

BEFORE THE
PHILADELPHIA GAS COMMISSION

Philadelphia Gas Works and Philadelphia Facilities
Management Corporation Petition for Approval and
Recommendation for Approval of Certain
Transactions and Contracts for the Purchase,
Storage, Distribution and/or Transmission of
Natural and Other Gas, and also Certain
Transactions and Contracts Respecting Real
Property Owned by the City of Philadelphia and
Operated by the Philadelphia Gas Works

Direct Testimony of
Scott J. Rubin

on Behalf of
the Public Advocate

October 25, 2018

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Introduction

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Q. Please state your name and business address.

A. My name is Scott J. Rubin. My business address is 333 Oak Lane, Bloomsburg, PA.

Q. By whom are you employed and in what capacity?

A. I am an independent consultant and an attorney. My practice is limited to matters affecting the public utility industry.

Q. What is the purpose of your testimony in this case?

A. I have been asked by the Public Advocate to review a document entitled “Summary of Key Terms of Proposed Agreements Among the City of Philadelphia (‘City’), the Philadelphia Gas Works (‘PGW’) by Philadelphia Facilities Management Corporation (‘PFMC’), the Philadelphia Municipal Authority (‘PMA’), and Passyunk Energy Center LLC (‘PEC’) (and Other Related Parties) for the Development, Construction and Financing of Certain Facilities at PGW’s Passyunk Plant and the Purchase and Sale of Certain Natural Gas Products and Services,” dated September 20, 2018, which I will refer to as the “Term Sheet.”

Q. What are your qualifications to provide this testimony in this case?

A. I have testified as an expert witness before utility commissions or courts in the District of Columbia; the province of Nova Scotia; and the states of Alaska, Arizona, California, Connecticut, Delaware, Illinois, Kentucky, Maine, Maryland, Massachusetts, Minnesota, Mississippi, New Hampshire, New Jersey, New York, North Dakota, Ohio, Pennsylvania, South Carolina, and West Virginia. I also have testified as an expert witness before various federal, state, and local legislative committees. I have served as a consultant to

1 the staffs of four state utility commissions, as well as to several national utility trade
2 associations, and state and local governments throughout the country. Prior to
3 establishing my own consulting and law practice, I was employed by the Pennsylvania
4 Office of Consumer Advocate from 1983 through January 1994 in increasingly
5 responsible positions. From 1990 until I left state government, I was one of two senior
6 attorneys at the OCA. Among my other responsibilities in that position, I had a major
7 role in setting its policy positions on water and electric matters. In addition, I was
8 responsible for supervising the office's technical staff. During that time, I also testified as
9 an expert witness on rate design and other policy matters.

10 Throughout my career, I developed substantial expertise in matters relating to the
11 economic regulation of public utilities. I have published articles, contributed to books,
12 written speeches, and delivered numerous presentations, on both the national and state
13 level, relating to regulatory issues. I have attended numerous continuing education
14 courses involving the utility industry. I also have participated as a faculty member in
15 utility-related educational programs for the Institute for Public Utilities at Michigan State
16 University, the American Water Works Association (“AWWA”), and the Pennsylvania
17 Bar Institute. A copy of my curriculum vitae is attached as Appendix A.

18 **Q. Do you have any experience that is particularly relevant to the issues in this case?**

19 A. Yes, I do. My work encompasses a wide range of issues, including ratemaking, corporate
20 transactions such as mergers and divestitures, safety and reliability, and procurement.
21 For example, some of my work in the natural gas sector since 2015 includes evaluating
22 the costs and benefits of a gas utility’s proposed procurement of long-term pipeline
23 capacity, reviewing a gas utility’s proposed expansion plans involving the use of

1 compressed natural gas, advising Philadelphia City Council concerning possible
2 restructuring options for Philadelphia Gas Works, and participating in gas utility rate
3 proceedings in Illinois, Maine, Massachusetts, New Hampshire, and North Dakota.

4 **Summary**

5 **Q. How did you conduct your review of the Term Sheet?**

6 A. After I read the Term Sheet and its exhibits, I participated in discussions with
7 representatives of PGW to obtain additional information and clarifications. I also
8 obtained background information from the Public Advocate, including a working
9 restatement of the City's Management Agreement/Ordinance concerning the operation of
10 PGW and the roles of the PFMC and the Gas Commission, historic PGW financial and
11 operating information, and some examples from other proceedings where the Gas
12 Commission and City Council reviewed and approved PGW contracts.

13 **Q. Please summarize your concerns with the proposed transaction.**

14 A. In brief, I have the following concerns with the proposed transaction:

- 15 • PGW is proposing that the Gas Commission and City Council approve the
16 deal based solely on the Term Sheet. The Term Sheet, however, contains
17 numerous instances where the detailed terms and conditions are yet to be
18 fleshed out by the parties. The old saying is "the devil is in the details"
19 and that is absolutely true for a deal of this size and complexity.
- 20 • The counter-party to the transaction, Philadelphia Energy Center ("PEC"),
21 is a special-purpose entity that was organized as a limited-liability
22 company in Delaware on November 28, 2017, solely to develop this
23 project. (PEC registered with the Pennsylvania Secretary of State in July
24 2018.) As such, the limit of PEC's liability is its equity investment in the
25 project which may be close to zero. The capital costs of the project are
26 being paid up front by the developer which is an affiliate of PEC. I expect
27 the equity investors to similarly limit their liability, either through a
28 separate LLC or through a limited partnership type of arrangement. Thus,

1 if the City or PGW were to experience harm (either physical or economic),
2 it is unclear whether recourse could be had against any entity with
3 sufficient assets to compensate PGW.

- 4 • PEC was formed by Liberty Energy Trust (“LET”) which is the nominal
5 guarantor of the project. LET, however, is a tiny operation, listed in the
6 exhibits as having only five employees and annual revenues of \$1 million.
7 It is not clear if PEC has any employees at the present time.

- 8 • LET does not have the in-house expertise that is needed to effectively
9 market in excess of 2 billion cubic feet (“Bcf”) of natural gas annually.
10 From my review of the backgrounds and experience of LET’s five
11 employees, all of their expertise is in finance, investments, mergers, and
12 acquisitions.

- 13 • It appears, therefore, that PEC will need to hire or contract with skilled
14 energy marketing professionals in order to effectively utilize the proposed
15 project. There is no information in the documents provided concerning
16 the availability or qualifications of the people who will provide that
17 expertise or who these people or organizations might be.

- 18 • The guaranteed level of net revenues to PGW is \$1.35 million per year,
19 escalated for inflation. While this may be viewed as “new money,” I am
20 concerned that it might not be adequate compensation for tying up the
21 Passyunk assets and locking in the City to a fossil-fuel-based project for
22 the next 25 years.

23 **Q. Please summarize your conclusions and recommendations.**

24 **A.** My conclusions and recommendations can be summarized as follows:

- 25 • I conclude that it is highly likely that the full extent of PGW’s profit will
26 be the Fee for Service of \$0.60 per Mcf. I consider it reasonable to
27 assume that the extent of PGW (and ratepayer) benefit from the deal
28 would be a payment of between \$1.35 million and \$1.8 million per year,
29 adjusted for inflation.

- 30 • PGW should be required to seek approval from the Gas Commission of
31 the final agreements to ensure that they are consistent with the Term Sheet
32 and PGW representations.

- 33 • I recommend that any proposed change in the take-or-pay obligation, any
34 exercise of step-in rights, or any other change in a material term of the
35 deal, must be reviewed and approved by the Gas Commission.

1 minimum take-or-pay obligation of 2.25 Bcf per year, or \$1.35 million per year plus
2 inflation.¹

3 If PEC is able to sell enough gas, and sell it for a high enough price, then there is
4 a potential for PGW to receive a portion of the profits in addition to its 60-cent fee and its
5 expense reimbursement.

6 **Q. How is PGW's share of profits determined?**

7 A. As the deal is structured, any division of profits would occur only after PEC recovers its
8 (or Northstar's) debt service (capped at \$3.0 million per year), a minimum return on
9 equity of \$1.35 million, and unspecified "costs" of \$0.2 million. Thus, for example, if
10 there were profits of \$10 million in a year after all expenses, PEC would receive the first
11 \$4.55 million, then the remaining \$5.45 million would be split between PEC and PGW,
12 or \$2.725 million each, with an important caveat. The Fee for Service (\$0.60 per dth)
13 received by PGW is considered part of its profit participation. So in this example, if
14 PGW received \$1.5 million in Fee for Service, then the remaining amount it would be
15 due would be \$1.225 million. Table 1 shows these calculations.

16

¹ 2.25 Bcf = 2,250,000 Mcf @ \$0.60 per Mcf = \$1,350,000.

**Table 1: Hypothetical PGW Profit Potential Assuming
Total Profit of \$10 Million (\$ million)**

Total Profit (A)	\$10.00
Less PEC debt service	\$ (3.00)
Less PEC ROE	(1.35)
Less PEC costs	(0.20)
PEC costs before net profit determination (B)	\$ (4.55)
Net profit (A + B)	\$ 5.45
PGW share (50% of net profit)	\$ 2.725
Less Fee for Service	\$ (1.500)
Additional payment to PGW	\$ 1.225

1 There are, of course, numerous other terms and conditions, but the terms I
2 outlined above are the essential financial terms of the deal.

3 **Q. Are there provisions in the Term Sheet that are not yet fully developed?**

4 A. Yes. The Term Sheet contemplates that there will be nine separate agreements, as listed
5 on page 2 of the Term Sheet. As an example, the first agreement is a site license between
6 PGW and Philadelphia Municipal Authority (“PMA”) giving PMA the right to occupy
7 the Passyunk plant. That right will then be used by PMA to enter into an agreement with
8 Northstar for the actual construction of the project.

9 The Term Sheet describes the License Agreement between PGW and PMA in two
10 sentences. I expect the actual agreement would be considerably longer than that and
11 would include provisions regarding liability, access rights, and so on.

12 Similarly, the agreement between PMA and the developer says that the developer
13 “will provide PMA with a plant warranty, including for installation, parts and labor” for
14 three years. Again, I would expect the actual terms of a warranty for a project this

1 complex to be considerably longer than the one sentence contained in the Term Sheet
2 (page 4, second bullet).

3 Another important provision that is not fully developed concerns PMA's rights to
4 take over the project if Northstar defaults. The Term Sheet calls these "step-in rights."
5 The entire provision in the Term Sheet says: "In the event of Developer's default, PMA
6 or its designee shall be afforded and may exercise step-in rights with respect to the Loan
7 Documentation and any outstanding debt on the New Facilities." (Page 7, fourth bullet).
8 Again, I would expect the actual provision that gives PMA (and ultimately PGW) rights
9 to take over the project would be considerably longer and more complicated than this
10 single sentence.

11 **Q. Are there other examples of provisions that are not yet fully developed?**

12 A. Yes. On pages 7 and 8 of the Term Sheet, there is an outline of provisions regarding
13 Performance Security. These provisions provide important protections to the City during
14 the construction period to ensure that the project is completed properly. The first bullet
15 under Performance Security states that Northstar will "provide performance security (i.e.,
16 via approved surety bonds, letter(s) of credit and/or affiliate or parent guarantee)." I
17 asked PGW whether any details of the security were available. PGW responded that this
18 remained to be negotiated among the parties. In other words, the details of this vitally
19 important protection are not yet known.

20 These are just a few examples. Nearly every provision in the Term Sheet requires
21 further definition, expansion, and in some cases more negotiation among the parties.

Concerns with Proposed Transaction

Limited Potential for Economic Benefit

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3 **Q. Have you reviewed the potential for economic benefits for PGW and its ratepayers**
4 **from the proposed transaction?**

5 A. Yes, I have estimated the potential benefits for PGW and its ratepayers under a variety of
6 scenarios.

7 **Q. Please describe the method you used to estimate the potential range of benefits.**

8 A. It's impossible to accurately forecast natural gas prices for 25 years. So instead of using
9 a forecast, I used actual data for weekly natural gas spot prices during the past eight years
10 (October 2010 through September 2018).² I selected this time period because it
11 represents the period during which shale-gas production in the U.S. began to increase
12 significantly. According to the Energy Information Administration, in 2007 the U.S.
13 produced just over 1 Bcf of shale gas during the entire year.³ The first year in which the
14 5 Bcf threshold was crossed was 2010 (the starting point for my analysis). By 2016,
15 shale-gas production was in excess of 17 Bcf annually and it is expected to continue to
16 increase for many years into the future.

17 I use these historic data to estimate the spread between the highest and lowest
18 natural gas prices. It is that spread that determines whether profitable LNG (or
19 displacement) sales can be made. For example, if PEC can purchase gas for \$2/Mcf and

² U.S. Energy Information Administration, Weekly Henry Hub Spot Natural Gas Prices, available at:
< <http://tonto.eia.gov/dnav/ng/hist/rngwhhdw.htm> >.

³ U.S. Energy Information Administration, U.S. Shale Production, available at:
< http://tonto.eia.gov/dnav/ng/hist/res_epg0_r5302_nus_bcfa.htm >.

1 sell it during peak periods for \$6/Mcf, then it would achieve a margin of \$4/Mcf. Under
2 the Term Sheet, the only source of revenues for the project is the margin on sales. In
3 essence, then, rather than forecasting gas prices, I use historical data to estimate the likely
4 margin on gas sales.

5 **Q. How specifically did you estimate the potential margin on gas sales?**

6 A. I calculated likely high (sales) and low (purchase) gas prices using percentiles of actual
7 weekly spot gas prices during the eight-year period. Except by sheer luck, no one
8 perfectly times the high and low points of a market. So I assumed, for example, that PEC
9 does anywhere from a very good job to a near-perfect job of buying low and selling high.
10 I did this by picking different points on the gas price distribution curve during the eight-
11 year period, determined by using the percentile of gas prices.

12 During the eight-year period, there are more than 400 weekly gas prices. So
13 roughly the four lowest prices during those eight years would be the first percentile, the
14 next lowest four weeks would be the second percentile, and so on. Similarly, the highest
15 four weeks would be the 99th percentile, the next highest the 98th percentile, etc.

16 **Q. What is the range of weekly spot gas prices in the data set?**

17 A. From October 2010 to September 2018, the 1st percentile – representing the lowest gas
18 prices – is \$1.73 per Mcf. Prices in the 1st percentile last occurred in March 2016. The
19 99th percentile – the highest spot gas prices – is \$5.94 per Mcf. Prices that high last
20 occurred in March 2014.

1 **Q. How did you use this information to estimate the likely benefits to PGW and its**
2 **ratepayers from the proposed transaction?**

3 A. To be extremely generous to the proposed project – that is, to produce the highest
4 potential benefit – I calculated the potential benefit to PGW using these extreme prices –
5 assuming that PEC bought gas almost perfectly at the 1st percentile price (\$1.73 per Mcf)
6 and sold it with equal prescience at the market peak, the 99th percentile price of \$5.94 per
7 Mcf, achieving a margin of \$4.21 per Mcf. It is unlikely that PEC (or any energy trader)
8 would be able to consistently perform at this level.

9 **Q. How much gas did you assume PEC was able to buy and sell at these prices?**

10 A. Again, I selected a generous assumption. During the past eight years, PGW's highest
11 level of LNG sales was 1.044 Bcf in fiscal year 2013-2014. Early 2014 was the cold-
12 snap that blanketed the Northeastern U.S., known as the "polar vortex." That's also the
13 time period when the 99th percentile prices occurred during the past eight years.
14 Interestingly, PGW was able to sell about 1 Bcf of LNG at an average price equal to the
15 99th percentile price of \$5.94 per Mcf (a total of \$6.2 million) during 2013-2014.

16 The Term Sheet contains a minimum take-or-pay obligation of 2.25 Bcf of LNG
17 sales – more than twice as much as PGW was able to sell when gas demand was at its
18 highest level in many years. The Term Sheet also assumes that 2.7 Bcf of LNG will be
19 the typical level of annual production. Again, to be extremely generous to the parties, I
20 assumed an even higher level of sales – 3 Bcf per year, or almost three times the highest
21 level of LNG sales PGW ever experienced.

1 To complete the picture, I also assumed that 100% of sales were made at the
2 maximum margin of \$4.21 per Mcf.

3 **Q. Using those assumptions – 3 Bcf of sales with a margin of \$4.21 per Mcf – what is**
4 **the profit potential for PGW and its ratepayers from the proposed transaction?**

5 A. Using what I believe to be extremely generous assumptions regarding LNG sales, I
6 calculate that PGW's maximum profit potential would be limited to its Fee for Service,
7 which would be \$1.8 million if 3 Bcf of LNG were produced and sold in a year, as I show
8 in Table 2.

**Table 2: PGW Profit Potential Assuming
3 Bcf of Sales at a Margin of \$4.21 per Mcf (\$ million)**

Gross Margin (\$4.21/Mcf x 3 million Mcf)	\$12.63
Less Fee for Service (\$0.60/Mcf)	(1.80)
Less Fixed Cost (p. A-2-1)	(1.08)
Less Variable Cost (\$2.5 million per 2.7 Bcf)	(2.78)
Less Vaporization Cost (\$1.0 million per 2.7 Bcf)	(1.11)
Net Revenues (A)	<u>\$5.86</u>
Less PEC debt service	\$ (3.00)
Less PEC ROE	(1.35)
Less PEC costs	(0.20)
PEC costs before net profit determination (B)	<u>\$ (4.55)</u>
Net profit (A + B)	\$ 1.31
PGW share (50% of net profit)	\$ 0.65
Less Fee for Service	<u>\$ (1.80)</u>
Additional payment	\$ 0.00

1 **Q. At a margin of \$4.21 per Mcf, how much LNG would PEC need to sell in order for**
2 **PGW to receive more than its Fee for Service of \$0.60 per Mcf?**

3 A. If the margin is \$4.21 per Mcf, PEC would need to sell at least 5.06 Bcf of LNG in order
4 for PGW to “participate” in profits in excess of its Fee for Service of \$0.60 per Mcf.⁴

5 **Q. Do you consider it likely that PEC will be able to sell more than 5 Bcf of LNG?**

6 A. No. According to page 3 of the Term Sheet, the project would be designed to produce
7 120,000 gallons of LNG per day. There are approximately 82,600 BTUs per gallon of
8 LNG⁵, meaning the plant would produce about 9,912 Mcf per day, or a theoretical
9 maximum of 3.6 Bcf per year.⁶ Given the stated size of the project, it cannot produce
10 5 Bcf per year. Thus, even at a very high historical margin of \$4.21 per Mcf, the plant
11 cannot produce enough LNG for PGW to receive more profit than its Fee for Service.

12 **Q. Your calculations in Table 2 assume that PEC’s debt service is at the maximum**
13 **amount allowable under the Term Sheet, \$3.0 million per year. Did you evaluate**
14 **the effects on PGW’s potential profit if PEC’s debt service is less than the maximum**
15 **amount allowable?**

16 A. Yes. To test the sensitivity of this result to PEC’s cost of debt, I constructed another
17 example assuming PEC’s debt service is only one-half of the maximum amount

⁴ Using the costs and fees in Exhibit A-2 of the Term Sheet, determining when PGW’s Fee for Service is exactly equal to its 50% profit participation, assuming a margin of \$4.21 per Mcf, is calculated by solving the following equation, where x is sales in Bcf: $0.50 * (4.21x - 0.60x - 1.08 - 2.5x/2.7 - 1.0x/2.7 - 4.55) = 0.60x$. Dividing both sides by 0.50 then consolidating all x terms on one side of the equation results in the following: $(4.21 - 0.60 - 0.9259 - 0.3704 - 1.20)x = 1.08 + 4.55$, which when solved results in $x = 5.055$ Bcf.

⁵LNG conversion tables at: < <http://www.lngplants.com/conversiontables.html> >.

⁶ It is highly unlikely that the plant could run at full capacity 365 days per year, due to the need for maintenance as well as the cost of gas and tighter gas supply in the winter. If the plant ran at full capacity for 10 months each year, it would produce approximately 3.0 Bcf per year.

1 allowable, or \$1.5 million per year. All other assumptions are kept the same as in the
 2 example I described above. The bottom line is the same: even if PEC's debt cost is only
 3 one-half of the maximum amount allowable, there still would not be enough profit for
 4 PGW to receive more than its Fee for Service of \$0.60 per Mcf, as I show in Table 3.

**Table 3: PGW Profit Potential Assuming
 3 Bcf of Sales at a Margin of \$4.21 per Mcf and
 PEC Debt Cost of \$1.5 million (\$ million)**

Gross Margin (\$4.21/Mcf x 3 million Mcf)	\$12.63
Less Fee for Service (\$0.60/Mcf)	(1.80)
Less Fixed Cost (p. A-2-1)	(1.08)
Less Variable Cost (\$2.5 million per 2.7 Bcf)	(2.78)
Less Vaporization Cost (\$1.0 million per 2.7 Bcf)	(1.11)
Net Revenues (A)	<u>\$5.86</u>
Less PEC debt service	\$ (1.50)
Less PEC ROE	(1.35)
Less PEC costs	(0.20)
PEC costs before net profit determination (B)	<u>\$ (3.05)</u>
Net profit (A + B)	\$ 2.81
PGW share (50% of net profit)	\$ 1.41
Less Fee for Service	<u>\$ (1.80)</u>
Additional payment	\$ 0.00

5 **Q. At a margin of \$4.21 per Mcf and a PEC debt cost of \$1.5 million per year, how**
 6 **much LNG would PEC need to sell in order for PGW to receive more than its Fee**
 7 **for Service of \$0.60 per Mcf?**

8 A. If the margin is \$4.21 per Mcf and PEC's debt cost is only \$1.5 million per year, PEC
 9 would need to sell at least 3.7 Bcf of LNG in order for PGW to "participate" in profits in
 10 excess of its Fee for Service of \$0.60 per Mcf.⁷ As I explained above, the theoretical

⁷ Assuming a margin of \$4.21 per Mcf and debt cost of \$1.5 million, the break-even point is calculated by solving the following equation, where x is sales in Bcf: $0.50 * (4.21x - 0.60x - 1.08 - 2.5x/2.7 - 1.0x/2.7 - 3.05) = 0.60x$. Dividing both sides by 0.50 then consolidating all x terms on one side of the equation results in the following:

1 maximum annual production from the project is 3.6 Bcf per year, assuming no down
 2 time. Thus, even if PEC's debt cost is only one-half of the maximum allowed under the
 3 Term Sheet, the project cannot produce enough LNG for PGW to earn a profit in excess
 4 of its Fee for Service.

5 **Q. If PEC's sales are 3 Bcf per year, how high would the margin need to be in order for**
 6 **PGW to receive more than its Fee for Service of \$0.60 per Mcf?**

7 A. The result depends on the assumed cost of servicing PEC's debt. If sales are held
 8 constant at 3 Bcf per year and PEC's debt-service cost is \$3.0 million per year, PGW's
 9 profit would be limited to the Fee for Service of \$0.60 per Mcf unless the margin
 10 exceeded \$4.97 per Mcf.⁸ If the debt cost were reduced to \$1.5 million per year, then
 11 PGW could earn a profit in excess of the Fee for Service if the margin on sales were
 12 \$4.47 per Mcf.⁹

13 **Q. Do you consider it likely that PEC will be able to achieve a margin of between \$4.50**
 14 **and \$5.00 per Mcf?**

15 A. No, I do not consider that likely given current market conditions. Remember, I started
 16 my analysis with very generous assumptions – buying gas at close to the lowest price
 17 experienced in the last eight years and selling it for close to the highest price experienced

$(4.21 - 0.60 - 0.9259 - 0.3704 - 1.20)x = 1.08 + 3.05$, which when solved results in $x = 3.708$ Bcf.

⁸ Using the costs and fees in Exhibit A-2 of the Term Sheet, determining when PGW's Fee for Service is exactly equal to its 50% profit participation, assuming a quantity of 3 Bcf, is calculated by solving the following equation, where x is the margin in \$/Mcf: $0.50 * (3x - 1.80 - 1.08 - 2.78 - 1.11 - 4.55) = 1.80$. Dividing both sides by 0.50 then consolidating all x terms on one side of the equation results in the following:
 $3x = 3.60 + 1.80 + 1.08 + 2.78 + 1.11 + 4.55$, which when solved results in $x = \$4.973$ per Mcf.

⁹ Assuming sales of 3.0 Bcf and debt cost of \$1.5 million, the break-even point is calculated by solving the following equation, where x is the margin in \$/Mcf: $0.50 * (3x - 1.80 - 1.08 - 2.78 - 1.11 - 3.05) = 1.80$. Dividing both sides by 0.50 then consolidating all x terms on one side of the equation results in the following:
 $3x = 3.60 + 1.80 + 1.08 + 2.78 + 1.11 + 3.05$, which when solved results in $x = \$4.473$ per Mcf.

1 during that time. Increasing the margin to between \$4.50 and \$5.00 per Mcf would be
2 equivalent to buying gas at \$2 per Mcf and selling it at \$6.50 or \$7.00 per Mcf. Margins
3 that high on domestic sales have not been experienced since shale gas production started
4 in earnest in Pennsylvania and Ohio eight years ago. While international sales of LNG
5 may command higher prices, PEC would incur significant transportation costs to move
6 LNG to an export terminal. Even then, however, the highest LNG export price
7 experienced since February 2016 was \$6.44 per Mcf in January 2017. Most export prices
8 in the past two years have been in the range of \$4 to \$6.¹⁰ Those prices would not
9 produce a margin close to \$4.50 or \$5.00.

10 **Q. What do you conclude?**

11 A. I conclude that in evaluating the proposed deal, it is highly likely that the full extent of
12 PGW's profit will be the Fee for Service of \$0.60 per Mcf. While, of course, the natural
13 gas market could change, it would take significant market changes to produce profit
14 participation in excess of the Fee for Service. The Term Sheet requires a minimum Fee
15 for Service payment reflecting 2.25 Bcf of LNG per year, or \$1.35 million per year
16 adjusted for inflation. The Term Sheet contemplates an expected level of annual
17 production of 2.7 Bcf, which would result in a Fee for Service of \$1.62 million per year.
18 At 3.0 Bcf per year, the likely maximum production level from the plant, the Fee for
19 Service would be \$1.8 million per year. Thus, in evaluating the proposed transaction, I
20 consider it reasonable to assume the extent of PGW (and ratepayer) benefit from the deal
21 would be a payment of between \$1.35 million and \$1.8 million per year.

¹⁰ U.S. Energy Information Administration, Price of Liquefied U.S. Natural Gas Exports, available at:
< <https://www.eia.gov/dnav/ng/hist/n9133us3M.htm> >.

1 **Q. Are you ignoring the other payments PGW would receive?**

2 A. No, I am not ignoring them. The other payments compensate PGW for costs incurred by
3 PGW. If this transaction did not occur, then those costs would not be incurred either.
4 Thus, the net benefit to PGW is the Fee for Service payment unless market conditions
5 change so much that PGW also receives some profit participation above that amount.

6 **Q. What do you recommend?**

7 A. I recommend that the Gas Commission and City Council evaluate this transaction using a
8 likely benefit range of \$1.35 million to \$1.8 million per year, adjusted for inflation.

9 ***Lack of Specificity in Term Sheet***

10 **Q. Are you concerned about the Gas Commission being asked to approve a Term Sheet
11 instead of actual agreements?**

12 A. Yes. As I mentioned, the transaction contemplates nine separate agreements. From my
13 experience reviewing complex transactions, I would guess that those agreements will
14 total hundreds of pages. The Term Sheet provides a summary of some of the essential
15 elements of the transaction; it is not a legally binding document and it does not contain all
16 of the terms and conditions that will either bind or protect PGW and the City.

17 In my opinion, it is not reasonable for a regulatory body to approve this type of
18 complex, multi-party, multi-year transaction based solely on a term sheet. This is not like
19 a gas purchase contract, pipeline capacity agreement, or office lease where there are
20 standard terms and conditions used in the industry. This is a one-time special transaction
21 involving numerous interlocking legal entities on both sides. It is essential for the Gas
22 Commission, and ultimately City Council, to understand exactly what obligations PGW

1 and other City entities are assuming and specifically how PGW and its ratepayers (and
2 ultimately the City itself) are protected.

3 **Q. What do you recommend?**

4 A. I recommend that the Gas Commission provide what is essentially an advisory opinion
5 that approves or modifies provisions of the Term Sheet, but then requires PGW to come
6 back to the Commission for review of the final transaction documents. This transaction
7 is too complex and too important to be addressed in the cursory manner PGW suggests.
8 Indeed, I have reviewed Gas Commission proceedings involving fairly straightforward
9 leases where the review period was longer and where the Commission required changes
10 in the agreement to better protect the City.¹¹ If that can occur with a fairly traditional
11 lease, imagine the potential issues that could arise when moving from a 20-page term
12 sheet to the hundreds of pages involved in the nine separate agreements necessary to
13 implement the proposed transaction.

14 ***Review of Future Changes in Deal***

15 **Q. On page 20 of the Term Sheet, there's a provision called Project Volumes. What is**
16 **your understanding of this provision.**

17 A. As I understand it, this provision permits PGW and PEC to modify the minimum take-or-
18 pay obligation that results in the guaranteed payment of \$1.35 million per year (plus
19 inflation) to PGW.

¹¹ For example, on June 11, 2013, the Gas Commission issued an order reviewing a fairly standard commercial transaction involving the proposed lease of land located near Delaware Avenue and Tioga Street. The order was issued about 2-1/2 months after the lease was submitted for approval. The Commission rejected the lease as filed and ordered several changes in provisions of the lease to further protect PGW and the City.

1 **Q. Does this provision concern you?**

2 A. Yes, it does. At least in the Term Sheet, this provision does not contain any restrictions
3 and does not have any specific approval requirements for the City parties. The minimum
4 payment obligation is one of the most important provisions of the deal. If one of the
5 parties wants to renegotiate this provision, any such change should be carefully
6 scrutinized, not just by the parties but also by the Gas Commission and City Council.
7 Reducing that minimum take-or-pay obligation could fundamentally change the
8 economics of the transaction for PGW.

9 **Q. Do you have similar concerns about other provisions in the Term Sheet?**

10 A. Yes. There are several places in the Term Sheet that refer to PGW or PMA having “step-
11 in rights” if PEC or its affiliates default. The specific provisions appear in the description
12 of the Turnkey Lease between PMA and the developer (pages 7 and 9), the LNG Services
13 Agreement between PGW and PEC (pages 15 and 16), the Loan (page 18), and the
14 General Provisions (page 19). The wording of each provision is slightly different, but the
15 intent appears to be that if PEC or its affiliates default, then PGW has the right to step
16 into the shoes of PEC or the affiliate – that is, assume the loan, take ownership of
17 facilities, become the party to gas purchase or sales agreements, and so on.

18 It is not clear to me based on the description of step-in rights in the Term Sheet if
19 PGW (or PMA on PGW’s behalf) would require additional approval to exercise these
20 rights. The exercise of step-in rights could result in the City owning the facilities, being
21 responsible for millions of dollars in loans, or being a party to gas purchase or sales
22 agreements valued in the millions of dollars. Such rights also could result in PGW
23 allowing a third party to step into PEC’s role.

1 While the Term Sheet is silent on the point, I strongly recommend that the
2 exercise of any step-in rights by PGW (or PMA on PGW's behalf) should require review
3 and approval by the Gas Commission. That review should include a demonstration that it
4 is cost effective for PGW to undertake the obligations, as well as evidence that any third
5 parties involved are qualified to enter into this type of business relationship with PGW.

6 **Q. What do you recommend?**

7 A. I recommend that any proposed change in the take-or-pay obligation, any exercise of
8 step-in rights, or any other change in a material term of the deal, must be reviewed and
9 approved by the Gas Commission.

10 ***PEC / LET Lack of In-House Expertise***

11 **Q. Do PEC and its affiliate LET have experience in the procurement and marketing of**
12 **natural gas or LNG?**

13 A. To the best of my knowledge, neither PEC nor LET has any experience with natural gas
14 procurement or the marketing of LNG or natural gas. I reviewed the backgrounds of
15 LET's five employees and none of them appear to have that expertise. While some of
16 them have been employed by energy marketing companies, their experience appears to be
17 in finance, such as raising capital, mergers, and acquisitions. I did not see anyone with a
18 background in energy marketing or procurement. Similarly, I do not believe that PEC
19 has any employees at the present time.

20 **Q. Does this concern you?**

21 A. Yes, it does. The City must ensure that it is doing business with a party that can produce
22 value. It is one thing to ensure that the other side has relevant construction experience

1 (and it appears that Northstar does); but it is quite another to be able to actually produce
2 economic value from the facilities that would be constructed.

3 **Q. What do you recommend?**

4 A. I recommend that the Gas Commission determine whether appropriate due diligence has
5 been done to ensure that PEC and/or LET have the necessary expertise to effectively
6 market more than 2 Bcf of gas annually. I have not seen any evidence of that thus far.

7 ***Adequacy of Protection from Risk***

8 **Q. Could the proposed transaction create any risks or liabilities for PGW?**

9 A. Yes. The proposed deal would introduce a new, significant piece of equipment into the
10 Passyunk plant and require it to be there for 25 years. PGW is assuming the
11 responsibility for all operations and maintenance, with a promise that PEC will pay the
12 operating, maintenance, and repair costs. There is a risk, however, that PEC will be
13 unwilling or unable to pay those costs; but PGW still would be required to maintain the
14 equipment to avoid safety hazards.

15 In addition, there are risks associated with construction, such as ensuring that the
16 facilities are constructed safely and properly. There are potential financial risks (what
17 happens if PEC fails to perform, goes bankrupt, etc.). The project obviously is an
18 expansion of PGW's existing natural gas business, but that poses a risk of further reliance
19 on fossil fuels at a time when climate change is causing increasing concerns. As an
20 example, could the space in the Passyunk plant, and the private capital involved, be better
21 utilized to install fuel cells and electricity storage batteries (or indoor storage in

1 conjunction with rooftop solar on the Passyunk plant) or take other actions that might
2 reduce costs or diversify revenues.

3 **Q. Have you been able to determine whether PGW and its ratepayers will be**
4 **adequately protected from any risks or potential liability associated with the**
5 **proposed transaction?**

6 A. No. The Term Sheet contains cursory statements about protection from certain types of
7 risks and liabilities. It is not possible to evaluate the degree to which PGW and its
8 ratepayers would be insulated from (or compensated for) risks without seeing the text of
9 the final agreements among the parties. This is particularly the case because the parties
10 who are promising to pay operating, maintenance, and repair costs may be protected from
11 liability through their capitalization or other business arrangements.

12 **Q. What do you recommend?**

13 A. I recommend that the Gas Commission should review the final contract documents and
14 determine whether PGW and the City would be adequately protected from liability if they
15 were to enter into a long-term business arrangement with a thinly capitalized special-
16 purpose entity.

17 **Conclusion**

18 **Q. Do you have an opinion about the reasonableness of entering into this type of**
19 **arrangement for a potential benefit of \$1.35 million to \$1.8 million per year?**

20 A. While I try to never dismiss any type of benefit to ratepayers, this benefit is fairly small.
21 PGW's revenues are in the range of \$600 million per year, so the proposed transaction
22 might reduce PGW's rates by three-tenths of one percent (0.3%) or less. While that is

1 more than zero, it is not a significant change for most ratepayers. Indeed, a typical
2 customer would be likely to experience a much greater bill impact by enhancing the level
3 of insulation, installing a smart thermostat, or taking other measures to use gas more
4 efficiently.

5 **Q. Do you have an ultimate recommendation for the Gas Commission?**

6 A. No, I do not. The purpose of my testimony is to present facts and concerns to the
7 Commission. It is up to the Commission to weigh those factors to determine if the
8 benefits outweigh the risks of the transaction. If I were in a position to make a final
9 judgment, I would want to review the entire set of agreements among the parties so that I
10 could evaluate the risks posed to the City, PGW, and ratepayers. Then I would want to
11 weigh those risks against the likely benefit of a fraction of a percent reduction in
12 customers' bills.

13 In reaching a judgment, it also would be useful to have information about other
14 potential uses for the Passyunk plant or potential uses of outside capital that might be
15 foreclosed by this transaction.

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

17 A. Yes, it does.

Appendix A

Scott J. Rubin

Attorney + Consultant

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Current Position

Public Utility Attorney and Consultant. 1994 to present. I provide legal, consulting, and expert witness services to various organizations interested in the regulation of public utilities.

Previous Positions

Lecturer in Computer Science, Susquehanna University, Selinsgrove, PA. 1993 to 2000.

Senior Assistant Consumer Advocate, Office of Consumer Advocate, Harrisburg, PA. 1990 to 1994.

I supervised the administrative and technical staff and shared with one other senior attorney the supervision of a legal staff of 14 attorneys.

Assistant Consumer Advocate, Office of Consumer Advocate, Harrisburg, PA. 1983 to 1990.

Associate, Laws and Staruch, Harrisburg, PA. 1981 to 1983.

Law Clerk, U.S. Environmental Protection Agency, Washington, DC. 1980 to 1981.

Research Assistant, Rockville Consulting Group, Washington, DC. 1979.

Current Professional Activities

Member, American Bar Association, Infrastructure and Regulated Industries Section.

Member, American Water Works Association.

Admitted to practice law before the Supreme Court of Pennsylvania, the New York State Court of Appeals, the United States District Court for the Middle District of Pennsylvania, the United States Court of Appeals for the Third Circuit, and the Supreme Court of the United States.

Previous Professional Activities

Member, American Water Works Association, Rates and Charges Subcommittee, 1998-2001.

Member, Federal Advisory Committee on Disinfectants and Disinfection By-Products in Drinking Water, U.S. Environmental Protection Agency, Washington, DC. 1992 to 1994.

Chair, Water Committee, National Association of State Utility Consumer Advocates, Washington, DC. 1990 to 1994; member of committee from 1988 to 1990.

Member, Board of Directors, Pennsylvania Energy Development Authority, Harrisburg, PA. 1990 to 1994.

Member, Small Water Systems Advisory Committee, Pennsylvania Department of Environmental Resources, Harrisburg, PA. 1990 to 1992.

Member, Ad Hoc Committee on Emissions Control and Acid Rain Compliance, National Association of State Utility Consumer Advocates, 1991.

Member, Nitrogen Oxides Subcommittee of the Acid Rain Advisory Committee, U.S. Environmental Protection Agency, Washington DC. 1991.

Education

J.D. with Honors, George Washington University, Washington, DC. 1981.

B.A. with Distinction in Political Science, Pennsylvania State University, University Park, PA. 1978.

Publications and Presentations (* denotes peer-reviewed publications)

1. "Quality of Service Issues," a speech to the Pennsylvania Public Utility Commission Consumer Conference, State College, PA. 1988.
2. K.L. Pape and S.J. Rubin, "Current Developments in Water Utility Law," in *Pennsylvania Public Utility Law* (Pennsylvania Bar Institute). 1990.
3. Presentation on Water Utility Holding Companies to the Annual Meeting of the National Association of State Utility Consumer Advocates, Orlando, FL. 1990.
4. "How the OCA Approaches Quality of Service Issues," a speech to the Pennsylvania Chapter of the National Association of Water Companies. 1991.
5. Presentation on the Safe Drinking Water Act to the Mid-Year Meeting of the National Association of State Utility Consumer Advocates, Seattle, WA. 1991.
6. "A Consumer Advocate's View of Federal Pre-emption in Electric Utility Cases," a speech to the Pennsylvania Public Utility Commission Electricity Conference. 1991.
7. Workshop on Safe Drinking Water Act Compliance Issues at the Mid-Year Meeting of the National Association of State Utility Consumer Advocates, Washington, DC. 1992.
8. Formal Discussant, Regional Acid Rain Workshop, U.S. Environmental Protection Agency and National Regulatory Research Institute, Charlotte, NC. 1992.
9. S.J. Rubin and S.P. O'Neal, "A Quantitative Assessment of the Viability of Small Water Systems in Pennsylvania," *Proceedings of the Eighth NARUC Biennial Regulatory Information Conference*, National Regulatory Research Institute (Columbus, OH 1992), IV:79-97.
10. "The OCA's Concerns About Drinking Water," a speech to the Pennsylvania Public Utility Commission Water Conference. 1992.
11. Member, Technical Horizons Panel, Annual Meeting of the National Association of Water Companies, Hilton Head, SC. 1992.
12. M.D. Klein and S.J. Rubin, "Water and Sewer -- Update on Clean Streams, Safe Drinking Water, Waste Disposal and Pennvest," *Pennsylvania Public Utility Law Conference* (Pennsylvania Bar Institute). 1992.
13. Presentation on Small Water System Viability to the Technical Assistance Center for Small Water Companies, Pa. Department of Environmental Resources, Harrisburg, PA. 1993

14. "The Results Through a Public Service Commission Lens," speaker and participant in panel discussion at Symposium: "Impact of EPA's Allowance Auction," Washington, DC, sponsored by AER*X. 1993.
15. "The Hottest Legislative Issue of Today -- Reauthorization of the Safe Drinking Water Act," speaker and participant in panel discussion at the Annual Conference of the American Water Works Association, San Antonio, TX. 1993.
16. "Water Service in the Year 2000," a speech to the Conference: "Utilities and Public Policy III: The Challenges of Change," sponsored by the Pennsylvania Public Utility Commission and the Pennsylvania State University, University Park, PA. 1993.
17. "Government Regulation of the Drinking Water Supply: Is it Properly Focused?," speaker and participant in panel discussion at the National Consumers League's Forum on Drinking Water Safety and Quality, Washington, DC. 1993. Reprinted in *Rural Water*, Vol. 15 No. 1 (Spring 1994), pages 13-16.
18. "Telephone Penetration Rates for Renters in Pennsylvania," a study prepared for the Pennsylvania Office of Consumer Advocate. 1993.
19. "Zealous Advocacy, Ethical Limitations and Considerations," participant in panel discussion at "Continuing Legal Education in Ethics for Pennsylvania Lawyers," sponsored by the Office of General Counsel, Commonwealth of Pennsylvania, State College, PA. 1993.
20. "Serving the Customer," participant in panel discussion at the Annual Conference of the National Association of Water Companies, Williamsburg, VA. 1993.
21. "A Simple, Inexpensive, Quantitative Method to Assess the Viability of Small Water Systems," a speech to the Water Supply Symposium, New York Section of the American Water Works Association, Syracuse, NY. 1993.
22. * S.J. Rubin, "Are Water Rates Becoming Unaffordable?," *Journal American Water Works Association*, Vol. 86, No. 2 (February 1994), pages 79-86.
23. "Why Water Rates Will Double (If We're Lucky): Federal Drinking Water Policy and Its Effect on New England," a briefing for the New England Conference of Public Utilities Commissioners, Andover, MA. 1994.
24. "Are Water Rates Becoming Unaffordable?," a speech to the Legislative and Regulatory Conference, Association of Metropolitan Water Agencies, Washington, DC. 1994.
25. "Relationships: Drinking Water, Health, Risk and Affordability," speaker and participant in panel discussion at the Annual Meeting of the Southeastern Association of Regulatory Commissioners, Charleston, SC. 1994.
26. "Small System Viability: Assessment Methods and Implementation Issues," speaker and participant in panel discussion at the Annual Conference of the American Water Works Association, New York, NY. 1994.
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30. "Surviving the Safe Drinking Water Act," speaker at the Annual Meeting of the National Association of State Utility Consumer Advocates, Reno, NV. 1994.
31. "Safe Drinking Water Act Compliance -- Ratemaking Implications," speaker at the National Conference of Regulatory Attorneys, Scottsdale, AZ. 1995. Reprinted in *Water*, Vol. 36, No. 2 (Summer 1995), pages 28-29.
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33. S.J. Rubin, "Water Rates: An Affordable Housing Issue?," *Home Energy*, Vol. 12 No. 4 (July/August 1995), page 37.
34. Speaker and participant in the Water Policy Forum, sponsored by the National Association of Water Companies, Naples, FL. 1995.
35. Participant in panel discussion on "The Efficient and Effective Maintenance and Delivery of Potable Water at Affordable Rates to the People of New Jersey," at The New Advocacy: Protecting Consumers in the Emerging Era of Utility Competition, a conference sponsored by the New Jersey Division of the Ratepayer Advocate, Newark, NJ. 1995.
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38. "Changing Customers' Expectations in the Water Industry," speaker at the Mid-America Regulatory Commissioners Conference, Chicago, IL. 1996, reprinted in *Water* Vol. 37 No. 3 (Winter 1997), pages 12-14.
39. "Recent Federal Legislation Affecting Drinking Water Utilities," speaker at Pennsylvania Public Utility Law Conference, Pennsylvania Bar Institute, Hershey, PA. 1996.
40. "Clean Water at Affordable Rates: A Ratepayers Conference," moderator at symposium sponsored by the New Jersey Division of Ratepayer Advocate, Trenton, NJ. 1996.

41. "Water Workshop: How New Laws Will Affect the Economic Regulation of the Water Industry," speaker at the Annual Meeting of the National Association of State Utility Consumer Advocates, San Francisco, CA. 1996.
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- 111.Scott J. Rubin, Water Reliability and Resilience Standards, *Pennsylvania Public Utility Law Conference* (Pennsylvania Bar Institute). 2011.
- 112.Member of Expert Panel, Leadership Forum: Business Management for the Future, Annual Conference and Exposition of the American Water Works Association, Washington, DC. 2011.
- 113.Scott J. Rubin, Evaluating Community Affordability in Storm Water Control Plans, *Flowing into the Future: Evolving Water Issues* (Pennsylvania Bar Institute). 2011.
- 114.Invited Participant, Summit on Declining Water Demand and Revenues, sponsored by The Alliance for Water Efficiency, Racine, WI. 2012.
- 115.* Scott J. Rubin, Evaluating Violations of Drinking Water Regulations, *Journal American Water Works Association*, Vol. 105, No. 3 (Mar. 2013), pp. 51-52 (Expanded Summary) and E137-E147. Winner of the AWWA Small Systems Division Best Paper Award.
- 116.* Scott J. Rubin, Structural Changes in the Water Utility Industry During the 2000s, *Journal American Water Works Association*, Vol. 105, No. 3 (Mar. 2013), pp. 53-54 (Expanded Summary) and E148-E156.
- 117.* Scott J. Rubin, Moving Toward Demand-Based Residential Rates, *The Electricity Journal*, Vol. 28, No. 9 (Nov. 2015), pp. 63-71, <http://dx.doi.org/10.1016/j.tej.2015.09.021>.
- 118.Scott J. Rubin, Moving Toward Demand-Based Residential Rates. Presentation at the Annual Meeting of the National Association of State Utility Consumer Advocates, Austin, TX. 2015.

- 119.* Stacey Isaac Berahzer, et al., *Navigating Legal Pathways to Rate-Funded Customer Assistance Programs: A Guide for Water and Wastewater Utilities*, American Water Works Association, et al. 2017.
- 120.* Janet Clements, et al., *Customer Assistance Programs for Multi-Family Residential and Other Hard-to-Reach Customers*, Water Research Foundation, Denver, CO. 2017.
121. Scott J. Rubin, Water Costs and Affordability in the US: 1990 to 2015, *Journal American Water Works Association*, Vol. 110, No. 4 (Apr. 2018), pp. 12-16.

Testimony as an Expert Witness

1. *Pa. Public Utility Commission v. Pennsylvania Gas and Water Co. - Water Division*, Pa. Public Utility Commission, Docket R-00922404. 1992. Concerning rate design, on behalf of the Pa. Office of Consumer Advocate.
2. *Pa. Public Utility Commission v. Shenango Valley Water Co.*, Pa. Public Utility Commission, Docket R-00922420. 1992. Concerning cost allocation, on behalf of the Pa. Office of Consumer Advocate
3. *Pa. Public Utility Commission v. Pennsylvania Gas and Water Co. - Water Division*, Pa. Public Utility Commission, Docket R-00922482. 1993. Concerning rate design, on behalf of the Pa. Office of Consumer Advocate
4. *Pa. Public Utility Commission v. Colony Water Co.*, Pa. Public Utility Commission, Docket R-00922375. 1993. Concerning rate design, on behalf of the Pa. Office of Consumer Advocate
5. *Pa. Public Utility Commission v. Dauphin Consolidated Water Supply Co. and General Waterworks of Pennsylvania, Inc.*, Pa. Public Utility Commission, Docket R-00932604. 1993. Concerning rate design and cost of service, on behalf of the Pa. Office of Consumer Advocate
6. *West Penn Power Co. v. State Tax Department of West Virginia*, Circuit Court of Kanawha County, West Virginia, Civil Action No. 89-C-3056. 1993. Concerning regulatory policy and the effects of a taxation statute on out-of-state utility ratepayers, on behalf of the Pa. Office of Consumer Advocate
7. *Pa. Public Utility Commission v. Pennsylvania Gas and Water Co. - Water Division*, Pa. Public Utility Commission, Docket R-00932667. 1993. Concerning rate design and affordability of service, on behalf of the Pa. Office of Consumer Advocate
8. *Pa. Public Utility Commission v. National Utilities, Inc.*, Pa. Public Utility Commission, Docket R-00932828. 1994. Concerning rate design, on behalf of the Pa. Office of Consumer Advocate
9. *An Investigation of the Sources of Supply and Future Demand of Kentucky-American Water Company*, Ky. Public Service Commission, Case No. 93-434. 1994. Concerning supply and demand planning, on behalf of the Kentucky Office of Attorney General, Utility and Rate Intervention Division.
10. *The Petition on Behalf of Gordon's Corner Water Company for an Increase in Rates*, New Jersey Board of Public Utilities, Docket No. WR94020037. 1994. Concerning revenue requirements and rate design, on behalf of the New Jersey Division of Ratepayer Advocate.

11. *Re Consumers Maine Water Company Request for Approval of Contracts with Consumers Water Company and with Ohio Water Service Company*, Me. Public Utilities Commission, Docket No. 94-352. 1994. Concerning affiliated interest agreements, on behalf of the Maine Public Advocate.
12. *In the Matter of the Application of Potomac Electric Power Company for Approval of its Third Least-Cost Plan*, D.C. Public Service Commission, Formal Case No. 917, Phase II. 1995. Concerning Clean Air Act implementation and environmental externalities, on behalf of the District of Columbia Office of the People's Counsel.
13. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of the Dayton Power and Light Company and Related Matters*, Ohio Public Utilities Commission, Case No. 94-105-EL-EFC. 1995. Concerning Clean Air Act implementation (case settled before testimony was filed), on behalf of the Office of the Ohio Consumers' Counsel.
14. *Kennebec Water District Proposed Increase in Rates*, Maine Public Utilities Commission, Docket No. 95-091. 1995. Concerning the reasonableness of planning decisions and the relationship between a publicly owned water district and a very large industrial customer, on behalf of the Maine Public Advocate.
15. *Winter Harbor Water Company, Proposed Schedule Revisions to Introduce a Readiness-to-Serve Charge*, Maine Public Utilities Commission, Docket No. 95-271. 1995 and 1996. Concerning standards for, and the reasonableness of, imposing a readiness to serve charge and/or exit fee on the customers of a small investor-owned water utility, on behalf of the Maine Public Advocate.
16. *In the Matter of the 1995 Long-Term Electric Forecast Report of the Cincinnati Gas & Electric Company*, Public Utilities Commission of Ohio, Case No. 95-203-EL-FOR, and *In the Matter of the Two-Year Review of the Cincinnati Gas & Electric Company's Environmental Compliance Plan Pursuant to Section 4913.05, Revised Cost*, Case No. 95-747-EL-ECP. 1996. Concerning the reasonableness of the utility's long-range supply and demand-management plans, the reasonableness of its plan for complying with the Clean Air Act Amendments of 1990, and discussing methods to ensure the provision of utility service to low-income customers, on behalf of the Office of the Ohio Consumers' Counsel..
17. *In the Matter of Notice of the Adjustment of the Rates of Kentucky-American Water Company*, Kentucky Public Service Commission, Case No. 95-554. 1996. Concerning rate design, cost of service, and sales forecast issues, on behalf of the Kentucky Office of Attorney General.
18. *In the Matter of the Application of Citizens Utilities Company for a Hearing to Determine the Fair Value of its Properties for Ratemaking Purposes, to Fix a Just and Reasonable Rate of Return Thereon, and to Approve Rate Schedules Designed to Provide such Rate of Return*, Arizona Corporation Commission, Docket Nos. E-1032-95-417, *et al.* 1996. Concerning rate design, cost of service, and the price elasticity of water demand, on behalf of the Arizona Residential Utility Consumer Office.
19. *Cochrane v. Bangor Hydro-Electric Company*, Maine Public Utilities Commission, Docket No. 96-053. 1996. Concerning regulatory requirements for an electric utility to engage in unregulated business enterprises, on behalf of the Maine Public Advocate.
20. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of Monongahela Power Company and Related Matters*, Public Utilities Commission of Ohio, Case No. 96-106-EL-EFC. 1996. Concerning the costs and procedures associated with the implementation of the Clean Air Act Amendments of 1990, on behalf of the Ohio Consumers' Counsel.

21. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of Cleveland Electric Illuminating Company and Toledo Edison Company and Related Matters*, Public Utilities Commission of Ohio, Case Nos. 96-107-EL-EFC and 96-108-EL-EFC. 1996. Concerning the costs and procedures associated with the implementation of the Clean Air Act Amendments of 1990, on behalf of the Ohio Consumers' Counsel.
22. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of Ohio Power Company and Columbus Southern Power Company and Related Matters*, Public Utilities Commission of Ohio, Case Nos. 96-101-EL-EFC and 96-102-EL-EFC. 1997. Concerning the costs and procedures associated with the implementation of the Clean Air Act Amendments of 1990, on behalf of the Ohio Consumers' Counsel.
23. *An Investigation of the Sources of Supply and Future Demand of Kentucky-American Water Company (Phase II)*, Kentucky Public Service Commission, Docket No. 93-434. 1997. Concerning supply and demand planning, on behalf of the Kentucky Office of Attorney General, Public Service Litigation Branch.
24. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of Cincinnati Gas and Electric Co. and Related Matters*, Public Utilities Commission of Ohio, Case No. 96-103-EL-EFC. 1997. Concerning the costs and procedures associated with the implementation of the Clean Air Act Amendments of 1990, on behalf of the Ohio Consumers' Counsel.
25. *Bangor Hydro-Electric Company Petition for Temporary Rate Increase*, Maine Public Utilities Commission, Docket No. 97-201. 1997. Concerning the reasonableness of granting an electric utility's request for emergency rate relief, and related issues, on behalf of the Maine Public Advocate.
26. *Testimony concerning H.B. 1068 Relating to Restructuring of the Natural Gas Utility Industry*, Consumer Affairs Committee, Pennsylvania House of Representatives. 1997. Concerning the provisions of proposed legislation to restructure the natural gas utility industry in Pennsylvania, on behalf of the Pennsylvania AFL-CIO Gas Utility Caucus.
27. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of Cleveland Electric Illuminating Company and Toledo Edison Company and Related Matters*, Public Utilities Commission of Ohio, Case Nos. 97-107-EL-EFC and 97-108-EL-EFC. 1997. Concerning the costs and procedures associated with the implementation of the Clean Air Act Amendments of 1990, on behalf of the Ohio Consumers' Counsel.
28. *In the Matter of the Petition of Valley Road Sewerage Company for a Revision in Rates and Charges for Water Service*, New Jersey Board of Public Utilities, Docket No. WR92080846J. 1997. Concerning the revenue requirements and rate design for a wastewater treatment utility, on behalf of the New Jersey Division of Ratepayer Advocate.
29. *Bangor Gas Company, L.L.C., Petition for Approval to Furnish Gas Service in the State of Maine*, Maine Public Utilities Commission, Docket No. 97-795. 1998. Concerning the standards and public policy concerns involved in issuing a certificate of public convenience and necessity for a new natural gas utility, and related ratemaking issues, on behalf of the Maine Public Advocate.
30. *In the Matter of the Investigation on Motion of the Commission into the Adequacy of the Public Utility Water Service Provided by Tidewater Utilities, Inc., in Areas in Southern New Castle County, Delaware*,

Delaware Public Service Commission, Docket No. 309-97. 1998. Concerning the standards for the provision of efficient, sufficient, and adequate water service, and the application of those standards to a water utility, on behalf of the Delaware Division of the Public Advocate.

31. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of Cincinnati Gas and Electric Co. and Related Matters*, Public Utilities Commission of Ohio, Case No. 97-103-EL-EFC. 1998. Concerning fuel-related transactions with affiliated companies and the appropriate ratemaking treatment and regulatory safeguards involving such transactions, on behalf of the Ohio Consumers' Counsel.
32. *Olde Port Mariner Fleet, Inc. Complaint Regarding Casco Bay Island Transit District's Tour and Charter Service*, Maine Public Utilities Commission, Docket No. 98-161. 1998. Concerning the standards and requirements for allocating costs and separating operations between regulated and unregulated operations of a transportation utility, on behalf of the Maine Public Advocate and Olde Port Mariner Fleet, Inc.
33. *Central Maine Power Company Investigation of Stranded Costs, Transmission and Distribution Utility Revenue Requirements, and Rate Design*, Maine Public Utilities Commission, Docket No. 97-580. 1998. Concerning the treatment of existing rate discounts when designing rates for a transmission and distribution electric utility, on behalf of the Maine Public Advocate.
34. *Pa. Public Utility Commission v. Manufacturers Water Company*, Pennsylvania Public Utility Commission, Docket No. R-00984275. 1998. Concerning rate design on behalf of the Manufacturers Water Industrial Users.
35. *In the Matter of Petition of Pennsgrove Water Supply Company for an Increase in Rates for Water Service*, New Jersey Board of Public Utilities, Docket No. WR98030147. 1998. Concerning the revenue requirements, level of affiliated charges, and rate design for a water utility, on behalf of the New Jersey Division of Ratepayer Advocate.
36. *In the Matter of Petition of Seaview Water Company for an Increase in Rates for Water Service*, New Jersey Board of Public Utilities, Docket No. WR98040193. 1999. Concerning the revenue requirements and rate design for a water utility, on behalf of the New Jersey Division of Ratepayer Advocate.
37. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of Ohio Power Company and Columbus Southern Power Company and Related Matters*, Public Utilities Commission of Ohio, Case Nos. 98-101-EL-EFC and 98-102-EL-EFC. 1999. Concerning the costs and procedures associated with the implementation of the Clean Air Act Amendments of 1990, on behalf of the Ohio Consumers' Counsel.
38. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of Dayton Power and Light Company and Related Matters*, Public Utilities Commission of Ohio, Case No. 98-105-EL-EFC. 1999. Concerning the costs and procedures associated with the implementation of the Clean Air Act Amendments of 1990, on behalf of the Ohio Consumers' Counsel.
39. *In the Matter of the Regulation of the Electric Fuel Component Contained within the Rate Schedules of Monongahela Power Company and Related Matters*, Public Utilities Commission of Ohio, Case No. 99-106-EL-EFC. 1999. Concerning the costs and procedures associated with the implementation of the Clean Air Act Amendments of 1990, on behalf of the Ohio Consumers' Counsel.

40. *County of Suffolk, et al. v. Long Island Lighting Company, et al.*, U.S. District Court for the Eastern District of New York, Case No. 87-CV-0646. 2000. Submitted two affidavits concerning the calculation and collection of court-ordered refunds to utility customers, on behalf of counsel for the plaintiffs.
41. *Northern Utilities, Inc., Petition for Waivers from Chapter 820*, Maine Public Utilities Commission, Docket No. 99-254. 2000. Concerning the standards and requirements for defining and separating a natural gas utility's core and non-core business functions, on behalf of the Maine Public Advocate.
42. *Notice of Adjustment of the Rates of Kentucky-American Water Company*, Kentucky Public Service Commission, Case No. 2000-120. 2000. Concerning the appropriate methods for allocating costs and designing rates, on behalf of the Kentucky Office of Attorney General.
43. *In the Matter of the Petition of Gordon's Corner Water Company for an Increase in Rates and Charges for Water Service*, New Jersey Board of Public Utilities, Docket No. WR00050304. 2000. Concerning the revenue requirements and rate design for a water utility, on behalf of the New Jersey Division of Ratepayer Advocate.
44. *Testimony concerning Arsenic in Drinking Water: An Update on the Science, Benefits, and Costs*, Committee on Science, United States House of Representatives. 2001. Concerning the effects on low-income households and small communities from a more stringent regulation of arsenic in drinking water.
45. *In the Matter of the Application of The Cincinnati Gas & Electric Company for an Increase in Gas Rates in its Service Territory*, Public Utilities Commission of Ohio, Case No. 01-1228-GA-AIR, et al. 2002. Concerning the need for and structure of a special rider and alternative form of regulation for an accelerated main replacement program, on behalf of the Ohio Consumers' Counsel.
46. *Pennsylvania State Treasurer's Hearing on Enron and Corporate Governance Issues*. 2002. Concerning Enron's role in Pennsylvania's electricity market and related issues, on behalf of the Pennsylvania AFL-CIO.
47. *An Investigation into the Feasibility and Advisability of Kentucky-American Water Company's Proposed Solution to its Water Supply Deficit*, Kentucky Public Service Commission, Case No. 2001-00117. 2002. Concerning water supply planning, regulatory oversight, and related issue, on behalf of the Kentucky Office of Attorney General.
48. *Joint Application of Pennsylvania-American Water Company and Thames Water Aqua Holdings GmbH*, Pennsylvania Public Utility Commission, Docket Nos. A-212285F0096 and A-230073F0004. 2002. Concerning the risks and benefits associated with the proposed acquisition of a water utility, on behalf of the Pennsylvania Office of Consumer Advocate.
49. *Application for Approval of the Transfer of Control of Kentucky-American Water Company to RWE AG and Thames Water Aqua Holdings GmbH*, Kentucky Public Service Commission, Case No. 2002-00018. 2002. Concerning the risks and benefits associated with the proposed acquisition of a water utility, on behalf of the Kentucky Office of Attorney General.
50. *Joint Petition for the Consent and Approval of the Acquisition of the Outstanding Common Stock of American Water Works Company, Inc., the Parent Company and Controlling Shareholder of West Virginia-American Water Company*, West Virginia Public Service Commission, Case No. 01-1691-W-PC. 2002.

Concerning the risks and benefits associated with the proposed acquisition of a water utility, on behalf of the Consumer Advocate Division of the West Virginia Public Service Commission.

51. *Joint Petition of New Jersey-American Water Company, Inc. and Thames Water Aqua Holdings GmbH for Approval of Change in Control of New Jersey-American Water Company, Inc.*, New Jersey Board of Public Utilities, Docket No. WM01120833. 2002. Concerning the risks and benefits associated with the proposed acquisition of a water utility, on behalf of the New Jersey Division of Ratepayer Advocate.
52. *Illinois-American Water Company, Proposed General Increase in Water Rates*, Illinois Commerce Commission, Docket No. 02-0690. 2003. Concerning rate design and cost of service issues, on behalf of the Illinois Office of the Attorney General.
53. *Pennsylvania Public Utility Commission v. Pennsylvania-American Water Company*, Pennsylvania Public Utility Commission, Docket No. R-00038304. 2003. Concerning rate design and cost of service issues, on behalf of the Pennsylvania Office of Consumer Advocate.
54. *West Virginia-American Water Company*, West Virginia Public Service Commission, Case No. 03-0353-W-42T. 2003. Concerning affordability, rate design, and cost of service issues, on behalf of the West Virginia Consumer Advocate Division.
55. *Petition of Seabrook Water Corp. for an Increase in Rates and Charges for Water Service*, New Jersey Board of Public Utilities, Docket No. WR3010054. 2003. Concerning revenue requirements, rate design, prudence, and regulatory policy, on behalf of the New Jersey Division of Ratepayer Advocate.
56. *Chesapeake Ranch Water Co. v. Board of Commissioners of Calvert County*, U.S. District Court for Southern District of Maryland, Civil Action No. 8:03-cv-02527-AW. 2004. Submitted expert report concerning the expected level of rates under various options for serving new commercial development, on behalf of the plaintiff.
57. *Testimony concerning Lead in Drinking Water*, Committee on Government Reform, United States House of Representatives. 2004. Concerning the trade-offs faced by low-income households when drinking water costs increase, including an analysis of H.R. 4268.
58. *West Virginia-American Water Company*, West Virginia Public Service Commission, Case No. 04-0373-W-42T. 2004. Concerning affordability and rate comparisons, on behalf of the West Virginia Consumer Advocate Division.
59. *West Virginia-American Water Company*, West Virginia Public Service Commission, Case No. 04-0358-W-PC. 2004. Concerning costs, benefits, and risks associated with a wholesale water sales contract, on behalf of the West Virginia Consumer Advocate Division.
60. *Kentucky-American Water Company*, Kentucky Public Service Commission, Case No. 2004-00103. 2004. Concerning rate design and tariff issues, on behalf of the Kentucky Office of Attorney General.
61. *New Landing Utility, Inc.*, Illinois Commerce Commission, Docket No. 04-0610. 2005. Concerning the adequacy of service provided by, and standards of performance for, a water and wastewater utility, on behalf of the Illinois Office of Attorney General.

62. *People of the State of Illinois v. New Landing Utility, Inc.*, Circuit Court of the 15th Judicial District, Ogle County, Illinois, No. 00-CH-97. 2005. Concerning the standards of performance for a water and wastewater utility, including whether a receiver should be appointed to manage the utility's operations, on behalf of the Illinois Office of Attorney General.
63. *Hope Gas, Inc. d/b/a Dominion Hope*, West Virginia Public Service Commission, Case No. 05-0304-G-42T. 2005. Concerning the utility's relationships with affiliated companies, including an appropriate level of revenues and expenses associated with services provided to and received from affiliates, on behalf of the West Virginia Consumer Advocate Division.
64. *Monongahela Power Co. and The Potomac Edison Co.*, West Virginia Public Service Commission, Case Nos. 05-0402-E-CN and 05-0750-E-PC. 2005. Concerning review of a plan to finance the construction of pollution control facilities and related issues, on behalf of the West Virginia Consumer Advocate Division.
65. *Joint Application of Duke Energy Corp., et al., for Approval of a Transfer and Acquisition of Control*, Case Kentucky Public Service Commission, No. 2005-00228. 2005. Concerning the risks and benefits associated with the proposed acquisition of an energy utility, on behalf of the Kentucky Office of the Attorney General.
66. *Commonwealth Edison Company proposed general revision of rates, restructuring and price unbundling of bundled service rates, and revision of other terms and conditions of service*, Illinois Commerce Commission, Docket No. 05-0597. 2005. Concerning rate design and cost of service, on behalf of the Illinois Office of Attorney General.
67. *Pennsylvania Public Utility Commission v. Aqua Pennsylvania, Inc.*, Pennsylvania Public Utility Commission, Docket No. R-00051030. 2006. Concerning rate design and cost of service, on behalf of the Pennsylvania Office of Consumer Advocate.
68. *Central Illinois Light Company d/b/a AmerenCILCO, Central Illinois Public Service Company d/b/a AmerenCIPS, and Illinois Power Company d/b/a AmerenIP, proposed general increases in rates for delivery service*, Illinois Commerce Commission, Docket Nos. 06-0070, et al. 2006. Concerning rate design and cost of service, on behalf of the Illinois Office of Attorney General.
69. *Grens, et al., v. Illinois-American Water Co.*, Illinois Commerce Commission, Docket Nos. 5-0681, et al. 2006. Concerning utility billing, metering, meter reading, and customer service practices, on behalf of the Illinois Office of Attorney General and the Village of Homer Glen, Illinois.
70. *Commonwealth Edison Company Petition for Approval of Tariffs Implementing ComEd's Proposed Residential Rate Stabilization Program*, Illinois Commerce Commission, Docket No. 06-0411. 2006. Concerning a utility's proposed purchased power phase-in proposal, in behalf of the Illinois Office of Attorney General.
71. *Illinois-American Water Company, Application for Approval of its Annual Reconciliation of Purchased Water and Purchased Sewage Treatment Surcharges Pursuant to 83 Ill. Adm. Code 655*, Illinois Commerce Commission, Docket No. 06-0196. 2006. Concerning the reconciliation of purchased water and sewer charges, on behalf of the Illinois Office of Attorney General and the Village of Homer Glen, Illinois.

72. *Illinois-American Water Company, et al.*, Illinois Commerce Commission, Docket No. 06-0336. 2006. Concerning the risks and benefits associated with the proposed divestiture of a water utility, on behalf of the Illinois Office of Attorney General.
73. *Joint Petition of Kentucky-American Water Company, et al.*, Kentucky Public Service Commission, Docket No. 2006-00197. 2006. Concerning the risks and benefits associated with the proposed divestiture of a water utility, on behalf of the Kentucky Office of Attorney General.
74. *Aqua Illinois, Inc. Proposed Increase in Water Rates for the Kankakee Division*, Illinois Commerce Commission, Docket No. 06-0285. 2006. Concerning various revenue requirement, rate design, and tariff issues, on behalf of the County of Kankakee.
75. *Housing Authority for the City of Pottsville v. Schuylkill County Municipal Authority*, Court of Common Pleas of Schuylkill County, Pennsylvania, No. S-789-2000. 2006. Concerning the reasonableness and uniformity of rates charged by a municipal water authority, on behalf of the Pottsville Housing Authority.
76. *Application of Pennsylvania-American Water Company for Approval of a Change in Control*, Pennsylvania Public Utility Commission, Docket No. A-212285F0136. 2006. Concerning the risks and benefits associated with the proposed divestiture of a water utility, on behalf of the Pennsylvania Office of Consumer Advocate.
77. *Application of Artesian Water Company, Inc., for an Increase in Water Rates*, Delaware Public Service Commission, Docket No. 06-158. 2006. Concerning rate design and cost of service, on behalf of the Staff of the Delaware Public Service Commission.
78. *Central Illinois Light Company, Central Illinois Public Service Company, and Illinois Power Company: Petition Requesting Approval of Deferral and Securitization of Power Costs*, Illinois Commerce Commission, Docket No. 06-0448. 2006. Concerning a utility's proposed purchased power phase-in proposal, in behalf of the Illinois Office of Attorney General.
79. *Petition of Pennsylvania-American Water Company for Approval to Implement a Tariff Supplement Revising the Distribution System Improvement Charge*, Pennsylvania Public Utility Commission, Docket No. P-00062241. 2007. Concerning the reasonableness of a water utility's proposal to increase the cap on a statutorily authorized distribution system surcharge, on behalf of the Pennsylvania Office of Consumer Advocate.
80. *Adjustment of the Rates of Kentucky-American Water Company*, Kentucky Public Service Commission, Case No. 2007-00143. 2007. Concerning rate design and cost of service, on behalf of the Kentucky Office of Attorney General.
81. *Application of Kentucky-American Water Company for a Certificate of Convenience and Necessity Authorizing the Construction of Kentucky River Station II, Associated Facilities and Transmission Main*, Kentucky Public Service Commission, Case No. 2007-00134. 2007. Concerning the life-cycle costs of a planned water supply source and the imposition of conditions on the construction of that project, on behalf of the Kentucky Office of Attorney General.
82. *Pa. Public Utility Commission v. Pennsylvania-American Water Company*, Pennsylvania Public Utility Commission, Docket No. R-00072229. 2007. Concerning rate design and cost of service, on behalf of the Pennsylvania Office of Consumer Advocate.

83. *Illinois-American Water Company Application for Approval of its Annual Reconciliation of Purchased Water and Purchased Sewage Treatment Surcharges*, Illinois Commerce Commission, Docket No. 07-0195. 2007. Concerning the reconciliation of purchased water and sewer charges, on behalf of the Illinois Office of Attorney General.
84. *In the Matter of the Application of Aqua Ohio, Inc. to Increase Its Rates for Water Service Provided In the Lake Erie Division*, Public Utilities Commission of Ohio, Case No.07-0564-WW-AIR. 2007. Concerning rate design and cost of service, on behalf of the Office of the Ohio Consumers' Counsel.
85. *Pa. Public Utility Commission v. Aqua Pennsylvania Inc.*, Pennsylvania Public Utility Commission, Docket No. R-00072711. 2008. Concerning rate design, on behalf of the Masthope Property Owners Council.
86. *Illinois-American Water Company Proposed increase in water and sewer rates*, Illinois Commerce Commission, Docket No. 07-0507. 2008. Concerning rate design and demand studies, on behalf of the Illinois Office of Attorney General.
87. *Central Illinois Light Company, d/b/a AmerenCILCO; Central Illinois Public Service Company, d/b/a AmerenCIPS; Illinois Power Company, d/b/a AmerenIP: Proposed general increase in rates for electric delivery service*, Illinois Commerce Commission Docket Nos. 07-0585, 07-0586, 07-0587. 2008. Concerning rate design and cost of service studies, on behalf of the Illinois Office of Attorney General.
88. *Commonwealth Edison Company: Proposed general increase in electric rates*, Illinois Commerce Commission Docket No. 07-0566. 2008. Concerning rate design and cost of service studies, on behalf of the Illinois Office of Attorney General.
89. *In the Matter of Application of Ohio American Water Co. to Increase Its Rates*, Public Utilities Commission of Ohio, Case No. 07-1112-WS-AIR. 2008. Concerning rate design and cost of service, on behalf of the Office of the Ohio Consumers' Counsel.
90. *In the Matter of the Application of The East Ohio Gas Company d/b/a Dominion East Ohio for Authority to Increase Rates for its Gas Service*, Public Utilities Commission of Ohio, Case Nos. 07-829-GA-AIR, et al. 2008. Concerning the need for, and structure of, an accelerated infrastructure replacement program and rate surcharge, on behalf of the Office of the Ohio Consumers' Counsel.
91. *Pa. Public Utility Commission v. Pennsylvania American Water Company*, Pennsylvania Public Utility Commission, Docket No. R-2008-2032689. 2008. Concerning rate design, cost of service study, and other tariff issues, on behalf of the Pennsylvania Office of Consumer Advocate.
92. *Pa. Public Utility Commission v. York Water Company*, Pennsylvania Public Utility Commission, Docket No. R-2008-2023067. 2008. Concerning rate design, cost of service study, and other tariff issues, on behalf of the Pennsylvania Office of Consumer Advocate.
93. *Northern Illinois Gas Company d/b/a Nicor Gas Company*, Illinois Commerce Commission, Docket No. 08-0363. 2008. Concerning rate design, cost of service, and automatic rate adjustments, on behalf of the Illinois Office of Attorney General.

94. *West Virginia American Water Company*, West Virginia Public Service Commission, Case No. 08-0900-W-42T. 2008. Concerning affiliated interest charges and relationships, on behalf of the Consumer Advocate Division of the Public Service Commission of West Virginia.
95. *Illinois-American Water Company Application for Approval of its Annual Reconciliation of Purchased Water and Purchased Sewage Treatment Surcharges*, Illinois Commerce Commission, Docket No. 08-0218. 2008. Concerning the reconciliation of purchased water and sewer charges, on behalf of the Illinois Office of Attorney General.
96. *In the Matter of Application of Duke Energy Ohio, Inc. for an Increase in Electric Rates*, Public Utilities Commission of Ohio, Case No. 08-0709-EL-AIR. 2009. Concerning rate design and cost of service, on behalf of the Office of the Ohio Consumers' Counsel.
97. *The Peoples Gas Light and Coke Company and North Shore Gas Company Proposed General Increase in Rates for Gas Service*, Illinois Commerce Commission, Docket Nos. 09-0166 and 09-0167. 2009. Concerning rate design and automatic rate adjustments on behalf of the Illinois Office of Attorney General, Citizens Utility Board, and City of Chicago.
98. *Illinois-American Water Company Proposed Increase in Water and Sewer Rates*, Illinois Commerce Commission, Docket No. 09-0319. 2009. Concerning rate design and cost of service on behalf of the Illinois Office of Attorney General and Citizens Utility Board.
99. *Pa. Public Utility Commission v. Aqua Pennsylvania Inc.*, Pennsylvania Public Utility Commission, Docket No. R-2009-2132019. 2010. Concerning rate design, cost of service, and automatic adjustment tariffs, on behalf of the Pennsylvania Office of Consumer Advocate.
100. *Apple Canyon Utility Company and Lake Wildwood Utilities Corporation Proposed General Increases in Water Rates*, Illinois Commerce Commission, Docket Nos. 09-0548 and 09-0549. 2010. Concerning parent-company charges, quality of service, and other matters, on behalf of Apple Canyon Lake Property Owners' Association and Lake Wildwood Association, Inc.
101. *Application of Aquarion Water Company of Connecticut to Amend its Rate Schedules*, Connecticut Department of Public Utility Control, Docket No. 10-02-13. 2010. Concerning rate design, proof of revenues, and other tariff issues, on behalf of the Connecticut Office of Consumer Counsel.
102. *Illinois-American Water Company Annual Reconciliation Of Purchased Water and Sewage Treatment Surcharges*, Illinois Commerce Commission, Docket No. 09-0151. 2010. Concerning the reconciliation of purchased water and sewer charges, on behalf of the Illinois Office of Attorney General.
103. *Pa. Public Utility Commission v. Pennsylvania-American Water Co.*, Pennsylvania Public Utility Commission, Docket Nos. R-2010-2166212, et al. 2010. Concerning rate design and cost of service study for four wastewater utility districts, on behalf of the Pennsylvania Office of Consumer Advocate.
104. *Central Illinois Light Company d/b/a AmerenCILCO, Central Illinois Public Service Company d/b/a AmerenCIPS, Illinois Power Company d/b/a AmerenIP Petition for accounting order*, Illinois Commerce Commission, Docket No. 10-0517. 2010. Concerning ratemaking procedures for a multi-district electric and natural gas utility, on behalf of the Illinois Office of Attorney General.

105. *Commonwealth Edison Company Petition for General Increase in Delivery Service Rates*, Illinois Commerce Commission Docket No. 10-0467. 2010. Concerning rate design and cost of service study, on behalf of the Illinois Office of Attorney General.
106. *Pa. Public Utility Commission v. City of Lancaster Bureau of Water*, Pennsylvania Public Utility Commission, Docket No. R-2010-2179103. 2010. Concerning rate design, cost of service, and cost allocation, on behalf of the Pennsylvania Office of Consumer Advocate.
107. *Application of Yankee Gas Services Company for Amended Rate Schedules*, Connecticut Department of Public Utility Control, Docket No. 10-12-02. 2011. Concerning rate design and cost of service for a natural gas utility, on behalf of the Connecticut Office of Consumers' Counsel.
108. *California-American Water Company*, California Public Utilities Commission, Application 10-07-007. 2011. Concerning rate design and cost of service for multiple water-utility service areas, on behalf of The Utility Reform Network.
109. *Little Washington Wastewater Company, Inc., Masthope Wastewater Division*, Pennsylvania Public Utility Commission Docket No. R-2010-2207833. 2011. Concerning rate design and various revenue requirements issues, on behalf of the Masthope Property Owners Council.
110. *In the matter of Pittsfield Aqueduct Company, Inc.*, New Hampshire Public Utilities Commission Case No. DW 10-090. 2011. Concerning rate design and cost of service on behalf of the New Hampshire Office of the Consumer Advocate.
111. *In the matters of Pennichuck Water Works, Inc. Permanent Rate Case and Petition for Approval of Special Contract with Anheuser-Busch, Inc.*, New Hampshire Public Utilities Commission Case Nos. DW 10-091 and DW 11-014. 2011. Concerning rate design, cost of service, and contract interpretation on behalf of the New Hampshire Office of the Consumer Advocate.
112. *Artesian Water Co., Inc. v. Chester Water Authority*, U.S. District Court for the Eastern District of Pennsylvania Case No. 10-CV-07453-JP. 2011. Concerning cost of service, ratemaking methods, and contract interpretation on behalf of Chester Water Authority.
113. *North Shore Gas Company and The Peoples Gas Light and Coke Company Proposed General Increases in Rates for Gas Service*, Illinois Commerce Commission, Docket Nos. 11-0280 and 11-0281. 2011. Concerning rate design and cost of service on behalf of the Illinois Office of Attorney General, the Citizens Utility Board, and the City of Chicago.
114. *Ameren Illinois Company: Proposed general increase in electric delivery service rates and gas delivery service rates*, Illinois Commerce Commission, Docket Nos. 11-0279 and 11-0282. 2011. Concerning rate design and cost of service for natural gas and electric distribution service, on behalf of the Illinois Office of Attorney General and the Citizens Utility Board.
115. *Pa. Public Utility Commission v. Pennsylvania-American Water Co.*, Pennsylvania Public Utility Commission, Docket No. R-2011-2232243. 2011. Concerning rate design, cost of service, sales forecast, and automatic rate adjustments on behalf of the Pennsylvania Office of Consumer Advocate.
116. *Aqua Illinois, Inc. Proposed General Increase in Water and Sewer Rates*, Illinois Commerce Commission, Docket No. 11-0436. 2011. Concerning rate design and cost of service on behalf of the

Illinois Office of Attorney General.

117. *City of Nashua Acquisition of Pennichuck Corporation*, New Hampshire Public Utilities Commission, Docket No. DW 11-026. 2011. Concerning the proposed acquisition of an investor-owned utility holding company by a municipality, including appropriate ratemaking methodologies, on behalf of the New Hampshire Office of Consumer Advocate.
118. *An Application by Heritage Gas Limited for the Approval of a Schedule of Rates, Tolls and Charges*, Nova Scotia Utility and Review Board, Case NSUARB-NG-HG-R-11. 2011. Concerning rate design and cost of service, on behalf of the Nova Scotia Consumer Advocate.
119. *An Application of Halifax Regional Water Commission for Approval of a Cost of Service and Rate Design Methodology*, Nova Scotia Utility and Review Board, Case NSUARB-W-HRWC-R-11. 2011. Concerning rate design and cost of service, on behalf of the Nova Scotia Consumer Advocate.
120. *National Grid USA and Liberty Energy Utilities Corp.*, New Hampshire Public Utilities Commission, Docket No. DG 11-040. 2011. Concerning the costs and benefits of a proposed merger and related conditions, on behalf of the New Hampshire Office of Consumer Advocate.
121. *Great Northern Utilities, Inc., et al.*, Illinois Commerce Commission, Docket Nos. 11-0059, et al. 2012. Concerning options for mitigating rate impacts and consolidating small water and wastewater utilities for ratemaking purposes, on behalf of the Illinois Office of Attorney General.
122. *Pa. Public Utility Commission v. Aqua Pennsylvania, Inc.*, Pennsylvania Public Utility Commission, Docket No. R-2011-2267958. 2012. Concerning rate design, cost of service, and automatic rate adjustment mechanisms, on behalf of the Pennsylvania Office of Consumer Advocate.
123. *Golden State Water Company*, California Public Utilities Commission, Application 11-07-017. 2012. Concerning rate design and quality of service, on behalf of The Utility Reform Network.
124. *Golden Heart Utilities, Inc. and College Utilities Corporation*, Regulatory Commission of Alaska, Case Nos. U-11-77 and U-11-78. 2012. Concerning rate design and cost of service, on behalf of the Alaska Office of the Attorney General.
125. *Illinois-American Water Company*, Illinois Commerce Commission, Docket No. 11-0767. 2012. Concerning rate design, cost of service, and automatic rate adjustment mechanisms, on behalf of the Illinois Office of Attorney General.
126. *Application of Tidewater Utilities, Inc., for a General Rate Increase in Water Base Rates and Tariff Revisions*, Delaware Public Service Commission, Docket No. 11-397. 2012. Concerning rate design and cost of service study, on behalf of the Staff of the Delaware Public Service Commission.
127. *In the Matter of the Philadelphia Water Department's Proposed Increase in Rates for Water and Wastewater Utility Services*, Philadelphia Water Commissioner, FY 2013-2016. 2012. Concerning rate design and related issues for storm water service, on behalf of Citizens for Pennsylvania's Future.
128. *Corix Utilities (Illinois) LLC, Hydro Star LLC, and Utilities Inc. Joint Application for Approval of a Proposed Reorganization*, Illinois Commerce Commission, Docket No. 12-0279. 2012. Concerning merger-related synergy savings and appropriate ratemaking treatment of the same, on behalf of the

Illinois Office of Attorney General.

129. *North Shore Gas Company and The Peoples Gas Light and Coke Company*, Illinois Commerce Commission, Docket Nos. 12-0511 and 12-0512. 2012. Concerning rate design, cost of service study, and automatic rate adjustment tariff on behalf of the Illinois Office of Attorney General.
130. *Pa. Public Utility Commission v. City of Lancaster Sewer Fund*, Pennsylvania Public Utility Commission, Docket No. R-2012-2310366. 2012. Concerning rate design, cost of service, and cost allocation, on behalf of the Pennsylvania Office of Consumer Advocate.
131. *Aquarion Water Company of New Hampshire*, New Hampshire Public Utilities Commission, Docket No. DW 12-085. 2013. Concerning tariff issues, including an automatic adjustment clause for infrastructure improvement, on behalf of the New Hampshire Office of Consumer Advocate.
132. *In the Matter of the Application of Duke Energy Ohio, Inc., for an Increase in Electric Distribution Rates*, Public Utilities Commission of Ohio, Case No. 12-1682-EL-AIR, et al. 2013. Concerning rate design and tariff issues, on behalf of the Office of the Ohio Consumers' Counsel.
133. *In the Matter of the Application of Duke Energy Ohio, Inc., for an Increase in Natural Gas Distribution Rates*, Public Utilities Commission of Ohio, Case No. 12-1685-GA-AIR, et al. 2013. Concerning cost-of-service study, rate design, and tariff issues, on behalf of the Office of the Ohio Consumers' Counsel.
134. *In the Matter of the Application of The Dayton Power and Light Company to Establish a Standard Service Offer in the Form of an Electric Security Plan*, Public Utilities Commission of Ohio, Case No. 12-426-EL-SSO, et al. 2013. Concerning rate design, on behalf of the Office of the Ohio Consumers' Counsel.
135. *Application of the Halifax Regional Water Commission, for Approval of Amendments to its Schedule of Rates and Charges and Schedule of Rules and Regulations for the delivery of water, public and private fire protection, wastewater and stormwater services*, Nova Scotia Utility and Review Board, Matter No. M05463. 2013. Concerning rate design, cost-of-service study, and miscellaneous tariff provisions, on behalf of the Consumer Advocate of Nova Scotia.
136. *California Water Service Co. General Rate Case Application*, California Public Utilities Commission, Docket No. A.12-07-007. 2013. Concerning rate design, phase-in plans, low-income programs, and other tariff issues, on behalf of The Utility Reform Network.
137. *Application of The United Illuminating Company to Amend its Rate Schedules*, Connecticut Public Utility Regulatory Authority, Docket No. 13-01-19. 2013. Concerning sales forecast, rate design, and other tariff issues, on behalf of the Connecticut Office of Consumer Counsel.
138. *Application of Aquarion Water Company of Connecticut to Amend its Rate Schedules*, Connecticut Public Utility Regulatory Authority, Docket No. 13-02-20. 2013. Concerning sales forecast and rate design on behalf of the Connecticut Office of Consumer Counsel.
139. *Ameren Illinois Company, Proposed General Increase in Natural Gas Delivery Service Rates*, Illinois Commerce Commission, Docket No. 13-0192. 2013. Concerning rate design and revenue allocation, on behalf of the Illinois Office of Attorney General and Citizens Utility Board.

140. *Commonwealth Edison Company, Tariff filing to present the Illinois Commerce Commission with an opportunity to consider revenue neutral tariff changes related to rate design*, Docket No. 13-0387. 2013. Concerning rate design and cost of service study issues, on behalf of the Illinois Office of Attorney General.
141. *In the Matter of the Potomac Electric Power Company for Authority to Increase Existing Retail Rates and Charges for Electric Distribution Service*, District of Columbia Public Service Commission, Formal Case No. 1103. 2013. Concerning rate design, revenue allocation, and cost-of-service study issues, on behalf of the District of Columbia Office of Peoples' Counsel.
142. *Pa. Public Utility Commission v. Pennsylvania-American Water Co.*, Pennsylvania Public Utility Commission, Docket No. R-2013-2355276. 2013. Concerning rate design, revenue allocation, and regulatory policy, on behalf of the Pennsylvania Office of Consumer Advocate.
143. *In the Matter of the Revenue Requirement and Transmission Tariff Designated as TA364-8 filed by Chugach Electric Association, Inc.*, Regulatory Commission of Alaska, U-13-007. 2013. Concerning rate design and cost-of-service study issues, on behalf of the Alaska Office of the Attorney General.
144. *Ameren Illinois Company: Tariff filing to present the Illinois Commerce Commission with an opportunity to consider revenue neutral tariff changes related to rate design*, Docket No. 13-0476. 2013. Concerning rate design and cost of service study issues, on behalf of the Illinois Office of Attorney General.
145. *Pa. Public Utility Commission v. City of Bethlehem Bureau of Water*, Pennsylvania Public Utility Commission, Docket No. R-2013-2390244. 2014. Concerning rate design, cost of service study, and revenue allocation on behalf of the Pennsylvania Office of Consumer Advocate.
146. *In the Matter of the Tariff Revision Designated as TA332-121 filed by the Municipality of Anchorage d/b/a Municipal Light and Power Department*, Regulatory Commission of Alaska, U-13-184. 2014. Concerning rate design and cost-of-service study issues, on behalf of the Alaska Office of the Attorney General.
147. *Pa. Public Utility Commission v. Pike County Light and Power Co. - Gas*, Pennsylvania Public Utility Commission, Docket No. R-2013-2397353. 2014. Concerning rate design and revenue allocation on behalf of the Pennsylvania Office of Consumer Advocate.
148. *Pa. Public Utility Commission v. Pike County Light and Power Co. - Electric*, Pennsylvania Public Utility Commission, Docket No. R-2013-2397237. 2014. Concerning rate design, cost of service study, and revenue allocation on behalf of the Pennsylvania Office of Consumer Advocate.
149. *The Peoples Gas Light and Coke Company North Shore Gas Company Proposed General Increase In Rates for Gas Service*, Illinois Commerce Commission, Docket Nos. 14-0224 and 14-0225. 2014. Concerning rate design on behalf of the Illinois Office of the Attorney General and the Environmental Law and Policy Center.
150. *Apple Valley Ranchos Water Company*, California Public Utilities Commission, Docket No. A.14-01-002. 2014. Concerning rate design and automatic rate adjustment mechanisms on behalf of the Town of Apple Valley.

151. *Application by Heritage Gas Limited for Approval to Amend its Franchise Area*, Nova Scotia Utility and Review Board, Matter No. M06271. 2014. Concerning criteria, terms, and conditions for expanding a utility's service area and using transported compressed natural gas to serve small retail customers, on behalf of the Nova Scotia Consumer Advocate.
152. *Notice of Intent of Entergy Mississippi, Inc. to Modernize Rates to Support Economic Development, Power Procurement, and Continued Investment*, Mississippi Public Service Commission Docket No. 2014-UN-132. 2014. Concerning rate design and tariff issues, on behalf of the Mississippi Public Utilities Staff.
153. *Pa. Public Utility Commission v. City of Lancaster Bureau of Water*, Pennsylvania Public Utility Commission, Docket No. R-2014-2418872. 2014. Concerning rate design, cost of service study, and revenue allocation on behalf of the Pennsylvania Office of Consumer Advocate.
154. *Pa. Public Utility Commission v. Borough of Hanover Municipal Water Works*, Pennsylvania Public Utility Commission, Docket No. R-2014-2428304. 2014. Concerning rate design, cost of service study, and revenue allocation on behalf of the Pennsylvania Office of Consumer Advocate.
155. *Investigation of Commonwealth Edison Company's Cost of Service for Low-Use Customers In Each Residential Class*, Illinois Commerce Commission, Docket No. 14-0384. 2014. Concerning rate design on behalf of the Illinois Office of Attorney General.
156. *Application of the Halifax Regional Water Commission, for Approval of its Schedule of Rates and Charges and Schedule of Rules and Regulations for the Provision of Water, Public and Private Fire Protection, Wastewater and Stormwater Services*, Nova Scotia Utility and Review Board, Matter No. M06540. 2015. Concerning rate design, cost of service study, and tariff issues on behalf of the Nova Scotia Consumer Advocate.
157. *Testimony concerning organization and regulation of Philadelphia Gas Works*, Philadelphia City Council's Special Committee on Energy Opportunities. 2015.
158. *Testimony concerning proposed telecommunications legislation*, Maine Joint Standing Committee on Energy, Utilities, and Technology. 2015.
159. *Pa. Public Utility Commission v. United Water Pennsylvania, Inc.*, Pennsylvania Public Utility Commission, Docket No. R-2015-2462723. 2015. Concerning rate design, cost of service study, and revenue allocation on behalf of the Pennsylvania Office of Consumer Advocate.
160. *Ameren Illinois Company Proposed General Increase in Gas Delivery Service Rates*, Illinois Commerce Commission, Docket No. 15-0142. 2015. Concerning rate design on behalf of the Illinois Office of Attorney General.
161. *Maine Natural Gas Company Request for Multi-Year Rate Plan*, Maine Public Utilities Commission, Docket No. 2015-00005. 2015. Concerning rate design and automatic rate adjustment tariffs on behalf of the Maine Office of the Public Advocate.
162. *Application of Ohio Edison Company, The Cleveland Electric Illuminating Company and The Toledo Edison Company for Authority to Provide for a Standard Service Offer*, Public Utilities Commission of Ohio, Case No. 14-1297-EL-SSO. 2015. Concerning rate design and proposed rate discounts on behalf

of the Office of the Ohio Consumers' Counsel.

163. *An Application of the Halifax Regional Water Commission, for approval of revisions to its Cost of Service Manual and Rate Design for Stormwater Service*, Nova Scotia Utility and Review Board, Matter No. M07147. 2016. Concerning stormwater rate design and cost of service, on behalf of the Nova Scotia Consumer Advocate.
164. *In the Matter Of An Application By Heritage Gas Limited For Enhancement To Its Existing Residential Retro-Fit Assistance Fund*, Nova Scotia Utility and Review Board, Matter No. M07146. 2016. Concerning costs and benefits associated with utility system expansion, on behalf of the Nova Scotia Consumer Advocate.
165. *In the Matter of the Application of UNS Electric, Inc. for the Establishment of Just and Reasonable Rates and Charges*, Arizona Corporation Commission, Docket No. E-04204A-15-0142. 2016. Concerning rate design and residential demand charges on behalf of Arizona Utility Ratepayer Alliance.
166. *In the Matter of Application of Water Service Corporation of Kentucky for a General Adjustment in Existing Rates*, Kentucky Public Service Commission, Case No. 2015-00382. 2016. Concerning rate design and service area consolidation on behalf of the Kentucky Office of the Attorney General.
167. *Massachusetts Electric Company and Nantucket Electric Company*, Massachusetts Department of Public Utilities, Docket No. DPU 15-155. 2016. Concerning rate design and cost-of-service studies on behalf of the Massachusetts Office of Attorney General.
168. *In the Matter of Abenaki Water Company*, New Hampshire Public Utilities Commission, Docket No. DW 15-199. 2016. Concerning rate design on behalf of the New Hampshire Office of the Consumer Advocate.
169. *In the Matter of an Application by Heritage Gas Limited for Approval of its Customer Retention Program*, Nova Scotia Utility and Review Board Matter No. M07346. 2016. Concerning a regulatory response to competition and potential business failure on behalf of the Nova Scotia Consumer Advocate.
170. *Joint Application of Pennsylvania-American Water Company and the Sewer Authority of the City of Scranton*, Pennsylvania Public Utility Commission Docket No. A-2016-2537209. 2016. Concerning the lawfulness, costs and benefits, and ratemaking treatment of a proposed acquisition of a combined wastewater and storm water utility on behalf of the Pennsylvania Office of Consumer Advocate.
171. *Application of The United Illuminating Company to Amend its Rate Schedules*, Connecticut Public Utility Regulatory Authority Docket No. 16-06-04. 2016. Concerning rate design, cost-of-service study, and other tariff issues on behalf of the Connecticut Office of Consumer Counsel.
172. *Ameren Illinois Company Tariff filing to present the Illinois Commerce Commission with an opportunity to consider revenue neutral tariff changes related to rate design*, Illinois Commerce Commission Docket No. 16-0387. 2016. Concerning rate design and cost-of-service study on behalf of the Illinois Office of the Attorney General.
173. *Unitil Energy Systems, Inc.*, New Hampshire Public Utilities Commission Docket No. 16-384. 2016. Concerning rate design and cost-of-service study on behalf of the New Hampshire Office of Consumer

Advocate.

174. *Liberty Utilities (Granite State Electric) Corp.*, New Hampshire Public Utilities Commission Docket No. 16-383. 2016. Concerning rate design and cost-of-service study on behalf of the New Hampshire Office of Consumer Advocate.
175. *Arizona Public Service Co.*, Arizona Corporation Commission Docket No. E-01345A-16-0123. 2017. Concerning rate design and cost-of-service study on behalf of the Arizona Utility Ratepayer Alliance.
176. *Commonwealth Edison Company, Tariff filing to present the Illinois Commerce Commission with an opportunity to consider revenue neutral tariff changes related to rate design*, Illinois Commerce Commission Docket No. 17-0049. 2017. Concerning rate design and cost of service study issues, on behalf of the Illinois Office of Attorney General.
177. *NSTAR Electric Company and Western Massachusetts Electric Company*, Massachusetts Department of Public Utilities Docket No. D.P.U. 17-05. 2017. Concerning rate design and cost of service study issues, on behalf of the Massachusetts Office of Attorney General.
178. *In the Matter of the Tariff Revision Designated as TA857-2 Filed by Alaska Power Company*, Regulatory Commission of Alaska No. U-16-078. 2017. Concerning rate design and cost of service study issues on behalf of the Alaska Office of the Attorney General.
179. *In the Matter of the Application of Minnesota Power for Authority to Increase Rates for Electric Utility Service in Minnesota*, Minnesota Public Utilities Commission Docket No. E015/GR-16-664. 2017. Concerning rate design and cost of service study issues on behalf of AARP.
180. *Pennsylvania Public Utility Commission v. Pennsylvania-American Water Company*, Pennsylvania Public Utility Commission, Docket No. R-2017-2595853. 2017. Concerning rate design, cost of service, and policy issues, on behalf of the Pennsylvania Office of Consumer Advocate.
181. *Aqua Illinois, Inc. Proposed Rate Increases for Water and Sewer Services*, Illinois Commerce Commission, Docket No. 17-0259. 2017. Concerning rate design and single-tariff pricing, on behalf of the Illinois Office of Attorney General.
182. *Petition of Pennsylvania-American Water Company for Approval of Tariff Changes and Accounting and Rate Treatment Related to Replacement of Lead Customer-Owned Service Pipes*, Pennsylvania Public Utility Commission, Docket No. P-2017-2606100. 2017. Concerning public policy and ratemaking issues associated with the replacement of customer-owned lead service lines, on behalf of the Pennsylvania Office of Consumer Advocate.
183. *In the Matter of Application and Notice of Change in Natural Gas Rates of Montana-Dakota Utilities Co.*, North Dakota Public Service Commission, Case No. PU-17-295. 2017. Concerning rate design and cost of service study issues, on behalf of AARP.
184. *Aqua Illinois, Inc. Petition for the Issuance of a Certificate of Public Convenience and Necessity to Operate a Water and Wastewater System in the Village of Peotone*, Illinois Commerce Commission, Docket No. 17-0314. 2018. Concerning rate consolidation and rate design, on behalf of the Illinois Office of Attorney General.

185. *Application of the Connecticut Light and Power Company d/b/a Eversource Energy to Amend its Rate Schedules*, Connecticut Public Utilities Regulatory Authority, Docket No. 17-10-46. 2018. Concerning rate design issues, on behalf of the Connecticut Office of Consumer Counsel.
186. *Application by Heritage Gas for Approval of a Long-Term Natural Gas Transportation Contract and Cost Recovery Mechanism*, Nova Scotia Utility and Review Board, Matter M08473. 2018. Concerning evaluation of costs, benefits, and risks of a long-term natural gas pipeline contract, on behalf of the Consumer Advocate of Nova Scotia.
187. *Boston Gas Company and Colonial Gas Company*, Massachusetts Department of Public Utilities, D.P.U. 17-170. 2018. Concerning class revenue allocation and rate design, on behalf of the Massachusetts Office of Attorney General.
188. *In the Matter of the Application of Maryland-American Water Company for Authority to Adjust its Existing Schedule of Tariffs and Rates*, Maryland Public Service Commission, Case No. 9487. 2018. Concerning cost-of-service study, on behalf of the Staff of the Maryland Public Service Commission.
189. *Joint Application and Petition of South Carolina Electric & Gas Company and Dominion Energy, Inc. for review and approval of a proposed business combination between SCANA Corporation and Dominion Energy, Inc., as may be required, and for a prudency determination regarding the abandonment of the V.C. Summer Units 2 & 3 Project and associated merger benefits and cost recovery plans*, South Carolina Public Service Commission, Docket No. 2017-370-E. 2018. Concerning regulatory policy, prudency of decision-making, and cost sharing, on behalf of AARP.
190. *Application of Transource Pennsylvania, LLC for approval of the Siting and Construction of the 230 kV Transmission Line Associated with the Independence Energy Connection - East and West Projects in portions of York and Franklin Counties, Pennsylvania*, Pennsylvania Public Utility Commission, Docket Nos. A-2017-2640195, et al. 2018. Concerning regulatory policy and benefit-cost analysis for a proposed high-voltage electric transmission line, on behalf of the Pennsylvania Office of Consumer Advocate.
191. *Pa. Public Utility Commission v. Pittsburgh Water and Sewer Authority*, Pennsylvania Public Utility Commission, Docket Nos. R-2018-3002645, et al. 2018. Concerning cost-of-service study and rate design for a water and wastewater utility, on behalf of the Pennsylvania Office of Consumer Advocate.