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STATE OF NEW HAMPSHIRE
BEFORE THE
NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE

REBUTTAL TESTIMONY OF JOHN J. REED

DOCKET NO. DE 11-250

July 11, 2014

1 **I. Introduction and Executive Summary**

2 **Q. Please state your name and business address.**

3 A. My name is John J. Reed. My business address is 293 Boston Post Road West, Suite
4 500, Marlborough, Massachusetts 01752.

5 **Q. By whom are you employed and what is your position?**

6 A. I am the Chairman and Chief Executive Officer of Concentric Energy Advisors, Inc. and
7 CE Capital Advisors, Inc. (together "Concentric") (<http://www.ceadvisors.com/>).

8 **Q. On whose behalf are you appearing in this proceeding?**

9 A. I am appearing on behalf of Public Service Company of New Hampshire ("PSNH").

10 **Q. Please describe Concentric.**

11 A. Concentric is an economic advisory and management consulting firm, headquartered in
12 Marlborough, Massachusetts, which provides consulting services related to energy
13 industry transactions, energy market analysis, litigation, and regulatory support. CE

1 Capital Advisors is a FINRA-member securities firm that provides financial services
2 regarding energy industry mergers and acquisitions.

3 **Q. Please describe your educational background and professional experience.**

4 A. I have more than 35 years of experience in the energy industry, having served as an
5 executive in energy consulting firms, including the position of Co-Chief Executive
6 Officer of the largest publicly-traded management consulting firm in the United States
7 and as Chief Economist for the largest gas utility in the United States. I have provided
8 expert testimony on a wide variety of economic and financial issues related to the energy
9 and utility industry on numerous occasions before administrative agencies, utility
10 commissions, courts, arbitration panels and elected bodies across North America.
11 Attachment JJR-1 to this testimony provides my background and a list of prior
12 engagements in which I have provided expert testimony.

13 **Q. What is the purpose of your testimony in this proceeding?**

14 A. The purpose of my testimony is to respond to the testimony of other parties to this
15 proceeding relating to the prudence of PSNH regarding its Merrimack Station Scrubber
16 Project (the “Project”), as well as to testimony suggesting that PSNH had viable
17 alternatives to pursuing the Project. I specifically discuss the testimony of Dr. Elizabeth
18 Stanton, submitted on behalf of the Conservation Law Foundation, and Mr. Michael
19 Hachey, submitted on behalf of TransCanada, regarding their analyses and
20 recommendations pertaining to PSNH’s cost recovery for the Project. In my testimony I:

- 21 i) Review the appropriate prudence standard that should be applied in this
22 proceeding;
23 ii) Apply this prudence standard to assess the actions of PSNH and offer my
24 opinion regarding the prudence of these actions;

- 1 iii) Review the options available to PSNH when it considered the installation of
2 the scrubber at Merrimack Station;
3 iv) Discuss the likely timeline and process in the event that PSNH sought
4 permission to divest Merrimack Station;
5 v) Discuss the likely impact of the scrubber mandate on the price a willing
6 buyer would likely have paid in a divestiture;
7 vi) Discuss the option of retiring Merrimack Station in light of various orders in
8 this docket;
9 vii) Discuss my concerns with the intervenors' quantifications of a disallowance;
10 and
11 viii) Present my conclusions regarding the prudence of pursuing the installation
12 of the scrubber at Merrimack Station in light of the options available to
13 PSNH.

14 **Q. What relevant experience do you have regarding the issues which form the purpose**
15 **of your testimony in this proceeding?**

16 A. I have managed numerous engagements involving the definition and application of the
17 prudence standard in public utility ratemaking, beginning with major nuclear construction
18 projects almost thirty years ago. I have provided expert testimony on this issue in
19 regulatory proceedings across North America, on projects such as Florida Power &
20 Light's \$20 billion nuclear construction program, Ontario Power Generation's \$10 billion
21 Darlington Refurbishment Project, and similar engagements involving gas pipelines,
22 local distribution companies and coal-fired power projects. In these matters, I have
23 worked on behalf of utilities, utility regulators and utility customers. In addition, I have a
24 substantial amount of experience in managing divestiture processes for utilities seeking to
25 sell electric generating assets. I have managed several such sales in New England,
26 including multiple sales for operating units of Northeast Utilities, EUA, Bangor Hydro,
27 and others. I have also worked on several buy-side engagements for purchasers of

1 electric generating assets and have conducted valuations and appraisals of power plants
2 across the U.S.

3 **Q. Please describe how the remainder of your testimony is organized.**

4 A. The remainder of my testimony is organized as follows:

- 5 Section II: Review of Prudence Standard
- 6 Section III: Summary of Intervenors' Positions
- 7 Section IV: Consideration of Options
- 8 Section V: Variance Option
- 9 Section VI: Divestiture Option
- 10 Section VII: Retirement Option
- 11 Section VIII: Intervenors' Quantifications of a Disallowance
- 12 Section IX: Conclusion

13 **II. Review of Prudence Standard**

14 **Q. Please generally describe the prudence standard as you understand it.**

15 A. The original standard of prudence was expressed by Supreme Court Justice Louis
16 Brandeis in 1923 as a means of guiding regulators conducting reviews of utility capital
17 investments. Since that time a substantial amount of jurisprudence has been developed to
18 refine the Prudent Investment Test. Much of this was developed in the 1980s following
19 the nuclear construction programs of the previous two decades. As originally proffered,
20 the test provides a basis for establishing a utility's investment or rate base based on the
21 cost of such investment by stating the following:

22 There should not be excluded from the finding of the base investments
23 which, under ordinary circumstances, would be deemed reasonable. The
24 term is applied for the purpose of excluding what might be found to be
25 dishonest or obviously wasteful or imprudent expenditures. Every
26 investment may be assumed to have been made in the exercise of reasonable
27 judgment, unless the contrary is shown... adoption of the amount prudently
28 invested as the rate base and the amount of the capital charge as the measure
29 of the rate of return ... [would provide] a basis for decision which is certain

1 and stable. The rate base would be ascertained as a fact, not determined as a
2 matter of opinion.¹

3 Two key features of a prudence determination are captured in this language. First,
4 prudence relates to actions and decisions; costs themselves are not prudent or imprudent.
5 It is a decision or action that must be reviewed, not simply whether the costs are above or
6 below expectations. The second feature is that the standard typically incorporates a
7 presumption of prudence, which is often referred to as a rebuttable presumption. Thus,
8 per Justice Brandeis, the burden of showing that the decision is outside of the reasonable
9 bounds falls, at least initially, on the party challenging the utility's actions.

10 The position of Justice Brandeis was endorsed by the full Court in 1935 when Supreme
11 Court Justice Benjamin N. Cordozo stated:

12 Good faith is to be presumed on the part of managers of a business. In
13 the absence of a showing of inefficiency or improvidence, a court will
14 not substitute its judgment for theirs as to the measure of a prudent
15 outlay.²

16 The Prudent Investment Test offered by Justice Brandeis was applied sparingly for the
17 first four decades following its pronouncement. It was not until the nuclear construction
18 projects of the 1970s and 1980s that the Prudent Investment Test, at least in name, was
19 frequently applied in various electric utility rate cases. At that time, the Supreme Court's
20 standard became the foundation that many states, including New Hampshire, used to
21 develop state-specific prudence standards.

¹ Separate, concurring opinion of Justice Louis Brandeis, *Missouri ex. Rel. Southwestern Bell Telephone Co. v. Public Service Commission*, 262 U.S. 276 (1923).

² *West Ohio Gas Co. v. Public Utilities Commission of Ohio* (No.1), 249 U.S. 63, (1935), Opinion.

1 **Q. Are there various interpretations of the Prudent Investment Test that have been**
2 **proffered in other prudence reviews?**

3 A. Yes. Three interpretations of the Prudent Investment Test were offered by utilities,
4 regulators and industry experts during the 1980s during nuclear investment prudence
5 proceedings. Such interpretations, at times, were in violation of the strict standard first
6 developed by Justice Brandeis. Despite this, these interpretations were often used to
7 justify large disallowances, possibly as a rough means of mitigating the “rate shock”
8 associated with placing a multi-billion dollar investment into rate base.

9 The first interpretation of the Prudent Investment Test developed during this time closely
10 follows the traditional standard proffered by Justice Brandeis. Under this standard,
11 regulators utilized a balanced, retrospective review based upon the information that was
12 known or knowable at the time of the decision. In addition, this interpretation of the
13 standard considered a range of reasonable behavior given the circumstances, rather than
14 requiring perfection or even consistently above-average performance.

15 The National Regulatory Research Institute (“NRRI”) advocated for similar principles in
16 a research paper in 1984.^{3 4} In this paper the NRRI stated that the prudent investment
17 standard should include the following four guidelines:

- 18 • “...a presumption that the investment decisions of the utilities are prudent...”
- 19 • “...the standard of reasonableness under the circumstances...”
- 20 • “...a proscription against the use of hindsight in determining prudence...”
- 21 • “...determine prudence in a retrospective, factual inquiry. Testimony must
22 present facts, not merely opinion, about the elements that did or could have
23 entered into the decision at the time.”

³ National Regulatory Research Institute, *The Prudent Investment Test in the 1980's*, April 1985.

⁴ NRRI is the state commissions' research resource. Its primary funding comes from voluntary dues paid by state commissions. *NRRI website accessed on January 10, 2009.*

1 **Q. Please describe the two remaining interpretations of the prudence standard.**

2 A. The two remaining interpretations of the prudence standard are related to the perfect
3 execution of the project in one instance and the economic benefits or fair value of the
4 project in the second instance. Both of these interpretations of the standard reflect the use
5 of hindsight to second-guess utility decision-makers based on circumstances that were
6 clearly unknown or unknowable at the time the utility was required to make a decision.

7 In the first instance, the standard compared the performance of the project to the perfect
8 execution of the project. This interpretation focuses purely on the mistakes or missed
9 opportunities to lower specific costs of the project, and is solely results-based. This
10 interpretation of the standard fails to understand the inherent trade-offs that occur in any
11 large construction project, and fails to recognize that prudent behavior encompasses a
12 range of reasonable and acceptable conduct.

13 The third interpretation of the standard relies upon the economic benefits or fair value test
14 used to compare the value of the project to other capacity resources that are available at
15 the time of the prudence review, rather than at the time the decision to proceed with
16 construction was made. In the 1980s, this interpretation of the standard almost always
17 resulted in a very large disallowance for the utilities involved in such a review. As a
18 result, utility managers were often left penalized for unforeseen changes in the economic
19 or political climate associated with constructing a new nuclear facility.

20 **Q. Have other regulatory bodies or utility commissions addressed the issue of**
21 **prudence?**

22 A. Yes. The Federal Energy Regulatory Commission (“FERC”) offered its view of the
23 Prudent Investment Test in 1984 by stating the following:

1 We note that while in hindsight it may be clear that a management
2 decision was wrong, our task is to review the prudence of the utility's
3 action and the cost resulting there from based on the particular
4 circumstances existing either at the time the challenged costs were
5 actually incurred, or the time the utility became committed to incur those
6 expenses.⁵

7 The New York Public Service Commission shared similar observations when reviewing
8 Consolidated Edison Company of New York's Indian Point 2 nuclear plant.

9 The Company's conduct should be judged by asking whether the conduct
10 was reasonable at the time, under all the circumstances, considering that
11 the company had to solve its problems prospectively rather than reliance
12 on hindsight. In effect, our responsibility is to determine how reasonable
13 people would have performed the tasks that confronted the company.⁶

14 In addition, the Maine Public Utilities Commission ("Maine PUC") discussed the issue of
15 prudence in its Order in Docket No. 2006-200. The Maine PUC defined prudence "as the
16 determination whether the utility followed a course of conduct that a capably managed
17 utility would have followed in light of existing and reasonably knowable circumstances."

18 **Q. Has the New Hampshire Supreme Court opined on the appropriate Prudence**
19 **Standard?**

20 A. Yes. In the *Appeal of Conservation Law Foundation of New England*, at 127 N.H. 606,
21 638 (1986), the Court stated "prudence judges an investment or expenditure in the light
22 of what due care required at the time an investment or expenditure was planned and

⁵ Decision of the Federal Energy Regulatory Commission, *In Re: New England Power Company*, 31 FERC 61,047.

⁶ Decision of the New York Public Service Commission, *In Re: Consolidated Edison Company*, Opinion 79-1, January 16, 1979, Case No. 27123.

1 made.” This Commission has noted that this standard developed by the Supreme Court
2 “govern[s] the inclusion or exclusion of such costs for ratemaking purposes.”⁷

3 Furthermore, in *Appeal of Easton*, 125 N.H. 205, 215 (1984), the Supreme Court stated
4 that “[T]he PUC may reject management decisions ‘[w]hen inefficiency, improvidence,
5 economic waste, abuse of discretion or action inimical to the public interest are shown,’”
6 when reviewing whether a utility has been prudent in its decision making.

7 **Q. Has the New Hampshire Public Utilities Commission (“NHPUC” or “Commission”)**
8 **likewise considered the issue of prudent utility actions or otherwise adopted an**
9 **interpretation of the Prudence Standard?**

10 A. Yes, this Commission has considered and opined on the issue of prudence in a number of
11 cases. In NHPUC Order No. 20,503 in Docket No. DR 92-050, 77 NH PUC 268, dated
12 June 5, 1992, the Commission stated the following:

13 Prudence is "essentially....an analogue of the common law negligence standard."
14 [citing to *Appeal of Conservation Law Foundation*, 127 N.H. 606, 637 (1986)].
15 "While the scope of the prudence principle is by no means clear, it at least
16 requires the exclusion from rate base of costs that should have been foreseen as
17 wasteful." *Id.* "[P]rudence judges an investment or expenditure in the light of
18 what due care required at the time an investment or expenditure was planned and
19 made...." *Id.* at 638.

20 The test of due care asks what a reasonable person would do under the
21 circumstances existing at the time of a decision. *Fitzpatrick v. Public Service Co.*
22 *of N.H.*, 101 N.H. 35 (1957). Stated differently, a lack of due care is the failure to
23 use that degree of care that the ordinary reasonably careful and prudent person
24 would use under like circumstances. 57A Am. Jur. 2d Negligence 7 (1989).⁸

25 In Order No. 24,108 in Docket No. DE 01-150, 87 NH PUC 876 (2002) the Commission
26 stated:

⁷ *Re PSNH*, Order No. 22,847, 83 NH PUC 54, 73 (1998); *Re PSNH*, Order No. 20,280, 76 NH PUC 645, 654 (1991); *Re PSNH*, Order No. 20,503, 77 NH PUC 268, 270 (1992); *Re PSNH*, Order No. 22,234, 81 NH PUC 531,541 (1996); *Re PSNH*, Order No. 22,847, 83 NH PUC 54, 73 (1998).

⁸ NHPUC Order No. 20,503 in Docket No. DR 92-050 dated June 5, 1992, 77 NH PUC at 270.

1 One of the critical prudence considerations when evaluating actions and
2 decisions is to not apply the perspective of hindsight, but rather to consider the
3 actions in light of the conditions and circumstances as they existed at the time
4 they were taken. In this temporal respect it is similar to the duty of care in a case
5 of negligence at common law, namely, what would a reasonable person do at the
6 time the decision was made. *Fitzpatrick v. PSNH*, 101 NH 35 (1957).⁹

7 Finally, earlier in this proceeding, in Order No. 25,565 issued on August 27, 2013, the
8 Commission cited other regulatory commissions that have taken a similar view of a
9 prudence inquiry:

10 [Prudence] is the degree of care required by the circumstances under which the
11 action or conduct is to be exercised and judged by what is known, or could have
12 reasonably been known, at the time of the conduct. In other words, whether an
13 action will be considered prudent depends on whether the action would be
14 considered reasonable by a person with similar skills and knowledge under
15 similar circumstances. It is a term often used interchangeably with what is
16 considered “reasonable” under the circumstances. The Commission must
17 determine whether decisions were made in a reasonable manner in light of the
18 conditions or circumstances that were known or reasonably should have been
19 known when the decision was made.¹⁰

20 This Commission has also approved a specific definition of “Prudence” that applies to
21 PSNH’s operation of its fossil/hydro generating assets until they might be divested:

22 **Prudence:** The standard of care which qualified utility management would be
23 expected to exercise under the circumstances that existed at the time the decision
24 in question had to be made. In determining whether a decision was prudently
25 made, only those facts known or knowable at the time of the decision can be
26 considered.

27 This definition is contained on page 8 of the “Agreement to Settle PSNH Restructuring”
28 which was approved by this Commission in Docket No. DE 99-099.¹¹

⁹ NHPUC Order No. 24,108 in Docket No. DE 01-150 dated December 31, 2002, 87 NH PUC at 886.

¹⁰ Order No. 25,565, *slip op.* at 20, citing to *Duke Energy Indiana, Inc.*, Cause No. 43114 IGCC 4S1, PUR slip copy at 108, 2012 WL 6759528 at *108 (IURC December 27, 2012).

¹¹ *PSNH Proposed Restructuring Settlement*, 85 NH PUC 154 (approving Restructuring Settlement); on reh'g, 85 NH PUC 536 and 85 NH PUC 645 (2000). In addition to this Commission’s approval of the Restructuring Settlement, that document was signed by the Governor of New Hampshire, the Governor’s Office of Energy and Community Services, the New Hampshire Attorney General, Staff of the New Hampshire Public Utilities Commission, Public Service Company of New Hampshire and Northeast Utilities. *See also* Order No. 24,108 cited in footnote 9.

1 Notably, regarding the Scrubber Project this Commission has recognized that:

2 [T]he scrubber installation at Merrimack Station does not reflect a utility
3 management choice among a range of options. Instead, installation of scrubber
4 technology at the Merrimack Station is a legislative mandate, with a fixed
5 deadline. See RSA 125-O: 11, I, II; RSA 125-O:13, 1. The Legislature, not
6 PSNH, made the choice, required PSNH to use a particular pollution control
7 technology at Merrimack Station, and found that installation is “in the public
8 interest of the citizens of New Hampshire and the customers of the affected
9 sources.” RSA 125-O: 11, VI.¹²

10 As noted by the Commission, PSNH’s actions were mandated by law, and as a matter of
11 law, installation of the scrubber was judged to be in the public interest and therefore
12 prudent. The prudence of the design, contracting, and construction portions of the project
13 are open to Commission review; however, I am unaware of any material challenge to the
14 report prepared by Jacobs Consultancy that finds these aspects of the scrubber project to
15 have been prudently managed.

16 **Q. Do the intervenor witnesses in this case offer opinions on how prudence should be**
17 **defined and considered in this case?**

18 A. Yes. Dr. Stanton defined prudent costs as “one which - to the best understanding of a
19 utility’s manager at the time when the cost was incurred – provides a benefit to
20 ratepayers.”¹³ She also states that “Prudency [sic] requires a utility manager to restrict
21 capital expenses for which he or she plans to seek recovery from ratepayers to those
22 projects that are beneficial to ratepayers.”¹⁴ Finally, she states that “prudent decisions
23 must be reassessed continually up until the point that all costs are 'sunk'. That is, a
24 prudent decision to incur a capital expense is not made once in advance of all spending
25 and then stands as prudent in perpetuity. Rather, to be prudent, such a decision must be

¹² *Re PSNH*, Order No. 24,979. 94 NH PUC 311, 318 (2009).

¹³ Direct Testimony of Elizabeth A. Stanton, p. 6.

¹⁴ *Op. cit.*, p. 7.

1 reassessed continually throughout the planning and construction of the project in order to
2 determine whether, given changing economic conditions or cost estimates, canceling or
3 redesigning the project would be more beneficial to ratepayers.”

4 **Q. Do you agree with Dr. Stanton’s definition?**

5 A. No, I do not. Prudent decisions cannot be evaluated based on whether they were
6 expected to, or in fact did, provide a “benefit to ratepayers.” First, whether a project or
7 decision produces “benefits” to ratepayers can only be determined after the fact.
8 Therefore, the use of a standard of achieving actual benefits violates the widely-held
9 principle and specific Restructuring Settlement definition that prudence reviews should
10 avoid any reliance on hindsight and focus exclusively on what was known or knowable at
11 the time the decision was made. Second, the existence of “benefits” may be a subjective
12 matter that is not capable of being examined based on a factual inquiry limited to
13 information that was available at the time to the decision maker. For example, utilities
14 “choose” to pay federal income taxes because the law requires that they do so. The
15 decision to comply with this law may not be one that some, or even most ratepayers
16 believe produces “benefits” for them. However, it would be quite unreasonable to
17 conclude that a utility’s decision to pay such taxes is imprudent or unreasonable. It
18 would similarly be quite unreasonable to conclude that PSNH is imprudent for complying
19 with the statutory mandate requiring installation of the scrubber, even if one did not
20 consider that to be beneficial.

21 The determination of whether a decision is prudent needs to be addressed *solely* based on
22 an analysis of whether that decision was within, or outside, a defined range of reasonable
23 behavior. It is not related to costs, or benefits, or any other consequence of that decision
24 as it turned out. It is also not enough to conclude that another reasonable decision maker

1 may have come to a different conclusion or made a different decision. Reasonable
2 people can differ and still be within the range of what is considered reasonable.

3 Rather, actions are evaluated as prudent or imprudent based on an established range of
4 acceptable actions and the measured against the minimally prudent action. The
5 determination of prudence must be based on a comparison of the action taken to the
6 minimally acceptable action. Compliance with the law undoubtedly falls within the
7 range of acceptable actions.

8 In addition, while I agree that prudence is a continuing obligation, this standard does not
9 require a continual re-evaluation of a decision until all costs are “sunk” as Dr. Stanton
10 suggests. This suggests that in order to be prudent, PSNH should have re-evaluated the
11 installation of the scrubber up until all costs had been incurred. This is unreasonable and
12 assumes that PSNH had options other than installing the scrubber. PSNH re-evaluated
13 the scrubber project in September of 2008 at the request of the Commission and
14 discussed the revised project estimate with the Legislature in early 2009. Ultimately, the
15 Legislature reinforced the mandate requiring installation of the scrubber. The re-
16 evaluation of decisions only makes sense if there are viable alternatives that can still be
17 pursued. In this case, once the legislature made it clear that the law was not going to
18 change, the alternatives became non-viable.

19 **Q. Please describe the factors the Commission should consider in a proper prudence**
20 **review.**

21 A. In determining whether a utility’s decision-making process is found to be imprudent, the
22 Commission should begin by defining a range of acceptable behavior, determining what a
23 “minimally prudent” action would have been, and measuring the actions taken against the
24 minimum of the range. An assessment of prudence cannot be based solely on a single

1 behavior, but rather on a range of acceptable behavior. Second, the Commission should
2 take into consideration only what the utility could have known at the time it was making
3 the decision to proceed with the scrubber installation and avoid using hindsight in
4 determining the prudence of actions. Third, the Commission must not base a prudence
5 finding solely on whether the action or alternative actions resulted in customer benefits.
6 A determination of prudence based solely on customer benefits ignores important factors
7 that must be taken into consideration in determining the prudence of actions under the
8 circumstances in which decisions had to be made.

9 **III. Summary of Intervenor Witness Positions**

10 **Q. Please summarize the positions of Dr. Stanton and Mr. Hachey to which you will be**
11 **responding.**

12 A. Dr. Stanton concludes that out of the \$422 million of project costs that PSNH has
13 requested to include in rate base for the Project, only \$23 million, plus penalties for
14 cancellation set out in the “major scrubber contracts” (an amount Dr. Stanton does not
15 provide) should be considered to have been prudently incurred and included in rate base.
16 She reaches this conclusion by examining a “cash flow” analysis in which she attempts to
17 recreate what she believes a reasonable utility should have done in 2008 and 2009 to
18 reexamine the economics of the Project. She concludes that in four out of her five
19 scenarios the Project was likely to be “uneconomic,” and, therefore, by no later than
20 March 2009 PSNH should have cancelled the Project.

21 Mr. Hachey recommends that PSNH’s recovery in rate base be limited to \$10 million,
22 based on his conclusion that the Project should have been cancelled on or before
23 September 2008. His allowance of \$10 million is based on what had been spent as of
24 September 2008, without regard to cancellation costs of commitments as of that date. He

1 reaches his conclusion that the Project should have been cancelled by September 2008
2 based on factors that he believes PSNH should have taken into consideration in 2008.
3 His primary area of disagreement with PSNH's analysis is in the area of gas price
4 forecasting, which is an issue that is addressed in the testimony of Dr. David Harrison, Jr.
5 and Dr. Noah Kaufman of NERA. For my purposes, it is important to note that Mr.
6 Hachey's position is essentially that PSNH's gas price forecasts were outside of any
7 range of reasonable expectations, that reliance on these forecasts was unreasonable, that
8 this reliance led to the decision to continue with the Projects, and that "but for" these
9 unreasonable actions, the costs to ratepayers would only have been \$10 million, not the
10 \$422 million that PSNH is seeking. Unfortunately, Mr. Hachey did not provide much of
11 the relevant information regarding the price forecasts he references; therefore, it is
12 impossible to fully evaluate or reply to Mr. Hachey's contentions.

13 I will respond to each of these positions from the perspective of what I believe a proper
14 framework is for examining whether PSNH's actions were prudent, why I do not believe
15 that either witness has adhered to a proper framework for examining this issue, and why
16 neither has conducted the correct analysis for quantifying a disallowance associated with
17 any allegedly imprudent actions.

18 **IV. Consideration of PSNH's Options**

19 **Q. Please provide a brief description of the Merrimack generating plant.**

20 A. Merrimack Station is a 432 MW coal-fired generation facility located on the Merrimack
21 River in the Town of Bow, New Hampshire. The plant consists of two coal-fired units
22 and two oil-fired combustion turbines. Unit 1 was placed into commercial operation in
23 1960, and Unit 2 was placed into commercial operation in 1968. Merrimack Station
24 makes up approximately 36% of the capacity PSNH's generating portfolio.

1 **Q. Please provide a brief overview of the legislation requiring the construction of the**
2 **scrubber at Merrimack Station.**

3 A. In 2002, the State of New Hampshire passed the New Hampshire Clean Power Act to
4 address four pollutant emissions - sulfur dioxide, nitrogen oxide, mercury, and carbon
5 dioxide. In 2005, based on input from the New Hampshire Department of Environmental
6 Services (“NHDES”), Senate Bill 128 was introduced requiring that mercury emissions
7 be reduced at Merrimack Station to 24 pounds per year through a technology identified as
8 activated carbon injection. After further reviewing the technology and testing at
9 Merrimack Station, in 2006, the New Hampshire Legislature passed HB 1673, which
10 amended the Clean Power Act to expressly state that “It is in the public interest to
11 achieve significant reductions in mercury emissions at the coal-burning electric power
12 plants in the state as soon as possible.” The amendment required a minimum of an 80%
13 reduction in such emissions. In order to accomplish this objective, the Clean Power Act
14 mandated that a wet flue gas desulphurization system, also known as a scrubber, be
15 installed at Merrimack Station no later than July 1, 2013.

16 **Q. Was the Clean Power Act prescriptive in how the reduction in mercury reductions**
17 **was to be achieved?**

18 A. Yes, it was. RSA Section 125-O:11 stated as follows:

19 I. It is in the public interest to achieve significant reductions in mercury
20 emissions at the coal-burning electric power plants in the state as soon as
21 possible. The requirements of this subdivision will prevent, at a minimum, 80
22 percent of the aggregated mercury content of the coal burned at these plants from
23 being emitted into the air by no later than the year 2013. To accomplish this
24 objective, the best known commercially available technology shall be
25 installed at Merrimack Station no later than July 1, 2013.

26 II. The department of environmental services has determined that the best known
27 commercially available technology is a wet flue gas desulphurization system,
28 hereafter "scrubber technology," as it best balances the procurement, installation,
29 operation, and plant efficiency costs with the projected reductions in mercury and
30 other pollutants from the flue gas streams of Merrimack Units 1 and 2. Scrubber
31 technology achieves significant emissions reduction benefits, including but not

1 limited to, cost effective reductions in sulfur dioxide, sulfur trioxide, small
2 particulate matter, and improved visibility (regional haze).¹⁵

3 RSA Section 125-O:13 required that:

4 the owner of Merrimack Units 1 and 2 install and have operational scrubber
5 technology to control mercury emissions at Merrimack Units 1 and 2 no later
6 than July 1, 2013.¹⁶

7 **Q. What was the initial estimated amount for the scrubber installation and what was**
8 **the basis for this budget?**

9 A. The initial \$250 million cost estimate of the project was based on a Sargent and Lundy
10 estimate performed in 2005. Sargent & Lundy's effort culminated in a report dated March
11 2006 filed in Docket No. DE 08-103. The cost estimates provided by Sargent & Lundy
12 relied on past installations of flue gas desulphurization systems and limited consideration
13 of Merrimack Station specific site conditions. During the development of more detailed
14 pricing of the scrubber system, Sargent & Lundy and PSNH found that flue gas
15 desulfurization suppliers were unwilling to provide mercury reduction guarantees in
16 conjunction with equipment pricing guarantees. Therefore, the \$250 million estimate
17 contained no specific mercury reduction guarantee since it was not available at the time
18 from suppliers. Jacobs Consultancy included a thorough review of this issue in its
19 prudence report.

20 **Q. Was this estimate revised prior to the installation of the project?**

21 A. Yes. In the fall of 2007, PSNH entered into a contract with Washington Group
22 International (later URS) as the Project Program Manager for the scrubber project. URS

¹⁵ RSA Section 125-O:11, Section I and II.

¹⁶ RSA Section 125-O:13, Section I.

1 worked with PSNH to develop a detailed overall project scope, design basis, and final
2 cost estimate in 2008. As noted by Jacobs Consultancy in its report and the testimony of
3 Messrs. DiPalma and Dalton, this effort provided the technical basis for the scrubber
4 installation and the detailed project estimate of \$457 million. PSNH provided this project
5 estimate to the NHPUC on September 2, 2008, in Docket No. DE 08-103.

6 **Q. When did the scrubber installation commence and when was it placed into service?**

7 A. The physical construction of the scrubber began on March 9, 2009, and the scrubber was
8 placed in service on September 29, 2011.

9 **Q. Did the Clean Power Act allow alternatives to the installation of the scrubber?**

10 A. No. The Clean Power Act allowed for limited circumstances under which the owner of
11 Merrimack Station could request a variance from the mercury emission reduction
12 requirements prescribed in the legislation. These circumstances included: i) a variance in
13 schedule for compliance, or ii) a variance in the emissions reduction requirement based
14 on an energy supply crisis, a major fuel disruption, an unanticipated or unavoidable
15 disruption in the operation of the plant, or technological or economic infeasibility.

16 While PSNH also could have sought approval for a divestiture of Merrimack Station, this
17 would not have invalidated the requirement to install the scrubber. A divestiture, even in
18 the event it was approved and a willing buyer was found, would simply have shifted the
19 burden to install the scrubber from PSNH to the new owner. As discussed later in my
20 testimony, this also would not have benefitted PSNH's customers.

21 **Q. Please provide an overview of the timeline of the Project.**

22 A. The following is a timeline of relevant dates and activities leading up to the installation
23 and completion of the scrubber at Merrimack Station.

DATE	ACTIVITY
4/20/2006	House Bill 1673 is passed requiring the installation of scrubber technology at Merrimack Station no later than July 1, 2013. The law became effective June 8, 2006.
6/6/2007	PSNH submits a Temporary Air Permit application for the scrubber project, within the one-year deadline set by RSA 125-O:13, I.
8/22/2008	In response to NU's 8/7/2008 10-Q, which quotes an elevated cost estimate for the scrubber, the PUC opens an inquiry into the status of PSNH's efforts to install the scrubber, the costs of the technology, and the effect installation would have on energy service rates for PSNH customers. Commission instructs PSNH to file a report by 9/12/08.
9/02/2008	PSNH files a status report on its installation plans, a detailed cost estimate for the project of \$457 million, analysis of the anticipated effect of the project on energy service rates, and an analysis of the effect on energy service rates if Merrimack were not in the mix of fossil and hydro facilities operated in NH.
12/31/2008	PSNH executes more than \$225 million of the \$340 million in contracts for the scrubber project.
3/09/2009	N.H. Department of Environmental Services issues Temporary Permit TP-0008 for the Project and PSNH begins construction immediately.
6/30/2009	Per RSA 125-O:13, IX, PSNH provides its annual update on the Project to the Legislature Oversight Committee on Electric Utility Restructuring as well as the House Science, Technology, and Energy Committee and the Senate Energy and Economic Development Committee.
3/31/2010	PSNH holds an information session to discuss current information on the project status and costs.
5/19/2010	PSNH reports that the scrubber will be operational sooner than the 7/1/2013 deadline, thus achieving the "Economic Performance Incentives" a year sooner than required.
10/15/2010	This report is an update of the one submitted on 9/2/08. It includes a comprehensive status report on installation progress; a cost estimate; an analysis of the anticipated effect of the Project on service rates; an analysis of the effect on energy service rates if Merrimack were not part of the mix of fossil and hydro facilities operated by PSNH; the current state of the electric power markets and PSNH's forecast of power market prices.
9/28/2011	Scrubber placed in service.

1 **Q. During what timeframe do the other witnesses claim PSNH could have reasonably**
2 **considered alternatives to building the scrubber?**

3 A. Dr. Stanton contends that, due to a number of uncertainties, PSNH should have
4 reevaluated the project in late 2008 and early 2009 to determine if the project still
5 provided net benefits to customers.

6 In addition, Mr. Hachey asserts that the critical timeframe in which PSNH should have
7 reevaluated the scrubber project in order to decide whether to proceed was in the 2008
8 timeframe.

9 **Q. Why do these witnesses choose these timeframes in which they assert that PSNH**
10 **should have reconsidered the scrubber project?**

11 A. Dr. Stanton states that both natural gas prices and wholesale energy prices, as well as
12 trends in national income that can impact customer demand were in a great deal of flux
13 during this period. She maintains that a thorough cash flow analysis “was required for
14 prudence” in March 2009, “before beginning construction on the scrubber.”¹⁷

15 Mr. Hachey asserts that during 2008, changes in forecasted natural gas and coal prices,
16 environmental regulations, customer migration, project cost increases, and the economic
17 recession were all factors a prudent utility should have considered in deciding whether to
18 proceed with the project. He goes on to state that additional analysis done in the summer
19 of 2008 would have shown that the scrubber project would have resulted in significant
20 risks for ratepayers.

21 Before examining each of these witness’s assertions, it is important to recognize that each
22 of them started from what I believe was a flawed perspective: they have assumed that it

¹⁷ Direct testimony of Elizabeth A. Stanton, pg. 7.

1 was only prudent for PSNH to have proceeded with the scrubber project if that
2 represented the least-cost means of meeting the state’s generation requirements. As
3 discussed at length in my testimony, the legislature created a mandate that the scrubber
4 be installed. That decision was reached after the legislature considered the evidence it
5 heard regarding the benefits of the project in terms of environmental improvements,
6 energy market diversity, and reliability; the legislature subsequently reconsidered and
7 ratified its initial decision, opting for economic stimulus at a time of deep economic
8 recession with full knowledge of the project’s cost. I have found no evidence to suggest
9 that achieving the “least-cost” solution was what motivated the legislature. Clearly, the
10 mandate was created based on broader public interest desires, and to judge it now based
11 solely on whether it was the least-cost solution for electric consumers is inappropriate
12 revisionism.

13 **Q. Did PSNH reassess the scrubber project during this timeframe?**

14 A. Yes. In its Secretarial Letter dated August 22, 2008 in Docket No. DE 08-103, the
15 Commission notified PSNH that it was conducting an inquiry into the status of PSNH’s
16 efforts to install the scrubber technology at Merrimack Station. The Commission
17 directed PSNH to file, by September 12, 2008:

- 18 • a comprehensive status report on its installation plans;
- 19 • a detailed cost estimate for the project;
- 20 • an analysis of the anticipated effect of the project on energy service rates; and
- 21 • an analysis of the effect on energy service rates if Merrimack Station were not in
22 the mix of fossil and hydro facilities operated by PSNH.

23 In this report, PSNH concluded that the pursuit of the scrubber installation would allow
24 Merrimack Station to continue to be a cost-effective base-load resource with the added

1 benefit of being among the cleanest coal-burning plants in the nation. See the testimony
2 of Messrs. Large and Vancho for more detail on the analyses performed by PSNH.

3 **Q. Does Mr. Hachey acknowledge that this analysis was done in the timeframe that he**
4 **highlights?**

5 A. Yes, he does. However, he states that PSNH imprudently relied upon an inappropriate
6 methodology for projecting gas prices to justify its expenditure on the scrubber project.

7 Specifically, Mr. Hachey asserts that the analysis presented in the September 2, 2008,
8 report was outdated since the analysis contained in the report was based on June and July
9 2008 fuel prices. He also asserts that PSNH should have relied on gas forecasts and not
10 NYMEX futures to analyze the economic benefits of the project.

11 **Q. Does Mr. Hachey's opinion regarding the methodology and sources of data meet the**
12 **definition of imprudent action?**

13 A. No, it does not. An assessment of prudence cannot be based on a single benchmark for
14 what constitutes acceptable behavior, but rather must consider the range of behavior that
15 reasonable individuals would have undertaken. A differing view on the future of gas
16 prices, or sources of forecasts, does not constitute imprudent behavior. The fact that
17 PSNH relied on particular sources of data, or an alternate view of the future of gas prices
18 in New England, does not render its actions unreasonable or not in the interest of
19 ratepayers. In fact, PSNH performed its analysis in the summer of 2008 based on
20 assumptions known and knowable at the time. By any definition, this action would be
21 considered as having been within an acceptable range.

1 **Q. Regardless of the opinions of other witnesses in this case, during what timeframe**
2 **could PSNH have reasonably reconsidered the installation of the scrubber at**
3 **Merrimack Station?**

4 A. New Hampshire passed the amendment to the Clean Power Act in 2006, ordering that a
5 wet scrubber be installed at Merrimack Station. After passage of that law mandating the
6 installation of the scrubber, a change in the law would have been required to terminate
7 the legal requirement to install scrubber technology at Merrimack Station.

8 PSNH received its temporary air permit from the NHDES in March of 2009 and began
9 construction that month. Therefore, the most reasonable timeframe during which the
10 Legislature could have re-considered installation of the scrubber would have been after
11 the passage of the amendments to the Clean Power Act and prior to the receipt of permits
12 and the commencement of construction. In 2006 and 2007, the industry was
13 experiencing a relatively stable period. In 2008, the industry was entering a state of rapid
14 flux where technological advancements were unlocking domestic gas supply and spot and
15 futures prices were beginning to reflect this increased supply. Therefore, the most
16 reasonable timeframe in which the Legislature could have reviewed its decision to require
17 installation of the scrubber would have been in the 2008/early 2009 timeframe.

18 In fact, the Legislature did just that. During early 2009, the Legislature considered two
19 bills that would have amended the scrubber law: SB 152 and HB 496. With full
20 knowledge of the estimated \$457 million cost of the project, and after hearing from
21 myriad opponents and proponents of the project, the Legislature chose *not* to rescind its
22 mandate requiring installation of the scrubber.

1 **Q. What options could PSNH have considered in assessing whether to move forward**
2 **with the installation of a scrubber at Merrimack Station?**

3 A. The owner of Merrimack Station was mandated by law to comply with the stated
4 environmental reduction requirements through the installation of a scrubber at Merrimack
5 Station by July 2013. One of the most fundamental concerns that I have with the
6 analyses and conclusions offered by Dr. Stanton and Mr. Hachey is that there was no
7 option available to PSNH to simply walk away from the Project (just as PSNH could not
8 simply walk away from payment of taxes or any other requirement of law). During the
9 2008/early 2009 timeframe, other parties claim that PSNH could conceivably have
10 exercised the following options: i) sought a variance under the Clean Power Act; ii)
11 pursued authority for divestiture of Merrimack Station and transfer the responsibility to
12 install the scrubber to the new owner -- assuming there was a willing buyer, or iii)
13 pursued authority for retirement of Merrimack Station. I will evaluate each of these three
14 options in the following sections of my testimony.

15 **V: Variance Option**

16 **Q. Please explain the variance provision under the Scrubber Law.**

17 A. Under RSA Section 125-O:17 of the Clean Power Act, the owner of Merrimack Station
18 had an ability to seek a variance in accordance with the following provisions:

19 The owner may request a variance from the mercury emissions reduction
20 requirements of this subdivision by submitting a written request to the
21 department. The request shall provide sufficient information concerning the
22 conditions or special circumstances on which the variance request is based to
23 demonstrate to the satisfaction of the department that variance from the
24 applicable requirements is necessary.

25 I. Where an alternative schedule is sought, the owner shall submit a
26 proposed schedule which demonstrates reasonable further progress
27 and contains a date for final compliance as soon as practicable. If the
28 department deems such a delay is reasonable under the cited
29 circumstances, it shall grant the requested variance.

1 II. Where an alternative reduction requirement is sought, the owner
2 shall submit information to substantiate an energy supply crisis, a
3 major fuel disruption, an unanticipated or unavoidable disruption in
4 the operations of the affected sources, or technological or economic
5 infeasibility. The department, after consultation with the public
6 utilities commission, shall grant or deny the requested variance. If
7 requested by the owner, the department shall provide the owner with
8 an opportunity for a hearing on the request.”¹⁸

9 **Q. Based on these provisions, under what circumstances could PSNH have sought a**
10 **variance?**

11 A. Based on this language, PSNH could have sought a variance only in the “schedule” or
12 “reduction requirements.” In Order No. 25,506 issued on May 9, 2013, at page 17, this
13 Commission has expressly held that the variance provision may not be “interpreted . . . to
14 allow retirement of Merrimack Station rather than installation of the scrubber technology
15 as a method of meeting the emissions reduction requirements.”

16 **Q. Would a request to delay or cancel the project on the basis of cost have met the**
17 **definition of a variance under the Clean Power Act?**

18 A. Not as I read the language of the Act. The Clean Power Act describes a means to obtain
19 a “variance”, and not a “waiver” of the scrubber installation mandate. The Act does not
20 provide a basis for the owner of Merrimack station to elect to not construct the scrubber.

21 **Q. Do you take exception to the idea that the “economic infeasibility” language in the**
22 **Act could have been exercised as an option by PSNH to cancel the scrubber project**
23 **as suggested by Mr. Hachey?**

24 A. Yes, I do. Under the Act, the owner of Merrimack Station was permitted to seek a
25 *variance* in the scrubber emissions reduction requirement due to economic

¹⁸ RSA Section 125-O:17, Sections I and II

1 infeasibility. Economic infeasibility is mentioned only in subpart II of RSA 125-O:17.
2 Thus, by this definition, the only way that PSNH could have sought permission to
3 effectively cancel the scrubber project would have been to seek a change in the mercury
4 reduction requirement from the 80 percent prescribed in the Clean Power Act to zero
5 percent (the Act did not provide any provisions for a waiver, only variances in the timing
6 and level of compliance). This would have effectively amounted to a repeal of the Act,
7 since Merrimack was the only plant that was subject to this Act. It defies logic to
8 believe that NHDES had the authority to repeal the law and that PSNH could have
9 received approval to eliminate the mercury reduction requirement in its entirety
10 considering the support that the Clean Power Act had from the Legislature, the Governor,
11 and NHDES itself, and it is extraordinary to suggest that the *minimally prudent* decision
12 on the part of PSNH was to delay the project in order to seek, and to successfully secure,
13 such a ruling.

14 **Q. In your opinion, was it imprudent for PSNH to not seek a variance under the Clean**
15 **Power Act to delay or cancel the scrubber project?**

16 A. No, it was not. The variances that were permitted under the Act would not have
17 materially affected the cost of the Project, and PSNH was prudent in not pursuing a
18 cancellation or delay under the variance provision of the scrubber law.

19 **Q. Wasn't it also possible for PSNH to seek to have the Clean Power Act repealed once**
20 **PSNH knew the full expected cost of the Project?**

21 A. I would find it to be an extraordinary and untenable position to conclude that the *only*
22 prudent course of action would have been to seek a repeal of the law. But in this case, as
23 I indicated earlier, the Legislature *did* reconsider the scrubber law and chose *not* to
24 change the mandate requiring installation of the scrubber. Indeed, as Mr. Smagula

1 discusses in his testimony, in early 2009 the Legislature’s majority committee report
2 expressly noted its concerns over any “pause in or cancellation of the project.”¹⁹ At this
3 time, the viable alternatives to proceeding with the project were reasonably understood to
4 have been foreclosed.

5 **VI: Divestiture Option**

6 **Q. Please provide a brief description of the state of the New England wholesale market**
7 **in the 2008/2009 timeframe.**

8 A. Looking back, it is now evident that beginning in the fall of 2008 and spring 2009, gas
9 prices began dropping and as a result, wholesale electric prices in New England were also
10 dropping. This emerging phenomenon began putting a great deal of pressure on profit
11 margins for coal and nuclear plants in the region.

12 **Q. Did the state of the wholesale market affect the value the market was placing on coal**
13 **assets?**

14 A. Yes. Subsequent to the initial drop in gas prices, in the 2010 timeframe when the
15 decrease in gas prices was expected to be longer term, these assets began realizing very
16 low prices and, at times, no interest from prospective buyers. In addition, coal plants
17 faced additional financial pressure with looming environmental regulations that could
18 potentially require large capital investments for compliance. Indeed, the premise of
19 TransCanada, CLF, the Sierra Club and OCA is that PSNH should have known that the
20 value of Merrimack Station was not enough to support the installation of the scrubber.

²⁴ “Majority Committee Report” finding H.B. 496 “inexpedient to legislate,” dated March 19, 2009, issued by the House Committee on Science, Technology and Energy.

1 **Q. Were there coal plants that were bought or sold in New England or in the Northeast**
2 **region during this timeframe?**

3 A. Yes. There was one coal fired generating facility in New England, the Mount Tom
4 Generating Facility in Holyoke, MA, that was sold as a part of a larger portfolio of gas
5 and hydroelectric assets. The sale price of the coal asset was not disclosed.

6 **Q. What was the state of coal-fired generating facility transactions nationally during**
7 **the timeframe Merrimack Station might have been divested?**

8 A. At the time gas prices began dropping in later 2008 and early 2009, it was impossible to
9 know if the decrease in prices was sustainable over the long term. By 2010, it became
10 clear that technology advances in gas fracking were fundamentally affecting the supply of
11 gas and that low prices were actually sustainable. During this time period (2010), it was
12 extremely difficult to sell coal plants due to lower gas prices and environmental
13 compliance concerns. A report by Credit Suisse in September of 2010 stated:

14 If the EPA rules were not bad enough for coal generators, we think a large
15 chunk of the US coal fleet is vulnerable to closure simply due to crummy
16 economics where we see coal pricing at a premium to natural gas out the forward
17 curve when adjusting on an electricity equivalent basis. Awful energy margins
18 suggest to us that owners should be reevaluating their coal fleets due to pure
19 energy economics before even taking on the burden of a capex for environmental
20 control equipment.²⁰

21 The Los Angeles Department of Water and Power also announced in October of 2009
22 that it would eliminate the purchase of coal power over the next ten years. In addition, in
23 April of 2010, Southern California Edison announced its intent to divest its 48 percent
24 share of Four Corners Power Plant by the end of 2016. According to an article in New

²⁰ Credit Suisse 23 September 2010 Americas/United States Equity Research Electric Utilities (Regulated Utilities/Independent & Integrated Power)

1 American Media: “the trend shows utilities are increasingly seeing coal as a bad business
2 decision.”²¹

3 Furthermore, in September of 2010, Duke announced a review of its Ohio strategy related
4 to the ownership of coal plants in that region. Duke wrote down the value of its 7,700
5 megawatts of wholesale plants in the region in the second quarter of 2010 by \$660
6 million to \$3.84 billion. The company stated that the write down was due to lower prices
7 and the potential costs of complying with tighter air pollution regulations.²² Power prices
8 in the region fell by 40% from 2008 to 2010, placing enormous pressure on profit
9 margins for the assets.

10 Finally, in a recent report on the future viability of Bridgeport Harbor Station in
11 Connecticut prepared by the Institute for Energy Economic and Financial Analysis
12 (“IEEFA”), the IEEFA noted that falling natural gas prices since 2008, the increase in the
13 price of delivered coal from 2002 to 2011 and the increased generation of renewables has
14 driven the retirement of more than 13,000 MW of the country’s aging coal fleet from
15 2009 – 2012.²³

16 Clearly, by the time any divestiture process for Merrimack Station could have gone to
17 market, (i.e., the 2010 time frame) it would not have been possible for such a divestiture
18 to produce any benefit for customers.

²¹ http://newamericamedia.org/2010/04/social-edison-bails-out-of-coal-plan_April_7, 2010

²² <http://www.bloomberg.com> September 22, 2010

²³ <http://www.ieefa.org/press-release-connecticuts-last-coal-fired-power-plant-is-in-critical-financial-condition-community-needs-to-plan-for-transition/>

1 **Q. Is it reasonable to assume that inclusion of a long term power purchase agreement**
2 **was the only viable way to attract buyers' interest in a coal-fired generating facility**
3 **at that time?**

4 A. Yes. Low gas prices and uncertain environmental regulations had a negative effect on
5 the value and viability of coal-fired generation. To increase the market value of these
6 assets, sellers could offer power purchase agreements as part of the sale process.
7 However, in most cases, these PPAs did not offer sufficient value to induce buyers to
8 purchase weak-performing or high-risk plants.

9 **Q. Is it likely that in late 2009 or 2010 PSNH would have had to include a power**
10 **purchase agreement with a prospective buyer had PSNH chosen to divest of**
11 **Merrimack Station?**

12 A. Yes, PSNH would almost certainly have had to sign a long term power purchase
13 agreement to purchase output from Merrimack in order for a merchant generation buyer
14 to have any interest in buying this plant. A reasonable buyer in that time frame would
15 likely have required an above-market PPA in exchange for the risk it was incurring in
16 purchasing the plant; *i.e.*, a merchant owner would have required a PPA locking PSNH
17 into buying the entire output of Merrimack Station at a price that covered all of its
18 operating expenses – including the scrubber – at a merchant rate of return, and not the
19 lower regulated rate of return that PSNH is allowed to earn. This not only would have
20 negated any benefit to ratepayers of selling the plant – it would have raised the costs
21 ultimately borne by ratepayers.

1 **Q. If PSNH had pursued a divestiture, would the process have allowed PSNH or**
2 **another owner to comply with the scrubber mandate under the Clean Power Act by**
3 **July 2013?**

4 A. It is unlikely that a divestiture process would have allowed the scrubber to be installed by
5 the July 2013 deadline if PSNH had delayed the scrubber project in order to try to shift
6 that responsibility to a purchaser of the plant. First, under New Hampshire law, PSNH
7 does not have the unilateral authority to divest or retire any of its generating assets. RSA
8 369-B:3-a as then in effect read:

9 The sale of PSNH fossil and hydro generation assets shall not take place before
10 April 30, 2006. Notwithstanding RSA 374:30, subsequent to April 30, 2006,
11 PSNH may divest its generation assets if the commission finds that it is in the
12 economic interest of retail customers of PSNH to do so, and provides for the cost
13 recovery of such divestiture. Prior to any divestiture of its generation assets,
14 PSNH may modify or retire such generation assets if the commission finds that it
15 is in the public interest of retail customers of PSNH to do so, and provides for the
16 cost recovery of such modification or retirement.”²⁴

17 To divest, PSNH would have had to petition the NHPUC to make a determination
18 whether “it is in the economic interest of retail customers of PSNH to do so.” Such an
19 adjudicative proceeding would likely have taken a year or more to complete. In an
20 October 25, 2013 letter, the Chair of the NHPUC told the Chair of the Electric
21 Restructuring Legislative Oversight Committee:

22 What we cannot accomplish before April 1, 2014, is to conduct the adjudication
23 required to make a Commission finding concerning whether it is in customers’
24 economic interest for PSNH to divest its generation assets. That adjudicatory
25 process requires time for parties to submit competing expert testimony and
26 evidence, to have discovery on those facts, to rule on discovery disputes, to hold
27 evidentiary hearings and to issue a Commission order. This litigated phase
28 would typically follow the initial staff report and would take six months or more,
29 barring appeals or other similar judicial remedies.²⁵

²⁴ RSA 369-B:3-a.

²⁵ October 25, 2013 letter from Chair of the NHPUC.

1 If “the litigated phase” of an RSA 369-B:3-a hearing would take “six months or more,”
2 the entire process would likely have taken at least a year. Assuming that PSNH received
3 approval to divest, the divestiture process alone would have taken anywhere from ten to
4 eighteen months depending on the interest in the asset, the type of sale process, and
5 required negotiations, assuming there was even interest in the plant. Therefore, even if
6 PSNH had decided to pursue a divestiture in the fall of 2008, the entire approval and sale
7 process would have resulted in a sale completion date in mid to late 2010 under a best
8 case scenario.

9 **Q. Would a delay of the scrubber project until after the completion of divestiture**
10 **process have placed the sale process at risk?**

11 A. Yes. The Clean Power Act stated that “the owner shall install and have operational
12 scrubber technology to control mercury emissions at Merrimack Units 1 and 2 no later
13 than July 1, 2013.” Any reasonable buyer would have determined that the law required
14 them, as owner, to install and operate the scrubber no later than July 1, 2013.
15 Furthermore, any reasonable seller would not expect to sell an asset burdened by an
16 environmental compliance mandate with a date certain without being confident that the
17 prospective buyer could meet the prescribed compliance date. The completion of a
18 divestiture process in the fall of 2010 would have left only two and a half years at best for
19 a new owner to permit and install the scrubber equipment. This would have negatively
20 affected interest in Merrimack Station and jeopardized the ability to sell the plant.

1 **Q. Would a buyer have bought Merrimack Station and not factored in the cost of**
2 **installing the scrubber, relying on the potential for obtaining a waiver or a change**
3 **in law?**

4 A. No. The Clean Power Act law plainly and expressly required installation of the scrubber
5 and the Legislature reaffirmed the scrubber mandate in the spring of 2009 even after the
6 \$457 million price estimate was known. In its “Majority Committee Report” finding
7 H.B. 496 “inexpedient to legislate,” on March 19, 2009, the House Committee on
8 Science, Technology and Energy expressly noted that installation of the scrubber was a
9 legislative mandate:

10 While this bill is well intentioned, the committee received many hours of
11 testimony outlining the negative and unintended consequences associated with
12 passing the bill. The committee heard lengthy testimony from both sides and the
13 majority decided that since the legislature mandated in 2006 for PSNH to install
14 the scrubber without placing a limit on the costs, to choose to place a limit on the
15 cost nearly three years later would pose significant problems. While the
16 committee recognizes that the increase in projected cost for the scrubber is
17 significant, there is no evidence that PSNH has acted improperly in their costing
18 or contracting process. The majority believed that placing a cap on cost recovery
19 for a legislatively mandated project was not only arbitrary but could constitute a
20 taking and be unconstitutional. The majority was also concerned that the passage
21 of this bill would lead to a pause in or cancellation of the project. This would not
22 only have significant environmental ramifications but also would lead to the loss
23 of several hundred short term and long term jobs related to the construction and
24 operation of the scrubber. The committee also decided that an unofficial late
25 amendment was too far reaching, requiring more time to debate and receive
26 public input. As a result, the potential amendment was not considered by the
27 committee and discussion was focused on the bill as introduced.

28 **Q. How would a potential buyer have likely factored the scrubber project into its bid**
29 **price?**

30 A. If, as has been suggested by PSNH's opponents in this docket, the low price of natural gas
31 and lower electric demand was reasonably known in the late 2008-early 2009 timeframe,
32 every potential buyer would have included those factors in their bids, resulting in low or
33 nonexistent value for Merrimack Station before even considering the costs of the

1 scrubber. But, as indicated earlier, due to the long time period before a divestiture
2 process could begin, the actual time when bidders would be doing their analyses was
3 closer to 2010. By then, the impact of gas fracking was better known and the value of
4 Merrimack Station would have been lower. In my opinion, based on my experience of
5 having sold numerous power plants, and having failed to sell others, it would have been
6 virtually impossible for a divestiture process in this time frame to have produced benefits
7 for PSNH's customers.

8 Furthermore, while Dr. Stanton asserts that it would have been prudent to consider
9 divestiture prior to commencing major construction, this would not have led to a more
10 favorable outcome. First, while Dr. Stanton acknowledges that PSNH had incurred \$23
11 million in engineering and planning expenses by March of 2009, she fails to recognize
12 that PSNH had already contractually committed to \$225 million of the \$340 million in
13 contracts for the scrubber project by the end of 2008; as Mr. Smagula notes in his
14 testimony, nearly \$150 million of "sunk" costs were invested by the end of the first
15 quarter of 2009. If a divestiture process had taken place after the \$457 million firm
16 estimate was available, but before construction started, a buyer would not have been
17 certain of what the final cost would be and would face the risk of construction delays,
18 weather, labor difficulties, unforeseen conditions, materials delays, re-engineering
19 requirements, and the potential that the scrubber might not meet emissions standards.
20 Any reasonable buyer would have priced all of these risks into its bid.

21 Based on my experience in asset transactions and given the size, complexity, site
22 conditions and technology risks, I believe that any reasonable hypothetical buyer would
23 have included a project cost contingency into any bid on top of PSNH's estimate. This
24 would have resulted in a "scrubber cost" included in the divestiture process in the range
25 of \$500 million or more. That is, absent a full cost-of-service based long term power

1 purchase agreement, once a buyer had established a fair market value for the plant, they
2 would have subtracted \$500 million from that price. This would clearly have meant that
3 in the 2010 time frame that PSNH would have had to pay a prospective buyer to take
4 Merrimack Station, and the scrubber mandate, off of PSNH's hands.

5 **Q. Would a utility such as PSNH be prudent in continuing with a large environmental**
6 **compliance project such as the scrubber project during an extended divestiture**
7 **process?**

8 A. Yes. The law had a date certain for completion. In addition, there were far too many
9 uncertainties facing PSNH to just stop the project. What if the PUC said divestiture was
10 not appropriate after a year plus-long proceeding? What if there was a divestiture
11 process, but no bidders? What if bids came in too low to justify a sale? A delay in the
12 Project would have required re-bidding the Project, potentially at a higher cost later,
13 losing positions in manufacturing schedules, causing further delays, and forfeiture of the
14 incentives for early emissions reductions included in the scrubber law at RSA 125-O:16.
15 A prudent utility would have continued with the project with or without a divestiture
16 process. This is exactly what PSNH did.

17 **Q. Did customers benefit from PSNH prudently deciding to complete the scrubber**
18 **installation before making any decisions about the future of Merrimack Station?**

19 A. Yes. Clearly, by delaying any potential divestiture process until the scrubber was
20 completed, operating, and meeting emissions requirements, the risks enumerated above
21 faced by prospective buyers were eliminated. Not only were the risks of compliance
22 eliminated, but the final cost of the scrubber installation was \$422 million which was \$35
23 million below the final project estimate. Therefore, not only were risks eliminated,

1 thereby eliminating their corresponding risk premiums, but there was an economic
2 benefit associated with achieving resolution of this issue at a lower cost than projected.

3 **Q. Do you believe that PSNH was prudent in deciding to complete the installation of**
4 **the scrubber?**

5 A. Yes. Even in light of the Legislature’s recent decision to require this Commission to
6 consider divestiture of PSNH’s generating assets, the best course of action for ratepayers
7 was in fact exactly what PSNH did – to continue building the scrubber. This prudent
8 course of action minimized the cost and the risk to any potential buyer in the future.

9 **VII: Retirement Option**

10 **Q. Was the retirement of Merrimack Station a viable option under the Clean Power**
11 **Act?**

12 A. No. That option was not viewed as viable at that time. Early in the scrubber project,
13 prior to the start of construction in September 2008, this Commission itself noted that
14 retirement of Merrimack Station was not a viable option under law:

15 Nowhere in RSA 125-O does the Legislature suggest that an alternative to
16 installing scrubber technology as a means of mercury compliance may be
17 considered, whether in the form of some other technology or retirement of the
18 facility.²⁶

19 The PUC ratified that decision five years later in May of 2013, after construction had
20 been completed and the scrubber placed into operation.²⁷

²⁶ Order No. 24,898, Sep.19, 2008 at 12. In that Order, the Commission also expressly held that, “the Legislature intended its findings in RSA 125-O:11 to foreclose a Commission proceeding pursuant to RSA 369-B:3-a” – the statute governing the Commission’s authority to approve retirement of one of PSNH’s generating assets. *Id.* at 10.

²⁷ Order No. 25,506 dated May 9, 2013, at p. 17.

1 New Hampshire’s Revised Statutes Annotated (“RSA”) section 369-B:3-a expressly
2 states that PSNH may retire its generating assets only “if the Commission finds it is in the
3 public interest of retail customers of PSNH to do so.” Clearly, under the law, PSNH does
4 not have the unilateral right to “elect” to retire any or all of its generating assets. In fact,
5 the law forbids such retirement unless the Commission makes the requisite finding – in
6 this case a finding that installation of the scrubber was not in the public interest.

7 In addition to these legal barriers to retirement, the analysis performed by Drs. Harrison
8 and Kaufman of NERA indicates that in the majority of scenarios modeled by them,
9 neither divestiture nor retirement of Merrimack Station were economic choices. Given
10 the scrubber law’s express public interest finding in RSA 125-O:11, VI – that “The
11 installation of such [scrubber] technology is in the public interest of the citizens of New
12 Hampshire and the customers of the affected sources,” it is inconceivable that this
13 Commission would have concluded that the public interest mandated that PSNH retire
14 Merrimack Station. That, coupled with the Commission’s 2008 decision that retirement
15 of Merrimack Station was not a viable option under the scrubber law, and the economics
16 discussed in NERA’s analyses, would eliminate retirement as an option that any prudent
17 utility manager would consider.

18 **Q. Were there additional benefits that the scrubber installation provided under the**
19 **Clean Air Act that a retirement of Merrimack Station would not have satisfied?**

20 A. Yes. The passage of the Clean Power Act was not simply about reducing mercury or
21 achieving a least-cost energy market solution; it was also about broader public interest
22 benefits. The Majority Report of the House Science, Technology, and Energy
23 Committee, noted as follows:

24 The majority was also concerned that the passage of this bill would lead to a
25 pause in or cancellation of the project. This would not only have significant

1 environmental ramifications but also would lead to the loss of several hundred
2 short term and long term jobs related to the construction and operation of the
3 scrubber.²⁸

4 If PSNH had pursued and obtained approval to retire Merrimack Station instead of
5 installing the scrubber, the public interest benefits of the scrubber project – including the
6 energy diversity benefits and the jobs referred to by the Legislature and discussed by Dr.
7 Shapiro in her rebuttal testimony -- would not have been realized.

8 **VIII: Intervenors' Quantification of a Disallowance**

9 **Q. How does Dr. Stanton calculate what she considers to be PSNH's prudently**
10 **incurred costs associated with the installation of the scrubber?**

11 A. As I noted earlier, Dr. Stanton believes that the \$23 million spent by PSNH prior to
12 March 2009, plus all penalties for cancelation under the executed contracts, are prudent
13 costs that should be recovered by the utility. She goes on to state that any additional
14 costs spent by PSNH on the scrubber after March 2009 were imprudent and should not be
15 recoverable.

16 **Q. How does Mr. Hachey calculate what he considers to be PSNH's prudently-incurred**
17 **costs associated with the installation of the scrubber?**

18 A. Mr. Hachey believes that the PSNH should have realized that it was uneconomic to
19 proceed with the scrubber no later than September of 2008. He concludes that expenses
20 incurred beyond this date were imprudently incurred and should not be recoverable. As a
21 result, he recommends that the NHPUC should only approve what PSNH had spent on

²⁸ Science, Technology and Energy Committee, "Majority Committee Report" finding H.B. 496 "inexpedient to legislate," on March 19, 2009.

1 the project as of that date, or \$10 million based on PSNH's September 2, 2008, filing in
2 DE 08-103.

3 **Q. If, for the sake of argument, you accepted these witnesses' conclusions that PSNH's**
4 **decision to continue with the Project was imprudent, do you agree with these**
5 **witnesses' positions on the determination of PSNH's prudently-incurred costs?**

6 A. No, I do not. A determination of prudently-incurred costs begins with the establishment
7 of a range of conduct, the determination of a minimally prudent course of action and then
8 the examination of the associated cost consequences. Both Dr. Stanton and Mr. Hachey
9 fail to establish a range of conduct, fail to identify a minimally prudent action and ignore
10 the required nexus between the minimally prudent course of action and a recommended
11 disallowance.

12 For example, Dr. Stanton presents an analysis using information available as of March of
13 2009 that she claims shows that in the five scenarios she examined, only one produced a
14 net benefit for PSNH customers based on an installed cost of the scrubber of \$457
15 million. She then leaps to the conclusion that PSNH should have halted the scrubber
16 project in March of 2009 and should only be allowed what was spent on the scrubber
17 project as of that date. Mr. Hachey makes a similar determination, without any economic
18 analysis, that the project should have been halted in September of 2008 and therefore the
19 expenses incurred as of that date are the only prudently-incurred costs.

20 Both of these witnesses fail to understand a basic aspect of a prudence determination, *i.e.*,
21 the establishment of a minimally prudent course of action and the definition of prudently
22 incurred costs as the delta between what did occur – the installation of the scrubber – and
23 this established minimally prudent course of action. In order to do this, both Dr. Stanton
24 and Mr. Hachey would have had to determine the cost at which the scrubber would have

1 been prudent to install and established this as the minimally prudent course of action.
2 But neither of these witnesses conducted such an analysis. If one were to conclude that
3 PSNH was imprudent, the difference between the costs associated with the action taken
4 and the minimally prudent action would provide the basis for determining prudently
5 incurred costs and the cost consequences of imprudence.

6 **Q. Can you illustrate this point with an example?**

7 A. Yes. Let's assume that as of the key decision date, PSNH had incurred no costs
8 whatsoever, and that it had a choice of installing the scrubber or simply walking away
9 from the Project (contrary to the facts). Let us also assume that, as Dr. Stanton claims,
10 spending \$457 million on the scrubber would have been uneconomic. However, let us
11 also assume that if the scrubber's cost estimate had only been \$375 million, everyone
12 would have agreed that it made sense to go forward. Under these circumstances, one
13 would have to conclude that PSNH is entitled to recover \$375 million, because that was
14 within the bounds of a reasonable decision. This also reflects the fact that, at that level,
15 the Project would have benefitted customers. Yet, under Dr. Stanton's and Mr. Hachey's
16 methodologies, no recovery would be permitted because they claim the Project never
17 should have proceeded. Those positions are fundamentally at odds with the fact that the
18 project was built, the plant is producing benefits for customers, and those benefits are
19 passed on in the form of lower rates. Every hour that the plant is dispatched it produces
20 an economic margin and that margin would not have been created if the scrubber had not
21 been installed and the plant had instead been retired. Therein lies the fundamental flaw in
22 the disallowance methodologies of Dr. Stanton and Mr. Hachey; they are not derived
23 from a comparison to the minimally prudent course of action, and they fail to consider the
24 actual benefits produced or anticipated to have been produced.

1 **IX: Conclusion**

2 **Q. Based on an appropriate definition of prudence and a proper prudence review, was**
3 **PSNH’s conduct concerning the installation of the scrubber at Merrimack Station**
4 **prudent?**

5 A. Yes, PSNH’s actions were prudent. It is clear that the Clean Power Act, when combined
6 with changing conditions in power and gas markets, created a dilemma for PSNH. On
7 the one hand, the Act’s requirements were clear, and the Legislature’s objectives in
8 reaffirming the requirements of the Act in 2009 were equally clear. The Act’s
9 requirements could have been fulfilled by a subsequent owner of Merrimack, but the
10 Act’s requirements also made it highly likely that no other owner would have been
11 willing to buy the plant, or at least that such a sale would have increased costs to PSNH’s
12 customers. Dr. Stanton and Mr. Hachey both claim that the installation of the scrubber
13 was unequivocally uneconomic and PSNH should not have pursued the project and
14 instead could have pursued divestiture. As discussed above, that would likely have led to
15 even higher costs for PSNH’s customers.

16 Even more certainly, one cannot reasonably conclude that ignoring the scrubber mandate
17 or pursuing divestiture were the only prudent courses of action. Msrs. Large and
18 Vancho present testimony demonstrating that PSNH performed real-time analyses that
19 supported the Scrubber Project. The expert testimony submitted by Drs. Harrison and
20 Kaufman, which I have also reviewed, demonstrates that based upon economic analyses
21 alone, PSNH’s pursuit of the Scrubber Project was well within a range of reasonableness.
22 Their analyses show the Scrubber Project was the low-cost alternative for ratepayers for
23 various plausible future scenarios as of both analysis dates. PSNH’s conduct must be
24 deemed “prudent” if it meets the standard of care which qualified utility management

1 would be expected to exercise under the circumstances that existed at the time the
2 decision in question had to be made. Based on the results of the analyses performed by
3 PSNH itself, as well as analyses of its expert witnesses, one must conclude that
4 construction of the Scrubber Project was prudent. It follows that the Commission should
5 conclude that proceeding with the Scrubber Project was a prudent decision.

6 Given the dilemma created by the Scrubber Law, which expressly mandated installation
7 and operation of the Scrubber by someone, I believe that PSNH pursued the course of
8 action that reasonable electric utility managers would have pursued under the same
9 circumstances: it obeyed the law and proceeded with construction and installation of the
10 scrubber. I recognize that with the benefit of hindsight, this action may not have
11 produced all of the economic benefits that it was expected to produce. However, that fact
12 should not be allowed to color the Commission's judgment regarding the fundamental
13 question before it: was PSNH's decision outside the range of what reasonable managers
14 would have done at the time? I have seen no evidence to convince me that PSNH's
15 decision even approached that level of unreasonableness or indefensibility.

16 **Q. Does this conclude your Rebuttal Testimony?**

17 A. Yes, it does.