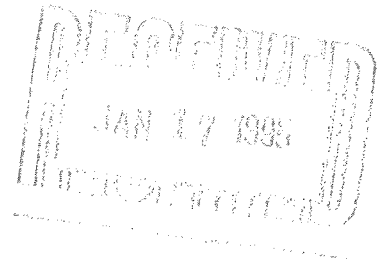


STATE OF MICHIGAN
BEFORE THE PUBLIC SERVICE COMMISSION



In the Matter of the Application of)
Consumers Power Company for Approval)
of a Power Supply Cost Recovery Plan)
and for Authorization of Monthly Power)
Supply Cost Recovery Factors for)
Calendar Year 1995)

Case No. U-10710

DIRECT TESTIMONY OF
PAUL CHERNICK
ON BEHALF OF
THE RESIDENTIAL RATEPAYER CONSORTIUM

Resource Insight, Inc.

January 11, 1995

TABLE OF CONTENTS

	<u>Page</u>
I. Identification and Qualifications.	1
II. Introduction.	3
III. Market Competition and Least-Cost Planning.	15
IV. Competitive DSM Strategies.	20
V. Rate Effects and the RIM Test.	30
VI. Conclusions and Recommendations.	35

1 **I. Identification and Qualifications**

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

3 A: I am Paul L. Chernick. I am president of Resource Insight, Inc., 18 Tremont
4 Street, Suite 1000, Boston, Massachusetts.

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

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

12 I was a Utility Analyst for the Massachusetts Attorney General for more
13 than three years, and was involved in numerous aspects of utility rate design,
14 costing, load forecasting, and the evaluation of power supply options. Since
15 1981, I have been a consultant in utility regulation and planning: first as a
16 research associate at Analysis and Inference, after 1986 as president of PLC,
17 Inc., and since August 1990 in my current position at Resource Insight. In
18 those capacities, I have advised a variety of clients on utility matters,
19 including, among other things, the need for, cost of, and cost-effectiveness of
20 prospective new generation plants and transmission lines; retrospective review
21 of generation planning decisions; ratemaking for plant under construction;
22 ratemaking for excess and/or uneconomical plant entering service;
23 conservation program design; cost recovery for utility efficiency programs; and

1 the valuation of environmental externalities from energy production and use.
2 My resume is attached as Exhibit I-____ (PLC-1).

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

4 A: Yes. I have testified over one hundred times on utility issues before various
5 regulatory, legislative, and judicial bodies, including the Massachusetts
6 Department of Public Utilities, the Massachusetts Energy Facilities Siting
7 Council, the Vermont Public Service Board, the Texas Public Utilities
8 Commission, the New Mexico Public Service Commission, the District of
9 Columbia Public Service Commission, the New Hampshire Public Utilities
10 Commission, the Connecticut Department of Public Utility Control, the Maine
11 Public Utilities Commission, the Minnesota Public Utilities Commission, the
12 South Carolina Public Service Commission, the Federal Energy Regulatory
13 Commission, and the Atomic Safety and Licensing Board of the U.S. Nuclear
14 Regulatory Commission. A detailed list of my previous testimony is contained
15 in my resume.

16 **Q: Have you testified previously before this Commission?**

17 A: Yes. I testified before the Michigan PSC in Cases Nos. U-7775 and U-7785, on
18 power plant performance standards. I also testified before the Commission in
19 Case No. U-10102 on Detroit Edison's demand-side-management program, in
20 Case No. U-10335 and Case No. U-10554, on Consumers Power's demand-
21 side-management planning, non-residential program design, screening,
22 avoided-cost calculations, and cost-recovery proposals, and in Case No. U-
23 10702, on Detroit Edison's proposed PSCR plan for 1995.

24 **Q: Have you been involved in least-cost utility resource planning?**

1 A: Yes. I have been involved in utility planning issues since 1978, including load
2 forecasting, the economic evaluation of proposed and existing power plants,
3 and the establishment of rate for qualifying facilities. Most recently, I have
4 been a consultant to various energy conservation design collaboratives in New
5 England, New York, and Maryland; to the Conservation Law Foundation's
6 conservation design project in Jamaica; to CLF interventions in a number of
7 New England rulemaking and adjudicatory proceedings; to the Boston Gas
8 Company on avoided costs and conservation program design; to the City of
9 Chicago in reviewing the Least Cost Plan of Commonwealth Edison; to the
10 South Carolina Consumer Advocate on least-cost planning; to environmental
11 groups in North Carolina, Florida, Ohio and Michigan on DSM planning; and
12 to several parties on incorporating externalities in utility planning and resource
13 acquisition. I also assisted the DC PSC in drafting order 8974 in Formal Case
14 834 Phase II, which established least-cost planning requirements for the
15 electric and gas utilities serving the District.

16 II. Introduction

17 Q: On whose behalf are you testifying?

18 A: I am testifying on behalf of the Residential Ratepayer Consortium.

19 Q: What is the purpose of your testimony?

20 A: The purpose of my testimony is to respond to the Consumers Power
21 Company's PSCR filing. I first discuss how the Company's 1995 PSCR
22 surcharge reflects the Company's DSM spending plans as presented in the
23 prefiled direct testimony of Carl A. Gilzow in Michigan PSC Case No. U-
24 10554. In this case, the Company proposes to reduce significantly its DSM

1 spending compared to levels ordered by the Commission in Case No. U-10335.
2 Second, I discuss how the five-year plan would fail to acquire all the cost-
3 effective DSM savings identified by the Company in its 1992 Integrated
4 Resource Plan and 1993 IRP Update.

5 **Q: Please summarize the Company's latest DSM plans.**

6 A: Consumers Power's primary proposal in Case No. U-10554 is to discard the
7 DSM spending plans for the next three years that were approved by the
8 Commission in Case U-10335. Instead, the Company would spend \$22.5
9 million over the one-year period from May 1994 to April 1995 to acquire 60
10 GWh of DSM. This represents a 75% reduction from the 240 GWh that could
11 reasonably be saved by spending \$30 million each year for the next three
12 years, as ordered by the Commission in Case No. U-10335. The Company's
13 1994 load forecast, and the current PSCR filing (Montague Direct at 2 TR
14 106-107), reflects \$22.5 million in DSM spending.¹

15 Starting in 1996, the Company would compose a DSM portfolio of only
16 residential and commercial programs that pass the Rate Impact Measure (RIM)
17 Test; however, no programs, RIM-passing or otherwise, would be offered for
18 primary service customers over 500 kW. Since the Company has been unable

¹ In contrast to Mr. Montague's testimony, Mr. Gilzow's prefiled direct testimony in Case No. U-10554 indicates that the Company is proposing to spend \$30 million over two years. The Company does not offer any explanation for this discrepancy. Furthermore, the Company's has not specified over what time period it would spend the proposed \$22.5 million. Company Witness David Montague testifies in the instant case (at 2 TR 106-109) that Consumers' PSCR factors are based, in part, on "first year (1994-1995 partial) program spending of \$22.5 million." However, in response to discovery in Case No. U-10554, the Company indicates that \$22.5 million would be spent over four years from 1994 to 1997 (Response to 10554-S-CP-46).

1 to identify any efficiency program that passes the RIM, the proposal may be
2 the equivalent of simply eliminating spending on efficiency programs for any
3 customer class.

4 **Q: How do the Company's DSM plans pertain to its energy costs in the PSCR**
5 **filing?**

6 A: Failure to acquire cost-effective DSM savings would lead the Company to
7 purchase more expensive supply, increasing energy costs above the level that
8 would otherwise be required. The Commission has explicitly linked
9 Consumers' DSM plans to its PSCR filings and five-year plans (March 29
10 1990 Order in Case No. U-9127 at 23-26; July 22 1992 Order in Case No. U-
11 9960 at 36).

12 The Company's estimate of 1995 energy costs are needlessly inflated
13 because they reflect DSM spending of only \$22.5 million between May 1994
14 and April 1995, instead of the Commission-authorized spending of \$30 million
15 *per year* starting in May 1994 and continuing through 1995 (and beyond).
16 Energy costs in 1995 are increased by reduced DSM spending in both 1994
17 and 1995. Since savings from DSM spending in 1994 persist into 1995 and
18 beyond, the failure to acquire the savings in 1994 will increase energy
19 requirements in 1995.

20 Consumers' proposed five-year plan would further restrict the acquisition
21 of cost-effective DSM savings after 1995. Consequently, its five-year plan
22 would lead to greater energy costs after 1995 than if the Company
23 comprehensively acquired all cost-effective demand-side resources identified
24 in its 1992 IRP and 1993 Update.

25 **Q: What reasons does Consumers give for abandoning the DSM ordered by**
26 **the Commission?**

1 A: The Company says that it faces growing competition and therefore must keep
2 customer rates, not costs, as low as possible.

3 In summary, the current environment is much more competitive and price
4 sensitive than it ever has been and Consumers Power believes it is only
5 prudent to invest in DSM where the resultant rate increase to the customer
6 is offset by the benefits provided. Continuing to select resources based
7 primarily on the Utility Cost (UC) or Total Resource Cost (TRC) tests
8 does not address the competitive realities in the marketplace. Customers
9 pay rates, not revenue requirements. Over-reliance on the TRC and UC
10 tests will simply result in more of the customers leaving the CPCo system.
11 (Gilzow Prefiled Direct in Case No. U-10554 at 7-8)

12 Q: Please summarize the findings of your evaluation of the Company's
13 proposal.

14 A: The Company's DSM funding proposal is simply without merit. In response to
15 some ill-defined threat of retail competition, and without any analytical basis,
16 Consumers proposes wholesale abandonment of its obligation to provide least-
17 cost energy services to its customers. The Company has apparently concluded
18 that the only feasible response to rate concerns on the part of its large
19 industrial customers is to forego DSM efforts that can provide cost,
20 environmental, risk-reduction, and employment benefits to all ratepayers.

21 The Company's proposal to eliminate or severely scale back its DSM
22 efforts is ill-advised, given the broad customer support for these programs and
23 strong evidence of significant potential for additional cost-effective savings.
24 Evaluation results from the last three years of program implementation show
25 that the Company's programs, including the program targeted to large
26 commercial and industrial customers, achieved high levels of customer
27 satisfaction and prompted customer demand for services well in excess of
28 program goals. Based on the findings of Consumers' 1992 IRP and 1993

1 Update, current activity levels will acquire only a minor fraction of the cost-
2 effective savings potential in the Company's service territory.

3 The Company's proposal constitutes imprudent planning. Consumers
4 faces an immediate need for new capacity, even accounting for its currently
5 authorized DSM efforts. If these efforts are abandoned, ratepayers will likely
6 face immediate cost increases as the Company substitutes more-expensive
7 supply for the foregone DSM. Ironically, the Company's proposed strategy
8 could lead to significant rate increases in the near term; the rate effects
9 associated with front-loaded recovery of additional supply costs could be
10 severe. Increases in bills (as well as rates) and reduction in customer service
11 would tend to reduce the competitiveness of Consumers and its business
12 customers.

13 In its August 18, 1994, order in Case U-10335 (at 17-18), the
14 Commission noted,

15 The appropriate level of future DSM spending was addressed in detail in
16 the Commission's May 10, 1994 order, and the decision on that issue was
17 based on hundreds of pages of testimony and exhibits offered by the
18 parties. Furthermore, the \$30 million annual spending level authorized for
19 1994 through 1996 represented a significant reduction from the levels
20 proposed by Consumers' witnesses and supported by the utility's most
21 recent integrated resource plan. In contrast, Consumers' current proposal
22 to further reduce spending is based solely on vague claims of an
23 increasingly competitive environment, rather than on specific facts or
24 circumstances arising after the close of the record.

25 The Company's current proposal is based on equally vague claims that
26 are similarly unsupported by events since the issuance of the order last
27 summer.

28 **Q: What is the magnitude of cost-effective savings foregone by the Company's**
29 **proposal?**

1 A: The Company's filing in this proceeding does not provide any estimate of the
2 loss of savings due to the Company's abandonment of its current DSM
3 spending plans. However, in response to 10554-S-CP-48, the Company
4 estimates that DSM spending of \$22.5 million will save, after a one-year lag,
5 about 60 GWh and 20 MW per year (inclusive of losses).²

6 Assuming a linear relationship between spending and savings acquired,
7 the Company's proposal to cease all further spending, rather than spending the
8 authorized \$30 million annually for three years, would result in a loss of
9 approximately 240 GWh and 90 MW of annual savings. Under the Company's
10 alternative proposal, to spend only \$22.5 million, the loss will amount to
11 approximately 180 GWh and 70 MW of annual DSM savings, due to just the
12 first three program years.³

13 As highlighted by the Commission in its August 18, 1994 order in U-
14 10335, the magnitude of foregone cost-effective savings is actually many times
15 larger than estimated above. In its 1992 IRP (at 10-2), Consumers' Preferred
16 Plan included \$69 million of cost-effective DSM spending in 1995, yielding
17 annual savings of 335 GWh and 116 MW.⁴ Cost-effective spending in the
18 Preferred Plan increased steadily through 2001, with cumulative savings
19 reaching 3,228 GWh and 687 MW. In addition, the Company's analysis of an

² These savings levels will decline over time as installed measures reach the end of their useful lives. The calculations in the response to 10554-S-CP-48 appear to assume an average measure life of about 15 years.

³ The lost savings and the need for replacement supplies would continue long beyond the three-year period.

⁴ In the Company's 1993 Long-Range Resource Plan Update to its 1992 IRP, Consumers reduced these savings estimates by 20% because it assumed that DSM was only 80% "effective" (Consumers Power, 1993 Long-Range Resource Plan Update at Exhibit 1).

1 intensified DSM scenario indicated a cost-effectively achievable potential
2 almost double that of the Preferred Plan.

3 **Q: Will this loss of savings subside with implementation of RIM-passing**
4 **programs in 1996?**

5 A: Probably not. As discussed in more detail in Section V (pp. 29–34), adoption
6 of the RIM as the primary screening test will result in the rejection of cost-
7 effective DSM. In fact, the Company notes in response to 10554-S-CP-5 that it
8 “has not identified any energy-efficiency programs which pass the RIM Test.”

9 Even if it is possible to design efficiency programs that pass the RIM, the
10 savings will likely be significantly less than achievable with a program
11 designed to maximize total resource or utility net benefits. For example, in
12 support of proposed DSM goals, the four largest electric utilities in Florida
13 estimated savings for a portfolio of TRC-passing measures and a portfolio of
14 RIM-passing measures. Aggregate energy savings for the RIM portfolios were
15 26% to 63% of the savings for the TRC portfolios (Chernick, Paul, Direct
16 Testimony in Florida PSC Dockets 930548-EG–930551-EG, at Exhibit LEAF-
17 PC-5). Since the TRC portfolios (especially for the utilities with the higher
18 RIM-to-TRC ratios) were not designed to maximize TRC net benefits, savings
19 from measures and programs that would pass the RIM Test would likely be
20 less than a quarter of the savings for an optimal TRC portfolio.

21 **Q: Has the Company analyzed the cost or rate implications of its proposal?**

22 A: No. In response to 10554-S-CP-13 and-14, the Company admits that it has not
23 conducted an integrated-resource-planning analysis of its proposal to eliminate
24 all spending, or its alternative proposal to restrict spending to programs that
25 pass the RIM, or even of the currently approved spending plan. Absent such
26 analyses, the Company appears to lack critical information on the magnitude

1 or timing of the cost and rate effects associated with its proposed strategy.
2 Thus, the Company has no basis for determining whether its proposed strategy
3 would have the desired effect on rates to retain or attract industrial and
4 municipal load, or for estimating the cost implications of this particular load-
5 retention strategy.

6 The Company's failure to undertake an integrated planning analysis
7 contravenes explicit Commission directives:

8 Although the Commission may not make utility management decisions, the
9 Commission must determine whether a utility has incurred costs pursuant
10 to reasonable and prudent actions, a prerequisite for cost recovery. Based
11 on that authority, the Commission has stated the expectation that each
12 utility will ground its decisions concerning meeting additional needed
13 capacity on the company's integrated resource plan. Because the
14 Commission also expects a reasonable degree of continuity in utility
15 planning processes, the companies are required to fully explain and justify
16 any significant deviation from the most recent integrated resource plan.
17 (October 12 1994 order in Case U-10574 at 12)

18 The Commission expressly recognizes the connection between integrated
19 resource planning and energy costs, and the relevance of integrated resource
20 planning and the appropriate PSCR plan and five-year forecast:

21 The Commission finds that in order to evaluate the reasonableness and
22 prudence of the decisions underlying the PSCR plan and the five-year
23 forecast filed by the utility, Consumers' future PSCR plans and forecasts
24 must be derived from and consistent with the Company's most recent
25 integrated resource plan....

26 Further, the Commission directs that the company's future PSCR plans and
27 five-year forecasts, beginning with its 1992 PSCR plan...must derive from
28 and be consistent with the company's most recently filed integrated
29 resource plan. Documentation of the five-year forecast must include a
30 thorough evaluation of the cost-effectiveness of demand-side-management
31 and non-utility resource options relative to other resource options. (March
32 29 1990 Order in Case No. U-9127 at 23, 25)

1 Consumers should be put on notice that costs associated with resource
2 planning decision may be disallowed if they are not properly justified by
3 information and analysis in future IRPs and if the cost of fuel or purchased
4 and net interchange power rises to an unreasonable or imprudent level as a
5 result. (July 22 1992 Order in Case No. U-9960 at 36)

6 **Q: Has the Company presented a reasonable assessment of the likely role of**
7 **DSM in a competitive market?**

8 A: No. The Company has not presented a credible evaluation of the likelihood or
9 nature of retail competition, or of the role of DSM in a competitive market. In
10 particular, the Company has failed to provide any evidence to support its
11 position that competition will be primarily on the basis of commodity price, or
12 that DSM-related rate effects will be a major consideration in price
13 competition.⁵ Instead, Consumers simply asserts that price concerns will be
14 paramount, and that DSM-related rate increases will undermine the Company's
15 and its customers' competitiveness.

16 The Company's focus on price competition ignores the fact that an
17 industrial firm's viability will depend in part on its ability to minimize the cost
18 of the energy service input to its production process, not necessarily the price
19 of the electricity purchased. In short, competitiveness depends on bills (or bills
20 per unit of output), not rates (or bills per kWh of input).⁶ Customer bills, in

⁵ Gilzow (Prefiled Direct in Case No. U-10554 at 7) claims that the "average rate impact for an industrial customer would reach almost 0.7 mills per kWh in the third year [of the authorized spending level] excluding...incentive payments...or lost revenue recovery." However, this estimate appears to be for the size of the DSM surcharge, ignoring all other rate effects (Response to 10554-S-CP-50).

⁶ If only price per unit of energy input mattered, customers would always select gas over electricity. Since electricity often requires fewer BTUs to accomplish a task, and since electric equipment is often less expensive than gas equipment, customers frequently select

1 turn, depend on both rates and the efficiency with which electricity is
2 converted to provide energy services. Demand-side-management-related rate
3 increases should not reduce a firm's competitive position, or the economic
4 attractiveness of the service territory, if the DSM activities allow the firm to
5 reap proportionately larger process efficiency improvements.

6 A well-designed DSM portfolio can increase the attractiveness of the
7 Company's service territory to its current and prospective new customers. In
8 fact, inconsistent with its position in this proceeding, the Company explicitly
9 recognizes the competitive value of DSM in its filing in Case No. U-10625. In
10 the latter proceeding, the Company asserts that one of its first lines of defense
11 against the threat of self-generation would be to identify "opportunities for
12 energy savings that provide better economic returns than the competitive
13 alternative to the Company's electric service" (Polich, Richard, Prefiled Direct
14 Testimony in Michigan PUC Case No. U-10625 at 6). Yet in Case No. U-
15 10554, the Company is proposing to dismantle the very tools required to
16 address these savings opportunities and mitigate the competitive threat.

17 **Q: Has the Company reasonably characterized the threat of price competition**
18 **for customers that cannot or will not take advantage of the Company's**
19 **DSM opportunities?**

20 **A:** No. Even if competition were primarily on the basis of commodity price, the
21 Company has failed to provide any evidence of the size or timing of the rate
22 impact associated with its current spending plans, or of the level of rate
23 increase that would undermine the Company's competitiveness. The Company

electricity to achieve a lower cost per unit of output. Similarly, efficient electric use may
cost more per kWh, but less per unit of energy service, than inefficient electric use.

1 therefore has no idea how much rates will increase with its current DSM plans,
2 or whether its proposed strategy will in any way improve the attractiveness of
3 its service to those customers who are most price-sensitive.

4 Moreover, the Company has failed to evaluate the effect of other rate-
5 mitigating strategies on its competitive position. Instead, the Company
6 proposes to bar all large primary service customers from participating in DSM
7 programs, regardless of their willingness to participate or the extent to which
8 they are capable of acquiring savings on their own. In combination with
9 Consumers' proposal to eliminate or severely restrict DSM spending for other
10 customers, the Company's strategy represents a losing proposition for all
11 parties.⁷ Primary service customers willing to participate in a DSM program
12 will be barred from doing so. Other customers, who are unlikely to participate
13 in or gain from the competitive market, will no longer be able to reduce costs
14 through DSM programs. And price-sensitive customers may look to alternative
15 sources of power if the rate effects of supply replacements for the foregone
16 DSM are too severe in the near term.

17 **Q: What is the impact of Consumers' DSM-cutback plan on the company's**
18 **energy costs for 1995?**

⁷ Except perhaps for Consumers' and Midland Cogeneration Venture's shareholders, if the foregone DSM is replaced with additional purchase of MCV power above currently authorized amounts. In fact, the Company's 1995 PSCR Plan assumes savings for only the first program year and 320 MW of additional MCV purchases (Polena, R. J., Direct Testimony at Exhibit A-12 [RJP-1]). As proposed by the Company in Case U-10625, the additional MCV purchases will be used to offer discounted prices to customers at risk of leaving the system. A less-expensive load-retention strategy might be to reduce load at these customers' facilities with cost-effective efficiency upgrades, rather than meeting their demand with more costly MCV power.

1 A: The Company does not provide this information, and making reasonable
2 estimates would be beyond the scope of my testimony.

3 **Q: Please summarize your recommendations.**

4 A: The Commission should reject the Company's 1995 PSCR surcharge and
5 proposed five-year plan. Consumers should be required to recalculate 1995
6 energy costs based on an assumed DSM spending level of \$30 million per year
7 starting in May of 1994.⁸

8 The Commission should take this opportunity to remind the Company
9 once again of its obligation to minimize ratepayer costs through integrated
10 least-cost planning:

11 The Commission Staff and Michigan utilities should continue to use
12 integrated resource planning principles to prevent current and future plan-
13 ning decision from burdening future customers with unwarranted costs or
14 unreliable energy systems. (MPSC October 12 1994 Order in Case U-
15 10574 at 21)

16 ...Consumers should remain cognizant of (1) the fact that the primary goal
17 of integrated resource planning...is to minimize the utility's total long-term
18 cost of service, (2) the Commission's requirement, as set forth in its March
19 29, 1990 order in Case No. U-9172, that Consumers rely on the IRP
20 process to achieve the lowest cost for its future supply of power, and (3)
21 the fact that the Energy Policy Act of 1992 emphasizes the need to
22 minimize total system cost when conducting utility planning. (MPSC
23 August 18, 1994 Opinion and Order in Rehearing in Case No. 10335 at
24 18-19)

⁸ The issue here is whether the total power-supply costs being charged to ratepayers is excessive, not whether the PSCR rate is higher or lower. Thus, any excess costs due to the Company's imprudent failure to implement DSM should be denied, but no adjustment should be made to actual sales levels.

1 The Commission should expressly reject the Company's proposed use of
2 the RIM Test and remind the Company that use of the RIM to screen DSM is
3 not consistent with least-cost-planning principles.

4 **III. Market Competition and Least-Cost Planning**

5 **Q: What is the Company's rationale for proposing to discard its current DSM**
6 **spending plans?**

7 A: The Company sees the utility environment as ever more competitive and price-
8 sensitive, with large customers and municipals able to turn to alternative
9 energy suppliers, self-generation, or cogeneration. The Company contends that
10 increasing rates due to DSM would drive away large, price-sensitive
11 customers, and precipitate falling sales that would hurt all ratepayers. In this
12 more competitive market, Consumers recommends the minimization of rates,
13 not bills, as the appropriate objective of DSM program planning.

14 **Q: Has Consumers performed any analyses to support its claims about the**
15 **effect of DSM on the competitiveness of the Company or its customers?**

16 A: No. As acknowledged in responses to discovery in Case No. 10554, the
17 Company has not conducted any studies regarding the effect of DSM costs on
18 customers' ability to compete, or on the likelihood that customers will seek out
19 alternative suppliers.⁹ Moreover, the Company has not performed any analyses

⁹ In support of its concerns, Mr. Gilzow (Prefiled Direct in Case No. U-10554 at 7) cites estimates of the bill payments required by primary service customers for their share of DSM program costs. However, in response to 10554-CP-S-33, the Company acknowledges that these payments constitute less than one percent of these customers' total electricity bill. Furthermore, Mr. Gilzow's calculations do not account for potential bill savings if these customers participated in the Company's DSM programs.

1 to support Mr. Gilzow's claim (in prefiled direct testimony in Case No. U-
2 10554) that reliance on the TRC or UC tests will lead to customers leaving the
3 system (Responses to 10554-S-CP-3, 4, and 8).

4 **Q: Will reliance on the TRC Test in the selection of DSM resources hurt the**
5 **competitive position of the utility?**

6 A: No. Bills are more important to customers than are rates. Bills, not rates,
7 determine whether an industrial plant is competitive with others in its industry.
8 Therefore, bills determine the competitive position of the utility.

9 **Q: Do Consumers' concerns about competition justify making rate**
10 **minimization its major planning objective?**

11 A: No. The Company's outlook is clearly inconsistent with the interests of all
12 customer classes and contrary to the economic interests of the region. Reduced
13 spending on cost-effective DSM will needlessly raise total energy-service costs
14 for both small, less-price-responsive customers and for large industrial
15 customers alike. Reliance on the RIM Test to screen individual programs
16 would have similarly detrimental effects by eliminating many efficiency
17 measures that reduce total energy service costs.

18 Consumers proposes to discard not just its DSM spending plans, but its
19 fundamental obligation to provide energy services at least cost. Least-cost
20 planning dictates that Consumers select DSM resources whenever they are less
21 expensive than the supply alternatives for meeting customer demand. In
22 contrast, a rate-minimization strategy would reject the low-cost DSM resource,
23 in favor of the more-expensive supply, if DSM raised rates more than supply.

24 **Q: How can economical DSM raise rates more than the supply alternative?**

1 A: Utility expenditures, whether on DSM or supply resource, directly increase
2 revenue requirements and rates. However, unlike supply, many DSM measures
3 reduce sales.¹⁰ This reduction in sales further increases rates because the sunk
4 costs of the existing system are spread over a smaller sales base; reduced
5 revenues from program participants translates into higher rates for all
6 customers. This revenue loss is not an economic cost—total revenue
7 requirements are unaffected—but a redistribution of the burden of sunk costs.

8 The effect of DSM lost revenues is illustrated in Exhibit I-____ (PLC-2).
9 If DSM costs 3¢/kWh and supply costs 4¢/kWh (Columns A and B), the
10 increase in revenue requirements to serve additional load are 25% lower with
11 DSM than with supply. In contrast, rates with DSM increase 0.4%, while rates
12 with supply *decrease* only 0.4%.¹¹

13 Exhibit I-____ (PLC-2) also illustrates how seriously the RIM Test and
14 Consumer's uncritical pursuit of rate minimization would frustrate least-cost
15 planning objectives. Assuming the same level of DSM savings at no cost to the
16 utility, revenue requirements will be 0.6% lower when selecting DSM over the
17 more-expensive supply. However, since rates with DSM exceed rates with
18 supply, the RIM Test would reject the no-cost DSM, in favor of supply.

19 **Q: Who might gain from the Company's strategy?**

¹⁰ This is the direct effect. By increasing discretionary income and reducing the costs of doing business, energy efficiency may result in increased economic activity, industrial production, and electricity sales in Consumers service territory.

¹¹ In addition to generating supply, DSM avoids investments in reserves and load-related upgrades to the transmission and distribution system. In this example, "supply cost" can be considered to include costs for all avoided components.

1 A: Benefits would primarily accrue to customers who are unwilling or unable to
2 reduce energy-service costs through DSM program participation. These are the
3 only customers who are likely to be better off without effective DSM
4 programs.

5 In essence, the Company would impose real economic losses on the vast
6 majority of large and small customers who could benefit from higher energy
7 efficiency, for the sake of avoiding any DSM costs for a small group that might
8 not participate in DSM programs.

9 **Q: Are the Company's options limited to choosing either higher bills through**
10 **abandonment of DSM or higher bills through loss of industrial load?**

11 A: No. As discussed in detail in Section IV (pages 21-29), there are a number of
12 strategies that can be employed to minimize costs, retain existing load, and
13 attract new load without sacrificing the economic benefits of DSM. In fact,
14 these options include the use of DSM for reducing the cost of doing business
15 in the Company's service territory.

16 **Q: Besides cost savings, are other benefits sacrificed under least-rates**
17 **planning?**

18 A: Yes. In addition to reducing direct costs to ratepayers, DSM can also reduce
19 cost uncertainty, reduce environmental impacts, and create jobs. Although not
20 explicitly reflected in revenue requirements, these are tangible benefits that
21 improve the welfare of Consumers' customers, including large industrials, and
22 the attractiveness of the service territory.

1 The risk-mitigating, environmental, and employment benefits of DSM
2 have been extensively documented.¹² The Company's 1992 IRP (at Section 8)
3 also provides evidence of the environmental benefits of DSM, showing
4 dramatic reductions in system emissions of CO₂, SO₂, and NO_x with increases
5 in DSM savings.

6 **Q: How have commissions in other states responded to proposed DSM**
7 **cutbacks due to competitiveness concerns?**

8 A: Several utilities have proposed cutbacks explicitly due to *rate* concerns,
9 without necessarily specifying what the underlying concerns are. It is thus
10 difficult to determine whether competitiveness is a motivating factor.

¹² For a survey of analyses of the risk-mitigating benefits of DSM, see Chernick, Paul. 1993. "Risk and Other Nonprice Factors in Valuing DM," *From Here to Efficiency: Securing Demand-Management Resources* 5:99-138. Harrisburg, Penn.: Pennsylvania Energy Office. In addition, see Xenergy, Inc. 1994. "Exploration of Diversity and DSM Flexibility in Integrated Resource Planning" ORNL/41X-03373V. Oak Ridge, Tenn.: Oak Ridge National Laboratory. For a detailed discussion of the environmental benefits of DSM, see (1) Ottinger, Richard, et al. 1990. *Environmental Costs of Electricity*. Dobbs Ferry, New York: Oceana. (2) Vine, Edward, Drury Crawley, and Paul Centolella (Eds.). 1991. *Energy Efficiency and the Environment: Forging the Link*. Washington: American Council for an Energy Efficient Economy. There have been numerous analyses of the job-creation benefits of DSM. These include (1) Laitner, Skip, John DeCicco, Neal Elliot, Howard Geller, and Marshall Goldberg. 1994. "Energy Efficiency as an Investment in Ohio's Economic Future." Columbus, Ohio: Campaign for an Energy-Efficient Ohio. (2) Jaccard, Mark, and David Sims. 1991. "Employment Effects of Electricity Conservation: The Case of British Columbia" *Energy Studies Review* 3(1):35-44. (3) Geller, Howard, John DeCicco, and Skip Laitner. 1992. "Energy Efficiency and job Creation: The Employment and Income benefits from Investing in Energy-Conserving Technologies." Washington: American Council for an Energy Efficient Economy. (4) Tennis, Michael, Ian Goodman, and Matthew Clark. "Employment Impacts of New York State Energy Options." Boston: The Goodman Group. A study of the employment impacts of DSM in Michigan is forthcoming from ACEEE.

1 In many of these cases, and unlike Consumers, the utilities have faced
2 surplus capacity, low avoided costs, and a severely depressed regional
3 economy. Most of the utilities that have recently reduced substantial DSM
4 spending have nonetheless maintained spending levels much higher than the
5 budget that Consumers is proposing to eliminate.

6 Commissions in New York and Oregon have reaffirmed their commitment
7 to DSM and broader least-cost planning goals in the face of proposed
8 cutbacks. The New York Public Service Commission rejected DSM cutbacks
9 proposed by the Long Island Lighting Company, which expressed
10 competitiveness concerns. The Commission based its decision on its staff's
11 finding that "substantial value will be lost to customers, in terms of bill savings
12 and net resource savings, if all of the proposed program reductions are carried
13 out." (New York PSC Case 93-E-1045, Staff Memorandum at 16) The staff of
14 the Oregon Public Utilities Commission recommended in a draft decision
15 denial of PacifiCorp's proposal to restrict DSM rate impacts, citing the utility's
16 continuing obligation to minimize total resource costs.

17 [T]he Commission has not wavered in the least-cost planning principles
18 adopted by Order No. 89-507 and restated in Order No. 93-206:
19 Minimizing total resource cost is the key standard by which to assess
20 alternative resource acquisitions. Minimizing rates is a secondary
21 consideration. (Oregon PUC Staff Proposed Order Regarding PacifiCorp's
22 Third Resource and Market Planning Program [October 18, 1994] at 17)

23 In addition, the Connecticut Department of Public Utility Control has
24 reaffirmed its commitment to DSM in a generic inquiry on retail wheeling. The
25 DPUC asserted that its "commitment to cost effective conservation will not
26 wane." (Connecticut DPUC, Draft Decision in Docket No. 93-09-29, at 52).
27 The Department also noted the load-retention and load-building attributes of
28 DSM:

1 In a narrow sense, conservation lowers load but the primary purpose of
2 much of the current conservation expenditures are to retain load and
3 attract new business.... UI has recognized the importance of customer
4 service and has aggressively pursued conservation despite or perhaps
5 because of its high retail rates. Such emphasis on customer service should
6 increase with competition. (Connecticut DPUC at 53)

7 **IV. Competitive DSM Strategies**

8 **Q: Has the Company presented a credible characterization of emerging**
9 **competitive forces at the retail level?**

10 **A:** The Company does not attempt to characterize competition in the instant
11 proceeding. The Company's discussion of emerging competitive forces in Case
12 No. U-10554 is limited to a recital of legislative and regulatory actions that are
13 changing the landscape of wholesale competition, glancing reference to
14 Michigan's retail wheeling experiment and California's recently approved
15 guidelines, and a discussion of recent cogeneration and municipalization
16 developments in its service territory. The Company cites these developments as
17 evidence that the retail market is becoming "...much more competitive and
18 price sensitive than it has been..." (Gilzow Prefiled Direct in Case No. U-
19 10554 at 7).

20 Contrary to the Company's vague assertions, competition is nothing new.
21 Utilities routinely compete in wholesale markets for off-system sales and
22 purchases, against both other utilities and independent power producers.
23 Utilities have also faced competitive pressure at the retail level for many years,
24 with the ever-present threat of self-generation or relocation by their large
25 customers. Utilities also actively compete for retail load by offering economic

1 development rates and other incentives for industrial facility construction or
2 expansion.¹³

3 In addition, the Company's concerns about changes in retail competition
4 in Michigan may be premature and unwarranted. The Commission has made it
5 clear that its decision to experiment with retail wheeling does not pre-ordain
6 its permanence in this State:

7 The Commission emphasizes that the purpose of conducting a limited
8 experiment is to gather and evaluate information that would inform future
9 deliberations concerning whether retail wheeling is ultimately in the public
10 interest and whether it should be included as an element of retail
11 competition on a permanent basis. Today's decision does not find, or
12 attempt to foreshadow a finding, that a large-scale, permanent program of
13 retail wheeling will be in the public interest. (Michigan PUC Order in Case
14 U-10143 and U-10176 at 29)

15 More critically, the Commission has repeatedly reaffirmed its
16 commitment to least-cost planning and DSM in light of emerging competitive
17 forces in its orders in Cases U-10135 and U-10574.

18 Finally, the Company's assessment of the competitive market fails to
19 consider that competition may be on the basis of more than just commodity
20 price.¹⁴ Instead, customers may be looking for a bundle of services that
21 provide reliable power at minimum costs with minimum cost uncertainty.
22 These services could include

¹³ What has changed in the nature of competitive pressures is an apparently renewed vigor on the part of large industrials to wield the threat of leaving the system to extract price concessions.

¹⁴ Indeed, a New Hampshire company is planning to compete for Public Service Company of New Hampshire's industrial load by offering a bundle of power-supply and efficiency services, and believes that PSNH's lack of DSM makes PSNH more vulnerable to competition. Northeast Power Report. 1994. "N.H. Lawyer Wants to Become a Utility Underselling PSNH," *Northeast Power Report* (September 2, 1994):1-2.

- 1 • enhanced or guaranteed reliability levels;
- 2 • power-quality services for increased power factor and reduced harmonic
- 3 distortion;
- 4 • detailed end-use load data for load management and real-time pricing;
- 5 • increased energy-service efficiency, including DSM, end-use renewables,
- 6 cogeneration services, and backup power;
- 7 • contract pricing that minimizes price volatility.¹⁵

8 Competition should spur increased attention to development of services
9 that increase customer value, not necessarily price:

10 Increased competition holds the potential for breeding numerous
11 innovations in consumer services, products, and packaging. Competition
12 for customers may spur the development of value-added bundling of
13 services and product features that are tailored more closely to the needs of
14 particular consumer segments. (Connecticut DPUC Draft Decision in
15 Docket No. 93-09-29 at 42)

16 **Q: Is the Company's assessment of the role of DSM in a competitive retail**
17 **market reasonable?**

18 **A:** The Company's speculations on the role of DSM are flawed in three respects.
19 First, the Company appears to assume that least-cost planning and DSM are
20 fundamentally in conflict with competition, and therefore have no role in a

¹⁵ Pennsylvania Electric Company has taken this concept one step forward by offering a full array of technical services to help firms modernize and expand. In addition to assistance with efficiency upgrades, these services include plant operations reviews, assistance with environmental compliance, product testing of manufacturing methods, and accounting and marketing assistance. Tremel, Charles. 1993. "Customer Partnerships: The Magic of Successful Industrial DSM," *Proceedings: Sixth Annual Demand-Side management Conference: Making a Difference* 165-173. Palo Alto, Cal.: Electric Power Research Institute.

1 future competitive market.¹⁶ This view of least-cost planning's untimely
2 demise is inconsistent with many of the retail competition scenarios currently
3 under consideration throughout the industry. These scenarios assume a
4 continued monopoly on distribution services with attendant cost-of-service
5 regulation and least-cost planning obligations.

6 Since market barriers to customer adoption of DSM would persist in a
7 competitive world, distribution utilities would continue to seek to minimize
8 total costs by offering DSM programs tied to distribution service. Demand-
9 side-management costs would be recovered from all customers through
10 distribution charges, regardless of the customer's source of generation. Priced
11 in this fashion, DSM would no longer be a significant factor in retail
12 competition; DSM costs could not be avoided simply by seeking out
13 alternative sources of generation.¹⁷

14 Second, as noted above, Consumers is not accounting for the competitive
15 value of DSM as part of a bundle of pricing, reliability, and efficiency services.
16 As discussed below, DSM can be and has been used to assist firms in

¹⁶ Interestingly, this does not seem to be the general conclusion regarding gas utilities, who have long faced as much competition (from other fuels and from transportation) as electric utilities are likely to face in the foreseeable future, and face even more competition in the wake of FERC Order 636. Many gas utilities (e.g., in Massachusetts, California, Maryland, and Wisconsin) have run extensive DSM programs for several years, and other states (e.g., New York, Connecticut, Minnesota) are moving to expand gas DSM even as competition has increased.

¹⁷ Such a pricing regime is discussed in Hogan, William. 1994. "A Competitive Electricity Market Model." Cambridge, Mass.: John F. Kennedy School of Government Center for Business and Government.

1 economic distress and to generally improve the attractiveness of the service
2 territory to new business.

3 Third, Consumers has not demonstrated that DSM is a major contributor
4 to price levels. The Company's proposal to abandon DSM and increase
5 energy-service costs is likely to reduce rates little, if at all, compared to
6 alternative cost-cutting measures that provide real economic gains.

7 Finally, even in the customer segment in which Consumers claims that
8 price concerns are paramount, the Company has not offered any evidence that
9 its rates are uncompetitive. Apart from some poorly-described complaints from
10 some of its industrial customers, Consumers has no basis for claiming that
11 DSM will be a major factor in price competition.¹⁸

12 **Q: How can Consumers position itself to thrive in a competitive market?**

13 A: There are several actions the Company can take to enhance its competitiveness
14 and improve the viability of its customers' businesses. First, the Company
15 should revise its perspective on competition. Rather than viewing all
16 competition as a threat to its continued survival, Consumers should approach
17 competition as an opportunity to develop new profit centers while
18 strengthening relationships with its customers. The former perspective leads to
19 a defensive posture, where the Company fails to position itself to profit from
20 changes. The latter approach could include the provision of a broad array of

¹⁸ It is possible that the customers who have been complaining are really concerned about their total bill, not the DSM costs. Alternatively, they may be primarily concerned paying for DSM activities that serve other classes (a problem Consumers has proposed to solve through cost allocation) or their competitors. If customers are concerned about paying for DSM services not available to them, the Company could seek to broaden program participation and explore alternative cost-allocation methods.

1 (profitable) services for maintaining existing customers and attracting new
2 load.

3 The Company should be identifying business opportunities in each
4 market niche and developing robust and flexible business strategies for
5 profitably servicing these markets. In addition, Consumers should be taking
6 advantage of all opportunities to reduce short-and long-term system costs, to
7 minimize cost uncertainty, and improve system reliability.

8 **Q: What strategies might Consumers undertake to protect shareholders and**
9 **any customers who are not able to take advantage of retail competition?**

10 **A:** It is difficult to be very specific about responses to competition, since
11 Consumers is vague about the nature of the competitive threat. However, I can
12 identify several approaches that would benefit customers and help protect the
13 Company from potential competition.

14 First, Consumers can increase the attractiveness of its product, by
15 reducing the amount of electricity needed to provide a particular service,
16 increasing power quality (protecting valuable equipment), increasing the
17 reliability of energy delivery, improving the quality of energy service
18 (improved quality of lighting, better temperature and humidity control, etc.),
19 and reducing discretionary spending throughout the Company. In addition, the
20 Company should consider writing down any investment in uneconomic plant
21 and buying out or renegotiating uneconomic purchase contracts. The Company
22 should also evaluate the cost-effectiveness of continued operation of aging
23 plants in need of significant maintenance or environmental-compliance
24 expenditures.

25 Second, Consumers can reduce the volatility in its costs (and hence in its
26 customers' rates and bills) and maintain the reliability of power supply. Most

1 customers will prefer predictable, stable electric bills. The Company can
2 pursue this goal by

- 3 • moving away from its riskier supply resources, such as nuclear and older
4 fossil units;
- 5 • reducing environmental risks by anticipating requirements, building
6 capability to procure DSM and renewables, and reducing utilization of
7 polluting resources;
- 8 • reducing planning risks by investing in short lead-time renewable and
9 distributed generation, and DSM; minimizing fluctuations in load growth
10 with DSM, especially market-driven lost-opportunity options (which
11 Consumers has virtually ignored);
- 12 • using long-term contracts, options, and other hedges to minimize fuel-
13 price volatility.

14 Third, Consumers can prepare itself to react to changes in its operating
15 environment (new environmental regulations, fuel-price spikes, loss of capa-
16 city) by creating contingency resources for cost management (which requires
17 resources that supply significant amount of energy at prices that are not tied to
18 the Company's other supplies), as well as reliability. Retrofit DSM, distributed
19 generation, renewable generation, and high-efficiency cogeneration can
20 provide fully diversified contingency resources, while options on existing and
21 new conventional generation can provide insurance against some outcomes.

22 Fourth, the Company can concentrate on new resource options tied to the
23 distribution system and recoverable through distribution charges. This category
24 would include DSM and distributed generation.

25 **Q: What role can DSM play in keeping Consumers' large customers on its**
26 **system?**

1 A: A comprehensive industrial conservation program will reduce the cost of doing
2 business in Consumers' service territory, keeping customers viable and
3 attracting new loads. Furthermore, Consumers can lever the DSM program to
4 support economic development, for example, by

- 5 • Targeting early DSM treatment at vulnerable facilities, or at those that
6 agree to expand employment;
- 7 • Tying utility-funding of DSM to a multi-year commitment by the
8 customer to remain on system.

9 Demand-side management *has* been used by utilities as an effective
10 marketing tool for attracting or retaining industrial load. For example, Boston
11 Edison Company's Energy Efficiency Partnership program saved a Sealtest
12 ice-cream plant and 180 jobs from likely elimination. A company
13 spokesperson credited energy savings paid for by Edison with giving the plant
14 "a major competitive edge."¹⁹

15 Northeast Utilities has had numerous successes retaining load by
16 improving the competitiveness of its large customers. One of NU's success
17 stories involves Fortune Plastics, a plastics manufacturing plant. Located in
18 Connecticut and Tennessee, Fortune had been shifting production to Tennessee
19 to lower its operating costs. By taking advantage of the DSM services offered
20 by NU's retail subsidiary, Connecticut Light and Power, Fortune was able to
21 decrease energy costs by 17% and to maintain, and possibly expand,
22 operations in Connecticut. According to Fortune Plastics President John
23 Duhlig,

¹⁹ Boston Globe. 1991 "At Sealtest, Sweet Smell Of Success With Energy," *Boston Globe* (October 9, 1991):39.

1 This package allows our Tennessee and Old Saybrook [Connecticut] plants
2 to operate on a much more equal footing. While electric rates will continue
3 to be lower in Tennessee, our Old Saybrook operations will be made so
4 much more efficient that the energy costs of the two facilities will be
5 roughly similar.

6 Now, instead of transferring the manufacturing capacity of our Old
7 Saybrook plant to Tennessee, we're considering expanding our operations
8 here because this plant is so much more efficient.²⁰

9 NU's successes in improving efficiency at its customers' facilities have
10 provided tangible benefits beyond retaining load, jobs, and the local tax base.
11 The lighting, motor, and process upgrades installed as a result of participation
12 in NU's industrial program have reduced water consumption, improved
13 working conditions, and mitigated environmental hazards.

14 **Q: Should the Company's proposal to exclude primary-service customers from**
15 **DSM program participation be incorporated in the five-year plan?**

16 A: No. Excluding any customers from participating is cost-effective DSM
17 programs would lead to a significant loss of cost-effective savings at these
18 customer's facilities and, at worst, a total loss of customer load due to plant
19 shutdown or self-generation.

20 **V. Rate Effects and the RIM Test**

21 **Q: What is the appropriate test of the cost-effectiveness of utility DSM**
22 **options?**

23 A: Utilities are publicly regulated entities with fundamental obligations to
24 maximize benefits to their customers and to the wider community that

²⁰ Quoted in Connecticut Light and Power. Undated. "Incentives Spell Good Fortune: Fortune Plastics, Inc., Old Saybrook, Connecticut." Hartford, Conn.: Northeast Utilities.

1 constitutes the public interest. The purpose of utility DSM programs, like that
2 of many other utility activities (supply acquisition, the design of distribution
3 systems, rate design), is to maximize the net value of the energy services that
4 the utility normally provides, or (almost equivalently) to minimize the costs of
5 providing service. Hence, the basic test of cost-effectiveness is a measure of
6 total costs.

7 **Q: What role should the Ratepayer Impact Measure Test have in determining**
8 **the cost-effectiveness of a demand-side option?**

9 A: It should have no role in the economic screening of demand-side programs or
10 the technologies incorporated in such programs. Screening with the RIM will
11 lead to the rejection of economical DSM.

12 **Q: How does use of the RIM Test lead utilities to reject cost-effective DSM?**

13 A: Demand-side management is cost-effective if its total benefits exceed its total
14 costs under the Total Resource Cost Test. The present-value RIM Test is not a
15 measure of total costs; nor is it a useful measure of equity or rate impact. The
16 RIM Test varies from the TRC Test primarily in its treatment of the participant.
17 Rather than including the participant's costs and benefits, along with those of
18 all other customers, the RIM treats participant impacts as if they were of no
19 concern to the utility or the Commission. The RIM ignores

- 20 • the costs the participant incurs in participating in the program,
- 21 • the benefit to the participant from any rebate or other incentives,
- 22 • the benefit to the participant of reduced bills.

23 The treatment of the latter two items is particularly inconsistent, since the
24 RIM includes both the incentives and lost revenues as costs.

25 Revenue shifts involve a loss to one group of customers, but a gain to
26 another. The RIM effectively adds the losses to the costs of DSM (subtracts

1 them from its benefits), but does not account for the gain. If this same principle
2 were applied to rate design, no rate would ever be decreased, because a rate
3 change creates benefits for some customers but net costs to others.²¹

4 **Q: Is the RIM Test a meaningful test of rate effects?**

5 A: No. The RIM Test does not assess the rate effects of DSM among and within
6 classes. The RIM looks at rate effects on a measure-by-measure or program-
7 by-program basis, and estimates only the average system rate effect of a
8 particular utility DSM program or measure. Estimating rate impacts of any one
9 program is not meaningful, unless considered in the context of the number of
10 participants in that program, the number of participants in other DSM
11 programs, and that pattern of cost recovery between classes and over time.

12 The RIM Test may screen out programs and measures vital for the
13 economic health of the state. A measure that fails the RIM might be the one
14 that saves an industry in Consumer's service territory. For example, an
15 industrial-process design program may be the only program in which many
16 industrial customers can participate.

17 The RIM Test also does not properly determine the pattern of rates and
18 bills over time. A program failing the RIM Test may increase rates in the near
19 term but reduce them in the long run, while a program passing the RIM may
20 well raise rates in the near term. The RIM Test is typically calculated using
21 estimates of avoided costs as a measure of the reduction in revenue
22 requirements from DSM. Avoided costs are usually estimated on the deferral
23 basis, which states avoided capacity costs as the change in the present value of

²¹ Unlike DSM, rate design and cost allocation shift costs between customers without directly reducing total costs.

1 costs due to a year's delay in construction. Avoided costs computed in this way
2 will start low and rise with inflation. Revenue requirements and rate effects
3 will actually be determined by the Commission's ratemaking procedures,
4 which allow recovery of a return (and associated income taxes) on the
5 unamortized investment. Ratemaking costs start at a high level, and decline
6 over time, as the initial investment is depreciated. Thus, avoided costs will
7 usually understate DSM's effect on reducing revenue requirements in the early
8 years, when rate effects are most likely to be most pronounced.

9 **Q: Do utilities apply the equivalent of the RIM Test to decisions other than**
10 **DSM?**

11 A: No. A wide range of utility actions have rate implications. As noted above, rate
12 design and cost allocation would be impossible if utilities refused to increase
13 bills to some customers. Neither rate design nor cost allocation are generally
14 reviewed with the RIM Test.²² The RIM Test, for example, would indicate that
15 utilities could reduce rates by requiring customers to purchase their own
16 services and meters, and, for larger customers, transformers and secondary
17 lines. This change in policy would pass the RIM Test, but probably increase
18 total energy service costs; utilities recognize that such a change would be
19 counter-productive, since customers ultimately care about energy service costs,
20 not rates.

21 Any supply-acquisition decision will affect the pattern of rates and bills
22 over time and the allocation of costs to rate classes. Utilities do not simply stop

²² Applying the RIM Test to rate design would result in incentives to increase usage (such as declining block rates, requiring master-metering, providing rebates for wasteful energy usage) so long as marginal costs were less than average rates (including customer charges), even if marginal costs were greater than marginal rates.

1 building power plants because they make some customers better off, and others
2 worse off, than they would have been otherwise. Rate impacts and equity
3 considerations are not usually considered in selecting supply resources; where
4 these factors are considered at all, they are secondary concerns, and do not
5 dominate resource selection. The utility should design a resource plan that
6 minimizes total costs, *then* decide how to allocate costs and benefits between
7 and among customer classes: this principle should apply to DSM and supply
8 alike.

9 **Q: Does primary reliance on the TRC Test for screening DSM options mean**
10 **that the ratepayer impacts should be ignored?**

11 A: Not at all. The effects of the DSM and supply options on rates and bills should
12 be determined for each customer class annually, but only after an initial DSM
13 portfolio is constructed.

14 **Q: How should the utility determine whether rate or bill effects are excessive?**

15 A: There is no simple answer to this question. Acceptable levels of rate increases
16 due to DSM depend on

- 17 • the starting level of rates,
- 18 • base-case rate increases without DSM,
- 19 • the distribution of DSM offerings (what percentage of customers can
20 participate),
- 21 • the distribution of DSM savings (such as the percentage of customers
22 with declining bills),
- 23 • provisions to aid vulnerable customers (low-income, at-risk businesses),
- 24 • the average level of customer bills.

1 **Q: If DSM results in rates higher than they might be otherwise, does this**
2 **imply that the rates are excessive, or that they endanger the state or**
3 **regional economy or the competitive position of the utility?**

4 A: No. The economic attractiveness of the state for business, and the disposable
5 income of households, depends on bills, not rates. As long as DSM is cost-
6 effective, it will decrease the costs of energy services, and bolster the local
7 economy.²³ Whether a difference in rates between the base case and an
8 aggressive DSM plan is a matter for concern depends on how much average
9 bills are reduced, how widely the benefits of DSM are distributed, how rates
10 would otherwise be moving, and how much risk is reduced, as well as the
11 magnitude of the rate difference.

12 **Q: If the portfolio as a whole fails the RIM Test, should the DSM plan be**
13 **rejected?**

14 A: No. The fact that the portfolio fails the RIM Test does not imply that rate
15 effects are distributed unfairly, or that rate increases are too large compared to
16 bill reductions. Equity problems should be addressed by changing cost-
17 recovery patterns, altering the allocation of expenditures among and within
18 rate classes, increasing the penetration of programs to groups that would
19 otherwise face higher bills, and changing the timing of particular programs. A
20 DSM plan should not be rejected because it fails the RIM Test.

²³ This general relationship is in addition to the positive direct employment effects of DSM.

1 **VI. Conclusions and Recommendations**

2 **Q: Please summarize your conclusions.**

3 A: The Company's estimated energy costs for 1995 reflect an avoidable increase
4 due to the Company's plans to scale back DSM acquisition from levels ordered
5 by the Commission in Case No. U-10335. Instead of spending at the rate of
6 \$30 million per year from May 1994 through April 1997, as authorized by the
7 Commission, the Company proposes to spend only \$22.5 million in the 12-
8 month period from May 1994 to April 1995. The DSM savings foregone by
9 reduced spending through 1995 will needlessly increase energy costs in 1995.

10 The Company's five-year plan would acquire virtually no further DSM
11 savings beyond the 60 GWh that the Company anticipates from its proposed
12 \$22.5 million investment between May 1994 and April 1997. Spending the full
13 \$30 million per year starting in May 1994 (as ordered by the Commission), by
14 contrast, would save some 240 GWh in the first three years alone. In other
15 words, the Company would fail to acquire 180 GWh in cost-effective DSM
16 savings during the period May, 1994–April, 1997. These are savings that
17 would cost the Company and its customer less than the avoided supply.

18 Beyond 1997, the Company's 1992 IRP and 1993 Update identified
19 significant amounts of additional cost-effective DSM savings.

20 Consumers has failed to provide reasonable justification for abandoning
21 cost-effective DSM. The Company's arguments regarding the connection of
22 DSM to rate effects and competition are not adequately supported. Where the
23 Company's concerns may have some merit, it has not examined other
24 alternatives for addressing them. The Company has simply prescribed
25 termination of cost-effective DSM as the panacea for all its potential future
26 ills, real or imagined.

1 Competition is nothing new to electric utilities. The existence of com-
2 petition does not excuse utilities from pursuing least-cost-planning objectives.

3 The TRC Test remains the appropriate test for screening DSM; the
4 Company's proposal to adopt the RIM Test as its primary screening test will
5 lead to significant loss of cost-effective savings without materially improving
6 (and perhaps impairing) its competitive position.

7 **Q: What are your recommendations regarding the issues before the Com-**
8 **mission in this docket?**

9 **A: The Commission should reject the Company's PSCR factors for 1995. The**
10 **Company should submit new factors that reflect the full effects of spending**
11 **\$30 million to acquire cost-effective DSM savings in 1995, estimated using the**
12 **same method that Consumers used to estimate the savings impact of its**
13 **proposed \$22.5 million DSM plan. The Commission should further require the**
14 **Company to base its revised PSCR factors on the energy costs that could have**
15 **been realized had Consumers started spending at the rate of \$30 million per**
16 **year, not \$22.5 million per year, beginning in May of 1994.²⁴**

17 The Commission should furthermore reject the Company's proposed five-
18 year plan. The Commission should remind Consumers that the reason why the
19 Commission did not order specific levels of DSM spending after 1997 was to
20 allow the evaluation results of DSM spending pursuant to the Commission
21 Order in Case No. U-9346 to inform program design, goals, and budgets
22 (Order in Case No. U-10335 at 110-111). Until Consumers has the benefit of

²⁴ The issue here is whether the total power-supply costs being charged to ratepayers is excessive, not whether the PSCR rate is higher or lower. Thus, any excess costs due to the Company's imprudent failure to implement DSM should be denied, but no adjustment should be made to actual sales levels.

1 such experience, it should submit truly least-cost five-year plans based on
2 current assumptions regarding DSM cost and performance. The Commission
3 should require the Company to submit a new five-year plan on that basis. Once
4 litigation of the evaluation results is complete, Consumers should file an
5 update, to include full-scale implementation of all cost-effective DSM.

6 Finally, the Commission should take this opportunity again to reject the
7 RIM Test as the primary basis for DSM screening

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

9 **A: Yes.**

Figure I-____ (PLC-2):

Case No. U-10710

**Illustration of Rate Impacts and Revenue Requirements
of Demand and Supply**

	New Resource Options		
	Additional Supply at 4¢/kWh	Additional DSM at 3¢/kWh	Additional zero-cost DSM
Initial Sales (GWh) [A]	30,000	30,000	30,000
New Resource Requirement (GWh) [B]	300	300	300
New DSM (GWh) [C]		300	300
Final Sales (GWh) [D]	30,300	30,000	30,000
Initial Revenue Requirement (M\$) [E]	2,000	2,000	2,000
New Resource Revenue Requirements (M\$) [F]	12	9	0
Final Revenue Requirement (M\$) [G]	2,012	2,009	2,000
Rates (¢/kWh) [H]	6.64	6.70	6.67

Row Notes:

[A]: Sales prior to load growth are the same under all options.

[B]: Without additional DSM, load would grow 1% in Year 2.

[C]: Additional DSM is assumed to cover all new load growth.

[D]: Equal to [A] + [B] - [C]

[E]: Revenue requirements prior to load growth and new resource selection are the same under all options.

[F]: Based on the new resource requirement (300 GWh) and on a cost of 4¢/kWh for Additional Supply and Additional DSM; Zero-Cost DSM is free.

[G]: Equal to [E] × [F]

[H]: Equal to [G] ÷ [D] × 100

Qualifications of
PAUL L. CHERNICK

Resource Insight, Inc.
18 Tremont Street, Suite 1000
Boston, Massachusetts 02108

Summary of Professional Experience

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

Education

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

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

Honors

Chi Epsilon (Civil Engineering)

Tau Beta Pi (Engineering)

Sigma Xi (Research)

Institute Award, Institute of Public Utilities, 1981.

Publications

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

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

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

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

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

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

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

"Accounting for Externalities" (with E. Caverhill). *Public Utilities Fortnightly* 127(5), March 1, 1991.

"Methods of Valuing Environmental Externalities" (with E. Caverhill), *The Electricity Journal* 4(2), March 1991.

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

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

"Analysis of Residential Fuel Switching as an Electric Conservation Option" (with E. Espenhorst and I. Goodman), *Gas Energy Review*, December 1990.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

"Revenue Stability Target Ratemaking," *Public Utilities Fortnightly*, February 17, 1983, pp. 35-39.

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

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

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

Reports

"Review of the Elizabethtown Gas Company's 1992 DSM Plan and the Demand-Side Management Rules" (with J. Wallach, J. Plunkett, J. Peters, S. Geller, B. Hamilton, and A. Shapiro); Report to the New Jersey Department of Public Advocate, November 1992.

"The AGREA Project Critique of Externality Valuation: A Brief Rebuttal," March 1992.

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 J. Wallach, et al.); Report to the New Jersey Department of Public Advocate, June 1992.

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

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

"Report on the Adequacy of Ontario Hydro's Estimates of Externality Costs Associated with Electricity Exports" (with E. Caverhill), January 1991.

"Comments on the 1991-1992 Annual and Long Range Demand Side Management Plans of the Major Electric Utilities," (with Plunkett, J., et al.), September 1990.

"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 I. Goodman and E. 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 E. Espenhorst), Boston Gas Company, December 22, 1989.

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

"Conservation Potential in the State of Minnesota," (with I. 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

"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.

DSM Advocacy Workshop; April 15, 1992; Session Leader for "Cost Recovery and Decoupling" and "The Clean Air Act and Externalities in Utility Resource Planning" panels.

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

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

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

Understanding Massachusetts' New Integrated Resource Management Rules; Needham, Massachusetts, November 9, 1990; "Accounting for Externalities: Why, Which and How?"

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

"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;

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

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

New England Conference of Public Utilities Commissioners, Environmental Externalities Workshop; Portsmouth, N.H., 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".

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

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

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

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; "Insurance Market Assessment of Technological Risks".

Advisory Assignments to Regulatory Commissions

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

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

Expert Testimony

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

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

2. MEFSC 78-17; Northeast Utilities 1978 forecast; Massachusetts Attorney General; September 29, 1978.

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

3. MEFSC 78-33; Eastern Utilities Associates 1978 forecast; Massachusetts Attorney General; November 27, 1978.

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

4. MDPU 19494; Phase II; Boston Edison Company Construction Program; Massachusetts Attorney General; April 1, 1979.

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

5. MDPU 19494; Phase II; Boston Edison Company Construction Program; Massachusetts Attorney General; April 1, 1979.

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

6. Atomic Safety and Licensing Board, Nuclear Regulatory Commission 50-471; Pilgrim Unit 2, Boston Edison Company; Commonwealth of Massachusetts; June 29, 1979.

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

7. MDPU 19845; Boston Edison Time-of-Use Rate Case; Massachusetts Attorney General; December 4, 1979.

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

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

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

9. MDPU 20248; Petition of MMWEC to Purchase Additional Share of Seabrook Nuclear Plant; Massachusetts Attorney General; June 2, 1980.

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

10. MDPU 200; Massachusetts Electric Company Rate Case; Massachusetts Attorney General; June 16, 1980.

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

11. MEFSC 79-33; Eastern Utilities Associates 1979 Forecast; Massachusetts Attorney General; July 16, 1980.

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

12. MDPU 243; Eastern Edison Company Rate Case; Massachusetts Attorney General; August 19, 1980.

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

13. Texas PUC 3298; Gulf States Utilities Rate Case; East Texas Legal Services; August 25, 1980.

- Inter-class revenue allocations, including production plant in-service, O&M, CWIP, nuclear fuel in progress, amortization of canceled plant residential rate design; interruptible rates; off-peak rates. Joint testimony with M.B. Meyer.
14. MEFSC 79-1; Massachusetts Municipal Wholesale Electric Company Forecast; Massachusetts Attorney General; November 5, 1980.
- Cost comparison methodology; nuclear cost estimates; cost of conservation, co-generation, and solar.
15. MDPU 472; Recovery of Residential Conservation Service Expenses; Massachusetts Attorney General; December 12, 1980.
- Conservation as an energy source; advantages of per-kWh allocation over per-customer-month allocation.
16. MDPU 535; Regulations to Carry Out Section 210 of PURPA; Massachusetts Attorney General; January 26, 1981 and February 13, 1981.
- Filing requirements, certification, qualifying facility (QF) status, extent of coverage, review of contracts; energy rates; capacity rates; extra benefits of QFs in specific areas; wheeling; standardization of fees and charges.
17. MEFSC 80-17; Northeast Utilities 1980 Forecast; Massachusetts Attorney General; March 12, 1981 (not presented).
- Specification process, employment, electric heating promotion and penetration, commercial sales model, industrial model specification, documentation of price forecasts and wholesale forecast.
18. MDPU 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. MDPU 1048; Boston Edison Plant Performance Standards; Massachusetts Attorney General; May 7, 1982.
- Critique of company approach, data, and statistical analysis; description of comparative and absolute approaches to standard-setting; proposals for standards and reporting requirements.
20. DCPSC FC785; Potomac Electric Power Rate Case; DC People's Counsel; July 29, 1982.
- Inter-class revenue allocations, including generation, transmission, and distribution plant classification; fuel and O&M classification; distribution and service allocators. Marginal cost estimation, including losses.

21. NHPUC DE1-312; Public Service of New Hampshire-Supply and Demand; Conservation Law Foundation, et al.; October 8, 1982.

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

22. Massachusetts 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. Illinois Commerce Commission 82-0026; Commonwealth Edison Rate Case; Illinois Attorney General; October 15, 1982.

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

24. New Mexico Public Service Commission 1794; Public Service of New Mexico Application for Certification; New Mexico Attorney General; May 10, 1983.

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

25. Connecticut Public Utility Control Authority 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. MDPU 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. Massachusetts 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. Connecticut Public Utility Control Authority 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. MEFSC 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. Michigan 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. MDPU 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. MDPU 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. Michigan 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. MDPU 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. Pennsylvania 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. NHPUC 84-200; Seabrook Unit 1 Investigation; New Hampshire Public Advocate; November 15, 1984.

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

39. Massachusetts Division of Insurance; Hearing to Fix and Establish 1985 Automobile Insurance Rates; Massachusetts Attorney General; November, 1984.

Profit margin calculations, including methodology and implementation.

40. MDPU 84-152; Seabrook Unit 1 Investigation; Massachusetts Attorney General; December 12, 1984.

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

41. Maine PUC 84-120; Central Maine Power Rate Case; Maine PUC Staff; December 11, 1984.

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

42. Maine PUC 84-113; Seabrook 2 Investigation; Maine PUC Staff; December 14, 1984.

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

43. MDPU 1627; Massachusetts Municipal Wholesale Electric Company Financing Case; Massachusetts Executive Office of Energy Resources; January 14, 1985.

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

44. Vermont PSB 4936; Millstone 3; Costs and In-Service Date; Vermont Department of Public Service; January 21, 1985.

Construction schedule and cost of completing Millstone Unit 3.

45. MDPU 84-276; Rules Governing Rates for Utility Purchases of Power from Qualifying Facilities; Massachusetts Attorney General; March 25, 1985, and October 18, 1985.

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

46. MDPU 85-121; Investigation of the Reading Municipal Light Department; Wilmington (MA) Chamber of Commerce; November 12, 1985.

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

47. Massachusetts 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. New Mexico Public Service Commission 1833, Phase II; El Paso Electric Rate Case; New Mexico Attorney General; December 23, 1985.

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

49. Pennsylvania PUC R-850152; Philadelphia Electric Rate Case; Utility Users Committee and University of Pennsylvania; January 14, 1986.

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

50. MDPU 85-270; Western Massachusetts Electric Rate Case; Massachusetts Attorney General; March 19, 1986.

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

51. Pennsylvania PUC R-850290; Philadelphia Electric Auxiliary Service Rates; Albert Einstein Medical Center, University of Pennsylvania and AMTRAK; March 24, 1986.

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

52. New Mexico Public Service Commission 2004; Public Service of New Mexico, Palo Verde Issues; New Mexico Attorney General; May 7, 1986.

Recommendations for Power Plant Performance Standards for Palo Verde nuclear units 1, 2, and 3.

53. Illinois Commerce Commission 86-0325; Iowa-Illinois Gas and Electric Co. Rate Investigation; Illinois Office of Public Counsel; August 13, 1986.

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

54. New Mexico Public Service Commission 2009; El Paso Electric Rate Moderation Program; New Mexico Attorney General; August 18, 1986. (Not presented).

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

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

55. City of Boston, Public Improvements Commission; Transfer of Boston Edison District Heating Steam System to Boston Thermal Corporation; Boston Housing Authority; December 18, 1986.
- History and economics of steam system; possible motives of Boston Edison in seeking sale; problems facing Boston Thermal; information and assurances required prior to Commission approval of transfer.
56. Massachusetts 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. MDPU 87-19; Petition for Adjudication of Development Facilitation Program; Hull (MA) Municipal Light Plant; January 21, 1987.
- Estimation of potential load growth; cost of generation, transmission, and distribution additions. Determination of hook-up charges. Development of residential load estimation procedure reflecting appliance ownership, dwelling size.
58. New Mexico Public Service Commission 2004; Public Service of New Mexico Nuclear Decommissioning Fund; New Mexico Attorney General; February 19, 1987.
- Decommissioning cost and likely operating life of nuclear plants. Review of utility funding proposal. Development of alternative proposal. Ratemaking treatment.
59. MDPU 86-280; Western Massachusetts Electric Rate Case; Massachusetts Energy Office; March 9, 1987.
- Marginal cost rate design issues. Superiority of long-run marginal cost over short-run marginal cost as basis for rate design. Relationship of consumer reaction, utility planning process, and regulatory structure to rate design approach. Implementation of short-run and long-run rate designs. Demand versus energy charges, economic development rates, spot pricing.
60. Massachusetts Division of Insurance 87-9; 1987 Workers' Compensation Rate Filing; State Rating Bureau; May 1987.
- Profit margin calculations, including methodology, implementation, surplus requirements, investment income, and effects of 1986 Tax Reform Act.
61. Texas PUC 6184; Economic Viability of South Texas Nuclear Plant #2; Committee for Consumer Rate Relief; August 17, 1987.

- STNP operating parameter projections; capacity factor, O&M, capital additions, decommissioning, useful life. STNP 2 cost and schedule projections. Potential for conservation.
62. Minnesota PUC ER-015/GR-87-223; Minnesota Power Rate Case; Minnesota Department of Public Service; August 17, 1987.
- Excess capacity on MP system; historical, current, and projected. Review of MP planning prudence prior to and during excess; efforts to sell capacity. Cost of excess capacity. Recommendations for ratemaking treatment.
63. Massachusetts Division of Insurance 87-27; 1988 Automobile Insurance Rates; Massachusetts Attorney General and State Rating Bureau; September 2, 1987. Rebuttal October 8, 1987.
- Underwriting profit margins. Effect of 1986 Tax Reform Act. Biases in calculation of average margins.
64. MDPU 88-19; Power Sales Contract from Riverside Steam and Electric to Western Massachusetts Electric; Riverside Steam and Electric; November 4, 1987.
- Comparison of risk from QF contract and utility avoided cost sources. Risk of oil dependence. Discounting cash flows to reflect risk.
65. Massachusetts Division of Insurance 87-53; 1987 Workers' Compensation Rate Refiling; State Rating Bureau; December 14, 1987.
- Profit margin calculations, including updating of data, compliance with Commissioner's order, treatment of surplus and risk, interest rate calculation, and investment tax rate calculation.
66. Massachusetts Division of Insurance; 1987 and 1988 Automobile Insurance Remand Rates; Massachusetts Attorney General and State Rating Bureau; February 5, 1988.
- Underwriting profit margins. Provisions for income taxes on finance charges. Relationships between allowed and achieved margins, between statewide and nationwide data, and between profit allowances and cost projections.
67. Massachusetts Department of Public Utilities 86-36; Investigation into the Pricing and Ratemaking Treatment to be Afforded New Electric Generating Facilities which are not Qualifying Facilities; Conservation Law Foundation; May 2, 1988.
- Cost recovery for utility conservation programs. Compensating for lost revenues. Utility incentive structures.

68. Massachusetts Department of Public Utilities 88-123; Petition of Riverside Steam & Electric Company; Riverside Steam and Electric Company; May 18, 1988, and November 8, 1988.

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

69. Massachusetts Department of Public Utilities 88-67; Boston Gas Company; Boston Housing Authority; June 17, 1988.

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

70. Rhode Island Public Utility Commission Docket 1900; Providence Water Supply Board Tariff Filing; Conservation Law Foundation, Audubon Society of Rhode Island, and League of Women Voters of Rhode Island; June 24, 1988.

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

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

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

72. Vermont Public Service Board Docket No. 5270, Module 6; Investigation into Least-Cost Investments, Energy Efficiency, Conservation, and the Management of Demand for Energy; Conservation Law Foundation, Vermont Natural Resources Council, and Vermont Public Interest Research Group; September 26, 1988.

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

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

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

74. MDPU 88-67, Phase II; Boston Gas Company Conservation Program and Rate Design; Boston Gas Company; March 6, 1989.

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

75. Vermont Public Service Board Docket No. 5270; Status Conference on Conservation and Load Management Policy Settlement; Central Vermont Public Service, Conservation Law Foundation, Vermont Natural Resources Council, Vermont Public Interest Research Group, and Vermont Department of Public Service; May 1, 1989.

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

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

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

77. MDPU 89-100; Boston Edison Rate Case; Massachusetts Energy Office; June 30, 1989.

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

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

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

79. MDPU 89-72; Statewide Towing Association, Police-Ordered Towing Rates; Massachusetts Automobile Rating Bureau; September 13, 1989.

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

80. Vermont Public Service Board Docket 5330; Application of Vermont Utilities for Approval of a Firm Power and Energy Contract with Hydro-Quebec; Conservation Law Foundation, Vermont Natural Resources Council, Vermont Public Interest Research Group; December 19, 1989. Surrebuttal February 6, 1990.

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

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

81. MDPU 89-239; Inclusion of Externalities in Energy Supply Planning, Acquisition and Dispatch for Massachusetts Utilities; December, 1989; April, 1990; May, 1990.

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

82. California Public Utilities Commission; Incorporation of Environmental Externalities in Utility Planning and Pricing; Coalition of Energy Efficient and Renewable Technologies; February 21, 1990.

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

83. Illinois Commerce Commission Docket 90-0038; Proceeding to Adopt a Least Cost Electric Energy Plan for Commonwealth Edison Company; City of Chicago; May 25, 1990. Joint rebuttal testimony with David Birr, August 14, 1990.

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

84. Maryland Public Service Commission Case No. 8278; Adequacy of Baltimore Gas & Electric's Integrated Resource Plan; Maryland Office of People's Counsel; September 18, 1990.

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

85. Indiana Utility Regulatory Commission; Integrated Resource Planning Docket; Indiana Office of Utility Consumer Counselor; November 1, 1990.

- Integrated resource planning process and methodology, including externalities and screening tools. Incentives, screening, and evaluation of demand-side management. Potential of resource bidding in Indiana.
86. MDPU Dockets 89-141, 90-73, 90-141, 90-194, and 90-270; Preliminary Review of Utility Treatment of Environmental Externalities in October QF Filings; Boston Gas Company; November 5, 1990.
- Generic and specific problems in Massachusetts utilities' RFPs with regard to externality valuation requirements. Recommendations for corrections.
87. MEFSC 90-12/90-12A; Adequacy of Boston Edison Proposal to Build Combined-Cycle Plant; Conservation Law Foundation; December 14, 1990.
- Problems in Boston Edison's treatment of demand-side management, supply option analysis, and resource planning. Recommendations of mitigation options.
88. Maine PUC Docket No. 90-286; Adequacy of Conservation Program of Bangor Hydro Electric; Penobscot River Coalition; February 19, 1991.
- Role of utility-sponsored DSM in least-cost planning. Bangor Hydro's potential for cost-effective conservation. Problems with Bangor Hydro's assumptions about customer investment in energy efficiency measures.
89. Commonwealth of Virginia State Corporation Commission Case No. PUE900070; Order Establishing Commission Investigation; Southern Environmental Law Center; March 6, 1991.
- Role of utilities in promoting energy efficiency. Least-cost planning objectives of and resource acquisition guidelines for DSM. Rate-making considerations for DSM investments.
90. Massachusetts DPU Docket No. 90-261-A; Economics and Role of Fuel-Switching in the DSM Program of the Massachusetts Electric Company; Boston Gas Company; April 17, 1991.
- Role of fuel-switching in utility DSM programs and specifically in Massachusetts Electric's. Establishing comparable avoided costs and comparison of electric and gas system costs. Updated externality values.
91. Commonwealth of Massachusetts; Massachusetts Refusetech Contractual Request for Adjustment to Service Fee; Massachusetts Refusetech; May 13, 1991.
- NEPCo rates for power purchases from the NESWC plant. Fuel price and avoided cost projections vs. realities.
92. Vermont PSB Docket No. 5491; Cost-Effectiveness of Central Vermont's Commitment to Hydro Quebec Purchases; Conservation Law Foundation; July 19, 1991.

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

93. South Carolina Public Service Commission Docket No. 91-216-E; Cost Recovery of Duke Power's DSM Expenditures; South Carolina Department of Consumer Affairs; September 13, 1991. Surrebuttal October 2, 1991.

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

94. Maryland Public Service Commission Case No. 8241, Phase II; Review of Baltimore Gas & Electric's Avoided Costs; Maryland Office of People's Counsel; September 19, 1991.

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

95. Bucksport Planning Board; AES/Harriman Cove Shoreland Zoning Application; Conservation Law Foundation and Natural Resources Council of Maine; October 1, 1991.

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

96. Massachusetts DPU Docket No. 91-131; Update of Externalities Values Adopted in Docket 89-239; Boston Gas Company; October 4, 1991. Rebuttal December 13, 1991.

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

97. Florida PSC Docket No. 910759; Petition of Florida Power Corporation for Determination of Need for Proposed Electrical Power Plant and Related Facilities; Floridians for Responsible Utility Growth; October 21, 1991.

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

98. Florida PSC Docket No. 910833-EI; Petition of Tampa Electric Company for a Determination of Need for Proposed Electrical Power Plant and Related Facilities; Floridians for Responsible Utility Growth; October 31, 1991.

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

99. Pennsylvania PUC Dockets I-900005, R-901880; Investigation into Demand Side Management by Electric Utilities; Pennsylvania Energy Office; January 10, 1992.

Appropriate cost recovery mechanism for Pennsylvania utilities. Purpose and scope of direct cost recovery, lost revenue recovery, and incentives.
100. South Carolina PSC Docket No. 91-606-E; Petition of South Carolina Electric and Gas for a Certificate of Public Convenience and Necessity for a Coal-Fired Plant; South Carolina Department of Consumer Affairs; January 20, 1992.

Justification of plant certification under integrated resource planning. Failures in SCE&G's DSM planning and company potential for demand-side savings.
101. Massachusetts DPU Docket No. 92-92; Adequacy of Boston Edison's Street-Lighting Options; Town of Lexington; June 22, 1992.

Efficiency and quality of street-lighting options. Boston Edison's treatment of high-quality street lighting. Corrected rate proposal for the Daylux lamp. Ownership of public street lighting.
102. South Carolina PSC Docket No. 92-208-E; Integrated Resource Plan of Duke Power Company; South Carolina Department of Consumer Affairs; August 4, 1992.

Problems with Duke Power's DSM screening process, estimation of avoided cost, DSM program design, and integration of demand-side and supply-side planning.
103. North Carolina Utilities Commission Docket No. E-100, Sub 64; Integrated Resource Planning Docket; Southern Environmental Law Center; September 29, 1992.

General principles of integrated resource planning, DSM screening, and program design. Review of the IRPs of Duke Power Company, Carolina Power & Light Company, and North Carolina Power.
104. Ontario Environmental Assessment Board—Ontario Hydro Demand/Supply Plan Hearings; *Environmental Externalities Valuation and Ontario Hydro's Resource Planning* (3 vols.); October, 1992.
105. Public Utility Commission of Texas Docket No. 110000; Application of Houston Lighting and Power Company for a Certificate of Convenience and Necessity for the DuPont Project; Destec Energy, Inc.; September 28, 1992.
106. Maine Board of Environmental Protection; In the Matter of the Basin Mills Hydroelectric Project Application; on behalf of Conservation Intervenors; November 16, 1992.

107. Maryland Public Service Commission Case No. 8473; In the Matter of the Application of the Baltimore Gas and Electric Company for the Review and Approval of the Power Sales Agreement Between the Baltimore Gas and Electric Company and AES Northside, Inc.; Maryland Office of People's Counsel; November 16, 1992.
108. North Carolina Utilities Commission Docket No. E-100, Sub 64; In the Matter of Analysis and Investigation of Least Cost Integrated Resource Planning in North Carolina—1992; Southern Environmental Law Center, on Demand-Side Management Cost Recovery and Incentive Mechanisms; November 18, 1992.
109. South Carolina Public Service Commission Docket No. 92-209-E; In Re Carolina Power & Light Company; South Carolina Department of Consumer Affairs; November 24, 1992.
109. Florida PDepartment of Environmental Regulation hearings on the Power Plant A Siting Act; Legal Environmental Assistance Foundation, December, 1992.
110. Maryland Public Service Commission Case No. 8487; Application of the Baltimore Gas and Electric Company for an Increase in Electric Rates; January 13, 1993. Rebuttal Testimony: February 4, 1993.
111. Maryland Public Service Commission Case No. 8179; Petition of Potomac Edison for Approval of Amendment No. 2 to the Electric Energy Purchase Agreement with AES Warrior Run, Inc.; Maryland Office of People's Counsel; January 29, 1993.
112. Michigan Public Service Commission Case No. U-10102; In the Matter of the Application of the Detroit Edison Company for Authority to Amend its Rate Schedules Governing the Supply of Electric Energy; Michigan United Conservation Clubs; February 17, 1993.
113. Public Utilities Commission of Ohio Dockets No. 91-635-EL-FOR, 92-312-EL-FOR, 92-1172-EL-ECP; City of Cincinnati, April, 1993
114. Michigan Public Service Commission Case No. U-10335; In the Matter of the Application of Consumers Power Company for Authority to Increase Its Rates; Michigan United Conservation Clubs; October 1993.
115. Illinois Commerce Commission 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.

116. Federal Energy Regulatory Commission Projects Nos. 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.
117. Vermont Public Service Board Dockets No. 5270-CV-1,-3, and 5686; Central Vermont Public Service Fuel-Switching, DSM, and 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.
118. Florida Public Service Commission, Dockets 930548-EG-930551-EG, on behalf of the Legal Environmental Assistance Foundation, Inc. April 1994.
Integrated resource planning, avoided costs, rate impacts, analysis of conservation goals of Florida electric utilities.
119. Vermont Public Service Board Docket No. 5724, on behalf of the Vermont Department of Public Service. Joint surrebuttal testimony with John Plunkett. August 1994.
120. Massachusetts Department of Public Utilities in DPU 94-49 on behalf of the Massachusetts Office of Attorney General. August 1994.
Analysis of Boston Edison's treatment of the effects of planning decision on customer bills, especially the company's its modeling and treatment of risk.
121. Michigan Public Service Commission in MPSC Case No. U-10554, Consumers Power Company DSM Program and incentive, on behalf of the Michigan Conservation Clubs. November 1994.
Proposal to scale back DSM spending. Critique of proposed DSM changes; discussion of appropriate measurements of cost-effectiveness, role of DSM in competitive power markets.
122. Michigan Public Service Commission in MPSC Case No. 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.

123. New Jersey Board of Regulatory Commissioners in Docket No. EM92030359; on behalf of 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."