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Before the
STATE OF NEW HAMPSHIRE
PUBLIC UTILITIES COMMISSION

DE 11-250

In the Matter of:
Public Service Company of New Hampshire
Investigation of Merrimack Station Scrubber Project and Cost Recovery

Direct Testimony
of
Steven E. Mullen
Assistant Director – Electric Division

December 23, 2013

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**Public Service Company of New Hampshire
DE 11-250**

I. Introduction and Summary

1
2 **Q. Please state your name, position and business address.**

3 A. My name is Steven E. Mullen. I am employed by the New Hampshire Public Utilities
4 Commission as Assistant Director of the Electric Division. My business address is 21
5 South Fruit Street, Suite 10, Concord, New Hampshire.

6 **Q. Please summarize your educational background and work experience.**

7 In 1989, I graduated *magna cum laude* from Plymouth State College with a Bachelor of
8 Science degree in Accounting. I attended the NARUC Annual Regulatory Studies
9 Program at Michigan State University in 1997. In 1999, I attended the Eastern Utility
10 Rate School sponsored by Florida State University. I am a Certified Public Accountant
11 and have obtained numerous continuing education credits in accounting, auditing, tax,
12 finance and utility related courses.

13
14 From 1989 through 1996, I was employed as an accountant with Chester C. Raymond,
15 Public Accountant in Manchester, New Hampshire. My duties involved preparation of
16 financial statements and tax returns as well as participation in year-end engagements. In
17 1996, I joined the Commission as a PUC Examiner in the Finance Department. In that
18 capacity I participated in field audits of regulated utilities' books and records in the
19 electric, telecommunications, water, sewer and gas industries. I also performed rate of
20 return analysis, participated in financing dockets and presented oral testimony before the
21 Commission. In 1998, I was promoted to the position of Utility Analyst III and
22 continued to work in all of the regulated industry fields, although the largest part of my

1 time was concentrated on electric and water issues. As part of an internal reorganization
2 of the Commission's Staff in 2001, I became a member of the Electric Division. I was
3 promoted to Utility Analyst IV in 2007 and then Assistant Director of the Electric
4 Division in 2008. Working with the Director of the Electric Division, I am responsible
5 for the day-to-day management of the Electric Division including decisions on matters of
6 policy. In addition, I evaluate and make recommendations concerning rate, financing,
7 accounting and other general industry filings. I represent Staff in meetings with company
8 officials, outside attorneys, accountants and consultants relative to the Commission's
9 policies, procedures, Uniform System of Accounts, rate case, financing and other
10 industry and regulatory matters.

11 **Q. Have you previously testified before this Commission?**

12 A. Yes. I have testified before the Commission on numerous occasions.

13 **Q. Did you previously testify in this proceeding?**

14 A. Yes. I submitted prefiled testimony on February 24, 2012 on the issue of the
15 implementation of temporary rates. Subsequently, I testified during the March 12, 2012
16 hearing on temporary rates.

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

18 A. The purpose of my testimony is to provide comments and recommendations concerning
19 Public Service Company of New Hampshire's (PSNH) installation of a wet flue gas
20 desulfurization scrubber unit (Scrubber) at its coal-fired Merrimack Station generating
21 plant in Bow, New Hampshire. My comments and recommendations cover the areas of
22 overall prudence of the project and cost recovery.

23 **Q. Please summarize your testimony.**

1 A. After careful consideration of the facts of this case along with a) the conclusions of
2 Staff's consultant who oversaw the construction phase of the project, b) the results of the
3 financial audit performed by the Commission's Audit Staff, and c) the requirements of
4 the controlling legislation, Staff's position is that PSNH was prudent in its management
5 of the Scrubber project and the costs incurred in constructing the Scrubber were prudent.
6 Although there have been changes in the project costs over time and the resulting rate
7 impacts are not at the levels originally expected, the Commission's decision in this case
8 should center on the reasonableness of the decisions made by PSNH based on the
9 information available at the time.

10 **Q. How have you organized your testimony?**

11 A. I begin with a discussion of the background of the project. Next, I discuss the various
12 forms of project oversight that were employed during the construction phase. That is
13 followed by a discussion of the costs at issue in this proceeding. Finally, I provide my
14 recommendation with regard to the implementation of permanent rates along with the
15 associated rate and bill impacts.

16 **II. Project Background**

17 **A. *Brief History***

18 **Q. Please provide some background as to the origination of the Scrubber project.**

19 A. In 2002, RSA Chapter 125-O, titled the "Multiple Pollutant Reduction Program,"
20 became law. The Multiple Pollutant Reduction Program dealt with required reductions in
21 air emissions of sulfur dioxide (SO₂), oxides of nitrogen (NO_x), mercury and carbon

1 dioxide (CO₂).¹ In March of 2004, the New Hampshire Department of Environmental
2 Services (NHDES) made a recommendation to the New Hampshire Legislature to place a
3 cap on mercury reductions from fossil fuel-fired power plants within New Hampshire.²
4 Following that, prolonged negotiations among PSNH, legislators, various environmental
5 groups and State agencies—described as a “collaborative effort”—resulted in what was
6 further described as compromise legislation, House Bill 1673 (HB 1673) to reduce
7 mercury and SO₂ from PSNH’s coal-fired power plants.³

8 **B. Controlling Legislation**

9 **Q. Please provide a brief overview of the legislation requiring the construction of the**
10 **Scrubber at Merrimack Station.**

11 A. In 2006, the New Hampshire Legislature passed HB 1673 which included new sections of
12 RSA Chapter 125-O. Those new sections, codified as Sections 125-O:11 through 125-
13 O:18⁴ were titled “Mercury Emissions” and required, among other things, that “[t]otal
14 mercury emissions from the affected sources shall be at least 80 percent less on an annual
15 basis than the baseline mercury input, as defined in RSA 125-O:12, III beginning on July
16 1, 2013.”⁵

17 **Q. Is the statute prescriptive in how the reduction in mercury emissions was to be**
18 **achieved?**

19 A. Yes. As stated in RSA 125-O:11, sections I and II,

¹ RSA 125-O:1, III.

² See, Attachment SEM-1, January 12, 2006 letter from Michael P. Nolin, Commissioner, NHDES to Lawrence C. Ross, Chairman of the New Hampshire House of Representatives’ Science, Technology and Energy Committee.

³ See, Attachment SEM-2, November 9, 2005 press release from PSNH announcing the agreed-upon proposed legislation.

⁴ See, RSA Chapter 125-O:11 – 18.

⁵ RSA 125-O:13, II.

1 To accomplish this objective, the best known commercially available
2 technology shall be installed at Merrimack Station no later than July 1,
3 2013. The department of environmental services has determined that the
4 best known commercially available technology is a wet flue gas
5 desulphurization system, hereafter "scrubber technology," as it best
6 balances the procurement, installation, operation, and plant efficiency
7 costs with the projected reductions in mercury and other pollutants from
8 the flue gas streams of Merrimack Units 1 and 2. Scrubber technology
9 achieves significant emissions reduction benefits, including but not limited
10 to, cost effective reductions in sulfur dioxide, sulfur trioxide, small
11 particulate matter, and improved visibility (regional haze).
12

13 The prescriptive nature of the legislation with respect to the technology to be installed
14 is also demonstrated in the testimony of Mr. Robert Scott, then Director of the Air
15 Resources Division at the New Hampshire Department of Environmental Services,⁶ on
16 HB 1673 before the Senate Committee on Energy and Economic Development on April
17 11, 2006.⁷ While the full text of Mr. Scott's testimony along with others who testified
18 that day is included in Attachment SEM-3, the prescriptive nature of the legislation is
19 discussed in this section of his testimony:

20 It's also been raised, why are we being prescriptive? Why are we in this
21 regular...in this law to PSNH to put in a scrubber? And I have to take
22 some personal responsibility for that; I advocated for that myself. Why
23 would I do that? Everybody, including myself, I think agrees that we want
24 to see mercury reductions, a high level of mercury reductions sooner
25 rather than later. We know today that the installation of scrubbers which
26 have a wonderful benefit of SO₂ reductions, also reduce mercury at a high
27 percentage. That is today the best technology, especially taking into
28 account the multi-pollutant benefits that we know of. What we wanted to
29 avoid is extra time being given, another year, two years of a selection
30 process, what's the best technology, the owner's having to go to PUC to
31 convince them that this is the best technology, and then perhaps having
32 some other company come in and say, 'Well, I had this new alchemy and I
33 can do something even better.' That's all fine and dandy, but what we're

⁶ Mr. Scott is currently a Commissioner at the Public Utilities Commission and was appointed in March 2012. On March 9, 2012, Mr. Scott filed a letter in this proceeding recusing himself from any participation in the docket.

⁷ See, Attachment SEM-3, transcript of April 11, 2006 hearing before the Senate Committee on Energy and Economic Development.

1 concerned about is we don't want to have this as a method where we're
2 constantly delaying the installation. By calling out scrubber technology in
3 the bill, we're signaling PSNH from the word go to start to engineer,
4 design and build scrubber technology right away. The bill has in it, within
5 one year of passage of the bill, they are required to have all their
6 applications in to us, which means there's a lot of engineering work they
7 have to do. This is starting...this is in the ground writing for the plan, and
8 this is why we did that.⁸
9

10 That testimony summarizes the intentions of the drafters of the legislation that PSNH
11 take measures to reduce mercury emissions at its coal plants as soon as possible and to
12 accomplish the mercury reductions using the technology set forth in the legislation.

13 **Q. In your summary of the requirements of the Scrubber Law, you said "among other
14 things." What are some of the other requirements of RSA 125-O:11 – 125-O:18?**

15 **A. Other requirements of the mercury reduction law that pertain to Merrimack Station and
16 PSNH's other coal-fired generating units located at its Schiller Station in Portsmouth,
17 New Hampshire⁹ are listed in RSA 125-O:13 "Compliance." Among those other
18 requirements, which included reporting requirements to the New Hampshire Department
19 of Environmental Services and various legislative committees, was a requirement of the
20 owner to, prior to July 1, 2013, "test and implement, as practicable, mercury reduction
21 control technologies or methods to achieve early reductions in mercury emissions below
22 the baseline mercury emissions."**

23 **Q. Did PSNH conduct such testing?**

24 **A. Yes. A discussion of this can be found on pages 20-21 of the testimony of Jacobs
25 Consultancy. Further discussion of the testing is found in Attachment SEM-4, PSNH's
26 response to TransCanada 2-9.**

⁸ Id at 33.

⁹ Pursuant to RSA 125-O:12, I, these generating units are defined as the "affected sources."

1 **Q. Does the Scrubber Law include any unique findings regarding the installation of the**
2 **Scrubber?**

3 A. Yes. Specifically, included in RSA 125-O:11 “Statement of Purpose and Findings” is the
4 following finding particular to the wet flue gas desulphurization system: “The
5 installation of such technology is in the public interest of the citizens of New Hampshire
6 and the customers of the affected sources.”¹⁰

7 **Q. Why do you consider that finding unique?**

8 A. To my knowledge, that is the only instance of the Legislature making a public interest
9 finding regarding the installation of a particular technology, at least with respect to
10 regulated utility industries.

11 **Q. What is the significance of the use of the word “owner” throughout RSA Sections**
12 **125-O:11 through 125-O:18?**

13 A. As defined in RSA 125-O:12, IV, “owner” means the owner or owners of the affected
14 sources. The word “owner” was used to cover the circumstance where PSNH may have
15 sold or otherwise divested its ownership in any of the affected sources.

16 **Q. Have any of the affected sources, particularly Merrimack Station, been divested?**

17 A. No.

18 **Q. The definition you cited above defines “owner” as either singular or plural. What**
19 **would be a situation with multiple owners of the affected sources?**

20 A. Such a situation could arise if, for example, PSNH sold Schiller Station and retained
21 Merrimack Station.

22 **Q. Does such a situation make economic sense for purposes of all Sections 125-O:11**

¹⁰ RSA 125-O:11, VI.

1 **through 125-O:18?**

2 A. A situation with different owners of Schiller Station and Merrimack Station as posited in
3 my example would result in PSNH being responsible for mercury reductions at all four
4 coal-burning units even though PSNH would no longer have ownership of the two
5 Schiller coal units. Further, under the economic performance incentives described in
6 RSA 125-O:16, the “owner,” in qualifying circumstances, is eligible to receive early
7 reduction credits and over-compliance credits. In a situation where Schiller Station is
8 owned by another entity, it appears that entity would be able to receive such credits
9 without having to make any of its own plant improvements. Granted, the financial
10 considerations of such a scenario could be dealt with when negotiating the terms of a
11 plant sale, but my point is that having more than one owner of the affected sources
12 introduces a level of complexity beyond the plain words of the statutes.

13 **Q. In your view, were RSA Sections 125-O:11 through 125-O:18 written with a single**
14 **owner of the affected sources in mind, and that owner being PSNH?**

15 A. Yes. My view is based on a review of the information leading up to passage of the
16 Scrubber Law, including statements by parties and governmental officials in support of
17 the law. PSNH, by its own admission, was highly involved in the collaborative effort in
18 what has been described as a compromise bill. As part of the compromise, PSNH made
19 certain commitments that would be enforced following passage of the bill. In reviewing
20 documents in the legislative history of HB 1673, I have yet to come across comments
21 suggesting that a company other than PSNH would potentially be responsible for
22 complying with the Scrubber Law as a result of a divestiture of the affected sources.
23 While the generic wording of the statutes would apparently allow for the possibility of a

1 different owner, all focus seemed to squarely remain on PSNH as the owner.

2 **Q. As no divestiture has taken place, what impact does that have on this proceeding?**

3 A. With no divestiture of any of the affected sources, PSNH remains the owner of all
4 affected sources and, therefore, remains responsible for complying with the Scrubber
5 Law.

6 III. Prudence of the Scrubber Project

7 **Q. How should prudence be determined in this or any other proceeding?**

8 A. As a general matter, a determination of prudence involves a review of the information
9 available to a utility at the time decisions are made to determine if the decisions were
10 reasonable, based on the then-available information. A prudence determination involves
11 the use of foresight rather than hindsight.

12 **Q. Does the Scrubber Law include any statements about prudence?**

13 A. Yes. Pursuant to RSA 125-O:18, "If the owner is a regulated utility, the owner shall be
14 allowed to recover all prudent costs of complying with the requirements of this
15 subdivision in a manner approved by the public utilities commission."

16 **Q. In light of the requirements of the Scrubber Law, how did the Commission describe
17 the scope of this case in its Order of Notice?**

18 A. In that Order of Notice, the scope was described as follows:

19 The filing raises, inter alia, issues related to whether the costs of the
20 Scrubber Project were prudently incurred consistent with the requirements
21 of RSA 125-O:11 et seq. and are eligible for recovery through default
22 service rates as provided by RSA 125-O:18; whether temporary rates
23 pursuant to RSA 378:27 are appropriate for recovery of any costs
24 associated with the Scrubber Project; and whether the resulting rates are
25 just and reasonable pursuant to RSA 378:5 and 8.¹¹
26

¹¹ December 1, 2011 Order of Notice at 3.

1 As will be discussed later in my testimony, temporary rates were implemented and have
2 been in place since April 2012. What still remains to be determined now that the
3 Scrubber project is complete, is whether the costs of the project were prudently incurred
4 and eligible for recovery through default service rates. Consistent with RSA 125-O:18,
5 the focus should be on the "...prudent costs of complying with the requirements of this
6 subdivision..."

7 **Q. In your view, is this proceeding about whether or not PSNH should have divested its**
8 **ownership in Merrimack Station or any of the affected sources?**

9 A. No. As stated above, this proceeding is about whether the costs of the Scrubber were
10 prudently incurred and are eligible for recovery. Granted, prudence reviews can involve
11 a lot of different circumstances, but a) this proceeding was not noticed as a divestiture
12 proceeding,¹² and b) consistent with RSA 125-O:18, the focus should be on the
13 "...prudent costs of complying with the requirements of this subdivision..."

14
15 **A. *Progression of Total Estimated Costs***

16 **Q. Regarding the costs at issue in this proceeding, please briefly describe the changes in**
17 **cost estimates that occurred over time with respect to the Scrubber project.**

18 A. At the time the Scrubber Law was being considered in 2005-2006, it was widely
19 discussed that the estimated cost of the project would not exceed \$250 million. In an
20 August 7, 2008 quarterly earnings report (Form 10-Q) filed by PSNH's parent company,
21 Northeast Utilities, it was disclosed that the estimated costs of the Scrubber project had

¹² The Commission currently has an open investigation, IR 13-020, regarding the valuation and potential divestiture of PSNH's generating units.

1 increased to \$457 million. A subsequent estimate of \$430 million was provided in the
2 second half of 2010, and the final project cost estimate of \$422 million was provided in
3 the first half of 2011.¹³ A full examination of the circumstances and details involved in
4 these cost estimates is contained in the June 2011 Due Diligence Report and the
5 September 10, 2012 Final Report prepared by Jacobs Consultancy as well as in Jacobs
6 Consultancy's testimony.

7 **Q. With respect to the \$250 million estimate, please explain how you used that number**
8 **in your February 2012 temporary rate testimony.**

9 A. My temporary rate testimony included a Temporary Rate Cost Percentage that, in part,
10 was calculated using the \$250 million amount as the numerator. My recommendation for
11 temporary rates recognized that as this was an ongoing proceeding, parties were expected
12 to raise a number of questions regarding the Scrubber construction and costs. As I
13 explained in that testimony,

14 The percentage was calculated solely for the purpose of developing a
15 temporary rate recommendation and it has no other significance. Any
16 decisions regarding prudence and potential cost allowances and
17 disallowances should be made in the permanent rates portion of this
18 proceeding after all of the evidence has been examined. The percentage
19 represents what I view as a reasonable balancing of the various interests
20 and concerns.¹⁴

21
22 **Q. What is your position as to the relevance of that number now with regard to**
23 **reviewing the overall costs of the project?**

24 A. As discussed in the testimony of Jacobs Consultancy, the \$250 million estimate was
25 preliminary and did not include things such as the cost of emissions removal guarantees,

¹³ For these three estimates, see Attachment SEM-5, PSNH's response to TransCanada 4-13. Although the discovery response indicates that the final estimate was \$420 million, the disclosure in the 10-K was \$422 million.

¹⁴ Hearing Exhibit 9 at 14, lines 12-16.

1 site-specific considerations or PSNH's internal costs. While the \$250 million makes for a
2 talking point, given that we now know the actual costs of the Scrubber project, and it has
3 long been known that the total project costs would exceed \$250 million, the discussion of
4 permanent rate recovery should focus on the actual costs, the management of the project,
5 and the rate impacts of the project.

6 **Q. What events took place following the disclosure of the increased cost estimate of**
7 **\$457 million in 2008?**

8 **A. On August 22, 2008, in light of the increased cost estimate, the Commission opened**
9 **Docket No. DE 08-103 and directed PSNH to file "a comprehensive status report on its**
10 **[Scrubber] installation plans, a detailed cost estimate for the project, an analysis of the**
11 **anticipated effect of the project on energy service rates, and an analysis of the effect on**
12 **energy service rates if Merrimack Station were not in the mix of fossil and hydro**
13 **facilities operated by PSNH."**¹⁵ **DE 08-103 also served as "a repository for all materials**
14 **to be filed by PSNH." In its Order No. 24,898 in that proceeding, the Commission stated,**
15 **among other things,**

16 We are sensitive to the OCA's point that the cost estimates for the
17 scrubber project have increased approximately 80 percent from \$250
18 million to \$457 million in a relatively short time. In fact, that
19 circumstance is what prompted us to open this investigation. However, a
20 substantial increase in the cost estimate does not constitute a grant of
21 Commission authority to determine whether the project is in the public
22 interest. The Legislature has already made an unconditional determination
23 that the scrubber project is in the public interest. Nowhere in RSA 125-O
24 does the Legislature suggest that an alternative to installing scrubber
25 technology as a means of mercury compliance may be considered,
26 whether in the form of some other technology or retirement of the facility.
27 Furthermore, RSA 125-O does not: (1) set any cap on costs or rates; (2)
28 provide for Commission review under any particular set of circumstances;

¹⁵ The requested information was submitted by PSNH on September 2, 2008.

1 or (3) establish some other alternative review mechanism. Therefore, we
2 must accede to its findings.¹⁶
3

4 That ruling supports my earlier description of the Legislature's public interest finding as
5 "unique."

6 **Q. Subsequent to the issuance of Order No. 24,898, did any developments occur at the**
7 **Legislature?**

8 A. Yes. In the following legislative session and as a result of the increased cost estimate,
9 two bills, House Bill 496 and Senate Bill 152 related to the Scrubber project were
10 considered. One bill would have capped the recoverable costs at \$250 million, and the
11 other would have required the Commission to open a proceeding to review whether the
12 Scrubber project was in the public interest. Neither bill passed.

13 **Q. Since neither bill passed, why is knowing that history important?**

14 A. It is important to establish that a) back in the 2008 and 2009 time period, the general
15 public, as well as legislators, were aware of the cost escalation of the project, and b)
16 despite that knowledge, no cost limitations were imposed on the project.

17 **Q. Given that there are no cost limitations in the statutes, how will the Commission be**
18 **able to determine whether the costs incurred by PSNH to construct the Scrubber**
19 **were prudent?**

20 A. Such a determination involves a review of the decisions that were made, the information
21 available at the times those decisions were made, how the project was managed, and the
22 actual costs incurred. In that regard, prudence review of the Scrubber project is no
23 different than the review that would be performed for other projects.

¹⁶ Order No. 24,898 (September 19, 2008) in DE 08-103 at 12-13.

1 **B. *PSNH's Cost Analyses in Light of Increased Costs***

2 **Q. Did PSNH's September 2, 2008 submittal in DE 08-103 include things such as**
3 **certain projections as to natural gas and coal prices as well as analyses of scenarios**
4 **for replacing Merrimack Station's energy and capacity if Merrimack Station was**
5 **retired and no longer part of PSNH's generation portfolio?**

6 A. Yes.

7 **Q. Was detail concerning those projections and analyses provided during the discovery**
8 **phase of this proceeding?**

9 A. Yes. In response to a discovery request,¹⁷ PSNH provided copies of presentations made
10 to a) Northeast Utilities' Risk and Capital Committee on June 25, 2008, and b) Northeast
11 Utilities' Board of Trustees on July 15, 2008. Both presentations incorporated the
12 revised estimate of \$457 million and included a description of various financial scenarios,
13 sensitivities and risks. Those scenarios were assigned probabilities and involved the use
14 of ranges of capital costs (including the potential addition of a cooling tower for other
15 environmental compliance requirements), natural gas prices, coal prices and carbon costs
16 (due to the Regional Greenhouse Gas Initiative and then-potential federal legislation). In
17 addition, PSNH provided further detail concerning the development of those scenarios
18 through detailed spreadsheets calculating revenue requirements throughout the projected
19 life of the Scrubber along with various fuel forecasts.

20 **Q. Did PSNH rely on any particular fuel forecasts in developing its financial scenarios?**

¹⁷ See, Attachment SEM-6, PSNH's response to Staff 2-2. Although the response is marked "Privileged and Confidential," the electronic version of the file has notation struck through. I have confirmed that the documents are, in fact, not considered confidential by PSNH.

1 A. As stated in response to a discovery request,¹⁸ PSNH used a variety of 2008 fuel price
2 quotations and forecasts from industry consultants to examine a range of values for
3 various cost items, including fuel prices, and did not rely on a singular fuel forecast.

4 **Q. Based on information available at the time those financial scenarios were performed**
5 **in the summer of 2008, do they seem unreasonable?**

6 A. No. The market data presented appears to be in line with similar vintage market
7 information available at that time. For example, one of the fuel forecasts supplied by
8 PSNH was as of June 11, 2008 for natural gas futures at Henry Hub. On attachment
9 SEM-8, I have compared the prices cited by PSNH to those available from SNL as of
10 March 31, 2008, June 11, 2008, September 30, 2008, March 31, 2009 and September 30,
11 2009. As shown on SEM-8, the June 11, 2008 prices are in agreement with those
12 provided by PSNH. In addition, the futures prices for the years 2013 through 2020 had
13 increased on average by roughly \$2 per MMBtu, or roughly 21 percent, from the March
14 31, 2008 average level of \$9.312/MMBtu to \$11.340 at June 11, 2008.

15 **Q. How did the natural gas futures prices move in the vintage forecasts following June**
16 **11, 2008?**

17 A. As further shown on SEM-8, the futures prices for 2013 through 2020 declined to an
18 average of \$8.681 per MMBtu by September 30, 2008, declined again by March 31, 2009
19 to an average of \$7.388 and then leveled off through March 31, 2010 at prices averaging
20 between \$7 and \$7.50 per MMBtu.

21 **Q. How do those various vintages of futures prices compare to actual Henry Hub**
22 **natural gas prices?**

¹⁸ See, Attachment SEM-7, page 1 of PSNH's response to TransCanada 1-2 (supplemental response).

1 A. For comparison, on SEM-8 I have included a graph showing the actual Henry Hub spot
2 natural gas prices for the period January 2008 through April 2013.¹⁹ As is clear from a
3 comparison of the futures prices in the table at the top of the page to the actual prices in
4 the graph, actual prices were significantly below what was forecast at various times.

5 **Q. What is the important point to draw out of this discussion?**

6 A. Although actual prices varied significantly from forecasted prices, judgments about the
7 decisions made by PSNH with respect to the Scrubber project must be made based on the
8 information available at the time. While my discussion uses natural gas pricing as an
9 example, it helps demonstrate that based on available information, PSNH's 2008
10 financial analyses do not appear unreasonable.

11 **Q. In addition to its own financial analyses, did PSNH also have the costs of the project
12 reviewed by an outside firm?**

13 A. Yes. As described in the testimony of Jacobs Consultancy, in 2008 PSNH hired
14 PowerAdvocate to conduct a review of the costs of the Scrubber project along with an
15 analysis of the market conditions associated with capital construction projects and retrofit
16 scrubber projects.²⁰

17 **Q. Did PSNH keep Northeast Utilities' Risk and Capital Committee apprised as to the
18 status of the costs and construction of the Scrubber project?**

19 A. Yes. In discovery, PSNH provided copies of minutes of additional meetings of the Risk
20 and Capital Committee that, in addition to the June 25, 2008 meeting referenced above,
21 took place on September 17, 2008; January 28, 2009; June 24, 2009; December 16, 2009;

¹⁹ See, IR 13-020 June 7, 2013 Staff Report at 14. <http://www.puc.nh.gov/Electric/IR%2013-020%20PSNH%20Report%20-%20Final.pdf>

²⁰ A copy of PowerAdvocates's March 2009 report is included as Attachment WHS-3 to PSNH witness William Smagula's June 15, 2012 testimony.

1 May 27, 2010; October 25, 2010; February 16, 2011; May 25, 2011; and November 25,
2 2011. Included with those minutes were copies of the Risk and Capital Committee's
3 approvals of the revised funding requests when the estimated capital costs were adjusted
4 to \$457 million and \$430 million.

5 **C. Project Oversight**

6 **Q. Did Staff conduct any oversight of the Scrubber project during the construction
7 phase?**

8 A. Yes. On January 26, 2010, Staff contracted with Jacobs Consultancy²¹ (Jacobs), an
9 international management, technical and consulting firm, to monitor the progress of the
10 Scrubber project. During the construction of the project, Jacobs conducted quarterly site
11 visits, interviewed company personnel and conducted a considerable amount of
12 discovery. A full description of the work performed by Jacobs is contained in the
13 testimony and related attachments of Jacobs being filed as companion testimony to my
14 testimony.

15 **Q. Did Jacobs prepare periodic reports as part of its review?**

16 A. Yes. Jacobs prepared the following reports:

- 17 • Due Diligence Report – June 2011
- 18 • April 2011 Quarterly Report – June 15, 2011
- 19 • July 2011 Quarterly Report – September 20, 2011
- 20 • October 2011 Quarterly Report – December 22, 2011
- 21 • Final Report – September 10, 2012

22 **Q. Were those reports filed in this proceeding and made available to all parties?**

²¹ Jacobs Consultancy is a division of Jacobs Engineering Group, Inc.

1 A. Yes.

2 **Q. Based on its review, what was Jacobs' overall assessment of PSNH's management of**
3 **the Scrubber project?**

4 A. Jacobs gave PSNH high marks for its management of the project. As stated in its
5 September 10, 2012 Final Report and in its testimony, Jacobs' overall assessment of
6 PSNH's management of the project was as follows:

7 The New Hampshire Clean Air Project at Merrimack Power Station was a
8 well-defined and documented effort. The PSNH team did a thorough
9 analysis of the technical requirements prior to initiating the project,
10 availing themselves of various industry specialists to strengthen their
11 findings. PSNH followed rigid corporate procedures to ensure compliance
12 with both regulatory and prudent business requirements. The selection
13 process for a Program Manager was a thorough and fruitful procedure
14 followed by an equally thorough process for selecting equipment suppliers
15 and contractors.

16 Given the size and complexity of the Merrimack Clean Air Project, the
17 construction approach functioned as planned. The various contractors
18 have worked well together, eventually achieving a better than average
19 safety record. Throughout the project, PSNH exercised good oversight by
20 properly controlling cost and schedule, as evidenced by the project being
21 completed under budget and ahead of schedule.²²

22
23 **Q. In addition to Staff's oversight during the construction phase of the project, did the**
24 **Legislature retain any oversight role with respect to the Scrubber project?**

25 A. Yes. PSNH was required to present annual reports to the Legislature as to the status of
26 the project. Specifically, RSA 125-O:13, IX provides as follows:

27 The owner shall report by June 30, 2007 and annually thereafter, to the
28 legislative oversight committee on electric utility restructuring, established
29 under RSA 374-F:5, and the chairpersons of the house science, technology
30 and energy committee and the senate energy and economic development
31 committee, on the progress and status of complying with the requirements
32 of paragraphs I and III, relative to achieving early reductions in mercury
33 emissions and also installing and operating the scrubber technology
34 including any updated cost information. The last report required shall be

²² Jacobs Consultancy September 10, 2012 Final Report at 10-11.

1 after the department has made a determination, under paragraph V, on the
2 maximum sustainable rate of mercury emissions reductions by the
3 scrubber technology.
4

5 **Q. Did PSNH report to the Legislature as required?**

6 A. Yes. Copies of all such annual reports have been submitted as part of this proceeding. In
7 addition, PSNH periodically prepared and presented information for Legislative
8 committees as proposed legislation was discussed. Included as Attachment SEM-9 to my
9 testimony is a copy of a document that was presented to legislators during the
10 consideration of SB 152 in 2009 that, in part, includes a discussion of the drivers of the
11 increase in capital costs to \$457 million.

12 **Q. Did PSNH also provide written status reports to the Commission regarding the
13 status of the Scrubber project?**

14 A. Yes. In addition to providing the Commission with copies of material provided to the
15 Legislature, PSNH filed status reports on May 21, 2010, October 15, 2010, November 11,
16 2011, November 18, 2011, March 22, 2012 and June 28, 2012. Also, on March 31, 2010,
17 at the request of the Commission, PSNH held a public information session at the
18 Commission.

19 **D. *Audit of Project Costs***

20 **Q. Did Staff perform an audit of the costs of the Scrubber project?**

21 A. Yes. The Audit Staff reviewed all costs of the project and produced two reports. The
22 first report is dated August 21, 2012 and covered the project costs incurred through
23 March 31, 2012. The second report, dated August 23, 2013, reviewed the project costs
24 recorded subsequent to March 31, 2012 and through December 31, 2012, and later
25 updated through March 31, 2013. Both reports are included with my testimony as

1 Attachments SEM-10 and SEM-11, respectively.

2 **Q. What were the total reported costs of the Scrubber project?**

3 A. As discussed in Attachment SEM-11 [8/23/13 Audit Report], the total reported costs
4 through March 31, 2013 after recommended adjustments by the Audit Staff were
5 \$417,526,603 (see page 33).

6 **Q. What was the nature of the Audit Staff's recommended adjustments?**

7 A. The Audit Staff recommended the removal of a total of \$441,713 of various types of
8 costs from total Scrubber capital costs for the purposes of calculating depreciation,
9 overhead and the allowance for funds used during construction (commonly referred to as
10 AFUDC). Those costs, which are listed on page 67 of SEM-10, include approximately
11 \$49,500 of relatively small cost items and approximately \$392,200 of removal costs that
12 had not been otherwise taken into account. In addition, the Audit Staff recommended
13 removal of \$58,483 of AFUDC from the total project costs for AFUDC associated with
14 two spare booster fans.

15 **Q. Did PSNH agree with the Audit Staff's recommended adjustments with respect to
16 the \$441,713 of costs?**

17 A. No. PSNH stated that it believes that it has properly accounted for the cost items at
18 issue.²³ In its response to the discovery request, PSNH provided its description of the
19 three categories of costs at issue: decommissioning/demolition, safety and office supplies.
20 To be clear, the Audit Staff did not recommend disallowance of the costs. Rather, the
21 costs at issued were recommended to be removed from the total capital costs of the
22 project, thereby reducing the associated AFUDC, overhead and depreciation. I concur

²³ See, Attachment SEM-12, PSNH's response to OCA-AUDIT-1-1.

1 with the Audit Staff's recommendations.

2 **Q. Please describe the issue involving \$58,483 of AFUDC.**

3 A. When ordering booster fans for the Scrubber project, included in the order were two
4 spare booster fans to keep in inventory as spares. Considering the specific machining and
5 engineering involved, it was reasonable for PSNH to purchase spare booster fans at the
6 time the booster fans for use in the Scrubber project were being fabricated. However, as
7 the spare fans were purchased for inventory purposes, they should not have been treated
8 as capital items and accrued AFUDC prior to their transfer to the inventory account. For
9 instance, if PSNH had made a separate purchase of the spare booster fans, it would not
10 have calculated any AFUDC associated with that purchase. PSNH, in its response to the
11 Audit Report, stated that such accounting was consistent with its internal accounting
12 policies.

13 **Q. Taking the above into account, what amount do you recommend for use as the
14 capital cost of the Scrubber project as a result of the Staff's audit?**

15 A. I recommend that, as a starting point, \$417,526,603 be used.

16 **Q. Are there any other adjustments you recommend be made to that amount?**

17 A. One of the items included in the above total costs was a new meeting and office building
18 necessitated due to the demolition of the prior 1960s vintage office/meeting building.
19 The new building, referred to by PSNH as "The Meeting Place," was constructed
20 pursuant to a separate work order and at a total cost of \$2,014,714. Although included in
21 the total Scrubber project costs that were reviewed as part of the financial audit, in
22 response to a discovery request²⁴ PSNH stated that the costs of The Meeting Place are

²⁴ See Attachment SEM-13, PSNH's response to OCA 4-17.

1 “not considered part of the C[lean] A[ir] P[roject] and recovery of the costs is treated in
2 the same manner as other general plant assets at Merrimack Station.” With that in mind,
3 the \$2,014,714 of costs for The Meeting Place should be removed from the total capital
4 costs of the Scrubber project, bringing the total capital costs to be considered in this
5 proceeding down to \$415,511,889.

6 **Q. Will the capital costs of the Scrubber project be subject to any additional future
7 adjustments?**

8 A. Yes. As of the writing of this testimony, it is my understanding that certain items and
9 their related costs have yet to be finalized and recorded to the plant accounts. Those
10 items are:

Siemens Availability Guarantee	1,909,000
Performance Testing Support & Misc. Contract Labor	200,000
Indirects & Miscellaneous	60,000
Total	<u>2,169,000</u>

11
12 The above costs all relate to final calibration and testing of various Scrubber components
13 and will not be finalized until the testing is complete and the results are known. As those
14 costs have not yet been finalized, they are not included in the following section of my
15 testimony regarding cost recovery and rate impacts.

16 **IV. Cost Recovery and Rate Impacts**

17 **A. *Temporary Rates***

18 **Q. Early in your testimony you mentioned that you previously testified in this
19 proceeding on the subject of temporary rates. What are temporary rates?**

20 A. As explained in that earlier testimony and reproduced here for convenience, temporary
21 rates, which are specifically allowed pursuant to RSA 378:27, provide a means for a

1 utility to begin recovery of certain costs, pending the outcome of a full proceeding to
2 investigate those costs. Following the completion of the full proceeding, a “permanent
3 rate” level is determined, and the difference between the temporary rate level and the
4 permanent rate level is then reconciled through either collection from or refund to
5 customers.

6 **Q. Please describe in general terms how a temporary rate reconciliation would work.**

7 A. At the conclusion of the “permanent rate” part of this proceeding, the Commission will
8 determine whether PSNH complied with the law and whether PSNH’s costs of doing so
9 were prudently incurred. Then: a) any permanent rate increment attributable to the
10 scrubber would be set, and b) a reconciliation amount would be calculated and reconciled
11 through a collection from or a refund to customers. The reconciliation amount would be
12 calculated by determining the difference between the revenues that would have been
13 received during the period of temporary rates if the permanent rate level was in effect and
14 the actual revenues received during the temporary rate period.

15 **Q. Are temporary rates currently in place that have allowed PSNH to begin recovery of
16 some of its Scrubber investment during the pendency of this proceeding?**

17 A. Yes. Beginning April 16, 2012, PSNH has been allowed to charge its default ES
18 customers a temporary Scrubber cost recovery rate of 0.98 cents per kWh as an add-on to
19 what I will refer to as the non-Scrubber default ES rate.

20 **Q. Do all of PSNH’s customers pay the 0.98 cents per kWh temporary Scrubber cost
21 recovery rate?**

22 A. No. Only default service customers of PSNH pay the temporary rate. Customers who
23 have chosen to receive energy supply service from a competitive supplier or through self-

1 supply do not pay the temporary rate. This provision of Scrubber cost recovery in the
2 default ES rate of PSNH is consistent with RSA 125-O:18 which states, in part,

3 If the owner²⁵ is a regulated utility, the owner shall be allowed to recover
4 all prudent costs of complying with the requirements of this subdivision in
5 a manner approved by the public utilities commission. During ownership
6 and operation by the regulated utility, such costs shall be recovered via the
7 utility's default service charge.
8

9 The Scrubber temporary rate, therefore, can be viewed as an avoidable cost for PSNH's
10 customers, specifically those who elect not to receive default service from PSNH.

11 **Q. Through that temporary Scrubber cost recovery rate of 0.98 cents per kWh, has**
12 **PSNH been receiving full recovery of its incurred costs of the Scrubber project?**

13 **A. No. PSNH has only been receiving recovery of a portion of its Scrubber-related costs.**

14 **Q. How, then, would PSNH recover the any previously unrecovered Scrubber costs?**

15 **A. This is where the temporary rate reconciliation I described earlier comes into play. As**
16 **part of its rulings in this proceeding, the Commission will determine a permanent rate**
17 **associated with Scrubber cost recovery. That permanent rate will be either higher or**
18 **lower than the current temporary Scrubber cost recovery rate. The difference between**
19 **the temporary and permanent rates will create either an under-recovery to be charged to**
20 **customers over a period of time or an over-recovery to be refunded to customers over a**
21 **period of time, such under-or over-recovery dependent on the Commission's decision on**
22 **the merits of the case.**

23 **Q. In approving temporary rates for the Scrubber, did the Commission make any**
24 **findings with respect to whether the Scrubber was used and useful?**

²⁵ Pursuant to RSA 125-O:12, "owner" means the owner of an "affected source," with the affected sources being PSNH's Merrimack Station in Bow, New Hampshire and Schiller Station in Portsmouth, New Hampshire.

1 A. Yes. RSA 378:27 provides that "...temporary rates shall be sufficient to yield not less
2 than a reasonable return on the cost of the property of the utility used and useful in the
3 public service less accrued depreciation, as shown by the reports of the utility filed with
4 the commission, unless there appears to be reasonable ground for questioning the figures
5 in such reports." Therefore, inherent in the Commission's authorization of temporary
6 rates for Scrubber recovery is a finding that, for purposes of that decision, the equipment
7 was used and useful.

8 **B. *Permanent Rates/Rate Impact***

9 **Q. What is your proposal for permanent rate recovery of the Scrubber costs?**

10 A. First, it is important to understand that there are two components that need to be taken
11 into account: the annual costs of owning and operating the Scrubber and the previously
12 unrecovered costs; that is, the costs not recovered due to the difference between the
13 permanent rate level and the temporary rate level for the period of time that the
14 temporary rate was in effect. The annual ongoing costs are the costs that would be
15 expected to be incurred and included in the revenue requirements on an annual basis.
16 The previously unrecovered costs are really a function of the regulatory process coupled
17 with delays in the proceeding for a variety of reasons. As more time has passed since the
18 implementation of temporary rates, the pot of unrecovered costs has continued to grow
19 and accrue a return component based on the carrying charges associated with the
20 unrecovered costs. The disposition of the unrecovered costs, depending on how they are
21 handled, could have a significant default service rate impact.

22 **Q. By referring to this as a "permanent" rate, does that mean that PSNH's default ES**
23 **rate will always include a separate calculation of the Scrubber-related costs?**

1 A. No. As I mentioned in my February 24, 2012 temporary rate testimony, this proceeding
2 is the first proceeding wherein the Commission established temporary rates for a default
3 service offering. PSNH's default service rate includes, among other things, all of its
4 generation-related costs and is periodically reconciled. What I envision is that following
5 the initial "stub" period, all Scrubber-related costs will be included in the determination
6 of PSNH's default ES rate and the separate calculation would cease.

7 **Q. What is your recommendation regarding the annual ongoing costs?**

8 A. I recommend that, similar to other generation-related costs, that the annual ongoing costs
9 be included in full in PSNH's default energy service rate. As shown on Attachment
10 SEM-14, those annual costs total \$63,396,000 and are comprised of operation and
11 maintenance expenses, fuel costs, avoided SO₂ costs, depreciation expense, property
12 taxes, and return on rate base. Using the estimated 2014 ES sales from DE 13-275,²⁶ the
13 rate impact of the annual ongoing costs is 1.72 cents per kWh, or an incremental impact
14 of 0.74 cents per kWh above the temporary Scrubber rate of 0.98 cents per kWh.

15 **Q. How should the previously unrecovered costs resulting from the temporary rate
16 reconciliation be treated?**

17 A. Here we have some options. The options range from full, immediate inclusion of all
18 unrecovered costs in PSNH's next ES rate setting proceeding to recovering the costs over
19 a number of years.

20 **Q. What are the total estimated unrecovered costs as of the end of 2013?**

21 A. As stated in PSNH's response to Tech Session 2-1, the total unrecovered costs as of
22 December 31, 2012 were \$50,127,000, and the total estimated unrecovered costs for 2013

²⁶ See, DE 13-275, Exhibit 3, page 7 of 36, Attachment EHC-1, page 1, line 32.

1 were \$28,607,000 resulting in total unrecovered costs as of the end of 2013 of
 2 \$78,734,000.²⁷

3 **Q. Have you analyzed the potential rate impact of recovering the previously**
 4 **unrecovered costs over various time periods?**

5 A. Yes. I looked at the impact of recovering the costs over 1, 3, 5, 7 and 10 years. The
 6 results of that analysis are shown in the table below (amounts in 1000s):²⁸

	1 yr	3 yrs	5 yrs	7 yrs	10 yrs
Amount of Unrecovered costs to be recovered	\$78,734	\$26,245	\$ 15,747	\$ 11,248	\$ 7,873
cents/kWh	2.14	0.71	0.43	0.31	0.21
Annual costs cents/kWh	1.72	1.72	1.72	1.72	1.72
Total	3.86	2.43	2.15	2.03	1.94
Temporary Rate	0.98	0.98	0.98	0.98	0.98
Rate Increment	2.88	1.45	1.17	1.05	0.96

7
 8 Given the magnitude of the unrecovered costs, the impact to PSNH's ES rate of a one-
 9 year recovery of all such costs PSNH's next ES rate proceeding would be prohibitive. Of
 10 course, as the period for recovering the previously unrecovered costs lengthens, the rate
 11 impact is lessened.

12 **Q. Looking at those results, do you have a recommendation?**

13 A. Yes. I recommend that the previously unrecovered costs be recovered over a seven-year
 14 period. As shown in the table, the increase to the ES rate of 7-year recovery of the
 15 unrecovered costs is 0.31 cents per kWh. When added to the recovery of the annual
 16 ongoing Scrubber costs at 1.72 cents per kWh, that results in a total Scrubber-related ES

²⁷ As I have reduced the total capital costs of the Scrubber project, the unrecovered costs would need to be recalculated and would be reduced slightly, but using PSNH's numbers is instructive for determining the magnitude of potential rate impacts.

²⁸ The rate impacts in the table are all based on PSNH's most recent estimate of ES sales for calendar year 2014 and will vary based on changes in the ES sales level. Decreases in sales will put upward pressure on the rate, and increases in sales will lessen the rate impact.

1 rate impact of 2.03 cents per kWh. Subtracting from that the current temporary Scrubber
2 rate of 0.98 cents per kWh, based on current ES sales levels the incremental rate increase
3 resulting from my recommendation is 1.05 cents per kWh, 0.74 cents per kWh
4 attributable to the annual costs of the Scrubber and 0.31 cents per kWh to recover the
5 previously unrecovered costs.

6 **Q. How did you decide on the use of a seven-year recovery period for the previously**
7 **unrecovered costs as compared to a recovery period of a different duration?**

8 A. Looking at the incremental rate impact, I attempted to strike a balance between the
9 interests of PSNH's customers and shareholders while coming up with a just and
10 reasonable result remaining mindful of the restriction of RSA 125-O:18 that Scrubber
11 costs be recovered through PSNH's default service rate and, therefore, only from default
12 service customers. Granted, current competitive alternatives to PSNH's default service
13 rate could create a challenge in terms of PSNH's Scrubber cost recovery, depending on
14 future developments in fuel and energy markets.

15 **Q. What would happen at the end of that seven-year recovery period?**

16 A. Once the previously unrecovered costs have been fully recovered at the end of the seven-
17 year period, the portion of the ES rate equivalent to 0.31 cents per kWh would cease to
18 exist.

19 **Q. Similar to the statute governing temporary rates, does the statute governing**
20 **permanent rates, RSA 378:28, require any similar findings by the Commission?**

21 A. Yes. The statute requires that before the Commission can include in permanent rates any
22 return on any plant, equipment or capital improvement, it must first be found to be
23 prudent, used and useful. Based on my review, the Scrubber meets the criteria.

1 **C. *Bill Impacts***

2 **Q. Using your recommendations for recovery of both the annual ongoing costs and the**
3 **previously unrecovered costs of the Scrubber project, what would the estimated**
4 **impact be to a PSNH ES customer?**

5 A. Using the 1.05 cents per kWh increment above the current temporary Scrubber cost
6 recovery rate, a PSNH ES customer using 650 kWh per month would see a monthly bill
7 increase of \$6.83. As all ES customers, regardless of rate class, receive ES service on a
8 per kWh basis, a way to gauge the impact to customers of varying usage levels is to
9 understand that for every 1000 kWh of usage, a PSNH ES customer would experience an
10 increase of \$10.50.

11 **V. Conclusion**

12 **Q. Do you have any concluding comments?**

13 A. Yes. As demonstrated by the prolonged procedural schedule, numerous legal filings,
14 extensive media coverage and legislative involvement, the Scrubber project has generated
15 lots of controversy due in large part to the large capital cost. The rate impact associated
16 with the project becomes magnified due to a) the restriction that the costs of the project
17 be recovered only from PSNH's default service customers, b) the extended period of time
18 that has transpired since the implementation of a temporary Scrubber cost recovery rate at
19 a level that provided less than 100 percent recovery, and c) significant customer
20 migration away from PSNH's default service to competitive supply options. In a perfect
21 world, we all could have predicted the movements in the natural gas, electricity and SO₂
22 markets and the current high levels of customer migration (which only recently began
23 significantly increasing). If we all knew back in 2005-2006 what we all know now, many

1 things would be different, and the Scrubber Law, for one, may not have existed in its
2 current form. However, perfect foresight rarely exists, if at all, especially when it comes
3 to predicting energy markets. One need only to review the history of the rate orders and
4 contracts arising in the 1980s for power purchases from hydroelectric and wood-fired
5 independent power producers to understand how future predictions can vary from actual
6 results. For purposes of determining prudence, it is important to not use hindsight as a
7 replacement for an assessment of decisions made based on the information available at
8 the time. Also, we could spend all sorts of time exploring a range of different “what-if”
9 scenarios: what if the plant was sold; what if the plant was retired; what if the
10 Legislature had capped the costs; what if the Scrubber Law was written differently.

11 While this all makes for interesting discussion, it distracts from the facts of the case. The
12 Scrubber Law exists and the Scrubber exists. The Scrubber is performing as planned and
13 is reducing emissions of mercury and SO₂ as required by law. The plant was not sold nor
14 was it retired and PSNH, as the owner, had—and continues to have—a duty to comply
15 with the law. Based on Staff’s review, including the thorough reviews performed by
16 Jacobs Consultancy and the Audit Staff, Staff’s position is that PSNH acted prudently in
17 complying with the Scrubber Law and constructing the Scrubber, and the resulting costs,
18 as described earlier in my testimony, were prudently incurred. Although the costs of the
19 project combined with current ES sales levels create a significant rate impact—a rate
20 impact not expected at the time of the passage of the Scrubber Law—the prudence of
21 PSNH’s actions at the time it made decisions related to the Scrubber project must not be
22 judged on current day conditions. Such hindsight is simple to apply, but inappropriate to
23 use for judging past decisions.

1 **Q. Does this conclude your testimony?**

2 **A. Yes, it does.**