

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

**DE 14-238**

**Public Service Company of New Hampshire**  
**Determination Regarding PSNH's Generation Assets**

**TESTIMONY**  
**OF**  
**MARK BERKMAN**

**September 18, 2015**

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**I. INTRODUCTION**

**Q. Please state your name, current position and business address.**

A. My name is Mark Berkman. I am a Principal of The Brattle Group (Brattle), an economic and financial consulting firm headquartered in Cambridge, Massachusetts. I am resident at Brattle's San Francisco, California office, 201 Mission St. 28<sup>th</sup> Fl. 94105.

**Q. Please summarize your educational and professional background.**

A. I have been a Principal at The Brattle Group since 2010. I was a director and founder of Berkeley Economic Consulting from 2007-2010, a vice president at Charles River Associates from 2002-2007, and vice president of NERA Economic Consulting from 2001-2011. I have also held positions at the Congressional Budget Office (CBO) and the Urban Institute. During the course of my 30-year career, I have testified before public utility and facility siting commissions in numerous states including Vermont, Indiana, Texas, California, and Washington State. I have also testified at trial in state and federal courts on over 20 occasions and testified before legislative committees at the state and federal level. I have published a number of articles in academic and trade journals. I have frequently utilized models such as REMI, IMPLAN, and MRIO to study the economic impacts of proposed regulations, taxes, and energy facilities including renewables, nuclear, coal, and hydro. I earned a PhD from the University of Pennsylvania's Wharton School program in applied economics and managerial science. I was awarded the Regional Science Association fellowship to support my dissertation research on the Regional Costs and Benefits of Acid Rain Control. I also earned a master's degree from Harvard University in planning, policy analysis, and management and a BA from George Washington University in urban affairs and economics. A more detailed description of my educational and professional background is provided in Attachment 1 of this testimony.

**II. PURPOSE OF THIS TESTIMONY**

**Q. What is the purpose of your testimony?**

A. I have been asked by Non-Advocate Staff of the New Hampshire Public Utilities Commission (Staff) to:

(1) Review the results of the REMI model economic impact analysis regarding the consumer savings projected by Eversource (testimonies of Thomas Frantz and Eric Chung respectively); and

(2) Consider the economic impacts accounting for revisions to Eversource customer savings with respect to timing (Testimony of Jay Dudley), magnitude (Testimony of Michael Cannata), and distribution by customer class (Testimony of Richard Chagnon).

(3) Consider whether the REMI analysis meets the economic analysis request made by the New Hampshire Legislature in SB221.

**Q. How is your testimony organized?**

A. Section III of my testimony summarizes my conclusions. Section IV presents my evaluation of the REMI results reflecting Eversource's projected customer savings from the proposed settlement in the context of the New Hampshire economy. Section V discusses how the results would change under an alternative baseline, lower customer savings, and assumptions regarding natural gas prices and savings (cost) allocations across customer classes. Section VI addresses whether the analysis presented by the Settling Parties meets the request of the State Legislature.

**III. KEY CONCLUSIONS**

**Q. Please summarize the key conclusions from your testimony.**

A. The REMI-based economic analysis and Mr. Frantz's presentation of it are incomplete to fully assess the economic impacts of the proposed settlement.

First, Mr. Frantz does not provide a useful context to judge the magnitude of the impacts relative to the New Hampshire economy. When placed in context, the economic impacts of

1 the proposed settlement according to its proponents are positive, but very small. For  
2 example, the total number of jobs attributed to the proposed settlement over the period  
3 2015-2021 represents only 0.4 percent of current total employment (720,087) in New  
4 Hampshire

5 Second, REMI was not run based on a true status quo basis to establish an accurate baseline,  
6 which leads to a modest overstatement of economic impacts. For example, correcting the  
7 baseline to reflect actual electricity expenditure levels in New Hampshire reduces the  
8 employment impacts attributed to the proposed settlement by about 4 percent from 3,239  
9 over the period 2015-2021 to 3,123.<sup>1</sup>

10 Third, the economic analysis did not consider scenarios that would test alternative cost  
11 saving magnitudes, allocations, or alternative natural gas price forecasts which could affect  
12 customer savings and thus the economic impact of the settlement.<sup>2</sup> In fact, rather than  
13 reducing consumer electricity costs, the proposal may actually increase them, leading to  
14 negative rather than positive economic impacts. The magnitude and direction of the  
15 economic impacts will be approximately proportional to the customer savings, though there  
16 could be some effect from the timing or the allocation of savings to rate classes.

17 Fourth, a complete economic analysis of the proposed settlement would have included: 1)  
18 more scenarios in the economic impact analysis to account for differences in future fuel  
19 costs, reliability, and air quality; and 2) a cost-benefit study. Such a study would not have  
20 focused on job impacts and changes in gross state product, but on changes in consumer  
21 surplus, reliability, air quality, and other externalities attributed to the settlement. Changes  
22 in consumer surplus, measured as the difference between customer willingness to pay and  
23 expected payments, could capture the value of reliability as well as insurance against  
24 volatile price changes. In addition, the focus of the cost-benefit analysis would be on the  
25 present value of net savings.

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<sup>1</sup> Calculated as:  $(3239 - 3123) / 3239 = 4\%$ .

<sup>2</sup> The exception to this is stranded cost treatment.

**IV. PLACING THE ECONOMIC IMPACTS OF THE PROPOSED SETTLEMENT IN  
CONTEXT**

**Q. Does the Economic Analysis Conducted by Eversource Indicate Substantial Economic  
Impacts Attributable to the Proposed Settlement?**

A. No. When placed in the context of the overall New Hampshire economy, the projected employment and Gross State Product (GSP) gains are modest. For example, job gains attributed to the proposed settlement total only 3,239 over the period 2015-2021.<sup>3</sup> By comparison, total employment in New Hampshire in 2015 stands at 720,087 as of July 2015 – reflecting a 12,000 job increase from the prior year.<sup>4</sup> Based on a two percent annual growth rate, total employment will reach approximately 810,900,800 by 2021 – an increase of 90,800 jobs.<sup>5</sup> Thus, the job increase resulting from the proposed settlement is likely to represent only 4 percent of expected growth (and slightly less once a baseline correction is made). In addition, job gains in the manufacturing sector – a sector of concern in the State – are also small (again, slightly smaller once a baseline correction is made). Between 2015 and 2021, less than 70 additional manufacturing jobs are attributable to the proposed settlement according to the REMI analysis (REMI, Appendix VI) compared to about 66,000 total manufacturing jobs.<sup>6</sup>

Changes to GSP (gross state product) related to the proposed settlement are also relatively small. The REMI analysis estimated that GSP would increase by \$406 million (\$0.4 billion) between 2015 and 2021 as a result of the settlement. New Hampshire's GSP stood at about \$60 billion in 2015. Assuming a 1 percent annual GSP growth rate through 2021, the contribution of the settlement would be very modest over the period.

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<sup>3</sup> REMI, Table 2, p.5.

<sup>4</sup> New Hampshire Employment Security, Briefing, August 18, 2015 reports 720,087 total employment in July 2015.

<sup>5</sup> See footnote 2.

<sup>6</sup> New Hampshire Employment Projects by Industry and Occupation 2012-2022.

**V. EVALUATION OF THE REMI ANALYSIS**

**Q. Please elaborate on your concerns regarding the economic impact analysis.**

A. The economic impact analysis is flawed in several respects. First, the baseline used as a benchmark of the alternative scenarios considered did not accurately reflect actual electricity spending in New Hampshire. REMI typically relies on indexed national data to provide state level baselines. While this is often reasonable, in instances where energy prices are at issue a more state-specific source is advisable. The results of the impact study could be quite different using more specific data.

**Q. Do you know how much of a difference this change in baseline makes in this instance?**

A. Yes. At the request of Staff, REMI conducted a sensitivity analysis using more state-specific electricity expenditures. The results of this analysis show changes in the employment and GSP (Gross State Product) estimates attributable to the proposed settlement. Overall, the gains in employment attributed to the settlement proposal fell as a result of the revised baseline. For example, the overall job gain from 2015 through 2021 was 3,239 using the settling parties' baseline, but that figure fell by 116 jobs to 3,123 using the revised baseline – a 4 percent reduction.<sup>7</sup> Thus, employment gain attributed to the settlement is modest. Gains in GSP (Gross State Product) from 2015 through 2021 fell from 406 billion to 390 million, also a 4 percent decline.<sup>8</sup>

**Q. You also raised a concern regarding the scenarios studied in the economic impact analysis. Please explain.**

A. I think that the economic analysis presented by the settling parties failed to create scenarios to address: 1) potentially lower consumer savings (or higher consumer costs); 2)

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<sup>7</sup> Revised estimate is taken from REMI response to staff request, "Measuring the Economic Impacts of Public Service of New Hampshire Electric Generation Asset Divestiture Options – Revised Findings When Compared to Adjusted Status Quo Baseline Forecast," Table 3. REMI also responded to staff requests TC-45 and TC 46 with additional tables.

<sup>8</sup> Ibid.

1       uncertainties regarding future natural gas prices on consumer savings; and 3) alternative  
2       savings distributions. Mr. Cannata, for example, has determined that rather than consumer  
3       savings, the settlement would actually lead to additional customer costs. If this is the case,  
4       then REMI would indicate job losses and reduced GSP attributable to the proposed  
5       settlement. An exact estimate of this cannot be provided with running REMI, but the impact  
6       is likely to be close to a mirror image of the proportional estimates associated with savings.  
7       Thus, a \$360 million cost to consumers over six years would lead to modest job losses and a  
8       minor reduction in GSP. Should costs be twice the savings projected by Eversource, the  
9       negative impacts would be about twice as high. Job losses over the period 2015-2021 would  
10      be 6,000 and the GSP reduction over this period would be about \$22 million. These  
11      reductions suggest greater scrutiny of the settlement proposal may be called for.

12   **Q. Do you know the magnitude of changes to the economic impacts associated with the**  
13   **other scenarios that you have outlined that should have considered?**

14   A. Yes. At the request of Staff, REMI completed several sensitivity runs addressing these  
15   scenarios. A high natural gas price scenario and three scenarios reflecting three consumer  
16   savings allocations specified by PUC non-settling staff were completed. These allocations,  
17   which shift the relative burdens of meeting revenue requirements from small and medium  
18   commercial/industrial customers to large commercial/industrial customers are shown  
19   below:<sup>9</sup>

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<sup>9</sup> See Staff testimony of Richard Chagnon.



### Revenue Requirement Allocation

Rate Class	Base	Allocation Option A	Allocation Option B	Allocation Option C
Rate Class LG (large commercial/industrial)	5.75%	13.25%	12.63%	11.56%
Rate Class GV (medium commercial/industrial)	20.00%	19.99%	19.06%	17.45%
Rate Class G (small commercial/industrial)	25.00%	24.91%	23.75%	21.75%
Rate Class R (residential)	48.75%	41.38%	44.11%	48.75%
Rate Class OL (outdoor lighting)	0.50%	0.50%	0.50%	0.50%

1 The results are summarized in the tables below with respect to employment and gross state  
2 product (GSP). As shown, the natural gas scenario indicates that the proposed settlement  
3 would result in job losses rather than gains under the proposed settlement and the GSP  
4 would be lower. The changes in revenue requirement allocations did not result in notable  
5 changes in either employment or GSP.

### Impact on Employment - REMI Baseline vs. REMI Response

Scenario	2015-2021	2015-2031
REMI Baseline	3,239	8,912
High Natural Gas Prices	-1,035	-4,060
Allocation Option A	3,159	8,761
Allocation Option B	3,177	8,790
Allocation Option C	3,212	8,847

Sources and Notes:

[1]: Units are individuals (jobs).

[2]: Source for REMI Baseline: REMI Report Tables 2 and 3.

[3]: Source for all other scenarios: REMI Response to TC 46, September 14, 2015.

### Impact on State GSP - REMI Baseline vs. REMI Response

Scenario	2015-2021	2015-2031
REMI Baseline	\$406	\$1,393
High Natural Gas Prices	-\$134	-\$689
Allocation Option A	\$398	\$1,337
Allocation Option B	\$398	\$1,347
Allocation Option C	\$400	\$1,366

Sources and Notes:

[1]: Units are millions of current (2015) dollars.

[2]: Source for REMI Baseline: REMI Report Tables 2 and 3.

[3]: Source for all other scenarios: REMI Response to TC 46, September 14, 2015.

**VI. EVALUATION OF THE REMI ANALYSIS IN RESPONSE TO LEGISLATIVE CONCERNS**

**Q. Mr. Frantz, on behalf of Designated Staff in this proceeding, noted in his testimony that the Legislature was not particularly clear regarding the definition of economic analysis. Do you have an opinion regarding the appropriate economic analysis in this instance?**

A. Economic analyses of two types are typically conducted when government programs or regulations are evaluated – a cost-benefit analysis and an economic impact analysis. The analysis that Mr. Frantz presented, based on a study conducted by REMI, falls in the latter category. No cost-benefit analysis was performed, but whether this was deemed necessary by the Legislature is unclear.

**Q. Do you think a cost-benefit analysis should have been conducted?**

A. I can't comment on the expectations of the Legislature, but as an economist and a policy analyst I think that a cost-benefit analysis (CBA) would have been helpful. CBA studies are designed to measure economic efficiency in contrast to impact studies that focus on metrics such as employment and output. While these are important, they do not by themselves inform decision makers whether an investment or policy generates benefits greater than costs. Economic efficiency is determined by whether benefits exceed costs. If for, example, there are two policies under consideration, Policy A may generate benefits well in excess of costs while Policy B generates benefits only slightly greater than costs. At the same time, Policy A may generate few jobs, while Policy B generates thousands of jobs. Choosing Policy A creates more economic benefits, but fewer jobs. Consequently, unless the policy's objective is to promote job growth, Policy A should be selected to maximize benefits.