

**COMMONWEALTH OF MASSACHUSETTS**  
**BEFORE THE DEPARTMENT OF PUBLIC UTILITIES**

**Petition of Massachusetts Electric Company and )**  
**Nantucket Electric Company d/b/a National ) Docket No. DPU 09-39**  
**Grid to the Department of Public Utilities for )**  
**Approval of an Increase in Distribution Rates )**

**DIRECT TESTIMONY OF**  
**PAUL CHERNICK**  
**ON BEHALF OF**  
**THE DEPARTMENT OF ENERGY RESOURCES**

Resource Insight, Inc.

**AUGUST 6, 2009**

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Exhibit PLC-1            *Professional Qualifications of Paul Chernick*

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 the president of Resource Insight, Inc., 5 Water St.,  
4 Arlington, Massachusetts.

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

6 A: I received an SB degree from the Massachusetts Institute of Technology in June  
7 1974 from the Civil Engineering Department, and an 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 in my current position at Resource Insight. In these capacities, I have  
18 advised a variety of clients on utility matters.

19 My work has considered, among other things, the cost-effectiveness of pro-  
20 spective new electric generation plants and transmission lines, retrospective  
21 review of generation-planning decisions, ratemaking for plant under construc-  
22 tion, ratemaking for excess and/or uneconomical plant entering service, conser-  
23 vation program design, cost recovery for utility efficiency programs, the valua-  
24 tion of environmental externalities from energy production and use, allocation of  
25 costs of service between rate classes and jurisdictions, design of retail and

1 wholesale rates, and performance-based ratemaking and cost recovery in restruc-  
2 tured gas and electric industries. My professional qualifications are further  
3 summarized in Exhibit PLC-1.

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

5 A: Yes. I have testified more than two hundred times on utility issues before  
6 various regulatory, legislative, and judicial bodies, including utility regulators in  
7 twenty-four states, and three Canadian provinces, and two Federal agencies.

8 **Q: Please summarize your experience regarding recovery of utility energy-  
9 efficiency program costs and associated revenue losses.**

10 A: I first proposed a combined revenue-stabilization and conservation-funding  
11 mechanism in testimony on alternatives to the Seabrook nuclear power plant  
12 before the New Hampshire Public Utilities Commission in its Docket No. DE1-  
13 312 in October 1982. My qualifications list a number of subsequent  
14 engagements related to ratemaking for energy-efficiency, including recovery of  
15 direct costs and lost revenue.

16 I have supported broader revenue stabilization than proposed by the  
17 utilities in some cases (e.g., in Ontario), and proposed modifications to utility  
18 decoupling proposals in other situations (e.g., for Con Edison's electric sales,  
19 Vectren's Indiana gas territories). I have also worked on issues of cost recovery  
20 in collaborative efforts among utilities, consumer advocates, and other parties,  
21 including Con Edison's continuing gas revenue-per-customer decoupling col-  
22 laborative. I currently work for Philadelphia Gas Works on its lost-revenue-  
23 recovery proposal.

1 **II. Introduction and Summary**

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

3 A: I am testifying on behalf of the Department of Energy Resources.

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

5 A: On May 15 2009, National Grid filed the direct testimony of Susan F. Tierney in  
6 support of the Company's proposal for a revenue-decoupling mechanism. As  
7 part of the decoupling proposal, Dr. Tierney proposes a mechanism for tracking  
8 and recovering (1) capital expenditures incurred after the 2008 test year and (2)  
9 O&M cost escalation since the 2008 test year, net of a productivity offset. My  
10 testimony addresses both of these proposed cost trackers.

11 **Q: Is the Company's proposed-revenue decoupling mechanism substantially**  
12 **consistent with the Department's order in DPU 07-50-A?**

13 A: Yes, aside from the cost trackers, the revenue-reconciliation portion is substan-  
14 tially consistent with the Department's order. It would require that reconciliation  
15 of target revenues with actual revenues occur on a company-wide basis and be  
16 credited or debited through the energy charge. The revenue-decoupling com-  
17 ponent of National Grid's proposal is consistent with this requirement.

18 **Q: Are the Company's proposed capital-cost tracker and inflation adjustment**  
19 **consistent with the Department's order in DPU 07-50-A?**

20 A: No. The Department's order states that companies may take factors such as  
21 inflation and capital spending requirements into account when determining the  
22 annual revenue requirement. The Department requires that any such proposals  
23 must be fully supported and places on the distribution company the burden of  
24 proof to demonstrate the reasonableness of its proposal. National Grid has not  
25 adequately met its burden to demonstrate the reasonableness of its proposal.

1 **Q: Please summarize your findings and conclusions regarding the proposed**  
2 **tracking mechanisms.**

3 A: The Company's proposed process for setting the capital tracker lacks key  
4 provisions for determining whether incremental expenditures are cost-effective,  
5 or whether such investments provide tangible reliability or service benefits to  
6 consumers. I recommend that the Department require that Company to file a  
7 revised proposal that establishes a framework for evaluating cost-effectiveness  
8 testing of capital expenditures to be recovered through the capital tracker, and  
9 that sets forth performance metrics for tracking the performance of such capital  
10 expenditures over time.

11 Nor has the Company shown the need for or reasonableness of its proposed  
12 inflation tracker. The proposed tracker selectively focuses on inflationary  
13 increases to O&M spending, but fails to account for efficiency and productivity  
14 savings due to proposed capital improvements, other O&M savings from imple-  
15 mentation of National Grid's restructuring of Electric Distribution Operations,  
16 DSM-related O&M savings, payroll savings from workforce turnover, or the  
17 effects of its proposed inspection and maintenance plan, for which it seeks a  
18 separate cost tracker outside the decoupling mechanism.<sup>1</sup> The Company has  
19 offered no evidence that the proposed productivity offset adequately captures  
20 such O&M savings. As a result, National Grid may recover more than its cost of  
21 service through the combination of base rates and the cost trackers. The  
22 Department should therefore reject the proposal for an inflation tracker.

23 **Q: Can the decoupling mechanism be implemented without the tracking**  
24 **mechanisms?**

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<sup>1</sup>National Grid estimates that the inspection and maintenance plan would cost \$1.8 million for 2010 (Testimony of John Pettigrew, p. 42).

1 A: Yes. The Department can approve decoupling in this proceeding without the  
2 tracking mechanisms. The Department may wish to establish a subsequent phase  
3 of this proceeding, or a separate docket, to allow National Grid to properly  
4 structure its capital cost trackers and O&M adjustments with appropriate  
5 performance metrics.

### 6 **III. National Grid’s Decoupling Proposal**

7 **Q: What is the rationale for a decoupling mechanism?**

8 A: As the Department said in its order in DPU 07-50-A, full decoupling is desirable  
9 to “comprehensively remov[e] the disincentives the distribution companies  
10 currently face regarding...deployment” of demand resources (p. 6), by better  
11 aligning distribution companies’ financial interests “with the need to: (1) capture  
12 all available and economic system and end-use efficiencies and their associated  
13 reliability, economic and environmental benefits; and (2) foster the advancement  
14 of price-responsive demand in regional wholesale energy markets” (p. 31)

15 The Department determined that “a full decoupling mechanism best meets  
16 our objectives of (1) aligning the financial interests of the companies with policy  
17 objectives regarding the efficient deployment of demand resources, and (2)  
18 ensuring that the companies are not harmed by decreases in sales associated  
19 with any increased use of demand resources” (DPU 07-50-A, pp. 31–32).

20 **Q: Have traditional ratemaking and cost-recovery structures posed an**  
21 **impediment to enthusiastic utility support of demand resources?**

22 A: Yes they have, particularly with respect to energy efficiency and other activities  
23 that reduce distribution-company sales. So long as the utility loses revenues and  
24 earnings for each reduction in energy use, even the most public-interested utility  
25 managers will be torn between their obligations to their customers and to their

1 investors. Decoupling eliminates this conflict, by making utility earnings  
2 independent of sales.

3 **Q: Please describe National Grid's proposed decoupling mechanism.**

4 A: The Company's proposal combines a mechanism for decoupling revenues from  
5 sales with a mechanism for tracking and recovering two types of spending. The  
6 basic revenue-decoupling mechanism is designed so that the Company will  
7 recover no more or less than an approved level of test-year revenues regardless  
8 of differences between actual and test-year sales.

9 The Company has combined this revenue-decoupling mechanism for test-  
10 year revenues with two separate tracking and adjustment mechanisms to recover  
11 costs incurred subsequent to the test-year. One mechanism would track and  
12 recover the revenue requirements associated with its capital investments as they  
13 accumulate from year to year, while the other would adjust O&M expenses  
14 based on an inflation factor

15 **Q: Is there any reason to include these two cost trackers in the decoupling  
16 mechanism?**

17 A: No. National Grid currently has other cost trackers that operate without the  
18 decoupling mechanism, and proposes to add more trackers in this case, also  
19 outside the decoupling mechanism. The Company could have decoupling  
20 without cost trackers, as well as trackers without decoupling. There is no  
21 particular reason to link these two cost trackers to decoupling.

#### 22 **IV. National Grid's Proposed Trackers for Capital Investment and Inflation**

23 **Q: What is the Company's rationale for its proposal to establish tracking  
24 mechanisms for capital investment and inflation?**



1 A: Under traditional cost-of-service ratemaking, base rates are set based on test-  
2 year revenue requirements and sales. Once base rates go into effect, any sales  
3 growth beyond test-year levels generates revenues in excess of test-year revenue  
4 requirements.

5 Dr. Tierney argues in theory that utilities rely on these additional revenues  
6 generated by sales growth to fund capital investments and cover spending  
7 increases beyond that reflected in the test year. However, revenue decoupling  
8 eliminates that source of incremental funding by limiting revenue recovery to  
9 test-year levels. Dr. Tierney therefore proposes to replace those revenues with  
10 capital and inflation trackers in order to restore the sales-related revenue source  
11 eliminated by revenue decoupling.

12 **Q: Are the company's proposed capital-cost tracker and O&M adjustments**  
13 **designed to match the growth-related revenues that the Company would no**  
14 **longer retain, due to revenue decoupling?**

15 A: No. The trackers would result in revenues being collected based on inflation  
16 factors and the Company's capital spending, completely independent of the  
17 potential growth-related revenues. Any relationship between the revenues  
18 recovered through the various cost trackers and the effects of the revenue  
19 decoupling mechanism would be coincidental.

20 **A. *Capital Tracker***

21 **Q: Please describe the proposed capital-expenditure tracker.**

22 A: The Company proposes a tracker that recovers revenue requirements associated  
23 with both actual and forecasted capital investments. For actual investments, the  
24 tracker is designed to recover the revenue requirements associated with capital  
25 additions since the test year, less the revenue requirements associated with plant

1 retirement since the test year. For the purposes of estimating revenue require-  
2 ments associated with future investments, the Company proposes to set the level  
3 of annual capital additions at 75% of the average of the two prior years' actual  
4 additions.

5 Thus, in any year, the capital-cost tracker will reflect the revenue  
6 requirements associated with accumulated net capital additions since the test  
7 year and with forecasted gross capital additions for the upcoming year.

8 **Q: Is the Company proposing flow-through recovery of all net capital**  
9 **additions?**

10 A: No. According to Dr. Tierney, the investment tracker would recover only those  
11 capital expenditures determined by the Department to be prudent and used and  
12 useful.

13 However, the Company's proposal fails to provide for any type of process  
14 or procedures for forecasting the reliability or direct economic benefits to  
15 consumers from its capital investments, for weighing expected benefits against  
16 costs, or for setting performance targets for measuring actual performance  
17 against claimed benefits over time. In other words, the Company's proposal  
18 provides neither the metrics nor the data necessary for determining whether  
19 benefits are expected to exceed costs or whether actual performance bears out  
20 these expectations.

21 In the absence of established procedures for determining the cost-effective-  
22 ness of capital additions, review of the annual capital-additions filing would be  
23 very burdensome for the Department and the parties. Since the Company's plan  
24 would provide for prudence review at the end of the year, before any  
25 performance data can be expected, there is no mechanism for comparing the  
26 Company's promises of reliability, service quality, and efficiency with actual

1 results. The results of 2012 investments, for example, will not generally be  
2 measurable at the end of 2012, when that investment would be subject to  
3 prudence review. The absence of any accountability mechanism is particularly  
4 problematic in the context of the Company's announced intention to increase  
5 spending to correct past underinvestment, systematically replace equipment  
6 earlier than current practice, and proactively improve service.

7 **Q: How might investment in new distribution plant provide economic benefits**  
8 **to ratepayers?**

9 A: Consumers could benefit to the extent that an investment improves operating  
10 efficiency, increases productivity, increases reliability, or otherwise reduces  
11 operating expenses. For example,

- 12 • Replacing older equipment may eliminate additional O&M spending  
13 required to extend the life of that existing equipment.
- 14 • Replacing overhead lines that have been physically stressed will tend to  
15 reduce the frequency of line failures and repair operations.
- 16 • Systematically replacing equipment (such as line transformers or poles) in  
17 a planned program may be less expensive than replacing the equipment  
18 piecemeal as it fails, since the latter may require more travel time,  
19 mobilization and demobilization, and overtime payments than the former.<sup>2</sup>
- 20 • New equipment will tend to fail less often, improving reliability.
- 21 • New conductors may have lower line losses, due to larger diameter  
22 conductor and reduced splices.
- 23 • New transformers may have lower no-load and load losses than older  
24 equipment.

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<sup>2</sup>On the other hand, the replacements would occur sooner in the planned program, so the present value of the costs may be greater than the replace-as-needed approach.

- 1           • Eliminating equipment types, sizes, and voltages that are no longer  
2           Company-standard equipment may reduce costs of stocking spares,  
3           training crews, and the like.

4   **Q: What is the basis for the proposal to recover projected capital expenditures**  
5   **that have not yet been incurred?**

6   A: The Company does not offer any rationale for including future expenditures in  
7   the cost tracker.

8   **Q: Should the Company be allowed to include projections of future expendi-**  
9   **tures in the capital-investment tracker?**

10  A: No. Including future expenditures of uncertain magnitude or cost-effectiveness  
11  unreasonably complicates the tracking-and-reconciliation process.

12  **Q: Should the Department approve the Company's request for a capital-**  
13  **investment tracker?**

14  A: Not at this time. Instead, the Department should direct National Grid to file a  
15  revised proposal that

- 16           • includes a proposed analytical framework for estimating and evaluating  
17           expected reliability, service or economic benefits from capital investments.  
18           • proposes performance metrics for measuring realized benefits over time.  
19           • provides for the filing of data on expected benefits associated with  
20           incremental capital expenditures proposed for recovery through the capital  
21           tracker.  
22           • provides for the filing of data on realized benefits associated with previous  
23           years' capital expenditures being recovered through the capital tracker.  
24           • removes the proxy value for future capital expenditures from the  
25           calculation of the capital tracker.

1 **Q: The Company has existing service-quality targets in place. Would achieving**  
2 **those performance targets represent sufficient justification for approval of**  
3 **recovery of capital investments?**

4 A: No. The existing service-quality measures provide the Company with modest  
5 incentives to make expenditures necessary to meet minimal performance levels.  
6 That incentive structure (if not necessarily the actual values) is would be  
7 appropriate during a rate freeze, when the Company would be tempted to retain  
8 revenues for shareholders and allow service to decline. National Grid's proposal  
9 is the opposite of a rate freeze: the Company would recover all its investments,  
10 with little or no regulatory lag. Moreover, National Gird has proposed a much-  
11 more-aggressive investment strategy that would result in greatly increased  
12 capital spending. In the proposed situation, the Company would have strong  
13 incentives to make investments—to avoid penalties, earn incentive payments,  
14 and increase rate base—whether or not the expenditures were in the best  
15 interests of ratepayers. Before the Department accepts the investment tracker, it  
16 must find mechanisms to ensure that increased investment will be accompanied  
17 by improved performance.

18 ***B. Inflation Cost-Tracker***

19 **Q: Please describe the Company's proposal for tracking inflation costs.**

20 A: The Company proposes a tracker that recovers increases in O&M spending due  
21 to general price inflation. Under this proposal, the Company will calculate  
22 operating-expense increases by applying an economy-wide GDP index that is  
23 offset by a factor assumed to represent industry-specific productivity  
24 improvements. For the purposes of this calculation, Dr. Tierney recommends a  
25 0.5% productivity offset to the general inflation rate.

1           As with the proposed capital tracker, the inflation tracker will be set in  
2 each year to recover both cumulative historical inflationary increases, calculated  
3 using actual inflation rates, and projected spending increases in the upcoming  
4 year, as calculated using a forecasted inflation rate. Unlike the capital tracker,  
5 inflation will be calculated relative to 2010, not to the test year, since the  
6 Company's estimate of revenue requirements already incorporates an adjustment  
7 for forecasted inflation from the test year to 2010.

8   **Q: Will the proposed tracking mechanism reconcile forecasted to actual**  
9   **inflation rates?**

10 A: The forecasted inflation rate used to project spending increases for the  
11 upcoming year will be reconciled against the actual rate when the inflation  
12 tracker is re-set the following year. However, the forecasted rates used to inflate  
13 revenue requirements from the test year to 2010 will not be reconciled. The  
14 Company has not explained why it would not reconcile forecasted inflation for  
15 2008 to 2010 against actual inflation for this period.

16           Nor, does the Company intend to apply the productivity offset to inflation  
17 from the test year to 2010. Again, the Company does not explain why no  
18 productivity improvement is assumed for this two-year period (IR DOER 1-13).

19   **Q: What is the basis for the proposed productivity offset of 0.5%?**

20 A: Dr. Tierney, in Exhibits NG-SFT-2 and NG-SFT-3, primarily relies on a compila-  
21 tion of results of a small sample of studies of electric- and gas-utility produc-  
22 tivity and productivity offsets, along with a few productivity-offset factors  
23 adopted pursuant to settlement agreements. Dr. Tierney calculates a number of  
24 different average statistics on the productivity and productivity-offset study data  
25 and, after consideration of the settlement numbers, concludes, "a productivity

1 offset of 0.5 percent is a conservative estimate of the appropriate productivity  
2 adjustment for use in the Company's Net Inflation Adjustment" (p. 59).

3 **Q: Is this a valid approach for determining an appropriate productivity offset**  
4 **for the Company?**

5 A: No. Dr. Tierney's study sample is simply too small, and the variation in study  
6 results too wide, to draw reasonable conclusions from the sample averages. For  
7 example, in Exhibit NG-SFT-3, Dr. Tierney's sample includes only four results  
8 for productivity offset, one of which is for gas, not electric systems. Of the three  
9 electric studies, two are apparently analyses of the same data set performed by  
10 two different parties in the same proceeding. Even if you exclude the gas-  
11 distribution study, which has a *negative* productivity offset, the results vary  
12 widely from 0.18% to 1.09%.

13 These data limitations notwithstanding, Dr. Tierney has not shown that  
14 these study results, either individually or on average, are applicable to the  
15 Company's specific circumstances. According to the direct testimony of John  
16 Pettigrew, the Company is currently faced with a situation where "strategies and  
17 tactics to extend the life of distribution infrastructure are exhausted and a  
18 significant level of infrastructure is reaching the end of its useful life all at the  
19 same time" (p. 9). While this situation may require the Company to substantially  
20 increase capital outlays, such investments will probably reduce operating  
21 expenses. At the same time, according to Mr. Pettigrew, the Company is  
22 engaged in an effort to reduce expenses by improving operating efficiency and  
23 productivity:

1 As National Grid moves to increase its efforts on system maintenance and  
2 capital investment, it is also focused on containing annual O&M costs and  
3 making cost-effective capital investments. The Company recognizes that  
4 long-term efficiency gains are vital to its operations because the Company's  
5 resources (and those of its customers) are not unlimited. Given the sub-  
6 stantial level of investment that is necessary to maintain the electric distri-  
7 bution system, it is critical that the Company put its valuable resources to  
8 work in an efficient manner. Therefore, National Grid is working to im-  
9 prove its operating approach through changes to its organizational structure  
10 that will, among other things, increase its efficiency and effectiveness  
11 through the creation of "centers of excellence" for key capabilities and  
12 automation of certain work activities. (p. 7)

13 There is nothing in the data provided in Exhibits NG-SFT-2 or NG-SFT-3  
14 to indicate that the studies in Dr. Tierney's sample reflect the productivity  
15 improvements associated with the kind of fundamental transformation in  
16 business practices and organizational structure that the Company anticipates.

17 **Q: Are there factors other than improved productivity that might offset the**  
18 **impact of price inflation?**

19 A: The Company's operating expenses could be reduced with additional DSM  
20 spending, to the extent that such load reductions reduce O&M spending. For  
21 example, lower loads on line transformers will tend to increase their operating  
22 lives and reduce the frequency of transformer failures and maintenance  
23 expenditures related to dealing with those failures.

24 Also, payroll expenses may not keep pace with inflation, because of work-  
25 force turnover and replacement of experienced higher-wage employees with  
26 entry-level staff. The aging of the workforce is one of the operational challenges  
27 widely reported to face utilities as baby boomers reach retirement age.<sup>3</sup>

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<sup>3</sup>Cohen, Ed, "Knowledge drain will hit utilities hard," *Electric Light & Power* May 2006;  
Brown, Steven, "Transformers and Circuit Breakers not the Only Aging Utility Resources,"  
*Electric Light & Power* May 2005.



1           The change in workforce structure is likely to present challenges, as first-  
2           hand knowledge of the system is lost with the retirees, but it is also likely to  
3           reduce average wage rates.

4   **Q: What do you recommend with regard to the Company's proposal for an**  
5   **inflation tracker?**

6   A: The Company has failed to show that its net inflation adjustment will reasonably  
7       reflect changes in the Company's operating expenses over time. As National  
8       Grid has proposed the trackers, ratepayers would be paying for capital  
9       expenditures that reduce O&M expenses but not receiving any of those cost  
10      reductions until the next rate case. Nor has the Company dealt with the  
11      productivity offset to inflation from the test year to 2010, or the effects on O&M  
12      expenditures of the proposed Inspection and Maintenance Plan, DSM spending,  
13      or reductions in aggregate workforce seniority. I therefore recommend that the  
14      Company's request for an inflation tracker be denied.

15           As with the investment tracker, the Department should allow the Company  
16      to file an improved proposal, dealing with the identified deficiencies, in a later  
17      proceeding.

18   **Q: Does this complete your direct testimony?**

19   A: Yes.