

**STATE OF NEW HAMPSHIRE**  
**BEFORE THE PUBLIC UTILITIES COMMISSION**

**Liberty Utilities Petition to Approve )**  
**Firm supply and Transportation     )**  
**Agreements and the Granite Bridge )**  
**Project                                          )**

**Docket No. DG 17-198**

**DIRECT TESTIMONY OF**  
**PAUL CHERNICK**  
**ON BEHALF OF**  
**CONSERVATION LAW FOUNDATION**

Resource Insight, Inc.

**SEPTEMBER 13, 2019**

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## EXHIBITS

Attachment PLC-1

*Qualifications of Paul Chernick*

1    **I.    Identification & Qualifications**

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

3    A:   My name is Paul L. Chernick. I am the president of Resource Insight, Incorporated,  
4       5 Water Street, Arlington, Massachusetts.

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

6    A:   I received a Bachelor of Science degree from the Massachusetts Institute of  
7       Technology in June 1974 from the Civil Engineering Department, and a Master of  
8       Science degree from the Massachusetts Institute of Technology in February 1978 in  
9       technology and policy.

10       I was a utility analyst for the Massachusetts Attorney General for more than  
11       three years. I was involved in numerous aspects of utility rate design, costing, load  
12       forecasting, and the evaluation of power supply options. Since 1981, I have been a  
13       consultant in utility regulation and planning, first as a research associate at Analysis  
14       and Inference, after 1986 as president of PLC, Inc., and in my current position at  
15       Resource Insight since 1990. In these capacities, I have advised a variety of clients  
16       on utility matters.

17       My work has considered, among other things, the cost-effectiveness of  
18       prospective new electric generation plants and transmission lines, retrospective  
19       review of generation-planning decisions, ratemaking for plants under construction,  
20       ratemaking for excess and/or uneconomical plants entering service, conservation  
21       program design, cost recovery for utility efficiency programs, the valuation of  
22       environmental externalities from energy production and use, allocation of costs of  
23       service between rate classes and jurisdictions, design of retail and wholesale rates,  
24       and performance-based ratemaking and cost recovery in restructured gas and electric

1 industries. My professional qualifications are further summarized in Attachment  
2 PLC-1.

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

4 A: Yes. I have testified over three hundred times on utility issues before various  
5 regulatory, legislative, and judicial bodies, including utility regulators in thirty-seven  
6 states and six Canadian provinces, and three U.S. federal agencies. This previous  
7 testimony has included many reviews of the economics of power plants, utility  
8 planning, marginal costs, and related issues.

9 **Q: On whose behalf have you worked?**

10 A: A large percentage of my testimony has been filed on behalf of consumer advocates  
11 (e.g., the Massachusetts, New Mexico, Washington, and Illinois Attorney Generals;  
12 other official public consumer advocates in Connecticut, Maine, Massachusetts, New  
13 Hampshire, New Jersey, Pennsylvania, Illinois, Minnesota, Maryland, Ohio,  
14 Vermont, Indiana, South Carolina, Arizona, West Virginia, Utah, District of  
15 Columbia, and Nova Scotia; and such non-profit consumer advocates as AARP, East  
16 Texas Legal Services, Public Interest Research Groups, Alliance for Affordable  
17 Energy, citizens' groups, Ontario School Energy Group, Citizens Action Coalition,  
18 and Small Business Utility Advocates). I have also worked for regulatory bodies in  
19 Massachusetts, Connecticut, District of Columbia, and Puerto Rico, as well as the  
20 Vermont House of Representatives.

21 The remainder of my clients include investor-owned and municipal utilities,  
22 municipalities (New York City, Chicago, Cincinnati, several Massachusetts, New  
23 Hampshire and New York towns in various proceedings), large customers, power-  
24 plant developers and owners, labor unions, energy advocates and environmental  
25 groups.

1     **II. Introduction**

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

3     A: I am testifying on behalf of Conservation Law Foundation.

4     **Q: What is the scope of your testimony?**

5     A: In this proceeding, Liberty has submitted a petition requesting the New Hampshire  
6       Public Utilities Commission to:

- 7       • Approve a delivered supply contract with ENGIE Gas & LNG, LLC (“ENGIE”);  
8       • Approve a precedent agreement with Portland Natural Gas Transmission System  
9       (“PNGTS”) for firm transportation capacity on the Portland XPress Project;<sup>1</sup>  
10      • Find to be prudent the Company’s decision to build an in-state pipeline, the Granite  
11      Bridge Pipeline; and  
12      • Find to be prudent the Company’s decision to build an on-system liquefied natural  
13      gas (“LNG”) facility, the Granite Bridge LNG facility.<sup>2</sup>

14     Petition at 1.

15             In its Order of Notice dated February 8, 2018, the Commission noted that the  
16     proposal raises issues:

17             ... related to RSA 374:1 and 374:2 (public utilities to provide reasonably safe  
18             and adequate service at "just and reasonable" rates); RSA 374:4 (Commission's  
19             duty to keep informed of the manner in which all public utilities in the state  
20             provide for safe and adequate service); RSA 374:7 (Commission's authority to  
21             investigate and ascertain the methods employed by public utilities to "order all  
22             reasonable and just improvements and extensions in service or methods" to  
23             supply gas); RSA 378:7 (rates collected by a public utility for services rendered  
24             or to be rendered must be just and reasonable); and, by implication, the standards  
25             of RSA 378:28 (all utility plant to be included in permanent rates must be found  
26             by the Commission to be prudent, used, and useful). These issues embrace, but  
27             are not limited to, the question of whether Liberty reasonably investigated and

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<sup>1</sup> This supply will also require contracts on Union Gas in Ontario and the TransCanada Mainline.

<sup>2</sup> Liberty Utilities refers to the pipeline and LNG facility collectively as the Granite Bridge Project.

1           analyzed its long-term supply requirements and the alternatives for satisfying  
2           those requirements.

3       Order of Notice at 2.

4   **Q: What is the scope of your testimony?**

5   A: I specifically consider the following issues raised in Liberty's Petition:

- 6       • The role of increased gas penetration in Liberty's load forecast.
- 7       • The imprudence of encouraging shifting energy load to gas.
- 8       • The uncertainty in future gas use and the resulting risk of commitment to new  
9       transportation agreements and pipelines.
- 10      • The failure of the Company to reasonably investigate and analyze the long-term  
11      supply requirements and the alternatives to the Granite Bridge Pipeline, and the  
12      upstream pipeline contracts that Liberty proposes to utilize Granite Bridge.

13   **Q: Please summarize your conclusions and recommendations.**

14   A: Liberty's proposed contracts and new pipeline do not advance economically prudent  
15      or environmentally sound energy investments, and therefore should not be approved  
16      by the Commission.

17           Liberty's petition and supporting testimony do not demonstrate that the  
18      proposed contracts and new pipeline will be used and useful over the expected  
19      lifetime of the proposed investments, or that it is reasonable for ratepayers to bear the  
20      costs of these investments in light of the availability of alternatives to new natural  
21      gas infrastructure investments and commitments.

22           Liberty's proposal fails to demonstrate that its proposed investments are  
23      prudent and will be used and useful, in light of the need to reduce fossil fuel use—  
24      including natural gas—to mitigate climate change and pollution impacts.

25           Liberty's proposal fails to reasonably address future need, to reflect the  
26      availability of cleaner and lower cost resources, including electricity and high-  
27      performance air-source electric heat pumps.

1           There is significant risk that the proposed investments will result in future  
2           stranded costs and higher customer costs, as the region and New Hampshire  
3           transitions away from direct use of fossil fuels to cleaner energy resources.

4   **Q: What is the global and national background to local decisions about natural gas**  
5   **use?**

6   A: Natural gas use, in New Hampshire and nationally, must decline if we are to avoid  
7           the most severe consequences of global warming, as discussed in the testimony of  
8           CLF witness Elizabeth Stanton in this docket. About two dozen US regulatory  
9           jurisdictions have recognized this reality by establishing greenhouse-gas reduction  
10          targets, including California,<sup>3</sup> Connecticut, Massachusetts, Vermont, Maine, and  
11          New York. In order to minimize the economic burden of unsustainable long-term  
12          commitments, New Hampshire would be well advised to similarly reflect the carbon-  
13          constrained future in current decision-making.

14   **Q: Does Liberty address the greenhouse gas implications of its planned expansions**  
15   **of gas supply and sales?**

16   A: No. None of Liberty's testimony in this proceeding addresses greenhouse gas  
17          emissions. In Liberty's Least Cost Integrated Resources Planning proceeding  
18          (Docket DG 17-152), Liberty Witness William Killeen basically denies that Liberty  
19          needs to think about greenhouse gases at all, because the Company interpret[s] the  
20          requirement to assess the LCIRP's "'integration and impact on state compliance with  
21          the Clean Air Act of 1990, as amended, and other environmental laws that may  
22          impact a utility's assets or customers,' as required by RSA 378:38, V" in

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<sup>3</sup> Draft Results: Future of Natural Gas Distribution in California, CEC Staff Workshop for CEC PIER-16-011, June 6, 2019, available at [https://ww2.energy.ca.gov/research/notices/2019-06-06\\_workshop/2019-06-06\\_Future\\_of\\_Gas\\_Distribution.pdf](https://ww2.energy.ca.gov/research/notices/2019-06-06_workshop/2019-06-06_Future_of_Gas_Distribution.pdf).

1 irresponsibly narrow terms that is limited to only evaluating acid rain, urban air  
2 pollution, and toxic air emissions.<sup>4</sup>

3 **III. Gas Promotion in Liberty's Load Forecast**

4 **Q: What is Liberty's justification for Granite Bridge and the associated supply**  
5 **contracts?**

6 A: The joint testimony of William Killeen and James Stephens describes an expected  
7 increase in customers and an increase in demand. Specifically, their testimony states  
8 this is a result of "EnergyNorth's continued focus on customer growth in its existing  
9 service territories; .... and additional growth from service area expansions."<sup>5</sup>

10 Mr. Killeen similarly explains in his testimony in the Liberty LCIRP docket  
11 that the Company's claimed need for Granite Bridge arises from forecast load  
12 growth:

13 Q. Is the Company's existing delivery capacity sufficient to meet the forecasted  
14 demand requirements of its customers?

15 A. No. The Company's design day demand during the planning period will exceed  
16 its capacity on the Concord Lateral, and there is no more capacity available on  
17 the Concord Lateral....<sup>6</sup>

18 He similarly explains that forecast load growth drives the need for the new  
19 supply contracts:

20 Q. Is the Company's existing gas supply sufficient to meet the forecasted demand?

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<sup>4</sup> DG 17-152, Killeen Direct Testimony at p. 9, lines 14-20.

<sup>5</sup> DG 17-198, Killeen & Stephens Direct Testimony at p. 151, line 8 – p. 152 line 2.

<sup>6</sup> DG 17-152, Killeen Direct Testimony at p. 7, lines 5-8.



A. No. Although the Company currently has sufficient supplies to use all the available capacity on the Concord Lateral, the Company does not have the incremental supply to meet the forecasted increase in demand. Specifically, the Company requires incremental supply during the development of the Granite Bridge Pipeline, and to utilize the capacity of the Granite Bridge Pipeline once it is placed into service.<sup>7</sup>

In other words, load growth drives Liberty's case for both Granite Bridge and the new long-term supply contracts.

**Q: How much of Liberty's projected load growth would result from its promotion of conversion from other fuels to natural gas?**

A: Table 1 reproduces Liberty's forecast based on historical trends (which would include some fuel-switching from other fuels to natural gas) and Liberty's total forecast, including the results of Liberty's fuel-switching efforts.<sup>8</sup>

**Table 1: Effect of Fuel-Switching Promotion on Liberty Load Forecast (BBtu)**

	Residential		C&I		Total
	Heating	Non-Heating	Heating	Non-Heating	
<b>From LCIRP Table 20: Econometric Demand Forecast</b>					
2017/18	6,025	68	6,242	1,984	14,319
2018/19	6,089	66	6,332	1,979	14,466
2019/20	6,168	64	6,422	1,963	14,617
2020/21	6,235	62	6,484	1,942	14,722
2021/22	6,308	59	6,568	1,922	14,858
<b>From LCIRP Table 23: Demand Forecast Including Promotion</b>					
2017/18	6,302	68	6,670	2,102	15,142
2018/19	6,427	66	6,871	2,119	15,483
2019/20	6,568	64	7,107	2,147	15,885
2020/21	6,733	62	7,375	2,192	16,360
2021/22	6,908	59	7,655	2,228	16,851
<b>Promotional Load Growth</b>					
2017/18	277	-	428	118	823
2018/19	338	-	538	140	1,017
2019/20	400	-	684	184	1,268
2020/21	498	-	891	250	1,638
2021/22	600	-	1,088	305	1,993

<sup>7</sup> *Id.* at p. 9, lines 1-6.

<sup>8</sup> The values in both LCIRP Table 20 (before the load-promotion efforts) and Table 23 (with load promotion) are both prior to the inclusion of energy efficiency.

1   **Q: Please describe Liberty's promotional efforts.**

2   A: The difference between the model results in LCIRP Table 20 and the enhanced  
3   forecast in LCIRP Table 23 is due to the effect of two Liberty programs, as estimated  
4   by EnergyNorth's Sales and Marketing Group:

5           Two out-of-model adjustments were made to the econometric forecast to account  
6           for additional growth that is not reflected in the historical billing data. Those out-  
7           of-model adjustments were related to: (1) expected increases in the number of  
8           customers in the Company's existing service territory related to increasing sales  
9           and marketing efforts; and (2) estimates of the number of customers in new  
10          service territories in which the Company is expanding.<sup>9</sup>

11          The additional natural gas use by new customers resulting from Liberty's  
12          planned promotion efforts accounts for 68% of the load growth that Liberty projects  
13          over the forecast period. Without these new heating customers, Liberty's forecast  
14          would fall from 2.7% annually to 0.9%.

15   **Q: What are the implications of the large role of fuel-switching in Liberty's**  
16   **forecast?**

17   A: If Liberty were not promoting the shifting of customer loads from other fuels to  
18   natural gas, its need for additional resources would be dramatically reduced. Liberty's  
19   case for acquiring additional gas supplies is driven by Liberty's own plans to increase  
20   sales, but Liberty has not shown that such increases in natural gas combustion result  
21   in prudent investments or are the result of a reasonable investigation and analysis of  
22   its long-term supply requirements and the alternatives for satisfying those  
23   requirements. Thus, Liberty has not shown that the proposed investments are  
24   reasonable or that their costs should be borne by ratepayers.

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<sup>9</sup> DG 17-152, Liberty LCIRP at p. 25-26.

1     **IV. Shifting Energy Load Among Fuels**

2     **Q: Does Liberty consider whether shifting customer energy use to gas would have**  
3     **environmental effects?**

4     A: The Company's testimony in this proceeding does not address environmental  
5     impacts. In the LCIRP proceeding, Mr. Killeen purports to provide the Company's  
6     assessment of the environmental, economic and health impacts of the options  
7     considered in the LCIRP, but he fails to adequately do so for several reasons.

8             First, he admits that the company only identified three resource options: two  
9     pipeline delivery options and LNG purchases.<sup>10</sup> The Company failed to consider  
10    additional options to balance natural gas demand and supply, including suspension  
11    of the promotional efforts and enhanced energy-efficiency programs. Nor did the  
12    Company test cases with lower demand and smaller supply options. As a result, he  
13    simply provides a cursory comparison of these two very limited options, and  
14    concludes that of the two, Granite Bridge is superior. He does the same for the gas  
15    supply sources, again failing to analyze other available energy resources.

16            Second, Mr. Killeen makes conclusory statements (without any supporting  
17    analysis) about the increased use of gas in the state. For these reasons, the Company's  
18    testimony does not provide a reasonable analysis of the impacts of the proposed  
19    project, that the proposed investments and contracts are prudent, or that those  
20    commitments would improve Liberty's service at reasonable and just rates.

21    **Q: Do the environmental impacts affect the economics of the proposals?**

22    A: Yes, in two ways. First, by failing to evaluate the environmental impacts of the  
23    proposals, the Company has not shown that the costs that will be borne by ratepayers  
24    are reasonable and prudent over the life of the investments. New Hampshire will face  
25    impacts from greenhouse gas emissions and climate change over the expected term

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<sup>10</sup> DG 17-152, Killeen Direct Testimony at p. 7, lines 7-13.

1 of these investments. Those impacts affect the economics and the overall  
2 reasonableness of the proposed investments; thus, they must be considered during the  
3 Commission's prudence review.

4 Second, New Hampshire consumers will eventually bear the costs of reducing  
5 emissions from gas combustion, while still paying for the new gas resources in  
6 Liberty's proposal, including the capital costs of the Granite Bridge project and the  
7 capacity charges of the pipeline supply. These costs will be borne by New Hampshire  
8 customers even as gas use is reduced significantly in the future to address its  
9 environmental impacts. Increasing the efficiency of gas consumption, stopping the  
10 promotion of new gas connections, and encouraging installation of alternative  
11 technologies (such as high-efficiency heat pumps) would constitute a more prudent  
12 approach to balancing Liberty's supply and demand while moving New Hampshire  
13 towards a low-carbon future. Liberty's current plan would simultaneously increase  
14 the emissions that future consumers will need to reduce, while burdening current and  
15 future customers with fixed supply costs.

16 **Q: Is natural gas the preferred energy choice for space and water heating?**

17 A: No. Compared to natural gas combustion at the end use, electricity can provide  
18 energy services while emitting less greenhouse gases, so long as it is either (1)  
19 sourced largely from renewable resources, including wind, solar and hydro or (2)  
20 produced and used in a manner that is more efficient than direct gas use at the end  
21 use. I discuss the potential for high-efficiency heat pumps in detail in my testimony  
22 in DG 17-152, Liberty's Least Cost Integrated Resource Planning docket, and point  
23 out that in the LCIRP, Liberty failed to consider any alternatives to new gas  
24 infrastructure. As I state in that testimony, increasing natural gas use and committing  
25 to long-term contracts to support increasing (or even current) gas loads, will only  
26 increase the cost of transitioning away from fossil fuels and increase the economic

1       burden created by the proposed investments. Many other jurisdictions are taking steps  
2       to avoid increasing gas use and the risks that come with it. My analysis in the LCIRP  
3       case is relevant here because the Commission must evaluate “whether Liberty  
4       reasonably investigated and analyzed its long-term supply requirements and the  
5       alternatives for satisfying those requirements.”<sup>11</sup>

6       **V.   Risks of New Long-Term Gas Commitments**

7       **Q:   To what risks are ratepayers exposed as a result of Liberty investing in a major**  
8       **supply pipeline and upstream pipeline commitments?**

9       A:   Liberty has not demonstrated that the planned investments and commitments will be  
10       beneficial to customers, even in the near term. There is a significant risk that the  
11       resources will not remain economic through their expected terms of service. The  
12       Granite Bridge Pipeline would be in place and available for several decades, with  
13       maintenance expenditures and investments that will need to be recovered from  
14       ratepayers, but Liberty is unlikely to need the delivery capacity for very long, leaving  
15       its customers vulnerable to having to pay for stranded assets.

16       One source of that risk is future national regulation and/or taxation of  
17       greenhouse gas emissions. As New Hampshire faces requirements to reduce  
18       emissions, including from natural gas combustion, improved efficiency of gas use  
19       and conversion of fossil end uses to electricity will reduce Liberty’s load, reducing  
20       the need for the Granite Bridge Pipeline. Since other regional gas distributors (and  
21       gas-fired generators) would face similar declines in demand, Liberty is unlikely to  
22       find buyers for its unused upstream capacity at full contract prices, further burdening  
23       consumers with stranded costs.

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<sup>11</sup> DG 17-198 Order of Notice, February 8, 2018, at p. 2.

1    **Q: Can Liberty count on recovering from off-system sales the full cost of the excess**  
2    **capacity from the Granite Bridge pipeline, the Granite Bridge LNG facility, and**  
3    **the contracts with Portland Pipeline, TransCanada and Enbridge?**

4    A: No. Liberty has a memorandum of understanding with the Granite Ridge gas  
5    combined-cycle plant for some peaking supply for a small (but confidential) portion  
6    of the expected physical lives of the Granite Bridge facilities and the lives of the  
7    supply contracts. Granite Ridge’s owner, Calpine, has “indicated that it was not yet  
8    willing to further commit itself to a service that would not be available until 2023.  
9    Calpine indicated that a precedent agreement for winter peaking service at this time  
10   would be premature given the projected in-service date of the Granite Bridge LNG  
11   project and the uncertainty of future New England power market changes.”<sup>12</sup> In  
12   other words, Calpine does not know how much Granite Ridge will operate in the late  
13   2020s, or what the ISO-NE market rules will be, or what the costs of peaking  
14   resources will be, and will not take on the risk of even a short-term commitment for  
15   the Liberty peaking supply.

16           As greenhouse gas limits and renewable energy standards reduce gas  
17   consumption by generation and end users, the market for natural-gas deliverability  
18   will decline. More of the generation load (both in therms and in percentage) will be  
19   served from existing pipelines, reducing the demand and price for peaking supplies,  
20   such as the Granite Bridge LNG plant or the proposed pipeline contracts.

21           This issue is addressed in a recent report from the Rocky Mountain Institute  
22   that addresses the issue of wind, solar, storage and demand resources displacing gas  
23   generation, and finds that even new combined-cycle units will be uneconomic to keep

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<sup>12</sup> Supplemental Direct Testimony of Francisco C. DaFonte and William R. Killeen at p. 39, lines 14–18.

1 in service by the early 2030s.<sup>13</sup> While the RMI study does not examine the economics  
2 of less efficient gas-fired steam plants and older combined-cycle units, they are likely  
3 to become uncompetitive even earlier. As the output of those gas-fired generators  
4 declines, so will the price basis for New England gas and thus Liberty's opportunities  
5 to recoup the costs of its proposed contracts.

6 The RMI study describes the risks of gas LDCs depending on sales to  
7 generators to cover the fixed-cost commitments:

8 An increase in unit cost of delivered fuel due to declining throughput is seen  
9 most immediately by whichever party bears a sunk cost for the pipeline (e.g., the  
10 investment in the pipeline, or a demand-based contract for pipeline capacity) but  
11 whose revenue or value depends on pipeline throughput. For example, a gas  
12 marketing company or gas utility who enters into a demand-based contract with  
13 a pipeline developer but expects to sell gas to electric utilities or independent  
14 power producers on a per-unit basis would have to adjust prices upward in order  
15 to recover sunk costs. Any price increase seen by gas generators would put  
16 further downward pressure on power sector demand; this dynamic risks setting  
17 up a reinforcing feedback loop, sometimes referred to as a "death spiral," for gas  
18 pipelines whose unit costs rise as throughput declines, which in turn leads to  
19 further cost increases and further loss of throughput. (Dyson, et al., 2019, at 42)

20 Captive ratepayers of gas utilities bear the risk of secondary market sales failing  
21 to meet expectations due to falling demand for gas in the power sector, and thus  
22 average prices for fuel delivery rising significantly.<sup>14</sup>

23 RMI also offers some recommendations to gas utility regulators:<sup>15</sup>

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<sup>13</sup> Mark Dyson, Grant Glazer, and Charles Teplin. Prospects for Gas Pipelines in the Era of Clean Energy: How Clean Energy Portfolios Are Reducing US Power Sector Demand for Natural Gas and Creating Stranded Asset Risks for Gas Pipelines. Rocky Mountain Institute, 2019, <https://rmi.org/cep-reports>.

<sup>14</sup> Ibid. at 44.

<sup>15</sup> Ibid at 47.

1 Gas distribution companies are often the primary contract holder for new  
2 pipeline capacity, even though electric generators are increasingly the largest  
3 users of pipelines, because gas distribution companies resell their capacity rights  
4 to generators. Gas utilities rely on these revenues to keep costs low for their  
5 customers; a loss of revenue in the secondary market due to falling power sector  
6 demand will effectively raise the price paid by captive gas customers. Gas utility  
7 regulators considering proposed gas utility positions in new pipeline capacity  
8 should carefully assess the risks imposed on customers if expected electric sector  
9 demand fails to materialize, and allocate risks and incentives accordingly.  
10 Regulators should consider a representative list of questions in this  
11 determination, including:

12 »»» To what extent does a gas utility's proposed investment in, or contract for  
13 new pipeline capacity rely on secondary market sales to electric power  
14 customers to bolster project economics for gas customers?

15 »»» Does any expected revenue from secondary sales to the power market  
16 accurately reflect the declining economics of gas-fired generation relative  
17 to clean energy in the next 15 years?

18 »»» Are risks passed on to captive retail customers if expected secondary  
19 market sales to power plants do not materialize?

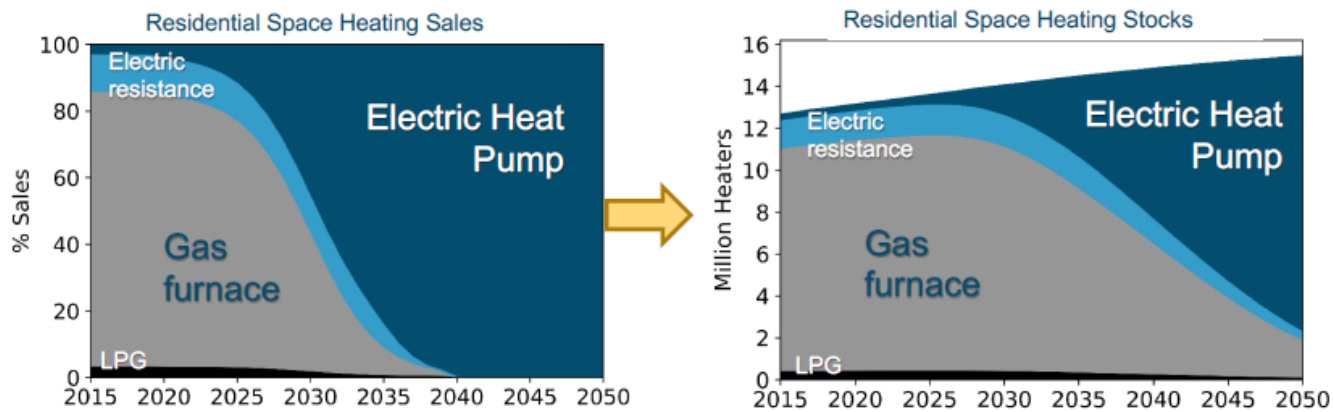
20 Liberty and its customers will face these same circumstances that put its  
21 proposed investments at substantial risk of being stranded assets.

22 **Q: Have other jurisdictions recognized the reality that natural gas use must**  
23 **decline?**

24 A: Yes. In California, analysis of options for meeting greenhouse gas goals found that  
25 the least-cost pathway would require a relatively rapid transition of new and  
26 replacement heating equipment to electricity. Even once the vast majority of new  
27 equipment installed in homes and businesses is electric, the slow turnover in  
28 appliances means that many gas furnaces, once installed, are likely to operate for  
29 decades longer, as illustrated in Figure 1.

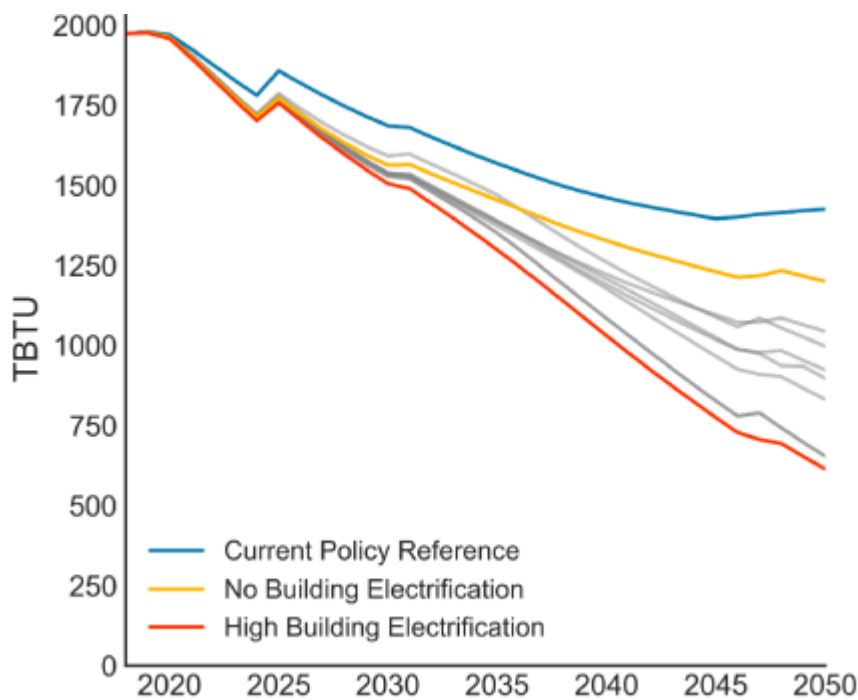


1 **Figure 1: Projected California Residential Heating Transition<sup>16</sup>**



2  
3 Figure 2 shows the projected deliveries of natural gas (along with biogas and  
4 other renewable gas) under the range of approaches considered in the study. The High  
5 Building Electrification case is the lowest-cost option.

6 **Figure 2: California Gas Distribution Futures<sup>17</sup>**



<sup>16</sup> Aas, et al., 2019 (op cit) at 48.

<sup>17</sup> Aas, et al., 2019 (op cit) at 52.

1   **Q: How are these California results relevant to New Hampshire?**

2   A: New Hampshire's climate and energy use mix differ from California's, so the optimal  
3   decarbonization trajectory will not be identical for the two states. But the general  
4   relationships are likely to be similar. A low-carbon future for New Hampshire and  
5   the region requires replacement of fossil-fueled space- and water-heating with  
6   electric appliances, as well as increased energy efficiency.

7         Going forward with the Granite Bridge project and the upstream contracts  
8   would amount to an expensive bet that New Hampshire will never be faced with the  
9   need or desire to reduce greenhouse gas emissions.

10   **Q: What would a shorter useful life of Granite Bridge Pipeline mean for Liberty  
11   and its customers?**

12   A: Either the near-term recovery of the pipeline cost would need to be accelerated, such  
13   as through a higher depreciation rate, or Liberty and the Commission will need to  
14   deal with recovering the stranded costs in the out years, spreading the costs over a  
15   falling sales base. The same would be true for associated supply contracts that are no  
16   longer needed or economic as regional gas load falls; Liberty would need to  
17   accelerate contract cost recovery through creation of a regulatory liability, creating a  
18   fund to pay down contract costs in the last years of the contract, rather than burdening  
19   the declining customer base with the full annual costs of the contracts.

20   **Q: If Liberty does not need its full contract capacity during the life of the new  
21   supply contracts and the Granite Bridge Pipeline, could Liberty balance its  
22   supply by allowing other contracts to expire?**

23   A: Yes, but at a significant cost. Liberty currently holds a portfolio of contracts that are  
24   lower in cost than the Portland XPress Project and associated upstream contracts.<sup>18</sup>

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<sup>18</sup> "These existing contracts have favorable terms that could not be obtained in today's market." DG 17-152 Killeen Direct Testimony at p. 8, lines 14–15.

1 So ratepayers would be stuck paying for the new supply contracts and Granite Bridge,  
2 while giving up lower-cost existing contracts.

3 **Q: Are there regulatory precedents for these situations?**

4 A: Yes. A number of electric utilities have found that continued operation of their coal  
5 plants—which were typically being depreciated over a 60-year life—would be  
6 uneconomic in the near future. For example, a plant might be 30 years old, with its  
7 original investment half depreciated and subsequent capital additions (for example,  
8 for environmental retrofits, perhaps including some very recent ones). When the  
9 falling cost of renewables and market power prices means further operation would  
10 increase rates, the utility is faced with a decision as to how to recover the remaining  
11 investment. Some utilities have accelerated the depreciation of these plants in their  
12 final years, while others have promptly retired the uneconomic assets and requested  
13 recovery of the investment balance through a regulatory asset. In either case,  
14 customers wind up paying more than if the utility had never built the plant or had  
15 retired it prior to large recent retrofits. The same was true for the above-market power  
16 purchases at the time of restructuring; there is a substantial risk of similar outcomes  
17 for new long-term gas contracts and pipeline construction.

## 18 **VI. Alternatives to the Granite Bridge Pipeline**

19 **Q: What alternatives does Liberty have to balance load and capacity, without**  
20 **prohibiting new gas uses?**

21 A: Most of the demand growth that Liberty has proposed would be eliminated by ceasing  
22 Liberty's efforts to promote new gas space and water heating (and some other end  
23 uses). For meeting the remainder of the load, above current supply, Liberty's options  
24 include energy efficiency, including facilitating the penetration of heat pumps as I  
25 discuss in detail in my LCIRP testimony; a limited expansion of LNG supply in its

1 service territory as needed to cover needle peaks; and (if necessary during a transition  
2 period) limited imports of LNG. The Liberty LCIRP notes that Liberty has been  
3 purchasing LNG and associated vapor from ENGIE.

4 **A. Energy Efficiency**

5 **Q: Did Liberty evaluate an aggressive energy-efficiency effort as an alternative to**  
6 **a new pipeline and new gas contracts?**

7 A: No. The Liberty testimony states: “[t]he energy efficiency savings were assumed to  
8 be equal to those estimated by the Company in the 2018-2020 New Hampshire  
9 Statewide Energy Efficiency Plan filed with the Commission in Docket No. DE 17-  
10 136.<sup>19</sup> As elaborated in the Liberty LCIRP, the forecast shows only minimal amounts  
11 of energy-efficiency load reductions. Table 2 shows the energy-efficiency savings  
12 that Liberty reports in its load forecast. LCIRP Table 24 subtracts the energy-  
13 efficiency column from the total pre-efficiency forecast to derive the total net  
14 forecast, so the data must be cumulative. Hence, I added a column for the incremental  
15 energy-efficiency savings in each year.

16 **Table 2: Energy-efficiency Savings in Liberty LCIRP Forecast (BBtu)**

Year	Pre-Efficiency Forecast a	Energy Efficiency b	Forecast net of Energy Efficiency c	New Energy Efficiency d	Energy Efficiency as % Load e
2017/18	15,142	108	15,034		
2018/19	15,483	114	15,369	6.2	0.04%
2019/20	15,885	122	15,763	8.2	0.05%
2020/21	16,360	127	16,234	4.7	0.03%
2021/22	16,851	131	16,720	3.9	0.02%
a, b, c LCIRP Table 24 MMBtu ÷ 1,000					
d b minus b previous year					
e d ÷ (a - b previous year)					

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<sup>19</sup> DG 17-198 Killeen & Stephens Direct Testimony at p. 157, lines 4-6.

1   **Q: How do the forecast energy efficiency savings compare to Liberty's reported**  
2   **past energy efficiency savings?**

3   A: Table 3 shows the historical energy efficiency savings that Liberty claims for each  
4   year, from Liberty's LCIRP Appendix 2, Table 2-1. Liberty describes these as annual  
5   savings, and they bounce up and down, so they appear to be the new savings each  
6   year.

7   **Table 3: Historical Energy-Efficiency Savings in Liberty LCIRP (BBtu/year)**

Year	Annual Savings
2003	38
2004	73
2005	76
2006	84
2007	153
2008	97
2009	121
2010	78
2011	76
2012	148
2013	115
2014	117
2015	144
2016	110
Cumulative	1,430

8           Liberty's LCIRP testimony of Eric M. Stanley provides an estimate of Liberty's  
9   2018 incremental annual savings of 130 BBtu, or 0.73% of 2018 sales.

10   **Q: Does Liberty explain why it projects its savings to fall from about 100 BBtu/year**  
11   **annually to less than 10 BBtu, as you compute in Table 2?**

12   A: No.

13   **Q: You assumed that the energy-efficiency values in your Table 2 and Liberty**  
14   **LCIRP Table 24 are cumulative values from some unspecified starting year. Is**

1        **it possible that Liberty intended that those values be interpreted as incremental**  
 2        **annual savings, as in Liberty LCIRP Table 2-1?**

3    A:    That interpretation would mean that Liberty incorrectly computed the post-energy-  
 4        efficiency forecast in LCIRP Table 24. Table 4 computes the net-of-energy-  
 5        efficiency forecast, assuming that Liberty intended the energy-efficiency values in  
 6        LCIRP Table 24 to be annual.

7    **Table 4: Alternative Interpretation of Liberty LCIRP Energy-efficiency Savings (BBtu)**

Year	Pre-Efficiency Forecast <i>a</i>	Annual Energy Efficiency <i>b</i>	Cumulative Energy Efficiency <i>c</i>	Forecast net of Energy Efficiency <i>d</i>	Energy Efficiency as % Load <i>e</i>
2017/18	15,142	108	108	15,034	
2018/19	15,483	114	222	15,261	0.7%
2019/20	15,885	122	344	15,541	0.8%
2020/21	16,360	127	471	15,889	0.8%
2021/22	16,851	131	602	16,249	0.8%
<i>a, b</i> Table 24					
<i>c</i> <i>b</i> plus <i>c</i> previous year					
<i>d</i> <i>a</i> minus <i>c</i>					
<i>e</i> $d \div (a - c \text{ previous year})$					

8        This correction would reduce the forecast for 2021/22 by 471 BBtu, or 28% of  
 9        the post-energy-efficiency forecast load growth from Table 2.

10    **Q:    If this interpretation of Liberty’s energy efficiency plan is correct, what would**  
 11        **be the effect of this energy efficiency plan on the load forecast without Liberty’s**  
 12        **vigorous fuel-switching plans?**

13    A:    Table 5 subtracts the cumulative energy-efficiency savings (under the alternative  
 14        interpretation in Table 4) from Liberty’s load forecast without the promotional  
 15        program, from Table 2.

1     **Table 5: Liberty Forecast without Promotion (BBtu)**

	Pre- Efficiency Demand	Post-2016/17 Efficiency	Post- Efficiency Demand
2017/18	14,319	108	14,211
2018/19	14,466	222	14,244
2019/20	14,617	344	14,273
2020/21	14,722	471	14,251
2021/22	14,858	602	14,256

2             Eliminating the promotional efforts and maintaining the energy-efficiency  
3     savings would essentially eliminate Liberty’s load growth.

4     **Q: Are Liberty’s energy efficiency programs particularly aggressive?**

5     A: No. Taken literally, LCIRP Table 24 reports very small savings. Under the alternative  
6     interpretation, Liberty would be conserving 0.7% or 0.8% of energy use annually,  
7     just about enough to offset non-promotional load growth, and the LCIRP load  
8     forecast would need to be adjusted downward. The Liberty LCIRP testimony of Mr.  
9     Stanley supports that alternative interpretation, that Liberty intended to include much  
10    more energy efficiency in its forecast.

11            The Massachusetts Joint Statewide Electric and Gas Three-Year Energy  
12    Efficiency Plan 2019–2021 (October 31, 2018) includes gas savings of 1.25% of  
13    statewide sales.<sup>20</sup> The most recent ACEEE scorecard (which analyzes 2017 savings)  
14    shows gas savings of 1.35% of sales in Minnesota, 1.1% in Massachusetts, and 1%  
15    in Rhode Island and Michigan. It appears likely that Liberty could do more, cost-  
16    effectively, than the 0.8% it reports in the LCIRP.<sup>21</sup> In ignoring increased energy  
17    efficiency as a resource to meet customer energy needs, Liberty has failed to  
18    reasonably investigate and analyze its long-term supply requirements and the  
19    alternatives available to satisfy those requirements.

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<sup>20</sup> <http://ma-eeac.org/plans-updates/>.

<sup>21</sup> <https://aceee.org/research-report/u1808>

1    **Q: Does Liberty’s testimony address the failures of its Granite Bridge analysis and**  
2    **LCIRP to adequately consider demand-side alternatives?**

3    A: No. Liberty provides no specific evaluation of energy efficiency as an alternative  
4    resource in this proceeding.<sup>22</sup> Liberty has failed to consider whether additional cost-  
5    effective demand-side programs warrant investment as a more prudent way to meet  
6    its customers’ needs in the future. Indeed, my understanding is the LCIRP law  
7    includes a hierarchy of resources that places demand reduction and energy efficiency  
8    at the top. Liberty has not addressed whether enhanced demand reduction would  
9    contribute to reducing the cost of balancing supply and demand or more generally  
10   investigated and analyzed the alternatives for balancing its long-term supply and  
11   demand.

12    **B. LNG**

13    **Q: Does New England have adequate LNG import capacity?**

14    A: Yes. The Liberty LCIRP notes as much:

15           Although the New England region continues to have certain volumes of imported  
16           LNG, those volumes have been variable and are becoming winter season  
17           focused. ...[T]he two off-shore LNG importation facilities (i.e., Northeast  
18           Gateway and Neptune LNG) had limited activity since commencing service in  
19           2009 and 2010, respectively, and ENGIE’s Distrigas LNG facility has  
20           experienced a declining trend in LNG import volumes since 2009. (LCIRP, p.  
21           45)

22           The volume of LNG imported into the region is influenced by various factors,  
23           including...the need for the New England market to pull the supply by  
24           contracting for imported LNG volumes.” (LCIRP, p. 46)

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<sup>22</sup> The Company simply asserts that its forecast includes continuation of its current program savings (see DG 17-198 Killeen & Stephens Direct Testimony at p. 157, lines 1-11, which as I show above, Liberty grossly understated in the final forecast. In the LCIRP testimony, Mr. Stanley largely defends the Company’s current gas efficiency programs (which are approved in a separate docket) as being cost-effective and meeting the state’s minimum Energy Efficiency Resource Standard.



1 While the LCIRP may be painting the lack of demand for LNG in the New  
2 England market as some sort of problem, it is in fact an advantage for gas buyers,  
3 since import (and associated storage) capacity is readily available.

4 By the end of 2018, domestic gas liquefaction and shipping capacity, along the  
5 Gulf and the Southeast, was expected to more than double in 2019, from 4.9 Bcf/day  
6 to about 10 Bcf/day.<sup>23</sup> As of July 31, 2019, 13 Bcf/day of supply was in operation,  
7 in commissioning or under construction.<sup>24</sup> Additional LNG supply is under  
8 construction in Canada, Australia, Indonesia, Russia, Mozambique, Malaysia,  
9 Senegal and Argentina, with more projects proposed.<sup>25</sup>

10 If New England needs some supplemental gas, before the regional transition to  
11 electricity reduces gas load below the capacity of the existing pipeline system, LNG  
12 should be available. Of course, LNG is still natural gas, with its carbon emissions  
13 from combustion and methane emissions from leaks, so New England should not be  
14 planning on using large amounts of LNG for the long term. However, using small  
15 amounts of LNG in the near term would avoid the build-out of infrastructure and  
16 associated capacity contracts that lock in high costs to consumers, with a substantial  
17 risk of eventually being stranded costs.

## 18 VII. Conclusions

19 **Q: Please briefly summarize your conclusions.**

20 A: Liberty failed to demonstrate that the proposed investments and commitments are  
21 prudent. Liberty failed to evaluate cost-effective and lower polluting alternatives

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<sup>23</sup> <https://www.eia.gov/todayinenergy/detail.php?id=37732>.

<sup>24</sup> <https://www.eia.gov/naturalgas/U.S.liquefactioncapacity.xlsx>.

<sup>25</sup> [https://www.igu.org/sites/default/files/node-news\\_item-field\\_file/IGU%20Annual%20Report%202019\\_23%20loresfinal.pdf](https://www.igu.org/sites/default/files/node-news_item-field_file/IGU%20Annual%20Report%202019_23%20loresfinal.pdf).

1 including energy efficiency and heat pumps. In doing so, Liberty failed to reasonably  
2 investigate and analyze its long-term supply requirements and the alternatives for  
3 satisfying those requirements. Liberty also failed to demonstrate that its proposals  
4 will reasonably meet the needs of its customers and will be used and useful. Despite  
5 New Hampshire's planning requirements, Liberty failed to include the necessary  
6 analysis of available alternatives to new natural gas infrastructure projects, which the  
7 Company insists are the only reasonable options for meeting Liberty's need to  
8 balance supply and demand.

9 Liberty's proposal creates a significant risk future stranded costs and higher  
10 customer bills, as New Hampshire customers transition away from fossil fuels to  
11 cleaner electric resources but continue to be charged for imprudent natural gas  
12 investments far into the future.

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

14 **A:** Yes.

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### 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.

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## HONORS

Chi Epsilon (Civil Engineering)

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Institute Award, Institute of Public Utilities, 1981.

## PUBLICATIONS

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Northborough, Mass.: Avoided-Energy-Supply-Component Study Group, c/o National Grid Company.

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“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.

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

“The Potential Economic Benefits of Regulatory NO<sub>x</sub> 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**

“Rethinking Utility Rate Design—Retail Demand and Energy Charges,” Solar Power PV Conference, Boston MA, February 24, 2016.

“Residential Demand Charges - Load Effects, Fairness & Rate Design Implications.” Web seminar sponsored by the NixTheFix Forum. September 2015.

“The Value of Demand Reduction Induced Price Effects.” With Chris Neme. Web seminar sponsored by the Regulatory Assistance Project. March 2015.

“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.” Demand-Side Management and the Global Environment Conference; Washington, D.C. April 22 1991.

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.

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.

Austin City Council, Austin Energy Rates, March to June 2012.

Puerto Rico Energy Commission, Puerto Rico Electric Power Authority, rate design issues, September 2015 to present.

## EXPERT TESTIMONY

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

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 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 1980.

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

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

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

13. **Texas PUC 3298**, Gulf States Utilities rates; East Texas Legal Services. August 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 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 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 1981 and February 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 1981.

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 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. **DC PSC FC785**, Potomac Electric Power rate case; DC Peoples Counsel. July 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 DE 81-312**, Public Service of New Hampshire supply and demand; Conservation Law Foundation et al. October 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. CC 82-0026**, Commonwealth Edison rate case; Illinois Attorney General. October 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 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 Consumer Advocate. November 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 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 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 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 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 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 1985 and October 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 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 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 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 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 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 1986.

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

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

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 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 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 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 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 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 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 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 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 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 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 1988.

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

- 68. Mass. DPU 88-123**, petition of Riverside Steam & Electric; Riverside Steam and Electric Company. May 1988 and November 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 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 1900**, Providence Water Supply Board tariff filing; Conservation Law Foundation, Audubon Society of Rhode Island, and League of Women Voters of Rhode Island. June 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 1988, supplemented August 1988; Losses and Expenses, September 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 1988.

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

73. **Vt. House of Representatives, Natural Resources Committee**, House Act 130; “Economic Analysis of Vermont Yankee Retirement”; Vermont Public Interest Research Group. February 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 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 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 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 rates; Massachusetts Energy Office. June 1989.

Prudence of decision to spend \$400 million from 1986–88 to return Pilgrim nuclear 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 1989. Rebuttal, October 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 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 1989. Surrebuttal February 1990.

Analysis of a proposed 20-year power purchase. Comparison to efficiency investment. Critique of conservation potential analysis. Analysis of Vermont electric energy supply. Planning risk of large supply additions. Valuation of environmental externalities. Identification of possible improvements to proposed contract.

- 81. Mass. DPU 89-239**, inclusion of externalities in energy-supply planning, acquisition, and dispatch for Massachusetts utilities. Boston Gas Company. 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 1990.

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

- 83. Ill. CC 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 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 1990.

Rationale for demand-side management. 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. URC**, integrated-resource-planning docket; Indiana Office of Utility Consumer Counselor. November 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, 90-270**; preliminary review of utility treatment of environmental externalities in October qualifying-facilities filings; Boston Gas Company. November 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 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 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**, commission investigation; Southern Environmental Law Center. March 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 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 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 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. Direct, September 13 1991; Surrebuttal October 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 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 1991.

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

- 96. Mass. DPU 91-131**, update of externalities values adopted in Docket 89-239; Boston Gas Company. October 1991. Rebuttal, December 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 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 1991.
- Obligation to pursue integrated resource planning, 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 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 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 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 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. UC E-100 Sub 64**, integrated-resource-planning docket; Southern Environmental Law Center. September 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.); Coalition of Environmental Groups. 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 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 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 1992.
- Non-price scoring and unquantified benefits; DSM potential as alternative; environmental costs; cost and benefit estimates.
- 108. N.C. UC E-100 Sub 64**, analysis and investigation of least cost integrated resource planning in North Carolina; Southern Environmental Law Center. November 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 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 1993; rebuttal February 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 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.

Demand-side-management 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. CC 92-0268**, electric-energy plan for Commonwealth Edison; City of Chicago. Direct, 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. UC 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 FC917 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.
- Demand-side-management 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. UC E-2 Sub 669**. December 1995.
- Need for new capacity. Energy-conservation potential and model programs.
- 136. Arizona CC 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, Central Vermont Public Service Company rates; 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, Essex County Gas Company rates; Massachusetts Attorney General. July 1996.**

Market-based allocation of gas-supply costs of Essex County Gas Company.

- 142. Mass. DPU 96-60, Fall River Gas Company rates; Massachusetts Attorney General. Direct, July 1996; surrebuttal, August 1996.**

Market-based allocation of gas-supply costs of Fall River Gas Company.

- 143. Md. PSC 8725, Maryland electric-utilities merger; 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 incentive mechanisms in rates for the Consumers Gas Company.
- 146. New York PSC** 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 prefilled 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.

Proposed power-supply arrangements between APS's potential 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 street lighting; 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.

Cost allocation and rate design. Net vs. gross load billing. Export and wheeling-through transactions. Environmental implications of utility proposals.

- 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. 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

Comparison of sales price to other nuclear sales. Evaluation of auction design and implementation. Assessment of valuation of purchased-power contracts.

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

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- 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.

Inadequacies of proposed transmission plan. Failure of to perform least-cost planning. Distributed resources.



- 202. Ohio PUC 03-2144-EL-ATA**, Ohio Edison, Cleveland Electric, and Toledo Edison Cos. rates and transition charges; Green Mountain Energy Co. 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 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. UC 3698388**, British Columbia Hydro resource-acquisition plan; British Columbia Sustainable Energy Association and Sierra Club of Canada BC Chapter. September 2005.

Renewable energy and DSM. Economic tests of cost-effectiveness. Costs avoided by DSM.

- 211. Conn. DPUC 05-07-18**, financial effect of long-term power contracts; Connecticut Office of Consumer Counsel. 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, 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.

Seasonal and time-of-use differentiation of generation, congestion, transmission and distribution costs; fixed and variable peak-period timing; identification of pricing seasons and seasonal peak periods; cost-effectiveness of time-of-use rates.

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

Multi-year planning and budgeting; lost-revenue adjustment mechanism; determining savings for incentives; oversight; program screening.

- 216. Ind. URC 42943 and 43046**, Vectren Energy DSM proceedings; Citizens Action Coalition. Direct, June 2006.

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- 218. Penn. PUC 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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- 223. Ohio PUC PUCO 05-1444-GA-UNC,** recovery of conservation costs, decoupling, and rate-adjustment mechanisms for Vectren Energy Delivery of Ohio; Ohio Consumers' Counsel. February 2007.
- Assessing cost-effectiveness of natural-gas energy-efficiency programs. Calculation of avoided costs. Impact on rates. System benefits of DSM.
- 224. N.Y. PSC 06-G-1332,** Consolidated Edison Rates and Regulations; City of New York. March 2007.
- Gas energy efficiency: benefits to customers, scope of cost-effective programs, revenue decoupling, shareholder incentives.

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

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

- 226. Conn. DPUC 07-04-24**, review of capacity contracts under Energy Independence Act; Connecticut Office of Consumer Counsel. Direct (with Jonathan Wallach), June 2007.

Assessment of proposed capacity contracts for new combined-cycle, peakers and DSM. Evaluation of contracts for differences, modeling of energy, capacity and forward-reserve markets. Corrections of errors in computation of costs, valuation of energy-price effects of peakers, market-driven expansion plans and retirements, market response to contracted resource additions, DSM proposal evaluation.

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

Energy-efficiency planning. Recovery of DSM costs. Decoupling of rates from sales. Company incentives for DSM. Advanced metering. Resource planning.

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

Revenue allocation, rate design, and demand-side management. Estimation of marginal costs and export revenues.

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

Cost of capital for Hydro and nuclear investments. Financial risks of nuclear power.

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

Cost allocation and rate design. Cost of service. Correct classification of generation, transmission, and purchases.

- 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.
- Critique of integrated system plan. Resource cost and characteristics; finance cost. Development of least-cost green-energy portfolio.
- 234. N.Y. PSC 08-E-0596**, Consolidated Edison electric rates; City of New York. September 2008.
- Estimated bills, automated meter reading, and advanced metering. Aggregation of building data. Targeted DSM program design. Using distributed generation to defer T&D investments.
- 235. Conn. DPUC 08-07-01**, Integrated resource plan; Connecticut Office of Consumer Counsel. 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. November 2008.
- Marginal costs. Rate design. Time-of-use rates.
- 237. Md. PSC 9036**, Columbia Gas rates; Maryland Office of People's Counsel. 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.
- Adequacy of decommissioning funding. Potential benefits to Vermont of revenue-sharing provision. Risks to Vermont of underfunding decommissioning fund.
- 239. N.S. UARB M01439**, Nova Scotia Power DSM and cost recovery; Nova Scotia Consumer Advocate. May 2009.
- Recovery of demand-side-management costs and lost revenue.
- 240. N.S. UARB M01496**, 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. July 2009. Also filed and presented in **MA EFSB 08-02**, February 2010.

Need for transmission projects. Modeling of transmission system. Realistic modeling of operator responses to contingencies

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

Revenue-decoupling mechanism. Automatic rate adjustments.

- 243. Utah PSC 09-035-23**, Rocky Mountain Power rates; Utah Office of Consumer Services. Direct, October 2009; rebuttal, November 2009.

Cost-of-service study. Cost allocators for generation, transmission, and substation.

- 244. Utah PSC 09-035-15**, Rocky Mountain Power energy-cost-adjustment mechanism; Utah Office of Consumer Services. Direct, November 2009; surrebuttal, January 2010.

Automatic cost-adjustment mechanisms. Net power costs and related risks. Effects of energy-cost-adjustment mechanisms on utility performance.

- 245. Penn. PUC R-2009-2139884**, Philadelphia Gas Works energy efficiency and cost recovery; Philadelphia Gas Works. December 2009.

Avoided gas costs. Recovery of efficiency-program costs and lost revenues. Rate impacts of DSM.

- 246. B.C. UC 3698573**, British Columbia Hydro rates; British Columbia Sustainable Energy Association and Sierra Club British Columbia. February 2010.

Rate design and energy efficiency.

- 247. Ark. PSC 09-084-U**, Entergy Arkansas rates; National Audubon Society and Audubon Arkansas. Direct, February 2010; surrebuttal, April 2010.

Recovery of revenues lost to efficiency programs. Determination of lost revenues. Incentive and recovery mechanisms.

- 248. Ark. PSC 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 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 M02961**, Port Hawkesbury biomass project; Nova Scotia Consumer Advocate. 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. 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, 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; Nova Scotia Consumer Advocate. October 2010.

Cost allocation. Cost of capital. Effect on rates of growth in sales.

- 256. Man. PUB 17/10**, Manitoba Hydro rates; Resource Conservation Manitoba and Time to Respect Earth's Ecosystem. December 2010.

Revenue-allocation and rate design. DSM program.

- 257. N.S. UARB M03665**, Nova Scotia Power depreciation rates; Nova Scotia Consumer Advocate. February 2011.
- Depreciation and rates.
- 258. New Orleans City Council UD-08-02**, Entergy IRP rules; Alliance for Affordable Energy. December 2010.
- Integrated resource planning: Purpose, screening, cost recovery, and generation planning.
- 259. N.S. UARB M03665**, depreciation rates of Nova Scotia Power; Nova Scotia Consumer Advocate. February 2011.
- Steam-plant retirement dates, post-retirement use, timing of decommissioning and removal costs.
- 260. N.S. UARB M03632**, renewable-energy community-based feed-in tariffs; Nova Scotia Consumer Advocate. March 2011.
- Adjustments to estimate of cost-based feed-in tariffs. Rate effects of feed-in tariffs.
- 261. Mass. EFSB 10-2/DPU 10-131, 10-132**; NStar transmission; Town of Sandwich, Mass. Direct, May 2011; Surrebuttal, June 2011.
- Need for new transmission; errors in load forecasting; probability of power outages.
- 262. Utah PSC 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.
- 263. N.S. UARB M04104**; Nova Scotia Power general rate application; Nova Scotia 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.
- 264. N.S. UARB M04175**, Load-retention tariff; Nova Scotia Consumer Advocate. August 2011.
- Marginal cost of serving very large industrial electric loads; risk, incentives and rate design.
- 265. Ark. PSC 10-101-R**, Rulemaking re self-directed energy efficiency for large customers; National Audubon Society and Audubon Arkansas. July 2011.
- Structuring energy-efficiency programs for large customers.



- 266. Okla. CC 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.

- 267. Nevada PUC 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.

- 268. La. PSC 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.

- 269. Okla. CC 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

- 270. Ky. PSC 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.

- 271. N.S. UARB M04819**, demand-side-management plan of Efficiency Nova Scotia; Nova Scotia Consumer Advocate. May 2012.

Avoided costs. Allocation of costs. Reporting of bill effects.

- 272. Kansas CC 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.

- 273. N.S. UARB M04862**, Port Hawksbury load-retention mechanism; Nova Scotia 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.

- 274. Utah PSC 11-035-200**, Rocky Mountain Power Rates; Utah Office of Consumer Council. June 2012.

Cost allocation. Estimation of marginal customer costs.

- 275. Ark. PSC 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.

- 276. U.S. EPA 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.

- 277. 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.

- 278. Vt. PSB 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.

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

Estimation of marginal costs. Fuel switching.

- 280. N.S. UARB M05339**, Capital Plan of Nova Scotia Power; Nova Scotia Consumer Advocate. January 2013.

Economic and financial modeling of investment. Treatment of AFUDC.

- 281. N.S. UARB M05416**, South Canoe wind project of Nova Scotia Power; Nova Scotia Consumer Advocate. January 2013.

Revenue requirements. Allocation of tax benefits. Ratemaking.

- 282. N.S. UARB 05419**; Maritime Link transmission project and related contracts, Nova Scotia Consumer Advocate and Small Business Advocate. Direct, April 2013; supplemental (with Seth Parker), November 2013.

Load forecast, including treatment of economy energy sales. Wind power cost forecasts. Cost effectiveness and risk of proposed project. Opportunities for improving economics of project.

- 283. Ont. Energy Board** 2012-0451/0433/0074, Enbridge Gas Greater Toronto Area 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** 05092, tidal-energy feed-in-tariff rate; Nova Scotia 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** 05473, Nova Scotia Power 2013 cost-of-service study; Nova Scotia Consumer Advocate. October 2013.
- Cost-allocation and rate design.
- 286. B.C. UC** 3698715 & 3698719; performance-based ratemaking plan for FortisBC companies; British Columbia Sustainable Energy Association and Sierra Club British Columbia. Direct (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. Conn. PURA** Docket No. 14-01-01, Connecticut Light and Power Procurement of Standard Service and Last-Resort Service. July and October 2014.
- Proxy for review of bids. Oversight of procurement and selection process.
- 288. Conn. PURA** Docket No. 14-01-02, United Illuminating Procurement of Standard Service and Last-Resort Service. January, April, July, and October 2014.
- Proxy for review of bids. Oversight of procurement and selection process.
- 289. Man. PUB** 2014, need for and alternatives to proposed hydro-electric facilities; Green Action Centre. Evidence (with Wesley Stevens) February 2014.
- Potential for fuel switching, DSM, and wind to meet future demand.
- 290. Utah PSC** 13-035-184, Rocky Mountain Power Rates; Utah Office of Consumer Services. May 2014.
- Class cost allocation. Classification and allocation of generation plant and purchased power. Principles of cost-causation. Design of backup rates.
- 291. Minn. PSC** E002/GR-13-868, 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.

- 292. Cal. PUC** Rulemaking 12-06-013, electric rates and rate structures; Natural Resources Defense Council. 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.

- 293. Md. PSC** 9361, proposed merger of PEPCo Holdings into Exelon; Sierra Club and Chesapeake Climate Action Network. Direct, December 2014; surrebuttal, January 2015.

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

- 294. N.S. UARB** M06514, 2015 capital-expenditure plan of Nova Scotia Power; Nova Scotia Consumer Advocate. January 2015.

Economic evaluation of proposed projects. Treatment of AFUDC, overheads, and replacement costs of lost generation. Computation of rate effects of spending plan.

- 295. Md. PSC** 9153 et al., Maryland energy-efficiency programs; Maryland Office of People's Counsel. January 2015.

Costs avoided by demand-side management. Demand-reduction-induced price effects.

- 296. Québec Régie de L'énergie** R-3867-2013 phase 1, Gaz Métro cost allocation and rate structure; ROÉÉ. February 2015

Classification of the area-spanning system; minimum system and more realistic approaches. Allocation of overhead, energy-efficiency, gas-supply, engineering-and-planning, and billing costs.

- 297. Conn. PURA** Docket No. 15-01-01, Connecticut Light and Power Procurement of Standard Service and Last-Resort Service. February and July 2015.

Proxy for review of bids. Oversight of procurement and selection process.

- 298. Conn. PURA** Docket No. 15-01-02, United Illuminating Procurement of Standard Service and Last-Resort Service. February, July, and October 2015.

Proxy for review of bids. Oversight of procurement and selection process.

- 299. Ky. PSC** 2014-00371, Kentucky Utilities electric rates; Sierra Club. March 2015.

Review basis for higher customer charges, including cost allocation. Design of time-of-day rates.

- 300. Ky. PSC 2014-00372**, Louisville Gas and Electric electric rates; Sierra Club. March 2015.

Review basis for higher customer charges, including cost allocation. Design of time-of-day rates.

- 301. Mich. PSC U-17767**, DTE Electric Company rates; Michigan Environmental Council, Sierra Club, and Natural Resource Defense Council. May 2015.

Cost effectiveness of pollution-control retrofits versus retirements. Market prices. Costs of alternatives.

- 302. N.S. UARB M06733**, supply agreement between Efficiency One and Nova Scotia Power; Nova Scotia Consumer Advocate. June 2015.

Avoided costs. Cost-effectiveness screening of DSM. Portfolio design. Affordability and bill effects.

- 303. Penn. PUC P-2014-2459362**, Philadelphia Gas Works DSM, universal-service, and energy-conservation plans; Philadelphia Gas Works. Direct, May 2015; Rebuttal, July 2015.

Avoided costs. Recovery of lost margin.

- 304. Ont. Energy Board EB-2015-0029/0049**, 2015–2020 DSM Plans Of Enbridge Gas Distribution and Union Gas, Green Energy Coalition. Evidence July 31, 2015, Corrected August 12, 2015.

Avoided costs: price mitigation, carbon prices, marginal gas supply costs, avoidable distribution costs, avoidable upstream costs (including utility-owned pipeline facilities).

- 305. PUC Ohio Case No. 14-1693-EL-RDR**, AEP Ohio Affiliate purchased-power agreement, Sierra Club. September 2015.

Economics of proposed PPA, market energy and capacity projections. Risk shifting. Lack of price stability and reliability benefits. Market viability of PPA units.

- 306. N.S. UARB Matter No. M06214**, NS Power Renewable-to-Retail rate, Nova Scotia Consumer Advocate. November 2015.

Review of proposed design of rate for third-party sales of renewable energy to retail customers. Distribution, transmission and generation charges.

- 307. PUC Texas Docket No. 44941**, El Paso Electric rates; Energy Freedom Coalition of America. December 2015.

Cost allocation and rate design. Effect of proposed DG rate on solar customers. Load shapes of residential customers with and without solar. Problems with demand charges.

- 308. N.S. UARB** Matter No. M07176, NS Power 2016 Capital Expenditures Plan, Nova Scotia Consumer Advocate. February 2016.

Economic evaluation of proposed projects, including replacement energy costs and modeling of equipment failures. Treatment of capitalized overheads and depreciation cash flow in computation of rate effects of spending plan.

- 309. Md. PSC** Case No. 9406, BGE Application for recovery of Smart Meter costs, Maryland Office of People’s Counsel. Direct February 2016, Rebuttal March 2016, Surrebuttal March 2016.

Assessment of benefits of Smart Meter programs for energy revenue, load reductions and price mitigation; capacity load reductions and price mitigation; free riders and load shifting in peak-time rebate (PTR) program; cost of PTR participation; effect of load reductions on PJM capacity obligations, capacity prices and T&D costs.

- 310. City of Austin TX**, Austin Energy 2016 Rate Review, Sierra Club and Public Citizen. May 2016

Allocation of generation costs. Residential rate design. Geographical rate differentials. Recognition of coal-plant retirement costs.

- 311. Manitoba PUB**, Manitoba Hydro Cost of Service Methodology Review, Green Action Centre. June 2016, reply August 2016.

Allocation of generation costs. Identifying generation-related transmission assets. Treatment of subtransmission. Classification of distribution lines. Allocation of distribution substations and lines. Customer allocators. Shared service drops.

- 312. Md. PSC** Case No. 9418, PEPCo Application for recovery of Smart Meter costs, Maryland Office of People’s Counsel. Direct July 2016, Rebuttal August 2016, Surrebuttal September 2016.

Assessment of benefits of Smart Meter programs for energy revenue, load reductions and price mitigation; load reductions in dynamic-pricing (DP) program; cost of DP participation; effect of load reductions on PJM capacity obligations, capacity prices and T&D costs.

- 313. Md. PSC** Case No. 9424, Delmarva P&L Application for recovery of Smart Meter costs, Maryland Office of People’s Counsel. Direct September 2016, Rebuttal October 2016, Surrebuttal October 2016.

Estimation of effects of Smart Meter programs—dynamic pricing (DP), conservation voltage reduction and an informational program—on wholesale revenues, wholesale prices and avoided costs; estimating load reductions from the DP program; cost of DP participation; effect of load reductions on PJM capacity obligations, capacity prices and T&D costs.

- 314. N.H. PUC** Docket No. DE 16-576, Alternative Net Metering Tariffs, Conservation Law Foundation. Direct October 2016, Reply December 2016.

Framework for evaluating rates for distributed generation. Costs avoided and imposed by distributed solar. Rate design for distributed generation.

- 315. Puerto Rico Energy Commission** CEPR-AP-2015-0001, Puerto Rico Electric Power Authority rate proceeding, PR Energy Commission. Report December 2016.

Comprehensive review of structure of electric utility, cost causation, load data, cost allocation, revenue allocation, marginal costs, retail rate designs, identification and treatment of customer subsidies, structuring rate riders, and rates for distributed generation and net metering.

- 316. N.S. UARB** Matter No. M07745, NS Power 2017 Capital Expenditures Plan, Nova Scotia Consumer Advocate. January 2017.

Computation and presentation of rate effects. Consistency of assumed plant operation and replacement power costs. Control of total cost of small projects. Coordination of information-technology investments. Investments in biomass plant with uncertain future.

- 317. N.S. UARB** Matter No. M07746, NS Power Enterprise Resource Planning project, Nova Scotia Consumer Advocate. February 2017.

Estimated software project costs. Costs of internal and contractor labor. Affiliate cost allocation.

- 318. N.S. UARB** Matter No. M07767, NS Power Advanced Metering Infrastructure projects, Nova Scotia Consumer Advocate. February 2017.

Design and goals of the AMI pilot program. Procurement. Coordination with information-technology and software projects.

- 319. Québec Régie de l'énergie** R-3867-2013 phase 3A; Gaz Métro estimates of marginal O&M costs; ROÉÉ. March 2017.

Estimation of one-time, continuing and periodic customer-related operating and maintenance cost. Costs related to loads and revenues. Dealing with lumpy costs.

- 320. N.S. UARB** Matter No. M07718, NS Power Maritime Link Cost Recovery, Nova Scotia Consumer Advocate. April 2017.

Usefulness of transmission interconnection prior to operation of the associated power plant.

- 321. Mass. DPU** 17-05, Eversource Rate Case, Cape Light Compact. Direct April 2017, Rebuttal May 2017.

Critique of proposed performance-based ratemaking mechanism. Proposal for improvements.

- 322. PUCO 16-1852**, AEP Ohio Electric Security Plan, Natural Resources Defense Council. May 2017.

Residential customer charge. Cost causation. Effect of rate design on consumption.

- 323. Iowa Utilities Board RPU-2017-0001**, Interstate Power and Light rate case, Natural Resources Defense Council. Direct August 2017, Reply September 2017.

Critique of proposed demand-charge pilot rates for residential and small commercial customers. Defects of demand rates and shortcomings of IPL experimental proposal design.

- 324. N.S. UARB Matter No. M08087**, NS Power 2017 Load Forecast, Nova Scotia Consumer Advocate. Direct August 2017.

Review of forecast methodology, including extrapolation of drivers of commercial load from US national data; treatment of non-firm and competitive loads; behind-the-meter generation and controlling peak-load growth.

- 325. Québec Régie de l'énergie R-3867-2013 phase 3B**; Gaz Métro line-extension policy; ROÉÉ. September 2017.

The costs of adding new load. Estimating the durability of revenues from line extensions.

- 326. Mass. EFSB 17-02**; Eversource proposed Hudson-Sudbury transmission line; Town of Sudbury. October 2017.

Accuracy of ISO New England regional load forecasts. Potential for distributed solar, storage and demand response.

- 327. Manitoba PUB**, Manitoba 2017/18 & 2018/19 General Rate Application; Green Action Coalition. October 2017.

Marginal costs. Rate design. Affordability rate design for low-income and electric-heating customers. Design of residential inclining blocks. Problems with demand charges and demand ratchets. Cost-of-service study improvements.

- 328. N.S. UARB Matter No. M08383**, NS Power 2018 Annually Adjusted Rates; Consumer Advocate. January 2018.

Projection of incremental dispatch cost. Computing administrative charges. Methodological issues.



- 329. N.S. UARB** Matter No. M08349, NS Power’s Advanced Metering Infrastructure Proposal; Consumer Advocate. January 2018.

Estimation of AMI benefits: load balancing among feeders, critical peak pricing, avoided costs of meters for distributed generation. NS Power’s claims of benefits from accounting credits (AFUDC, overheads, and converting write-offs to reduced revenue) and shifting costs to customers (earlier billing, higher recorded usage). Realistic AMI meter life. Excessive charge for customers who opt out of AMI.

- 330. N.S. UARB** Matter No. M08350, NS Power 2018 Annual Capital Expenditures Plan; Consumer Advocate. February 2018.

Overlap between ACE projects and AMI project. Hydro project planning and valuation of lost hydro energy output.

- 331. Conn. PURA** Docket No. 08-01-01RE05, Proposed Amendment to Peaker Contracts; Connecticut Consumers Counsel. May 2018.

Dividing increased revenues from ISO-NE’s Pay-for-Performance mechanism between contract generators and ratepayers.

- 332. Kansas CC** Docket No. 18-WSEE-328-RTS, Westar Rate Case; Sierra Club. Direct June 2018. Rebuttal June 2018. Supplement July 2018.

Costs and benefits of running Westar coal plants. Costs of renewables and other alternatives. Recommendation regarding planning, coal retirement schedule, and acquisition of leased capacity.

- 333. Cal. PUC** Application 17-09-006; Pacific Gas and Electric Gas Cost Allocation Proceeding; Small Business Utility Advocates. Direct June 2018.

Allocation of gas distribution system costs. Allocation of costs of energy-efficiency programs.

- 334. N.S. UARB** Matter No. M08670, NS Power 2018 Load Forecast, Nova Scotia Consumer Advocate. Direct July 2018.

Review of forecast methodology, including treatment of future energy-efficiency programs, treatment of third-party supply and behind-the-meter generation.

- 335. Iowa Utilities Board** RPU-2018-0003, MidAmerican Energy Request for Approval of Ratemaking Principles for Wind XII; Sierra Club. Direct August 2018.

Cost and benefits of continued operation of six MidAmerican coal-fired units.

- 336. Cal. PUC** A.18-02-016, 03-001, 03-002; 2018 Energy Storage Plans; Small Business Utility Advocates. Direct, Rebuttal and Supplement, August 2018.

Reliance on substation-sited storage. Need for increased emphasis on customer-sited and shared storage. Maximizing benefits, total and for small business. Oversized SDG&E proposed projects. Cost recovery. Storage technology diversity.

- 337. La. PSC U-34794;** Cleco Corp Purchase of NRG Assets and Contracts; Sierra Club. Direct, September 2018.

Economics of NRG generation resources, Cleco Power coal plants and wholesale sales contracts. Risks of the proposed transaction.

- 338. Cal. PUC A.18-11-005;** Southern California Gas Demand-Response Proposal; Small Business Utility Advocates. Direct March 2019, Rebuttal April 2019.

Potential benefits of gas demand response and SoCalGas failure to identify potential benefits from its programs. Program design. Cost allocation.

- 339. Cal. PUC A.18-11-003;** Pacific Gas & Electric Electric Vehicle Rate; Small Business Utility Advocates. Direct April 2019, Rebuttal May 2019.

Critique of subscription demand charge. Time-of-use periods. Outreach to small business. Time-of-use price differentials.

- 340. Cal. PUC A.18-07-024;** Southern California Gas and San Diego Gas & Electric Triennial Cost Allocation Proceeding; Small Business Utility Advocates. Direct April 2019.

Core commercial declining blocks. Computation of customer charges. Embedded versus marginal cost allocation. Marginal cost computation. Allocation of self-generation incentives.

- 341. Vt. PUC Case No. 19-0397-PET;** Screening Values for Energy-Efficiency Measures; Conservation Law Foundation. Direct May 2019.

Conceptual basis for including price-suppression benefits to consumers. Avoided T&D costs. Avoided externalities with a renewable energy standard. Risk mitigation.

- 342. N.S. UARB Matter No. M09096;** EfficiencyOne Application for 2020–2022 DSM Plan; Consumer Advocate. May 2019

Evaluate NS Power critique of EfficiencyOne proposal. Comparability of efficiency budgets. Affordability. Energy-efficiency programs and resource planning.

- 343. N.S. UARB Matter No. M09191;** NS Power 2019 Load Forecast Report; Consumer Advocate. July 2019.

Review load-forecast treatment of energy efficiency, fuel switching, electric vehicles, behind-the-meter solar, AMI-enabled programs, and the changing trend in lighting efficiency.

- 344. Iowa Utilities Board RPU-2019-001;** Interstate Power and Light Rate Case; Sierra Club. August 2019

Economics of continued operation of five coal units: fuel, O&M, capital additions, overheads, market revenues, and cost of renewable resources. Recommend retirement of all units.

- 345. Maine PUC 2019-00101;** Unitil Precedent Agreement for Westbrook Xpress, Conservation Law Foundation. August 2019

The role of fuel conversions in Unitil's load forecast. Mandates for reducing greenhouse gas emissions. Efficient electric end uses as alternatives to gas system expansion. Risks of and alternatives to new pipeline supply.

- 346. Maine PUC 2019-00105;** Bangor Natural Gas Precedent Agreement for Westbrook Xpress, Conservation Law Foundation. August 2019

Mandates for reducing greenhouse gas emissions. Efficient electric end uses as alternatives to gas system expansion. Risks of and alternatives to new pipeline supply.

- 347. Wisconsin PSC 6690-UR-126;** Wisconsin Public Service Corporation 2020 Rate Case, Sierra Club. August 2019

Economics of continued operation of four coal units: fuel, O&M, capital additions, overheads, market revenues, and cost of renewable resources. Recommend retirement of uneconomic units.

- 348. Wisconsin PSC 05-UR-109;** Wisconsin Electric Power Company 2020 Rate Case; Sierra Club. August 2019

Economics of continued operation of six coal units: fuel, O&M, capital additions, overheads, market revenues, and cost of renewable resources. Recommend retirement of uneconomic units.

- 349. N.S. UARB Matter No. M09277;** NS Power Maritime Link Cost Recovery, Nova Scotia Consumer Advocate. August 2019

Benefits of the Maritime Link transmission line prior to operation of associated power supply and connecting transmission facilities.

- 350. Colorado PUC Proceeding AL19-0268E;** Public Service of Colorado Rate Case, Sierra Club. September 2019

Prudence of PSCo regarding need to replace Comanche 3 superheater in fifth year. Economics of coal plants nationally. Regulatory responses to deteriorating coal economics.

**351. N.H. PUC DG 17-152; Liberty Utilities Least Cost Integrated Resource Plan; Conservation Law Foundation. September 2019**

Integrated planning for gas utilities in an era of carbon constraints. Heat pumps as alternative to expansion of gas distribution system. Risk of long-term supply contracts. Availability of LNG imports

## ACRONYMS AND INITIALISMS

APS	Alleghany Power System	NARUC	National Association of Regulatory Utility Commissioners
ASLB	Atomic Safety and Licensing Board	NEPOOL	New England Power Pool
BEP	Board of Environmental Protection	NRC	Nuclear Regulatory Commission
BPU	Board of Public Utilities	OCA	Office of Consumer Advocate
BRC	Board of Regulatory Commissioners	PSB	Public Service Board
CC	Corporation Commission	PBR	Performance-based Regulation
CMP	Central Maine Power	PSC	Public Service Commission
DER	Department of Environmental Regulation	PUC	Public Utility Commission
DPS	Department of Public Service	PUB	Public Utilities Board
DQE	Duquesne Light	PURA	Public Utility Regulatory Authority
DPUC	Department of Public Utilities Control	PURPA	Public Utility Regulatory Policy Act
DSM	Demand-Side Management	ROÉÉ	Regroupement des organismes environnementaux en énergie
DTE	Department of Telecommunications and Energy	SCC	State Corporation Commission
EAB	Environmental Assessment Board	UARB	Utility and Review Board
EFSB	Energy Facilities Siting Board	USAEE	U.S. Association of Energy Economists
EFSC	Energy Facilities Siting Council	UC	Utilities Commission
EUB	Energy and Utilities Board	URC	Utility Regulatory Commission
FERC	Federal Energy Regulatory Commission	UTC	Utilities and Transportation Commission
ISO	Independent System Operator		
LRAM	Lost-Revenue-Adjustment Mechanism		