/15 6/15	Exelon Corporation, as Successor by Merger to Unicom Corporation and Subsidiaries et al. v. Commission of Internal Revenue	29183-13 29184-13	Valuation of Analysis of Lease Terms and Quantify Plant Values
Council of the District of Columbia Committee on Consumer and Regulatory Affairs				
Potomac Electric Power Co.	7/99	Potomac Electric Power Co.	Bill 13-284	Utility Restructuring

Line No.	Service Company	Operating Companies	Services Provided by Affiliated Services Company
1	AES US Services, LLC	<ul style="list-style-type: none"> • AES Southland Energy, LLC, • AES Huntington Beach Energy, LLC, • AES ES Alamitos, LLC, • AES Alamitos Energy, LLC, • AES Wind Generation, LLC., • Indianapolis Power & Light Company, • IPALCO Enterprises, Inc., • AES NA Central, L.L.C., • AES Distributed Energy, Inc., • The AES Corporation, • AES Big Sky, L.L.C., • DPL Inc., • AES Ohio Generation, LLC, • The Dayton Power and Light Company, • AES North America Development, LLC, • AES ES Gilbert, LLC, • AES Hawaii, LLC., • Miami Valley Insurance Company, • MacGregor Park, Inc., • Miami Valley Lighting, LLC, • Na Pua Makani Power Partners, LLC, • AES Shady Point, LLC 	<ul style="list-style-type: none"> • Coo Office, Battery Operations, • Commercial Operation, • Ops Monitoring & Control, • Plant Managers, • Storms, • Systems Operations, • Settlements, • Customer Service, • T&D Metering Service, • Safety, • Environmental Mgt, • Strat Acct & Cus Pro, • Growth & Strg Invest, • Infrstctr Security, • Reliability Programs, • Vendor Discounts, • Us SBU Leader, • De Accounting, Manager - CFO, • Accounts Payable, • Technical Accounting, • Controller, • Financial Reporting, • Fixed Asset Accounting • Gen & Ops Accounting • Treasury, • Regulatory Accounting, • Tax Accounting, • Revenue Accounting, • Internal Audit, • IT Governcre & Scrity, • IT Management, • Cyber Security,

			<ul style="list-style-type: none"> • IT Enterprise Apps, • IT collaboration Svc, • IT Infrastructure, • IT Networks, • IT Generation Apps, • IT T&D Apps, • Legal Services, • Regulatory Affairs, • Local HR, • Benefits O&M, • Talent Coe, • Payroll, • Total Rewards Coe, • Purchasing Management, • Logistic & Mat Management, • A&PM Norms & Stds, • Asset Management - T&D, • Insurance, • A&PM NERC Compliance, • A&PM Performance Eng, • A&PM Outages & Prjct, • Risk Management, • A&PM Technical Eng, • Customer Experience, • Communications, • Employee Ovhd Dollar, • Pension Clearing, • Payroll Taxes O&M, • Digital Customer Exp, • Operations Tech, • Digital Prod & Eco, • IT Digital Operation, • Digital Sol & Innov, • Digital Work Exp, • Emp Ovhd Hours O&M
2	Algonquin Power & Utilities Corp	<ul style="list-style-type: none"> • Algonquin Power Trust, • Liberty Utilities (Sub) Corp., • Liberty Utilities (CalPeco Electric) LLC, 	<ul style="list-style-type: none"> • Legal Costs, • Tax Services, • Audit,

		<ul style="list-style-type: none"> • Liberty Utilities (Granite State Electric) Corp., • Liberty Utilities (Energy North Natural Gas) Corp., • Liberty Utilities (Midstates Natural Gas) Corp., • Liberty Utilities (Gas New Brunswick) LP, • Liberty Utilities (Peach State Natural Gas) Corp., • Liberty Utilities (Pine Bluff Water) Corp., Liberty Energy Utilities (New Hampshire) Corp., • Liberty Utilities (New England Natural Gas Company) Corp., • Liberty Utilities (White Hall Water) Co., • Liberty Utilities (White Hall Sewer) Co., • Liberty Utilities Co., Liberty Utilities (Park Water) Corp., • Empire District Electric, • Liberty Utilities (Woodson-Hensley Water) Corp., • Liberty Utilities (St. Lawrence Gas) Corp, • Liberty Utilities (Tinker Transmission) LP 	<ul style="list-style-type: none"> • Investor Relations, • Director Fees and Insurance, • Licenses, • Fees and Permits, • Escrow and Transfer Agent Fees, • Other Professional Services, • Other Administration Costs, • Executive and Strategic Management
3	Allegheny Energy Service Corporation	<ul style="list-style-type: none"> • FirstEnergy Service Company 	<ul style="list-style-type: none"> • All charges recorded at Allegheny Service Corporation are allocated 100% to FirstEnergy Service Company monthly
4	Alliant Energy Corporate Services, Inc	<ul style="list-style-type: none"> • Alliant Energy Corporation, • Alliant Energy SPE LLC, • Wisconsin Power and Light Company, • Interstate Power and Light Company, • Alliant Energy Resources, LLC, • Heartland Energy Group Inc, • Industrial Energy Applications Delaware Inc, • Alliant Energy Transportation Inc, • Cedar Rapids and Iowa City Railway Company, • Logistics Park Dubuque, Inc., • Williams Bulk Transfer Inc, • Alliant Energy Investments Inc, • Iowa Land and Building Company, • Alliant Energy Generation Inc, • Sheboygan Power LLC, • Alliant Energy Finance, LLC, • AE Growth & Development, LLC, • Comprehensive Energy Solutions, LLC, • AE Development Holdco, LLC, • AER Biofuels, LLC, 	<ul style="list-style-type: none"> • Accounting, • Administrative, • Corporate, • Corporate Secretary, • Customer Service, • Customer Assistance and Customer Relations, • Electric Distribution Engineering and Construction, • Environmental Affairs, • Facilities, • Finance, • Fuels, • Gas Acquisition and Dispatch, • Gas Transmission and Distribution • Engineering and Construction, • Human Resources, • Information Systems, • Insurance and Risk Management, • Internal Auditing, • Investor Relations, • Legal,

		<ul style="list-style-type: none"> • AET Hybrid Transit, LLC, • AET BTS LLC 	<ul style="list-style-type: none"> • Materials Management, • Power Engineering and Construction, • Planning, • Power Planning, • Public and Community Affairs, • Rates, • Real Estate and Right of Way, • Shareowner Services, • Transportation
5	Ameren Services Company	<ul style="list-style-type: none"> • Ameren Corporation, • Ameren Development Corporation, • Union Electric Company, • Ameren Transmission Company of Illinois, • Ameren Energy Medina Valley Cogen, LLC, • Ameren Illinois Company, • ATX Southwest, LLC, • ATX East, LLC, • Ameren Transmission Company, LLC 	<ul style="list-style-type: none"> • Power Ops and Energy Mgmt • Controller • Supply Chain, Risk & Property Management • Treasurer • Corporate Strategy and Innovation • Human Resources • Executive • Digital • CSR Policy & Analysis • Legal, Fed Reg & Compliance • Ameren Services Center • Financial Services • Trans Ops Plan Policy and Reg • Corp Comm, D&I and Corp Contr • Corporate Internal Audit • Corporate Tax • Operations & Tech Services • Safety, Security & Ops Oversight • Customer Affordability • Stores Inventory Transfers • Engineering and Construction Support • Rental Expense • Transfer AMI Software Costs • Rental Income • Vehicle usage by affiliate • Laboratory Services
6	American Electric Power	<ul style="list-style-type: none"> • Abstract Digital, • AEP Amazon, • AEP Appalachian Transmission Company, Inc., 	<ul style="list-style-type: none"> • Chief Administrative Officer Administration, • Corporate Human Resources, • Information Technology,

<p>Service Corporation</p>	<ul style="list-style-type: none"> • AEP Clean Energy Resources LLC, • AEP Coal, Inc. • AEP Credit, Inc., • AEP Energy Partners, Inc., • AEP Energy Service Gas Holding Company • AEP Energy Services, Inc., • AEP Energy Supply LLC • AEP Energy, Inc, • AEP Generating Company • AEP Generation Resources, • AEP Indiana Michigan Transmission Company, Inc. • AEP Investments, Inc., • AEP Kentucky Coal, LLC, • AEP Kentucky Transmission Company, Inc. • AEP Nonutility Funding LLC, • AEP Ohio Transmission Company, Inc., • AEP Oklahoma Transmission Company, Inc. • AEP OnSite Partners, LLC, • AEP Pro Serv, Inc. • AEP Renewables, LLC, • AEP Retail Energy Partners LLC, • AEP Southwestern Transmission Company, Inc. • AEP T&D Services, LLC, • AEP Texas Company, • AEP Transmission Company, LLC, • AEP Transmission Holding Company, LLC • AEP Transmission Partner LLC, • AEP Utility Funding LLC, • AEP West Virginia Transmission Company, Inc, • American Electric Power Company, • Appalachian Power Company, • Apple Blossom Wind, LLC, • Auwahi Wind Energy, LLC, • Blackhawk Coal Company, • Bold Transmission, LLC, • BSE Solutions LLC, • Central Appalachian Coal Company, • Central Coal Company, 	<ul style="list-style-type: none"> • Real Estate & Workplace Services, • Audit Services, • Chief Executive Officer Administration, • Legal, • Chief Financial Officer Administration, • Corporate Accounting, • Corporate Planning & Budgeting, • Risk and Strategic Initiatives, • Supply Chain & Fleet Operations, Treasury, • Commercial Operations, • Chief Customer Officer, • Corporate Communications, • External Affairs Administration, Federal Affairs, • Regulatory Services, • Environmental Services, • Fossil and Hydro Generation, • Generation Administration, • Generation Business Services, • Generation Engineering and Technical Services - Project and Construction, • Regulated Commercial Operations, • Transmission, Transmission Administration, • Transmission Grid Development, • Transmission Field Services, • Trans Ventures Strategy & Policy, • Utility Operations
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		<ul style="list-style-type: none"> • Conesville Coal Preparation Company, • CSW Energy, Inc., • Desert Sky Wind Farm LLC, • Dolet Hills Lignite Co, LLC, • Electric Transmission America, • Electric Transmission TX, LLC, • Franklin Real Estate Company Grid Assurance LLC, • Indiana Michigan Power Company Jacumba Solar LLC, • Kentucky Power Company, • Kingsport Power Company, • Kyte Works, LLC, • NM Renewable Development, LLC, • Ohio Franklin Realty, LLC, • Ohio Power Company, • Oxbow Lignite Company, LLC, • Public Service Company of Oklahoma, • RITELine Indiana, LLC, • Sempra Renewables, LLC, • Snowcap Coal Company, Inc., • Solar LLCs, • Southern Appalachian Coal Company, • Southwestern Electric Power Company, • Transource Energy, LLC, • Transource Maryland, • Transource Missouri, LLC, • Transource Pennsylvania, • Transource West Virginia, LLC, • Trent Wind Farm LLC, • United Sciences Testing, Inc., • Wheeling Power Company 	
7	ATC Management Inc	<ul style="list-style-type: none"> • American Transmission Company LLC, • ATC Development Manager Inc 	<ul style="list-style-type: none"> • Asset Management, • Audit & Risk Management, • Business Administration Services, • Business Development, • Business Partner Services, • Construction, • Corporate, • Corporate Communications,

			<ul style="list-style-type: none"> • Finance & Accounting, • Human Capital, • Information Technology, • Legal, • Officers, • External Affairs, • Regulatory Relations & Policy
8	Avangrid Service Company	<ul style="list-style-type: none"> • Iberdrola S.A. Avangrid, Inc., • Avangrid, Inc, • Avangrid Networks, Inc., • New York State Electric & Gas Corporation, • Rochester Gas and Electric Corporation, • RGS Energy Group, Inc, • Central Maine Power Company, • CMP Group, Inc., • The Union Water Power Company, • Maine Electric Power Company, Inc., • Chester SVC Partnership, • Maine Natural Gas Corporation, • Avangrid Networks NY Transco, • UIL Holdings Corporation, • United Illuminating Electric, • Connecticut Natural Gas, • Southern Connecticut Gas, • Berkshire Gas Company, 	<ul style="list-style-type: none"> • Governing Bodies, Innovation, • Environment & Quality, • Real Estate and General Services, • Corporate Security, • IT, • Human Resources, • Purchasing, • Insurance, • Finance and Treasury, • Risks, • Investor Relations, • Control, • Administration, • Tax, • Communications, • Legal Services, • Corporate Development, • DG Businesses and Regulation, • External Audit, • Secretary of the Board, • Internal Audit, • Compliance
9	Black Hills Service Company, LLC	<ul style="list-style-type: none"> • Wyodak Resources Development Corp, • Black Hills Wyoming, LLC, • Black Hills Electric Generation, LLC, • Black Hills Non-Regulated Holdings, LLC, • Black Hills Colorado IPP, LLC, • N780BH, LLC, • Black Hills Colorado Wind, LLC, • Northern Iowa Windpower, LLC, • Black Hills Corporation, 	<ul style="list-style-type: none"> • Accounting Accrual Entries • Accounting Systems • Asset Blended • Asset Customer • Asset Planning & Data Mana • Asset Programs • Asset Transmission • Benefit Loadings • Benefit Pooled

	<ul style="list-style-type: none"> • Black Hills Exploration and Production, Inc, • Black Hills Gas Resources, Inc, • Black Hills Wyoming Gas, LLC (combination of Cheyenne Light, Fuel and Power Company’s natural gas utility operations, the Wyoming portion of Black Hills Gas Distribution, LLC and Black Hills Northwest Wyoming Gas Utility Company, LLC), • Black Hills Power, Inc, • Cheyenne Light Fuel and Power Company, • Black Hills Energy Service Company, • Black Hills Kansas Gas Utility Company, LLC, Black Hills Iowa Gas Utility Company, LLC, • Black Hills Gas Nebraska Gas Utility Company, LLC, • Black Hills Colorado Electric, LLC, • Black Hills Colorado Gas, Inc, • Black Hills Northwest Wyoming Gas Utility Company, LLC, • Black Hills Shoshone Pipeline, LLC, • Black Hills Energy Arkansas, Inc, • Black Hills Gas Distribution Colorado, • Black Hills Gas Distribution Nebraska, • Black Hills Gas Distribution Wyoming, • Rocky Mountain Natural Gas, LLC 	<ul style="list-style-type: none"> • Community Affairs • Compliance Gas • Corporate Accounting • Credit and Risk • Customer Serv Call Centers • Customer Service Support • Electric Asset Management • Electric Meter Services • Energy Efficiency/DSM • Engineering Resources • Environmental Services • Exec Management-Utilities • Executive Management • FERC Tariff and Compliance • Field Support Services • Fleet Serv • Gas Asset Optimization • Gas Measurement Serv • Generation Dispatch Power Marketing • Generation Plant Operations • Governmental Affairs • Growth Strategy & Innovation • HR Rotation Program • HR Talent Management • HR Total Rewards • Human Resources • Human Resources Corp • In-House Corporate Solutions (Communications) • Internal Audit • IT Security - Compliance-Risk • IT Administration • IT Bus Apps Customer Systems • IT Bus Apps Fin & HR Systems • IT Bus Apps-Adds-Integ • IT Bus Apps-Pmo-Ecm-Gov • IT Bus Apps-Utility Systems • IT Bus Apps-Web • IT Infrastructure & Ops
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			<ul style="list-style-type: none"> • Land Rights • Legal - Corporate • Maintenance • NERC Compliance • Northern Gas Generation • Operational Services • Pipeline and System Integrity • Pipeline Safety and Compliance Gas • Power Delivery Management • Property Accounting • Pwr Supply and Renewables • Real Estate & Facilities • Records Management • Regulatory and Finance • Relay & Controls • Reliability Center • Safety • Service Guard Marketing • Substation/Protection Engineering • Supply Chain • Supply Chain Management • Tax • Technical Training Safety • Transmission & Distribution Planning • Transmission & Distribution Engineering • Transmission Engineering Services (TES) • Treasury • Utility Process & System Training • Vegetation Management
10	CenterPoint Energy Service Company, LLC	<ul style="list-style-type: none"> • CenterPoint Energy Houston Electric, LLC, • CenterPoint Energy Resources Corp., • CenterPoint Energy MRT Services, LLC, • Enable Midstream Partners, LP, • National Furnace Company, • Arkansas Louisiana Finance Corporation, • CenterPoint Energy Properties, Inc, • CenterPoint Energy Arkla, • CenterPoint Energy Minnesota Gas, 	<ul style="list-style-type: none"> • Administrative and service functions involving system-wide coordination, strategy, and compliance functions

		<ul style="list-style-type: none"> • Minnesota Intrastate Pipeline Company, • CenterPoint Energy Services, Inc., • CenterPoint Energy Intrastate Pipelines, LLC, • CenterPoint Energy Entex, • CenterPoint Energy Mobile Energy Solutions, Inc., • Allied Materials Corporation, • CenterPoint Energy Investment Management, Inc., • CenterPoint Energy, Inc., • Utility Holding, LLC, • Labo Land Holdings, LLC, • CenterPoint Energy Home Service Plus, LLC, • CenterPoint Energy Intelligent Energy Solutions, LLC, • CenterPoint Energy Midstream, Inc, • Vectren 	
11	Columbia Pipeline Group Service Company	<ul style="list-style-type: none"> • Columbia Gas Transmission LLC, • Columbia Gulf Transmission Co, • Crossroads Pipeline Company, • Portland Natural Gas Transmission System 	<ul style="list-style-type: none"> • President & CEO; • Executive V.P: <ul style="list-style-type: none"> ○ Commercial Operation, ○ Project Planning and Operations; • CFO: <ul style="list-style-type: none"> ○ Controller - Financial Reporting & Corporate Accounting, ○ Cost Accounting and Business Unit Accounting, ○ Financial Planning & Budget Reporting - Risk Management, ○ Department of Taxation, ○ Capital Markets & Treasury; • Stakeholder Relations & Technical Services & General Counsel: <ul style="list-style-type: none"> ○ Internal Audit & Compliance - SOX Compliance, ○ Legal & Corporate Secretarial, ○ Legal – Land/Litigation, ○ Legal – Corporate/Commercial, ○ Legal – Compliance & Ethics; • Corporate Services; • Human Resources: <ul style="list-style-type: none"> ○ Compensation & Benefits, ○ HR Operations; • Information Services; • Facility Services & Supply Chain
12	Dominion Energy Services, Inc.	<ul style="list-style-type: none"> • BrightSuite, Inc., • CNG Coal Company, 	<ul style="list-style-type: none"> • Accounting: <ul style="list-style-type: none"> ○ Payroll Processing, ○ Accounts Payable Processing,

	<ul style="list-style-type: none"> • Dominion ACP Holding, Inc., • Dominion Capital, Inc., • Dominion Cove Point, LLC, • Dominion Energy Carolina Gas Services, Inc., • Dominion Energy Carolina Gas Transmission, LLC, • Dominion Energy Cove Point LNG, LLC, • Dominion Energy Fairless, LLC, • Dominion Energy Field Services, Inc., • Dominion Energy Fuel Services, Inc., • Dominion Energy Gas Holdings, LLC, • Dominion Energy Generation Marketing, Inc., • Dominion Energy Kewaunee, Inc., • Dominion Energy Manchester Street, Inc., • Dominion Energy Midstream GP, LLC, • Dominion Energy Nuclear Connecticut, Inc., • Dominion Energy Overthrust Pipeline, LLC, • Dominion Energy Questar Corporation, • Dominion Energy Questar Pipeline, LLC, • Dominion Energy Questar Pipeline Services, Inc., • Dominion Energy RNG Holdings, Inc., • Dominion Energy Solutions, Inc., • Dominion Energy Technical Solutions, Inc., • Dominion Energy Terminal Company, Inc., • Dominion Energy Transmission, Inc., • Dominion Energy, Inc., • Dominion Gathering & Processing, Inc., • Dominion Generation, Inc., • Dominion Greenbrier, Inc., • Dominion Iroquois, Inc., Dominion Lands, Inc., • Dominion Modular LNG Holdings, Inc., • Dominion Natrium Holdings, Inc., • Dominion Privatization South Carolina, LLC, • Dominion Privatization Texas, LLC, • Dominion Products and Services, Inc., • Dominion Solar Holdings IV, LLC, • Dominion Solar Projects III, Inc., • Dominion Solar Projects IV, Inc., • Dominion Solar Projects V, Inc., 	<ul style="list-style-type: none"> ○ Fixed Assets Accounting; • Information Technology, Electronic Transmission and Computer Services and Software Pooling: <ul style="list-style-type: none"> ○ LDC/EDC Computer Applications, ○ Other Computer Applications, including Software/Hardware Pooling, ○ Telecommunications Applications; • Human Resources: <ul style="list-style-type: none"> ○ Human Resources; • Business Services: <ul style="list-style-type: none"> ○ Facility Services, ○ Fleet Administration, ○ Security, ○ Gas Supply, ○ Risk Management; • Corporate Planning: <ul style="list-style-type: none"> ○ Corporate Planning; • Supply Chain: <ul style="list-style-type: none"> ○ Purchasing; • Tax: <ul style="list-style-type: none"> ○ Tax Accounting and Compliance; • Customer Services: <ul style="list-style-type: none"> ○ Customer Payment (Remittance) Processing; • Treasury/ Finance: <ul style="list-style-type: none"> ○ Treasury and Cash Management; • Other Service: <ul style="list-style-type: none"> ○ Accounting Services, ○ Audit, ○ Business Planning, ○ Corporate Secretary, ○ Energy Marketing, ○ Environment, ○ Executive, ○ External Affairs, ○ General Services, ○ Legal, ○ Operations, ○ Travel Services, ○ Aviation
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		<ul style="list-style-type: none"> • Dominion Solar Projects D, Inc., • Dominion Solar Services, Inc., • Dominion Solar Projects VI, Inc., • Dominion Solar Projects VII, Inc., • Dominion Voltage, Inc., • Hope Gas, Inc., • Public Service Company of North Carolina, Incorporated, • Questar Energy Services, Inc., • Questar Field Services, LLC, • Questar Gas Company, • Questar InfoComm, Inc., • Questar Southern Trails Pipeline Company, • Dominion Energy South Carolina, Inc., • SCANA Energy Marketing, LLC, • SCANA Corporation, • Dominion Energy Southeast Services, Inc., • The East Ohio Gas Company, • Virginia Electric and Power Company, • Virginia Power Services, LLC, • Virginia Power Nuclear Services Company, • VP Property, Inc., • Virginia Power Services Energy Corp., Inc., • Wexpro Company, • Wexpro Development Company, • Wexpro II Company 	
<p>13</p>	<p>Dominion Energy Southeast Services, Inc.</p>	<ul style="list-style-type: none"> • Dominion Energy South Carolina, Inc., • South Carolina Fuel Company, Inc., • Public Service Company of North Carolina Incorporated, • SCANA Energy Marketing, Inc., • South Carolina Generating Company, Inc., • SCANA Corporation (Parent Company), • Dominion Retail Gas Holdings, Inc. 	<ul style="list-style-type: none"> • Information systems technology services, • Customer-related billing, • Mailing, • Remittance processing, • Call center and customer communications, • Services for electric and gas customers, • Marketing-related services, • Gas measurement services and fleet management services, • Employee services, • Administrative services including procurement, • Finance, • Accounting, • Risk management and public affairs,

			<ul style="list-style-type: none"> • Corporate governance services including legal, • Investor relations, • Shareholder services, • Corporate secretarial, • Corporate compliance, • Strategic planning and certain executive administrative services, • Telecommunications services, • Gas supply and capacity management services, • Gas system management and monitoring services, • Gas control coordination and gas engineering services
<p>14</p>	<p>Duke Energy Business Services, LLC</p>	<ul style="list-style-type: none"> • Bison Insurance Company, Ltd, • Cinergy Corp, • Cinergy Receivables Co LLC, • DE Commercial Enterprises Inc, • DE Merchants, LLC, • DE Renewables Commercial LLC, • DE Transmission Holding Company, LLC, • DEGS NC Solar LLC, • DEGS Solar, LLC, • DEGS Wind I, LLC, • Duke Energy Carolinas, LLC, • Duke Energy Corp, • Duke Energy Corporate Services, Inc, • Duke Energy Florida (f/k/a Progress Energy Florida), • Duke Energy Indiana, Inc., • Duke Energy Kentucky, Inc., • Duke Energy North America, LLC, • Duke Energy Ohio, Inc., • Duke Energy Ohio, Inc. (non-reg), • Duke Energy Pipeline Holding, • Duke Energy Progress (f/k/a Progress Energy Carolinas, Inc.), • Duke Energy Registration Services, Inc., • Duke Generation Services Holding Co. Inc., • Duke Technologies Inc., • Frontier Windpower II LLC, • Frontier Windpower LLC, • KO Transmission, • Piedmont Natural Gas Company Inc, 	<ul style="list-style-type: none"> • Information Systems, • Meters, • Transportation, • System Maintenance, • Marketing and Customer Relations, • Transmission and Distribution Engineering and Construction, • Power Engineering and Construction, • Human Resources, • Supply Chain, • Facilities, • Accounting, • Power and Gas Planning and Operations, • Public Affairs, • Legal, • Rates, • Finance, • Rights of Way, • Internal Auditing, • Environmental, • Health and Safety, • Fuels, • Investor Relations, • Planning, • Executive, • Nuclear Development

		<ul style="list-style-type: none"> • Symphony Breeze, LLC, • Symphony Sun, LLC 	
15	Entergy Enterprises, Inc	<ul style="list-style-type: none"> • EAM Nelson Holding, LLC, • EK Holding III, LLC, • EN Services LP, • Entergy Asset Management, • Entergy Corporation, • Entergy Global, LLC, • Entergy Int Holdings Ltd, LLC-E, • Entergy Int Investments No 2, • Entergy International Ltd, LLC, • Entergy Nuclear Fitzpatrick, LLC, • Entergy Nuclear Holding Corp-No. 1, • Entergy Nuclear Indian Point 2, LLC, • Entergy Nuclear Indian Point 3, LLC, • Entergy Nuclear Vermont Investment Corp, • Entergy Nuclear Generation Company, • Entergy Nuclear, Inc., • Entergy Nuclear Nebraska, LLC, • Entergy Nuclear Operations, Inc., • Entergy Nuclear Palisades, LLC, • Entergy Nuclear Power Mktg, LLC, • Entergy Power E&C Holding, LLC, • Entergy Power, LLC, • Entergy Power RS LLC, • Entergy Power Ops U.S. Inc., • Entergy Services, LLC, • Entergy Solutions Ltd, • Entergy Tech Holding Co-Parent, • EP Gas Holding Corp, • EP Gas Operations Corp, • EWO Marketing LLC, • EWO WIND II - EPGC, • TLG Services, Inc., • Vermont Yankee Asset Retirement Management, LLC, Deferred 	<ul style="list-style-type: none"> • Administration, • Corporate Support - General, • EWC - Entergy Wholesale Commodities, • Finance - Finance and Accounting, • Information Technology, • System Benefits, • System Planning, • Wholesale Ops Corporate Support, • Wholesale Ops Finance

<p>16</p>	<p>Entergy Nuclear Operations, Inc</p>	<ul style="list-style-type: none"> • Entergy Arkansas, LLC, • Entergy Enterprises, Inc., • Entergy Louisiana, LLC, • Entergy Nuclear Fitzpatrick, LLC, • Entergy Nuclear Holding Corp-No. 1, • Entergy Nuclear Indian Point 2, LLC, • Entergy Nuclear Indian Point 3, LLC, • Entergy Nuclear Generation Company, • Entergy Nuclear, Inc., • Entergy Nuclear Nebraska, LLC, • Entergy Nuclear Operations, Inc., • Entergy Nuclear Palisades, LLC, • Entergy Operations, Inc., • Entergy Services, LLC, • TLG Services, Inc., • Vermont Yankee Asset Retirement Management, LLC, Deferred 	<ul style="list-style-type: none"> • Administration, • Chief Administrative Officer, • Corporate, • Corporate - Legal Services, • Corporate - Office of the Chief Executive Officer, • Corporate - Public Relations, • Corporate Support - General, • Customer Service, • Customer Service and Operations Support, • Customer Service Support, Distribution, • EWC - Entergy Wholesale Commodities, • Finance - Finance and Accounting, • Fossil Operations, • Gas Operations, • Human Resources, • Information Technology, • Nuclear - Non-Regulated, • Nuclear Corporate Support, • Nuclear Operations, • Operations and Performance, • President, • Supply Chain, • System Benefits, • System Planning, • Transmission, • Utility Management and Support Services, • Utility Support – Distribution, • Utility Support – Operations, • Wholesale Ops Corporate Support
<p>17</p>	<p>Entergy Operations, Inc</p>	<ul style="list-style-type: none"> • Entergy Arkansas, LLC, • Entergy Enterprises, Inc., • Entergy Louisiana, LLC, • Entergy Mississippi, LLC, • Entergy New Orleans, LLC, • Entergy Nuclear Operations, Inc., • Entergy Operations, Inc., • Entergy Services, LLC, • Entergy Texas, Inc., 	<ul style="list-style-type: none"> • Administration, • Corporate - Public Relations, • Corporate Support – General, • Finance - Finance and Accounting, • Human Resources, • Information Technology, • Nuclear – Regulated, • Nuclear Corporate Support, • Nuclear Operations,

		<ul style="list-style-type: none"> • System Energy Resources, Inc., Deferred 	<ul style="list-style-type: none"> • Supply Chain, • System Benefits, • Transmission, • Utility Support - Distribution
18	Entergy Services, LLC	<ul style="list-style-type: none"> • Entergy Arkansas, LLC, • Entergy Corporation, • Entergy Enterprises, Inc., • Entergy Louisiana, LLC, • Entergy Mississippi, LLC, • Entergy New Orleans, LLC, • Entergy Operations, Inc., • Entergy Services Holding, Inc., • Entergy Services, LLC, • Entergy Texas, Inc., • Entergy Transco Holding Company, LLC, • Entergy Transco Texas, LLC, • Entergy Utility Holding Company, LLC, • Morpheus One Holdings, LLC, • System Energy Resources, Inc., Deferred 	<ul style="list-style-type: none"> • Administration, • Chief Administrative Officer, • Corporate, • Corporate – Legal Services, • Corporate - Office of the Chief Executive Officer, • Corporate – Public Relations, • Corporate Support - General, • Customer Service, • Customer Service and Operations Support, • Customer Service Support, • Distribution, • EWC – Entergy Wholesale Commodities, • Finance - Finance and Accounting, • Fossil Operations, • Gas Operations, • Human Resources, • Information Technology, • Nuclear – Non-Regulated, • Nuclear - Regulated, • Nuclear Corporate Support, • Nuclear Operations, • Operations and Performance, • President, • Regulatory, • Supply Chain, • System Benefits, • System Planning, • Transmission, • Utility Management and Support Services, • Utility Support - Distribution, • Utility Support - Operations, • Wholesale Ops Corporate Support, • Wholesale Ops Finance

19	Eversource Services, Inc.	<ul style="list-style-type: none"> • n/a 	<ul style="list-style-type: none"> • Eversource Services, Inc. did not provide services to Eversource, Inc. or its subsidiaries during 2019.
20	Eversource Energy Service Company	<ul style="list-style-type: none"> • Connecticut Light and Power Company, • Eversource Energy Parent, • Eversource Energy Transmission Ventures Inc, • Eversource Gas Transmission II LLC, • Eversource Investment LLC, • Eversource Investment Service Company, Eversource LNG Service Company LLC, • Harbor Electric Energy Company, • Hopkinton LNG Corp, • HWP Company, • North Atlantic Energy Corporation, • North Atlantic Energy Service Corporation, • Northeast Generation Services Company, • Northern Pass Transmission LLC, • NSTAR Electric Company, • NSTAR Gas Company, • NU Enterprises Inc, • Properties Inc, • Public Service Company of New Hampshire, • Renewable Properties Inc, • The Rocky River Realty Company, • Yankee Energy System Inc, • Yankee Gas Services Company, • Eversource Water Ventures 	<ul style="list-style-type: none"> • Building Rent and Maintenance, • Corporate Relations, • Customer Group, • Depreciation, • Electric Distribution, • Energy Supply, • Engineering and Emergency Prep, • Enterprise Energy Strat + Bus Dev, • ERM and Claims + Insurance, • Finance and Accounting, • General Administration, • Human Resources, • Information Technology, • Internal Audit + Security, • Investor Relations, Legal, • Miscellaneous, • New Business Improvement, • Operations Administration, • Operations Services, • Safety, • Supply Chain + Env Affs + Property Management, • Taxes, • Transmission, Benefits, • Electric Distribution, • Engineering & Emergency Prep
21	Exelon Business Services Company, LLC	<ul style="list-style-type: none"> • Aerolab Enterprises, LLC, • Atlantic City Electric Co., • ATNP Finance Company, • Baltimore Gas and Electric Company, • BGE Home Products & Services, LLC, • CER Generation LLC (Hillabee), • Cltn Battery Utility, LLC, • Colorado Bend II Power, LLC., • Commonwealth Edison Company, • Constellation Energy Comm Grp., • Constellation Energy Nuclear Group, LLC (dba CENG, LLC), 	<ul style="list-style-type: none"> • Corporate Governance Areas: <ul style="list-style-type: none"> ○ Communications, ○ Corporate Governance (including Corporate Secretary), ○ Corporate Security, ○ Corporate Strategy, ○ Corporate Development, ○ Executive, ○ Finance, ○ General Company Activities including interest, severance, and income taxes, ○ Government Affairs and Public Policy,

		<ul style="list-style-type: none"> • Constellation Mystic Pwr, LLC, • Constellation NewEnergy, Inc, • Constellation Power Source Gen., • Constellation Power, Inc., Data Center Enterprises, LLC, • Delmarva Power & Light Co., • Distrigas of Massachusetts LLC, • Exelon Corporation, • Exelon Enterprises Company, LLC, • Exelon Framingham, LLC, • Exelon Generation Company, LLC, • Exelon Generation Finance Company, LLC, • Exelorate Enterprises, LLC., • ExGen Handley Power, LLC, • Exelon PowerLabs, LLC, • Exelon Solar Chicago, LLC, • Exelon Transmission Company, LLC, • Exelon West Medway, LLC, • Exelon West Medway II, LLC, • Exelon Wind, LLC, • Exelon Wyman, LLC, • ExTex LaPorte Limited Partnership, • EZEV Enterprise, LLC, • Handsome Lake Energy, LLC, • PECO Energy Company, • PEPCO Holdings Inc., • PHI Service Company, • Potomac Electric Power Co., • Wolf Hollow II Power, LLC 	<ul style="list-style-type: none"> ○ Legal Services • Exelon Utility Focused Items: <ul style="list-style-type: none"> ○ Transmission Operations and Planning • Human Resources: <ul style="list-style-type: none"> ○ Human Resources, ○ Human Resources - Labor Relations • Real Estate: <ul style="list-style-type: none"> ○ Real Estate Services • Supply: <ul style="list-style-type: none"> ○ Supply – purchasing / activities related to materials, ○ Supply – combined materials and services related purchasing / activities, ○ Supply Administration, ○ Credit card Program Administration • Information Technology (IT): <ul style="list-style-type: none"> ○ IT related to corporate governance areas, ○ IT related to utility customer systems, ○ IT related to Human Resources, ○ IT projects and applications, ○ IT governance and other items of general nature
22	FirstEnergy Service Company	<ul style="list-style-type: none"> • FirstEnergy Corp., • FirstEnergy Solutions Corporation, • FirstEnergy Generation, LLC, • FirstEnergy Nuclear Generation, LLC, • Allegheny Energy Supply, LLC, • Allegheny Generating Company, • FirstEnergy Nuclear Operating Company, • American Transmission Systems, Incorporated, • FirstEnergy Transmission, LLC, • Trans-Allegheny Interstate Line Company, 	<ul style="list-style-type: none"> • Chairman of the Board, • President & CEO, FirstEnergy Service Company, • President, FE Utilities, • Transmission, Distribution Support, • Utility Operations, • Compliance & Reg. Services, • Customer Service, • Energy Efficiency, • Environmental, • SVP & Chief Financial Officer,

		<ul style="list-style-type: none"> • AET PATH Company, LLC, • PATH, LLC, • AYE Series, • PATH Allegheny Trans. Co, • PATH Allegheny Maryland Transmission Co, LLC, • Mid-Atlantic Interstate Transmission, LLC, • FirstEnergy Ventures Corporation, • Bay Shore Power Company, • FirstEnergy Properties, Inc., • Allegheny Ventures, • The Cleveland Electric Illuminating Company, • Jersey Central Power & Light Company, • Metropolitan Edison Company, • Monongahela Power Company, • Ohio Edison Company, • The Potomac Edison Company, • Pennsylvania Electric Company, • Pennsylvania Power Company, • The Toledo Edison Company, • West Penn Power Company, • Buchanan Energy Company of Virginia, LLC, • Warrenton River Terminal, Ltd., • GPU Nuclear, Inc, • Suvon, LLC. 	<ul style="list-style-type: none"> • Corporate Services & CIO, • Supply Chain, • Controller, • Treasury, • Corporate Risk, • Business Development, • Integrated System Planning & Development, • Internal Auditing, • Legal, • Rates & Regulatory Affairs, • Corporate, Real Estate, Records Management, • External Affairs & Communications, • Corporate Affairs & Community Involvement, • Federal Affairs & Energy Policy, • Local Affairs & Economic Development, • State Affairs, • Human Resources, • FE Generation & CNO, • Marketing & Branding, • FE Tomorrow
23	GridLiance Management, LLC	<ul style="list-style-type: none"> • GridLiance Heartland LLC, • GridLiance High Plains LLC, • GridLiance East LLC, • GridLiance West LLC, • GridLiance West Holding LLC, • GridLiance Eastern Holdings LLC, • GridLiance Holdco LP, • GridLiance Texas LLC, 	<ul style="list-style-type: none"> • Corporate oversight, • Human resources, • Records management, • Risk management, • Payroll services, • Legal, • Administrative, • IT services
24	LG&E and KU Services Company	<ul style="list-style-type: none"> • Louisville Gas and Electric Company, • Kentucky Utilities Company, • Western Kentucky Energy Corp., • FCD LLC, • PPL EU Services Corporation, • LG&E and KU Capital LLC, 	<ul style="list-style-type: none"> • Customer Service, • Sales and Marketing, • Economic Development and Major Accounts, • Meter Reading Services, • Cash Remittance, • Billing Integrity,

	<ul style="list-style-type: none"> • PPL Services Corporation, • PPL Electric Utilities Corporation, • PPL Strategic Development, LLC 	<ul style="list-style-type: none"> • Energy Efficiency, • Smart Grid Strategy, • Field Services, • CCS Retail Business Readiness, • Project Engineering, • System Laboratory, • Generation, • Generation Services and Safety, • Fuel Procurement, • Project Development, • Strategy, • Reliability and Tariffs, • Operations and Construction, • Reliability and Compliance, • Energy Marketing, • Market Forecasting, • Load Forecasting, • Generation Planning and Analysis, • Network Trouble and Dispatch, • Electric Engineering, • Distribution Asset Management, • Forestry, • Substation Construction and Maintenance, • Budgeting, • Financial Planning, • Accounting and Reporting, • Property Accounting, • Revenue Accounting, • Payroll, • Tax Accounting, • Compliance and Reporting, • Audit Services, • Sarbanes-Oxley Compliance, • Treasury and Corporate Finance, • Risk Management, • Credit Administration, • Energy Marketing Trading Controls, • Supply Chain,
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25	Liberty Energy Utilities (New Hampshire) Corp	<ul style="list-style-type: none"> • None Listed 	<ul style="list-style-type: none"> • No services listed
26	Liberty Utilities (Canada) Corp	<ul style="list-style-type: none"> • Liberty Utilities (CalPeco Electric) LLC, • Liberty Utilities (Pine Bluff Water) Inc., • Liberty Utilities (Midstates Natural Gas) Corp, • Liberty Utilities (Peach State Natural Gas) Corp., • Liberty Utilities (Sub) Corp., • Liberty Energy Utilities (New Hampshire) Corp., • Liberty Utilities (Granite State Electric) Corp., 	<ul style="list-style-type: none"> • Utility Four-Factor Methodology, • Customer Count, • Utility Net Plant, • Non-Labor Expenses, • Labor Expenses, • Information Technology, • Human Resources,

		<ul style="list-style-type: none"> • Liberty Utilities (EnergyNorth Natural Gas) Corp., • Liberty Utilities (New England Natural Gas Company) Corp., • Algonquin Power & Utilities Corp., • Algonquin Power Trust, Liberty Utilities Co, • Liberty Utilities Energy Solutions Corp, • Liberty Utilities (Pipeline &Transmission) Corp., • Liberty Utilities (Park Water) Corp, Davis Road LP, • Mountain Water Company, • Liberty Utilities (Apple Valley Ranchos Water) Corp, • Blue Duchess Co Inc, Blue Duchess Co S.a.r.l., • Green Duchess Co Inc, Green Duchess Co S.a.r.l., Liberty Utilities Service Corp., • Liberty Utilities (Tinker Transmission) LP, • The Empire District Electric Company, • Éoliennes Belle-Rivière inc., • Great Bay Solar I, LLC, • Project Co (Odell Wind Farm, LLC), • Deerfield Wind Energy, LLC, • Algonquin SKIC 20 Solar, LLC, • Windelectric Inc., • Liberty Utilities (Missouri Water) LLC, • Algonquin Power (Ontario Transmission) Inc., • Liberty Utilities (St. Lawrence Gas) Corp, • Liberty Utilities (Gas New Brunswick) LP, • Algonquin Power Services Canada Inc., • Liberty Utilities (Arkansas Water) Corp 	<ul style="list-style-type: none"> • Training, • Facilities and Building Rent, • Environment, • Health, • Safety and Security, • Procurement, • Executive and Strategic Management, • Technical Services, • Utility Planning, • Risk Management, • Financial Reporting, • Planning and Administration, • Treasury, • Internal Audit, • External Communications, • Legal Costs, • Compliance
27	Liberty Utilities Service Corp	<ul style="list-style-type: none"> • Liberty Utilities (Peach State Natural Gas) Corp., • Liberty Utilities Energy Solutions Corp, • Liberty Utilities (CalPeco Electric) LLC, • Liberty Utilities (Sub) Corp., • Liberty Utilities (Pine Bluff Water) Inc., • Liberty Utilities (New England Natural Gas Company) Corp., • Liberty Utilities (Midstates Natural Gas) Corp., • Liberty Utilities (Canada) Corp., • Liberty Utilities Co, • Algonquin Power Trust, • Liberty Utilities (Pipeline & Transmission) Corp., • Liberty Energy Utilities (New Hampshire) Corp., 	<ul style="list-style-type: none"> • Utility Four-Factor Methodology, • Customer Count, • Utility Net Plant, • Non-Labor Expenses, • Labor Expenses, • Information Technology, • Human Resources, • Training, • Environment, • Health, Safety and Security, • Facilities and Building Rent, • Procurement,

		<ul style="list-style-type: none"> • Algonquin Windsor Lock, • Liberty Utilities (Park Water) Corp., • The Empire District Electric Company, • Liberty Power, Sanger Power, • Liberty Utilities (Missouri Water) LLC, • Liberty Utilities (Tinker Transmission) LP, • Amherst Wind Farm, • Deerfield Wind Energy, • Great Bay Solar, • Minonk Wind, • O'Dell Wind Farm, • Senate Wind, • Shady Oaks Wind, • St. Leon Wind Energy, Liberty Utilities (Tinker Transmission) LP, • Liberty Utilities (St. Lawrence Gas) Corp, • Liberty Utilities (Gas New Brunswick) LP, • Liberty Utilities (Arkansas Water) Corp 	<ul style="list-style-type: none"> • Executive and Strategic Management, • Technical Services, • Utility Planning, • Risk Management, • Financial Reporting, • Planning and Administration, • Compliance, • Treasury, • Internal Audit, • External Communications, • Legal Costs
<p>28</p>	<p>National Grid Engineering & Survey, Inc</p>	<ul style="list-style-type: none"> • Boston Gas Company, • Brooklyn Union Gas-KEDNY, • Colonial Gas Company, • Massachusetts Electric Co, • Nantucket Electric Co, • NE Hydro-Trans Corp, • NE Hydro-Trans Elec Co, • New England Power Company, • NG Development Holdings, • KS Gas East Corp-KEDLI, • NG Generation LLC, • NG Glenwood Energy Center, • NG LNG LP Regulated Entity, • NG Port Jeff Energy Center, • NG Services, Inc., • National Grid USA Parent, • NGUSA Service Company, • Niagara Mohawk Power Corp, • Transgas Inc, • Narragansett Electric Co, 	<ul style="list-style-type: none"> • Maintenance and construction, • Electric power plant operations, • Management of Complex Construction Projects, • Resource Planning and Response and Operations Performance activities

		<ul style="list-style-type: none"> • PSEG Electric Serv TSA Co, • Wayfinder Group, Inc. 	
29	National Grid USA Service Company Inc	<ul style="list-style-type: none"> • Boston Gas Company, • Brooklyn Union Gas-KEDNY, • Colonial Gas Company, • EUA Energy Investment, • Massachusetts Electric Co, • Nantucket Electric Co, • Narragansett Electric Co, • NE Electric Trans Corp, • NE Hydro-Trans Corp, • NE Hydro-Trans Elec Co, • New England Power Company, • NG Development Holdings, • NG Energy Trading Srvcs, • NG Engineering Srvcs, LLC, • KS Gas East Corp-KEDLI, • NG Generation LLC, • NG LNG LP Regulated Entity, • NG NEHoldings 2 LLC, • NG Services, Inc., • National Grid USA Parent, • Niagara Mohawk Holdings, • Niagara Mohawk Power Corp, • Transgas Inc, • Wayfinder Group, Inc., • NG Electric Services, • PSEG Electric Serv TSA Co, • NG North America Inc., • National Grid Ventures Consolidated 	<ul style="list-style-type: none"> • US Human Resources, <ul style="list-style-type: none"> ○ Compensation, ○ Benefits & Pensions, ○ HR SVP, ○ Labor & Employee Relations, ○ Talent & Diversity, ○ Talent Acquisition, ○ US HR Business Partner, • US Finance, <ul style="list-style-type: none"> ○ Finance Business Partnering, ○ Controllership, ○ Corporate Finance, ○ Finance Excellence, ○ US CFO, • Total US IT, <ul style="list-style-type: none"> ○ Global IT, ○ Global Solution Development RTB, ○ Infrastructure & Operations, ○ IS Commercial Supplier Management, ○ IS Digital Risk & Security, ○ IS Enterprise Projects, ○ IS Physical Security, ○ IS Legacy Org, ○ US Group Functions/Data Management., ○ US Infrastructure Program Del. RTB, ○ US IT, • US Legal, <ul style="list-style-type: none"> ○ Federal and State Regulatory, ○ Litigation, ○ Environment and ○ Employment, ○ General Counsel, • Global Human Resources, <ul style="list-style-type: none"> ○ Global & US LTC, ○ Global Academy, ○ Global HR Business Partners, ○ Global People Analytics, • Global Finance,

			<ul style="list-style-type: none"> ○ Claims, ○ Investment Management, ○ US Insurance, ○ US Investor Relations, ○ US Tax, ○ US Treasury, ○ US IS Finance, ● Global Legal, <ul style="list-style-type: none"> ○ Internal Compliance, ○ Records Management, ○ US Risk Management, ● Senior Counsel Corporate, <ul style="list-style-type: none"> ○ Real Estate, ○ Corporate Counsel, ● Corporate Affairs, <ul style="list-style-type: none"> ○ Federal Affairs, ○ Government Relations, ○ Strategic Communications, ● Audit, <ul style="list-style-type: none"> ○ US Audit, ● Capital Delivery, <ul style="list-style-type: none"> ○ Capital Delivery Programs, ○ Capital Delivery SVP, ○ Capital Delivery – Electric, ○ Capital Delivery – Gas, ○ Capital Project Development Contracts & Commercial, ○ Project Controls & Estimating, ● Centralized Functions, <ul style="list-style-type: none"> ○ Centralized Services, ○ Property & Fleet, ● Customer Operations, <ul style="list-style-type: none"> ○ Chief Customer Officer, ○ Customer Delivery, ○ Customer Process Enablement, ○ Customer Solutions, ○ Innovation & Development, ○ Marketing & Product Growth, ● Electric Business Unit, <ul style="list-style-type: none"> ○ COO Electric Business Unit, ○ Elec Inv Strategy & Resource Planning,
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			<ul style="list-style-type: none"> ○ Elec Planning & Performance Management, ○ Emergency Planning & Electric Services, ○ Field Operations (Maintenance & Construction), ○ US Electric Engineering, ● Gas Business Unit, <ul style="list-style-type: none"> ○ COO Gas Business Unit, ○ Gas Bus Planning & Performance, ○ Gas Enablement Project, ○ Gas Field Operation, ○ US Gas Engineering, ○ Work & Resource Management, ● Global Procurement, <ul style="list-style-type: none"> ○ Global Procurement-Strategy, ○ Inventory Management & Warehouse Management, ○ US Procurement, ● Global SHE, <ul style="list-style-type: none"> ○ Global SHE, ● MA JDx, <ul style="list-style-type: none"> ○ Community & Cust Management-MA, ○ Jurisdictions-MA Pres, ○ US Policy & Social Impact, ● NY JDx, <ul style="list-style-type: none"> ○ Community & Cust Management-NY, ○ Jurisdictions-NY Pres, ○ Performance & Strategy-NY, ● RI JDx, <ul style="list-style-type: none"> ○ Community & Cust Management-RI, ○ Jurisdictions-RI Pres, ○ Performance & Strategy-RI, ● Safety & Business Excellence, <ul style="list-style-type: none"> ○ BE-Internal Consultancy, ○ Performance Excellence, ○ Plan, Automation & Analytics, ○ US Business Assurance, ● Safety, Health & Environment, <ul style="list-style-type: none"> ○ Corporate Safety, ○ Environment, ○ Field Safety, ○ Health, ○ Process Safety,
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			<ul style="list-style-type: none"> ○ SHE Performance & Reporting, ○ SHE-VP, ○ US Business Assurance VP, ● Strategy & Regulation, <ul style="list-style-type: none"> ○ New England Pricing, ○ New England Revenue Reqmt, ○ New York Pricing, ○ New York Revenue Reqmt, ○ Reg Process Excellence, ○ Reg Strategy & Int Analytics, ○ Strategy & Regulation SVP, ● Transmission, Gen & Energy Procurement, <ul style="list-style-type: none"> ○ Bus Planning, Dev & Process, ○ Energy Procurement, ○ Power Plant Operations, ○ Pres & COO-Trans, Gen & EP, ○ Systems Eng & Aviation, ○ Tx Planning & Asset Management
30	NiSource Corporate Services Company	<ul style="list-style-type: none"> ● Columbia Gas of Kentucky, Inc., ● Columbia Gas of Maryland, Inc., ● Columbia Gas of Massachusetts (Bay State Gas d/b/a Columbia Gas of Massachusetts), ● Columbia Gas of Ohio, Inc., ● Columbia Gas of Pennsylvania, Inc., ● Columbia Gas of Virginia, Inc., ● Columbia Gas of Ohio Receivables Corporation, ● Columbia Gas of Pennsylvania Receivables Corporation, ● NiSource Development Company, Inc., ● NiSource Energy Technologies, Inc., ● NiSource Inc., ● NiSource Insurance Corporation, Inc., ● Northern Indiana Public Service Company LLC 	<ul style="list-style-type: none"> ● Accounting and Statistical Services, ● Auditing Services, ● Budget Services, ● Business Services, ● Corporate Services, ● Customer Billing, Collection, and Contact Services, ● Employee Services, ● Engineering and Research Services, ● Facility Services, ● Gas Dispatching Services, ● Information Services, ● Information Technology Services, ● Insurance Services, ● Land/Surveying Services, ● Legal Services, ● Officers, ● Operations Support and Planning Services, ● Purchasing, Storage and Disposition Services, ● Regulatory Services, ● Tax Services, ● Transportation Services,

31	PHI Service Company	<ul style="list-style-type: none"> • Potomac Electric Company, • Delmarva Power & Light Company, • Atlantic City Electric Company, • Exelon Business Services Company, LLC, • Constellation NewEnergy, Inc., • Pepco Holdings LLC, • Commonwealth Edison Company, • PECO Energy Company, • Baltimore Gas and Electric Company, • Exelon Generation Company, LLC 	<ul style="list-style-type: none"> • Treasury Services • Executive Management, • Support Services: <ul style="list-style-type: none"> ○ Vehicle Resource Management Building Services, ○ Claims Administration Services Other Services, ○ Financial Services, ○ Human Resources, ○ Legal Services, ○ Customer Services, ○ Information Technology, • Governmental Affairs: <ul style="list-style-type: none"> ○ Customer Research and Account Management Services, ○ Other Government Affairs Services, ○ Communication Services, • Regulatory Services: <ul style="list-style-type: none"> ○ Customer Energy, • Other Regulatory Services, • Regulated Electric and Gas Operation Services: <ul style="list-style-type: none"> ○ System Operations Services, ○ Meter Maintenance and Testing Services Other Delivery Services, ○ Supply Services, ○ Utility Storeroom Services Other Supply Services
32	PNMR Services Company	<ul style="list-style-type: none"> • PNM, • PNMR Holding Company, • TNMP, • PNMR DMC, • NMPPA 	<ul style="list-style-type: none"> • Financial Systems, • Accounts Payable, • Asset Management, • Direct-PNMR Utility, • Co 6 Utility General, • Direct-PNM Utility, • IT Infrastructure, • Building-Lewisville, • Buildings-Dallas-Las Colinas, • Downtown Albuquerque Buildings, • Aztec Building, • Maximo, • Benefits, • Ethics and Governance, • Payroll, • People Services, • Communications

<p>33</p>	<p>PPL EU Services Corporation</p>	<ul style="list-style-type: none"> • PPL Corporation, • PPL Services Corporation, • PPL Strategic Development, LLC, • PPL Electric Utilities Corporation, • PPL Global, LLC, • LG&E and KU Services Company, • PPL Distributed Energy Resources, LLC, • PPL Safari Holdings, LLC, • Safari Energy, LLC 	<ul style="list-style-type: none"> • Communications: <ul style="list-style-type: none"> ○ Board Services, ○ Charitable Contributions, ○ Energy Efficiency, ○ External Communications, ○ Internal Communications, ○ Communications Indirect • Facilities: <ul style="list-style-type: none"> ○ Building Operations and Maintenance, ○ Customer Requests, ○ Rent and Lease Costs, ○ Facilities Indirect • Finance: <ul style="list-style-type: none"> ○ Accounting and Reporting, ○ Energy Acquisition, ○ Ethics and Compliance, ○ Miscellaneous Billing, ○ Planning and Analysis, ○ Property Accounting, ○ Property Accounting / Business Line Support, ○ Regulatory Operations, ○ Finance Indirect • Human Resources: <ul style="list-style-type: none"> ○ Benefits, ○ Business Partners, ○ Compensation, ○ Health Services, ○ Human Resource Information System, ○ Labor Relations, ○ Payroll Services, ○ Talent Management, ○ Human Resources Indirect • Information Technology: <ul style="list-style-type: none"> ○ Cyber Security and Information, ○ Operations, ○ Transformation, ○ Planning, ○ Information Technology Indirect • Supply Chain: <ul style="list-style-type: none"> ○ Contract Management,
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			<ul style="list-style-type: none"> ○ Materials Sourcing, ○ Supply Chain Administration, ○ Warehouse Support ○ Supply Chain Indirect ● Technical Development & Improvement: <ul style="list-style-type: none"> ○ Emergency Preparedness, ○ Training, ○ Technical Development & Improvement Indirect
34	PPL Services Corporation	<ul style="list-style-type: none"> ● PPL Corporation, ● PPL Subsidiary Holding, LLC, ● PPL Energy Holding, LLC, ● PPL Capital Funding, Inc., ● PPL Strategic Development, LLC, ● PPL Power Insurance LTD, ● PPL EU Services Corporation, ● CEP Reserves, Inc., ● CEP Lending, Inc., ● PPL Electric Utilities Corporation, ● PPL Translink, Inc., ● PPL UK Holdings, LLC, ● PPL Global, LLC, ● PMDC International Holdings, Inc., ● PPL Barbados SRL, ● PPL Atlantic Holdings, LLC, ● LG&E and KU Services Company, ● PPL Distributed Energy Resources, LLC, ● PPL Safari Holdings, LLC, ● PPL Safari Energy, LLC, ● PPL Technology Ventures, LLC, ● PPL Energy Resources, LLC, ● PPL Renewables, LLC 	<ul style="list-style-type: none"> ● Corporate Audit Services – Direct: <ul style="list-style-type: none"> ○ Auditing, ○ SOX Control Testing, ○ SOX Compliance, ○ Corporate Audit Services – Indirect; ● Office of Chairman – Direct: <ul style="list-style-type: none"> ○ Office of President, ○ Office of President - Net Jet, ○ Strategic Development Support, ○ Office of Chairman – Indirect; ● Corporate Systems – Direct: <ul style="list-style-type: none"> ○ UIP Systems Support, ○ Wall Street System Support, ○ Wausau System Support, ○ HFM System Support, ○ Strategic Development Support, ○ CaseWare Electronic Workpaper System Support, ○ Business Line Support, ○ Controller App System Support, ○ Treasury App System Support, ○ Corporate Systems – Indirect; ● Enterprise Security – Direct: <ul style="list-style-type: none"> ○ Corporate Compliance Officer, ○ Cyber Security Risk Management, ○ Business Line Support, ○ Strategic Development Support, ○ Enterprise Security – Indirect; ● Financial - Direct: <ul style="list-style-type: none"> ○ Office of President, ○ Training, ○ Financial Support, ○ International Accounting Services,

			<ul style="list-style-type: none"> ○ International Tax Compliance & Planning, ○ Tax Compliance & Reporting-EU, ○ Audit/PCAOB Fees, ○ Financial Reporting, ○ Internal Reporting, ○ Financial Consulting Services ○ Fin Support for Delaware Co's, ○ Distributed Energy Resources, ○ Safari Energy, ○ Investor Relations, ○ Investor Service Fees, ○ Rating Agency, ○ Billing, ○ Remittance Processing, ○ Cash Receipt Exception Posting, ○ Credit Services, ○ Vendor Servicing (Corporate Disbursements), ○ Cash Processing Scanning Services, ○ Pension Domestic Only, ○ Pensions Pennsylvania Only Stock Based Compensation, ○ Compensation & Benefits, ○ Insurance Services-General Strategic Development Support, ○ Financial – Indirect; ● Human Resources - Direct: <ul style="list-style-type: none"> ○ Employee Communications, ○ Executive Services, ○ Board Services, ○ HR Support to Business Lines, ○ Physical Security, ○ Protective Services, ○ Talent Management and Diversity & Inclusion Services., ○ Corp Compensation and Benefit Services, ○ Human Resources – Indirect; ● Information Services - Direct: <ul style="list-style-type: none"> ○ IT Vehicle Costs, ○ IT Tax; ● Office of General Counsel - Direct: <ul style="list-style-type: none"> ○ Legal Services, ○ Government Affairs & Communications, ○ Corporate Compliance,
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			<ul style="list-style-type: none"> ○ Annual Meeting/Proxy, ○ Board Services, ○ Office of General Counsel – Indirect; ○ PPL Services – Indirect; ● Supply Chain - Direct: <ul style="list-style-type: none"> ○ Storage of Goods
35	Sempra North American Infrastructure, LLC	<ul style="list-style-type: none"> ● Sempra Technology Ventures, LLC, ● Sempra LNG, LLC, ● LA Storage, LLC, ● Cameron Interstate Pipeline, LLC, ● Sempra LNG ECA Liquefaction, LLC, ● Port Arthur LNG Holdings, LLC, Port Arthur LNG, LLC, ● Sempra International, LLC, ● Infraestructura Energetica Nova, S.A.B. de C.V., ● Sempra Midstream, Inc., ● Bay Gas Storage, Co. LTD, ● Mississippi Hub, LLC, ● Port Arthur Pipeline, LLC, ● Sempra Gas & Power Marketing, LLC, ● Sempra Renewables, LLC, ● Sempra LNG Marketing, LLC, ● Sempra LNG International, LLC, ● Sempra Louisiana LNG, LLC, ● Domingo Pipeline, LLC, ● PALNG Common Facilities Company, LLC, ● Sempra Global, ● Sempra Renewables Services, Inc., ● Sempra Energy, ● Port Arthur LNG Phase II, LLC, ● Sempra LNG Holdings II, LLC 	<ul style="list-style-type: none"> ● Executive, ● Human Resources, ● Information Technology & Supply Management, ● Operations, ● Legal & External Affairs, ● Asset Management, ● Engineering & Construction, ● Commercial & Project Development, ● Accounting and Finance
36	Sempra Services Corporation	<ul style="list-style-type: none"> ● Sempra LNG International, LLC, ● Sempra Gas & Power Marketing, ● Port Arthur Pipeline, ● Sempra LNG Holdings II, LLC, ● Sempra LNG ECA Liquefaction, ● Port Arthur LNG, LLC 	<ul style="list-style-type: none"> ● No services listed; Sempra Services Corporation became a FERC reporting entity on July 13, 2019

37	Southern Company Services, Inc	<ul style="list-style-type: none"> • The Southern Company, • Alabama Power Company, • Georgia Power Company, • Mississippi Power Company, • Southern Electric Generating Company, • Southern Nuclear Operating Company, • Southern Company Holdings, Inc., • Southern Communications Services, Inc., • Southern Power Company, • Southern Company Gas, • PowerSecure International 	<ul style="list-style-type: none"> • Accounting, Finance, and Treasury, • Auditing, • Executive and Corporate, • External Affairs, • Human Resources, • Information Technology, • Legal and General Counsel, • Supply Chain Management, • System Air, • Engineering, • Transmission, • Environmental and Research, • Executive and Corporate, • Other - SWE, • System Planning, • SCG Exec and Corporate Support, • Chief Production Officer
38	Southern Nuclear Operating Company, Inc	<ul style="list-style-type: none"> • Alabama Power Company, • Georgia Power Company, • Southern Nuclear Services, LLC (SNS), • Southern Nuclear Development, LLC (SND) 	<ul style="list-style-type: none"> • Alabama Power and Georgia Power: <ul style="list-style-type: none"> ○ Operating and maintenance services, ○ New investment services, and ○ Fuel services at cost with respect to nuclear generating plants. • SNS and SND, at cost: <ul style="list-style-type: none"> ○ Assistance, ○ Materials, ○ Supplies, ○ Licenses, ○ Offices, ○ Certain real property rights, ○ Telecommunications services, ○ Public information services, ○ Environmental services, ○ Accounting services, ○ Procurement services, ○ Maintenance personnel, ○ Security personnel
39	TECO Services, Inc	<ul style="list-style-type: none"> • TECO Energy, Inc., • TECO Finance, Inc., • TECO EnergySource, Inc., • TECO Gemstone, Inc., 	<ul style="list-style-type: none"> • Accounts Payable, • Claim Management, • Corporate Communications, • Emergency Management,

		<ul style="list-style-type: none"> • TECO Properties Corporation, • TECO Pipeline Holding Company, LLC, • SeaCoast Gas Transmission, LLC, • Tampa Electric Company, • Peoples Gas System (a division of Tampa Electric Company), • TECO Partners, Inc., • New Mexico Gas Company, Inc., • Emera Technologies LLC, • Bridgeport Energy LLC, • Emera Energy Generation II LLC, • Emera Caribbean Holdings Limited, • Emera (Caribbean) Incorporated, • Emera Energy Incorporated, • Emera Energy U.S. Subsidiary No. 1, Inc., • Emera Incorporated, • Emera Maine, • Emera US Holdings Inc., • Grand Bahama Power Company Limited, • Nova Scotia Power Incorporated, • Rumford Power Inc, • Scotia Power U.S., Ltd., • Tiverton Power LLC, • Emera Energy Services, Inc. 	<ul style="list-style-type: none"> • Human Resources, • Information Technology, • Procurement, • Administrative Services
40	Unitil Service Corporation	<ul style="list-style-type: none"> • Unitil Energy Systems, Inc., • Fitchburg Gas and Electric Light Co., • Unitil Realty Corp., • Unitil Resources, Inc., • Unitil Corporation, • Northern Utilities, Inc., • Granite State Gas Transmission, Inc. 	<ul style="list-style-type: none"> • Regulatory Services, • Distributed Energy Resources, • Human Resources, • Executive, • Finance, • Information Systems, • Accounting, • Engineering, • Energy Contracts, • Financial Services, • Business Continuity & Compliance, • Customer Service, • Operations Shared Services, • Distribution Engineering, • Communication Services,

			<ul style="list-style-type: none"> • Gas Engineering, • Gas Operations, • Electric Operations, • Business Development
41	WEC Business Services LLC	<ul style="list-style-type: none"> • ATC Holding LLC, • Bluewater Gas Storage, LLC, • Dairyland Power Cooperative, • Elm Road Generating Station Supercritical, LLC, • Integrys Holding, Inc., • Madison Gas and Electric Company, • Michigan Gas Utilities Corporation, • Minnesota Energy Resources Corporation, • North Shore Gas Company, • Port Washington Generating Station, LLC, • The Peoples Gas Light and Coke Company, • Upper Michigan Energy Resources Corporation, • WEC Energy Group, Inc., • WEC Infrastructure LLC, • W.E. Power, LLC, • Wisconsin Electric Power Company, • Wisconsin Energy Capital Corporation, • Wisconsin Gas LLC, • Wisconsin Power and Light Company, • Wisconsin Public Service Corporation, • Wisconsin River Power Company, • Wispark LLC, • WPPI Energy, • WPS Power Development, LLC 	<ul style="list-style-type: none"> • Administrative, • Communications, • Customer, • Environmental, • Executive Management, • External Affairs, • Finance, • Human Resources, • Information Technology, • Legal and Governance, • Supply Chain, • Operational Support and Development, • Wholesale Energy and Fuels
42	Xcel Energy Services Inc	<ul style="list-style-type: none"> • NSP-Minnesota, • PSCo, • SPS, • NSP-Wisconsin, • Xcel Energy, Inc., • Xcel Energy Joint Ventures, • MEC Holdings, LLC, • e-prime, Inc., • Capital Services, LLC, • Xcel Energy 	<ul style="list-style-type: none"> • Executive Management Services, • Investor Relations, • Internal Audit, • Legal, • Claims Services, • Corporate Communications, • Employee Communications, • Corporate Strategy & Business Development, • Government Affairs, • Facilities & Real Estate,

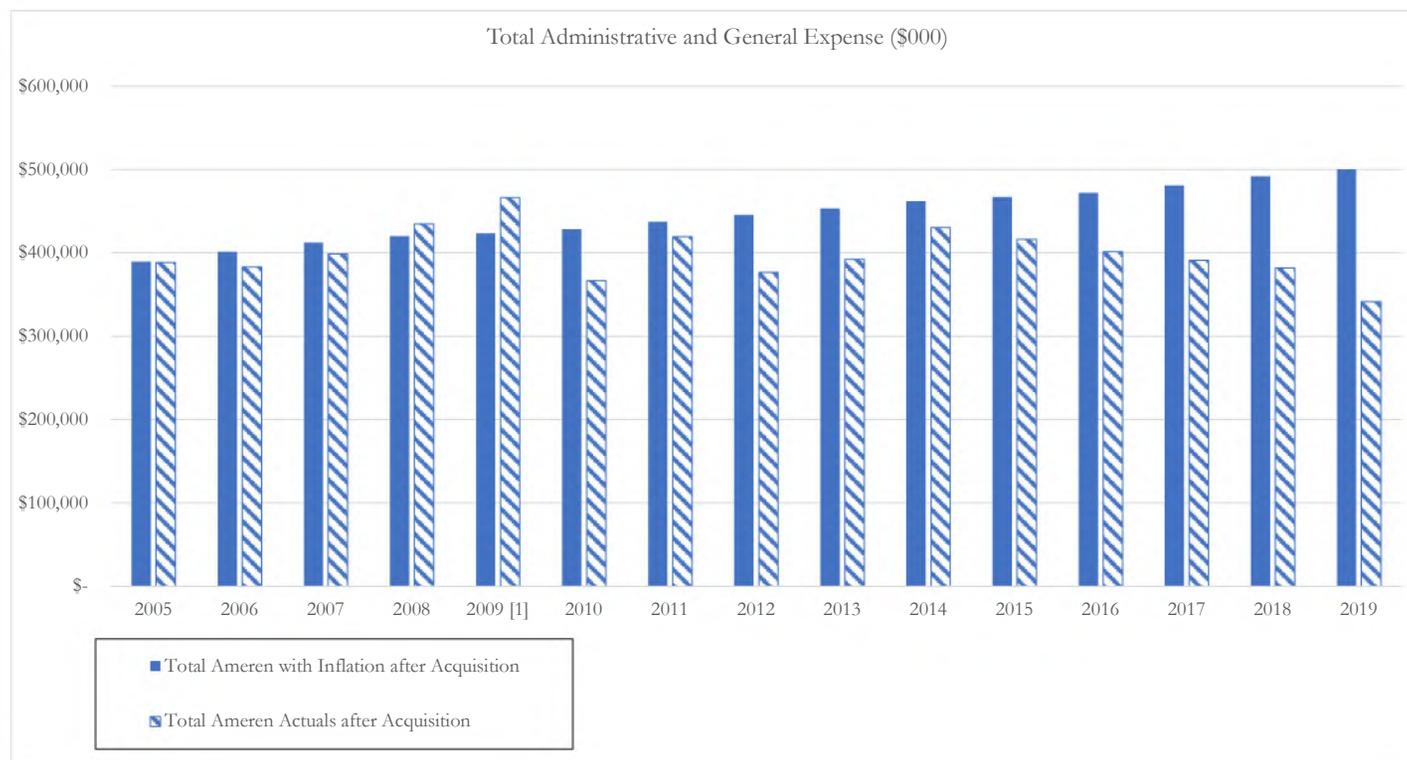
	<ul style="list-style-type: none"> • WYCO, Inc., • Eloigne Company, • Nicollet Projects I, LLC, • Quixx Corporation, • Chippewa and Flambeau Improvement Company, • 1480 Welton, Inc., • United Power & Land Company, • Energy Impact Fund Investments, Inc., • Xcel Energy Transmission Development Company, LLC, • WestGas Interstate, Inc., • Nicollet Holdings Company, • P.S.R. Investments, Inc, • Xcel Energy Ventures, Inc., • Clearwater Investments, Inc., • Xcel Energy Transmission Holding Company, LLC, • Xcel Energy West Transmission Company, LLC, • Xcel Energy Performance Contracting, Inc., • Xcel Energy Retail Holdings Inc., • Xcel Energy Wholesale Group, Inc., • Xcel Energy Ventures Holdings, Inc., • Xcel Energy Markets Holdings, Inc., • Xcel Energy Southwest Transmission Company, LLC, • Xcel Energy International, Inc., • Xcel Energy Communications Group, Inc., • Reddy Kilowatt Corporation, • Xcel Energy Investments, • Seren Innovations, Inc., • NSP Lands, Inc. 	<ul style="list-style-type: none"> • Facilities Administrative Services, • Supply Chain, • Supply Chain Special Programs, • Human Resources, • Finance & Treasury, • Accounting, • Financial Reporting & Taxes, • Payment & Reporting, • Receipts Processing, • Payroll, • Rates & Regulation, • Energy Supply Engineering and Environmental, • Energy Supply Business Resources, • Energy Markets Regulated Trading & Marketing, • Energy Markets - Fuel Procurement, • Energy Delivery Marketing, • Energy Delivery Construction, Operations & Maintenance (COM), • Energy Delivery Engineering/Design, • Marketing & Sales, • Customer Service, • Business Systems, • Aviation Services, • Fleet
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Administrative and General Expense Detailed Analysis

Total Administrative and General (\$000)

Inflated after Acquisition															
	2005	2006	2007	2008	2009 [1]	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Union Electric	233,851	240,938	247,408	252,241	254,151	257,104	262,477	267,516	272,204	277,348	280,325	283,386	288,771	295,278	300,321
CIPS (merger completed 12/31/1997)	77,549	79,899	82,045	83,647	84,280	85,260	87,042	88,713	90,267	91,973	92,960	93,975	95,761	97,919	99,591
CILCO (acquisition closed 1/31/2003)	27,043	27,862	28,611	29,169	29,390	29,732	30,353	30,936	31,478	32,073	32,417	32,771	33,394	34,146	34,730
IP (acquisition closed 9/30/2004)	51,145	52,695	54,110	55,166	55,584	56,230	57,405	58,507	59,533	60,633	61,213	61,854	63,016	64,530	65,682
Total Ameren with Inflation after Acquisition	389,588	401,394	412,173	420,223	423,406	428,326	437,277	445,672	453,482	462,027	466,915	471,987	480,942	491,873	500,324

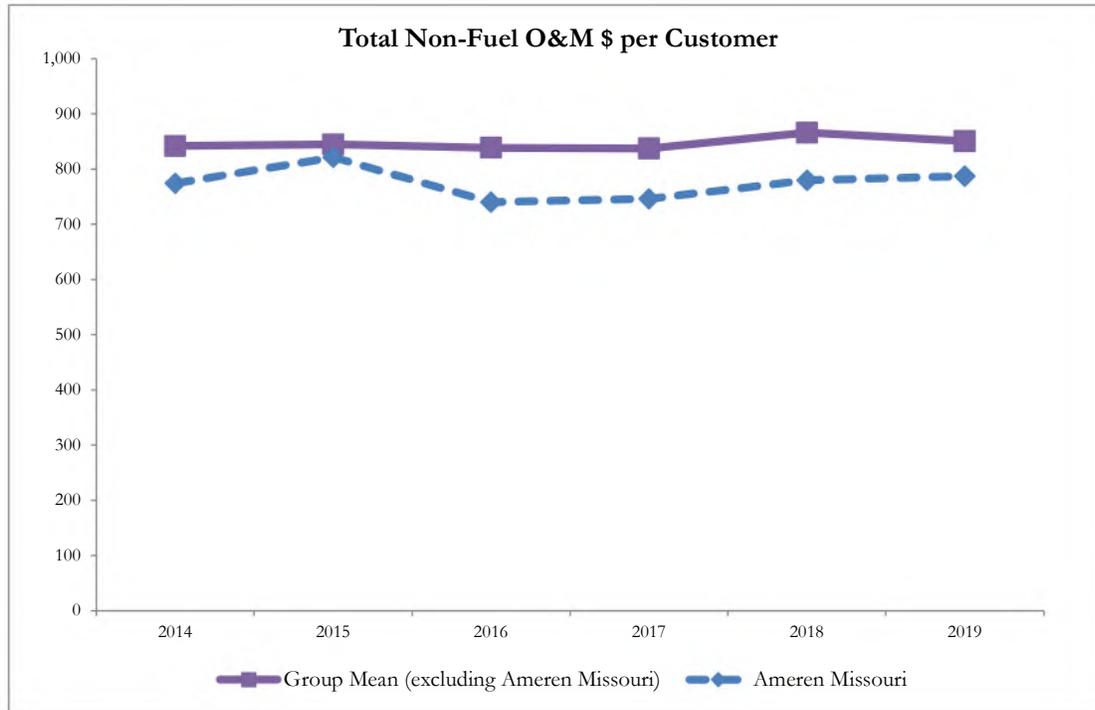
Actuals															
	2005	2006	2007	2008	2009 [1]	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Union Electric	243,224	245,282	265,020	272,687	250,628	240,384	275,201	236,903	251,904	278,701	264,623	251,783	234,050	235,012	214,437
CIPS (merger completed 12/31/1997)	41,305	39,765	39,944	47,871	40,468										
CILCO (acquisition closed 1/31/2003)	36,057	30,052	32,037	27,610	97,824										
IP (acquisition closed 9/30/2004)	67,543	67,716	61,571	86,449	77,172										
Ameren Illinois						126,171	143,958	139,418	140,454	151,672	151,661	149,707	157,181	146,610	126,801
Total Ameren Actuals after Acquisition	388,129	382,815	398,572	434,617	466,092	366,555	419,159	376,321	392,358	430,373	416,284	401,490	391,231	381,622	341,238



NOTES

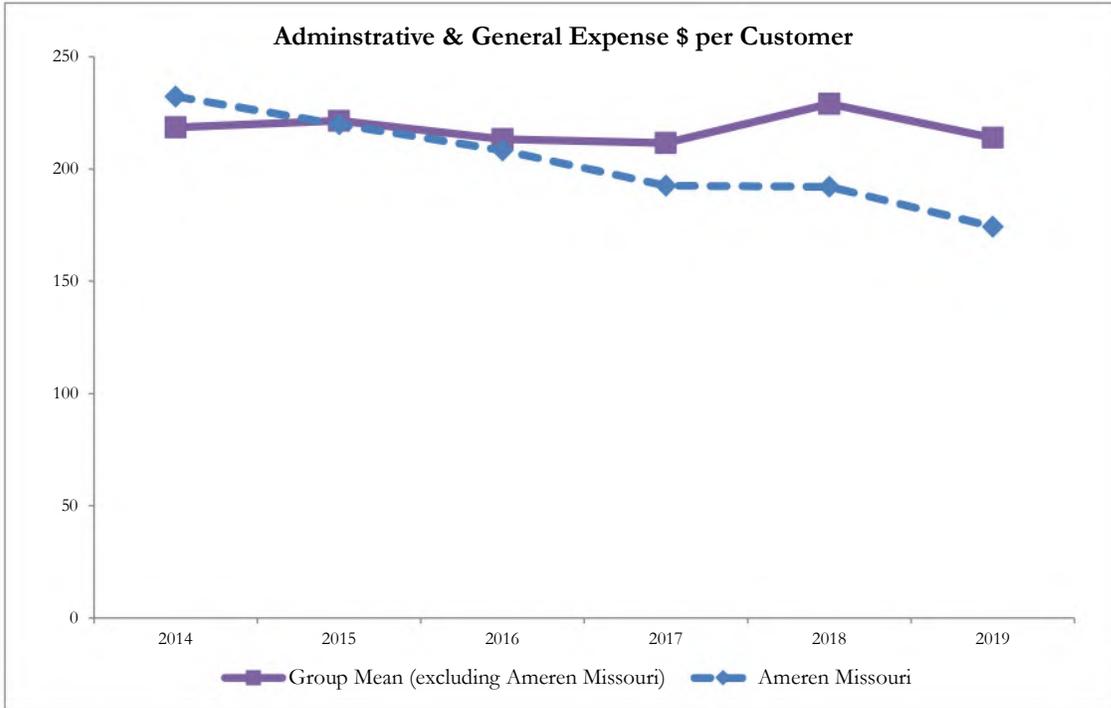
[1] Amount for CILCO in 2009 ties to the Form 1 which includes \$57,483 of intercompany billings recorded in account 921. In the Company's filing in Docket #12-0001, that amount was excluded.

National Electric Utilities With Regulated Generation



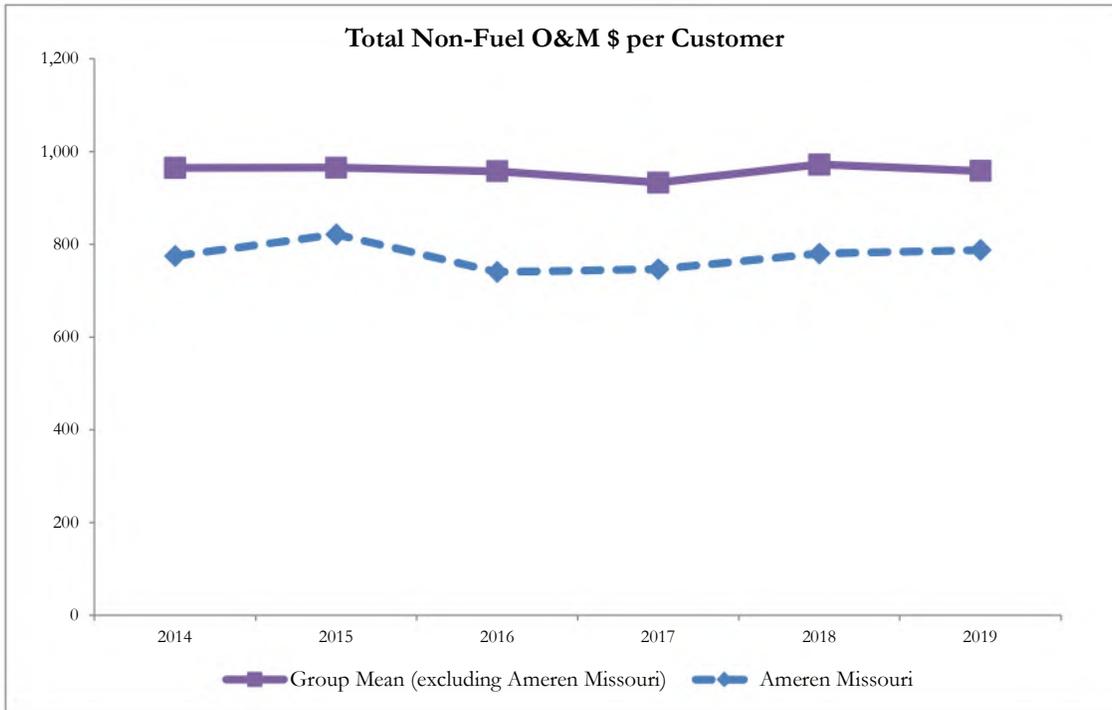
Total Non-Fuel O&M \$ per Customer						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	774	821	740	746	779	787
Group Mean (excluding Ameren Missouri)	842	844	839	837	866	851
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
National Electric Utilities With Regulated Generation						
Ameren Missouri	25	28	19	19	23	23
Quartile	2	3	2	2	2	2
Total Ranked	50	50	50	51	51	51

National Electric Utilities With Regulated Generation



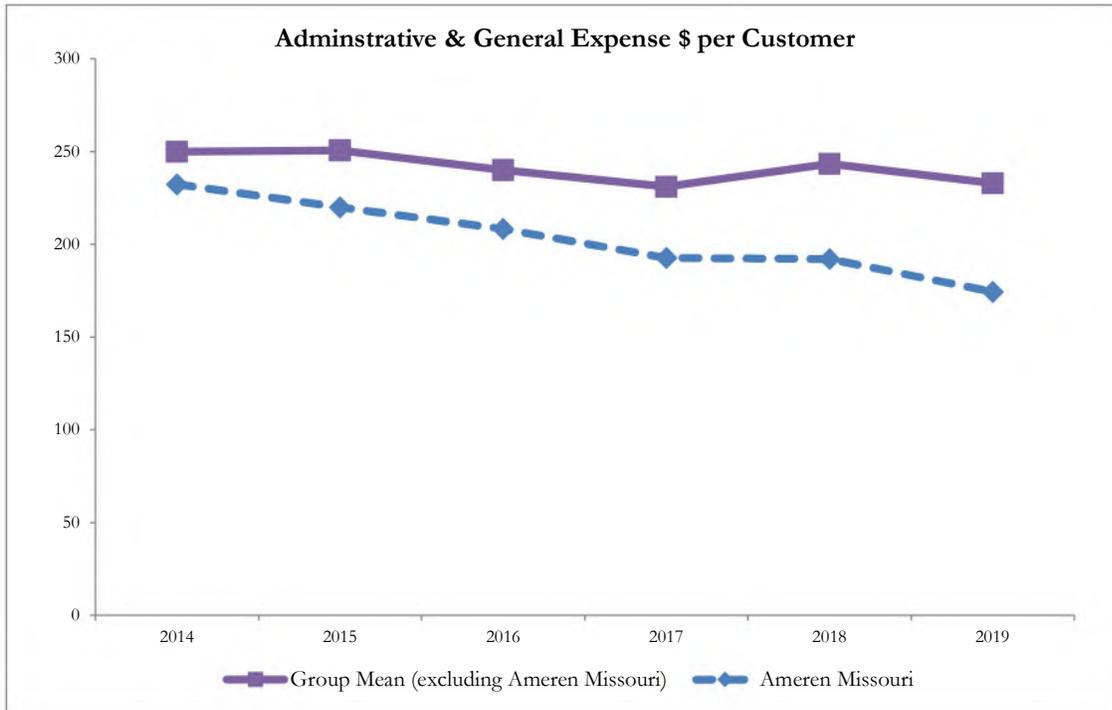
Adminstrative & General Expense \$ per Customer						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	232	220	208	193	192	174
Group Mean (excluding Ameren Missouri)	218	221	213	212	229	214
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
National Electric Utilities With Regulated Generation						
Ameren Missouri	30	30	30	26	22	20
Quartile	3	3	3	3	2	2
Total Ranked	50	50	50	51	51	51

Midwest Electric Utilities With Regulated Generation



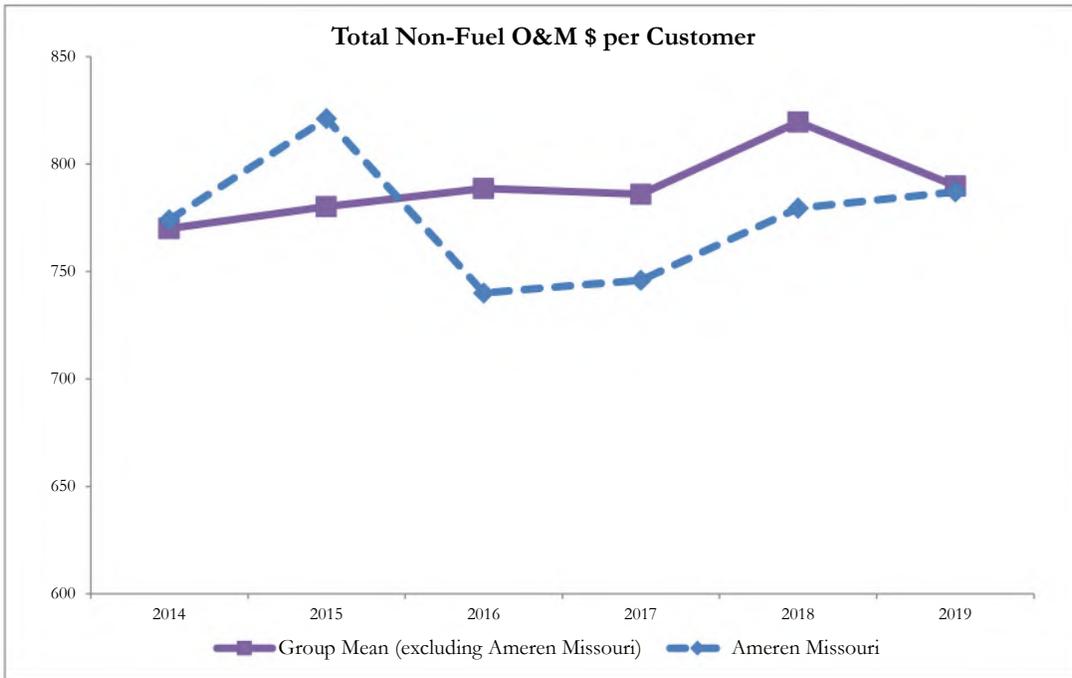
Total Non-Fuel O&M \$ per Customer						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	774	821	740	746	779	787
Group Mean (excluding Ameren Missouri)	964	965	957	933	972	958
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
Midwest Electric Utilities With Regulated Generation						
Ameren Missouri	6	6	1	2	4	3
Quartile	2	2	1	1	1	1
Total Ranked	16	16	16	17	17	17

Midwest Electric Utilities With Regulated Generation



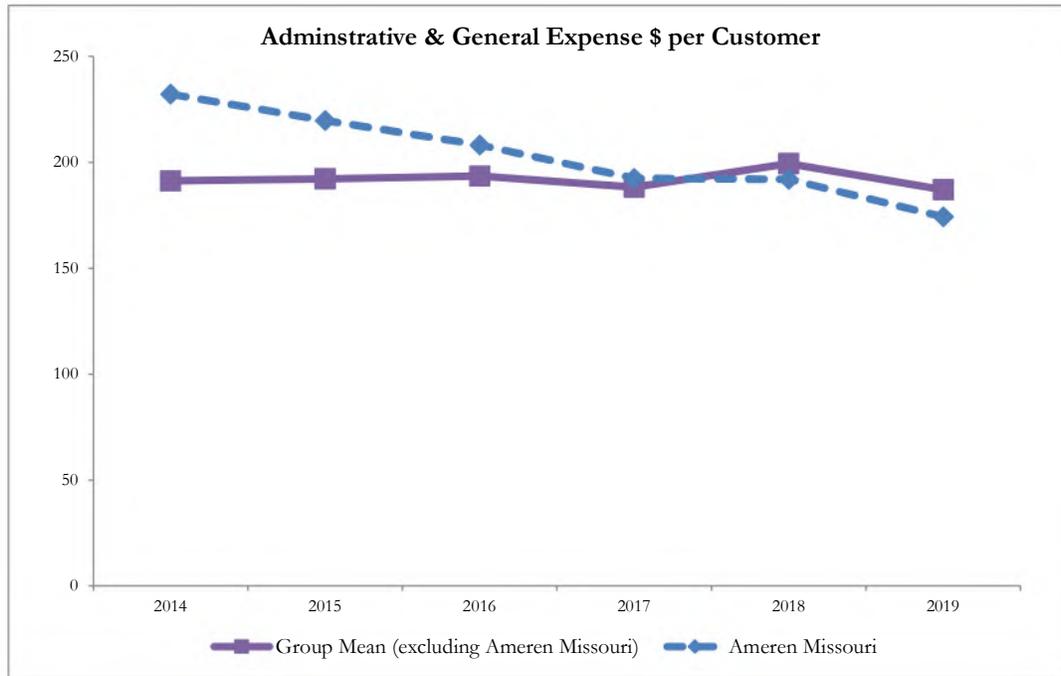
Adminstrative & General Expense \$ per Customer						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	232	220	208	193	192	174
Group Mean (excluding Ameren Missouri)	250	251	240	231	243	233
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
Midwest Electric Utilities With Regulated Generation						
Ameren Missouri	7	6	7	6	6	6
Quartile	2	2	2	2	2	2
Total Ranked	16	16	16	17	17	17

National Electric Utilities With Regulated Generation & 500,000 to 2,000,000 Customers



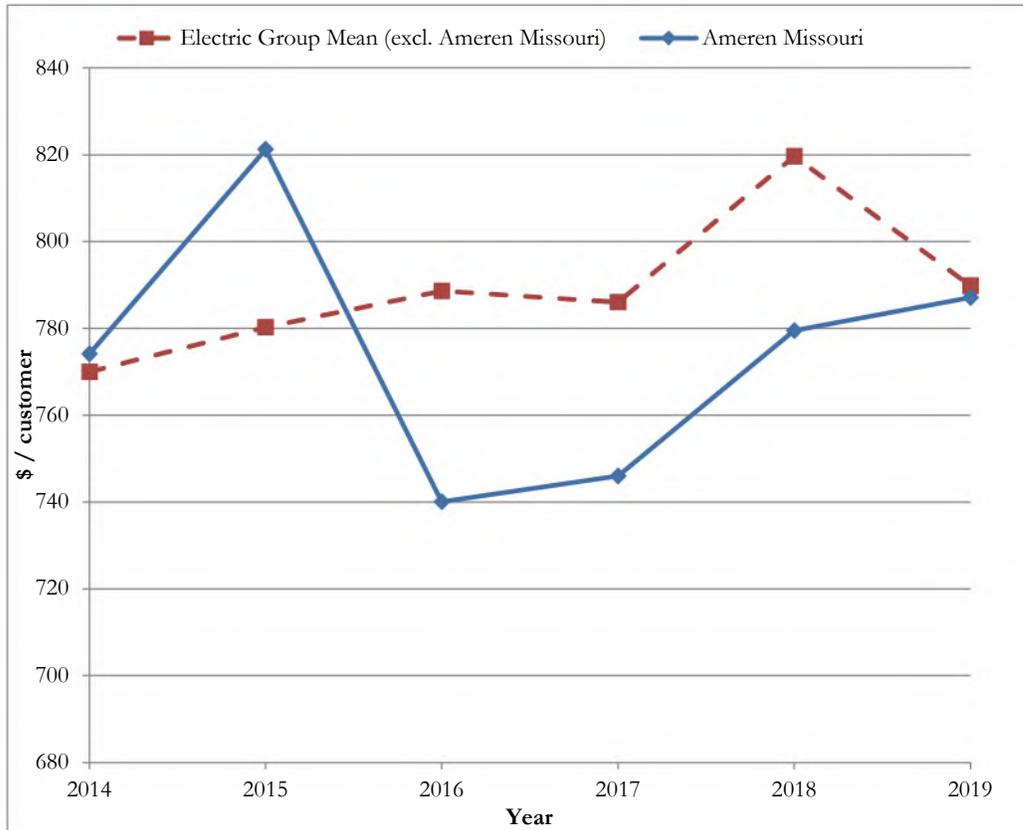
Total Non-Fuel O&M \$ per Customer						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	774	821	740	746	779	787
Group Mean (excluding Ameren Missouri)	770	780	789	786	820	790
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
National Electric Utilities With Regulated Generation & 500,000 to 2,000,000 Customers						
Ameren Missouri	12	14	9	8	10	11
Quartile	3	3	2	2	2	3
Total Ranked	21	21	21	21	21	21

National Electric Utilities With Regulated Generation & 500,000 to 2,000,000 Customers



Adminstrative & General Expense \$ per Customer						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	232	220	208	193	192	174
Group Mean (excluding Ameren Missouri)	191	192	193	188	199	187
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
National Electric Utilities With Regulated Generation & 500,000 to 2,000,000 Customers						
Ameren Missouri	15	14	14	12	10	10
Quartile	3	3	3	3	2	2
Total Ranked	21	21	21	21	21	21

Total Non-Fuel O&M per Customer Cost Efficiency

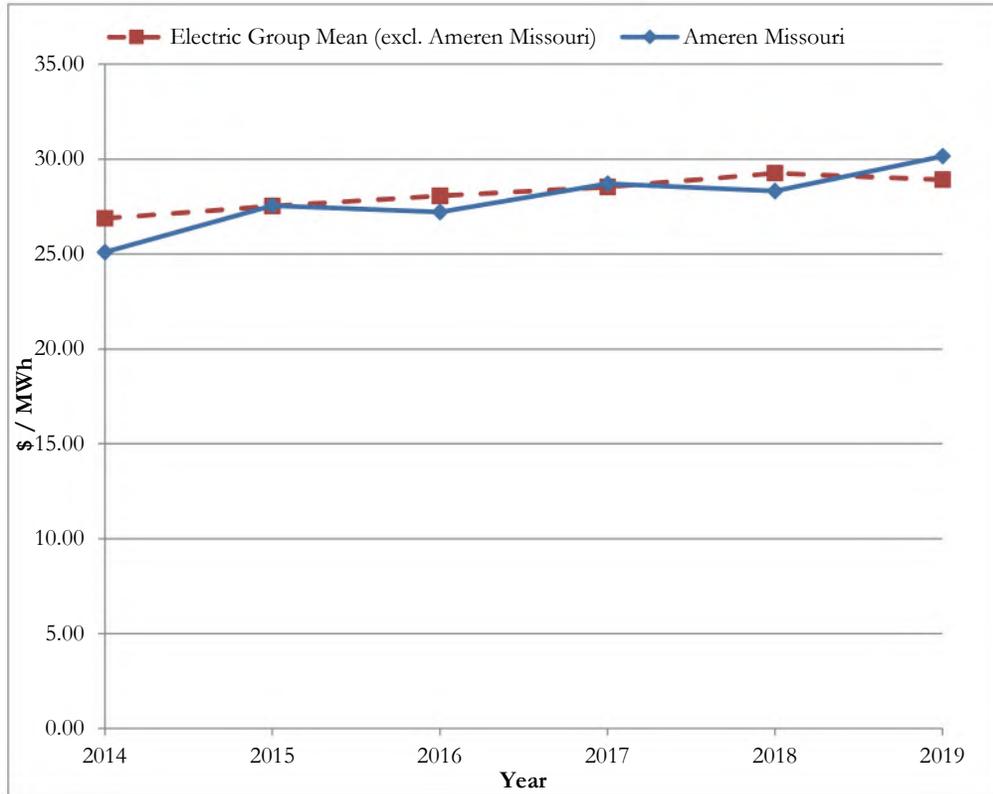


Total Non-Fuel O&M per Customer						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	774	821	740	746	779	787
Electric Group Mean (excl. Ameren Missouri)	770	780	789	786	820	790
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
Electric Group:						
Ameren Missouri	12	14	9	8	10	11
Total Ranked	21	21	21	21	21	21

Source: SNL Interactive, FERC Form 1

Total O&M Expenses less Fuel, Purchased Power, and Other Expenses; Ult Consumer Electric Customers

Total Non-Fuel O&M per MWh Sold Cost Efficiency

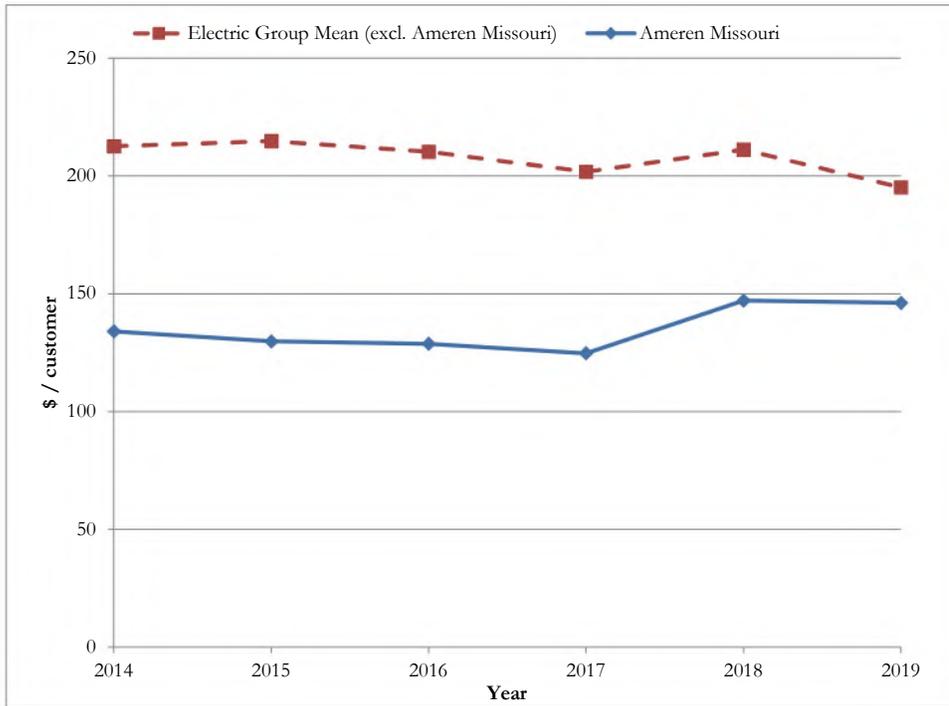


Total Non-Fuel O&M per MWh Sold						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	25.1	27.5	27.2	28.7	28.3	30.1
Electric Group Mean (excl. Ameren Missouri)	26.9	27.5	28.1	28.5	29.3	28.9
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
Electric Group:						
Ameren Missouri	12	14	12	12	13	13
Total Ranked	21	21	21	21	21	21

Source: SNL Interactive, FERC Form 1

Total O&M Expenses less Fuel, Purchased Power, and Other Expenses; Tot Sales: Ult Cnsmr-Mwhrs Sold (MWh)

Non-Fuel Production O&M (Excluding Nuclear) per Customer Cost Efficiency

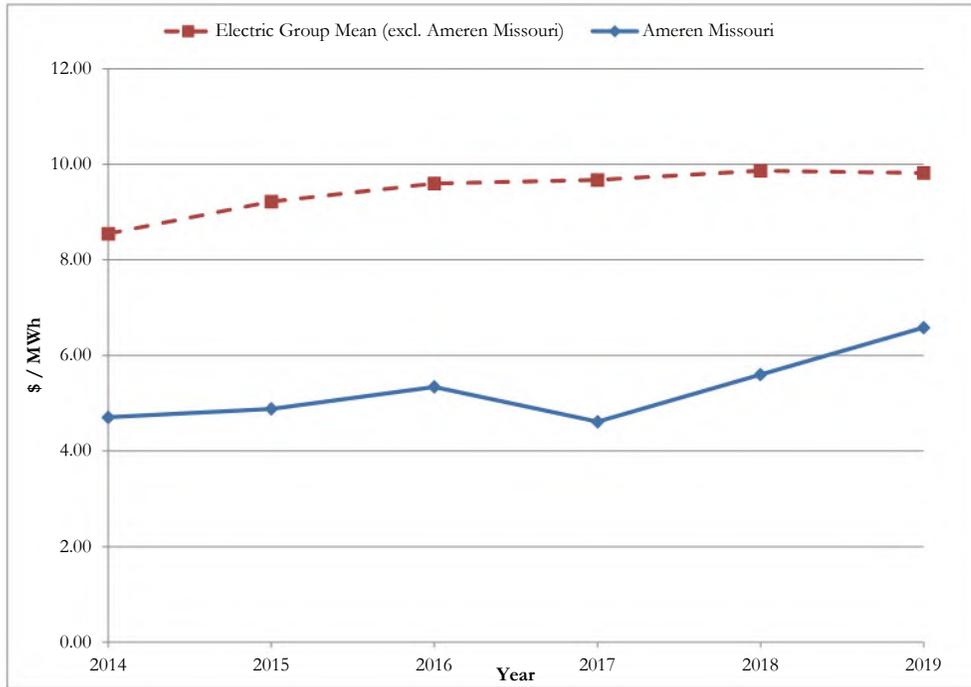


Non-Fuel Production O&M (Excluding Nuclear) per Customer						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	134	130	129	125	147	146
Electric Group Mean (excl. Ameren Missouri)	213	215	210	202	211	195
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
Electric Group:						
Ameren Missouri	4	3	4	5	6	7
Total Ranked	21	21	21	21	21	21

Source: SNL Interactive, FERC Form 1

Total Power Production O&M Expenses, excluding Nuclear less fuel, Purchased Power, and Other Expenses; Total Electric Customers

**Non-Fuel Production O&M per MWh Produced (Excluding Nuclear)
Cost Efficiency**

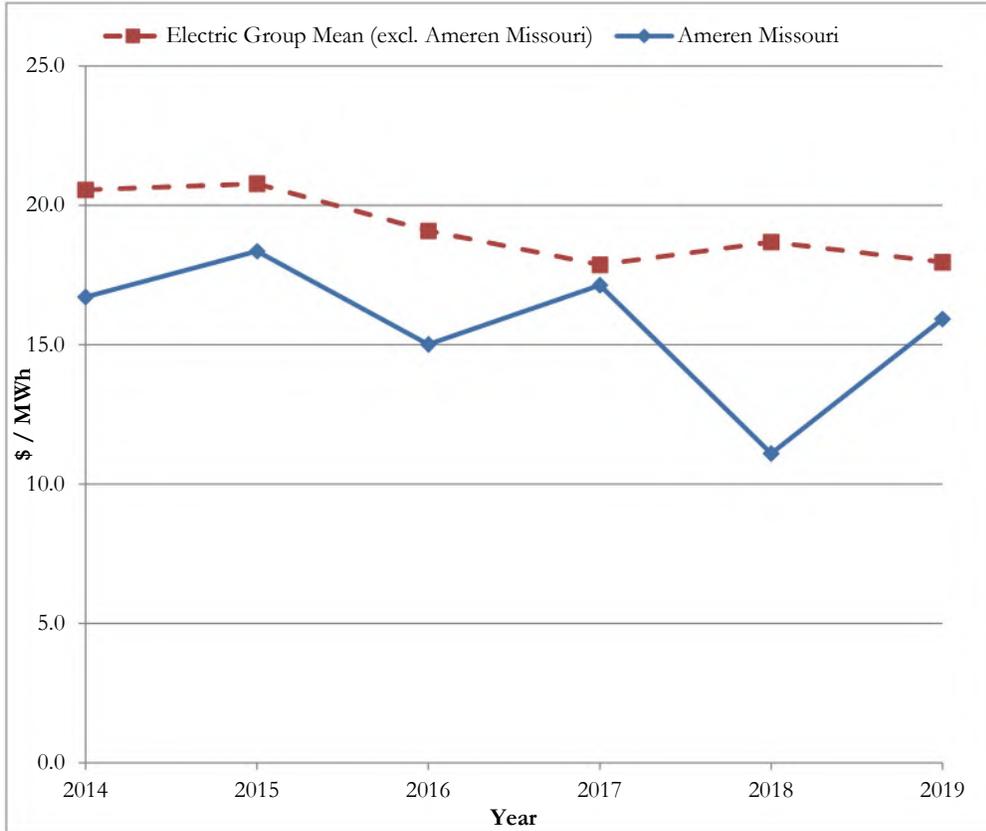


Non-Fuel Production O&M per MWh Produced (Excluding Nuclear)						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	4.70	4.88	5.34	4.62	5.60	6.58
Electric Group Mean (excl. Ameren Missouri)	8.55	9.22	9.60	9.67	9.87	9.82
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
Electric Group:						
Ameren Missouri	1	2	2	2	4	5
Total Ranked	21	21	21	21	21	21

Source: SNL Interactive, FERC Form 1

Total Power Production O&M Expenses excluding Nuclear, less Fuel, Purchased Power, and Other Expenses; Total Net Generation excl Nuclear

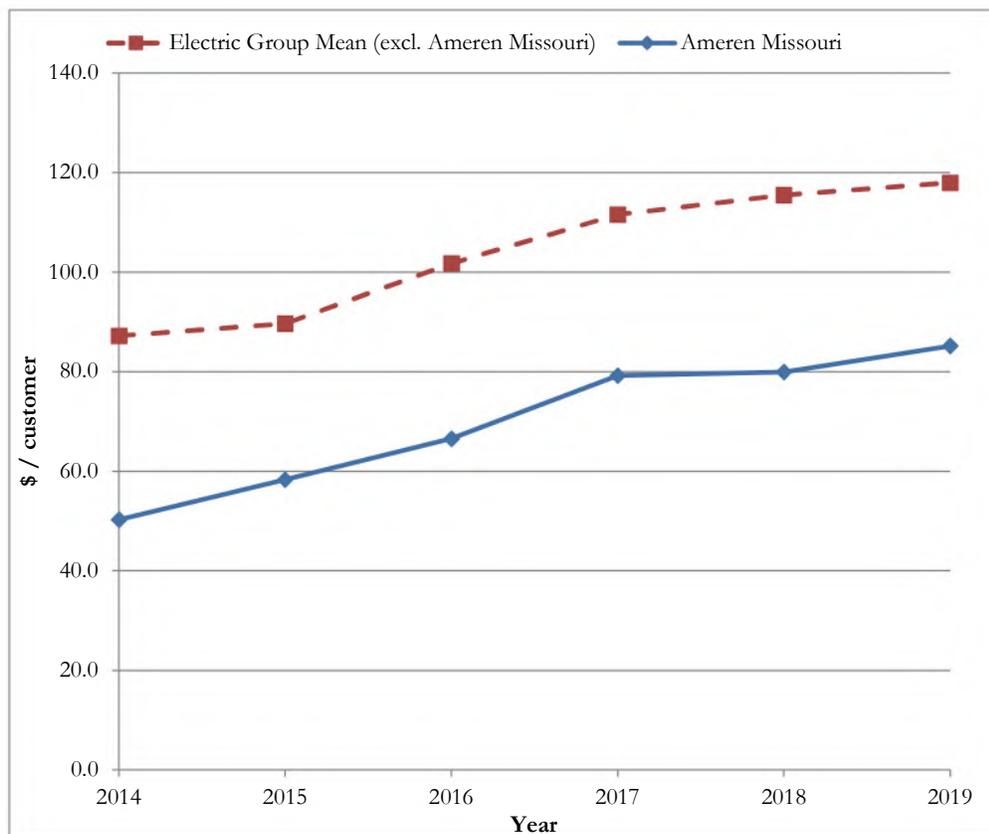
Non-Fuel Nuclear Production O&M per Nuclear MWh Produced Cost Efficiency



Non-Fuel Nuclear Production O&M per Nuclear MWh Produced						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	16.7	18.4	15.0	17.1	11.1	15.9
Electric Group Mean (excl. Ameren Missouri)	20.6	20.8	19.1	17.9	18.7	18.0
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
Electric Group:						
Ameren Missouri	4	3	1	4	1	2
Total Ranked	8	8	8	8	8	8

Source: SNL Interactive, FERC Form 1
Non-Fuel Nuclear O&M less Fuel Expenses; Nuclear Generation (MWh)

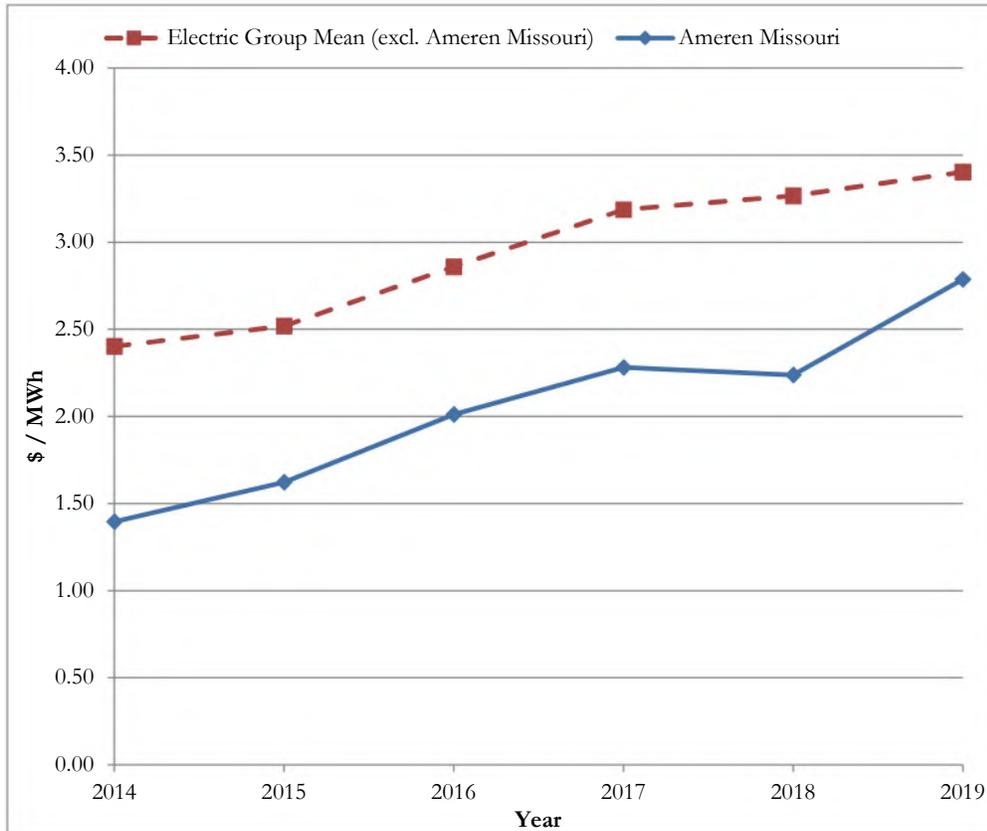
Transmission O&M per Customer Cost Efficiency



Transmission O&M per Customer						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	50.3	58.3	66.6	79.2	80.0	85.2
Electric Group Mean (excl. Ameren Missouri)	87.2	89.6	101.7	111.5	115.5	118.0
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
Electric Group:						
Ameren Missouri	5	8	10	11	10	10
Total Ranked	21	21	21	21	21	21

Source: SNL Interactive, FERC Form 1
Transmiss-O&M Exp; Total Electric Customers

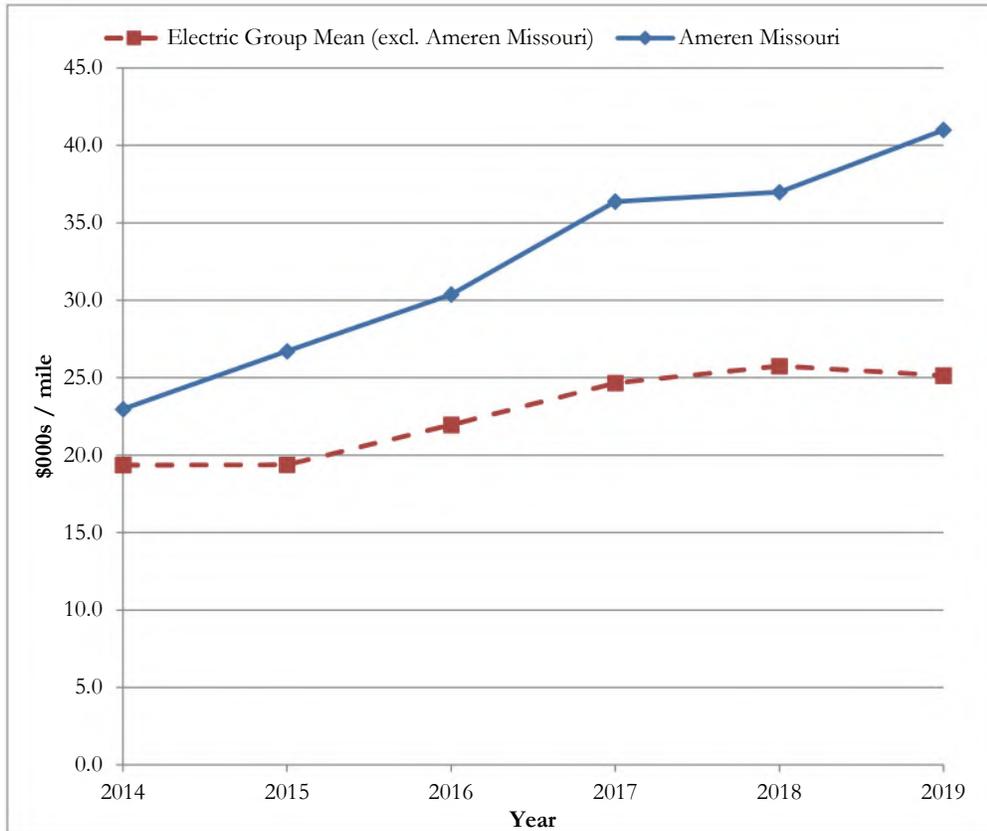
Transmission O&M per MWh Cost Efficiency



Transmission O&M per MWh						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	1.40	1.62	2.01	2.28	2.24	2.79
Electric Group Mean (excl. Ameren Missouri)	2.40	2.52	2.86	3.19	3.27	3.40
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
Electric Group:						
Ameren Missouri	8	8	9	8	8	10
Total Ranked	21	21	21	21	21	21

Source: SNL Interactive, FERC Form 1
Transmiss-O&M Exp; Total Electricity Sales Vol

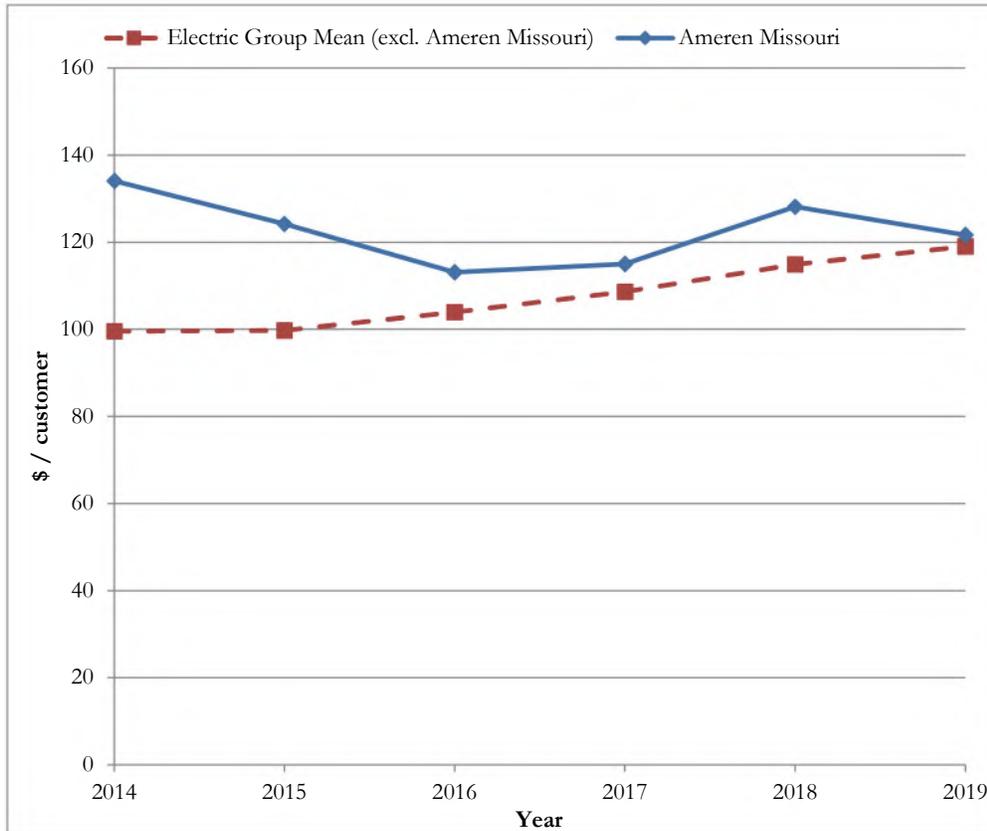
Transmission O&M per Mile of Transmission Line Cost Efficiency



Transmission O&M per Mile of Transmission Line						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	23.0	26.7	30.4	36.4	37.0	41.0
Electric Group Mean (excl. Ameren Missouri)	19.4	19.4	22.0	24.7	25.8	25.1
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
Electric Group:						
Ameren Missouri	17	18	16	17	17	16
Total Ranked	21	21	21	21	21	21

Source: SNL Interactive, FERC Form 1
Transmiss-O&M Exp (\$000); Length of Transmission Lines (Miles)

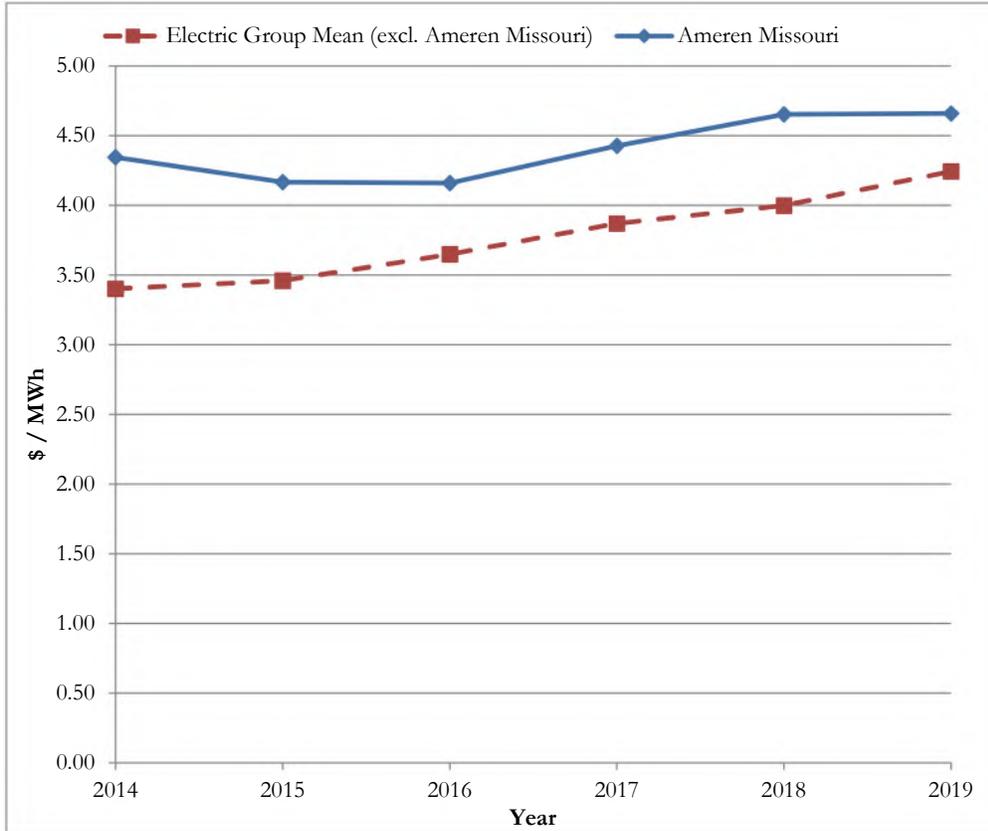
Distribution O&M per Customer Cost Efficiency



Distribution O&M per Customer						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	134	124	113	115	128	122
Electric Group Mean (excl. Ameren Missouri)	100	100	104	109	115	119
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
Electric Group:						
Ameren Missouri	20	18	14	13	14	12
Total Ranked	21	21	21	21	21	21

Source: SNL Interactive, FERC Form 1
Distr-O&M Exp; Ult Consumer Electric Customers

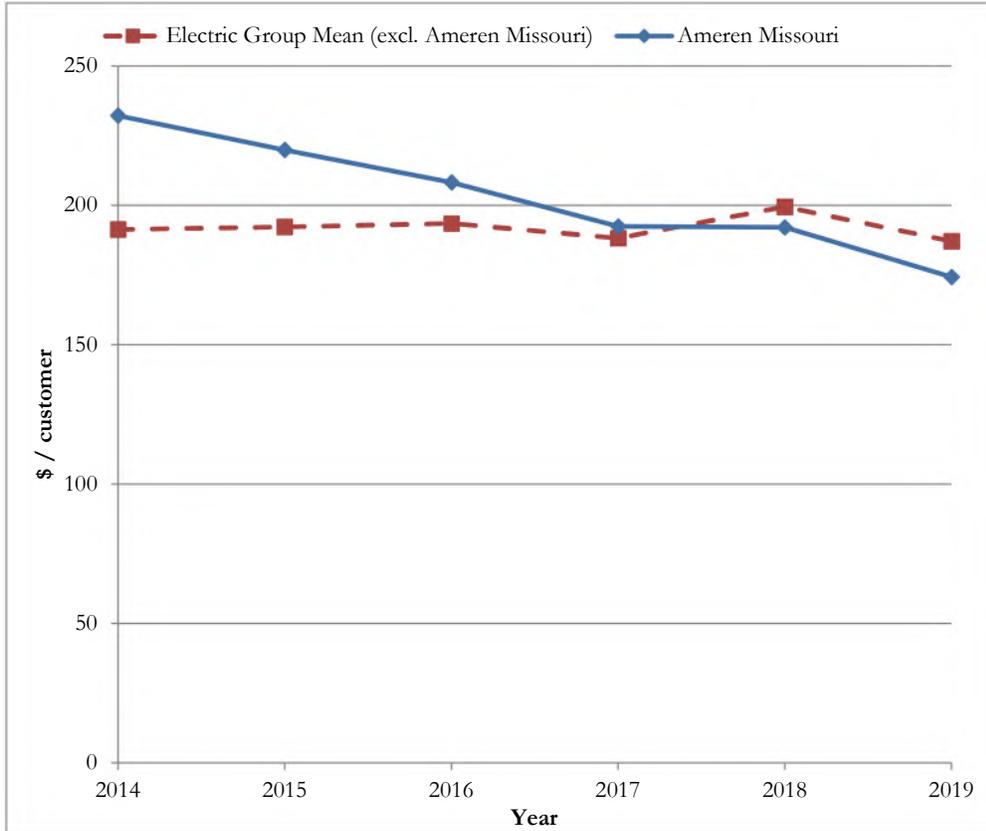
Distribution O&M per MWh Cost Efficiency



Distribution O&M per MWh						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	4.35	4.17	4.16	4.43	4.65	4.66
Electric Group Mean (excl. Ameren Missouri)	3.40	3.46	3.65	3.87	4.00	4.24
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
Electric Group:						
Ameren Missouri	20	18	17	16	18	15
Total Ranked	21	21	21	21	21	21

Source: SNL Interactive, FERC Form 1
Distr-O&M Exp; Tot Sales: Ult Cnsmr-Mwhrs Sold (MWh)

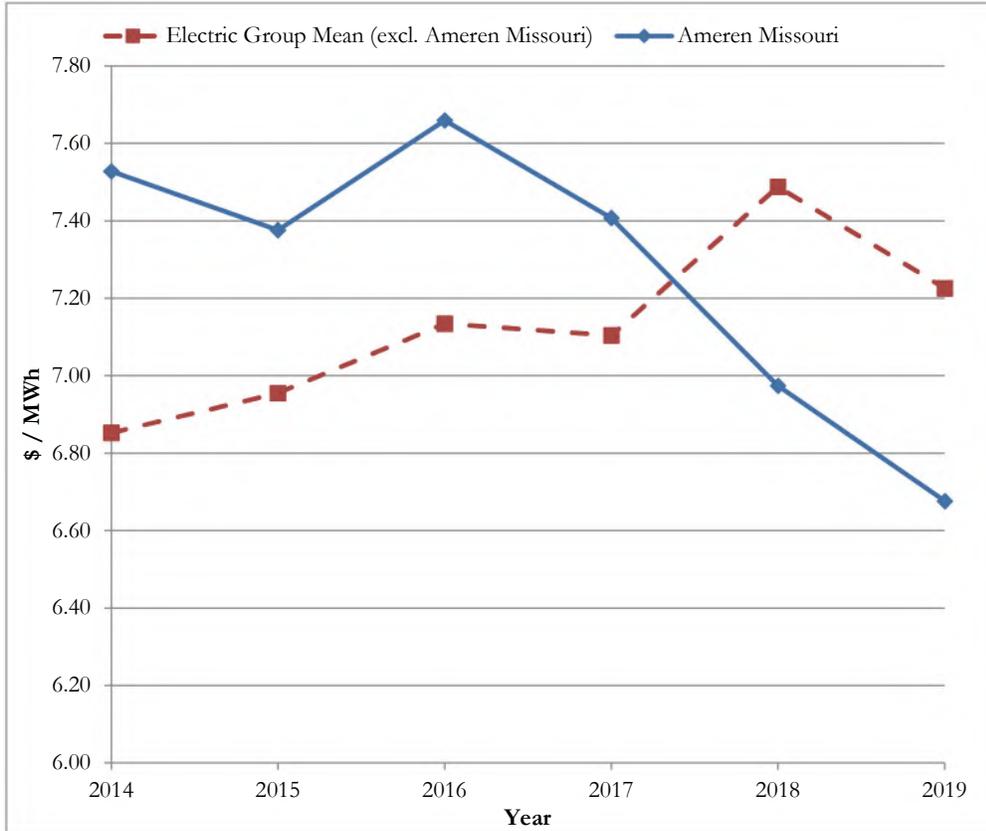
A&G Expense per Customer Cost Efficiency



A&G Expense per Customer						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	232	220	208	193	192	174
Electric Group Mean (excl. Ameren Missouri)	191	192	193	188	199	187
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
Electric Group:						
Ameren Missouri	15	14	14	12	10	10
Total Ranked	21	21	21	21	21	21

Source: SNL Interactive, FERC Form 1
A&G-O&M Exp; Ult Consumer Electric Customers

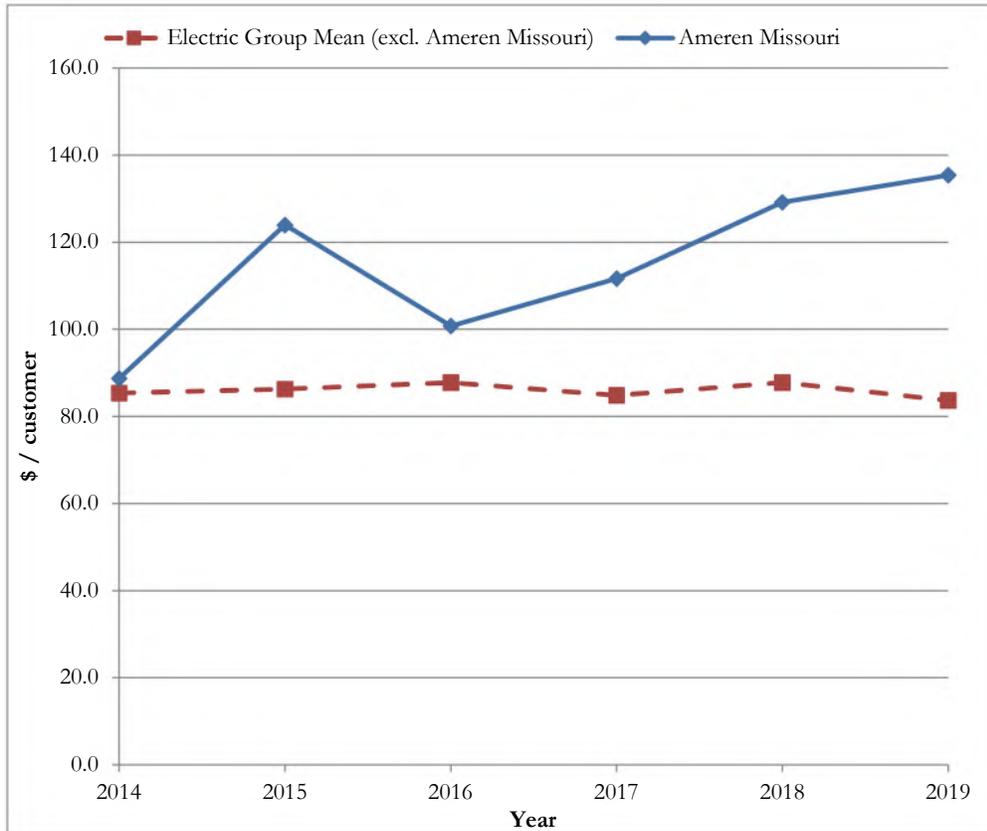
A&G Expense per MWh Cost Efficiency



A&G Expense per MWh						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	7.53	7.38	7.66	7.41	6.97	6.68
Electric Group Mean (excl. Ameren Missouri)	6.85	6.96	7.13	7.10	7.49	7.23
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
Electric Group:						
Ameren Missouri	15	14	14	14	12	12
Total Ranked	21	21	21	21	21	21

Source: SNL Interactive, FERC Form 1
A&G-O&M Exp; Tot Sales: Ult Cnsmr-Mwhrs Sold (MWh)

Customer Expense per Customer Cost Efficiency

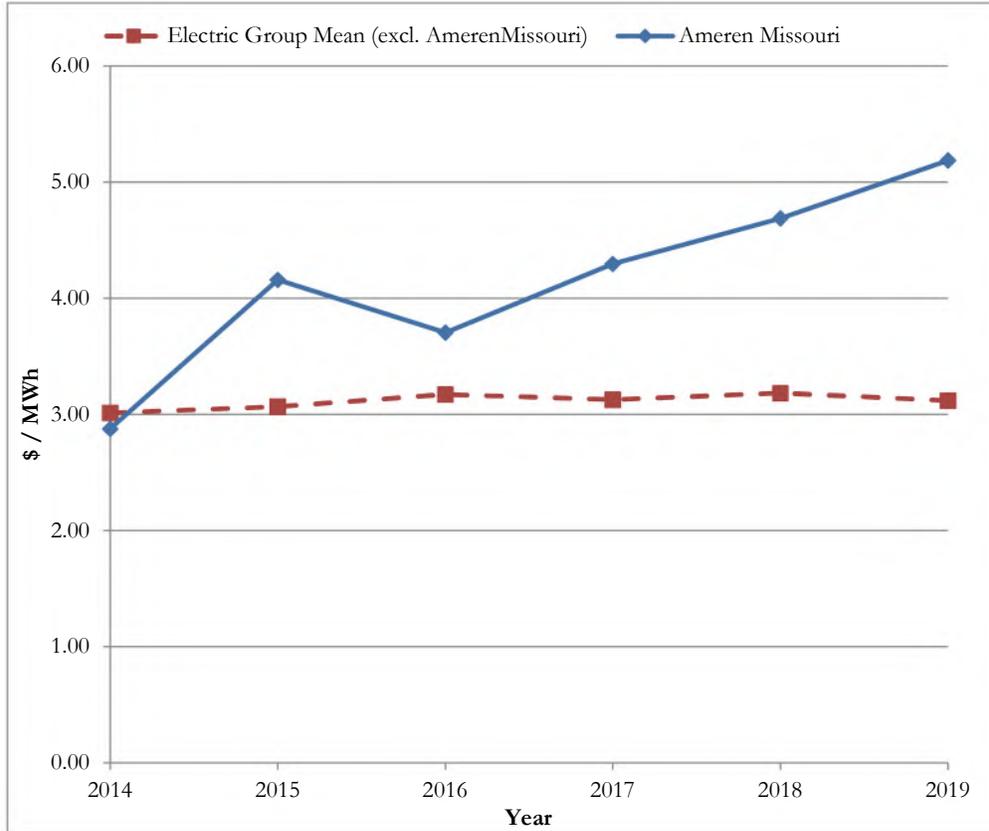


Customer Expense per Customer						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	88.7	124.0	100.8	111.7	129.1	135.4
Electric Group Mean (excl. Ameren Missouri)	85.4	86.2	87.8	84.8	87.8	83.7
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
Electric Group:						
Ameren Missouri	11	20	15	18	20	20
Total Ranked	21	21	21	21	21	21

Source: SNL Interactive, FERC Form 1

Customer Accounts Exp; Customer Service and Info Exp; Sales Exp; Ult Consumer Electric Customers

Customer Expense per MWh Cost Efficiency



Customer Expense per MWh						
<i>Annual Values</i>						
	2014	2015	2016	2017	2018	2019
Ameren Missouri	2.88	4.16	3.71	4.30	4.69	5.19
Electric Group Mean (excl. Ameren Missouri)	3.01	3.07	3.17	3.13	3.18	3.12
<i>Rankings</i>						
	2014	2015	2016	2017	2018	2019
Electric Group:						
Ameren Missouri	13	17	12	17	19	21
Total Ranked	21	21	21	21	21	21

Source: SNL Interactive, FERC Form 1

Customer Accounts Exp; Customer Service and Info Exp; Sales Exp; Tot Sales: Ult Cnsmr-Mwhrs Sold (MWh)

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Union Electric Company)
d/b/a Ameren Missouri's Tariffs to Adjust)
Its Revenues for Electric Service.)

Case No. ER-2021-0240

AFFIDAVIT OF JOHN J. REED

STATE OF Massachusetts)
) ss
CITY OF Marlborough)

John J. Reed, being first duly sworn on his oath, states:

My name is John J. Reed, and on his oath declare that he is of sound mind and lawful age; that he has prepared the foregoing *Direct Testimony*; and further, under the penalty of perjury, that the same is true and correct to the best of my knowledge and belief.



John J. Reed

Sworn to me this 31 day of March, 2021.

Wendy H. Ruston
Notary Public
Commonwealth of Massachusetts
Commission Expires April 22, 2022