

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

**In the Matter of the Application of
Kentucky Utilities Company for an
Adjustment of Its Electric Rates and for
Certificates of Public
Convenience and Necessity**

Case No. 2016-00370

**DIRECT TESTIMONY OF
JONATHAN WALLACH
ON BEHALF OF
SIERRA CLUB, ALICE HOWELL,
AND CARL VOGEL**

Resource Insight, Inc.

MARCH 3, 2017

TABLE OF CONTENTS

I.	INTRODUCTION AND SUMMARY	1
II.	RESIDENTIAL BASIC SERVICE CHARGE	4
III.	FIXED AND VARIABLE ENERGY RATES.....	16

TABLE OF EXHIBITS

Exhibit JFW-1	<i>Professional Qualifications of Jonathan Wallach</i>
Exhibit JFW-2	<i>Minimum Connection Cost of Service</i>
Exhibit JFW-3	<i>Sources for Elasticity Estimates</i>

1 **I. INTRODUCTION AND SUMMARY**

2 **Q: Please state your name, occupation, and business address.**

3 A: My name is Jonathan F. Wallach. I am Vice President of Resource Insight,
4 Inc., 5 Water Street, Arlington, Massachusetts.

5 **Q: Please summarize your professional experience.**

6 A: I have worked as a consultant to the electric power industry since 1981. From
7 1981 to 1986, I was a research associate at Energy Systems Research Group.
8 In 1987 and 1988, I was an independent consultant. From 1989 to 1990, I
9 was a senior analyst at Komanoff Energy Associates. I have been in my
10 current position at Resource Insight since September of 1990.

11 Over the past four decades, I have advised and testified on behalf of
12 clients on a wide range of economic, planning, and policy issues relating to
13 the regulation of electric utilities, including: electric-utility restructuring;
14 wholesale-power market design and operations; transmission pricing and
15 policy; market-price forecasting; market valuation of generating assets and
16 purchase contracts; power-procurement strategies; risk assessment and
17 mitigation; integrated resource planning; mergers and acquisitions; cost
18 allocation and rate design; and energy-efficiency program design and
19 planning.

20 My resume is attached as Exhibit JFW-1.

21 **Q: Have you testified previously in utility proceedings?**

22 A: Yes. I have sponsored expert testimony in more than eighty state, provincial,
23 and federal proceedings in the U.S. and Canada. Exhibit JFW-1 provides a
24 detailed list of my previous testimony.

25

1

2 **Q: On whose behalf are you testifying in this proceeding?**

3 A: I am testifying on the behalf of the Sierra Club, Alice Howell, and Carl
4 Vogel.

5 **Q: What is the purpose of your testimony?**

6 A: On November 23, 2016, Kentucky Utilities Company (KU or “the
7 Company”) filed an application (including supporting testimony) for
8 authority to adjust its electric rates and for certificates of public convenience
9 and necessity. My testimony addresses the following aspects of the
10 Company’s filing:

- 11 • The Company’s proposal to increase the monthly residential basic
12 service charge from \$10.75 to \$22.00.
- 13 • The Company’s proposal to separate the residential energy rate into
14 fixed and variable cost components.

15 Both of these proposals are supported in pre-filed direct testimony by
16 Company witnesses Robert M. Conroy and William Steven Seelye.

17 **Q: Please summarize your findings and recommendations.**

18 A: The Company lacks a reasonable basis for its proposal to increase the basic
19 service charge. The proposed increase would inappropriately shift load-
20 related costs to the basic service charge, dampen price signals to consumers
21 for reducing energy usage, disproportionately and inequitably increase bills
22 for the Company’s lowest-usage residential customers, and exacerbate the
23 subsidization of larger residential customers’ costs by those lower-usage
24 customers. Consequently, the Commission should reject the Company’s
25 proposal to increase the monthly basic service charge to \$22.00 and instead

1 find that it is reasonable to maintain the monthly charge at its current level of
2 \$10.75.

3 The Company also proposes to separate the residential energy rate into
4 “fixed” and “variable” cost components on its tariff for informational and
5 educational purposes. The Commission should reject the Company’s proposal
6 since it will only serve to confuse and misinform ratepayers regarding the
7 distinction between fixed and variable costs recovered through the residential
8 energy rate and regarding the rationale for recovering such costs separately.

9 My recommendations regarding both of these proposals are intended to
10 promote rate designs that provide revenue adequacy, reasonably mitigate
11 intra-class subsidies, and, in accordance with the Commission’s longstanding
12 ratemaking standards, promote efficient behavior with appropriate price
13 signals for conservation in order to avoid unnecessary costs being imposed
14 on ratepayers:

15 For over 30 years, the Commission has historically noted the importance
16 of energy efficiency (conservation) as a ratemaking standard. “It is
17 intended to minimize the ‘wasteful’ consumption of electricity and to
18 prevent consumption of scarce resources....”

19 [W]ith the potential for huge increases in the costs of generation and
20 transmission as a result of aging infrastructure, low natural gas prices,
21 and stricter environmental requirements, we will strive to avoid taking
22 actions that might disincent energy efficiency.¹

¹ In re Applic. of Ky. Utils. Co. for an Adjustment of Its Elec. Rates, Case No. 2012-00221, Order (Dec. 20, 2012), at 7, 11 (internal citations omitted).

1 Indeed, the Commission’s focus on energy efficiency and conservation
2 has sharpened over time, consistent with “the Commission’s belief that
3 greater attention to energy efficiency is important.”²

4 **II. RESIDENTIAL BASIC SERVICE CHARGE**

5 **Q: What is the Company’s proposal with respect to the basic service charge
6 for residential customers?**

7 A: The Company proposes to more than double the monthly basic service charge
8 for residential customers from \$10.75 to \$22.00. Company witness Conroy
9 contends that the Company’s proposal would result in a basic service charge
10 that better reflects the fixed customer-related cost to serve a residential
11 customer, as indicated by the results of the Company’s cost of service study
12 (COSS). Mr. Conroy notes that the COSS estimates a customer-related cost
13 for the residential class of \$23.93 per customer per month, which means that
14 the proposed basic service charge would recover about 92% of the embedded
15 costs classified as customer-related and allocated to the residential class in
16 the Company’s COSS.

17 **Q: What costs are classified as customer-related in the Company’s COSS?**

18 A: According to Company witness Seelye, the cost of meters, service drops, and
19 all customer services are deemed to be customer-related in the Company’s

² In re Applic. of Blue Grass Energy Coop. Corp. for an Adjustment of Rates, Case No. 2014-00339, Order (May 29, 2015), at 7; *see also* In re Applic. of Big Rivers Elec. Corp. for an Adjustment of Rates, Case No. 2012-00535, Order (Oct. 29, 2013), at 53 (“[A]s we have stated in many other orders ... “EE/DSM and conservation have become more important.”); In re 2012 Integrated Res. Plan of E. Ky. Pwr. Coop., Inc., Case No. 2012-00149, Staff Report (Sept. 26, 2013), at 30 (encouraging utility “to further educate and encourage [stakeholders] about the importance of DSM, energy efficiency, and energy conservation”).

1 COSS. In addition, the COSS classifies a portion of pole, conductor, and
2 secondary transformer costs as customer-related, based on the results of a
3 zero-intercept analysis of such distribution plant costs.

4 **Q: Why does KU want to move the residential basic service charge to the**
5 **COSS estimate of customer-related costs?**

6 A: Mr. Seelye claims that the COSS estimate of customer-related costs, on a per-
7 customer basis, represents the minimum monthly cost to provide a residential
8 customer access to electric service no matter how much energy that customer
9 uses in a month.³ Mr. Seelye further asserts that any amount of that
10 customer-related cost recovered through the energy charge represents a
11 subsidy payment from above-average to below-average usage customers.⁴
12 Thus, the Company’s proposal to increase the basic service charge from
13 \$10.75 to \$22.00 would remove almost all of the customer-related costs from
14 the energy charge and thereby effectively eliminate the alleged subsidy
15 payment from above-average to below-average customers.⁵

³ Direct Testimony William Steven Seelye, Case No. 2016-00370, November 23, 2016, p. 21, ll. 1-7. Mr. Seelye also refers to customer-related costs as “non-volumetric fixed costs.”

⁴ To the extent that non-volumetric fixed costs are recovered through energy rates, a low-usage customer will contribute a smaller share toward recovery of such costs than a larger residential customer. Conversely, to the extent that volumetric costs are recovered through the basic service charge, a low-usage customer will contribute a larger share toward recovery of such costs than a larger residential customer.

⁵ Company witness Conroy also notes that increasing the basic service charge might reduce spikes in monthly bills. However, concerns regarding monthly bill volatility could be addressed simply by encouraging customers to sign up for budget billing under the Company’s Budget Payment Plan and by offering cost-effective demand-side management programs targeting weather-related loads. In any event, customers experiencing financial hardship from periodically high bills—who tend to be lower-income consumers—would not likely find

1 **Q: Do you agree with Mr. Seelye's claim that increasing the basic service**
2 **charge would reduce subsidization of low-usage customers by larger**
3 **residential customers?**

4 A: No. To the contrary, I conclude from a review of the Company's COSS that
5 customers with above-average usage are currently being subsidized by low-
6 usage customers. Thus, the Company's proposal would actually exacerbate
7 intra-class subsidization and diminish rate affordability for smaller customers
8 by shifting load-related costs inappropriately from high-usage to low-usage
9 customers.

10 Specifically, I find that the Company overstates the minimum cost to
11 serve a residential customer because it relies on the results of a zero-intercept
12 analysis to derive its estimate of the minimum cost *per customer*. As
13 discussed below, it is not appropriate to rely on the results of zero-intercept
14 analyses for the purposes of estimating a *per-customer* minimum cost, since
15 such analyses typically overstate the true minimum cost *per customer* for
16 distribution plant. Correcting for this overstatement, I find that the minimum
17 cost to serve a residential customer is less than the amount currently being
18 recovered through the basic service charge, which indicates that low-usage
19 customers are currently subsidizing high-usage customers.
20

reprieve in an overall rate hike that smooths out billing periods by way of raising each of their monthly bills to varying degrees. In other words, consistently higher monthly bills are not made more palatable to vulnerable households simply because those bills are more uniform in their costliness.

1 **Q: Please describe the Company's zero-intercept analysis of pole,**
2 **conductor, and line-transformer costs.**

3 A: In order to allocate the cost of its existing distribution plant to customer
4 classes, the Company must first separate such plant costs into customer-
5 related and demand-related portions. Those plant costs classified as
6 customer-related can then be allocated to classes in proportion to the number
7 of customers in each class, while those costs classified as demand-related can
8 be allocated in proportion to class demand.

9 The Company's zero-intercept analysis determines the customer-related
10 portion of distribution plant cost by estimating the "minimum" cost of the
11 Company's existing distribution equipment, i.e., what the cost of all of the
12 Company's existing poles, conductors or line transformers would be if those
13 conductors or transformers were sized to carry zero load. In the Company's
14 COSS, the "minimum" cost of the distribution system (as determined by the
15 zero-intercept analysis) is classified as customer-related and then allocated to
16 customer classes in proportion to the number of customers in each class.

17 The zero-intercept method derives the minimum cost of the existing
18 distribution system by estimating what it would cost in theory to replicate the
19 configuration of the existing distribution system (i.e., assuming the same
20 number of poles, conductor-feet, and transformers) with equipment that did
21 not have to carry any load. The zero-intercept approach derives the cost of
22 this hypothetical zero-load equipment by estimating a functional relationship
23 between equipment cost and equipment size based on the current system, and
24 then extrapolating that cost function to estimate the cost of equipment that
25 carries zero load (e.g., zero-kVA transformers), the smallest units legally

1 allowed (e.g., 25-foot poles), or the smallest units physically feasible (e.g.,
2 the thinnest conductors that will support their own weight in overhead spans).

3 **Q: Is it appropriate to rely on the results of a zero-intercept analysis to**
4 **estimate the minimum cost to connect a residential customer?**

5 A: No. As noted above, the purpose of a zero-intercept analysis is to determine
6 the portion of distribution plant costs that are reasonably allocated to
7 customer classes based on the number of customers in each class. The
8 Company has not offered any evidence that zero-intercept analyses also yield
9 reliable estimates of the minimum cost to connect an individual customer.

10 To the contrary, zero-intercept analyses overstate the minimum cost *per*
11 *customer* because they assume that a minimum system carrying zero load
12 would have the same number of poles, conductor-feet, and transformers as
13 currently installed in a distribution system designed to carry actual
14 distribution load. In other words, the zero-intercept method assumes that each
15 piece of distribution equipment would serve the same number of customers
16 on average, regardless of whether the customers are average-sized (as for the
17 actual system) or have zero demand (as for the hypothetical minimum
18 system.)

19 This is not a realistic assumption, since even a minimally sized piece of
20 distribution equipment should be able to serve more minimal-demand
21 customers than the number of average-demand customers served by average-
22 sized distribution equipment. Consequently, the true minimum cost to serve a
23 customer with minimal usage is likely to be less than the customer-related
24 cost per customer derived using a zero-intercept analysis. Indeed, since the
25 zero-intercept method estimates the minimum cost for hypothetical
26 equipment that serves zero load, the true minimum plant cost *per customer*

1 must be zero because distribution equipment that carries zero load can serve
2 an infinite number of customers with zero load.

3 **Q: Have you estimated the true minimum cost to serve one of the**
4 **Company's residential customers?**

5 A: Yes. As noted above, the Company considers the minimum cost to serve a
6 residential customer to include the cost per customer of meters, service
7 drops, customer services, and the customer-related portion of pole,
8 conductor, and transformer plant costs. However, since the true minimum
9 cost of the Company's poles, conductors, and secondary transformers per
10 customer is zero under a zero-intercept analysis, I derived the minimum cost
11 to connect a residential customer based on the costs per residential customer
12 of service drops, meters, meter-reading, billing, and other customer-service
13 expenses.

14 Based on the calculations in Exhibit WSS-2, I estimate a minimum
15 connection cost of \$10.60 per customer per month.⁶ As indicated in Exhibit
16 JFW-2, the total minimum connection cost breaks down to \$3.35 for
17 customer-related distribution costs and \$7.24 for customer-service expenses.⁷

⁶ The spreadsheet version of Exhibit WSS-2 is part of the Company's COSS spreadsheet model. The COSS model was provided in response to Commission Staff Data Request No. 1-53.

⁷ The only change I made to the calculations in Exhibit WSS-2 was to exclude the customer-related portions of pole, conductor, and transformer costs from the calculation of customer-related distribution cost. I adopted all other input assumptions and calculations in Exhibit WSS-2 for the purposes of deriving Exhibit JFW-2.

1 Thus, a monthly residential basic service charge of \$22.00, as proposed
2 by the Company, would overstate the minimum connection cost by more than
3 a factor of two.

4 **Q: What does this result tell us about cost subsidization within the**
5 **residential class?**

6 A: The fact that the current basic service charge exceeds the minimum
7 connection cost indicates that volumetric costs are also being recovered
8 through the current charge. This means that residential customers with
9 below-average usage currently bear a disproportionate share of volumetric
10 costs and consequently subsidize larger customers under current rates, not the
11 other way around as Mr. Seelye contends.

12 **Q: How would a change in the basic service charge affect cost subsidization**
13 **within the residential class?**

14 A: Since the current basic service charge already exceeds the minimum cost to
15 serve a residential customer, increasing the charge would exacerbate the
16 subsidization of high-usage customers' costs by low-usage customers.
17 Decreasing the basic service charge, on the other hand, would reduce the
18 subsidy payment from low-usage to high-usage residential customers.

19 Consequently, if the Commission opts to address subsidies within the
20 residential customer class, my estimate of the minimum connection cost
21 suggests that a *reduction* – not an increase – in the basic service charge
22 would be warranted to mitigate subsidization of high-usage customers' costs
23 by low-usage customers.

1 **Q: Besides exacerbating subsidization of high-usage customers by low-usage**
2 **customers, would the Company's proposal to increase the basic service**
3 **charge have any other adverse effects?**

4 A: Yes. The difference between the Company's proposed basic service charge
5 and the minimum cost to serve residential customers represents usage-related
6 costs. Thus, the Company's proposal to increase the residential basic service
7 charge would shift recovery of costs to the basic service charge that are more
8 appropriately recovered through the energy charge. Such a cost shift would
9 dampen price signals and discourage economically efficient conservation and
10 investments in distributed generation by residential customers.

11 **Q: How should residential energy and basic service charges be set in order**
12 **to provide appropriate price signals and encourage conservation?**

13 A: Energy charges should be set at levels that recover costs that tend to increase
14 with customer usage. This includes costs directly driven by customer usage,
15 such as generation, transmission, substations, and distribution conductor
16 sizing and number. Energy charges should also include costs that tend to rise
17 with customer usage level but are not directly caused by customer usage.
18 Examples of this latter category might include bad debt, the costs associated
19 with adding line transformers to avoid long runs of secondary conductor with
20 high loads, or the additional distribution costs between very large suburban
21 homes, as opposed to closely packed urban duplexes or apartments.

22 In contrast, the basic service charge is intended to reflect the
23 incremental costs imposed by the continued presence of a customer who uses
24 very little energy. Thus, the basic service charge should not be expected to
25 cover all customer-related costs for the average residential customer, but only

1 the incremental cost to connect one more very small customer.⁸ Since the
2 Company would typically not need to add secondary conductor or a
3 transformer to connect a very small customer, incremental connection costs
4 would be limited to installation and maintenance costs for a service drop and
5 meter, along with meter-reading, billing, and other customer-service
6 expenses.⁹

7 **Q: What is the incremental cost to connect a residential customer in the**
8 **Company's service territory?**

9 A: The per-customer minimum connection cost described above reflects the
10 incremental cost to connect one more very small customer. Thus, I estimate
11 an incremental cost of \$10.60 per customer per month.

12 The \$22.00 basic service charge proposed by KU overstates my
13 estimated incremental connection cost by more than 100%. The excess over
14 incremental connection cost represents usage-related costs that would be
15 recovered through the basic service charge under the Company's proposal.
16 Thus, the Company's proposal to increase the residential basic service charge
17 would dampen price signals by inappropriately shifting recovery of usage-
18 related costs from the energy charge to the basic service charge.
19

⁸ See, e.g., Jim Lazar & Wilson Gonzalez, *Smart Rate Design for a Smart Future*, Regulatory Assistance Project, 36 (July 2015).

⁹ Remote residences might also require a line extension and a small transformer in order to connect to the distribution system. On the other hand, customers located in a multi-family building would probably not require their own service drop.

1 **Q: How does the proposed increase to the basic service charge affect the**
2 **residential energy rate?**

3 A: With the basic service charge set at \$22.00, KU proposes to decrease the
4 energy rate to 8.523¢/kWh in order to recover the test-year revenue
5 requirement allocated to the residential class. If, instead, the basic service
6 charge remained at its current rate of \$10.75, the energy rate would have to
7 be increased to 9.477¢/kWh to recover the same allocated revenue
8 requirement.¹⁰ Thus, the energy rate under the Company's proposal to more
9 than double the basic service charge would be 0.95¢/kWh, or about 10%, less
10 than the energy charge without the proposed increase to the basic service
11 charge.

12 **Q: To what extent would the lower energy charge under the Company's**
13 **proposal for the basic service charge dampen price signals for**
14 **conservation?**

15 A: Residential customers respond to the price incentives created by the electrical
16 rate structure. Those responses are generally measured as price elasticities,
17 i.e., the ratio of the percentage change in consumption to the percentage
18 change in price. Price elasticities are generally low in the short term and rise
19 over several years, because customers have more options for increasing or
20 reducing energy usage in the medium to long term. For example, a review by
21 Espey and Espey (2004) of thirty-six articles on residential electricity
22 demand published between 1971 and 2000 reports short-run average-rate

¹⁰ Company Response to Sierra Club First Data Request No. 5.

1 elasticity estimates of about -0.35 on average across studies and long-run
2 average-rate elasticity estimates of about -0.85 on average across studies.¹¹

3 Studies of electric price response typically examine the change in usage
4 as a function of changes in the marginal rate paid by the customer.¹² Table 1
5 lists the results of seven studies of marginal-price elasticity over the last forty
6 years.¹³

7 **Table 1: Summary of Marginal-Price Elasticities**

Authors	Date	Elasticity Estimates
Acton, Bridger, and Mowill	1976	-0.35 to -0.7
McFadden, Puig, and Kirshner	1977	-0.25 without electric space heat and -0.52 with space heat
Barnes, Gillingham, and Hageman	1981	-0.55
Henson	1984	-0.27 to -0.30
Reiss and White	2005	-0.39
Xcel Energy Colorado	2012	-0.3 (at years 2 and 3)
Orans et al, on BC Hydro inclining-block rate	2014	-0.13 in 3rd year of phased-in rate

8 **Q: What would be a reasonable estimate of the marginal-price elasticity for**
9 **changes in the residential energy rate?**

10 A: From Table 1, it appears that -0.3 would be a reasonable mid-range estimate
11 of the effect over a few years.

¹¹ In other words, on average across these studies, consumption decreased by 0.35% in the short term and by 0.85% in the long term for every 1% increase in average rates. The citation for this study is provided in Exhibit JFW-3.

¹² For the Company, that would be the energy rate.

¹³ The citations for these studies are provided in Exhibit JFW-3.

1 **Q: What would be a reasonable estimate of the effect on energy use from**
2 **the 10% reduction to the residential energy rate under the Company's**
3 **proposal to increase the basic service charge?**

4 A: An elasticity of -0.3 and a 10% reduction in energy price would result in a
5 3% increase in energy consumption. This means that all else equal,
6 residential load would be expected to increase by 3% over a several-year
7 period as a result of implementing the Company's proposed basic service
8 charge increase, rather than recovering the additional revenue requirement
9 through energy charges.

10 For comparison, KU and Louisville Gas and Electric project that each
11 year's installations under their Residential Incentives energy-efficiency
12 program will save about 0.2% of their combined residential load.¹⁴
13 Consequently, the consumption increase due to the Company's proposed
14 increase in its basic service charge (and the resulting decrease in the energy
15 charge) would undo about fifteen years of savings from the Residential
16 Incentives program.

17 **Q: What do you recommend with regard to the Company's proposal to**
18 **increase the residential basic service charge?**

19 A: The Company's proposal would inappropriately shift load-related costs from
20 the energy charge to the basic service charge, dampen price signals to
21 consumers for reducing energy usage, disproportionately and inequitably
22 increase bills for the Company's smallest residential customers, and
23 exacerbate the subsidization of larger residential customers' costs by

¹⁴ 2014 Joint Integrated Resource Plan of Louisville Gas and Electric Company and Kentucky Utilities Company, Vol. 1.

1 customers with below-average usage. Consequently, the Commission should
2 reject the Company's proposal to increase the monthly basic service charge to
3 \$22.00 and instead find that it is reasonable to maintain the monthly charge at
4 its current level of \$10.75.

5 **III. FIXED AND VARIABLE ENERGY RATES**

6 **Q: What does the Company propose with regard to the design of the**
7 **residential energy rate?**

8 A: The Company proposes to split the residential energy rate into "fixed" and
9 "variable" cost components on its tariff for informational and educational
10 purposes. The fixed cost component (Infrastructure Energy Charge) would
11 purport to recover all demand-related generation, transmission, and
12 distribution costs allocated to the residential class. The variable cost
13 component (Variable Energy Charge) would purport to recover all energy-
14 related costs allocated to the residential class.¹⁵

15 According to Mr. Seelye, the Company proposes this design for the
16 residential energy rate because:

17 As greater emphasis is placed on distributed generation and energy
18 conservation in our society, it is important for customers, stakeholders
19 and utility employees to understand the distinction between fixed and
20 variable costs.¹⁶

¹⁵ As discussed above in Section II, the Company proposes to recover almost all customer-related costs (including minimum distribution plant costs) allocated to the residential class through the residential basic service charge.

¹⁶ Seelye Testimony, p. 11, ll. 6-9.

1 **Q: What is the Company’s understanding of “the distinction between fixed**
2 **and variable costs” recovered through the energy rate?**

3 A: Company witness Conroy appears to have a different understanding of this
4 distinction than Company witness Seelye.

5 According to Mr. Conroy, the “fixed” costs recovered through the
6 energy rate are those costs that vary with customer demand (however
7 measured) regardless of energy usage, whereas the “variable” costs recovered
8 through the energy rate consists of those costs that vary with energy usage
9 regardless of demand.¹⁷ In other words, Mr. Conroy considers a portion of
10 the costs recovered through the energy rate to be “fixed” in the sense that
11 they do not vary with energy usage, but do vary with demand.¹⁸

12 In contrast, Mr. Seelye contends that the “fixed” costs recovered
13 through the energy rate do not vary with either customer demand or energy
14 usage, whereas the “variable” costs recovered through the energy rate vary
15 with energy usage.¹⁹

16 It is not clear whose understanding of the “distinction between fixed and
17 variable costs” – Mr. Conroy’s or Mr. Seelye’s – the Company intends to
18 convey to customers with its proposal to split the residential energy rate into
19 fixed and variable cost components.

¹⁷ Testimony Robert M. Conroy, Case No. 2016-00370, November 23, 2016, p. 14, ll. 1-13.

¹⁸ “Fixed” as used here, in the context of the proposed components of the energy rate, is to be distinguished from “fixed” customer-related costs to be recovered through the basic service charge under the Company’s proposal, which Mr. Conroy asserts do not vary with either demand or energy usage.

¹⁹ Company Response to Sierra Club First Data Request No. 8.

1 **Q: Why does the Company want to educate customers about the distinction**
2 **between the fixed and variable costs recovered through the residential**
3 **energy rate?**

4 A: According to Mr. Conroy, the Company believes that educating customers
5 about this distinction will provide “a better understanding of intra-class
6 subsidies.”²⁰ Specifically, the Company believes that customers with above-
7 average energy usage will pay more than their fair share of the residential
8 class’s demand-related costs (and low-usage customers will pay less than
9 their fair share) whenever demand-related costs are recovered through energy
10 rates.

11 **Q: How likely is it that the recovery of demand-related costs through the**
12 **residential energy rate would result in any significant subsidization of**
13 **low-usage customers’ demand-related costs by high usage-customers?**

14 A: It seems unlikely that there would be subsidization to any notable degree or
15 at all, since subsidization would occur only to the extent that (i) the
16 percentage difference between the average *usage* for high-usage customers
17 and for all customers exceeds (ii) the percentage difference between average
18 *demand* for those same high-usage customers and for all customers. In other
19 words, subsidization of low-usage customers would arise only if, and to the
20 extent that, the average load factor for high-usage customers exceeds that for
21 the residential class as a whole.²¹

²⁰ Conroy Testimony, p. 15, line 22.

²¹ Load factor is defined as the ratio of average hourly demand to peak hourly demand. For example, if the average residential customer consumes 12,000 kWh per year and has a peak demand of 4 kW, then the average load factor for the residential class would be equal to 12,000 kWh / 8,760 hours per year / 4 kW, or about 34%.

1 There is no reason to expect that customers with above-average usage
2 would have a higher load factor on average than customers with below-
3 average usage. To the contrary, it seems more likely that high-usage
4 customers would have below-average load factors if their higher usage were
5 driven by central air-conditioning or electric space heat load. In this case,
6 low-usage customers would be subsidizing high-usage customers' demand-
7 related costs, not the other way around as Mr. Conway contends.

8 **Q: What evidence has KU provided that supports its belief that high-usage**
9 **customers are subsidizing low-usage customers' demand-related costs?**

10 A: None. In response to discovery, the Company acknowledges that it does not
11 possess data regarding the demand of most of its residential customers.²²
12 Without such data, the Company cannot determine whether the average load
13 factor for high-usage residential customers differs from that for the class as a
14 whole. Thus, the Company has no evidence to support its speculation that the
15 recovery of demand-related costs through the energy rate gives rise to
16 subsidization of low-usage customers by high-usage customers.

17 Likewise, KU does not possess demand data for residential distributed
18 generation ("DG") customers and therefore cannot determine whether the
19 average load factor for these customers differs materially from the class
20 average.²³ The Company therefore has no way of determining whether the
21 growth of distributed generation in its service territory will exacerbate (or
22 mitigate) subsidization of DG customers' demand-related costs by non-DG
23 customers.

²² Company Response to Sierra Club Supplemental Data Request No. 1.

²³ Company Response to Sierra Club Supplemental Data Request No. 2.

1 **Q: What do you recommend with regard to the Company's proposal to**
2 **separate the residential energy rate into fixed and variable cost**
3 **components?**

4 A: The Commission should reject this proposal because it will serve to confuse
5 and misinform residential customers regarding the distinction between the
6 "fixed" and "variable" costs recovered in the energy rate and regarding the
7 extent to which recovery of "fixed" costs in the energy rate contributes to
8 intra-class subsidization.

9 **Q: Does this conclude your direct testimony?**

10 A: Yes.

Qualifications of
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SUMMARY OF PROFESSIONAL EXPERIENCE

- 1990–Present* **Vice President, Resource Insight, Inc.** Provides research, technical assistance, and expert testimony on electric- and gas-utility planning, economics, regulation, and restructuring. Designs and assesses resource-planning strategies for regulated and competitive markets, including estimation of market prices and utility-plant stranded investment; negotiates restructuring strategies and implementation plans; assists in procurement of retail power supply.
- 1989–90* **Senior Analyst, Komanoff Energy Associates.** Conducted comprehensive cost-benefit assessments of electric-utility power-supply and demand-side conservation resources, economic and financial analyses of independent power facilities, and analyses of utility-system excess capacity and reliability. Provided expert testimony on statistical analysis of U.S. nuclear plant operating costs and performance. Co-wrote *The Power Analyst*, software developed under contract to the New York Energy Research and Development Authority for screening the economic and financial performance of non-utility power projects.
- 1987–88* **Independent Consultant.** Provided consulting services for Komanoff Energy Associates (New York, New York), Schlissel Engineering Associates (Belmont, Massachusetts), and Energy Systems Research Group (Boston, Massachusetts).
- 1981–86* **Research Associate, Energy Systems Research Group.** Performed analyses of electric utility power supply planning scenarios. Involved in analysis and design of electric and water utility conservation programs. Developed statistical analysis of U.S. nuclear plant operating costs and performance.

EDUCATION

BA, Political Science with honors and Phi Beta Kappa, University of California, Berkeley, 1980.

Massachusetts Institute of Technology, Cambridge, Massachusetts. Physics and Political Science, 1976–1979.

PUBLICATIONS

“The Future of Utility Resource Planning: Delivering Energy Efficiency through Distributed Utilities” (with Paul Chernick), *International Association for Energy Economics Seventeenth Annual North American Conference* (460–469). Cleveland, Ohio: USAEE. 1996.

“The Price is Right: Restructuring Gain from Market Valuation of Utility Generating Assets” (with Paul Chernick), *International Association for Energy Economics Seventeenth Annual North American Conference* (345–352). Cleveland, Ohio: USAEE. 1996.

“The Future of Utility Resource Planning: Delivering Energy Efficiency through Distribution Utilities” (with Paul Chernick), *1996 Summer Study on Energy Efficiency in Buildings* 7(7.47–7.55). Washington: American Council for an Energy-Efficient Economy, 1996.

“Retrofit Economics 201: Correcting Common Errors in Demand-Side-Management Cost-Benefit Analysis” (with John Plunkett and Rachael Brailove). In proceedings of “Energy Modeling: Adapting to the New Competitive Operating Environment,” conference sponsored by the Institute for Gas Technology in Atlanta in April of 1995. Des Plaines, Ill.: IGT, 1995.

“The Transfer Loss is All Transfer, No Loss” (with Paul Chernick), *Electricity Journal* 6:6 (July, 1993).

“Benefit-Cost Ratios Ignore Interclass Equity” (with Paul Chernick et al.), *DSM Quarterly*, Spring 1992.

“Consider Plant Heat Rate Fluctuations,” *Independent Energy*, July/August 1991.

“Demand-Side Bidding: A Viable Least-Cost Resource Strategy” (with Paul Chernick and John Plunkett), *Proceedings from the NARUC Biennial Regulatory Information Conference*, September 1990.

“New Tools on the Block: Evaluating Non-Utility Supply Opportunities With *The Power Analyst*, (with John Plunkett), *Proceedings of the Fourth National Conference on Micro-computer Applications in Energy*, April 1990.

REPORTS

“Economic Benefits from Early Retirement of Reid Gardner” (with Paul Chernick) prepared for and filed by the Sierra Club in PUC of Nevada Docket No. 11-08019.

“Green Resource Portfolios: Development, Integration, and Evaluation” (with Paul Chernick and Richard Mazzini) report to the Green Energy Coalition presented as evidence in Ontario EB 2007-0707.

“Risk Analysis of Procurement Strategies for Residential Standard Offer Service” (with Paul Chernick, David White, and Rick Hornby) report to Maryland Office of People’s Counsel. 2008. Baltimore: Maryland Office of People’s Counsel.

“Integrated Portfolio Management in a Restructured Supply Market” (with Paul Chernick, William Steinhurst, Tim Woolf, Anna Sommers, and Kenji Takahashi). 2006. Columbus, Ohio: Office of the Ohio Consumers’ Counsel.

“First Year of SOS Procurement.” 2004. Prepared for the Maryland Office of People’s Counsel.

“Energy Plan for the City of New York” (with Paul Chernick, Susan Geller, Brian Tracey, Adam Auster, and Peter Lanzalotta). 2003. New York: New York City Economic Development Corporation.

“Peak-Shaving–Demand-Response Analysis: Load Shifting by Residential Customers” (with Brian Tracey). 2003. Barnstable, Mass.: Cape Light Compact.

“Electricity Market Design: Incentives for Efficient Bidding; Opportunities for Gaming.” 2002. Silver Spring, Maryland: National Association of State Consumer Advocates.

“Best Practices in Market Monitoring: A Survey of Current ISO Activities and Recommendations for Effective Market Monitoring and Mitigation in Wholesale Electricity Markets” (with Paul Peterson, Bruce Biewald, Lucy Johnston, and Etienne Gonin). 2001. Prepared for the Maryland Office of People’s Counsel, Pennsylvania Office of Consumer Advocate, Delaware Division of the Public Advocate, New Jersey Division of the Ratepayer Advocate, Office of the People’s Counsel of the District of Columbia.

“Comments Regarding Retail Electricity Competition.” 2001. Filed by the Maryland Office of People’s Counsel in U.S. FTC Docket No. V010003.

“Final Comments of the City of New York on Con Edison’s Generation Divestiture Plans and Petition.” 1998. Filed by the City of New York in PSC Case No. 96-E-0897.

“Response Comments of the City of New York on Vertical Market Power.” 1998. Filed by the City of New York in PSC Case Nos. 96-E-0900, 96-E-0098, 96-E-0099, 96-E-0891, 96-E-0897, 96-E-0909, and 96-E-0898.

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“Economic Feasibility Analysis and Preliminary Business Plan for a Pennsylvania Consumer’s Energy Cooperative” (with John Plunkett et al.). 1997. 3 vols. Philadelphia, Penn.: Energy Coordinating Agency of Philadelphia.

“Good Money After Bad” (with Charles Komanoff and Rachel Brailove). 1997. White Plains, N.Y.: Pace University School of Law Center for Environmental Studies.

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“Protest and Request for Hearing of Maryland Office of People’s Counsel.” 1997. Filed by the Maryland Office of People’s Counsel in PSC Docket Nos. EC97-46-000, ER97-4050-000, and ER97-4051-000.

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Bruce Biewald, and David Wise). 1997. Baltimore, Maryland: Maryland Office of People's Counsel.

"Comments of the New Hampshire Office of Consumer Advocate on Restructuring New Hampshire's Electric-Utility Industry" (with Bruce Biewald and Paul Chernick). 1996. Concord, N.H.: NH OCA.

"Estimation of Market Value, Stranded Investment, and Restructuring Gains for Major Massachusetts Utilities" (with Paul Chernick, Susan Geller, Rachel Brailove, and Adam Auster). 1996. On behalf of the Massachusetts Attorney General (Boston).

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"Technical Information." 1993. Appendix to "Energy Efficiency Down to Details: A Response to the Director General of Electricity Supply's Request for Comments on Energy Efficiency Performance Standards" (UK). On behalf of the Foundation for International Environmental Law and Development and the Conservation Law Foundation (Boston).

"Integrating Demand Management into Utility Resource Planning: An Overview." 1993. Vol. 1 of "From Here to Efficiency: Securing Demand-Management Resources" (with Paul Chernick and John Plunkett). Harrisburg, Pa.: Pennsylvania Energy Office

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"Analysis Findings, Conclusions, and Recommendations." 1992. Vol. 1 of "Correcting the Imbalance of Power: Report on Integrated Resource Planning for Ontario Hydro" (with Paul Chernick and John Plunkett).

"Demand-Management Programs: Targets and Strategies." 1992. Vol. 1 of "Building Ontario Hydro's Conservation Power Plant" (with John Plunkett, James Peters, and Blair Hamilton).

"Review of the Elizabethtown Gas Company's 1992 DSM Plan and the Demand-Side Management Rules" (with Paul Chernick, John Plunkett, James Peters, Susan Geller, Blair Hamilton, and Andrew Shapiro). 1992. Report to the New Jersey Department of Public Advocate.

"Comments of Public Interest Intervenors on the 1993-1994 Annual and Long-Range Demand-Side Management and Integrated Resource Plans of New York Electric Utilities" (with Ken Keating et al.) 1992.

“Review of Jersey Central Power & Light’s 1992 DSM Plan and the Demand-Side Management Rules” (with Paul Chernick et al.). 1992. Report to the New Jersey Department of Public Advocate.

“Review of Rockland Electric Company’s 1992 DSM Plan and the Demand-Side Management Rules” (with Paul Chernick et al.). 1992.

“Initial Review of Ontario Hydro’s Demand-Supply Plan Update” (with David Argue et al.). 1992.

“Comments on the Utility Responses to Commission’s November 27, 1990 Order and Proposed Revisions to the 1991–1992 Annual and Long Range Demand Side Management Plans” (with John Plunkett et al.). 1991.

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“Profitability Assessment of Packaged Cogeneration Systems in the New York City Area.” 1989. Principal investigator.

“Statistical Analysis of U.S. Nuclear Plant Capacity Factors, Operation and Maintenance Costs, and Capital Additions.” 1989.

“The Economics of Completing and Operating the Vogtle Generating Facility.” 1985. ESRG Study No. 85-51A.

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“Power Planning in Kentucky: Assessing Issues and Choices—Project Summary Report to the Public Service Commission.” 1984. ESRG Study No. 83-51.

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“The Economics of Alternative Space and Water Heating Systems in New Construction in the Jersey Central Power and Light Service Area, A Report to the Public Advocate.” 1982. ESRG Study No. 82-31.

“Review of the Kentucky-American Water Company Capacity Expansion Program, A Report to the Kentucky Public Service Commission.” 1982. ESRG Study No. 82-45.

“Long Range Forecast of Sierra Pacific Power Company Electric Energy Requirements and Peak Demands, A Report to the Public Service Commission of Nevada.” 1982. ESRG Study No. 81-42B.

“Utility Promotion of Residential Customer Conservation, A Report to Massachusetts Public Interest Research Group.” 1981. ESRG Study No. 81-47

PRESENTATIONS

“Office of People’s Counsel Case No. 9117” (with William Fields). Presentation to the Maryland Public Utilities Commission in Case No. 9117, December 2008.

“Electricity Market Design: Incentives for Efficient Bidding, Opportunities for Gaming.” NASUCA Northeast Market Seminar, Albany, N.Y., February 2001.

“Direct Access Implementation: The California Experience.” Presentation to the Maryland Restructuring Technical Implementation Group on behalf of the Maryland Office of People’s Counsel. June 1998.

“Reflecting Market Expectations in Estimates of Stranded Costs,” speaker, and workshop moderator of “Effectively Valuing Assets and Calculating Stranded Costs.” Conference sponsored by International Business Communications, Washington, D.C., June 1997.

EXPERT TESTIMONY

- 1989 **Mass. DPU** on behalf of the Massachusetts Executive Office of Energy Resources. Docket No. 89-100. Joint testimony with Paul Chernick relating to statistical analysis of U.S. nuclear-plant capacity factors, operation and maintenance costs, and capital additions; and to projections of capacity factor, O&M, and capital additions for the Pilgrim nuclear plant.
- 1994 **NY PSC** on behalf of the Pace Energy Project, Natural Resources Defense Council, and Citizen's Advisory Panel. Case No. 93-E-1123. Joint testimony with John Plunkett critiques proposed modifications to Long Island Lighting Company's DSM programs from the perspective of least-cost-planning principles.
- 1994 **Vt. PSB** on behalf of the Vermont Department of Public Service. Docket No. 5270-CV-1 and 5270-CV-3. Testimony and rebuttal testimony discusses rate and bill effects from DSM spending and sponsors load shapes for measure- and program-screening analyses.
- 1996 **New Orleans City Council** on behalf of the Alliance for Affordable Energy. Docket Nos. UD-92-2A, UD-92-2B, and UD-95-1. Rates, charges, and integrated resource planning for Louisiana Power & Lights and New Orleans Public Service, Inc.
- 1996 **New Orleans City Council** Docket Nos. UD-92-2A, UD-92-2B, and UD-95-1. Rates, charges, and integrated resource planning for Louisiana Power & Lights and New Orleans Public Service, Inc.; Alliance for Affordable Energy. April, 1996.
- Prudence of utilities' IRP decisions; costs of utilities' failure to follow City Council directives; possible cost disallowances and penalties; survey of penalties for similar failures in other jurisdictions.
- 1998 **Massachusetts Department of Telecommunications and Energy** Docket No. 97-111, Commonwealth Energy proposed restructuring; Cape Cod Light Compact. Joint testimony with Paul Chernick, January, 1998.
- Critique of proposed restructuring plan filed to satisfy requirements of the electric-utility restructuring act of 1997. Failure of the plan to foster competition and promote the public interest.
- Massachusetts Department of Telecommunications and Energy** Docket No. 97-120, Western Massachusetts Electric Company proposed restructuring; Massachusetts Attorney General. Joint testimony with Paul Chernick, October, 1998. Joint surrebuttal with Paul Chernick, January, 1999.
- Market value of the three Millstone nuclear units under varying assumptions of plant performance and market prices. Independent forecast of wholesale market prices. Value of Pilgrim and TMI-1 asset sales.

- 1999 **Maryland PSC** Case No. 8795, Delmarva Power & Light comprehensive restructuring agreement, Maryland Office of People’s Counsel. July 1999.
- Support of proposed comprehensive restructuring settlement agreement
- Maryland PSC** Case Nos. 8794 and 8808, Baltimore Gas & Electric Company comprehensive restructuring agreement, Maryland Office of People’s Counsel. Initial Testimony July 1999; Reply Testimony August 1999; Surrebuttal Testimony August 1999.
- Support of proposed comprehensive restructuring settlement agreement
- Maryland PSC** Case No. 8797, comprehensive restructuring agreement for Potomac Edison Company, Maryland Office of People’s Counsel. October 1999.
- Support of proposed comprehensive restructuring settlement agreement
- Connecticut DPUC** Docket No. 99-03-35, United Illuminating standard offer, Connecticut Office of Consumer Counsel. November 1999.
- Reasonableness of proposed revisions to standard-offer-supply energy costs. Implications of revisions for other elements of proposed settlement.
- 2000 **U.S. FERC** Docket No. RT01-02-000, Order No. 2000 compliance filing, Joint Consumer Advocates intervenors. Affidavit, November 2000.
- Evaluation of innovative rate proposal by PJM transmission owners.
- 2001 **Maryland PSC** Case No. 8852, Charges for electricity-supplier services for Potomac Electric Power Company, Maryland Office of People’s Counsel. March 2001.
- Reasonableness of proposed fees for electricity-supplier services.
- Maryland PSC** Case No. 8890, Merger of Potomac Electric Power Company and Delmarva Power and Light Company, Maryland Office of People’s Counsel. September 2001; surrebuttal, October 2001. In support of settlement: Supplemental, December 2001; rejoinder, January 2002.
- Costs and benefits to ratepayers. Assessment of public interest.
- Maryland PSC** Case No. 8796, Potomac Electric Power Company stranded costs and rates, Maryland Office of People’s Counsel. December 2001; surrebuttal, February 2002.
- Allocation of benefits from sale of generation assets and power-purchase contracts.
- 2002 **Maryland PSC** Case No. 8908, Maryland electric utilities’ standard offer and supply procurement, Maryland Office of People’s Counsel. Direct, November 2002; Rebuttal December 2002.

Benefits of proposed settlement to ratepayers. Standard-offer service. Procurement of supply.

2003 **Maryland PSC** Case No. 8980, adequacy of capacity in restructured electricity markets; Maryland Office of People's Counsel. Direct, December 2003; Reply December 2003.

Purpose of capacity-adequacy requirements. PJM capacity rules and practices. Implications of various restructuring proposals for system reliability.

2004 **Maryland PSC** Case No. 8995, Potomac Electric Power Company recovery of generation-related uncollectibles; Maryland Office of People's Counsel. Direct, March 2004; Supplemental March 2004, Surrebuttal April 2004.

Calculation and allocation of costs. Effect on administrative charge pursuant to settlement.

Maryland PSC Case No. 8994, Delmarva Power & Light recovery of generation-related uncollectibles; Maryland Office of People's Counsel. Direct, March 2004; Supplemental April 2004.

Calculation and allocation of costs. Effect on administrative charge pursuant to settlement.

Maryland PSC Case No. 8985, Southern Maryland Electric Coop standard-offer service; Maryland Office of People's Counsel. Direct, July 2004.

Reasonableness and risks of resource-procurement plan.

2005 **FERC** Docket No. ER05-428-000, revisions to ICAP demand curves; City of New York. Statement, March 2005.

Net-revenue offset to cost of new capacity. Winter-summer adjustment factor. Market power and in-City ICAP price trends.

FERC Docket No. PL05-7-000, capacity markets in PJM; Maryland Office of People's Counsel. Statement, June 2005.

Inefficiencies and risks associated with use of administratively determined demand curve. Incompatibility of four-year procurement plan with Maryland standard-offer service.

FERC Dockets Nos. ER05-1410-000 & EL05-148-000, proposed market-clearing mechanism for capacity markets in PJM; Coalition of Consumers for Reliability, Affidavit October 2005, Supplemental Affidavit October 2006.

Inefficiencies and risks associated with use of administratively determined demand curve. Effect of proposed reliability-pricing model on capacity costs.

2006 **Maryland PSC** Case No. 9052, Baltimore Gas & Electric rates and market-transition plan; Maryland Office of People's Counsel, February 2006.

Transition to market-based residential rates. Price volatility, bill complexity, and cost-deferral mechanisms.

Maryland PSC Case No. 9056, default service for commercial and industrial customers; Maryland Office of People's Counsel, April 2006.

Assessment of proposals to modify default service for commercial and industrial customers.

Maryland PSC Case No. 9054, merger of Constellation Energy Group and FPL Group; Maryland Office of People's Counsel, June 2006.

Assessment of effects and risks of proposed merger on ratepayers.

Illinois Commerce Commission Docket No. 06-0411, Commonwealth Edison Company residential rate plan; Citizens Utility Board, Cook County State's Attorney's Office, and City of Chicago, Direct July 2006, Reply August 2006.

Transition to market-based rates. Securitization of power costs. Rate of return on deferred assets.

Maryland PSC Case No. 9064, default service for residential and small commercial customers; Maryland Office of People's Counsel, Rebuttal Testimony, September 2006.

Procurement of standard-offer power. Structure and format of bidding. Risk and cost recovery.

FERC Dockets Nos. ER05-1410-000 & EL05-148-000, proposed market-clearing mechanism for capacity markets in PJM; Maryland Office of the People's Counsel, Supplemental Affidavit October 2006.

Distorting effects of proposed reliability-pricing model on clearing prices. Economically efficient alternative treatment.

Maryland PSC Case No. 9063, optimal structure of electric industry; Maryland Office of People's Counsel, Direct Testimony, October 2006; Rebuttal November 2006; surrebuttal November 2006.

Procurement of standard-offer power. Risk and gas-price volatility, and their effect on prices and market performance. Alternative procurement strategies.

Maryland PSC Case No. 9073, stranded costs from electric-industry restructuring; Maryland Office of People's Counsel, Direct Testimony, December 2006.

Review of estimates of stranded costs for Baltimore Gas & Electric.

2007 **Maryland PSC** Case No. 9091, rate-stabilization and market-transition plan for the Potomac Edison Company; Maryland Office of People's Counsel, Direct Testimony, March 2007.

Rate-stabilization plan.

Maryland PSC Case No. 9092, rates and rate mechanisms for the Potomac Electric Power Company; Maryland Office of People's Counsel, Direct Testimony, March 2007.

Cost allocation and rate design. Revenue decoupling mechanism.

Maryland PSC Case No. 9093, rates and rate mechanisms for Delmarva Power & Light; Maryland Office of People's Counsel, Direct Testimony, March 2007.

Cost allocation and rate design. Revenue decoupling mechanism.

Maryland PSC Case No. 9099, rate-stabilization plan for Baltimore Gas & Electric; Maryland Office of People's Counsel, Direct, March 2007; Surrebuttal April 2007.

Review of standard-offer-service-procurement plan. Rate stabilization plan.

Connecticut DPUC Docket No. 07-04-24, review of capacity contracts under Energy Independence Act; Connecticut Office of Consumer Counsel, Joint Direct Testimony June 2007.

Assessment of proposed capacity contracts.

Maryland PSC Case No. 9117, residential and small-commercial standard-offer service; Maryland Office of People's Counsel. Direct and Reply, September 2007; Supplemental Reply, November 2007; Additional Reply, December 2007; presentation, December 2008.

Benefits of long-term planning and procurement. Proposed aggregation of customers.

Maryland PSC Case No. 9117, Phase II, residential and small-commercial standard-offer service; Maryland Office of People's Counsel. Direct, October 2007.

Energy efficiency as part of standard-offer-service planning and procurement. Procurement of generation or long-term contracts to meet reliability needs.

2008 **Connecticut DPUC 08-01-01**, peaking generation projects; Connecticut Office of Consumer Counsel. Direct (with Paul Chernick), April 2008.

Assessment of proposed peaking projects. Valuation of peaking capacity. Modeling of energy margin, forward reserves, other project benefits.

Ontario EB-2007-0707, Ontario Power Authority integrated system plan; Green Energy Coalition, Penimba Institute, and Ontario Sustainable Energy Association. Evidence (with Paul Chernick and Richard Mazzini), August 2008.

Critique of integrated system plan. Resource cost and characteristics; finance cost. Development of least-cost green-energy portfolio.

- 2009 **Maryland PSC** Case No. 9192, Delmarva Power & Lights rates; Maryland Office of People's Counsel. Direct, August 2009; Rebuttal, Surrebuttal, September 2009.
Cost allocation and rate design.
- Wisconsin PSC** Docket No. 6630-CE-302, Glacier Hills Wind Park certificate; Citizens Utility Board of Wisconsin. Direct and Surrebuttal, October 2009.
Reasonableness of proposed wind facility.
- PUC of Ohio** Case No 09-906-EL-SSO, standard-service-offer bidding for three Ohio electric companies; Office of the Ohio Consumers' Counsel. Direct, December 2009.
Design of auctions for SSO power supply. Implications of migration of First-Energy from MISO to PJM.
- 2010 **PUC of Ohio** Case No 10-388-EL-SSO, standard-service offer for three Ohio electric companies; Office of the Ohio Consumers' Counsel. Direct, July 2010.
Design of auctions for SSO power supply.
- Maryland PSC** Case No. 9232, Potomac Electric Power Co. administrative charge for standard-offer service; Maryland Office of People's Counsel. Reply, Rebuttal, August 2010.
Proposed rates for components of the Administrative Charge for residential standard-offer service.
- Maryland PSC** Case No. 9226, Delmarva Power & Light administrative charge for standard-offer service; Maryland Office of People's Counsel. Reply, Rebuttal, August 2010.
Proposed rates for components of the Administrative Charge for residential standard-offer service.
- Maryland PSC** Case No. 9221, Baltimore Gas & Electric cost recovery; Maryland Office of People's Counsel. Reply, August 2010; Rebuttal, September 2010; Surrebuttal, November 2010
Proposed rates for components of the Administrative Charge for residential standard-offer service.
- Wisconsin PSC** Docket No. 3270-UR-117, Madison Gas & Electric gas and electric rates; Citizens Utility Board of Wisconsin. Direct, Rebuttal, Surrebuttal, September 2010.
Standby rate design. Treatment of uneconomic dispatch costs.

Nova Scotia UARB Case No. NSUARB P-887(2), fuel-adjustment mechanism; Nova Scotia Consumer Advocate. Direct, September 2010.

Effectiveness of fuel-adjustment incentive mechanism.

Manitoba PUB, Manitoba Hydro rates; Resource Conservation Manitoba and Time to Respect Earth's Ecosystems. Direct, December 2010.

Assessment of drought-related financial risk.

2011 **Mass. DPU 10-170**, NStar–Northeast Utilities merger; Cape Light Compact. Direct, May 2011.

Merger and competitive markets. Competitively neutral recovery of utility investments in new generation.

Mass. DPU 11-5, -6, -7, NStar wind contracts; Cape Light Compact. Direct, May 2011.

Assessment of utility proposal for recovery of contract costs.

Wisc. PSC Docket No. 4220-UR-117, electric and gas rates of Northern States Power: Citizens Utility Board of Wisconsin. Direct, Rebuttals (2) October 2011; Surrebuttal, Oral Sur-Surrebutal November 2011;

Cost allocation and rate design. Allocation of DOE settlement payment.

Wisc. PSC Docket No. 6680-FR-104, fuel-cost-related rate adjustments for Wisconsin Power and Light Company: Citizens Utility Board of Wisconsin. Direct, October 2011; Rebuttal, Surrebuttal, November 2011

Costs to comply with Cross State Air Pollution Rule.

2012 **Maryland PSC** Case No. 9149, Maryland IOUs' development of RFPs for new generation; Maryland Office of People's Counsel. March 2012.

Failure of demand-response provider to perform per contract. Estimation of cost to ratepayers.

PUCO Cases Nos. 11-346-EL-SSO, 11-348-EL-SSO, 11-349-EL-AAM, 11-350-EL-AAM, transition to competitive markets for Columbus Southern Power Company and Ohio Power Company; Ohio Consumers' Counsel. May 2012

Structure of auctions, credits, and capacity pricing as part of transition to competitive electricity markets.

Wisconsin PSC Docket No. 3270-UR-118, Madison Gas & Electric rates, Wisconsin Citizens Utility Board. Direct, August 2012; Rebuttal, September 2012.

Cost allocation and rate design (electric).

Wisconsin PSC Docket No. 05-UR-106, We Energies rates, Wisconsin Citizens Utility Board. Direct, Rebuttal, September 2012.

Cost allocation and rate design (electric).

Wisconsin PSC Docket No. 4220-UR-118, Northern States Power rates, Wisconsin Citizens Utility Board. Direct, Rebuttal, October 2012; Surrebuttal, November 2012.

Recovery of environmental remediation costs at a manufactured gas plant. Cost allocation and rate design.

2013 **Corporation Commission of Oklahoma** Cause No. PUD 201200054, Public Service Company of Oklahoma environmental compliance and cost recovery, Sierra Club. Direct, January 2013; rebuttal, February 2013; surrebuttal, March 2013.

Economic evaluation of alternative environmental-compliance plans. Effects of energy efficiency and renewable resources on cost and risk.

Maryland PSC Case No. 9324, Starion Energy marketing, Maryland Office of People's Counsel. September 2013.

Estimation of retail costs of electricity supply.

Wisconsin PSC Docket No. 6690-UR-122, Wisconsin Public Service Corporation gas and electric rates, Wisconsin Citizens Utility Board. Direct, August 2013; Rebuttal, Surrebuttal September 2013.

Cost allocation and rate design; rate-stabilization mechanism.

Wisconsin PSC Docket No. 4220-UR-119, Northern States Power Company gas and electric rates, Wisconsin Citizens Utility Board. Direct, Rebuttal, Surrebuttal, October 2013.

Cost allocation and rate design.

Michigan PSC Case No. U-17429, Consumers Energy Company approval for new gas plant, Natural Resources Defense Council. Corrected Direct, October 2013.

Need for new capacity. Economic assessment of alternative resource options.

2014 **Maryland PSC** Cases Nos. 9226 & 9232, administrative charge for standard-offer service; Maryland Office of People's Counsel. Reply, April 2014; surrebuttal, May 2014.

Proposed rates for components of the Administrative Charge for residential standard-offer service.

Conn. PURA Docket No. 13-07-18, rules for retail electricity markets; Office of Consumer Counsel. Direct, April 2014.

Estimation of retail costs of power supply for residential standard-offer service.

PUC Ohio Cases Nos. 13-2385-EL-SSO, 13-2386-EL-AAM; Ohio Power Company standard-offer service; Office of the Ohio Consumers' Counsel. Direct, May 2014.

Allocation of distribution-rider costs.

Wisc. PSC Docket No. 6690-UR-123, Wisconsin Public Service Corporation electric and gas rates; Citizens Utility Board of Wisconsin. Direct, Rebuttal, August 2014; Surrebuttal, September 2014.

Cost allocation and rate design.

Wisc. PSC Docket No. 05-UR-107, We Energy biennial review of electric and gas costs and rates; Citizens Utility Board of Wisconsin. Direct, August 2014; Rebuttal, Surrebuttal September 2014.

Cost allocation and rate design.

Wisc. PSC Docket No. 3270-UR-120, Madison Gas and Electric Co. electric and gas rates; Citizens Utility Board of Wisconsin. Direct, Rebuttal, September 2014.

Cost allocation and rate design.

Nova Scotia UARB Case No. NSUARB P-887(6), Nova Scotia Power fuel-adjustment mechanism; Nova Scotia Consumer Advocate. Evidence, December 2014.

Allocation of fuel-adjustment costs.

2015 **Maryland PSC** Case No. 9221, Baltimore Gas & Electric cost recovery; Maryland Office of People's Counsel. Second Reply, June 2015; Second Rebuttal, July 2015.

Proposed rates for components of the Administrative Charge for residential standard-offer service.

Wisconsin PSC Docket No. 6690-UR-124, Wisconsin Public Service Corporation electric and gas rates, Citizens Utility Board of Wisconsin. Direct, Rebuttal, September 2015; Surrebuttal, October 2015.

Cost allocation and rate design.

Wisconsin PSC Docket No. 4220-UR-121, Northern States Power Company gas and electric rates, Citizens Utility Board of Wisconsin. Direct, Rebuttal, Surrebuttal, October 2015.

Cost allocation and rate design.

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Kentucky Utilities Company

**Minimum Connection Cost of Service Based on the Cost of Service Study
For the 12 Months Ended June 30, 2018**

Rate RS

Description	Distribution	Customer Service Expenses	Total
(1) Rate Base	\$ 67,782,621	\$ 4,473,217	\$ 72,255,838
(2) Rate Base Adjustments	-	-	-
(3) Rate Base as Adjusted	\$ 67,782,621	\$ 4,473,217	\$ 72,255,838
(4) Rate of Return	5.64%	5.64%	
(5) Return	\$ 3,822,123	\$ 252,236	\$ 4,074,358
(6) Interest Expenses	\$ 1,597,323	\$ 105,413	\$ 1,702,736
(7) Net Income	\$ 2,224,800	\$ 146,822	\$ 2,371,622
(8) Income Taxes	\$ 1,523,129	\$ 100,517	\$ 1,623,646
(9) Operation and Maintenance Expenses	\$ 8,920,476	\$ 37,147,127	\$ 46,067,603
(10) Depreciation Expenses	\$ 3,479,212	-	\$ 3,479,212
(11) Other Taxes	\$ 680,636	-	\$ 680,636
(12) Curtailable Service Credit			-
(13) Expense Adjustments - Prod. Demand	\$ -	\$ -	\$ -
(14) Expense Adjustments - Energy	\$ -	\$ -	\$ -
(15) Expense Adjustments - Trans. Demand	\$ -	\$ -	\$ -
(16) Expense Adjustments - Distribution	\$ -	\$ -	\$ -
(17) Expense Adjustments - Other	\$ 22,466	\$ 1,483	\$ 23,949
(18) Revenue Adjustments	\$ (748.36)	\$ (49.39)	\$ (798)
(19) Expense Adjustments - Total	\$ 21,718	\$ 1,433	\$ 23,151
(20) Total Cost of Service	\$ 18,447,294	\$ 37,501,312	\$ 55,948,607
(21) Less: Misc Revenue - Prod Demand	\$ -	\$ -	\$ -
(22) Less: Misc Revenue - Energy	\$ -	\$ -	\$ -
(23) Less: Misc Revenue - Other	\$ (1,108,795)	\$ (73,173)	\$ (1,181,968)
(24) Less: Misc Revenue - Total	\$ (1,108,795)	\$ (73,173)	\$ (1,181,968)
(25) Net Cost of Service	\$ 17,338,499	\$ 37,428,139	\$ 54,766,638
(26) Billing Units	5,168,140	5,168,140	
(27) Unit Costs	\$ 3.35	\$ 7.24	\$ 10.60

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CERTIFICATE OF SERVICE

This is to certify that the foregoing copy of the DIRECT TESTIMONY OF JONATHAN WALLACH ON BEHALF OF SIERRA CLUB, ALICE HOWELL, and CARL VOGEL, and Exhibits thereto, is a true and accurate copy of the document being filed in paper medium; that the electronic filing was transmitted to the Commission on March 3, 2017; that there are currently no parties that the Commission has excused from participation by electronic means in this proceeding; and that a copy of the filing in paper medium is being hand delivered to the Commission.



JOE F. CHILDERS