

Matter No. M06514

In the Matter of an Application by Nova Scotia Power Incorporated for Approval
of its Annual Capital Expenditure Plan for 2015

DIRECT TESTIMONY OF
PAUL CHERNICK
ON BEHALF OF
THE CONSUMER ADVOCATE

Resource Insight, Inc.

JANUARY 16, 2015

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Exhibit PLC-1	<i>Professional Qualifications of Paul Chernick</i>
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1 **I. Identification**

2 **Q: Mr. Chernick, please state your name, occupation, and business address.**

3 A: I am Paul L. Chernick. I am the president of Resource Insight, Inc., 5 Water
4 St., Arlington, Massachusetts.

5 **Q: Summarize your professional education and experience.**

6 A: I received an SB degree from the Massachusetts Institute of Technology in
7 June 1974 from the Civil Engineering Department, and an SM degree from
8 the Massachusetts Institute of Technology in February 1978 in technology
9 and policy. I have been elected to membership in the civil engineering
10 honorary society Chi Epsilon, and the engineering honor society Tau Beta Pi,
11 and to associate membership in the research honorary society Sigma Xi.

12 I was a utility analyst for the Massachusetts Attorney General for more
13 than three years, and was involved in numerous aspects of utility rate design,
14 costing, load forecasting, and the evaluation of power supply options. Since
15 1981, I have been a consultant in utility regulation and planning, first as a
16 research associate at Analysis and Inference, after 1986 as president of PLC,
17 Inc., and in my current position at Resource Insight. In these capacities, I
18 have advised a variety of clients on utility matters.

19 My work has considered, among other things, the cost-effectiveness of
20 prospective new electric generation plants and transmission lines, retrospec-
21 tive review of generation-planning decisions, ratemaking for plant under con-
22 struction, ratemaking for excess and/or uneconomical plant entering service,
23 conservation program design, cost recovery for utility efficiency programs,
24 the valuation of environmental externalities from energy production and use,
25 allocation of costs of service between rate classes and jurisdictions, design of

1 retail and wholesale rates, and performance-based ratemaking and cost
2 recovery in restructured gas and electric industries. My professional qualifi-
3 cations are further summarized in Exhibit PLC-1.

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

5 A: Yes. I have testified more than 275 times on utility issues before various
6 regulatory, legislative, and judicial bodies, including utility regulators in
7 thirty-five states and five Canadian provinces, and two U.S. Federal agencies.
8 This testimony has included the review of many utility-proposed power
9 plants and purchased-power contracts.

10 **Q: Have you testified previously regarding procurement of renewable and**
11 **distributed energy resources?**

12 A: Yes. I have testified in numerous proceedings on avoided costs and tariff
13 designs, as listed in my resume.

14 **Q: Have you previously testified before this Board?**

15 A: Yes. I testified in the Board's review of the following cases:

- 16 • Nova Scotia Power's Demand Side Management Plan for 2010 and
17 Demand Side Management Cost Recovery Rider in May 2009 (Matter
18 No. 01439)
- 19 • The proposed purchased-power agreement between Nova Scotia Power
20 Inc. and a biomass project to be constructed at the NewPage Port
21 Hawkesbury pulp and paper mill (Matter No. 01496)
- 22 • Nova Scotia Power's proposal to build the biomass project at NewPage
23 Port Hawkesbury (Matter No. 02961)
- 24 • Heritage Gas's 2010 rate case (Matter No. 03454)
- 25 • Nova Scotia Power's proposal to increase production depreciation rates
26 (Matter No. 03665)

- 1 • The Board’s review of proposed feed-in tariffs for certain distribution-
2 connected renewable projects (Matter No. 03632)
- 3 • The Nova Scotia Power 2012 General Rate Application (Matter No.
4 04104), with respect to cost allocation and rate design
- 5 • The Board’s review of proposed a proposed load-retention tariff and rate
6 (Matter No. 04175)
- 7 • The application of Efficiency Nova Scotia Corporation’s Electricity
8 Demand-Side Management Plan for 2013–2015 (Matter No. 04819).
- 9 • The application of Nova Scotia Power and Pacific West Commercial
10 Corporation for a load-retention rate mechanism for the Port
11 Hawkesbury paper mill (Matter No. 04862)
- 12 • The Board’s review of Nova Scotia Power’s 2013 Annual Capital
13 Expenditure Plan (Matter No. 05339)
- 14 • The application of Nova Scotia Power for approval of the South Canoe
15 Wind Project (Matter No. 05416)
- 16 • The Board’s review of the Maritime Link proposal (Matter No. 05419).
- 17 • The Board’s review of Nova Scotia Power’s 2013 Cost of Service Study
18 (Matter No. 05473)
- 19 • The Board’s review of proposed feed-in tariffs for Development Tidal
20 Arrays (Matter No. 05092).

21 I have also assisted the Consumer Advocate in preparing comments in
22 the Board’s reviews of Nova Scotia Power’s Nuttby, Digby, and Point Tupper
23 wind project proposals (Matters Nos. 02195, 02763 and 02983), Nova Scotia
24 Power’s Renewable Energy Tax and Accounting Depreciation (Matter No.
25 03795), the Capital Expenditure Justification Criteria review (Matter No.
26 04600), the Renewable RFP (Matter No. 04838), the 2014 NS Power
27 Integrated Resource Plan (Matter No. 05522), Port Hawkesbury Paper Load

1 Retention Tariff Report (Matter No. 05803), and the on-going stakeholder
2 process on NS Power’s 2014 cost allocation update (Mater No. 06555).

3 **II. Introduction and Summary**

4 **Q: On whose behalf are you testifying?**

5 A: My testimony is sponsored by the Nova Scotia Consumer Advocate.

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

7 A: I review aspects of the analysis used and presented by Nova Scotia Power
8 (“NS Power” or “NSPI”) in its Annual Capital Expenditure Plan (“ACE
9 Plan”) for 2015. Specifically, I discuss the following concerns about the
10 economic screening and reporting:

- 11 • The manner in which NS Power estimates the additional energy costs of
12 lost generation;
- 13 • The continuing assumption that construction defers the costs of Admin-
14 istrative Overhead (“AO”) and adds no AO costs;
- 15 • The presentation of rate effects of the spending plan, which ignores ex-
16 penditures up to the current depreciation cash flow, treats depreciation
17 on new plant as an offset to the cost of that plant, and treats new
18 customer revenues as an offset to investment costs.

19 **Q: Do you dispute the justification for any of the specific projects for which
20 NS Power has requested approval in this proceeding?**

21 A: No. My comments are directed toward the computation of economic justifi-
22 cation of projects, and more meaningful presentation of the effects of capital
23 expenditures on revenue requirements. While I am not convinced that NS
24 Power has properly analyzed some options for the steam plants—such as

1 running the plant until a component breaks, and replacing the component
2 then, or deciding which Ligan unit to retire by running all of them without
3 major replacements and retiring the first to fail—I have not been able to fully
4 explore these options with the data available.¹

5 **Q: How does NS Power screen the economics of projects it proposes in the**
6 **ACE Plan?**

7 A: For most projects, economic justification would be irrelevant, since the bene-
8 fits of the projects are in increased safety or reliability, or the ability to serve
9 customers. For the projects that are driven by economics, NS Power uses a
10 spreadsheet it calls the Economic Analysis Model (EAM) to compute the
11 effect of each project on revenue requirements.

12 **III. Replacement Energy Costs**

13 **Q: How do replacement energy costs figure into the project justifications?**

14 A: The EAM computations for many generation projects include as project
15 benefits the avoided replacement energy cost (REC) of prolonged outages
16 following failure of equipment that would be replaced or refurbished in the
17 project.² Similar issues arise for some transmission facilities that are needed
18 to allow economic dispatch and avoid having resources being locked into

¹In general, NS Power compares the cost of immediate replacement to the cost of running the plant forever without replacement, as probabilities of breakdowns and costs of replacement power rise.

²This computation is actually for the *incremental* replacement energy costs, above the running cost of the unit being replaced. I use NS Power's terminology for simplicity.

1 generation pockets (such as Cape Breton) and having load pockets (such as
2 greater Halifax) being isolated from outside supply.

3 **Q: How did NS Power compute the replacement energy costs for the 2015**
4 **ACE Plan?**

5 A: We have only a general explanation from NS Power. The fundamental
6 approach is described as follows:

7 For each thermal unit as well as imports, monthly average marginal cost
8 (\$/MWh) and monthly total output (GWh) are compiled from the Plexos
9 simulation outputs....

10 For each unit or unit grouping for which a REC is needed, a calculation
11 is performed to find the difference in seasonal energy weighted average
12 marginal cost between the unit itself and the energy-weighted average of
13 the unit(s) that are eligible to replace that energy under normal system
14 dispatch conditions. (NSPI (SBA) IR-29)

15 The “units that are eligible to replace that energy” are further clarified
16 for coal and hydro units as “any other generating unit, except those that are
17 fully dispatched (defined as having a forecasted net capacity factor >70
18 percent)” (ibid.). The coal units that would not be included as potential
19 sources for replacement energy would be Pt. Aconi, Trenton 6, and probably
20 Point Tupper (2013 GRA OP-06 Attachment 1 page 1, 2013 GRA Load/Fuel
21 Update OP-06 Attachment 1 page 1).³ For this purpose, NS Power treats all
22 hydro plants as operating at 100% capacity factor, so they would never be
23 treated as replacement resources.

³Dispatch was similar in 2012 (2012 Monthly Generating Facility Net Energy Output, NS Power OASIS, Forecasts and Assessments). I have not seen comparable data from 2014. Gas prices were very low in 2012 and 2013, and NS Power reported that Tufts Cove 3 operated at more than 70% capacity factor in 2013. Its dispatch will probably be lower in the future.

1 It appears that NS Power computes the running cost on a seasonal basis
2 (winter and summer) for each study unit, identifies the potential replacements
3 for that unit in each season, somehow estimates an average running costs for
4 those replacements, and computes the REC as the difference between the unit
5 running cost and the average running cost of the replacement plants.

6 **Q: What concerns have you identified with regard to this computation?**

7 A: I have the following concerns:

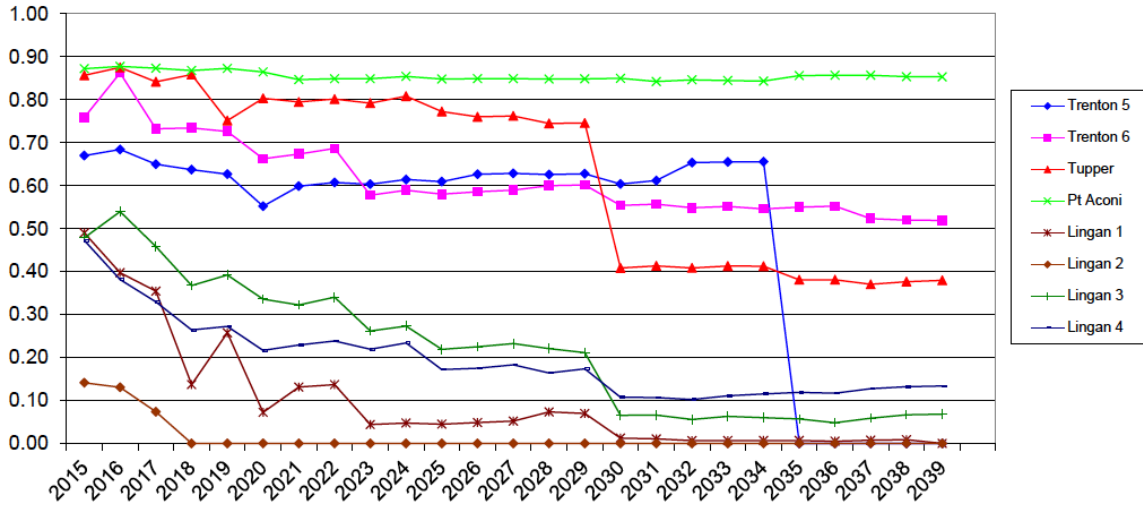
- 8 • Nova Scotia Power merges the RECs for groups of study units: the four
9 Lingan units, the three Tufts Cove steam units, and the entire hydro fleet,
10 despite differences in the resources in each group.
- 11 • Nova Scotia Power includes as replacement resources all generation
12 resources operating at less than 70% seasonal capacity factor, even if
13 some of those resources are dispatched before the study unit and are thus
14 likely to be unavailable to replace the study unit.
- 15 • It is not clear how NS Power weights the multiple replacement resources
16 for each study unit.

17 **Q: What is the problem with NS Power merging the Lingan units for the**
18 **REC estimation?**

19 A: The four Lingan units operate at widely different capacity factors, as shown
20 in Table 1 and in 2014 IRP Draft Report Appendix L pages 13–231, for which
21 an example projection is shown in Figure 1.

1

Figure 1: Coal Unit Capacity Factors



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3

Source: 2014 IRP Draft Report Appendix L, page 21

4

Table 1: Lingan Unit Capacity Factors

	2012	2013 GRA		2014 GRA	
	Actual	Filing	Update	Filing	Update
Unit 1	63%	21%	25%	15%	27%
Unit 2	32%	6%	14%	4%	12%
Unit 3	48%	55%	60%	60%	61%
Unit 4	66%	21%	11%	18%	8%

5

If Lingan 2 is unavailable when it would have been dispatched, other coal units would already be running, and replacement energy would necessarily come from a gas unit, a purchase, or the peakers. If Lingan 4 is out of service, its energy is much more likely to be replaced by output from another Lingan unit.⁴

10

In addition, the various versions of Exhibit OP-06 from the 2013 GRA indicate significant differences heat rates among the four Lingan units. Merging the four units for the REC computation obscures those differences.

12

⁴A year-long outage of Lingan 4 would still be more expensive than a year-long outage at Lingan 2, since Lingan 4 would be expected to run so much more than Lingan 2.

1 **Q: What is the problem with NS Power merging the three Tufts Cove steam**
2 **units for the REC estimation?**

3 A: Heat rate and capacity factor vary substantially among these three units.
4 Table 2 shows the capacity factors for the three units, from the same sources
5 as Table 1. The GRA filings consistently show Tufts Cove 1 having the
6 highest heat rate of the three and Tufts Cove 3 having the lowest. Depending
7 on the forecast, NS Power projected the heat rate for Tufts Cove 1 to be 3%
8 to 11% higher than for Tufts Cove 3.

9 **Table 2: Capacity Factors for Tufts Cove Steam Units**

	2012	2013 GRA		2014 GRA	
	Actual	Filing	Update	Filing	Update
<i>Unit 1</i>	65%	49%	42%	7%	32%
<i>Unit 2</i>	55%	57%	54%	19%	15%
<i>Unit 3</i>	52%	80%	77%	77%	76%

10 The 2012 capacity-factor values were anomalous, perhaps because low
11 gas prices made it economic to run Unit 1 (which cannot cycle on a daily
12 basis) overnight and shut down a coal unit, while Units 2 and 3 could be
13 cycled on to meet daytime loads.

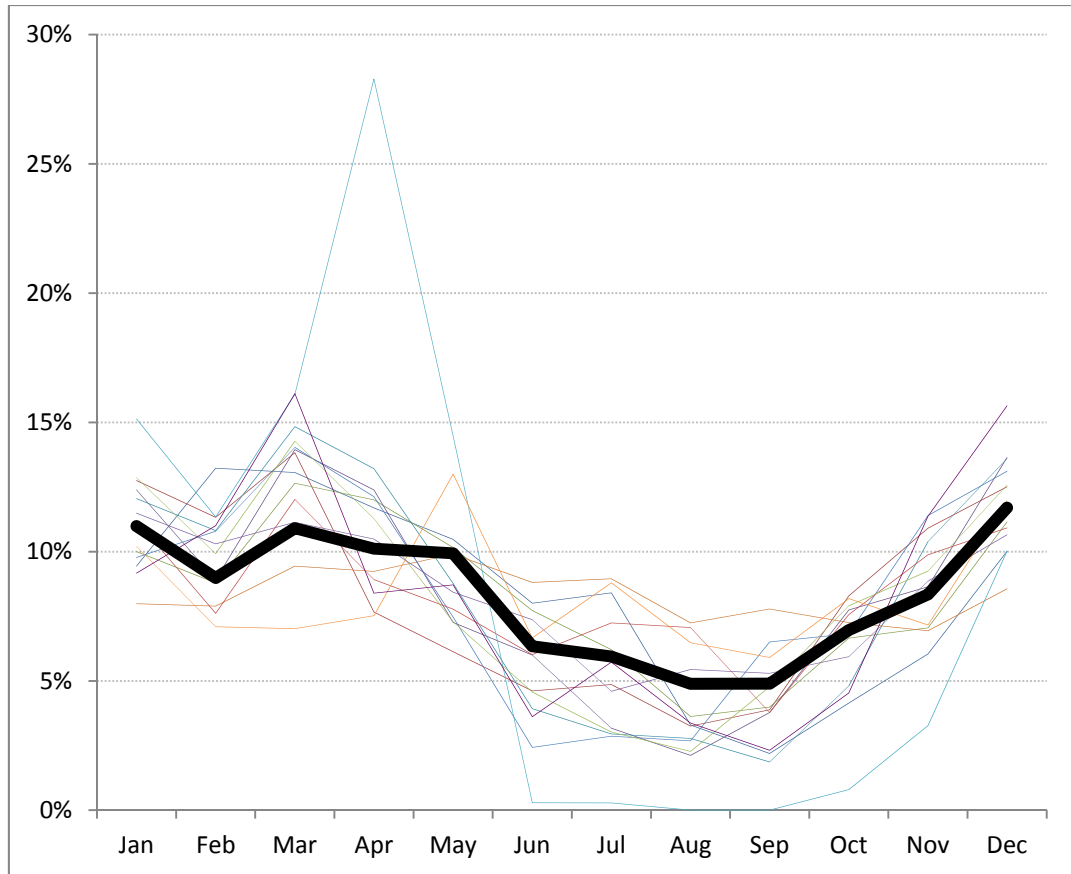
14 **Q: What is the problem with NS Power merging the hydro units for the**
15 **REC estimation?**

16 A: While all of the hydro units have the same running cost of zero, they have
17 very different operating patterns, as shown in Figure 2, where each thin line
18 represents one of the 13 hydro systems, and the thick black line represents
19 the total hydro system.⁵

⁵To avoid disclosing any confidential information about individual plant operation, I have averaged NS Power's estimates for 2012, 2013, and 2014, suppressed the identity of the individual systems, and presented the results as the monthly percentage of annual generation.

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Figure 2: Percent of Hydro Plant Generation by Month



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The monthly output of some systems is fairly smooth over the year, while other systems show strong peaks and valleys. The peak month represents less than 10% of annual output for one system, but more than 28% for another. Peaks output occurs in peak in March for most system, but in January, February, April, May, and December for others. One system has just 34% of its output in December through March, while another has over 50% of its annual output in the winter period.

10

11

12

All else equal, replacing a MWh of output from a winter-peaking hydro system should be more expensive than replacing a lost MWh from a system with more consistent output over the year.

13

14

Furthermore, all else is not equal. Many of the hydro systems are run-of-river, providing essentially the same output in each hour of the day or the

1 week. Wreck Cove, in contrast, operates as a daily storage system, producing
2 most of its energy in high-value on-peak hours, and provides valuable
3 spinning reserve when it is dispatched at less than full output. Other hydro
4 systems provide some storage and some spinning reserves, falling between
5 Wreck Cove and the run-of-river plants. Even if they all had the same
6 distribution of output among months, the average MWh of lost Wreck Cove
7 energy would be more expensive to replace than the average MWh of run-of-
8 river system energy.

9 **Q: What is the implication of NS Power's use of averaged RECs for Lingan,**
10 **Tufts Cove steam, and the hydro fleet?**

11 A: If the average values are correct, NS Power is overstating the cost of
12 replacing a MWh at some units at Lingan and Tufts Cove and some of the
13 hydro systems, and understating others. These errors may result in NS Power
14 erroneously deciding that a project at a high-value unit or hydro system is not
15 cost-effective, due to understatement of the REC value, or that a project at a
16 lower-value resource is cost-effective, due to overstatement of the REC
17 value.

18 **Q: What is your concern with including all generation resources operating**
19 **at less than 70% seasonal capacity factor as replacement resources?**

20 A: Even if a unit is operating at less than 70% seasonal capacity factor, it may be
21 operating in most hours in which replacement energy may be needed. For
22 example, Trenton 5 might run at 50% seasonal capacity factor, but not be
23 available to replace the lost output of an unavailable Lingan unit that is
24 running a 30% capacity factor, because Trenton 5 was running in the hours
25 that the Lingan replacement energy would be needed. Some of those

1 resources are dispatched before the study unit and are thus likely to be
2 unavailable to replace the study unit.

3 **Q: What is your concern with how NS Power weights the costs of multiple**
4 **replacement resources for each study unit?**

5 A: My concern is that NS Power has not explained clearly how it produces the
6 “the energy-weighted average [marginal cost] of the unit(s) that are eligible
7 to replace that energy under normal system dispatch conditions.” (NSPI
8 (SBA) IR-29). Based on NS Power’s description, I cannot tell by which of
9 the following factors potential replacement costs are weighted:

- 10 • the forecast seasonal energy output of each eligible unit in the PLEXOS
11 run;
- 12 • the unused energy of the eligible units in hours in which the study unit
13 would have run;
- 14 • a measure of monthly energy output of the eligible units;⁶
- 15 • some other measure of energy.

16 **Q: How can these last two concerns be resolved?**

17 A: If PLEXOS allows NS Power to easily rerun each month with each unit (or a
18 representative unit for the combustion turbines and hydro units) taken out of
19 service, that would directly estimate the replacement cost. If multiple
20 PLEXOS runs are not feasible, but NS Power can extract data on the output
21 of each plant by hour, a simple spreadsheet could estimate the cost of using
22 the least-expensive underutilized units to provide replacement energy for any

⁶Nova Scotia Power describes the beginning of its REC process as follows: “For each thermal unit as well as imports, monthly average marginal cost (\$/MWh) and monthly total output (GWh) are compiled from the Plexos simulation outputs.” (NSPI (SBA) IR-29)

1 unavailable unit.⁷ In any case, the objective should be to estimate the cost of
2 the actual resources that would run more to replace a unit that was out of
3 service or derated.

4 **IV. Treatment of Administrative Overhead Costs**

5 **Q: How does NS Power treat administrative overhead costs in the EAM?**

6 A: Nova Scotia Power counts the administrative overhead (AO) as part of the
7 project cost, allocating AO of 23.78% of contract costs and 81.82% of direct
8 labour costs (SBA IR-84 Attachment 1). Those costs are included in the
9 capital cost of the project and recovered through depreciation over the life of
10 the equipment, with return on the unamortized balance. That part of the
11 treatment is appropriate.

12 Unfortunately, NS Power offsets the capitalized AO by crediting an
13 equal value to revenue requirements during construction. As NS Power
14 explains, “the revenue requirement assessment incorporates...Administrative
15 overhead credit based on the prorated incremental capital to total capital
16 expenditures” (Application page 81). In effect, NS Power assumes that
17 capital projects do not result in any AO, and that the capital program simply
18 shifts some of the fixed AO from current rates to future rates.

19 **Q: Is NS Power’s treatment reasonable?**

20 A: No. Without the capital program, NS Power would have lower labour costs,
21 lower vehicle costs, and thus lower costs for all the administrative and over-
22 head functions that support labour, vehicles and the construction program

⁷Recognizing transmission constraints would be more difficult in this approach.

1 generally: e.g., pensions, information technology, legal services, human
2 resources, regulatory affairs, public relations, finance, procurement, vehicle
3 maintenance, and the like. Assuming that the construction program contri-
4 butes nothing to overheads is unreasonable.

5 **Q: Are you suggesting that every capital project increases all these AO cost**
6 **categories?**

7 A: In reality a very small project might not result in any incremental AO costs,
8 because it would not change the number of employees, hours worked, or
9 vehicle maintenance cycles. That project would also not result in any incre-
10 mental labour costs or vehicle costs, but NS Power does not net the labour
11 costs from revenue requirements during construction. Counting wages as a
12 real cost, but not pensions, is inconsistent.

13 On the other hand, large projects, and certainly the total capital expendi-
14 ture by function or overall, must increase AO costs. Capital labour is 27% of
15 NS Power's total labour cost (SBA IR-84 Attachment 1), so the effect of
16 capital spending on overheads cannot be trivial.

17 **V. Presentation of Rate Effects of the Spending Plan**

18 **Q: What are your concerns with NS Power's presentation of the revenue-**
19 **requirement effects of the ACE Plan?**

20 A: I have concerns with two downward adjustments that NS Power makes to the
21 revenue requirements computation: removing the revenues NS Power expects
22 from sales growth and reducing the capital plan expenditures by the deprecia-
23 tion on existing plant. In part due to these adjustments, as well as the AO
24 credit, NS Power claims that it "shows a decreasing revenue requirement
25 over a five year period" (ACE Plan page 82).

1 **A. Revenues Growth**

2 **Q: What is NS Power’s stated objective in netting revenue growth from the**
3 **cost of the ACE Plan?**

4 A: Nova Scotia Power explains its reasoning in two responses to Board
5 questions:

6 The revenue requirement directive demonstrates the effect of NS
7 Power’s capital investment on the current customer base in comparison
8 to 2014. While the fixed cost contribution of new customers does not
9 reduce the overall revenue requirement, it does reduce the amount of
10 fixed costs that the current customer base is required to bear. The
11 downward pressure on rates shown in the table illustrates the reduced
12 contribution required by current customers. In order for NS Power to
13 show this downward pressure on rates in the revenue requirement table,
14 a reduction in the revenue requirement line is required. (NSPI
15 (NSUARB) IR-26)

16 Additional fixed cost recovery received from customer growth achieved
17 through capital investment required to provide service to these
18 customers is included in the Long-Term Capital Planning & Revenue
19 Requirement table (page 82) as a credit to the Operating, Maintenance &
20 General expense (OM&G) line. The amount of fixed cost recovery is
21 based on NS Power’s projections of new residential customer growth
22 and the portion of these electric sales that will contribute to fixed cost
23 recovery. NS Power does not forecast commercial customer growth. The
24 fixed cost recovery is forecasted to increase by \$4,150,000 annually...
25 (NSPI (NSUARB) IR-27)

26 **Q: Is this treatment reasonable?**

27 A: No, for two reasons. First, while NS Power should be free to present any addi-
28 tional analyses it likes, including multiple perspectives on the effects of the
29 capital plan on revenue requirements, average bills, and/or rates, the “Long-
30 Term Capital Planning & Revenue Requirement” summary should show the
31 total revenue-requirement effect, before offsets or adjustments. As NS Power
32 admits, “the fixed cost contribution of new customers does not reduce the
33 overall revenue requirement.” The summary on page 82 of the ACE Plan does

1 not include any other savings or benefits of the capital spending; NS Power’s
 2 estimate of incremental revenue requirements is neither before benefits (since
 3 it reflects the revenues from new customers who could not be added without
 4 some capital expenditures) nor after benefits (since it ignores fuel and main-
 5 tenance savings).

6 Second, NS Power’s reduction in the capital-related revenue require-
 7 ments to reflect new customers is much greater than the revenue require-
 8 ments of the additions related to adding those customers. If NS Power wanted
 9 to net out the cost of facilities that were justified by new customer additions,
 10 it would have reduced investment by about \$30 million annually (ACE Plan
 11 page 8) rather than netting out its total estimate of revenues from new
 12 customers.⁸ With this change, the revenue requirements on page 82 would be
 13 much higher, even without correcting other problems in NS Power’s
 14 analysis), as summarized in Table 3.

15 **Table 3: Capital Revenue Requirement Corrected for Treatment of**
 16 **New Customers**

	2015 ACE	2016	2017	2018	2019
<i>ACE Plan p. 82</i>					
Incremental	(\$13.3)	\$2.9	\$1.3	\$4.1	\$14.1
Cumulative	(\$13.3)	(\$10.4)	(\$9.0)	(\$4.9)	\$9.2
<i>Net Out Investments for New Customers</i>					
Incremental	(\$7.1)	\$5.5	\$2.3	\$5.5	\$15.3
Cumulative	(\$7.1)	(\$1.5)	\$0.7	\$6.3	\$21.6
<i>Increase in Revenue Requirements with Correction</i>					
Incremental	\$6.2	\$2.6	\$0.9	\$1.4	\$1.2
Cumulative	\$6.2	\$8.8	\$9.8	\$11.2	\$12.4

⁸The values on page 8 are called “customer growth” and may include some localized growth in load from existing customers. Distribution investments for new customers are expected to be about \$21 million annually.

1 **B. Depreciation Expense on Existing Plant**

2 **Q: How does NS Power treat depreciation on existing plant in computing**
3 **the revenue requirements associated with the capital plan?**

4 A: The table on page 82 of the ACE Plan subtracts about \$200 million in depre-
5 ciation from the plan investments before computing the revenue
6 requirements.

7 **Q: How does NS Power define “existing plant” in this context?**

8 A: For this computation, NS Power includes the investments in the capital plan
9 itself as existing plant (NSUARB IR-29 Attachment 1, Inputs Model sheet).
10 This is a peculiar definition of “existing.” More importantly, depreciation on
11 new plant that NS Power subtracts from the investment requirement is much
12 more than the amount that NS Power treats as a component of revenue
13 requirements. Table 4 compares these two cash flows, from NSUARB IR-29
14 Attachment 1.

15 **Table 4: Depreciation Included in Revenue Requirement vs. Netted from**
16 **Investment**

	2015 ACE	2016	2017	2018	2019
<i>Treated as Cost</i>	\$0.9	\$2.0	\$4.4	\$8.3	\$4.6
<i>Netted from Investment</i>	\$4.2	\$10.6	\$15.5	\$21.3	\$26.9

Source: ACE Plan p. 82

17 Had NS Power not subtracted the depreciation on the capital additions
18 from the cost of the capital plan, its estimate of cumulative incremental
19 revenue requirements through 2019 would be about 40% higher than on page
20 82 of the ACE Plan.

21 **VI. Summary and Recommendations**

22 **Q: Please summarize your testimony on NS Power’s 2015 ACE Plan filing.**

1 A: This plan represents an improvement from the last ACE plan I reviewed,
2 especially in its focus on revenue requirements for economic screening.
3 Through the 2013 Capital Expenditure Justification Criteria stakeholder-
4 consultation process, NS Power clarified some of its practices and improved
5 others. In particular, NS Power explained its treatment of Allowance for
6 Funds Used During Construction (AFUDC), which NS Power treats as a
7 credit to revenue requirements during construction. NS Power explained that
8 it also includes return on investment during construction, so the AFUDC
9 credit offsets that component of revenue requirements.⁹

10 I have identified three items that still require improvement or correction,
11 as follows:

- 12 • The estimates of replacement power in NS Power's economic analyses
13 are not documented well. The estimates aggregate units that operate in
14 different ways and have different running costs.
- 15 • Nova Scotia Power should not be subtracting AO from revenue require-
16 ments during construction unless it can show that particular portions of
17 AO are really invariant with respect to the magnitude of the construction
18 program.
- 19 • While NS Power should be free to present any other analyses of revenue
20 requirements, rate effects, or bill effects of its capital plan, the standard

⁹Unfortunately, the AFUDC credit is computed monthly during construction, while return is computed on the average of the investment at the beginning and end of each calendar year. As a result, the AFUDC credit for a project may exceed the estimate of return during construction, indicating that the financing of the project reduces revenue requirements during construction. Or the opposite may occur, resulting in a net cost to ratepayers during construction. These effects are likely to roughly average out over the entire capital plan, but may produce counter-intuitive results for individual projects.

1 computation of revenue requirements should include all spending, not
2 just spending in excess of depreciation expense, and should not net out
3 revenue growth from new customers.

4 I recommend that the Board instruct NS Power to make those
5 changes for its 2016 ACE Plan.

6 **Q: Does this conclude your testimony?**

7 A: Yes.

PAUL L. CHERNICK

Resource Insight, Inc.
5 Water Street
Arlington, Massachusetts 02476

SUMMARY OF PROFESSIONAL EXPERIENCE

- 1986–Present* **President, Resource Insight, Inc.** Consults and testifies in utility and insurance economics. Reviews utility supply-planning processes and outcomes: assesses prudence of prior power planning investment decisions, identifies excess generating capacity, analyzes effects of power-pool-pricing rules on equity and utility incentives. Reviews electric-utility rate design. Estimates magnitude and cost of future load growth. Designs and evaluates conservation programs for electric, natural-gas, and water utilities, including hook-up charges and conservation cost recovery mechanisms. Determines avoided costs due to cogenerators. Evaluates cogeneration rate risk. Negotiates cogeneration contracts. Reviews management and pricing of district heating systems. Determines fair profit margins for automobile and workers' compensation insurance lines, incorporating reward for risk, return on investments, and tax effects. Determines profitability of transportation services. Advises regulatory commissions in least-cost planning, rate design, and cost allocation.
- 1981–86* **Research Associate, Analysis and Inference, Inc.** (Consultant, 1980–81). Researched, advised, and testified in various aspects of utility and insurance regulation. Designed self-insurance pool for nuclear decommissioning; estimated probability and cost of insurable events, and rate levels; assessed alternative rate designs. Projected nuclear power plant construction, operation, and decommissioning costs. Assessed reasonableness of earlier estimates of nuclear power plant construction schedules and costs. Reviewed prudence of utility construction decisions. Consulted on utility rate-design issues, including small-power-producer rates; retail natural-gas rates; public-agency electric rates, and comprehensive electric-rate design for a regional power agency. Developed electricity cost allocations between customer classes. Reviewed district-heating-system efficiency. Proposed power-plant performance standards. Analyzed auto-insurance profit requirements. Designed utility-financed, decentralized conservation program. Analyzed cost-effectiveness of transmission lines.
- 1977–81* **Utility Rate Analyst, Massachusetts Attorney General.** Analyzed utility filings and prepared alternative proposals. Participated in rate negotiations, discovery, cross-examination, and briefing. Provided extensive expert testimony before various regulatory agencies. Topics included demand forecasting, rate design, marginal costs, time-of-use rates, reliability issues, power-pool operations, nuclear-power cost projections, power-plant cost-benefit analysis, energy conservation, and alternative-energy development.

EDUCATION

SM, Technology and Policy Program, Massachusetts Institute of Technology, February 1978.

SB, Civil Engineering Department, Massachusetts Institute of Technology, June 1974.

HONORS

Chi Epsilon (Civil Engineering)

Tau Beta Pi (Engineering)

Sigma Xi (Research)

Institute Award, Institute of Public Utilities, 1981.

PUBLICATIONS

“Price Effects as a Benefit of Energy-Efficiency Programs” (with John Plunkett), *2014 ACEEE Summer Study on Energy Efficiency in Buildings* (forthcoming).

“Environmental Regulation in the Changing Electric-Utility Industry” (with Rachel Brailove), *International Association for Energy Economics Seventeenth Annual North American Conference* (96–105). Cleveland, Ohio: USAEE. 1996.

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

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

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

“The Allocation of DSM Costs to Rate Classes,” *Proceedings of the Fifth National Conference on Integrated Resource Planning*. Washington: National Association of Regulatory Utility Commissioners. May 1994.

“Environmental Externalities: Highways and Byways” (with Bruce Biewald and William Steinhurst), *Proceedings of the Fifth National Conference on Integrated Resource Planning*. Washington: National Association of Regulatory Utility Commissioners. May 1994.

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

“Benefit-Cost Ratios Ignore Interclass Equity” (with others), *DSM Quarterly*, Spring 1992.

“ESCOs or Utility Programs: Which Are More Likely to Succeed?” (with Sabrina Birner), *The Electricity Journal* 5:2, March 1992.

“Determining the Marginal Value of Greenhouse Gas Emissions” (with Jill Schoenberg), *Energy Developments in the 1990s: Challenges Facing Global/Pacific Markets, Vol. II*, July 1991.

“Monetizing Environmental Externalities for Inclusion in Demand-Side Management Programs” (with Emily Caverhill), *Proceedings from the Demand-Side Management and the Global Environment Conference*, April 1991.

“Accounting for Externalities” (with Emily Caverhill). *Public Utilities Fortnightly* 127(5), March 1 1991.

“Methods of Valuing Environmental Externalities” (with Emily Caverhill), *The Electricity Journal* 4(2), March 1991.

“The Valuation of Environmental Externalities in Energy Conservation Planning” (with Emily Caverhill), *Energy Efficiency and the Environment: Forging the Link*. American Council for an Energy-Efficient Economy; Washington: 1991.

“The Valuation of Environmental Externalities in Utility Regulation” (with Emily Caverhill), *External Environmental Costs of Electric Power: Analysis and Internalization*. Springer-Verlag; Berlin: 1991.

“Analysis of Residential Fuel Switching as an Electric Conservation Option” (with Eric Espenhorst and Ian Goodman), *Gas Energy Review*, December 1990.

“Externalities and Your Electric Bill,” *The Electricity Journal*, October 1990, p. 64.

“Monetizing Externalities in Utility Regulations: The Role of Control Costs” (with Emily Caverhill), in *Proceedings from the NARUC National Conference on Environmental Externalities*, October 1990.

“Monetizing Environmental Externalities in Utility Planning” (with Emily Caverhill), in *Proceedings from the NARUC Biennial Regulatory Information Conference*, September 1990.

“Analysis of Residential Fuel Switching as an Electric Conservation Option” (with Eric Espenhorst and Ian Goodman), in *Proceedings from the NARUC Biennial Regulatory Information Conference*, September 1990.

“A Utility Planner’s Checklist for Least-Cost Efficiency Investment” (with John Plunkett) in *Proceedings from the NARUC Biennial Regulatory Information Conference*, September 1990.

Environmental Costs of Electricity (with Richard Ottinger et al.). Oceana; Dobbs Ferry, New York: September 1990.

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

“Incorporating Environmental Externalities in Evaluation of District Heating Options” (with Emily Caverhill), *Proceedings from the International District Heating and Cooling Association 81st Annual Conference*, June 1990.

“A Utility Planner’s Checklist for Least-Cost Efficiency Investment,” (with John Plunkett), *Proceedings from the Canadian Electrical Association Demand-Side Management Conference*, June 1990.

“Incorporating Environmental Externalities in Utility Planning” (with Emily Caverhill), *Canadian Electrical Association Demand Side Management Conference*, May 1990.

“Is Least-Cost Planning for Gas Utilities the Same as Least-Cost Planning for Electric Utilities?” in *Proceedings of the NARUC Second Annual Conference on Least-Cost Planning*, September 10–13 1989.

“Conservation and Cost-Benefit Issues Involved in Least-Cost Planning for Gas Utilities,” in *Least Cost Planning and Gas Utilities: Balancing Theories with Realities*, Seminar proceedings from the District of Columbia Natural Gas Seminar, May 23 1989.

“The Role of Revenue Losses in Evaluating Demand-Side Resources: An Economic Re-Appraisal” (with John Plunkett), *Summer Study on Energy Efficiency in Buildings, 1988*, American Council for an Energy Efficient Economy, 1988.

“Quantifying the Economic Benefits of Risk Reduction: Solar Energy Supply Versus Fossil Fuels,” in *Proceedings of the 1988 Annual Meeting of the American Solar Energy Society*, American Solar Energy Society, Inc., 1988, pp. 553–557.

“Capital Minimization: Salvation or Suicide?,” in I. C. Bupp, ed., *The New Electric Power Business*, Cambridge Energy Research Associates, 1987, pp. 63–72.

“The Relevance of Regulatory Review of Utility Planning Prudence in Major Power Supply Decisions,” in *Current Issues Challenging the Regulatory Process*, Center for Public Utilities, Albuquerque, New Mexico, April 1987, pp. 36–42.

“Power Plant Phase-In Methodologies: Alternatives to Rate Shock,” in *Proceedings of the Fifth NARUC Biennial Regulatory Information Conference*, National Regulatory Research Institute, Columbus, Ohio, September 1986, pp. 547–562.

“Assessing Conservation Program Cost-Effectiveness: Participants, Non-participants, and the Utility System” (with A. Bachman), *Proceedings of the Fifth NARUC Biennial Regulatory Information Conference*, National Regulatory Research Institute, Columbus, Ohio, September 1986, pp. 2093–2110.

“Forensic Economics and Statistics: An Introduction to the Current State of the Art” (with Eden, P., Fairley, W., Aller, C., Vencill, C., and Meyer, M.), *The Practical Lawyer*, June 1 1985, pp. 25–36.

“Power Plant Performance Standards: Some Introductory Principles,” *Public Utilities Fortnightly*, April 18 1985, pp. 29–33.

“Opening the Utility Market to Conservation: A Competitive Approach,” *Energy Industries in Transition, 1985–2000*, Proceedings of the Sixth Annual North American Meeting of the International Association of Energy Economists, San Francisco, California, November 1984, pp. 1133–1145.

“Insurance Market Assessment of Technological Risks” (with Meyer, M., and Fairley, W) *Risk Analysis in the Private Sector*, pp. 401–416, Plenum Press, New York 1985.

“Revenue Stability Target Ratemaking,” *Public Utilities Fortnightly*, February 17 1983, pp. 35–39.

“Capacity/Energy Classifications and Allocations for Generation and Transmission Plant” (with M. Meyer), *Award Papers in Public Utility Economics and Regulation*, Institute for Public Utilities, Michigan State University 1982.

Design, Costs and Acceptability of an Electric Utility Self-Insurance Pool for Assuring the Adequacy of Funds for Nuclear Power Plant Decommissioning Expense, (with Fairley, W., Meyer, M., and Scharff, L.) (NUREG/CR-2370), U.S. Nuclear Regulatory Commission, December 1981.

Optimal Pricing for Peak Loads and Joint Production: Theory and Applications to Diverse Conditions (Report 77-1), Technology and Policy Program, Massachusetts Institute of Technology, September 1977.

REPORTS

“Implications of the Proposed Clean Power Plan for Arkansas: Review of Stakeholder Concerns and Assessment of Feasibility.” 2014. Report to Arkansas Audubon, Arkansas Public Policy Panel, and Arkansas Sierra Club.

“Comments on Nova Scotia Power Inc.’s Proposed Capital Expenditure Justification Criteria.” 2013. Filed by the Nova Scotia Small Business Advocate in N.S. UARB Matter No. 05355.

“Avoided Energy Supply Costs in New England: 2013 Report” (with Rick Hornby, David White, John Rosenkranz, Ron Denhardt, Elizabeth Stanton, Jason Gifford, Bob Grace, Max Chang, Patrick Luckow, Thomas Vitolo, Patrick Knight, Ben Griffiths, and Bruce Biewald). 2011. Northborough, Mass.: Avoided-Energy-Supply-Component Study Group, c/o National Grid Company.

“Affordability of Pollution Control on the Apache Coal Units: Review of Arizona Electric Power Cooperative’s Comments on Behalf of the Sierra Club” (with Ben Griffiths). 2012. Filed as part of comments in Docket EPA-R09-OAR-2012-0021 by National Parks Conservation Association, Sierra Club, et al.

“Audubon Arkansas Comments on Entergy’s 2012 IRP.” 2012. Prepared for and filed by Audubon Arkansas in Arkansas PUC Docket No. 07-016-U.

“Economic Benefits from Early Retirement of Reid Gardner” (with Jonathan Wallach). 2012. Prepared for and filed by the Sierra Club in PUC of Nevada Docket No. 11-08019.

“Analysis of Via Verde Need and Economics.” 2012. Appendix V-4 of public comments of the Sierra Club et al. in response to November 30 2011 draft of U.S. Army Corps of

Engineers environmental assessment in Department of the Army Environmental Assessment and Statement of Finding for Permit Application SAJ-2010-02881.

“Comments for The Alliance for Affordable Energy on Staff’s ‘Proposed Integrated Resource Planning Rules for Electric Utilities in Louisiana.’” 2011. Filed by the Alliance for Affordable Energy in Louisiana PSC Docket R-30021.

“Avoided Energy Supply Costs in New England: 2011 Report” (with Rick Hornby, Carl Swanson, David White, Jason Gifford, Max Chang, Nicole Hughes, Matthew Wittenstein, Rachel Wilson, and Bruce Biewald). 2011. Northborough, Mass.: Avoided-Energy-Supply-Component Study Group, c/o National Grid Company.

“State of Ohio Energy-Efficiency Technical-Reference Manual Including Predetermined Savings Values and Protocols for Determining Energy and Demand Savings” (with others). 2010. Burlington, Vt.: Vermont Energy Investment Corporation.

“Avoided Energy Supply Costs in New England: 2011 Report” (with Rick Hornby, Carl Swanson, David White, Ian Goodman, Bob Grace, Bruce Biewald, Ben Warfield, Jason Gifford, and Max Chang). 2009. Northborough, Mass.: Avoided-Energy-Supply-Component Study Group, c/o National Grid Company.

“Green Resource Portfolios: Development, Integration, and Evaluation” (with Jonathan Wallach and Richard Mazzini). 2008. Report to the Green Energy Coalition presented as evidence in Ont. Energy Board EB 2007-0707.

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

“Avoided Energy Supply Costs in New England: 2007 Final Report” (with Rick Hornby, Carl Swanson, Michael Drunsic, David White, Bruce Biewald, and Jenifer Callay). 2007. Northborough, Mass.: Avoided-Energy-Supply-Component Study Group, c/o National Grid Company.

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

“Natural Gas Efficiency Resource Development Potential in New York” (with Phillip Mosenthal, R. Neal Elliott, Dan York, Chris Neme, and Kevin Petak). 2006. Albany, N.Y.; New York State Energy Research and Development Authority.

“Natural Gas Efficiency Resource Development Potential in Con Edison Service Territory” (with Phillip Mosenthal, Jonathan Kleinman, R. Neal Elliott, Dan York, Chris Neme, and Kevin Petak. 2006. Albany, N.Y.; New York State Energy Research and Development Authority.

“Evaluation and Cost Effectiveness” (principal author), Ch. 14 of “California Evaluation Framework” Prepared for California utilities as required by the California Public Utilities Commission. 2004.

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

“Updated Avoided Energy Supply Costs for Demand-Side Screening in New England” (with Susan Geller, Bruce Biewald, and David White). 2001. Northborough, Mass.: Avoided-Energy-Supply-Component Study Group, c/o New England Power Supply Company.

“Review and Critique of the Western Division Load-Pocket Study of Orange and Rockland Utilities, Inc.” (with John Plunkett, Philip Mosenthal, Robert Wichert, and Robert Rose). 1999. White Plains, N.Y.: Pace University School of Law Center for Environmental Studies.

“Avoided Energy Supply Costs for Demand-Side Management in Massachusetts” (with Rachel Brailove, Susan Geller, Bruce Biewald, and David White). 1999. Northborough, Mass.: Avoided-Energy-Supply-Component Study Group, c/o New England Power Supply Company.

“Performance-based Regulation in a Restructured Utility Industry” (with Bruce Biewald, Tim Woolf, Peter Bradford, Susan Geller, and Jerrold Oppenheim). 1997. Washington: NARUC.

“Distributed Integrated-Resource-Planning Guidelines.” 1997. Appendix 4 of “The Power to Save: A Plan to Transform Vermont’s Energy-Efficiency Markets,” submitted to the Vt. PSB in Docket No. 5854. Montpelier: Vermont DPS.

“Restructuring the Electric Utilities of Maryland: Protecting and Advancing Consumer Interests” (with Jonathan Wallach, Susan Geller, John Plunkett, Roger Colton, Peter Bradford, Bruce Biewald, and David Wise). 1997. Baltimore, Maryland: Maryland Office of People’s Counsel.

“Comments of the New Hampshire Office of Consumer Advocate on Restructuring New Hampshire’s Electric-Utility Industry” (with Bruce Biewald and Jonathan Wallach). 1996. Concord, N.H.: NH OCA.

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

From Here to Efficiency: Securing Demand-Management Resources (with Emily Caverhill, James Peters, John Plunkett, and Jonathan Wallach). 1993. 5 vols. Harrisburg, Penn: Pennsylvania Energy Office.

“Analysis Findings, Conclusions, and Recommendations,” vol. 1 of “Correcting the Imbalance of Power: Report on Integrated Resource Planning for Ontario Hydro” (with Plunkett, John, and Jonathan Wallach), December 1992.

“Estimation of the Costs Avoided by Potential Demand-Management Activities of Ontario Hydro,” December 1992.

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

Environmental Externalities Valuation and Ontario Hydro’s Resource Planning (with E. Caverhill and R. Brailove), 3 vols.; prepared for the Coalition of Environmental Groups for a Sustainable Energy Future, October 1992.

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

“The AGREAS Project Critique of Externality Valuation: A Brief Rebuttal,” March 1992.

“The Potential Economic Benefits of Regulatory NO_x Valuation for Clean Air Act Ozone Compliance in Massachusetts,” March 1992.

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

“Report on the Adequacy of Ontario Hydro’s Estimates of Externality Costs Associated with Electricity Exports” (with Emily Caverhill), January 1991.

“Comments on the 1991–1992 Annual and Long Range Demand-Side-Management Plans of the Major Electric Utilities,” (with John Plunkett et al.), September 1990. Filed in NY PSC Case No. 28223 in re New York utilities’ DSM plans.

“Power by Efficiency: An Assessment of Improving Electrical Efficiency to Meet Jamaica’s Power Needs,” (with Conservation Law Foundation, et al.), June 1990.

“Analysis of Fuel Substitution as an Electric Conservation Option,” (with Ian Goodman and Eric Espenhorst), Boston Gas Company, December 22 1989.

“The Development of Consistent Estimates of Avoided Costs for Boston Gas Company, Boston Edison Company, and Massachusetts Electric Company” (with Eric Espenhorst), Boston Gas Company, December 22 1989.

“The Valuation of Externalities from Energy Production, Delivery, and Use: Fall 1989 Update” (with Emily Caverhill), Boston Gas Company, December 22 1989.

“Conservation Potential in the State of Minnesota,” (with Ian Goodman) Minnesota Department of Public Service, June 16 1988.

“Review of NEPOOL Performance Incentive Program,” Massachusetts Energy Facilities Siting Council, April 12 1988.

“Application of the DPU’s Used-and-Useful Standard to Pilgrim 1” (With C. Wills and M. Meyer), Massachusetts Executive Office of Energy Resources, October 1987.

“Constructing a Supply Curve for Conservation: An Initial Examination of Issues and Methods,” Massachusetts Energy Facilities Siting Council, June 1985.

“Final Report: Rate Design Analysis,” Pacific Northwest Electric Power and Conservation Planning Council, December 18 1981.

PRESENTATIONS

“Adding Transmission into New York City: Needs, Benefits, and Obstacles.” Presentation to FERC and the New York ISO on behalf of the City of New York. October 2004.

“Plugging Into a Municipal Light Plant,” With Peter Enrich and Ken Barna. Panel presentation as part of the 2004 Annual Meeting of the Massachusetts Municipal Association. January 2004.

“Distributed Utility Planning.” With Steve Litkovitz. Presentation to the Vermont Distributed-Utility-Planning Collaborative, November 1999.

“The Economic and Environmental Benefits of Gas IRP: FERC 636 and Beyond.” Presentation as part of the Ohio Office of Energy Efficiency’s seminar, “Gas Utility Integrated Resource Planning,” April 1994.

“Cost Recovery and Utility Incentives.” Day-long presentation as part of the Demand-Side-Management Training Institute’s workshop, “DSM for Public Interest Groups,” October 1993.

“Cost Allocation for Utility Ratemaking.” With Susan Geller. Day-long workshop for the staff of the Connecticut Department of Public Utility Control, October 1993.

“Comparing and Integrating DSM with Supply.” Day-long presentation as part of the Demand-Side-Management Training Institute’s workshop, “DSM for Public Interest Groups,” October 1993.

“DSM Cost Recovery and Rate Impacts.” Presentation as part of “Effective DSM Collaborative Processes,” a week-long training session for Ohio DSM advocates sponsored by the Ohio Office of Energy Efficiency, August 1993.

“Cost-Effectiveness Analysis.” Presentation as part of “Effective DSM Collaborative Processes,” a week-long training session for Ohio DSM advocates sponsored by the Ohio Office of Energy Efficiency, August 1993.

“Environmental Externalities: Current Approaches and Potential Implications for District Heating and Cooling” (with R. Brailove), International District Heating and Cooling Association 84th Annual Conference. June 1993.

“Using the Costs of Required Controls to Incorporate the Costs of Environmental Externalities in Non-Environmental Decision-Making.” Presentation at the American Planning Association 1992 National Planning Conference; presentation cosponsored by the Edison Electric Institute. May 1992.

“Cost Recovery and Decoupling” and “The Clean Air Act and Externalities in Utility Resource Planning” panels (session leader), DSM Advocacy Workshop. April 15 1992.

“Overview of Integrated Resources Planning Procedures in South Carolina and Critique of South Carolina Demand Side Management Programs,” Energy Planning Workshops; Columbia, S.C. October 21 1991;

“Least Cost Planning and Gas Utilities.” Conservation Law Foundation Utility Energy Efficiency Advocacy Workshop; Boston, February 28 1991.

“Least-Cost Planning in a Multi-Fuel Context,” NARUC Forum on Gas Integrated Resource Planning; Washington, D.C., February 24 1991.

“Accounting for Externalities: Why, Which and How?” Understanding Massachusetts’ New Integrated Resource Management Rules; Needham, Massachusetts, November 9 1990.

“Increasing Market Share Through Energy Efficiency.” New England Gas Association Gas Utility Managers’ Conference; Woodstock, Vermont, September 10 1990.

“Quantifying and Valuing Environmental Externalities.” Presentation at the Lawrence Berkeley Laboratory Training Program for Regulatory Staff, sponsored by the U.S. Department of Energy’s Least-Cost Utility Planning Program; Berkeley, California, February 2 1990;

“Conservation in the Future of Natural Gas Local Distribution Companies,” District of Columbia Natural Gas Seminar; Washington, D.C., May 23 1989.

“Conservation and Load Management for Natural Gas Utilities,” Massachusetts Natural Gas Council; Newton, Massachusetts, April 3 1989.

New England Conference of Public Utilities Commissioners, Environmental Externalities Workshop; Portsmouth, New Hampshire, January 22–23 1989.

“Assessment and Valuation of External Environmental Damages,” New England Utility Rate Forum; Plymouth, Massachusetts, October 11 1985; “Lessons from Massachusetts on Long Term Rates for QFs”.

“Reviewing Utility Supply Plans,” Massachusetts Energy Facilities Siting Council; Boston, Massachusetts, May 30 1985.

“Power Plant Performance,” National Association of State Utility Consumer Advocates; Williamstown, Massachusetts, August 13 1984.

“Utility Rate Shock,” National Conference of State Legislatures; Boston, Massachusetts, August 6 1984.

“Review and Modification of Regulatory and Rate Making Policy,” National Governors’ Association Working Group on Nuclear Power Cost Overruns; Washington, D.C., June 20 1984.

“Review and Modification of Regulatory and Rate Making Policy,” Annual Meeting of the American Association for the Advancement of Science, Session on Monitoring for Risk Management; Detroit, Michigan, May 27 1983.

ADVISORY ASSIGNMENTS TO REGULATORY COMMISSIONS

District of Columbia Public Service Commission, Docket No. 834, Phase II; Least-cost planning procedures and goals. August 1987 to March 1988.

Connecticut Department of Public Utility Control, Docket No. 87-07-01, Phase 2; Rate design and cost allocations. March 1988 to June 1989.

EXPERT TESTIMONY

1. **Mass. EFSC 78-12/MDPU 19494**, Phase I; Boston Edison 1978 forecast; Massachusetts Attorney General. June 12 1978.

Appliance penetration projections, price elasticity, econometric commercial forecast, peak demand forecast. Joint testimony with Susan C. Geller.

2. **Mass. EFSC 78-17**; Northeast Utilities 1978 forecast; Massachusetts Attorney General. September 29 1978.

Specification of economic/demographic and industrial models, appliance efficiency, commercial model structure and estimation.

3. **Mass. EFSC 78-33**; Eastern Utilities Associates 1978 forecast; Massachusetts Attorney General. November 27 1978.

Household size, appliance efficiency, appliance penetration, price elasticity, commercial forecast, industrial trending, peak demand forecast.

4. **Mass. DPU 19494**; Phase II; Boston Edison Company construction program; Massachusetts Attorney General. April 1 1979.

Review of numerous aspects of the 1978 demand forecasts of nine New England electric utilities, constituting 92% of projected regional demand growth, and of the NEPOOL demand forecast. Joint testimony with Susan Geller.

5. **Mass. DPU 19494**; Phase II; Boston Edison Company construction program; Massachusetts Attorney General. April 1 1979.

Reliability, capacity planning, capability responsibility allocation, customer generation, co-generation rates, reserve margins, operating reserve allocation. Joint testimony with S. Finger.

6. **U.S. ASLB, NRC 50-471**; Pilgrim Unit 2, Boston Edison Company; Commonwealth of Massachusetts. June 29 1979.

Review of the Oak Ridge National Laboratory and NEPOOL demand forecast models; cost-effectiveness of oil displacement; nuclear economics. Joint testimony with Susan Geller.

7. **Mass. DPU 19845**; Boston Edison time-of-use-rate case; Massachusetts Attorney General. December 4 1979.

Critique of utility marginal cost study and proposed rates; principles of marginal cost principles, cost derivation, and rate design; options for reconciling costs and revenues. Joint testimony with Susan Geller. Testimony eventually withdrawn due to delay in case.

8. **Mass. DPU 20055**; Petition of Eastern Utilities Associates, New Bedford G. & E., and Fitchburg G. & E. to purchase additional shares of Seabrook Nuclear Plant; Massachusetts Attorney General. January 23 1980.

Review of demand forecasts of three utilities purchasing Seabrook shares; Seabrook power costs, including construction cost, completion date, capacity factor, O&M expenses, interim replacements, reserves and uncertainties; alternative energy sources, including conservation, cogeneration, rate reform, solar, wood and coal conversion.

9. **Mass. DPU 20248**; Petition of Massachusetts Municipal Wholesale Electric Company to purchase additional share of Seabrook Nuclear Plant; Massachusetts Attorney General. June 2 1980.

Nuclear power costs; update and extension of MDPU 20055 testimony.

10. **Mass. DPU 200**; Massachusetts Electric Company rate case; Massachusetts Attorney General. June 16 1980.

Rate design; declining blocks, promotional rates, alternative energy, demand charges, demand ratchets; conservation: master metering, storage heating, efficiency standards, restricting resistance heating.

11. **Mass. EFSC 79-33**; Eastern Utilities Associates 1979 forecast; Massachusetts Attorney General. July 16 1980.

Customer projections, consistency issues, appliance efficiency, new appliance types, commercial specifications, industrial data manipulation and trending, sales and resale.

12. **Mass. DPU 243**; Eastern Edison Company rate case; Massachusetts Attorney General. August 19 1980.

Rate design: declining blocks, promotional rates, alternative energy, master metering.

13. **Texas PUC 3298**; Gulf States Utilities rate case; East Texas Legal Services. August 25 1980.

Inter-class revenue allocations, including production plant in-service, O&M, CWIP, nuclear fuel in progress, amortization of canceled plant residential rate design; interruptible rates; off-peak rates. Joint testimony with M. B. Meyer.

14. **Mass. EFSC 79-1**; Massachusetts Municipal Wholesale Electric Company Forecast; Massachusetts Attorney General. November 5 1980.

Cost comparison methodology; nuclear cost estimates; cost of conservation, cogeneration, and solar.

- 15. Mass. DPU 472;** Recovery of residential conservation-service expenses; Massachusetts Attorney General. December 12 1980.

Conservation as an energy source; advantages of per-kWh allocation over per-customer-month allocation.

- 16. Mass. DPU 535;** Regulations to carry out Section 210 of PURPA; Massachusetts Attorney General. January 26 1981 and February 13 1981.

Filing requirements, certification, qualifying-facility status, extent of coverage, review of contracts; energy rates; capacity rates; extra benefits of qualifying facilities in specific areas; wheeling; standardization of fees and charges.

- 17. Mass. EFSC 80-17;** Northeast Utilities 1980 forecast; Massachusetts Attorney General. March 12 1981 (not presented).

Specification process, employment, electric heating promotion and penetration, commercial sales model, industrial model specification, documentation of price forecasts and wholesale forecast.

- 18. Mass. DPU 558;** Western Massachusetts Electric Company rate case; Massachusetts Attorney General. May 1981.

Rate design including declining blocks, marginal cost conservation impacts, and promotional rates. Conservation, including terms and conditions limiting renewable, cogeneration, small power production; scope of current conservation program; efficient insulation levels; additional conservation opportunities.

- 19. Mass. DPU 1048;** Boston Edison plant performance standards; Massachusetts Attorney General. May 7 1982.

Critique of company approach, data, and statistical analysis; description of comparative and absolute approaches to standard-setting; proposals for standards and reporting requirements.

- 20. D.C. PSC FC785;** Potomac Electric Power rate case; D.C. People's Counsel. July 29 1982.

Inter-class revenue allocations, including generation, transmission, and distribution plant classification; fuel and O&M classification; distribution and service allocators. Marginal cost estimation, including losses.

- 21. N.H. PSC DE1-312;** Public Service of New Hampshire—supply and demand; Conservation Law Foundation, et al. October 8 1982.

Conservation program design, ratemaking, and effectiveness. Cost of power from Seabrook nuclear plant, including construction cost and duration, capacity factor, O&M, replacements, insurance, and decommissioning.

- 22. Mass. Division of Insurance;** Hearing to fix and establish 1983 automobile insurance rates; Massachusetts Attorney General. October 1982.

Profit margin calculations, including methodology, interest rates, surplus flow, tax flows, tax rates, and risk premium.

- 23. Ill. Commerce Commission 82-0026;** Commonwealth Edison rate case; Illinois Attorney General. October 15 1982.

Review of Cost-Benefit Analysis for nuclear plant. Nuclear cost parameters (construction cost, O&M, capital additions, useful life, capacity factor), risks, discount rates, evaluation techniques.

- 24. N.M. PSC 1794;** Public Service of New Mexico application for certification; New Mexico Attorney General. May 10 1983.

Review of Cost-Benefit Analysis for transmission line. Review of electricity price forecast, nuclear capacity factors, load forecast. Critique of company ratemaking proposals; development of alternative ratemaking proposal.

- 25. Conn. DPUC 830301;** United Illuminating rate case; Connecticut Consumers Counsel. June 17 1983.

Cost of Seabrook nuclear power plants, including construction cost and duration, capacity factor, O&M, capital additions, insurance and decommissioning.

- 26. Mass. DPU 1509;** Boston Edison plant performance standards; Massachusetts Attorney General. July 15 1983.

Critique of company approach and statistical analysis; regression model of nuclear capacity factor; proposals for standards and for standard-setting methodologies.

- 27. Mass. Division of Insurance;** Hearing to fix and establish 1984 automobile-insurance rates; Massachusetts Attorney General. October 1983.

Profit margin calculations, including methodology, interest rates.

- 28. Conn. DPUC 83-07-15;** Connecticut Light and Power rate case; Alloy Foundry. October 3 1983.

Industrial rate design. Marginal and embedded costs; classification of generation, transmission, and distribution expenses; demand versus energy charges.

- 29. Mass. EFSC 83-24;** New England Electric System forecast of electric resources and requirements; Massachusetts Attorney General. November 14 1983, Rebuttal, February 2 1984.

Need for transmission line. Status of supply plan, especially Seabrook 2. Review of interconnection requirements. Analysis of cost-effectiveness for power transfer, line losses, generation assumptions.

- 30. Mich. PSC U-7775;** Detroit Edison Fuel Cost Recovery Plan; Public Interest Research Group in Michigan. February 21 1984.

Review of proposed performance target for new nuclear power plant. Formulation of alternative proposals.

- 31. Mass. DPU 84-25;** Western Massachusetts Electric Company rate case; Massachusetts Attorney General. April 6 1984.

Need for Millstone 3. Cost of completing and operating unit, cost-effectiveness compared to alternatives, and its effect on rates. Equity and incentive problems created by CWIP. Design of Millstone 3 phase-in proposals to protect ratepayers: limitation of base-rate treatment to fuel savings benefit of unit.

- 32. Mass. DPU 84-49 and 84-50;** Fitchburg Gas & Electric financing case; Massachusetts Attorney General. April 13 1984.

Cost of completing and operating Seabrook nuclear units. Probability of completing Seabrook 2. Recommendations regarding FG&E and MDPU actions with respect to Seabrook.

- 33. Mich. PSC U-7785;** Consumers Power fuel-cost-recovery plan; Public Interest Research Group in Michigan. April 16 1984.

Review of proposed performance targets for two existing and two new nuclear power plants. Formulation of alternative policy.

- 34. FERC ER81-749-000 and ER82-325-000;** Montaup Electric rate cases; Massachusetts Attorney General. April 27 1984.

Prudence of Montaup and Boston Edison in decisions regarding Pilgrim 2 construction: Montaup's decision to participate, the Utilities' failure to review their earlier analyses and assumptions, Montaup's failure to question Edison's decisions, and the utilities' delay in canceling the unit.

- 35. Maine PUC 84-113;** Seabrook 1 investigation; Maine Public Advocate. September 13 1984.

Cost of completing and operating Seabrook Unit 1. Probability of completing Seabrook 1. Comparison of Seabrook to alternatives. Rate effects. Recommendations regarding utility and PUC actions with respect to Seabrook.

- 36. Mass. DPU 84-145;** Fitchburg Gas and Electric rate case; Massachusetts Attorney General. November 6 1984.

Prudence of Fitchburg and Public Service of New Hampshire in decision regarding Seabrook 2 construction: FGE's decision to participate, the utilities' failure to review their earlier analyses and assumptions, FGE's failure to question PSNH's decisions, and utilities' delay in halting construction and canceling the unit. Review of literature, cost and schedule estimate histories, cost-benefit analyses, and financial feasibility.

- 37. Penn. PUC R-842651;** Pennsylvania Power and Light rate case; Pennsylvania Consumer Advocate. November 1984.

Need for Susquehanna 2. Cost of operating unit, power output, cost-effectiveness compared to alternatives, and its effect on rates. Design of phase-in and excess capacity proposals to protect ratepayers: limitation of base-rate treatment to fuel savings benefit of unit.

- 38. N.H. PSC 84-200;** Seabrook Unit 1 investigation; New Hampshire Public Advocate. November 15 1984.

Cost of completing and operating Seabrook Unit 1. Probability of completing Seabrook 1. Comparison of Seabrook to alternatives. Rate and financial effects.

- 39. Mass. Division of Insurance;** Hearing to fix and establish 1986 automobile insurance rates; Massachusetts Attorney General. November 1984.

Profit margin calculations, including methodology and implementation.

- 40. Mass. DPU 84-152;** Seabrook Unit 1 investigation; Massachusetts Attorney General. December 12 1984.

Cost of completing and operating Seabrook. Probability of completing Seabrook 1. Seabrook capacity factors.

- 41. Maine PUC 84-120;** Central Maine Power rate case; Maine PUC Staff. December 11 1984.

Prudence of Central Maine Power and Boston Edison in decisions regarding Pilgrim 2 construction: CMP's decision to participate, the utilities' failure to review their earlier analyses and assumptions, CMP's failure to question Edison's decisions, and the utilities' delay in canceling the unit. Prudence of CMP in the planning and investment in Sears Island nuclear and coal plants. Review of literature, cost and schedule estimate histories, cost-benefit analyses, and financial feasibility.

- 42. Maine PUC 84-113;** Seabrook 2 investigation; Maine PUC Staff. December 14 1984.

Prudence of Maine utilities and Public Service of New Hampshire in decisions regarding Seabrook 2 construction: decisions to participate and to increase ownership share, the utilities' failure to review their earlier analyses and assumptions, failure to question PSNH's decisions, and the utilities' delay in halting construction and canceling the unit. Review of literature, cost and schedule estimate histories, cost-benefit analyses, and financial feasibility.

- 43. Mass. DPU 1627;** Massachusetts Municipal Wholesale Electric Company financing case; Massachusetts Executive Office of Energy Resources. January 14 1985.

Cost of completing and operating Seabrook nuclear unit 1. Cost of conservation and other alternatives to completing Seabrook. Comparison of Seabrook to alternatives.

- 44. Vt. PSB 4936;** Millstone 3 costs and in-service date; Vermont Department of Public Service. January 21 1985.

Construction schedule and cost of completing Millstone Unit 3.

- 45. Mass. DPU 84-276;** Rules governing rates for utility purchases of power from qualifying facilities; Massachusetts Attorney General. March 25 1985, and October 18 1985.

Institutional and technological advantages of Qualifying Facilities. Potential for QF development. Goals of QF rate design. Parity with other power sources. Security requirements. Projecting avoided costs. Capacity credits. Pricing options. Line loss corrections.

- 46. Mass. DPU 85-121;** Investigation of the Reading Municipal Light Department; Wilmington (Mass.) Chamber of Commerce. November 12 1985.

Calculation on return on investment for municipal utility. Treatment of depreciation and debt for ratemaking. Geographical discrimination in street-lighting rates. Relative size of voluntary payments to Reading and other towns. Surplus and disinvestment. Revenue allocation.

- 47. Mass. Division of Insurance;** Hearing to fix and establish 1986 automobile insurance rates; Massachusetts Attorney General and State Rating Bureau. November 1985.

Profit margin calculations, including methodology, implementation, modeling of investment balances, income, and return to shareholders.

- 48. N.M. PSC 1833, Phase II;** El Paso Electric rate case; New Mexico Attorney General. December 23 1985.

Nuclear decommissioning fund design. Internal and external funds; risk and return; fund accumulation, recommendations. Interim performance standard for Palo Verde nuclear plant.

- 49. Penn. PUC R-850152;** Philadelphia Electric rate case; Utility Users Committee and University of Pennsylvania. January 14 1986.

Limerick-1 rate effects. Capacity benefits, fuel savings, operating costs, capacity factors, and net benefits to ratepayers. Design of phase-in proposals.

- 50. Mass. DPU 85-270;** Western Massachusetts Electric rate case; Massachusetts Attorney General. March 19 1986.

Prudence of Northeast Utilities in generation planning related to Millstone 3 construction: decisions to start and continue construction, failure to reduce ownership share, failure to pursue alternatives. Review of industry literature, cost and schedule histories, and retrospective cost-benefit analyses.

- 51. Penn. PUC R-850290;** Philadelphia Electric auxiliary service rates; Albert Einstein Medical Center, University of Pennsylvania and AMTRAK. March 24 1986.

Review of utility proposals for supplementary and backup rates for small power producers and cogenerators. Load diversity, cost of peaking capacity, value of generation, price signals, and incentives. Formulation of alternative supplementary rate.

- 52. N.M. PSC 2004;** Public Service of New Mexico, Palo Verde issues; New Mexico Attorney General. May 7 1986.

Recommendations for power-plant performance standards for Palo Verde nuclear units 1, 2, and 3.

- 53. Ill. Commerce Commission 86-0325;** Iowa-Illinois Gas and Electric Co. rate investigation; Illinois Office of Public Counsel. August 13 1986.

Determination of excess capacity based on reliability and economic concerns. Identification of specific units associated with excess capacity. Required reserve margins.

- 54. N.M. PSC 2009;** El Paso Electric rate moderation program; New Mexico Attorney General. August 18 1986. (Not presented).

Prudence of EPE in generation planning related to Palo Verde nuclear construction, including failure to reduce ownership share and failure to pursue alternatives. Review of industry literature, cost and schedule histories, and retrospective cost-benefit analyses.

Recommendation for rate-base treatment; proposal of power plant performance standards.

- 55. City of Boston Public Improvements Commission;** Transfer of Boston Edison district heating steam system to Boston Thermal Corporation; Boston Housing Authority. December 18 1986.

History and economics of steam system; possible motives of Boston Edison in seeking sale; problems facing Boston Thermal; information and assurances required prior to Commission approval of transfer.

- 56. Mass. Division of Insurance;** Hearing to fix and establish 1987 automobile insurance rates; Massachusetts Attorney General and State Rating Bureau. December 1986 and January 1987.

Profit margin calculations, including methodology, implementation, derivation of cash flows, installment income, income tax status, and return to shareholders.

- 57. Mass. DPU 87-19;** Petition for adjudication of development facilitation program; Hull (Mass.) Municipal Light Plant. January 21 1987.

Estimation of potential load growth; cost of generation, transmission, and distribution additions. Determination of hook-up charges. Development of residential load estimation procedure reflecting appliance ownership, dwelling size.

- 58. N.M. PSC 2004;** Public Service of New Mexico nuclear decommissioning fund; New Mexico Attorney General. February 19 1987.

Decommissioning cost and likely operating life of nuclear plants. Review of utility funding proposal. Development of alternative proposal. Ratemaking treatment.

- 59. Mass. DPU 86-280;** Western Massachusetts Electric rate case; Massachusetts Energy Office. March 9 1987.

Marginal cost rate design issues. Superiority of long-run marginal cost over short-run marginal cost as basis for rate design. Relationship of consumer reaction, utility planning process, and regulatory structure to rate design approach. Implementation of short-run and long-run rate designs. Demand versus energy charges, economic development rates, spot pricing.

- 60. Mass. Division of Insurance 87-9;** 1987 Workers' Compensation rate filing; State Rating Bureau. May 1987.

Profit-margin calculations, including methodology, implementation, surplus requirements, investment income, and effects of 1986 Tax Reform Act.

- 61. Texas PUC 6184;** Economic viability of South Texas Nuclear Plant #2; Committee for Consumer Rate Relief. August 17 1987.

Nuclear plant operating parameter projections; capacity factor, O&M, capital additions, decommissioning, useful life. STNP 2 cost and schedule projections. Potential for conservation.

- 62. Minn. PUC ER-015/GR-87-223;** Minnesota Power rate case; Minnesota Department of Public Service. August 17 1987.

Excess capacity on MP system; historical, current, and projected. Review of MP planning prudence prior to and during excess; efforts to sell capacity. Cost of excess capacity. Recommendations for ratemaking treatment.

- 63. Mass. Division of Insurance** 87-27; 1988 automobile insurance rates; Massachusetts Attorney General and State Rating Bureau. September 2 1987. Rebuttal October 8 1987.

Underwriting profit margins. Effect of 1986 Tax Reform Act. Biases in calculation of average margins.

- 64. Mass. DPU** 88-19; Power Sales Contract from Riverside Steam and Electric to Western Massachusetts Electric; Riverside Steam and Electric. November 4 1987.

Comparison of risk from QF contract and utility avoided cost sources. Risk of oil dependence. Discounting cash flows to reflect risk.

- 65. Mass. Division of Insurance** 87-53; 1987 Workers' Compensation rate refiling; State Rating Bureau. December 14 1987.

Profit-margin calculations including updating of data, compliance with Commissioner's order, treatment of surplus and risk, interest rate calculation, and investment tax rate calculation.

- 66. Mass. Division of Insurance;** 1987 and 1988 automobile insurance remand rates; Massachusetts Attorney General and State Rating Bureau. February 5 1988.

Underwriting profit margins. Provisions for income taxes on finance charges. Relationships between allowed and achieved margins, between statewide and nationwide data, and between profit allowances and cost projections.

- 67. Mass. DPU** 86-36; Investigation into the pricing and ratemaking treatment to be afforded new electric generating facilities which are not qualifying facilities; Conservation Law Foundation. May 2 1988.

Cost recovery for utility conservation programs. Compensating for lost revenues. Utility incentive structures.

- 68. Mass. DPU** 88-123; Petition of Riverside Steam & Electric Company; Riverside Steam and Electric Company. May 18 1988, and November 8 1988.

Estimation of avoided costs of Western Massachusetts Electric Company. Nuclear capacity factor projections and effects on avoided costs. Avoided cost of energy interchange and power plant life extensions. Differences between median and expected oil prices. Salvage value of cogeneration facility. Off-system energy purchase projections. Reconciliation of avoided cost projection.

- 69. Mass. DPU** 88-67; Boston Gas Company; Boston Housing Authority. June 17 1988.

Estimation of annual avoidable costs, 1988 to 2005, and levelized avoided costs. Determination of cost recovery and carrying costs for conservation investments. Standards for assessing conservation cost-effectiveness. Evaluation of cost-effectiveness of utility funding of proposed natural gas conservation measures.

- 70. R.I. PUC Docket 1900; Providence Water Supply Board tariff filing; Conservation Law Foundation, Audubon Society of Rhode Island, and League of Women Voters of Rhode Island. June 24 1988.**

Estimation of avoidable water supply costs. Determination of costs of water conservation. Conservation cost-benefit analysis.

- 71. Mass. Division of Insurance 88-22; 1989 automobile insurance rates; Massachusetts Attorney General and State Rating Bureau; Profit Issues, August 12 1988, supplemented August 19 1988; Losses and Expenses, September 16 1988.**

Underwriting profit margins. Effects of 1986 Tax Reform Act. Taxation of common stocks. Lag in tax payments. Modeling risk and return over time. Treatment of finance charges. Comparison of projected and achieved investment returns.

- 72. Vt. PSB 5270, Module 6; Investigation into least-cost investments, energy efficiency, conservation, and the management of demand for energy; Conservation Law Foundation, Vermont Natural Resources Council, and Vermont Public Interest Research Group. September 26 1988.**

Cost recovery for utility conservation programs. Compensation of utilities for revenue losses and timing differences. Incentive for utility participation.

- 73. Vermont House of Representatives, Natural Resources Committee; House Act 130; "Economic Analysis of Vermont Yankee Retirement"; Vermont Public Interest Research Group. February 21 1989.**

Projection of capacity factors, operating and maintenance expense, capital additions, overhead, replacement power costs, and net costs of Vermont Yankee.

- 74. Mass. DPU 88-67, Phase II; Boston Gas company conservation program and rate design; Boston Gas Company. March 6 1989.**

Estimation of avoided gas cost; treatment of non-price factors; estimation of externalities; identification of cost-effective conservation.

- 75. Vt. PSB 5270; Status conference on conservation and load management policy settlement; Central Vermont Public Service, Conservation Law Foundation, Vermont Natural Resources Council, Vermont Public Interest Research Group, and Vermont Department of Public Service. May 1 1989.**

Cost-benefit test for utility conservation programs. Role of externalities. Cost recovery concepts and mechanisms. Resource allocations, cost allocations, and equity considerations. Guidelines for conservation preapproval mechanisms. Incentive mechanisms and recovery of lost revenues.

- 76. Boston Housing Authority Court 05099; Gallivan Boulevard Task Force vs. Boston Housing Authority, et al.; Boston Housing Authority. June 16 1989.**

Effect of master-metering on consumption of natural gas and electricity. Legislative and regulatory mandates regarding conservation.

- 77. Mass. DPU 89-100; Boston Edison rate case; Massachusetts Energy Office. June 30 1989.**

Prudence of BECo's decision to spend \$400 million from 1986–88 on returning the Pilgrim nuclear power plant to service. Projections of nuclear capacity factors, O&M, capital additions, and overhead. Review of decommissioning cost, tax effect of abandonment, replacement power cost, and plant useful life estimates. Requirements for prudence and used-and-useful analyses.

- 78. Mass. DPU 88-123; Petition of Riverside Steam and Electric Company; Riverside Steam and Electric. July 24 1989. Rebuttal, October 3 1989.**

Reasonableness of Northeast Utilities' 1987 avoided cost estimates. Projections of nuclear capacity factors, economy purchases, and power plant operating life. Treatment of avoidable energy and capacity costs and of off-system sales. Expected versus reference fuel prices.

- 79. Mass. DPU 89-72; Statewide Towing Association, police-ordered towing rates; Massachusetts Automobile Rating Bureau. September 13 1989.**

Review of study supporting proposed increase in towing rates. Critique of study sample and methodology. Comparison to competitive rates. Supply of towing services. Effects of joint products and joint sales on profitability of police-ordered towing. Joint testimony with I. Goodman.

- 80. Vt. PSB 5330; Application of Vermont utilities for approval of a firm power and energy contract with Hydro-Quebec; Conservation Law Foundation, Vermont Natural Resources Council, Vermont Public Interest Research Group. December 19 1989. Surrebuttal February 6 1990.**

Analysis of a proposed 450-MW, 20-year purchase of Hydro-Quebec power by twenty-four Vermont utilities. Comparison to efficiency investment in Vermont, including potential for efficiency savings. Analysis of Vermont electric energy supply. Identification of possible improvements to proposed contract.

Critique of conservation potential analysis. Planning risk of large supply additions. Valuation of environmental externalities.

- 81. Mass. DPU 89-239; Inclusion of externalities in energy-supply planning, acquisition, and dispatch for Massachusetts utilities. December 1989. April 1990. May 1990.**

Critique of Division of Energy Resources report on externalities. Methodology for evaluating external costs. Proposed values for environmental and economic externalities of fuel supply and use.

- 82. California PUC;** Incorporation of environmental externalities in utility planning and pricing; Coalition of Energy Efficient and Renewable Technologies. February 21 1990.

Approaches for valuing externalities for inclusion in setting power purchase rates. Effect of uncertainty on assessing externality values.

- 83. Ill. Commerce Commission** Docket 90-0038; proceeding to adopt a least-cost electric-energy plan for Commonwealth Edison Company; City of Chicago. May 25 1990. Joint rebuttal testimony with David Birr, August 14 1990.

Problems in Commonwealth Edison's approach to demand-side management. Potential for cost-effective conservation. Valuing externalities in least-cost planning.

- 84. Md. PSC 8278;** Adequacy of Baltimore Gas & Electric's integrated resource plan; Maryland Office of People's Counsel. September 18 1990.

Rationale for demand-side management, and BG&E's problems in approach to DSM planning. Potential for cost-effective conservation. Valuation of environmental externalities. Recommendations for short-term DSM program priorities.

- 85. Ind. Utility Regulatory Commission;** Integrated-resource-planning docket; Indiana Office of Utility Consumer Counselor. November 1 1990.

Integrated resource planning process and methodology, including externalities and screening tools. Incentives, screening, and evaluation of demand-side management. Potential of resource bidding in Indiana.

- 86. Mass. DPU 89-141, 90-73, 90-141, 90-194, and 90-270;** Preliminary review of utility treatment of environmental externalities in October qualifying-facilities filings; Boston Gas Company. November 5 1990.

Generic and specific problems in Massachusetts utilities' RFPs with regard to externality valuation requirements. Recommendations for corrections.

- 87. Mass. EFSC 90-12/90-12A;** Adequacy of Boston Edison proposal to build combined-cycle plant; Conservation Law Foundation. December 14 1990.

Problems in Boston Edison's treatment of demand-side management, supply option analysis, and resource planning. Recommendations of mitigation options.

- 88. Maine PUC 90-286;** Adequacy of conservation program of Bangor Hydro Electric; Penobscot River Coalition. February 19 1991.

Role of utility-sponsored DSM in least-cost planning. Bangor Hydro's potential for cost-effective conservation. Problems with Bangor Hydro's assumptions about customer investment in energy efficiency measures.

- 89. Va. SCC PUE900070;** Order establishing commission investigation; Southern Environmental Law Center. March 6 1991.

Role of utilities in promoting energy efficiency. Least-cost planning objectives of and resource acquisition guidelines for DSM. Ratemaking considerations for DSM investments.

- 90. Mass. DPU 90-261-A;** Economics and role of fuel-switching in the DSM program of the Massachusetts Electric Company; Boston Gas Company. April 17 1991.

Role of fuel-switching in utility DSM programs and specifically in Massachusetts Electric's. Establishing comparable avoided costs and comparison of electric and gas system costs. Updated externality values.

- 91. Private arbitration;** Massachusetts Refusetech Contractual Request for Adjustment to Service Fee; Massachusetts Refusetech. May 13 1991.

NEPCo rates for power purchases from the New England Solid Waste Compact plant. Fuel price and avoided cost projections vs. realities.

- 92. Vt. PSB 5491;** Cost-effectiveness of Central Vermont's commitment to Hydro Quebec purchases; Conservation Law Foundation. July 19 1991.

Changes in load forecasts and resale markets since approval of HQ purchases. Effect of HQ purchase on DSM.

- 93. S.C. PSC 91-216-E;** Cost recovery of Duke Power's DSM expenditures; South Carolina Department of Consumer Affairs. September 13 1991. Surrebuttal October 2 1991.

Problems with conservation plans of Duke Power, including load building, cream skimming, and inappropriate rate designs.

- 94. Md. PSC 8241, Phase II;** Review of Baltimore Gas & Electric's avoided costs; Maryland Office of People's Counsel. September 19 1991.

Development of direct avoided costs for DSM. Problems with BG&E's avoided costs and DSM screening. Incorporation of environmental externalities.

- 95. Bucksport (Maine) Planning Board;** AES/Harriman Cove shoreland zoning application; Conservation Law Foundation and Natural Resources Council of Maine. October 1 1991.

New England's power surplus. Costs of bringing AES/Harriman Cove on line to back out existing generation. Alternatives to AES.

- 96. Mass. DPU 91-131;** Update of externalities values adopted in Docket 89-239; Boston Gas Company. October 4 1991. Rebuttal, December 13 1991.

Updates on pollutant externality values. Addition of values for chlorofluorocarbons, air toxics, thermal pollution, and oil import premium. Review of state regulatory actions regarding externalities.

- 97. Fla. PSC 910759;** Petition of Florida Power Corporation for determination of need for proposed electrical power plant and related facilities; Floridians for Responsible Utility Growth. October 21 1991.

Florida Power's obligation to pursue integrated resource planning and failure to establish need for proposed facility. Methods to increase scope and scale of demand-side investment.

- 98. Fla. PSC 910833-EI;** Petition of Tampa Electric Company for a determination of need for proposed electrical power plant and related facilities; Floridians for Responsible Utility Growth. October 31 1991.

Tampa Electric's obligation to pursue integrated resource planning and failure to establish need for proposed facility. Methods to increase scope and scale of demand-side investment.

- 99. Penn. PUC I-900005, R-901880;** Investigation into Demand Side Management by electric utilities; Pennsylvania Energy Office. January 10 1992.

Appropriate cost recovery mechanism for Pennsylvania utilities. Purpose and scope of direct cost recovery, lost revenue recovery, and incentives.

- 100. S.C. PSC 91-606-E;** Petition of South Carolina Electric and Gas for a certificate of public convenience and necessity for a coal-fired plant; South Carolina Department of Consumer Affairs. January 20 1992.

Justification of plant certification under integrated resource planning. Failures in SCE&G's DSM planning and company potential for demand-side savings.

- 101. Mass. DPU 92-92;** Adequacy of Boston Edison's street-lighting options; Town of Lexington. June 22 1992.

Efficiency and quality of street-lighting options. Boston Edison's treatment of high-quality street lighting. Corrected rate proposal for the Daylux lamp. Ownership of public street lighting.

- 102. S.C. PSC 92-208-E;** Integrated-resource plan of Duke Power Company; South Carolina Department of Consumer Affairs. August 4 1992.

Problems with Duke Power's DSM screening process, estimation of avoided cost, DSM program design, and integration of demand-side and supply-side planning.

- 103. N.C. Utilities Commission E-100, Sub 64;** Integrated-resource-planning docket; Southern Environmental Law Center. September 29 1992.

General principles of integrated resource planning, DSM screening, and program design. Review of the IRPs of Duke Power Company, Carolina Power & Light Company, and North Carolina Power.

- 104. Ont. EAB** Ontario Hydro Demand/Supply Plan Hearings; *Environmental Externalities Valuation and Ontario Hydro's Resource Planning* (3 vols.). October 1992.

Valuation of environmental externalities from fossil fuel combustion and the nuclear fuel cycle. Application to Ontario Hydro's supply and demand planning.

- 105. Texas PUC** 110000; Application of Houston Lighting and Power company for a certificate of convenience and necessity for the DuPont Project; Destec Energy, Inc.. September 28 1992.

Valuation of environmental externalities from fossil fuel combustion and the application to the evaluation of proposed cogeneration facility.

- 106. Maine BEP**; In the Matter of the Basin Mills Hydroelectric Project application; Conservation Intervenors. November 16 1992.

Economic and environmental effects of generation by proposed hydro-electric project.

- 107. Md. PSC** 8473; Review of the power sales agreement of Baltimore Gas and Electric with AES Northside; Maryland Office of People's Counsel. November 16 1992.

Non-price scoring and unquantified benefits; DSM potential as alternative; environmental costs; cost and benefit estimates.

- 108. N.C. Utilities Commission** E-100, Sub 64; Analysis and investigation of least cost integrated resource planning in North Carolina; Southern Environmental Law Center. November 18 1992.

Demand-side management cost recovery and incentive mechanisms.

- 109. S.C. PSC** 92-209-E; In re Carolina Power & Light Company; South Carolina Department of Consumer Affairs. November 24 1992.

Demand-side-management planning: objectives, process, cost-effectiveness test, comprehensiveness, lost opportunities. Deficiencies in CP&L's portfolio. Need for economic evaluation of load building.

- 110 Fla. DER** hearings on the Power Plant Siting Act; Legal Environmental Assistance Foundation, December 1992.

Externality valuation and application in power-plant siting. DSM potential, cost-benefit test, and program designs.

- 111. Md. PSC** 8487; Baltimore Gas and Electric Company electric rate case. Direct, January 13 1993; Rebuttal, February 4 1993.

Class allocation of production plant and O&M; transmission, distribution, and general plant; administrative and general expenses. Marginal cost and rate design.

- 112. Md. PSC 8179;** Approval of amendment no. 2 to Potomac Edison purchase agreement with AES Warrior Run; Maryland Office of People's Counsel. January 29 1993.

Economic analysis of proposed coal-fired cogeneration facility.

- 113. Mich. PSC U-10102;** Detroit Edison rate case; Michigan United Conservation Clubs. February 17 1993.

Least-cost planning; energy efficiency planning, potential, screening, avoided costs, cost recovery, and shareholder incentives.

- 114. Ohio PUC 91-635-EL-FOR, 92-312-EL-FOR, 92-1172-EL-ECP;** Cincinnati Gas and Electric demand-management programs; City of Cincinnati. April 1993.

DSM planning, program designs, potential savings, and avoided costs.

- 115. Mich. PSC U-10335;** Consumers Power rate case; Michigan United Conservation Clubs. October 1993.

Least-cost planning; energy efficiency planning, potential, screening, avoided costs, cost recovery, and shareholder incentives.

- 116. Ill. Commerce Commission 92-0268,** Electric-energy plan for Commonwealth Edison; City of Chicago. Direct testimony, February 1 1994; rebuttal, September 1994.

Cost-effectiveness screening of demand-side management programs and measures; estimates by Commonwealth Edison of costs avoided by DSM and of future cost, capacity, and performance of supply resources.

- 117. FERC 2422 et al.,** Application of James River–New Hampshire Electric, Public Service of New Hampshire, for licensing of hydro power; Conservation Law Foundation; 1993.

Cost-effective energy conservation available to the Public Service of New Hampshire; power-supply options; affidavit.

- 118. Vt. PSB 5270-CV-1,-3, and 5686;** Central Vermont Public Service fuel-switching and DSM program design, on behalf of the Vermont Department of Public Service. Direct, April 1994; rebuttal, June 1994.

Avoided costs and screening of controlled water-heating measures; risk, rate impacts, participant costs, externalities, space- and water-heating load, benefit-cost tests.

- 119. Fla. PSC 930548-EG–930551–EG,** Conservation goals for Florida electric utilities; Legal Environmental Assistance Foundation, Inc. April 1994.

Integrated resource planning, avoided costs, rate impacts, analysis of conservation goals of Florida electric utilities.

- 120. Vt. PSB 5724**, Central Vermont Public Service Corporation rate request; Vermont Department of Public Service. Joint surrebuttal testimony with John Plunkett. August 1994.

Costs avoided by DSM programs; Costs and benefits of deferring DSM programs.

- 121. Mass. DPU 94-49**, Boston Edison integrated-resource-management plan; Massachusetts Attorney General. August 1994.

Least-cost planning, modeling, and treatment of risk.

- 122. Mich. PSC U-10554**, Consumers Power Company DSM program and incentive; Michigan Conservation Clubs. November 1994.

Critique of proposed reductions in DSM programs; discussion of appropriate measurements of cost-effectiveness, role of DSM in competitive power markets.

- 123. Mich. PSC U-10702**, Detroit Edison Company cost recovery, on behalf of the Residential Ratepayers Consortium. December 1994.

Impact of proposed changes to DSM plan on energy costs and power-supply-cost-recovery charges. Critique of proposed DSM changes; discussion of appropriate measurements of cost-effectiveness, role of DSM in competitive power markets.

- 124. N.J. BRC EM92030359**, Environmental costs of proposed cogeneration; Freehold Cogeneration Associates. November 1994.

Comparison of potential externalities from the Freehold cogeneration project with that from three coal technologies; support for the study “The Externalities of Four Power Plants.”

- 125. Mich. PSC U-10671**, Detroit Edison Company DSM programs; Michigan United Conservation Clubs. January 1995.

Critique of proposal to scale back DSM efforts in light of potential for competition. Loss of savings, increase of customer costs, and decrease of competitiveness. Discussion of appropriate measurements of cost-effectiveness, role of DSM in competitive power markets.

- 126. Mich. PSC U-10710**, Power-supply-cost-recovery plan of Consumers Power Company; Residential Ratepayers Consortium. January 1995.

Impact of proposed changes to DSM plan on energy costs and power-supply-cost-recovery charges. Critique of proposed DSM changes; discussion of appropriate measurements of cost-effectiveness, role of DSM in competitive power markets.

- 127. FERC 2458 and 2572**, Bowater–Great Northern Paper hydropower licensing; Conservation Law Foundation. February 1995.

Comments on draft environmental impact statement relating to new licenses for two hydropower projects in Maine. Applicant has not adequately considered how energy conservation can replace energy lost due to habitat-protection or -enhancement measures.

- 128. N.C. Utilities Commission** E-100, Sub 74, Duke Power and Carolina Power & Light avoided costs; Hydro-Electric–Power Producer’s Group. February 1995.

Critique and proposed revision of avoided costs offered to small hydro-power producers by Duke Power and Carolina Power and Light.

- 129. New Orleans City Council** UD-92-2A and -2B, Least-cost IRP for New Orleans Public Service and Louisiana Power & Light; Alliance for Affordable Energy. Direct, February 1995; rebuttal, April 1995.

Critique of proposal to scale back DSM efforts in light of potential competition.

- 130. D.C. PSC** Formal 917, II, Prudence of DSM expenditures of Potomac Electric Power Company; Potomac Electric Power Company. Rebuttal testimony, February 1995.

Prudence of utility DSM investment; prudence standards for DSM programs of the Potomac Electric Power Company.

- 131. Ont. Energy Board** EBRO 490, DSM cost recovery and lost-revenue–adjustment mechanism for Consumers Gas Company; Green Energy Coalition. April 1995.

DSM cost recovery. Lost-revenue–adjustment mechanism for Consumers Gas Company.

- 132. New Orleans City Council** CD-85-1, New Orleans Public Service rate increase; Alliance for Affordable Energy. Rebuttal, May 1995.

Allocation of costs and benefits to rate classes.

- 133. Mass. DPU** Docket DPU-95-40, Mass. Electric cost-allocation; Massachusetts Attorney General. June 1995.

Allocation of costs to rate classes. Critique of cost-of-service study. Implications for industry restructuring.

- 134. Md. PSC** 8697, Baltimore Gas & Electric gas rate increase; Maryland Office of People’s Counsel. July 1995

Rate design, cost-of-service study, and revenue allocation.

- 135. N.C. Utilities Commission** E-2, Sub 669. December 1995.

Need for new capacity. Energy-conservation potential and model programs.

- 136. Arizona Commerce Commission** U-1933-95-317, Tucson Electric Power rate increase; Residential Utility Consumer Office. January 1996.

- Review of proposed rate settlement. Used-and-usefulness of plant. Rate design. DSM potential.
- 137. Ohio PUC 95-203-EL-FOR; Campaign for an Energy-Efficient Ohio.** February 1996
- Long-term forecast of Cincinnati Gas and Electric Company, especially its DSM portfolio. Opportunities for further cost-effective DSM savings. Tests of cost effectiveness. Role of DSM in light of industry restructuring; alternatives to traditional utility DSM.
- 138 Vt. PSB 5835; Vermont Department of Public Service.** February 1996.
- Design of load-management rates of Central Vermont Public Service Company.
- 139. Md. PSC 8720, Washington Gas Light DSM; Maryland Office of People's Counsel.** May 1996.
- Avoided costs of Washington Gas Light Company; integrated least-cost planning.
- 140. Mass. DPU 96-100; Massachusetts Utilities' Stranded Costs; Massachusetts Attorney General.** Oral testimony in support of "estimation of Market Value, Stranded Investment, and Restructuring Gains for Major Massachusetts Utilities," July 1996.
- Stranded costs. Calculation of loss or gain. Valuation of utility assets.
- 141. Mass. DPU 96-70; Massachusetts Attorney General.** July 1996.
- Market-based allocation of gas-supply costs of Essex County Gas Company.
- 142. Mass. DPU 96-60; Massachusetts Attorney General.** Direct testimony, July 1996; surrebuttal, August 1996.
- Market-based allocation of gas-supply costs of Fall River Gas Company.
- 143. Md. PSC 8725; Maryland Office of People's Counsel.** July 1996.
- Proposed merger of Baltimore Gas & Electric Company, Potomac Electric Power Company, and Constellation Energy. Cost allocation of merger benefits and rate reductions.
- 144. N.H. PUC DR 96-150, Public Service Company of New Hampshire stranded costs; New Hampshire Office of Consumer Advocate.** December 1996.
- Market price of capacity and energy; value of generation plant; restructuring gain and stranded investment; legal status of PSNH acquisition premium; interim stranded-cost charges.
- 145. Ont. Energy Board EBRO 495, LRAM and shared-savings incentive for DSM performance of Consumers Gas; Green Energy Coalition.** March 1997.
- LRAM and shared-savings incentive mechanisms in rates for the Consumers Gas Company Ltd.

- 146. New York PSC Case 96-E-0897, Consolidated Edison restructuring plan; City of New York. April 1997.**
- Electric-utility competition and restructuring; critique of proposed settlement of Consolidated Edison Company; stranded costs; market power; rates; market access.
- 147. Vt. PSB 5980, proposed statewide energy plan; Vermont Department of Public Service. Direct, August 1997; rebuttal, December 1997.**
- Justification for and estimation of statewide avoided costs; guidelines for distributed IRP.
- 148. Mass. DPU 96-23, Boston Edison restructuring settlement; Utility Workers Union of America. September 1997.**
- Performance incentives proposed for the Boston Edison company.
- 149. Vt. PSB 5983, Green Mountain Power rate increase; Vermont Department of Public Service. Direct, October 1997; rebuttal, December 1997.**
- In three separate pieces of prefiled testimony, addressed the Green Mountain Power Corporation's (1) distributed-utility-planning efforts, (2) avoided costs, and (3) prudence of decisions relating to a power purchase from Hydro-Quebec.
- 150. Mass. DPU 97-63, Boston Edison proposed reorganization; Utility Workers Union of America. October 1997.**
- Increased costs and risks to ratepayers and shareholders from proposed reorganization; risks of diversification; diversion of capital from regulated to unregulated affiliates; reduction in Commission authority.
- 151. Mass. DTE 97-111, Commonwealth Energy proposed restructuring; Cape Cod Light Compact. Joint testimony with Jonathan Wallach, January 1998.**
- Critique of proposed restructuring plan filed to satisfy requirements of the electric-utility restructuring act of 1997. Failure of the plan to foster competition and promote the public interest.
- 152. N.H. PUC Docket DR 97-241, Connecticut Valley Electric fuel and purchased-power adjustments; City of Claremont, N.H. February 1998.**
- Prudence of continued power purchase from affiliate; market cost of power; prudence disallowances and cost-of-service ratemaking.
- 153. Md. PSC 8774; APS-DQE merger; Maryland Office of People's Counsel. February 1998.**
- Power-supply arrangements between APS's operating subsidiaries; power-supply savings; market power.
- 154. Vt. PSB 6018, Central Vermont Public Service Co. rate increase; Vermont Department of Public Service. February 1998.**

Prudence of decisions relating to a power purchase from Hydro-Quebec. Reasonableness of avoided-cost estimates. Quality of DU planning.

- 155. Maine PUC 97-580**, Central Maine Power restructuring and rates; Maine Office of Public Advocate. May 1998; Surrebuttal, August 1998.

Determination of stranded costs; gains from sales of fossil, hydro, and biomass plant; treatment of deferred taxes; incentives for stranded-cost mitigation; rate design.

- 156. Mass. DTE 98-89**, purchase of Boston Edison municipal streetlighting, Towns of Lexington and Acton. Affidavit, August 1998.

Valuation of municipal streetlighting; depreciation; applicability of unbundled rate.

- 157. Vt. PSB 6107**, Green Mountain Power rate increase, Vermont Department of Public Service. Direct, September 1998; Surrebuttal drafted but not filed, November 2000.

Prudence of decisions relating to a power purchase from Hydro-Quebec. Least-cost planning and prudence. Quality of DU planning.

- 158. Mass. DTE 97-120**, Western Massachusetts Electric Company proposed restructuring; Massachusetts Attorney General. Joint testimony with Jonathan Wallach, October 1998. Joint surrebuttal with Jonathan Wallach, January 1999.

Market value of the three Millstone nuclear units under varying assumptions of plant performance and market prices. Independent forecast of wholesale market prices. Value of Pilgrim and TMI-1 asset sales.

- 159. Md. PSC 8794 and 8804**; BG&E restructuring and rates; Maryland Office of People's Counsel. Direct, December 1998; rebuttal, March 1999.

Implementation of restructuring. Valuation of generation assets from comparable-sales and cash-flow analyses. Determination of stranded cost or gain.

- 160. Md. PSC 8795**; Delmarva Power & Light restructuring and rates; Maryland Office of People's Counsel. December 1998.

Implementation of restructuring. Valuation of generation assets and purchases from comparable-sales and cash-flow analyses. Determination of stranded cost or gain.

- 161. Md. PSC 8797**; Potomac Edison Company restructuring and rates; Maryland Office of People's Counsel. Direct, January 1999; rebuttal, March 1999.

Implementation of restructuring. Valuation of generation assets and purchases from comparable-sales and cash-flow analyses. Determination of stranded cost or gain.

- 162. Conn. DPUC 99-02-05**; Connecticut Light and Power Company stranded costs; Connecticut Office of Consumer Counsel. April 1999.

Projections of market price. Valuation of purchase agreements and nuclear and non-nuclear assets from comparable-sales and cash-flow analyses.

- 163. Conn. DPUC 99-03-04;** United Illuminating Company stranded costs; Connecticut Office of Consumer Counsel. April 1999.

Projections of market price. Valuation of purchase agreements and nuclear assets from comparable-sales and cash-flow analyses.

- 164. Wash. UTC UE-981627;** PacifiCorp–Scottish Power merger, Office of the Attorney General. June 1999.

Review of proposed performance standards and valuation of performance. Review of proposed low-income assistance.

- 165. Utah PSC 98-2035-04;** PacifiCorp–Scottish Power merger, Utah Committee of Consumer Services. June 1999.

Review of proposed performance standards and valuation of performance.

- 166. Conn. DPUC 99-03-35;** United Illuminating Company proposed standard offer; Connecticut Office of Consumer Counsel. July 1999.

Design of standard offer by rate class. Design of price adjustments to preserve rate decrease. Market valuations of nuclear plants. Short-term stranded cost

- 167. Conn. DPUC 99-03-36;** Connecticut Light and Power Company proposed standard offer; Connecticut Office of Consumer Counsel. Direct, July 1999; Supplemental, July 1999.

Design of standard offer by rate class. Design of price adjustments to preserve rate decrease. Market valuations of nuclear plants. Short-term stranded cost.

- 168. W. Va. PSC 98-0452-E-GI;** electric-industry restructuring, West Virginia Consumer Advocate. July 1999.

Market value of generating assets of, and restructuring gain for, Potomac Edison, Monongahela Power, and Appalachian Power. Comparable-sales and cash-flow analyses.

- 169. Ont. Energy Board RP-1999-0034;** Ontario performance-based rates; Green Energy Coalition. September 1999.

Rate design. Recovery of demand-side-management costs under PBR. Incremental costs.

- 170. Conn. DPUC 99-08-01;** standards for utility restructuring; Connecticut Office of Consumer Counsel. Direct, November 1999; Supplemental January 2000.

Appropriate role of regulation. T&D reliability and service quality. Performance standards and customer guarantees. Assessing generation adequacy in a competitive market.

- 171. Conn. Superior Court** CV 99-049-7239; Connecticut Light and Power Company stranded costs; Connecticut Office of Consumer Counsel. Affidavit, December 1999.

Errors of the Conn. DPUC in deriving discounted-cash-flow valuations for Millstone and Seabrook, and in setting minimum bid price.

- 172. Conn. Superior Court** CV 99-049-7597; United Illuminating Company stranded costs; Connecticut Office of Consumer Counsel. December 1999.

Errors of the Conn. DPUC, in its discounted-cash-flow computations, in selecting performance assumptions for Seabrook, and in setting minimum bid price.

- 173. Ont. Energy Board** RP-1999-0044; Ontario Hydro transmission-cost allocation and rate design; Green Energy Coalition. January 2000.

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- 174. Utah PSC** 99-2035-03; PacifiCorp Sale of Centralia plant, mine, and related facilities; Utah Committee of Consumer Services. January 2000.

Prudence of sale and management of auction. Benefits to ratepayers. Allocation and rate treatment of gain.

- 175. Conn. DPUC** 99-09-12; Nuclear Divestiture by Connecticut Light & Power and United Illuminating; Connecticut Office of Consumer Counsel. January 2000.

Market for nuclear assets. Optimal structure of auctions. Value of minority rights. Timing of divestiture.

- 176. Ont. Energy Board** RP-1999-0017; Union Gas PBR proposal; Green Energy Coalition. March 2000.

Lost-revenue-adjustment and shared-savings incentive mechanisms for Union Gas DSM programs. Standards for review of targets and achievements, computation of lost revenues. Need for DSM expenditure true-up mechanism.

- 177. N.Y. PSC** 99-S-1621; Consolidated Edison steam rates; City of New York. April 2000.

Allocation of costs of former cogeneration plants, and of net proceeds of asset sale. Economic justification for steam-supply plans. Depreciation rates. Weather normalization and other rate adjustments.

- 178. Maine PUC** 99-666; Central Maine Power alternative rate plan; Maine Public Advocate. Direct, May 2000; Surrebuttal, August 2000.

Likely merger savings. Savings and rate reductions from recent mergers. Implications for rates.

- 179. Mass. EFSB 97-4;** Massachusetts Municipal Wholesale Electric Company gas-pipeline proposal; Town of Wilbraham, Mass. June 2000.
- Economic justification for natural-gas pipeline. Role and jurisdiction of EFSB.
- 180. Conn. DPUC 99-09-03;** Connecticut Natural Gas Corporation merger and rate plan; Connecticut office of Consumer Counsel. September 2000.
- Performance-based ratemaking in light of mergers. Allocation of savings from merger. Earnings-sharing mechanism.
- 181. Conn. DPUC 99-09-12RE01;** Proposed Millstone sale; Connecticut Office of Consumer Counsel. November 2000.
- Requirements for review of auction of generation assets. Allocation of proceeds between units.
- 182. Mass. DTE 01-25;** Purchase of streetlights from Commonwealth Electric; Cape Light Compact. January 2001
- Municipal purchase of streetlights; Calculation of purchase price under state law; Determination of accumulated depreciation by asset.
- 183. Conn. DPUC 00-12-01 and 99-09-12RE03;** Connecticut Light & Power rate design and standard offer; Connecticut Office of Consumer Counsel. March 2001.
- Rate design and standard offer under restructuring law; Future rate impacts; Transition to restructured regime; Comparison of Connecticut and California restructuring challenges.
- 184. Vt. PSB 6460 & 6120;** Central Vermont Public Service rates; Vermont Department of Public Service. Direct, March 2001; Surrebuttal, April 2001.
- Review of decision in early 1990s to commit to long-term uneconomic purchase from Hydro Québec. Calculation of present damages from imprudence.
- 185. N.J. BPU EM00020106;** Atlantic City Electric Company sale of fossil plants; New Jersey Ratepayer Advocate. Affidavit, May 2001.
- Comparison of power-supply contracts. Comparison of plant costs to replacement power cost. Allocation of sales proceeds between subsidiaries.
- 186. N.J. BPU GM00080564;** Public Service Electric and Gas transfer of gas supply contracts; New Jersey Ratepayer Advocate. Direct, May 2001.
- Transfer of gas transportation contracts to unregulated affiliate. Potential for market power in wholesale gas supply and electric generation. Importance of reliable gas supply. Valuation of contracts. Effect of proposed requirements contract on rates. Regulation and design of standard-offer service.

- 187. Conn. DPUC 99-04-18 Phase 3, 99-09-03 Phase 2; Southern Connecticut Natural Gas and Connecticut Natural Gas rates and charges; Connecticut Office of Consumer Counsel. Direct, June 2001; Supplemental, July 2001.**
- Identifying, quantifying, and allocating merger-related gas-supply savings between ratepayers and shareholders. Establishing baselines. Allocations between affiliates. Unaccounted-for gas.
- 188. N.J. BPU EX01050303; New Jersey electric companies' procurement of basic supply; New Jersey Ratepayer Advocate. August 2001.**
- Review of proposed statewide auction for purchase of power requirements. Market power. Risks to ratepayers of proposed auction.
- 189. N.Y. PSC 00-E-1208; Consolidated Edison rates; City of New York. October 2001.**
- Geographic allocation of stranded costs. Locational and postage-stamp rates. Causation of stranded costs. Relationship between market prices for power and stranded costs.
- 190. Mass. DTE 01-56, Berkshire Gas Company; Massachusetts Attorney General. October 2001.**
- Allocation of gas costs by load shape and season. Competition and cost allocation.
- 191. N.J. BPU EM00020106; Atlantic City Electric proposed sale of fossil plants; New Jersey Ratepayer Advocate. December 2001.**
- Current market value of generating plants vs. proposed purchase price.
- 192. Vt. PSB 6545; Vermont Yankee proposed sale; Vermont Department of Public Service. Direct, January 2002.**
- Comparison of sales price to other nuclear sales. Evaluation of auction design and implementation. Review of auction manager's valuation of bids.
- 193. Conn. Siting Council 217; Connecticut Light & Power proposed transmission line from Plumtree to Norwalk; Connecticut Office of Consumer Counsel. March 2002.**
- Nature of transmission problems. Potential for conservation and distributed resources to defer, reduce or avoid transmission investment. CL&P transmission planning process. Joint testimony with John Plunkett.
- 194. Vt. PSB 6596; Citizens Utilities rates; Vermont Department of Public Service. Direct, March 2002; Rebuttal, May 2002.**
- Review of 1991 decision to commit to long-term uneconomic purchase from Hydro Québec. Alternatives; role of transmission constraints. Calculation of present damages from imprudence.
- 195. Conn. DPUC 01-10-10; United Illuminating rate plan; Connecticut Office of Consumer Counsel. April 2002**

Allocation of excess earnings between shareholders and ratepayers. Asymmetry in treatment of over- and under-earning. Accelerated amortization of stranded costs. Effects of power-supply developments on ratepayer risks. Effect of proposed rate plan on utility risks and required return.

- 196. Conn. DPUC 01-12-13RE01;** Seabrook proposed sale; Connecticut Office of Consumer Counsel. July 2002

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- 197. Ont. Energy Board RP-2002-0120;** Review of transmission-system code; Green Energy Coalition. October 2002.

Cost allocation. Transmission charges. Societal cost-effectiveness. Environmental externalities.

- 198. N.J. BPU ER02080507;** Jersey Central Power & Light rates; N.J. Division of the Ratepayer Advocate. Phase I December 2002; Phase II (oral) July 2003.

Prudence of procurement of electrical supply. Documentation of procurement decisions. Comparison of costs for subsidiaries with fixed versus flow-through cost recovery.

- 199. Conn. DPUC 03-07-02;** CL&P rates; AARP. October 2003

Proposed distribution investments, including prudence of prior management of distribution system and utility's failure to make investments previously funded in rates. Cost controls. Application of rate cap. Legislative intent.

- 200. Conn. DPUC 03-07-01;** CL&P transitional standard offer; AARP. November 2003.

Application of rate cap. Legislative intent.

- 201. Vt. PSB 6596;** Vermont Electric Power Company and Green Mountain Power Northwest Reliability transmission plan; Conservation Law Foundation. December 2003.

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- 202. Ohio PUC Case 03-2144-EL-ATA;** Ohio Edison, Cleveland Electric, and Toledo Edison Cos. rates and transition charges; Green Mountain Energy Co. Direct February 2004.

Pricing of standard-offer service in competitive markets. Critique of anticompetitive features of proposed standard-offer supply, including non-bypassable charges.

- 203. N.Y. PSC Cases 03-G-1671 & 03-S-1672;** Consolidated Edison company steam and gas rates; City of New York. Direct March 2004; Rebuttal April 2004; Settlement June 2004.

Prudence and cost allocation for the East River Repowering Project. Gas and steam energy conservation. Opportunities for cogeneration at existing steam plants.

- 204. N.Y. PSC 04-E-0572;** Consolidated Edison rates and performance; City of New York. Direct, September 2004; rebuttal, October 2004.

Consolidated Edison's role in promoting adequate supply and demand resources. Integrated resource and T&D planning. Performance-based ratemaking and streetlighting.

- 205. Ont. Energy Board RP 2004-0188;** cost recovery and DSM for Ontario electric-distribution utilities; Green Energy Coalition. Exhibit, December 2004.

Differences in ratemaking requirements for customer-side conservation and demand management versus utility-side efficiency improvements. Recovery of lost revenues or incentives. Reconciliation mechanism.

- 206. Mass. DTE 04-65;** Cambridge Electric Light Co. streetlighting; City of Cambridge. Direct, October 2004; Supplemental January 2005.

Calculation of purchase price of street lights by the City of Cambridge.

- 207. N.Y. PSC 04-W-1221;** Rates, rules, charges, and regulations of United Water New Rochelle; Town of Eastchester and City of New Rochelle. Direct, February 2005.

Size and financing of proposed interconnection. Rate design. Water-mains replacement and related cost recovery. Lost and unaccounted-for water.

- 208. N.Y. PSC 05-M-0090;** System-benefits charge; City of New York. Comments, March 2005.

Assessment and scope of, and potential for, New York system-benefits charges.

- 209. Md. PSC 9036;** Baltimore Gas & Electric rates; Maryland Office of People's Counsel. Direct, August 2005.

Allocation of costs. Design of rates. Interruptible and firm rates.

- 210. B.C. Utilities Commission Project No. 3698388,** British Columbia Hydro resource-acquisition plan; British Columbia Sustainable Energy Association and Sierra Club of Canada BC Chapter. Direct, September 2005.

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- 211. Conn. DPUC 05-07-18;** Financial effect of long-term power contracts; Connecticut Office of Consumer Counsel. Direct September 2005.

Assessment of effect of DSM, distributed generation, and capacity purchases on financial condition of utilities.

- 212. Conn. DPUC 03-07-01RE03 & 03-07-15RE02;** Incentives for power procurement; Connecticut Office of Consumer Counsel. Direct, September 2005. Additional Testimony, April 2006.

Utility obligations for generation procurement. Application of standards for utility incentives. Identification and quantification of effects of timing, load characteristics, and product definition.

- 213. Conn. DPUC Docket 05-10-03;** Connecticut L&P; time-of-use, interruptible, and seasonal rates; Connecticut Office of Consumer Counsel. Direct and Supplemental Testimony February 2006.

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- 214. Ont. Energy Board Case EB-2005-0520;** Union Gas rates; School Energy Coalition. Evidence, April 2006.

Rate design related to splitting commercial rate class into two classes: new break point, cost allocation, customer charges, commodity rate blocks.

- 215. Ont. Energy Board Case EB-2006-0021;** Natural-gas demand-side-management generic issues proceeding; School Energy Coalition. Evidence, June 2006.

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- 216. Ind. Utility Regulatory Commission Cause Nos. 42943 and 43046;** Vectren Energy DSM proceedings; Citizens Action Coalition. Direct, June 2006.

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- 217. Penn. PUC Docket No. 00061346;** Duquesne Lighting; Real-time pricing; PennFuture. Direct, July 2006; surrebuttal August 2006.

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- 218. Penn. PUC Docket No. R-00061366, et al.;** Rate-transition-plan proceedings of Metropolitan Edison and Pennsylvania Electric; Real-time pricing; PennFuture. Direct, July 2006; surrebuttal August 2006.

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- 219. Conn. DPUC 06-01-08;** Connecticut L&P procurement of power for standard service and last-resort service; Connecticut Office of Consumer Counsel. Reports and technical hearings quarterly since September 2006.

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- 220. Conn. DPUC 06-01-08;** United Illuminating procurement of power for standard service and last-resort service; Connecticut Office of Consumer Counsel. Reports and technical hearings quarterly since August 2006.

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- 221. N.Y. PSC Case No. 06-M-1017;** Policies, practices, and procedures for utility commodity supply service; City of New York. Comments, November and December 2006.

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- 222. Conn. DPUC 06-01-08;** Procurement of power for standard service and last-resort service, lessons learned; Connecticut Office Of Consumer Counsel. Comments and Technical Conferences December 2006 and January 2007.

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- 223. Ohio PUC PUCO Case No. 05-1444-GA-UNC;** recovery of conservation costs, decoupling, and rate-adjustment mechanisms for Vectren Energy Delivery of Ohio; Ohio Consumers' Counsel. Direct, February 2007.

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- 224. N.Y. PSC Case 06-G-1332;** Consolidated Edison Rates and Regulations; City of New York. Direct, March 2007.

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- 225. Alb. EUB 1500878;** ATCo Electric rates; Association of Municipal Districts & Counties and Alberta Federation of Rural Electrical Associations. Direct, May 2007

Direct assignment of distribution costs to streetlighting. Cost causation and cost allocation. Minimum-system and zero-intercept classification.

- 226. Conn. DPUC Docket 07-04-24;** Review of capacity contracts under Energy Independence Act; Connecticut Office of Consumer Counsel, Joint Direct Testimony June 2007.

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- 227. N.Y. PSC Case 07-E-0524;** Consolidated Edison electric rates; City of New York. Direct, September 2007.

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- 228. Man. PUB 136-07;** Manitoba Hydro rates; Resource Conservation Manitoba and Time to Respect Earth's Ecosystem. Direct, February 2008.

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- 229. Mass. EFSB 07-7;** DPU 07-58 & -59; Proposed Brockton Power Company plant; Alliance Against Power Plant Location. Direct, March 2008

Regional supply and demand conditions. Effects of plant construction and operation on regional power supply and emissions.

- 230. Conn. DPUC 08-01-01;** peaking generation projects; Connecticut Office of Consumer Counsel. Direct (with Jonathan Wallach), April 2008.

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

- 231. Ont. Energy Board-2007-0905,** Ontario Power Generation payments; Green Energy Coalition. Direct, April 2008.

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- 232. Utah PSC 07-035-93,** Rocky Mountain Power Rates; Utah Committee of Consumer Services. Direct, July 2008

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- 233. Ont. Energy Board-2007-0707;** Ontario Power Authority integrated system plan; Green Energy Coalition, Penimba Institute, and Ontario Sustainable Energy Association. Evidence (with Jonathan Wallach and Richard Mazzini), August 2008.

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- 234. N.Y. PSC Case 08-E-0596;** Consolidated Edison electric rates; City of New York. Direct, September 2008.

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- 235. Conn. DPUC 08-07-01;** Integrated resource plan; Connecticut Office of Consumer Counsel. Direct, September 2008.

Integrated resource planning scope and purpose. Review of modeling and assumptions. Review of energy efficiency, peakers, demand response, nuclear, and renewables. Structuring of procurement contracts.

- 236. Man. PUB 2008 MH EIIR,** Manitoba Hydro intensive industrial rates; Resource Conservation Manitoba and Time to Respect Earth's Ecosystem. Direct, November 2008.

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- 237. Md. PSC 9036;** Columbia Gas rates; Maryland Office of People's Counsel. Direct, January 2009.

Cost allocation and rate design. Critique of cost-of-service studies.

- 238. Vt. PSB 7440;** extension of authority to operate Vermont Yankee; Conservation Law Foundation and Vermont Public Interest Research Group. Direct, February 2009; Surrebuttal, May 2009.

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- 239. N. S. Review Board** Matter No. 01439; Nova Scotia Power DSM and cost recovery, Nova Scotia Consumer Advocate. May 2009.

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- 240. N. S. Review Board** Matter No. 0496; proposed biomass project, Nova Scotia Consumer Advocate. June 2009.

Procedural, planning, and risk issues with proposed power-purchase contract. Biomass price index. Nova Scotia Power's management of other renewable contracts.

- 241. Conn. Siting Council 370A;** Connecticut Light & Power transmission projects; Connecticut Office of Consumer Counsel. Direct, July 2009.

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- 242. Mass. DPU 09-39;** NGrid rates, Mass. Department of Energy Resources. August 2009.

Revenue-decoupling mechanism. Automatic rate adjustments.

- 243. Utah PSC Docket No. 09-035-23; Rocky Mountain Power rates; Utah Office of Consumer Services. Direct, October 2009. Rebuttal, November 2009.**
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- 244. Utah PSC Docket No. 09-035-15; Rocky Mountain Power energy-cost-adjustment mechanism; Utah Office of Consumer Services. Direct, November 2009; Surrebutal, January 2010.**
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- 245. Penn. PUC Docket No. R-2009-2139884; Philadelphia Gas Works energy efficiency and cost recovery; Philadelphia Gas Works. Direct, December 2009.**
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- 246. B.C. Utilities Commission Project No. 3698573; British Columbia Hydro rates; British Columbia Sustainable Energy Association and Sierra Club British Columbia. Direct, February 2010.**
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- 247. Ark. PSC Docket No. 09-084-U; Entergy Arkansas rates; National Audubon Society and Audubon Arkansas. Direct, February 2010; Surrebutal, April 2010.**
Recovery of revenues lost to efficiency programs. Determination of lost revenues. Incentive and recovery mechanisms.
- 248. Ark. PSC Docket No. 10-010-U; Energy efficiency; National Audubon Society and Audubon Arkansas. Direct, March 2010; Reply, April 2010.**
Regulatory framework for utility energy-efficiency programs. Fuel-switching programs. Program administration, oversight, and coordination. Rationale for commercial and industrial efficiency programs. Benefit of energy efficiency.
- 249. Ark. PSC Docket No. 08-137-U; Generic rate-making; National Audubon Society and Audubon Arkansas. Direct, March 2010; Supplemental, October 2010; Reply, October 2010.**
Calculation of avoided costs. Recovery of utility energy-efficiency-program costs and lost revenues. Shareholder incentives for efficiency-program performance.
- 250. Plymouth, Mass., Superior Court Civil Action No. PLCV2006-00651-B (Hingham Municipal Lighting Plant v. Gas Recovery Systems LLC et al.); Breach of agreement; defendants. Affidavit, May 2010.**
Contract interpretation. Meaning of capacity measures. Standard practices in capacity agreements. Power-pool rules and practices. Power planning and procurement.

- 251. N.S. UARB** Matter No. 02961; Port Hawkesbury biomass project; Nova Scotia Consumer Advocate. Direct, June 2010.
- Least-cost planning and renewable-energy requirements. Feasibility versus alternatives. Unknown or poorly estimated costs.
- 252. Mass. DPU** 10-54; NGrid purchase of long-term power from Cape Wind; Natural Resources Defense Council et al. Direct, July 2010.
- Effects of renewable-energy projects on gas and electric market prices. Impacts on system reliability and peak loads. Importance of PPAs to renewable development. Effectiveness of proposed contracts as price edges.
- 253. Md. PSC** 9230, Baltimore Gas & Electric rates; Maryland Office of People's Counsel. Direct, Direct, July 2010; Rebuttal, Surrebuttal, August 2010.
- Allocation of gas- and electric-distribution costs. Critique of minimum-system analyses and direct assignment of shared plant. Allocation of environmental compliance costs. Allocation of revenue increases among rate classes.
- 254. Ont. Energy Board**-2010-0008; Ontario Power Generation facilities charges; Green Energy Coalition. Evidence, August 2010.
- Critique of including a return on CWIP in current rates. Setting cost of capital by business segment.
- 255. N.S. UARB** Matter No. 03454; Heritage Gas rates; N.S. Consumer Advocate. Direct, October 2010.
- Cost allocation. Cost of capital. Effect on rates of growth in sales.
- 256. Man. PUB** Case No. 17/10, Manitoba Hydro rates; Resource Conservation Manitoba and Time to Respect Earth's Ecosystem. Direct, December 2010
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- 257. N.S. UARB** Matter No. 03665; Nova Scotia Power depreciation rates; N.S. Consumer Advocate. Direct, February 2011.
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- 258. New Orleans City Council** No. UD-08-02; Entergy IRP rules; Alliance for Affordable Energy. Direct, December 2010
- Integrated resource planning: Purpose, screening, cost recovery, and generation planning.
- 259. N.S. UARB** Matter No. 03632; Renewable-Energy Community-Based Feed-in Tariffs; N.S. Consumer Advocate. Direct, March 2011.
- Cost of projects. Rate effects of feed-in tariffs. Consideration of community in computing costs.

260. Mass. EFSB 10-2/ DPU 10-131, 10-132; NStar transmission; Town of Sandwich, Mass. Direct, May 2011; Surrebuttal, June 2011.

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261. Utah PSC Docket No. 10-035-124; Rocky Mountain Power rate case; Utah Office of Consumer Services. June 2011

Load data, allocation of generation plants, scrubbers, power purchases, and service drops. Marginal cost study: inclusion of all load-related transmission projects, critique of minimum- and zero-intercept methods for distribution. Residential rate design.

262. N.S. UARB Matter No. 04104; Nova Scotia Power general rate application; N.S. Consumer Advocate. August 2011.

Cost allocation: allocation of costs of wind power and substations. Rate design: marginal-cost-based rates, demand charges, time-of-use rates.

263. N.S. UARB Matter No. 04175; Load-retention tariff; N.S. Consumer Advocate. August 2011.

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264. Ark. PSC Docket No. 10-101-R; Rulemaking re self-directed energy efficiency for large customer; National Audubon Society and Audubon Arkansas. Testimony July 2011.

Energy efficiency.

265. Okla. Corporation Commission Cause No. PUD 201100077; Current and pending federal regulations and legislation affecting Oklahoma utilities; Sierra Club. Comments July, October 2011; presentation July 2011.

Challenges facing Oklahoma coal plants; efficiency, renewable and conventional resources available to replace existing coal plants; integrated environmental compliance planning.

266. Nevada PUC Docket No. 11-08019; Integrated analysis of resource acquisition; Sierra Club. Comments September 2011; Hearing October 2011

Scoping of integrated review of cost-effectiveness of continued operation of Reid Gardner 1–3 coal units.

267. La. PSC Docket R-30021; Louisiana integrated-resource-planning rules; Alliance for Affordable Energy. Comments October 2011.

Scoping of integrated review of cost-effectiveness of continued operation of Reid Gardner 1–3 coal units.

- 268. Okla. Corporation Commission** Cause No. PUD 201100087; Oklahoma Gas and Electric Company electric rates; Sierra Club. November 2011.
- Resource monitoring and acquisition. Benefits to ratepayers of energy conservation and renewables. Supply planning
- 269. Ky. PSC** Case No. 2011-00375; Kentucky utilities' purchase and construction of power plants; Sierra Club and National Resources Defense Council. December 2011.
- Assessment of resources, especially renewables. Treatment of risk. Treatment of future environmental costs.
- 270. N.S. UARB** Matter No. 04819; Demand-side-management plan of Efficiency Nova Scotia; N.S. Consumer Advocate. May 2012.
- Avoided costs. Allocation of costs. Reporting of bill effects.
- 271. Kansas CC** Docket No. 12-GIMX-337-GIV, Utility energy-efficiency programs; The Climate and Energy Project, June 2012.
- Cost-benefit tests for energy-efficiency programs. Collaborative program design.
- 272. N.S. UARB** Matter No. 04862; Port Hawksbury load-retention mechanism; N.S. Consumer Advocate. June 2012.
- Effect on ratepayers of proposed load-retention tariff. Incremental capital costs, renewable-energy costs, and costs of operating biomass cogeneration plant.
- 273. Utah PSC** Docket No. 11-035-200; Rocky Mountain Power Rates; Utah OCC. June 2012.
- Cost allocation. Estimation of marginal customer costs.
- 274. Ark. PSC** Docket No. 12-008-U; Environmental controls at Southwestern Electric Power Company's Flint Creek plant; Sierra Club. Direct, June 2012, Rebuttal, August 2012; Further, March 2013.
- Costs and benefits of environmental retrofit to permit continued operation of coal plant, versus other options including purchased gas generation, efficiency, and wind. Fuel-price projections. Need for transmission upgrades.
- 275. U.S. EPA** Docket EPA-R09-OAR-2012-0021; Air Quality Implementation Plan; Sierra Club, September 2012.
- Costs, financing, and rate effects of Apache coal-plant scrubbers. Relative incomes in service territories of Arizona Coop and other utilities.
- 276. Arkansas PSC** Docket No. 07-016-U; Entergy Arkansas' integrated resource plan; Audubon Arkansas. Comments, September 2012.

Estimation of future gas prices. Estimation of energy-efficiency potential. Screening of resource decisions. Wind costs.

- 277. Vt. PSB** Docket No. 7862; Entergy Nuclear Vermont and Entergy Nuclear Operations petition to operate Vermont Yankee; Conservation Law Foundation, October 2012.

Effect of continued operation on market prices. Value of revenue-sharing agreement. Risks of underfunding decommissioning fund.

- 278. Man. PUB** 2012–13 GRA, Manitoba Hydro rates; Green Action Centre. November 2012

Estimation of marginal costs. Fuel switching.

- 279. N.S. UARB** Matter No. M05339; Capital Plan of Nova Scotia Power; N.S. Consumer Advocate. January 2013.

Economic and financial modeling of investment. Treatment of AFUDC.

- 280. N.S. UARB** Matter No. M05416; South Canoe wind project of Nova Scotia Power; N.S. Consumer Advocate. January 2013.

Revenue requirements. Allocation of tax benefits. Ratemaking.

- 281. N.S. UARB** Docket No. NSPI-P-892; Depreciation Rates of Nova Scotia Power; N.S. Consumer Advocate. April 2013.

Steam-plant lives and removal costs.

- 282. N.S. UARB** Matter No. 05419; Maritime Link cost-recovery regulations; N.S. Consumer Advocate. Direct, April 2013; Joint Supplemental (with Seth Parker), November 2013.

Load Forecast. Cost effectiveness of proposed project.

- 283. Ont. Energy Board** 2012-0451/0433/0074; Enbridge Gas GTA project; Green Energy Coalition. June 2013, revised August 2013.

Estimating gas pipeline and distribution costs avoidable through gas DSM and curtailment of electric generation. Integrating DSM and pipeline planning.

- 284. N.S. UARB** Matter No. M05092; Tidal energy feed-in-tariff rate; N.S. Consumer Advocate. August 2013.

Purchase rate for test and demonstration projects. Maximizing benefits under rate-impact caps. Pricing to maximize provincial advantage as a hub for emerging tidal-power industry.

- 285. N.S. UARB** Matter No. M05473; Nova Scotia Power 2013 cost-of-service study; N.S. Consumer Advocate. October 2013.

Cost-allocation and rate design.

286. B.C. Utilities Commission Projects Nos. 3698715 & 3698719; Performance-based ratemaking plan for FortisBC companies, British Columbia Sustainable Energy Association and Sierra Club British Columbia. Joint testimony with John Plunkett, December 2013.

Rationale for enhanced gas and electric DSM portfolios. Correction of utility estimates of electric avoided costs. Errors in program screening. Program potential. Recommended program ramp-up rates.

287. Man. PUB 2014 NFAT, Fuel-switching, DSM, and wind; Green Action Centre. Evidence (with Wesley Stevens) February 2014.

Potential for fuel switching, DSM, and wind to meet future demand.

288. Utah PSC Docket 13-035-184; Rocky Mountain Power Rates; Utah OCC. May 2014.

Class cost allocation. Classification and allocation of generation plant and purchased power. Principles of cost-causation. Design of backup rates.

289. Minn. PSC Docket No. E002/GR-13-868, OAH Docket No. 68-2500-31182; Northern States Power rates; Clean Energy Intervenors. Direct, June 2014; Rebuttal, July 2014; Surrebuttal, August 2014.

Inclining-block residential rate design. Rationale for minimizing customer charges.

290. Cal. PUC Rulemaking 12-06-013, electric rates and rate structures; Natural Resources Defense Council. Direct, September 2014.

Redesigning residential rates to simplify tier structure while maintaining efficiency and conservation incentives. Effect of marginal price on energy consumption. Realistic modeling of consumer price response. Benefits of minimizing customer charges.

291. Md. PSC Case No. 9361, proposed Exelon-PEPCo merger; Sierra Club and Chesapeake Climate Action Network. Direct: December 2014.

Effect of proposed merger on consumer bills, renewable energy, energy efficiency, and climate goals.

ACRONYMS AND INITIALISMS

ASLRB	Atomic Safety and Licensing Board	LRAM	Lost-Revenue-Adjustment Mechanism
BEP	Board of Environmental Protection	NARUC	National Association of Regulatory Utility Commissioners
BPU	Board of Public Utilities	NEPOOL	New England Power Pool
BRC	Board of Regulatory Commissioners	NRC	Nuclear Regulatory Commission
DER	Department of Environmental Regulation	OCA	Office of Consumer Advocate
DPS	Department of Public Service	PSB	Public Service Board
DPUC	Department of Public Utilities Control	PSC	Public Service Commission
DSM	Demand-Side Management	PUC	Public Utility Commission
DTE	Department of Telecommunications and Energy	PUB	Public Utilities Board
EAB	Environmental Assessment Board	PURPA	Public Utility Regulatory Policy Act
EFSB	Energy Facilities Siting Board	SCC	State Corporation Commission
EFSC	Energy Facilities Siting Council	UARB	Utility and Review Board
EUB	Energy and Utilities Board	USAEE	U.S. Association of Energy Economists
FERC	Federal Energy Regulatory Commission	UTC	Utilities and Transportation Commission
ISO	Independent System Operator		