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STATE OF NEW HAMPSHIRE

PUBLIC UTILITIES COMMISSION

October 16, 2014 - 1:47 p.m.  
Concord, New Hampshire

DAY 3  
Afternoon Session only

NHPUC NOV03'14 PM 4:13

RE: DE 11-250  
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE:  
Investigation of Scrubber Costs and  
Cost Recovery.

PRESENT: Commissioner Martin P. Honigberg, Presiding  
Special Commissioner Michael J. Iacopino  
  
F. Anne Ross, Esq., General Counsel  
  
Sandy Deno, Clerk

APPEARANCES: Reptg. Public Service Co. of New Hampshire:  
Robert A. Bersak, Esq.  
Barry Needleman, Esq. (McLane, Graf...)  
Wilbur A. Glahn, III, Esq. (McLane, Graf...)  
  
Reptg. TransCanada Power Marketing, Ltd.,  
and TransCanada Hydro Northeast, Inc.:  
Douglas L. Patch, Esq. (Orr & Reno)  
Rachel A. Goldwasser, Esq. (Orr & Reno)  
  
Reptg. Conservation Law Foundation:  
Thomas R. Irwin, Esq.  
  
Reptg. the Sierra Club:  
Zachary M. Fabish, Esq.

COURT REPORTER: Steven E. Patnaude, LCR No. 52

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**APPEARANCES: (C o n t i n u e d)**

**Reptg. Residential Ratepayers:**  
Susan Chamberlin, Esq., Consumer Advocate  
James Brennan, Finance Director  
Office of Consumer Advocate

**Reptg. PUC Staff:**  
Suzanne G. Amidon, Esq.  
Michael J. Sheehan, Esq.  
Thomas C. Frantz, Director/Electric Division  
Leszek Stachow, Asst. Dir./Electric Division

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{DE 11-250} [Day 3/Afternoon Session ONLY] {10-16-14}

[WITNESS: Sahu]

1 CMSR. HONIGBERG: Is there anything we  
2 need to do before we call the next witness?

3 (No verbal response).

4 CMSR. HONIGBERG: Mr. Fabish.

5 (Whereupon **Ranajit Sahu** was duly sworn  
6 by the Court Reporter.)

7 **RANAJIT SAHU, SWORN**

8 **DIRECT EXAMINATION**

9 BY MR. FABISH:

10 Q. Good afternoon. Could you state your name for the  
11 record please.

12 A. My name is Ranajit, first name is spelled  
13 R-a-n-a-j-i-t, last name is spelled S-a-h-u.

14 Q. And, in what capacity are you here today?

15 A. I am here to provide some opinions on this docket and I  
16 have an expert report.

17 Q. And, do you have any changes you'd like to make to your  
18 prefiled testimony?

19 A. No. I have a copy of it here. It has some redactions.  
20 But, other than that, I don't have any changes that I  
21 know of.

22 Q. Okay. And, so, you'd say all the same things again  
23 here today?

24 A. I won't change my opinions, if that's your question.

[WITNESS: Sahu]

1 Q. Okay. Could you briefly state those opinions.

2 A. Yes. Very simply that, in this matter, I feel that  
3 PSNH was imprudent in moving forward with the Scrubber  
4 Project as it did, without a consideration of several  
5 federal environmental rules that would have -- that  
6 will require, in my opinion, additional capital  
7 expenditure at the fossil plants that PSNH runs, and  
8 including Merrimack. And, it was also imprudent in  
9 proceeding with the Scrubber Project when the cost of  
10 the Project increased significantly.

11 Q. And, have you previously testified before this  
12 Commission?

13 A. Yes. In a different docket, probably about two and a  
14 half, almost three years ago.

15 MR. FABISH: Okay. Thank you. I think  
16 the witness is available for questions.

17 CMSR. HONIGBERG: Who's going to be  
18 asking questions next? Mr. Patch?

19 MR. PATCH: Unless Ms. Chamberlin has  
20 any?

21 MS. CHAMBERLIN: I have no questions.

22 CMSR. HONIGBERG: So, Ms. Chamberlin has  
23 no questions. Mr. Patch.

24 MR. PATCH: Good afternoon, Dr. Sahu.

[WITNESS: Sahu]

1 Doug Patch. I represent TransCanada, which is an  
2 intervenor in this docket.

3 **CROSS-EXAMINATION**

4 BY MR. PATCH:

5 Q. I'm looking at your prefiled testimony, which has been  
6 marked as "Exhibit 19". And, I'm looking at Page 5.  
7 And, I'm looking at the top of that. And, actually,  
8 it's kind of a carryover -- well, it begins at the top  
9 there in the first paragraph. And, I believe, at that  
10 point in your testimony, you say that "simply because  
11 the future is not known with precision, it does not  
12 mean that it cannot be included in the planning  
13 process", is that correct?

14 A. That's right.

15 Q. And, you go on to say, I think in the next paragraph,  
16 that "it appears that in the case of PSNH they have the  
17 latter, sort of narrow view of planning", and "that was  
18 the norm at PSNH". And, by that, I think you meant  
19 that they took the view that, because the future was  
20 not known with precision, they didn't have to include  
21 it in the planning process, is that correct?

22 A. That's my understanding of how they proceeded or how  
23 they view planning for these upcoming environmental  
24 costs.

[WITNESS: Sahu]

1 Q. And, you go on to say that it's your opinion that  
2 "PSNH, in the Summer of '08, did not properly (or at  
3 all) consider the ramifications of proceeding with the  
4 Scrubber Project, in light of known and anticipated  
5 additional environmental costs associated with running  
6 the coal plants in its system in the years ahead."  
7 Correct?

8 A. That is still my opinion, yes.

9 Q. Now, you referred to another docket before this  
10 Commission in which you testified, and I believe that  
11 was the Public Service Company of New Hampshire IRP  
12 Docket, DE 10-261. And, there are transcripts of the  
13 testimony that was offered, and I believe it was in  
14 April of 2012. And, you testified there on behalf of  
15 the Sierra Club, is that correct?

16 A. Yes, I did.

17 Q. Okay. And, that was a docket that was about planning  
18 as well, was it not?

19 A. Yes. It was their resource planning.

20 Q. And, do you recall in that docket PSNH taking a similar  
21 position that, for planning purposes, they did not take  
22 into account any regulations being considered at the  
23 state or federal level until they had actually been  
24 adopted?

[WITNESS: Sahu]

1 A. Right. And, their position was that the rules had to  
2 be final in some way, before they could really  
3 incorporate that into their planning process, into  
4 their IRP process.

5 Q. And, do you recall in that docket whether there was a  
6 letter from the Commission that indicated that, as a  
7 general matter, a sound planning process should  
8 consider reasonably foreseeable regulatory changes,  
9 recognizing that the threshold at which a potential  
10 change in regulatory standards becomes too remote or  
11 speculative for a utility to consider will depend on  
12 the particular facts and circumstances of the  
13 regulatory matter at issue. Do you remember the  
14 Commission issuing a letter in which it made a  
15 statement similar to that?

16 A. Yes. I think I do.

17 Q. And, do you remember what you said you thought of  
18 PSNH's approach to planning in that particular docket?

19 A. I don't know my exact words, but I thought that was  
20 deficient. That was not the right way to plan for  
21 foreseeable futures, in which there would be material  
22 and significant costs associated with certain outcomes.

23 Q. And, so, the testimony you provided in this docket is  
24 consistent with what you said in that docket, is that

[WITNESS: Sahu]

1 fair to say?

2 A. Yes, I think it is. I believe it is. I know it is.

3 Q. I don't know if you have looked at Commission orders at  
4 all in this docket, but I'm going to focus on a  
5 statement the Commission made in November -- actually,  
6 it wasn't in this docket, but in a prior docket. There  
7 was a docket that the Commission opened in August, I  
8 guess it was, of 2008, DE 08-103, which was a docket  
9 opened by a letter the Commission sent to PSNH counsel  
10 when it learned of the increase in the estimate for the  
11 Scrubber, from 250 million to 457 million. Are you  
12 familiar at all with the fact that there was such a  
13 docket?

14 A. I'm familiar that there were inquiries from the  
15 Commission when the cost escalated. And, I'm familiar  
16 with the response that the Company provided, I believe,  
17 in early September of 2008, if memory serves.

18 Q. That's right. And, in that docket, the Commission  
19 issued two orders I believe in the fall. The second of  
20 which was an order on rehearing, in which the  
21 Commission said, and it cited a specific provision in  
22 the Scrubber Law, and said that that section "does,  
23 however, provide a basis for the Commission to  
24 consider, in the context of a later prudence review,

[WITNESS: Sahu]

1 arguments as to whether PSNH had been prudent in  
2 proceeding with installation of the scrubber  
3 technology, in light of increased cost estimates and  
4 additional costs from other reasonably foreseeable  
5 regulatory requirements, such as those cited by the  
6 Commercial Ratepayers, which included the Clean Air Act  
7 and the Clean Water Act." Does that sound familiar to  
8 you?

9 A. At some point I did read that, yes.

10 Q. So, that's consistent, basically, with what you're  
11 saying, is that, as part of the prudence review here,  
12 you think they should have done as the Commission told  
13 them to do or told them they would do in the Fall of  
14 2008, is that correct?

15 A. That is correct.

16 Q. I'm going to show you a document that has -- it's  
17 included as part of what's been marked as "Exhibit 42".  
18 And, it's one slide from a presentation that PSNH made  
19 to its Board of Trustees in the Summer of 2008.

20 (Atty. Patch handing document to the  
21 witness.)

22 **BY THE WITNESS:**

23 A. I see that.

24 BY MR. PATCH:

[WITNESS: Sahu]

1 Q. Does it look at all familiar to you? Have you seen it  
2 before?

3 A. Yes. I have seen this before.

4 Q. And, it's -- in this slide, they present a range of  
5 scenarios that they considered with regard to the  
6 economics of proceeding with the Scrubber Project. Is  
7 that -- would you say that's a correct summary of that?

8 A. Yes. The slide shows the range of cases, I guess, from  
9 "unlikely low" to "unlikely high" probabilities.

10 Q. And, the base case scenario that they present there, in  
11 which they come up with a net present value of \$130  
12 million for ratepayers, do you see that?

13 A. Yes.

14 Q. And, in reaching the conclusion about the net present  
15 value for ratepayers in that assumption, does it appear  
16 that they assumed any capital expenditures to comply  
17 with environmental regulations?

18 A. No. It just says "current assumptions". And, unlike  
19 what they state in the "unlikely low and "unlikely  
20 high" cases, they don't really talk about cooling  
21 towers and carbon legislation and so on and so forth.

22 Q. Do you think that was reasonable?

23 A. No. I think that was imprudent.

24 MR. PATCH: Thank you. That's all the

[WITNESS: Sahu]

1 questions I have.

2 CMSR. HONIGBERG: Who's going next? Mr.  
3 Irwin.

4 MR. IRWIN: Thank you. Dr. Sahu, my  
5 name is Tom Irwin. I represent --

6 (Court reporter interruption.)

7 MR. IRWIN: Dr. Sahu, my name is Tom  
8 Irwin. I represent the Conservation Law Foundation.

9 BY MR. IRWIN:

10 Q. I don't know if you can easily locate Exhibit 61 up  
11 there? If not, if it's not readily available, --

12 A. Is it in one of the binders here or --

13 Q. Don't worry about it. I'll?

14 MR. IRWIN: That would be great. Thank  
15 you.

16 (Atty. Sheehan handing document to the  
17 witness.)

18 MR. IRWIN: Thank you very much.

19 BY MR. IRWIN:

20 Q. Dr. Sahu, this is a Fact Sheet that accompanied the  
21 recent Merrimack Station Revised Draft NPDES permit  
22 from EPA New England. Looking at the first page of  
23 this document, at the bottom, you'll see the currently  
24 effective permit was issued "June 25th, 1992". Is that

[WITNESS: Sahu]

1 correct?

2 A. Yes.

3 Q. And, Dr. Sahu, what is the typical term of an NPDES  
4 permit under the Clean Water Act?

5 A. It's five years.

6 Q. So, the current permit would have expired in 1997?

7 A. Right.

8 Q. And, what happens when a permit expires?

9 A. Well, typically, there is a renewal application. But,  
10 while that renewal application is being processed, the  
11 current permit stays in effect, until such time as a  
12 renewed permit is issued by the regulatory agency.

13 Q. So, it's administratively continued or extended?

14 A. Right.

15 Q. Okay. So, in 2008, PSNH's permit had been  
16 administratively extended for 11 years, is that  
17 correct?

18 A. Yes. That will be 2000 -- 1997 through 2008. Correct,  
19 11 years.

20 Q. Would you expect a utility in PSNH's position, in 2008,  
21 with a permit administratively extended for 11 years at  
22 that point, to be monitoring the situation as it  
23 relates to NPDES permits generally, and, more  
24 specifically, with respect to the issue of cooling

[WITNESS: Sahu]

1 waters?

2 A. I would think answer would be "yes" to both. They  
3 would be monitoring developments in water pollution  
4 laws and the Clean Water Act and the NPDES permit  
5 regulations, and all of those things actively during  
6 that time.

7 Q. And, in the Summer of 2000 -- would you expect that, in  
8 the Summer of 2008, under those circumstances, a  
9 reasonably prudent utility manager to anticipate little  
10 or no future compliance costs associated with upcoming  
11 Clean Water Act permitting?

12 A. No. And, that's the whole point. It would -- it  
13 simply was not prudent for them to not include the kind  
14 of costs that they should have expected.

15 Q. Dr. Sahu, were you present this morning for Mr. Kahal's  
16 testimony?

17 A. Except for the first 45 minutes or so, I was present  
18 after that, yes.

19 Q. Did you hear him discuss his opinion that PSNH should  
20 have continued or updated its Summer 2008 analysis  
21 later in 2008 and into 2009?

22 A. Yes. I heard him, I heard Mr. Kahal say that.

23 Q. Now, your direct testimony I believe relates to the  
24 Summer of 2008?

[WITNESS: Sahu]

1 A. Right. That's the time I thought, if not earlier,  
2 certainly at that time there definitely should have  
3 been an assessment of proceeding forward, and all of  
4 its -- all of its ramifications.

5 Q. Do your opinions related to the foreseeability of  
6 future environmental regulatory costs extend in --  
7 would they apply as well in late 2008 and into 2009?

8 A. Yes, in general, in that time frame. Yes, I would  
9 agree with that.

10 MR. IRWIN: Thank you. I have nothing  
11 further.

12 CMSR. HONIGBERG: Mr. Needleman or Mr.  
13 Bersak, who are we going to be hearing from?

14 MR. NEEDLEMAN: That will be me.

15 CMSR. HONIGBERG: Go ahead, Mr.  
16 Needleman.

17 MR. NEEDLEMAN: Hello, Dr. Sahu. My  
18 name is Barry Needleman. I'm an attorney with McLane  
19 Graf, and I represent Public Service in this matter.

20 BY MR. NEEDLEMAN:

21 Q. Let me start by going back -- is that better? Let me  
22 start by going back to your opening statement, where  
23 you talked about -- you summarized what it was you were  
24 going to testify about. And, I thought I heard you say

[WITNESS: Sahu]

1 that, with respect to your second point, you were  
2 testifying that "the Company was imprudent because it  
3 did not do a reassessment when the cost of the Project  
4 increased", is that what you said?

5 A. Yes. They were related in my mind. And, that was the  
6 time period, that was sort of the trigger event, is the  
7 cost of this Project that the Company was undertaking  
8 showed a significant increase. And, that is a trigger  
9 event for reassessing the Project, and, in reassessing  
10 the Project, looking at all of these upcoming  
11 environmental costs.

12 Q. Okay. So, you view it as a triggering event tied to  
13 the environmental costs in your report. You're not  
14 testifying separately that the cost increase itself was  
15 an imprudent action, is that right?

16 A. I'm testifying to both. I think I've looked at, for  
17 background and based on my background, I've looked at  
18 the cost as well, and I actually found it pretty  
19 astounding. Yes, but they're related in my mind. The  
20 cost increase in and of itself was imprudent, but, as a  
21 trigger event, and bringing in, at that point, the full  
22 reassessment, including future environmental costs, is  
23 important.

24 Q. There's actually no place in your testimony or in any

[WITNESS: Sahu]

1 of your responses to the data requests where you said  
2 that "the cost increase itself was imprudent", is  
3 there?

4 A. I mean, that was the whole reason for me saying, in the  
5 middle of 2008, or in the Summer of 2008, that's when  
6 the cost increase, at least as I understand it,  
7 occurred.

8 Q. But, again, back to my question, there's no place in  
9 your testimony where you specifically said that, is  
10 there?

11 A. Well, in my view, I say "middle of 2008", and it's not  
12 a number picked out of thin air -- not a date picked  
13 out of thin air.

14 Q. Mr. Patch was asking you about the 2012 IRP docket.  
15 And, as a consequence of that docket, this Commission  
16 issued a letter, which talked in some way about how  
17 PSNH should be planning with respect to environmental  
18 issues going forward. Do you recall that?

19 A. He did ask me that, yes.

20 Q. And, it's your understanding that the Commission had  
21 not taken that position in 2008, is that correct?

22 A. I don't know all the positions of the Commission in  
23 2008.

24 Q. Are you aware of the position taking the -- the

[WITNESS: Sahu]

1 Commission taking the position in the 2012 docket at  
2 any time prior to that point?

3 A. Like I said, I have no knowledge of all the different  
4 positions that the Commission has taken at all times,  
5 no.

6 Q. Could you turn -- I think your testimony is marked as:  
7 "Exhibit 19", is that correct?

8 A. You mean, is that the redacted report?

9 Q. Yes.

10 A. Yes. I don't know the number, but I have it here.

11 MR. NEEDLEMAN: Well, someone will  
12 correct me, if I'm wrong. I think we're on Exhibit 19 for  
13 Dr. Sahu's prefiled testimony, is that correct?

14 CMSR. HONIGBERG: That's what we have  
15 here.

16 BY MR. NEEDLEMAN:

17 Q. Now, several times in the introduction to your  
18 testimony you talked about the Company "being  
19 imprudent". And, then, on Page 3 of your testimony,  
20 which is the summary, you use the phrase "prudent  
21 utility" at least four times. Am I correct that you've  
22 never actually testified in a prudence proceeding  
23 before?

24 A. That is correct. But I'm looking at cost estimates and

[WITNESS: Sahu]

1 environmental regulations, and that's what I've been  
2 doing for 20 years. So, --

3 Q. Have you ever assisted a regulated utility in making a  
4 real-time prudence decision?

5 A. No. There's always a first time for a lot of things,  
6 to bring the skill set that I have to bear.

7 Q. Have you ever published a peer-review paper dealing  
8 with the issue of prudence?

9 A. No, I have not. I don't usually publish peer-reviewed  
10 papers on client matters.

11 Q. Did you look at this Commission's decisions from prior  
12 dockets defining how it would apply the prudence  
13 standard in this docket?

14 A. You'd have to point me to what specific things you have  
15 in mind. I don't -- you know, there are so many, I'm  
16 sure, there's plenty of decisions and orders by the  
17 Commission. If there are particular ones you have in  
18 mind, I may have seen them, but I don't know. I can't  
19 answer that in the general.

20 CMSR. HONIGBERG: Dr. Sahu, do you  
21 remember what the question was?

22 WITNESS SAHU: I understood the question  
23 to mean, "had I looked at prior decisions relating to  
24 prudence by the Commission?"

[WITNESS: Sahu]

1 CMSR. HONIGBERG: I actually think that  
2 was the question. Keeping that question in your mind,  
3 have you looked at it?

4 WITNESS SAHU: What I was saying, your  
5 Honor, is I have looked at several Commission decisions,  
6 and I can't recall all of them right now. But, if he has  
7 a specific one in mind, he can show it to me and I can say  
8 if I can recall seeing it or not. That's all.

9 CMSR. HONIGBERG: So, the answer is  
10 you're not sure? Maybe you have and maybe you haven't,  
11 you're not sure?

12 WITNESS SAHU: That's correct.

13 BY MR. NEEDLEMAN:

14 Q. As you sit here today, can you recall looking at any of  
15 this Commission's prior prudence decisions?

16 A. No. But I can't answer that in the specifics.

17 MR. NEEDLEMAN: I'm going to circulate  
18 an exhibit, if you could.

19 (Ms. Frazier distributing documents.)

20 MR. NEEDLEMAN: What will we mark this  
21 one as?

22 MS. DENO: "Seventy-one".

23 CMSR. HONIGBERG: "Seventy-one".

24 MR. NEEDLEMAN: "Seventy-one".

[WITNESS: Sahu]

1 BY MR. NEEDLEMAN:

2 Q. This is Public Service's Data Request Number 6 to the  
3 Sierra Club and Sierra Club's response.

4 A. Okay.

5 Q. So, this Data Request Number 6 refers to Page 4 of your  
6 testimony. Why don't we go there.

7 A. Okay.

8 Q. And, in particular, it's the middle paragraph on that  
9 page, the last sentence that begins "The prudence of  
10 proceeding". Do you see that?

11 A. Yes.

12 Q. And, your testimony was just that, I'm not going to  
13 read these throughout, but you talked about the  
14 prudence of proceeding, in part, would require certain  
15 things. And, then, we asked you a data request about  
16 that, and specifically asked you your understanding of  
17 how prudence --

18 MR. FABISH: I would like to object to  
19 this line of questioning, if I could. This data request  
20 was supplemented. And, this is -- the Exhibit 71, the  
21 version that's been handed out, is not the supplemental  
22 request.

23 CMSR. HONIGBERG: The supplemental  
24 response?

[WITNESS: Sahu]

1 MR. FABISH: The supplemental response,  
2 yes.

3 MR. NEEDLEMAN: Okay. So, that's my  
4 mistake. Do you have a copy of the supplement?

5 MR. FABISH: Do I have a copy? I don't  
6 have copies for everyone. I've got a copy on my computer  
7 here.

8 MR. NEEDLEMAN: Did it change  
9 materially?

10 MR. FABISH: I think that you should  
11 compare the two. And, yes, it did change materially.

12 CMSR. HONIGBERG: Mr. Needleman, while  
13 they're looking for a copy of it, is there some -- another  
14 topic you might want to cover with the witness?

15 MR. NEEDLEMAN: Sure.

16 BY MR. NEEDLEMAN:

17 Q. Let's go to Page 3 of your testimony again.

18 A. Okay.

19 Q. You summarize your testimony here by focusing on the  
20 particular environmental risks that you say PSNH should  
21 have considered in the Summer of 2008, is that right?

22 A. Yes. I have three broad categories I have there. And,  
23 that's what you're referring to?

24 Q. Yes.

[WITNESS: Sahu]

1 A. Items 1, 2 and 3, yes.

2 Q. Yes. And, then, on the top of Page 10 of your  
3 testimony, you sort of summarize your ultimate point by  
4 saying that, if they had properly considered these  
5 risks the way you view them, they would have concluded  
6 that their aging coal plants might not be viable, and  
7 they might not have made the capital expenditures they  
8 made. Is that essentially your testimony?

9 A. It would have influenced their decision. Or, you know,  
10 even if it hadn't influenced their decision, in my  
11 mind, they would have had a fuller record upon which to  
12 base their decision to move forward. They would have  
13 added to the fullness of the record, this is, of  
14 course, absent. That's what I was pointing to. So,  
15 one of the outcomes could have been what you mentioned.  
16 But, in my mind, I just wanted to see a fuller record,  
17 so that, to whatever decision was being made, was --  
18 had the benefit of including these upcoming costs.

19 Q. Were you here yesterday when Mr. Frantz testified?

20 A. No, I was not.

21 Q. Are you aware that it was Mr. Frantz's opinions that  
22 the threshold issue in this matter is first to  
23 determine whether or not the law in question was a  
24 mandate for PSNH to construct the Scrubber?

[WITNESS: Sahu]

1 A. I was not here, so I can't speak to what he said or  
2 didn't say, or what his opinions were.

3 Q. Based on all the work you've done in this docket, is  
4 that your understanding?

5 A. It's my understanding that there is a law passed by the  
6 Legislature that the Company has stated provided the  
7 reason why they proceeded with the Scrubber Project.

8 Q. And, would you agree with me that, if this Commission  
9 actually determines that it was a mandate that required  
10 PSNH to construct the Scrubber, that your testimony  
11 here is essentially irrelevant?

12 A. I can't speak to what the Commission might do, and I'm  
13 not a lawyer, so I can't really answer your question.  
14 I don't think it is irrelevant to consider upcoming  
15 large capital environmental costs when you're  
16 proceeding to incur and go deeper in the hole with that  
17 large capital expenditure on a project.

18 Q. Maybe you didn't understand my question. Let me try it  
19 another way. If, in fact, PSNH was under a mandate  
20 from the Legislature to construct this Scrubber, --

21 A. I mean, can I clarify? Is that a hypothetical or is  
22 that -- how hard do you want me to take that?

23 Q. We'll call it a "hypothetical" for now.

24 A. Okay.

[WITNESS: Sahu]

1 Q. If PSNH was under a mandate pursuant to the statute to  
2 construct the Scrubber, then all of the environmental  
3 considerations you're talking about here have no  
4 relevance on going forward with that project, do they?

5 A. I disagree with that.

6 Q. Okay. Please explain why.

7 A. I'd ask you to clarify in your statement the question  
8 to me, you said "mandate to consider a scrubber",  
9 right?

10 Q. No, "mandate to construct the Scrubber".

11 A. How do you define "the Scrubber"?

12 Q. The project that was constructed at Merrimack Station,  
13 which is the subject of this docket.

14 A. So, you're saying that, in the hypothetical, the  
15 Legislature actually mandated that this particular  
16 scrubber, the wet scrubber, that is being -- that has  
17 been constructed was mandated? That is the  
18 hypothetical?

19 Q. That's exactly what I'm saying.

20 A. Because, as an engineer, you know, there are hundreds  
21 of different types of scrubbers, wet scrubbers,  
22 literally. So, I just wanted to be very sure if your  
23 question included this project as being the mandate  
24 from the Legislature.

[WITNESS: Sahu]

- 1 Q. Now that you understand my question, can you answer it?
- 2 A. I would say that it would still be highly relevant.
- 3 Q. If you were advising a potential buyer of Merrimack  
4 Station in the Summer of 2008, I assume you would have  
5 told them that they would need to think about all of  
6 these various environmental regulations that you've  
7 identified in your report and be concerned them,  
8 wouldn't they?
- 9 A. As part of due diligence, that's what buyers do, is my  
10 experience. I've been involved in several such  
11 matters. So, that's, yes, what I would have told them  
12 to do.
- 13 Q. And, I would assume that you would have told them, like  
14 you did on Page 10 of your testimony, that there are  
15 real concerns about the future viability of this plant,  
16 given what you perceive to be these large compliance  
17 costs, isn't that right?
- 18 A. Well, what I have -- if you recall, that's a slight  
19 distortion of what I answered you a few minutes ago.  
20 Which is, you would include them in your analysis, you  
21 know, your financial spreadsheet, if you will, which is  
22 typically at the heart of these buying decisions, and  
23 you would see how the numbers came about or how the  
24 probabilities came about. You would consider them,

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[WITNESS: Sahu]

1 yes. As to how the outcomes play out, that depends on  
2 the specifics. Sure. That's part of due diligence.

3 Q. To be specific, you said that "its aging coal plants  
4 might simply not be viable due to the large capital and  
5 operating costs needed to bring them into compliance."  
6 That's your testimony.

7 A. And, that is my testimony. Absolutely, that is  
8 something I would be concerned about. And, if the  
9 numbers that go into the analysis prove me wrong, I  
10 would be fine with that. But I would, based on my  
11 experience, think that that is a highly likely outcome.

12 Q. And, given your experience and given that highly likely  
13 outcome on all of these issues that you would have  
14 identified for that potential buyer, you would agree  
15 with me that it therefore would have been pretty hard  
16 for PSNH to sell this plant in 2008, wouldn't it?

17 A. I can't say that. I mean, buyers have many different  
18 reasons for buying plants. I mean, as we heard this  
19 morning, I mean, there's energy revenues, capacity  
20 revenues, ancillary revenues. There's all kinds of --  
21 and people might want the land that the company is --  
22 you know, that the plant is based on. I mean, I've  
23 dealt with buyers who have all kinds of reasons for  
24 making their decisions. I don't know how a buyer would

[WITNESS: Sahu]

1 value each of the assets or the types of assets that  
2 PSNH or Merrimack presented to them.

3 Q. These issues that you've identified would certainly be  
4 significant burdens on a future buyer, wouldn't they?

5 A. Some -- they would have to consider these, yes. They  
6 would have to make their prudent decision on whether to  
7 buy the asset or not, having considered these costs and  
8 weighing them appropriately based on their context.

9 Q. You say in your prefiled testimony, and you testified  
10 earlier, that the critical time period here, from your  
11 perspective, is the Summer of 2008, is that right?

12 A. Yes. That's my view.

13 Q. Are you familiar with what a "least cost integrated  
14 resource plan" is?

15 A. Yes. I've dealt with several of those in other states  
16 and other commissions.

17 Q. In fact, you dealt with one here, didn't you? PSNH  
18 filed a Least Cost Resource -- Integrated Resource Plan  
19 with this Commission on September 30th, 2010.

20 A. Right.

21 Q. And, Sierra Club intervened in that docket, and you  
22 were a witness in that docket, weren't you?

23 A. I was.

24 Q. So, you've actually dealt with one here?

[WITNESS: Sahu]

1 A. Yes.

2 Q. And, that Least Cost Integrated Resource Plan is a  
3 forward-looking docket, isn't it? So, that 2010 plan  
4 looks forward over the next couple of years, is that  
5 right?

6 A. Any "plan", by definition, looks forward, yes.

7 Q. Are you aware that PSNH also filed one of those plans  
8 on September 30th, 2007?

9 A. I can't remember the dates and what all the different  
10 filings were. I'll take your word for it.

11 Q. Sierra Club actually didn't intervene in that docket,  
12 did it?

13 A. I'm not -- having been an expert, you'll have to -- I  
14 can't speak to what Sierra Club did or didn't do in  
15 which docket, I can't really answer that.

16 Q. Do you recall testifying in that 2007 docket? You  
17 didn't, did you?

18 A. I only testified once, in April of 2012, as Mr. Patch  
19 indicated.

20 MR. NEEDLEMAN: All right. I want to  
21 actually take a minute here, and we're going to mark --  
22 well, let's mark Sierra Club's response to PSNH Data  
23 Request Number 5 to start.

24 (Ms. Frazier distributing documents.)

[WITNESS: Sahu]

1 CMSR. HONIGBERG: This is "72".

2 (The document, as described, was  
3 herewith marked as **Exhibit 72** for  
4 identification.)

5 BY MR. NEEDLEMAN:

6 Q. And, I'll just ask you a question while it's being  
7 passed out. This data request refers to Page 3 of your  
8 testimony where, at the bottom, you state that "PSNH  
9 didn't consider that summary of risks" that you  
10 identified, is that correct?

11 A. Based on my review of everything I've seen, that's my  
12 opinion, yes.

13 Q. And, we asked you for the specific information that you  
14 were relying upon in order to make that assertion, and  
15 this is the response that was provided to us. And,  
16 essentially, well, we'll get to the second part, but  
17 the first part you said that you don't see documents in  
18 the record indicating that PSNH considered the risks  
19 that you identify, is that right?

20 A. That's what I looked for. I looked for how these  
21 future environmental costs would have been priced and  
22 included with whatever probabilities into the analysis.  
23 And, I didn't find them, except in one instance, I  
24 found one cost for a cooling tower for \$30 million.

[WITNESS: Sahu]

1 Q. And, so, you didn't look at all at the September 30th,  
2 2007 Least Cost Integrated Resource Plan, did you?

3 A. I was looking at this docket and all the materials that  
4 were here.

5 Q. Only this docket?

6 A. Well, the decision to move forward with the Scrubber or  
7 not was the subject of this docket and at this time  
8 period. So, if I understand your question, so, the  
9 Company had two parallel tracks? I mean, they were  
10 considering them for something else, but excluding them  
11 completely for the Scrubber Project? Is that what  
12 I'm -- I should take from your questions and try to  
13 answer accordingly?

14 MR. NEEDLEMAN: No. Let's look at this  
15 plan. Why don't we pass it around and mark it.

16 WITNESS SAHU: Sure.

17 (Ms. Frazier distributing documents.)

18 CMSR. HONIGBERG: This is going to be  
19 "73".

20 (The document, as described, was  
21 herewith marked as **Exhibit 73** for  
22 identification.)

23 SP. CMSR. IACOPINO: Thank you.

24 MR. NEEDLEMAN: Sorry it's such a big

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1 exhibit, but I wanted to make sure it was complete.

2 WITNESS SAHU: At least it's not  
3 double-sided.

4 MR. NEEDLEMAN: It is double-sided.

5 MS. CHAMBERLIN: No.

6 WITNESS SAHU: Not my version. Then,  
7 I'm missing every other page then.

8 MR. FABISH: Not my version either.

9 MR. NEEDLEMAN: Ah. Okay. I apologize.

10 BY MR. NEEDLEMAN:

11 Q. So, let's look at this document for a minute. This  
12 cover page states it was prepared on "September 30,  
13 2007", is that right?

14 A. That's what the cover page says, yes.

15 Q. Right. And, as we already talked about, this is a  
16 forward looking docket. So, this would cover three  
17 years looking forward from 2007, is that right?

18 A. Right.

19 Q. So, it would actually cover the period of the Summer of  
20 2008, which you testified earlier is the critical  
21 period from your perspective, is that right?

22 A. Right.

23 Q. And, having been prepared on September 30th, 2007, it  
24 was prepared more than a year after the Scrubber Law

[WITNESS: Sahu]

1 was actually passed, isn't that correct?

2 A. I'll take your word for it. I don't know when the  
3 Scrubber Law was actually passed.

4 Q. And, shortly after the Scrubber Law was passed, PSNH  
5 began planning for the implementation and construction  
6 of the Scrubber, isn't that right?

7 A. I presume so.

8 Q. So, this document was prepared right when they were in  
9 the early stages of all of that planning, isn't that  
10 correct?

11 A. I mean, you just showed me the date. So, I think the  
12 planning probably began sometime prior to September of  
13 2007. I don't know when the planning began or when the  
14 planning was initiated. But all I can say is the  
15 output of that planning was this document in September  
16 of 2007. They could have started this three years ago,  
17 for all I know, in 2004 or '05 or '06.

18 Q. Now, on Page 3 of your testimony, when you summarize  
19 the areas that you're focusing on, broadly speaking,  
20 you look at three different areas. You look at "air  
21 quality regulations", "water quality regulations", and  
22 then what you called "climate-related regulations",  
23 which I think we could agree are sort of a subset of  
24 air that's primarily focused on carbon dioxide, is that

1 right?

2 A. Yes. It's the greenhouse gas part of the air quality.  
3 So, you can think of them as local air quality,  
4 regional air quality, or global air quality, correct.

5 Q. So, let's turn to Page 107 of this document.

6 A. Okay.

7 Q. And, up at the top, the title is "An assessment of Plan  
8 Integration and Impact on State Compliance with the  
9 Clean Air Act Amendments of 1990". I mean, with the  
10 understanding that that's the federal Clean Air Act of  
11 1990?

12 A. Right. Right.

13 Q. And, then, the heading underneath talks about what the  
14 section is going to cover, and it specifically talks  
15 about the Company's compliance with those 1990 Clean  
16 Air Act Amendments, is that right?

17 A. Well, I didn't read what is written here, but I think I  
18 see a description of some of the discussion about the  
19 Act's requirements, yes.

20 Q. Well, you should certainly take the time to read this,  
21 if you need to. And, if I'm moving too quickly, please  
22 ask me to stop.

23 A. Sure. I'll ask you for more time as I need it.

24 Q. Okay. So, going down on Page 107, there is a heading

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1 which is called "Section B. Emissions Policies at the  
2 Federal Level". And, then, that second paragraph talks  
3 about a variety of requirements that the Clean Air Act  
4 has imposed on the electric power industry. Do you see  
5 that?

6 A. Correct.

7 Q. It talks about "SO2 emission levels", which is sulphur  
8 dioxide, is that correct?

9 A. It talks about "sulphur dioxide emission levels", yes.

10 Q. It talks about "NOx", which is oxides of nitrogen, is  
11 that correct?

12 A. That's right.

13 Q. It talks about "hazardous air pollutants" there,  
14 "including mercury", is that correct?

15 A. That's correct.

16 Q. And, it talks about "future control of particulate  
17 emissions", which is another type of air emission, is  
18 that correct?

19 A. That's another pollutant, yes.

20 Q. And, then, we go all the way over to the bottom of  
21 Page 108. And, that last paragraph talks about -- it  
22 says "In addition to future regulations being  
23 implemented", so, that's forward-looking, is that  
24 right?

[WITNESS: Sahu]

1 A. Uh-huh.

2 Q. It talks about a variety of additional air regulations  
3 that the Company is looking at. And, for example, it  
4 says "there are several bills being considered, which  
5 regulate NOx, SO2, and mercury under a national cap and  
6 trade program." You see that?

7 A. Yes.

8 Q. And, it specifically says right afterward, "two of  
9 those bills also include carbon dioxide", is that  
10 right?

11 A. I see that.

12 Q. Over to the next page, Page 109.

13 A. Yes.

14 Q. It talks about now state level activities. And, that  
15 second paragraph there talks about New Hampshire  
16 specific air regulations, do you see that?

17 A. I do.

18 Q. And, it talks about, again, "SO2", "nitrogen" --  
19 "oxides of nitrogen", "mercury", and "carbon dioxide",  
20 is that right?

21 A. Yes.

22 Q. And, then, if you go down to the second to last  
23 paragraph at the bottom there, it starts to talk about  
24 these things called "CO2 allowances". Do you know what

[WITNESS: Sahu]

1 "CO2 allowances" are?

2 A. Well, yes, I know what allowances are. Sure.

3 Q. What are they?

4 A. They're basically the right to emit a certain amount of  
5 that pollutant.

6 Q. And, in that paragraph, it talks about PSNH being  
7 allocated certain amounts of allowances, including here  
8 it says "[over] 5 million tons of carbon dioxide  
9 allowances", is that right?

10 A. Right.

11 Q. Over to the bottom of Page 110 please.

12 A. Yes.

13 Q. I want you to look at that last paragraph. The first  
14 sentence talks about a subgroup of PSNH's Generation  
15 management team meeting annually to set strategic goals  
16 for the Company, you see that?

17 A. Yes.

18 Q. And, then, it talks later on about "eight to ten  
19 meetings throughout the year of an emissions management  
20 team", do you see that?

21 A. Yes.

22 Q. It talks about that team meeting to "make tactical  
23 decisions to achieve the goal of complying with  
24 emission regulations in a cost-effective manner", do

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1           you see that?

2   A.    Yes.

3   Q.    So, thus far, everything that I've identified so far is  
4           nothing you considered when you wrote your report, is  
5           that right?

6   A.    No.  That's not true.

7   Q.    Well, I thought you testified that you didn't consider  
8           this document?

9   A.    No, I didn't consider this document.  But I've learned  
10          nothing new from everything you've taken me through in  
11          the last 15 minutes.

12  Q.    Okay.  Let's keep going then.

13  A.    Sure.

14  Q.    Let's turn to Page 121.

15  A.    Okay.

16  Q.    So, now, we're getting more specific about  
17          environmental regulations.

18  A.    Okay.

19  Q.    The very first sentence there says "as environmental  
20          regulations become more stringent", so, that's  
21          forward-looking again, isn't it?

22  A.    Yes.  I've considered that this plan is supposed to be  
23          forward-looking.  So, I think I'll agree with you, when  
24          the word "future" is mentioned, that it's

[WITNESS: Sahu]

1 forward-looking. We can dispense through some time  
2 here.

3 Q. Sounds good. And, then, under heading  
4 "A. Environmental Regulations & Initiatives", that  
5 first sentence talks about "PSNH continually monitoring  
6 federal and state environmental regulations and  
7 legislative initiatives to determine their impact on  
8 their fossil assets." Do you see that?

9 A. That's not a surprise to me. I do see that.

10 Q. Okay. And, then, further down in that same paragraph,  
11 in A, it talks about various programs, "Acid Rain  
12 Program". That's a federal air program, is that right?

13 A. From the mid-'90s, yes.

14 Q. "Ozone Transport Region", that relates to the federal  
15 Clean Air Act, is that right?

16 A. Yes.

17 Q. "Clean Air Mercury Rule", again, federal Clean Air Act,  
18 is that right?

19 A. Correct.

20 Q. "New Hampshire Clean Power Act", that's a state level  
21 law that we looked at before, which includes CO2, is  
22 that right?

23 A. Yes.

24 Q. And, the "Clean Air Interstate Rule", another federal

[WITNESS: Sahu]

1 level law, is that right?

2 A. They're monitoring all of this stuff all the time, yes.

3 Q. And the "Clean Water Act", the first time we've seen  
4 that, is that right?

5 A. They're monitoring the Water Act as well.

6 Q. And, now, we go down to "A.1" there, I'm not going to  
7 read any of this, but there's a full page talking about  
8 specifically sulfur dioxide, isn't there?

9 A. Yes, a full page. I will agree with you.

10 Q. And, you go over to the next page, there's almost a  
11 page and a half talking about nitrogen oxide, is that  
12 right?

13 A. Yes.

14 Q. And, then, looks like almost more than two full pages  
15 talking about mercury regulation, is that right?

16 A. It's a good description of all these programs, correct.

17 Q. And, carbon dioxide, again, page and a half talking  
18 about carbon dioxide regulation, right?

19 A. Let me get there. Okay. I see it, yes.

20 Q. And, when you look at the second paragraph from the  
21 bottom of Page 126?

22 A. Yes.

23 Q. Starts off by what PSNH anticipates with respect to  
24 future CO2 regulation in New Hampshire, doesn't it?

[WITNESS: Sahu]

1 A. You mean the reference to "RGGI"? Yes.

2 Q. Yes.

3 A. I see that.

4 Q. And, then, go to the top of Page 127.

5 A. I'm there.

6 Q. First full paragraph talks about the "New Hampshire  
7 Clean Power Act" and "PSNH earning bonus CO2 allowances  
8 that may be used to offset future emissions".

9 A. Right. I see that.

10 Q. Did you give any consideration in your report to bonus  
11 CO2 allowances that might be awarded to PSNH?

12 A. I was looking for how the Company would comply with  
13 future carbon regulations in the context of the  
14 Scrubber Project.

15 Q. And, the award of bonus CO2 allowances would be one way  
16 that they would comply, wouldn't it?

17 A. In what way? Systemwide? At Merrimack? You know, I  
18 just want to understand your question.

19 Q. Either way. The award of bonus CO2 allowances would  
20 help PSNH to comply with the requirements regarding  
21 carbon, wouldn't they?

22 A. It might be one way. But I can't say that that by  
23 itself will solve their carbon compliance targets.

24 Q. Okay. Are you aware of PSNH being awarded any bonus

[WITNESS: Sahu]

1 CO2 allowances beyond what the statute gave to them?

2 A. Which statute? The state statute?

3 Q. The state statute.

4 A. No, not as I -- I'm aware of no allowances at the  
5 federal level, no.

6 Q. In fact, the state statute is the only regulation  
7 regarding CO2 that's in effect at this time, isn't it?

8 A. At this time, yes. But I was talking about future  
9 federal carbon regulations.

10 Q. I know in 2008 you were focused looking forward. But  
11 I'm saying, even today, there is no federal carbon  
12 regulation, is there?

13 A. Well, there is a proposal out there.

14 Q. I understand that. There's no current regulation,  
15 though, is there?

16 A. Well, that's the difference. For planning purposes,  
17 there's a proposal out there, yes.

18 Q. And, there was a proposal in 2008 at the federal level,  
19 wasn't there?

20 A. I think there was.

21 Q. There were several.

22 A. There were various, yes.

23 Q. And, then, just the last thing in that paragraph on  
24 Page 127, before we get to water. It says "PSNH will

[WITNESS: Sahu]

1 monitor the development of legislation specific to the  
2 second phase in the CO2 cap." We've already talked  
3 about this.

4 A. Right.

5 Q. You acknowledge that. So, now, in the middle of Page  
6 127, we get to water issues. And, I think earlier on  
7 you were asked by CLF's counsel "wouldn't you expect  
8 PSNH at that time to have monitored developments  
9 regarding water pollution laws?" And, you said you  
10 would have expected them to, is that right.

11 A. Yes.

12 Q. And, in fact, let's look at what they were doing here.  
13 First of all, we talk about Section 316(a), which deals  
14 with thermal discharges. And, it describes what we've  
15 heard a lot about, which is the reissuance of the  
16 Merrimack permit, is that right?

17 A. The NPDES permit, correct. Yes.

18 Q. And, at the bottom of the page, it talks about PSNH's  
19 expectations with respect to how that permit would be  
20 issued?

21 A. Yup. Yes.

22 Q. And, it talks about them specifically projecting the  
23 way in which this program, this water program, may  
24 impact their future operations, doesn't it?

[WITNESS: Sahu]

1 A. Yes. And, if I read that correctly here, now that you  
2 pointed it out to me, at the top of Page 128 it says  
3 "cooling towers are the most costly compliance option,  
4 with estimates ranging from 15 million to 40 million."  
5 It doesn't say for which plant or which unit. And, I'm  
6 going to beg to differ with that cost estimate, because  
7 I saw a similar range of costs in Mr. Long's  
8 presentation to the Board for approval of the expanded  
9 Scrubber costs. And, it's pretty astounding.

10 Q. Sure. But you read my mind, that's the next place I  
11 was going to point you to. And, I recognize that you  
12 could differ with me, but reasonable people can  
13 disagree on this, can't they?

14 A. Well, you know, 15 million versus 200 plus million? I  
15 mean, I don't know if that's a reasonable disagreement.

16 Q. Look further down on Page 128. Now, we're into Section  
17 316(b).

18 A. Yes.

19 Q. There's a long discussion here of the applicability of  
20 this, which we've also heard previous testimony about  
21 as it relates to PSNH's water permit. And, there's a  
22 really good description here of how there was an appeal  
23 in January of 2007 which slowed this whole process  
24 down, isn't there?

[WITNESS: Sahu]

1 A. There's a discussion of the appeal in June 26, 2007. I  
2 see that, yes.

3 Q. Well, actually, at the very bottom of Page 128, there's  
4 a sentence that begins "PSNH expects to demonstrate  
5 that operation of the Station's existing cooling tower  
6 intake structures had not resulted in [various] adverse  
7 environmental impacts." Do you see that?

8 A. But that's the point of discussion that was going on  
9 between the Company and the regulators, right.

10 Q. Exactly.

11 A. Correct.

12 Q. So, they are looking forward in trying to anticipate  
13 how water-related compliance will unfold, aren't they?

14 A. Well, I have not -- I have not -- maybe we're talking  
15 at cross purposes. I have not alleged that the Company  
16 was not aware of future environmental regulations.  
17 That they have staff, as Mr. Long said in his  
18 deposition, who are dedicated in generation or even in  
19 other parts of the NU system, monitoring future  
20 environmental legislation and regulations. I'm talking  
21 about translating all of those into budgetary costs  
22 when you make a decision of moving forward and aren't  
23 in the budget. They're quite different -- everything  
24 you've said so far and you've pointing me to is a good

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1 discussion about how they're monitoring different  
2 programs, how they were describing different things.  
3 By the way, there's no discussion of the "National  
4 Ambient Air Quality Standards" and how they evolve over  
5 time, but maybe that's buried in here somewhere, too.

6 Q. There actually is. We passed over them to make --

7 A. Okay. And, that's why I'm saying, that's why I'm  
8 considering it's probably in here somewhere. But I  
9 don't think -- that was my point. The point was, how  
10 do you bring that into a decision-making framework,  
11 when you're trying to spend hundreds of million dollars  
12 on a particular unit? They're just saying that "we  
13 know there's a law, we know there's something we're  
14 tracking. You know, we're talking to our regulators so  
15 we can read the regulations or the drafts." That is  
16 great. That's a necessary condition, but it's not a  
17 sufficient condition for project planning purposes.

18 Q. Well, I'm certain this document will speak for itself  
19 in the extent to which PSNH was planning. So, we  
20 certainly don't need to argue about it. Let's look at  
21 Page 129.

22 A. Sure.

23 Q. The top paragraph, right near the end, it says "PSNH  
24 cannot predict the outcome at this time", and then

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1 talks about what is likely. So, again,  
2 forward-looking, PSNH doing its best to account for  
3 these water regulations on its operations, is that  
4 right?

5 A. It's -- the only cost number that I have seen so far is  
6 the cooling tower costs of 15 to \$40 million,  
7 presumably systemwide, because this is not specific to  
8 Merrimack. But, besides that cost number for the  
9 cooling towers of 15 to \$40 million, everything you've  
10 pointed out to me I have not seen a single other  
11 translation of all these efforts of tracking and  
12 monitoring into what the fiscal impact might be at a  
13 particular station or on PSNH as a whole. That's what  
14 I was looking for.

15 Q. But you didn't quantify those impacts anywhere in your  
16 testimony, did you?

17 A. How could I quantify impacts where the utility has all  
18 the information? I could barely get an unredacted  
19 version of the report. I still don't have an  
20 unredacted version of the Jacobs report. And, you're  
21 asking me to project and what, get drawings and talk to  
22 vendors and do the assessments that the utility is  
23 supposed to do?

24 Q. You testified a moment ago that you disagreed with

[WITNESS: Sahu]

1           their assessment of the cooling tower costs, so you  
2           must have had some different number in mind?

3   A.   Yes.  I'll tell you how I -- exactly, it's a very  
4           simple number.  The Merrimack Station draws  
5           200,000 gallons per minute of cooling water.  That's  
6           the requirement.

7   Q.   And, so, you could come up with some sort of number for  
8           cooling towers based on that figure, right?

9   A.   Yes.  Of course.  I did.  That's why I'm saying it is  
10          grossly -- I think systemwide you're talking north of  
11          \$200 million.  Between the Merrimack Station, between  
12          what might be required of Newington, and between what  
13          might be required at the Schiller Units 4 and 6.  Yes,  
14          I can do those kind of things, based on relatively  
15          simple rules of thumb.  But it's not in the same  
16          ballpark of 14 -- or, 15 or \$40 million, or  
17          "\$30 million", as Mr. Long told his board.  Not even in  
18          the base case, in some low and high probability cases  
19          during time of the Scrubber Project go-ahead, when the  
20          cost had ballooned from \$150 million to \$450 million.

21   Q.   I want to go back to your summary on Page 3.

22   A.   Yes.

23   Q.   And, again, after listing all these risks, you say that  
24          the Company "did not consider these risks", referring

[WITNESS: Sahu]

1 to all of these different kinds of regulations that we  
2 just talked about. Do you stand by that testimony, in  
3 light of what we just went through with this plan?

4 A. Yes, and reinforces everything that my testimony,  
5 because I just said, and I'll repeat it, none of this  
6 was translated into budgetary considerations. This is  
7 what I was looking for. That's where the financial  
8 risk is. And, to the extent it was, in the context of  
9 cooling towers, I think that number is not credible.

10 Q. Are you aware of how the PUC acted with respect to this  
11 Least Cost Integrated Resource Plan?

12 A. The 2007? No, I don't know.

13 Q. Do you know whether they accepted it or not?

14 A. I have no idea.

15 Q. If they accepted it, would it change your testimony in  
16 any way?

17 A. No, it would not.

18 Q. Let's look at Mr. Long's deposition, which is  
19 Exhibit 27. I don't know if you have it up there?

20 A. Is it in one of the binders here? I don't need  
21 anybody --

22 MS. AMIDON: It should be.

23 WITNESS SAHU: Okay. I'll look for it.

24 MR. NEEDLEMAN: Why don't we take a

[WITNESS: Sahu]

1 minute.

2 WITNESS SAHU: Sure.

3 CMSR. HONIGBERG: Off the record.

4 (Brief off-the-record discussion  
5 ensued.)

6 CMSR. HONIGBERG: Let's go back on the  
7 record.

8 WITNESS SAHU: I think I have the  
9 deposition transcript.

10 MR. NEEDLEMAN: Okay. Great.

11 BY MR. NEEDLEMAN:

12 Q. I want to ask you a couple of questions about this.

13 And, again, it focuses on this issue of your testimony  
14 saying that "PSNH did not consider these various  
15 environmental risks." We've marked Data Request Number  
16 5 -- or, Data Request -- yes, Data Request Number 5 as  
17 "Exhibit 72". And, in that, where we asked you what  
18 you were relying on when you said that PSNH did not  
19 consider these risks, one of the things that you cited  
20 was Mr. Long's deposition?

21 A. Yes. I had read that deposition transcript then, and  
22 more recently, and that's correct.

23 Q. And, in there, you said "There's no indication that  
24 they considered the risks." Is that right?

[WITNESS: Sahu]

1 A. That's correct.

2 Q. And, actually, we're focused here on risks, not  
3 necessarily costs, but we'll talk about both of those.  
4 So, --

5 A. I just want to clarify, but "financial risk". I'm not  
6 talking about health risk assessments here. So, in  
7 this context, "risk" is the risk of proceeding with the  
8 Project from a financial standpoint.

9 Q. Let's go to Page 221 of Mr. Long's deposition. And,  
10 this is going to be a little challenging. I don't want  
11 to unfairly truncate things, but I'm going to focus on  
12 particular areas. And, if you need to read the  
13 material before that, then you should do that, okay?

14 A. Thank you.

15 Q. But, on Page 221, at the top, and I think all of these  
16 questions in this section are questions from your  
17 counsel, Mr. Fabish, who was questioning Mr. Long at  
18 the time. And, he was asking about the way in which  
19 the Company monitors and tracks regulations,  
20 environmental regulations. And, Mr. Long, at Line 5,  
21 said that "there's an environmental group within NU  
22 that monitors environmental regulations and  
23 compliance", and: They would also focus on developing  
24 rules." Do you see that?

[WITNESS: Sahu]

1 A. Yes. I see that.

2 Q. And, that's actually consistent with what we saw in the  
3 Least Cost Integrated Resource Plan, isn't it?

4 A. I think we're in agreement. I can make it simple.  
5 We're in agreement that the Company spent resources  
6 tracking regulations, transcribing the regulations in  
7 its various plans, and, in general, being aware of the  
8 regulations. I think we have a disagreement, I want to  
9 make it very pointed, disagreement of how all that  
10 benefited this go/no go decision-making when there are  
11 real financial risks. I mean, in the Scrubber Project  
12 context, there was no statements by the Company that  
13 said "we do not expect these future environmental  
14 regulations that our Northeast Utilities or the  
15 Generation Group is tracking to have any impact. There  
16 was not a negative statement there either. So, it was  
17 silent. And, to the extent it was not silent, it was  
18 only in the context of the cooling towers, with a  
19 ludicrously low capital cost number.

20 Q. Let's look at Page 224.

21 A. Sure.

22 Q. Again, your counsel was questioning Mr. Long. And, on  
23 the top of Page 225, he says "so, earlier you said that  
24 when doing environmental cost forecasting, draft rules

[WITNESS: Sahu]

1 aren't regarded." So, now, we're talking specifically  
2 about the issue that you've been focusing on, which is  
3 cost forecasting.

4 A. Right.

5 Q. And, after a slight back-and-forth, Mr. Long says  
6 "They're highly studied" and "they're monitored." Do  
7 you see that?

8 A. Yes.

9 Q. So, he's specifically talking about cost forecasting  
10 with respect to environmental rules, isn't that right?

11 A. But where is the beef? Where is that getting  
12 translated to actual use in these projects? For the  
13 third time, you know, the IRP that you pointed out to,  
14 in 2007, that preceded, you know, by eight or nine  
15 months, the decision of going forward on the scrubber  
16 in its expanded budgetary form did not have the costs.  
17 So, yes, I'm reading here and I'm trying to connect the  
18 dots. And, I'm saying "okay, so, we have people  
19 studying these things. We have people monitoring  
20 this." Great. We've established the necessary part of  
21 the necessary and sufficient requirement. And, then, I  
22 said "Great. So, there must be cost estimates? Where?"

23 Q. Let's go to Page 225?

24 A. Sure.

[WITNESS: Sahu]

- 1 Q. I'm sorry, we just did 225. Two twenty-six (226), 227.
- 2 A. I'm there.
- 3 Q. Again, at the bottom, Mr. Fabish asks about
- 4 environmental costs. This is aside from the Scrubber
- 5 Law. And, again, Mr. Long testified that those things
- 6 are considered, and he specifically talks about
- 7 assessing "sensitivities" with respect to "new
- 8 environmental rules", including "in the area of water".
- 9 Do you see that?
- 10 A. I think we looked at that very particular sensitivity,
- 11 that Mr. Patch just showed it to me, I think this was
- 12 on point I think exactly to what Mr. Long was talking
- 13 about. I mean, sensitivity and water rules with this
- 14 \$30 million cooling tower cost, which is there in the
- 15 sensitivity ranges.
- 16 Q. And, in fact, if we jump to 237, there is the testimony
- 17 that you were referring to earlier about the cooling
- 18 tower, isn't that correct?
- 19 A. Yes.
- 20 Q. Okay. And, he specifically talks about those cooling
- 21 tower costs, doesn't he?
- 22 A. Well, he says "That's not my number. I didn't derive
- 23 the number. I can't tell you." I'm reading at Lines
- 24 13 and 14.

[WITNESS: Sahu]

1 Q. But, as the president of the Company, you wouldn't  
2 expect him to derive the number, would you? You'd  
3 expect others under him to do that for him, would you?

4 A. That might be. But I'm responding to your question. I  
5 mean, he's discussing it, but I'm telling you how he's  
6 still discussing it. And, we saw that he had presented  
7 it to the RACC, and that was the same \$30 million  
8 number. And, you're right, he's at a much higher  
9 level, and he didn't know how the sausage was made.  
10 And, I can tell you that that cost is ludicrously low.  
11 And, I think the Company knows that it is low. I've  
12 seen other evidence that the -- that cost is woefully  
13 underestimated.

14 Q. So, it's your perspective that, as of the Summer of  
15 2008, that estimate, in your words, is "ludicrously  
16 low", is that right?

17 A. Yes.

18 Q. Okay. What evidence do you have to support that? What  
19 are you relying on to make that assertion?

20 A. I've looked at cooling tower costs for other types of  
21 industries for other clients, looking at cost estimates  
22 at other utilities. I mean, that would be an amazing  
23 cost, if we're to rely upon it to go off trying to buy  
24 cooling towers for this size plant, if that was the

[WITNESS: Sahu]

1 capital cost involved.

2 Q. We asked you for the basis of these things in our data  
3 requests. You didn't provide any information like  
4 that, did you?

5 A. Nothing specific. I hadn't done an assessment for  
6 Merrimack. Of course not.

7 Q. But I'm not asking you about Merrimack. I'm asking you  
8 now about your basis, and you're telling me you've done  
9 this for other projects.

10 MR. FABISH: Objection. If you're going  
11 to make claims that information has been requested, I  
12 think that we should -- we should drill down to specifics,  
13 if you want to make claims about specific data requests.

14 WITNESS SAHU: Yes. I don't recall the  
15 data request, but --

16 CMSR. HONIGBERG: Mr. Sahu, please.  
17 Mr. Needleman.

18 MR. NEEDLEMAN: Well, we'll get to that  
19 in a minute. I can do it now, if you want. But the  
20 witness was just testifying about his experience dealing  
21 with these projects elsewhere. So, I would like to hear  
22 what he's relying on to make that statement.

23 CMSR. HONIGBERG: I heard that. But you  
24 also said you made a data request in which -- and his

[WITNESS: Sahu]

1 response didn't include any of that information, and I  
2 think that's where Mr. Fabish jumped in. So, if there is  
3 a data request that you think he should look at, maybe now  
4 would be the time.

5 MR. NEEDLEMAN: Sure.

6 BY MR. NEEDLEMAN:

7 Q. Data Request Number 20.

8 A. I have it. If you could repeat the question.

9 CMSR. HONIGBERG: Wait just a moment.

10 WITNESS SAHU: I'm sorry.

11 (Ms. Frazier distributing documents.)

12 CMSR. HONIGBERG: So, that's

13 "Exhibit 74".

14 (The document, as described, was  
15 herewith marked as **Exhibit 74** for  
16 identification.)

17 CMSR. HONIGBERG: Mr. Needleman.

18 BY MR. NEEDLEMAN:

19 Q. Let's take it in two parts. First of all, let's look  
20 at Exhibit 74. And, I'm looking, in particular, at  
21 Question 20(c).

22 A. Okay.

23 Q. And, that one talks specifically about PSNH regarding  
24 future coal plants facing what you said were "further

[WITNESS: Sahu]

1 large regulatory costs", do you see that?

2 A. I do.

3 Q. And, we ask you to describe and quantify those costs  
4 for us?

5 A. Correct.

6 Q. You see that?

7 A. Yes.

8 Q. And, the response didn't do that, did it?

9 A. No, there is a response. I mean, I -- remember my  
10 previous answer, I didn't have all the documents to do  
11 a project cost estimate for you guys, for your client.  
12 I did not.

13 Q. So, you didn't -- you did not quantify those costs?

14 A. I did not quantify the costs for Merrimack. But, when  
15 I look at a cost like \$30 million, I'm an engineer, I  
16 can provide some context to it. Just because I didn't  
17 do a project-specific/plant-specific cost estimate,  
18 which your clients had all the information for, doesn't  
19 mean I can't judge a number that is out there that is  
20 so far out of the realm of all my other experience.

21 Q. So, let's focus on that for a moment.

22 A. Sure.

23 Q. Again, back to the question of whether or not these  
24 costs were supposedly "ludicrous estimates" in 2008,

[WITNESS: Sahu]

1 we've established that you didn't do any estimates of  
2 those costs with respect to Merrimack Station, is that  
3 right?

4 A. Yes.

5 Q. Now, with respect to other cooling tower projects that  
6 you had experience with as of 2008, comparable to  
7 Merrimack, what is your testimony about what those  
8 costs of those cooling towers would have been?

9 A. Look, EPA has been looking at cooling towers, and EPA  
10 has been gathering costs, talking to vendors, and I'm  
11 sure the various groups within your client's  
12 organizations have access to the same ones, they're  
13 typically \$300, \$350, \$375 per GPM capital cost, per  
14 gallon per minute. In a very gross way, without any  
15 more detail, just to get you in the ballpark. And,  
16 then, when you use that number -- let me finish -- when  
17 you use that number, a number in that range, and you  
18 use 200,000 GPM, which is roughly the kind of intake  
19 that Merrimack has. Now, that's publicly available. I  
20 think it's 287 million gallons per day, and it  
21 translates to about, if memory serves, about 200,000  
22 gallons per minute, you can come up with a ballpark  
23 cost estimate of where in the range of 70, \$75 million  
24 just at Merrimack Station. And, then, you add, you

[WITNESS: Sahu]

1 know, if you need to do that for the other plants, you  
2 have another potentially 400-megawatt plant in  
3 Newington, you have about 100 megawatts in Schiller 4  
4 and 6, it just didn't seem -- I was trying to see if --  
5 it's just an order magnitude analysis, and it didn't  
6 seem to fit.

7 Q. So, you were just able, sitting here on the stand, to  
8 do a ballpark estimate. Yet, when we asked you these  
9 questions, you couldn't answer them, because you said  
10 you didn't have adequate information.

11 CMSR. HONIGBERG: Wait, Mr. Sahu. Wait.  
12 Mr. Fabish.

13 MR. FABISH: I'd kind of like to object  
14 to this. I don't know where this is going. There was,  
15 you know, back early in 2014, PSNH and Sierra Club engaged  
16 in extensive discussions about discovery, discovery  
17 responses. Most of those were resolved, some of them were  
18 presented to this Commission, and ultimately decisions  
19 were made. And, I'm not sure exactly where this line of  
20 questioning is going now. But, if there could be some  
21 clarification on that, I think it would be appreciated.

22 CMSR. HONIGBERG: Mr. Needleman.

23 MR. BERSAK: To me, it's crystal clear.  
24 There are two issues here. Issue number one is they

[WITNESS: Sahu]

1 didn't provide cost estimates about what the impacts on  
2 Merrimack Station would be, despite the fact that he's  
3 testified to that, and now we see that he actually was  
4 capable, at least in general terms, ballparking those.  
5 And, now, issue number two, he's claiming that the costs  
6 are "ludicrous". So, I'd like to understand what his  
7 basis is for that. And, so far, all we've heard is  
8 general reference to EPA documents, and I was going to  
9 follow up on that if you permitted me to do it.

10 CMSR. HONIGBERG: Overruled.

11 BY MR. NEEDLEMAN:

12 Q. Let's talk about your general reference to those EPA  
13 documents. That wasn't my question. My question to  
14 you was, do you have personal experience installing  
15 cooling towers or estimating costs for the installation  
16 of cooling towers at coal-fired power plants in the  
17 2008 time frame?

18 A. I have to go back and see in the 2008 time frame what I  
19 had or not. But I've been dealing with cooling towers,  
20 just like I'm dealing with air pollution controls and  
21 water pollution controls at plants all throughout my  
22 career for the last 25 years.

23 Q. So, is that a "no"?

24 A. It's part of my general knowledge and background.

[WITNESS: Sahu]

1 Q. You list a whole series of regulations in your  
2 testimony that you say PSNH should have considered that  
3 you claim they didn't consider, is that right?

4 A. Yes.

5 Q. Now, you would agree with me that, if these regulations  
6 aren't actually applicable to PSNH, then they really  
7 wouldn't be relevant in your analysis, is that right?

8 A. Sure. I mean, if they are not relevant and not  
9 applicable, there's an analysis as to why they're not  
10 applicable, then you would show that analysis and say  
11 "That's why there is no need to consider it. That's  
12 why there is no financial impact." That makes sense.

13 Q. So, understanding whether or not they're applicable is  
14 actually an important component of your analysis, isn't  
15 that right?

16 A. Of my analysis?

17 Q. Yes.

18 A. The analysis of the Company did at the time or didn't  
19 do at the time that I was pointing out should have been  
20 done during the Scrubber Project in the middle of 2008.

21 Q. Let me try it a different way.

22 A. Sure.

23 Q. You have listed a series of environmental regulations  
24 in your analysis, and then you criticized PSNH for not

[WITNESS: Sahu]

1           adequately considering those regulations. My question  
2           to you is, if any of those environmental regulations  
3           that you list didn't actually apply to PSNH, then that  
4           wouldn't be relevant to this discussion, would it?

5   A.   And, I think I've answered the question. If, upon a  
6           showing of why that a particular regulation may not  
7           apply or doesn't apply, if that makes sense, sure. I  
8           mean, I'm not asking -- believe me, I'm not here  
9           wasting anybody's time asking for PSNH to -- no, let me  
10          finish. Can I --

11   Q.   Oh, absolutely. I'm not going to cut you off.

12   A.   Okay. Because I thought you were going to say  
13          something.

14   Q.   No.

15   A.   This is -- it's not a frivolous exercise in my mind. I  
16          thought these are actual, real environmental  
17          regulations that have costs attached to them that are  
18          coming down the pike that are foreseeable. And, they  
19          should have been vetted as part of, you know, not only  
20          spending the initial not-to-exceed \$250 million, but  
21          going ahead and spending potentially another  
22          \$200 million on top of it. It just makes sense to do  
23          that at that time. Even if it's been done at other  
24          times, that's another opportune time to revisit that

[WITNESS: Sahu]

1 question. And that I don't see, with all due respect,  
2 that kind of analysis.

3 Q. Oh, I understand. Thank you.

4 MR. NEEDLEMAN: Let's go mark another  
5 exhibit. The is Sierra Club's response to PSNH Data  
6 Request Number 13.

7 (Ms. Frazier distributing documents.)

8 CMSR. HONIGBERG: This is "75".

9 (The document, as described, was  
10 herewith marked as **Exhibit 75** for  
11 identification.)

12 BY MR. NEEDLEMAN:

13 Q. So, here we make reference to Pages 5 through 9 of your  
14 testimony, which is where you list all of these air and  
15 water requirements that we've been talking about now.

16 A. Right.

17 Q. And, then, we ask you, under 13(b), if they were  
18 "adopted in a manner that was applicable to Merrimack  
19 Station?" And, we were asking you that to get  
20 specifically to the question that I was just asking,  
21 which is, if they weren't applicable, then they  
22 certainly don't need to be considered as part of this  
23 analysis. And, would you look at the answer at the  
24 bottom of the page.

[WITNESS: Sahu]

1 A. At the very bottom?

2 Q. Yes.

3 A. Starting with "indeed"?

4 Q. Yes.

5 A. Okay.

6 Q. And, how did Sierra Club answer Question (b) here?

7 A. I think all the regulations that I've listed are  
8 potentially applicable.

9 Q. Right. But, Sierra Club, in response to that question,  
10 said that "it impermissibly calls for a legal  
11 conclusion", and you didn't answer, is that right?

12 A. I'm not a lawyer. I don't know what an "impermissible  
13 legal conclusion" is, but I can tell you this.

14 Q. Well, no. Hang on a minute. Hang on.

15 A. I can tell you my interpretation at least.

16 CMSR. HONIGBERG: Wait. Mr. Sahu, wait.

17 BY MR. NEEDLEMAN:

18 Q. Let me interrupt for a minute. We asked you this  
19 question. We asked you if the rules that you were  
20 citing and claiming that PSNH failed to consider were  
21 applicable to the plant? And, the answer we got was  
22 that "it's a legal conclusion", which means --

23 CMSR. HONIGBERG: Mr. Fabish. I'm  
24 sorry, Mr. Needleman. I didn't mean to interrupt you, but

[WITNESS: Sahu]

1 Mr. Fabish is going to object as soon as you're done. I  
2 just want to make sure we get there.

3 BY MR. NEEDLEMAN:

4 Q. And, the answer we got was that "it was a legal  
5 conclusion", and you didn't respond to it, is that  
6 correct?

7 CMSR. HONIGBERG: Mr. Fabish.

8 MR. FABISH: I'd like to object on the  
9 grounds that the question being asked, applicability, is  
10 purely a legal question. Dr. Sahu is a fact witness. I  
11 think it's entirely appropriate to, when asked, to explain  
12 how specific regulations apply in specific contexts. That  
13 is a legal conclusion being asked for and it's  
14 inappropriate for the discovery, and that's the grounds  
15 for the objection.

16 CMSR. HONIGBERG: I agree with what you  
17 just said, Mr. Fabish. Technically, the question Mr.  
18 Needleman just asked was "you didn't answer that question,  
19 did you?" I think that's a yes or no question that Dr.  
20 Sahu can probably answer. I'd be ecstatic if he could  
21 answer it "yes" or no.

22 MR. FABISH: I'll concede that.

23 CMSR. HONIGBERG: Dr. Sahu, do you  
24 understand the question?

[WITNESS: Sahu]

1 WITNESS SAHU: You know, English is my  
2 second language and I'm trying to keep up with you guys,  
3 but --

4 CMSR. HONIGBERG: I feel like I'm behind  
5 half the time, too.

6 WITNESS SAHU: Okay. I think I do.

7 CMSR. HONIGBERG: So, understanding the  
8 question is to confirm that you did not answer this  
9 question? That's correct, is it not? You did not answer  
10 this question?

11 WITNESS SAHU: Well, but in --

12 CMSR. HONIGBERG: Dr. Sahu, you did not  
13 provide an answer to Part (b), correct?

14 WITNESS SAHU: Without meaning to --  
15 just seeking a clarification, I mean, in the response  
16 there is references -- there is reference to (a), (c) and  
17 (d) is the question. But also it says "As to subpart (b),  
18 the question impermissibly calls for a legal conclusion."  
19 That is a response. I mean, it's present in the answer.  
20 So, it's been answered. It may not be to the satisfaction  
21 of counsel.

22 MR. NEEDLEMAN: I still don't think we  
23 have an answer here.

24 CMSR. HONIGBERG: Well, I think --

[WITNESS: Sahu]

1 MR. NEEDLEMAN: Can I try it a different  
2 way?

3 CMSR. HONIGBERG: I would be -- I would  
4 be delighted if you tried it a different way.

5 MR. NEEDLEMAN: Okay.

6 BY MR. NEEDLEMAN:

7 Q. Dr. Sahu, you cannot offer any opinion here today about  
8 the applicability of any of these requirements that  
9 you've identified on Pages 5 through 9, because to do  
10 so would be a legal conclusion, is that right?

11 A. In the way that the word "applicable" is mentioned  
12 here, that would be correct.

13 Q. All right. Page 6 of your testimony.

14 A. Sure.

15 Q. The middle of the page, one of these requirements that  
16 you talked about is "Regional Haze". Do you see that?

17 A. Yes. Yes.

18 Q. Have you done any work to assess the current compliance  
19 status of the plant with respect to issues like  
20 Regional Haze?

21 A. Well, I think, as I mention that here, one of the units  
22 Merrimack 2, was subject to what's called the "BART",  
23 the B-A-R-T, portion of the Regional Haze rules, and I  
24 acknowledge that there. And, I think there's a plan in

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1 place to satisfy the BART requirements, is my  
2 understanding.

3 Q. Are you aware of the fact that the Scrubber actually is  
4 the principal mechanism for complying with BART?

5 A. Well, BART deals with sulfur dioxide, nitrogen ox --  
6 oxides of nitrogen, as well as particulate matter. So,  
7 yes, it's my understanding that the sulfur dioxide  
8 portion of the BART requirements are met by the  
9 Scrubber, but there are pollutants as well. But, then,  
10 I go on to talk about other aspects of the Regional  
11 Haze Program that are upcoming or the Reasonable  
12 Further Progress rules, and so on, that will apply to,  
13 not just Unit 2, but also Unit 1, and other -- other  
14 units.

15 MR. NEEDLEMAN: I'll move to strike  
16 that. He can't testify about what will be applicable to  
17 Merrimack Station. We just established that.

18 CMSR. HONIGBERG: Mr. Fabish.

19 MR. FABISH: There's a big difference  
20 between the question which was asked in the discovery  
21 request, in which Mr. Needleman was discussing just now,  
22 as to whether or not a law ultimately is tested in court,  
23 court, applicable one way or the other, and the question  
24 of risk of applicability, which is what Mr. Sahu's

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1 testimony speaks about, it's about risk and planning.

2 MR. NEEDLEMAN: Seems like a distinction  
3 without a difference to me, if you're not qualified.

4 MR. FABISH: I don't think so at all. I  
5 don't think so at all. I think that --

6 CMSR. HONIGBERG: We'll let the answer  
7 stand.

8 BY MR. NEEDLEMAN:

9 Q. Page 5 of your testimony you talk about, the bottom of  
10 the page, "National Ambient Air Quality Standards".  
11 Those are federal air quality standards under the Clean  
12 Air Act, is that correct?

13 A. That's correct.

14 Q. Are you aware of the fact that the Scrubber actually  
15 has largely helped PSNH to achieve compliance with  
16 certain of those standards in Merrimack Station?

17 A. Certain of which of the standards, I'm sorry,  
18 counselor, just to be specific?

19 Q. For example, SO2, hourly SO2.

20 MR. FABISH: I object to the question.  
21 Compliance with the NAAQS is -- these are air quality  
22 standards, one doesn't comply with them. Technically,  
23 requirements are promulgated by states in state  
24 implementation plans pursuant to National Ambient Air

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1 Quality Standards, based on the attainment status of the  
2 area in which a facility may exist. It's those plans that  
3 an entity can be in or out of compliance with. And, at  
4 this point in time, though there is an SO2 NAAQS and there  
5 is a non-attainment designation for the area including  
6 Merrimack, no state implementation plan has been  
7 promulgated yet.

8 So, the idea to -- to ask the question  
9 "compliance with those NAAQS" I think is overly broad and  
10 imprecise. And, I would ask for a clarification of that  
11 question.

12 CMSR. HONIGBERG: Mr. Needleman.

13 MR. NEEDLEMAN: I'll clarify it.

14 BY MR. NEEDLEMAN:

15 Q. Dr. Sahu, isn't it correct that hourly SO2 limits are  
16 applicable to certain --

17 MR. NEEDLEMAN: Well, actually, I'm not  
18 going to ask that, because he can't answer it. I'll skip  
19 over it.

20 WITNESS SAHU: Good save.

21 MR. NEEDLEMAN: Close call.

22 WITNESS SAHU: Yes.

23 MR. NEEDLEMAN: Let's mark another data  
24 response.

[WITNESS: Sahu]

1 (Ms. Frazier distributing documents.)

2 CMSR. HONIGBERG: This is "76".

3 (The document, as described, was  
4 herewith marked as **Exhibit 76** for  
5 identification.)

6 BY MR. NEEDLEMAN:

7 Q. In the middle of Page 9 of your testimony, after you  
8 ran through all of these environmental requirements,  
9 you say, in the middle, "Keeping in mind that the above  
10 is not an exhaustive list". Do you see that?

11 A. Yes.

12 Q. And, so, we asked you Data Request Number 17, and we  
13 should have referred there to "Page 9" of your  
14 testimony, not "eight", but I think you got the gist of  
15 it anyway. And, we ask you "what else did you have in  
16 mind, in addition to everything that you listed?" You  
17 see that?

18 A. Yes.

19 Q. And, you provided two other things. You provided  
20 effluent limitation guidelines" and "coal combustion  
21 residual regulations". Do you see that?

22 A. Yes.

23 Q. And, you said these are other things that we should  
24 have been considering, is that right?

[WITNESS: Sahu]

1 A. Correct. Other things that were affecting coal-fired  
2 power plants, and could affect the coal units at PSNH.

3 Q. As of the Summer of 2008, right?

4 A. Yes. Of course.

5 Q. And, with respect to effluent limitation guidelines,  
6 those guidelines still aren't final today, are they?

7 A. No. They are still in draft form.

8 Q. And, do you have any sense on the compliance status of  
9 Merrimack Station with those guidelines?

10 A. Well, other than what I heard, I mean, which is that  
11 you have primary and secondary treatment, and you're  
12 not discharging scrubber waste into the river.

13 Q. So, actually, they're in pretty good shape with respect  
14 to compliance, aren't they?

15 A. Well, I haven't done a full study. But I understand  
16 that wastes are being taken to the local POTW or Ws,  
17 and something is happening to them at that point.

18 Q. And, then, you also referred to the "coal combustion  
19 residual regulations". Can you very briefly summarize  
20 what those are?

21 A. It's basically what the fate of the ash, the bottom ash  
22 and the fly ash that you get when you burn coal, and  
23 how they are ultimately dealt with. You know, in some  
24 cases, they are sent for beneficial use or portions of

[WITNESS: Sahu]

1 it are sent for beneficial use. In some cases, they're  
2 landfilled or they're put into ash ponds. So, that's  
3 what I was referring to. And, EPA has plans to  
4 promulgate regulations for how they should be managed.

5 Q. And, that largely relates to facilities, coal plants  
6 that have impoundments that hold those, doesn't it?

7 A. Right, that does.

8 Q. And, Merrimack Station doesn't have those kind of  
9 impoundments and never did, is that right?

10 A. Merrimack Station doesn't. But these regulations might  
11 effect other of PSNH's. I just wasn't sure, when I  
12 wrote this, of what was -- how the ash was being  
13 handled at Schiller. And, again, that's why it doesn't  
14 appear in the body of my report. I mentioned these of  
15 interest to people that run coal-fired power plants.

16 Q. But this is not about Schiller, is it?

17 A. No. This particular thing is on Merrimack. But,  
18 clearly, these requirements are coming down. And, I  
19 don't know that -- how that ash is going to be managed  
20 in the future. I mean, there could be -- their plants  
21 could change.

22 Q. But we could agree that, in 2008, these regulations  
23 didn't apply, and, as we sit here today, they don't  
24 apply, is that right?

[WITNESS: Sahu]

1 A. Yes. I think that's probably correct. That, at  
2 Merrimack, those regulations should not apply.

3 Q. So, at the bottom of Page 9, after going through all of  
4 this, you say you see "no evidence that PSNH properly  
5 considered any of the above potential", and then you  
6 say parenthetically "(and now real) regulatory  
7 impacts". Do you see that?

8 A. Right.

9 Q. In fact, a lot these impacts aren't real, are they?  
10 For example, we've already discussed that there is no  
11 federal CO2 regulation, is there?

12 A. No. And, let me clarifying the context in which --

13 Q. What --

14 A. Well, I mean, --

15 Q. Go ahead.

16 A. I mean, the "potential (and now real)", meaning these  
17 regulations are real in the sense that they're at  
18 different stages of rulemaking, okay? And, it's not as  
19 though there is a future proposal or something like  
20 that. Some of these have been in rulemaking for many  
21 years. But I put "real" in the context that these  
22 regulations, while they may not be final in every case,  
23 are nonetheless real. And, that was the context in  
24 which I wrote "real". I think you're interpreting that

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1 as maybe "final", and I didn't mean "real" to imply  
2 "final".

3 Q. So, they're real proposals?

4 A. Yes. These rules are going to require investment by  
5 PSNH. I mean, the idea here, what I was focusing on,  
6 is are there likely to be additional environmental  
7 costs, besides the Scrubber Project, at the Merrimack  
8 Station. That was the idea. I mean, one of the  
9 answers could have been "no, this is the last project  
10 that PSNH would have to do at Merrimack, and it would  
11 solve all future environmental regulatory costs", and  
12 the answer would be "zero", and that's great. That's  
13 one of the outcomes. But, in the grand scheme of  
14 things, it seemed unlikely that that would be the  
15 answer, or certainly there was no support in the record  
16 to show that this is the last environmental project  
17 that the Company would have to do at Merrimack with  
18 significant capital costs. That's what I mean by  
19 "real".

20 Q. So, let me -- I think I can truncate this here and get  
21 this done pretty quickly. So, we can both agree that,  
22 as we sit here today, there are no real costs with  
23 respect to federal CO2 regulations, is that correct?

24 A. I don't know that I can answer that "no real costs". I

[WITNESS: Sahu]

1 mean, there's a federal CO2 regulation. How that's  
2 going to shape up in final form, I don't know. Is the  
3 Company incurring costs this year for CO2? Probably  
4 not. But will it? Is that a real cost from a planning  
5 standpoint? I believe that to be the case.

6 Q. So, you're testifying about the potential applicability  
7 and cost of future regulations. Is that what you're  
8 telling us?

9 A. Well, you're planning. You're planning to put more  
10 money into a large scrubber project, and that's the  
11 time to look at -- and, incidentally, part of the  
12 reason I bring up CO2 is very technical. It is not  
13 just CO2 that is being emitted by the plant day in and  
14 day out. The Scrubber, using white limestone, produces  
15 additional CO2, just by the nature of how the chemistry  
16 works. So, anyway, so, CO2 is of interest in my  
17 different ways in this context. And, those are real  
18 impacts.

19 Q. You've already testified there is no federal current  
20 CO2 regulation, I won't revisit that again. Regional  
21 Haze costs being real, you've already testified that --  
22 well, strike that. Regional Haze, the Scrubber has  
23 taken care of that. So, to the extent that there's a  
24 real cost, we're done with that, isn't that correct?

[WITNESS: Sahu]

1 A. How did you get that from my answer? There are many  
2 pollutants involved. The Scrubber perhaps has taken  
3 care of the BART requirements for MK2. Yes, that's  
4 what I said.

5 Q. Effluent limitation guidelines that you cite, in fact,  
6 that's not an issue today, and that cost is not real,  
7 is it?

8 A. I don't -- I can't answer that without understanding  
9 exactly what's going on to the POTWs and what liability  
10 and costs there is for the Company of how it's  
11 disposing of the waste. I just -- all I can tell you  
12 is you're directly discharging at the station to the  
13 river, is my understanding.

14 Q. And, coal combustion regulations, those costs aren't  
15 real today for Merrimack Station, are they? They don't  
16 apply, do they?

17 A. They don't apply today, based on how they're managing  
18 ash today. But that still leaves several others,  
19 cooling towers being a big one.

20 Q. So, with respect to cooling towers, you're aware that  
21 there is a Draft Permit for Merrimack Station right now  
22 with respect to the NPDES Permit, is that right?

23 A. Is that the draft in 2011 that I was just shown?

24 Q. Yes.

[WITNESS: Sahu]

1 A. Yes.

2 Q. And, in that Draft Permit, EPA did an assessment of  
3 what cooling tower costs would be, didn't they?

4 A. Can you point that to me? I mean, I have it right  
5 here.

6 Q. I don't recall where it is. I'm just wondering whether  
7 you recall that assessment?

8 A. I have seen this at some point, I haven't reviewed it  
9 recently. So, it would help if, for me to answer your  
10 question, if you can point to the costs that EPA thinks  
11 was required.

12 Q. I'm told it's Attachment D.

13 A. Oh, okay.

14 MS. CHAMBERLIN: I'm sorry, Attachment D  
15 to what?

16 WITNESS SAHU: To the Draft NPDES  
17 Permit?

18 MR. NEEDLEMAN: Yes.

19 WITNESS SAHU: I don't have Attachment D  
20 here.

21 SP. CMSR. IACOPINO: Are we talking  
22 about the Fact Sheet or the actual permit? I don't think  
23 we have the permit. We have comments, and we have  
24 the --

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1 MS. AMIDON: Fact Sheet.

2 SP. CMSR. IACOPINO: -- the Fact Sheet.

3 CMSR. HONIGBERG: Mr. Needleman, do you  
4 have --

5 MR. NEEDLEMAN: Nothing further.

6 CMSR. HONIGBERG: Okay. The Staff,  
7 Ms. Amidon, Mr. Sheehan?

8 MS. AMIDON: Thank you. Staff has no  
9 questions for this witness.

10 CMSR. HONIGBERG: Commissioner Iacopino?

11 SP. CMSR. IACOPINO: Thank you.

12 BY SP. CMSR. IACOPINO:

13 Q. First of all, I want to clear up something in my own  
14 mind. When you're talking about "cooling towers" in  
15 your testimony, you're talking about something that  
16 might be required in the future. You're not talking  
17 about part of either the primary wastewater treatment  
18 system or the secondary wastewater treatment system,  
19 correct?

20 A. Right. But I'm talking about how the thermal heat is  
21 discharged from the condenser part of the -- part of  
22 the steam cycle.

23 Q. And, my understanding is right now, as we speak, no  
24 cooling tower is required at -- or, no additional

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1 cooling tower, other than that's already been built, is  
2 required at the plant, is that correct?

3 A. Yes. If I understand correctly, there's no cooling  
4 tower right now at all.

5 Q. Okay.

6 A. They do once through -- they draw the cooling watter  
7 from the river, they put it through the condensers, it  
8 picks up the heat, and then I think they discharge it  
9 to Hooksett Pond and it goes up onto the riverbank  
10 again, about 9 or 10 degrees warmer than it came in.

11 Q. So, the cooling tower that the two of you argued about  
12 being somewhere between 30 million and I think 300  
13 million, is something that may be required in the  
14 future as a result of the passage of some future  
15 regulations on the federal level?

16 A. Well, yes. There are federal regulations in draft form  
17 that are talking about minimizing this thermal impact  
18 onto rivers and lakes from which power plants get their  
19 cooling water. And, one way to minimize that would be  
20 through installing cooling water. So, they don't have  
21 to put that much river water in, they can recycle that  
22 water in the cooling tower and minimize how much new  
23 water they bring in, make-up water they bring in.

24 Q. And, just so that I understand, what is the name of

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1 those draft regulations or potential regulations?

2 A. Oh, they are, I think, listed here. They are under  
3 Part 316, Clean Water Act, Part 316.

4 Q. Okay.

5 A. Part 316(a), I believe.

6 Q. Okay. Thank you. I just wanted to clear that up.

7 Now, my second question, you have discussed a lot about  
8 what the Company should have done. And, you've given  
9 us your opinion that they were imprudent in their  
10 planning, essentially, you know, because they didn't  
11 consider, in planning the construction of the Scrubber,  
12 if I understand your testimony correctly, they did not  
13 consider these potential federal regulations?

14 A. Right. And, particularly, the large capital costs that  
15 might come as a result of these federal regulations.  
16 And, I also mentioned the timing of when they should  
17 have considered it, when the Scrubber cost was known to  
18 get high.

19 Q. My question to you, though, is, as a Commission, how  
20 are we supposed to consider what might happen on the  
21 federal level? What is the outline that you would give  
22 us as to what we should do?

23 A. Sure.

24 Q. Because it seems to me that these regulations are not

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1 just going to affect this particular plant or this  
2 particular applicant, it may affect power plants across  
3 the country. So, as people have to make a decision on  
4 rates and on issues like prudence, how are we supposed  
5 to consider these potential regulations?

6 A. Commissioner, that's a great question. And, the only  
7 way I know is how others in your position are grappling  
8 with the same thing and dealing with the same issue.  
9 Which is, we are talking about uncertain futures. So,  
10 you deal with them through probabilities. You deal  
11 with them judgments and probabilities. And, you're  
12 essentially doing something like a Monte Carlo  
13 analysis. You're doing an analysis to say "what is the  
14 odds that I'm going to put a \$100 million investment to  
15 satisfy this rule?" You know, is it a 5 percent  
16 chance? Is it a 95 percent chance? Is it an  
17 80 percent chance? Using expert judgment, using the  
18 Company's judgment, I think it can be done. It's going  
19 to give you a distribution of outcomes, which deal with  
20 financial risk. In other words, there may be a  
21 2 percent chance that, you know, a billion dollars  
22 would have to be spent at this plant to comply with the  
23 rules. But there may be a 50 percent chance that  
24 another \$400 million may be spent, or whatever the

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1 numbers are. And, I think that, it's sort of this  
2 yes/no binary, okay? Or, our vision just stops,  
3 because something is not 100 percent certain, I think  
4 having that distributional risk would be, in my humble  
5 opinion, more helpful to you to make judgments, and you  
6 can weigh, you know, the age of the power plant and all  
7 the benefits it provides against these costs, and come  
8 up with something that makes sense from ratepayers.  
9 And, that's one way to do it.

10 Q. And, can you point me to any place where that's been  
11 done?

12 A. I have actual seen --

13 Q. By a regulatory body.

14 A. Okay.

15 Q. Not by a company, obviously.

16 A. I'll have to see. I know that Monte Carlo type of  
17 analysis have been submitted by companies to their  
18 regulatory agencies, whether they're PUC and other  
19 similar bodies. Everybody, as you correctly pointed  
20 out, there are, at least count, about 900 coal-fired  
21 units in the country, give or take, today. There were  
22 about 1,100 just about two years ago. And, they're all  
23 looking, not just as control costs, but control  
24 options, you know, repowering, conversion to other

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1 fuels, adding controls, looking at their capacity  
2 factors in the future, all of that, and doing these  
3 kind of analyses, recognizing that some of these rules  
4 might change. After all, the same companies who are  
5 dealing with this are also trying to influence the  
6 rules. So, they have an assessment, and this is the  
7 part that I don't understand. If you're commenting on  
8 rules, which I'm sure PSNH is doing, you have to have  
9 an idea of what it's going to cost you. How can you  
10 provide comments to a regulatory agency or push back or  
11 suggest changes, if you haven't done an assessment of  
12 how much fiscal impact it might have on you. So,  
13 that's -- the information I think exists, it is just  
14 not part of where I thought it would have played a  
15 valuable role in saying "are we going to do this on top  
16 of all the other things?"

17 Q. Doctor, in your opinion, what weight should we give to  
18 the fact that, I think it's 2008 is the year that we  
19 begin talking about here, it is now 2014, six years  
20 later, yet it appears that the Scrubber, as planned in  
21 2008 and as constructed, is in compliance, for the  
22 last, well, I think it had been since 2011 at least,  
23 been in compliance for three years, been in compliance  
24 with the laws that existed since 2008. How should we

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1 weigh that?

2 A. You mean the mercury -- the main reason the Scrubber,  
3 as I understand it, was constructed was to reduce  
4 mercury emissions. Is that what you're referring to?

5 Q. Right. But your -- but your testimony talks about  
6 other emissions as well. And, as I understand it,  
7 correct me if I'm wrong, is that the plant is not in  
8 violation of any of these federal regulations right  
9 now?

10 A. I have to caveat that, I mean, I really truly don't  
11 know the status with regards to the sulphur dioxide  
12 standard, which is a National Ambient Air Quality  
13 Standard. I just don't know. I haven't seen the  
14 analysis of the modeling analysis that would be  
15 required and all of that stuff. I just don't know  
16 that. I know their sulphur dioxide emissions obviously  
17 have gone down.

18 Q. Do you believe that, if the EPA found them to be in  
19 violation, we would know about it? They would have  
20 told us?

21 A. I don't want to go the record anywhere of telling what  
22 the EPA can and should not do. But they would --

23 Q. Well, isn't that a problem?

24 A. They would, at some point, tell them. But companies

[WITNESS: Sahu]

1 obviously want to be in compliance. I'm answering it  
2 as best as I know, which is it applies to the ambient  
3 air around the plant, and that air quality in the plant  
4 is not attaining that standard right now. But the  
5 process for that is not to come back to, you know, a  
6 particular source without them having to do a document  
7 or a state implementation plan, and that they would  
8 have to go through a process, you know, or DES has to  
9 go through a process, and then see who has to reduce  
10 anything more to bring it back into compliance.

11 Q. Did you just --

12 SP. CMSR. IACOPINO: I was going to ask  
13 him a follow-up.

14 BY SP. CMSR. IACOPINO:

15 Q. Are you meaning to suggest that there's something about  
16 the plant that's not in compliance as we speak?

17 A. No, no, no. I was merely saying that the National  
18 Ambient Air Quality Standard, which is an ambient  
19 standard, it really does not measure the stack of the  
20 plant.

21 Q. Understood.

22 A. So, that attainment status, whether the area around the  
23 plant meets that ambient standard or not, is one issue.

24 That drives, if it's not meeting the standard, which

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1 is, I believe, the case, then the state has to develop  
2 a plan for how to bring it back into attainment. That  
3 might require additional reductions from -- that's just  
4 how the ambient standard process works, your Honor.

5 Q. No, I understand the ambient standards part, but you  
6 just again said that you don't believe they're in  
7 compliance. And, I'm trying to --

8 A. The ambient part is not in compliance. I'm not saying  
9 that the power plant --

10 Q. Okay.

11 A. -- is contributing to that non-compliance. That's the  
12 analysis that I don't think has been done.

13 SP. CMSR. IACOPINO: All right. Thank  
14 you.

15 CMSR. HONIGBERG: I don't have any  
16 questions. Mr. Fabish, do you have any redirect?

17 MR. FABISH: Just one or two.

18 **REDIRECT EXAMINATION**

19 BY MR. FABISH:

20 Q. So, Dr. Sahu, Mr. Needleman and you engaged in a  
21 conversation about what Mr. Needleman referred to as  
22 "real costs" and what "real" --

23 (Court reporter interruption.)

24 BY MR. FABISH:

[WITNESS: Sahu]

1 Q. In your opinion, is it prudent planning by a utility to  
2 wait until a regulation is finalized on the books,  
3 realized, and applicable to a facility to begin  
4 planning for costs that might stem from that sort of  
5 regulation?

6 A. No. In my opinion, that's -- that's not right from a  
7 planning perspective. I mean, they can plan for  
8 compliance costs at that point. But, from a planning,  
9 you know, perspective, you're always looking at some  
10 probabilities.

11 Q. And, as a second question, does -- you're familiar with  
12 the proposed Draft NPDES Permit for Merrimack Station?

13 A. Yes.

14 Q. Okay. Does that Draft NPDES Permit call for reductions  
15 in discharges of cooling water consistent with what  
16 would be achievable by installation of the cooling  
17 towers?

18 A. I believe it does, yes.

19 MR. FABISH: I think that's it for me.

20 CMSR. HONIGBERG: All right. Then, I  
21 think, Dr. Sahu, you're done. You can step down. We'll  
22 take five minutes, come back at 3:30, and start with the  
23 next witness, who I think is going to be Mr. Chung? All  
24 right.

1 SP. CMSR. IACOPINO: Mr. Chairman,  
2 before we leave, can I make a record request of the  
3 Company to provide us with a copy of the draft NPDES  
4 permit? I don't believe we have that.

5 CMSR. HONIGBERG: I see nodding of --

6 MR. NEEDLEMAN: Yes. We'll provide it.

7 CMSR. HONIGBERG: All right. Do you  
8 want to reserve an exhibit for that?

9 SP. CMSR. IACOPINO: I guess we might as  
10 well. Be 77?

11 **(Exhibit 77 reserved.)**

12 MR. NEEDLEMAN: And, we may want to do  
13 it electronically, because it's very large.

14 SP. CMSR. IACOPINO: It's fine by me.  
15 You might want to check with the other parties.

16 CMSR. HONIGBERG: Why don't you have a  
17 discussion with Staff about the best way to accomplish  
18 that.

19 MR. BERSAK: Sure.

20 CMSR. HONIGBERG: And, we'll work it out  
21 that way, okay?

22 MR. NEEDLEMAN: Okay.

23 CMSR. HONIGBERG: All right. Now, we're  
24 adjourned.

[WITNESS: Chung]

1 (Recess taken at 3:25 p.m. and the  
2 hearing resumed at 3:35 p.m.)

3 CMSR. HONIGBERG: All right. We're  
4 going to go right till 4:00, but we really do need to end  
5 right then. So, we're not going to roll over. Plan on  
6 ending. So, Mr. Chung has already been called. So, will  
7 you swear him in please.

8 (Whereupon **Eric H. Chung** was duly sworn  
9 by the Court Reporter.)

10 CMSR. HONIGBERG: Mr. Bersak.

11 MR. BERSAK: Thank you, Commissioner  
12 Honigberg.

13 **ERIC H. CHUNG, SWORN**

14 **DIRECT EXAMINATION**

15 BY MR. BERSAK:

16 Q. Mr. Chung, could you start of by giving the Commission  
17 your full name.

18 A. Yes. My name is Eric Chung.

19 Q. Is it correct that you've earned a Bachelor's of Arts  
20 degree with Honors majoring in Physics from Harvard  
21 University, as well as an MBA in Finance and Economics  
22 from the University of Chicago Booth School of  
23 Business?

24 A. Yes.

[WITNESS: Chung]

1 Q. Can you tell us by whom you are employed?

2 A. Northeast Utilities.

3 Q. And, what is your title and your job responsibilities?

4 A. I am Director of Revenue Requirements for Massachusetts  
5 and New Hampshire for Northeast Utilities. I am  
6 responsible for all regulatory activity affecting the  
7 financial requirements of NU's operating companies in  
8 those two states.

9 Q. Have you previously testified before this Commission?

10 A. Yes.

11 Q. Prior to your employment with Northeast Utilities, did  
12 Mr. Robert A. Baumann hold your position at Northeast  
13 Utilities?

14 A. Yes, he did.

15 Q. And, is it correct that Mr. Baumann is now retired from  
16 NU?

17 A. Yes.

18 Q. On November 18, 2011, Mr. Baumann filed joint testimony  
19 with Mr. Smagula regarding the Scrubber Project, and  
20 that testimony was marked and admitted into the record  
21 of this proceeding as "Exhibit 1". Are you familiar  
22 with that testimony?

23 A. Yes, I am.

24 Q. And, that testimony includes certain attachments. Are

[WITNESS: Chung]

1 you familiar with those attachments?

2 A. Yes.

3 Q. Are you adopting that testimony that was previously  
4 marked as "Exhibit 1" during the temporary rate portion  
5 of this proceeding as part of your testimony here  
6 today?

7 A. Yes, I am.

8 Q. On June 15, 2012, did Mr. Baumann submit in this  
9 proceeding additional written prefiled direct testimony  
10 regarding the establishment of permanent rates for PSNH  
11 as a result of complying with the requirements of the  
12 Scrubber Law?

13 A. Yes.

14 Q. And, are you familiar, Mr. Chung, with what has been  
15 premarked as "Exhibit 13", which is a document entitled  
16 the "Prepared Testimony of Robert A. Baumann", which is  
17 three pages in length?

18 A. Yes.

19 Q. And, did that testimony include six attachments?

20 A. Yes, it did.

21 Q. Those attachments have been previously marked for  
22 identification as "Exhibits 13-"1 through "13-6". Do  
23 you have any corrections to any portion of Exhibit 13  
24 or its accompanying attachments?

[WITNESS: Chung]

1 A. No, I do not.

2 Q. Do you adopt that testimony that's included in  
3 Exhibit 13, along with its attachments, as your  
4 testimony for purposes of this hearing today?

5 A. Yes.

6 Q. Two years later on, July 11, 2014, did you submit  
7 written prefiled rebuttal testimony in this proceeding?

8 A. Yes, I did.

9 Q. What's been previously marked as "Exhibit 14" for  
10 identification in this proceeding is a document  
11 entitled "Rebuttal Testimony of Eric H. Chung", which  
12 is seven pages in length. Is that your written  
13 prefiled rebuttal testimony, Mr. Chung?

14 A. Yes. That was prepared under my supervision.

15 Q. Do you have any corrections to any portion of that  
16 prefiled rebuttal testimony?

17 A. No, I don't.

18 Q. And, that prefiled rebuttal testimony included two  
19 attachments, which has been previously identified as  
20 "Exhibits 14-1" and "14-2". Do you have any  
21 corrections to either of those exhibits?

22 A. No, I do not.

23 Q. Mr. Chung, could you please provide us with a short  
24 overview of your testimony.

[WITNESS: Chung]

1 A. Thank you. Yes, I have some brief remarks. My  
2 testimony focused exclusively on updating and  
3 presenting the Scrubber rate calculations, based on the  
4 assumption that PSNH's investments to comply with the  
5 Scrubber Law's mandate were deemed to be prudent. So,  
6 in my testimony, I updated those figures for rates  
7 effective January 1st, 2015, contemporaneous with  
8 adjustments to PSNH's Energy Service and stranded cost  
9 rates.

10 Staff had prepared similar rate  
11 calculations in the Direct Testimony of Mr. Mullen.  
12 The 1.47 cents per kilowatt-hour rate I propose for  
13 ongoing Scrubber costs is approximately 15 percent less  
14 than the 1.72 cents per kilowatt-hour that Mr. Mullen  
15 included in his direct testimony. While the two  
16 calculations are quite similar in structure, my number  
17 reflects more recent information than what appeared in  
18 Mr. Mullen's earlier testimony.

19 Because of the extended duration of this  
20 proceeding, the unrecovered costs of the Scrubber have  
21 grown since Mr. Mullen's testimony. And, Mr. Mullen's  
22 testimony of February 24th, 2012 in this proceeding,  
23 which was exhibit -- as a previous exhibit, he  
24 testified that "a lower temporary rate level will

[WITNESS: Chung]

1 result in a smaller initial impact to customers, but  
2 increased deferred cost, and, therefore, potentially  
3 higher total costs associated with the Scrubber  
4 Project". This Commission chose to -- end quote. This  
5 Commission chose to implement a temporary rate that was  
6 lower than the full Scrubber cost.

7 Furthermore, Mr. Mullen had anticipated  
8 that the temporary rate for the Scrubber would be in  
9 effect for a one-year period. And, in fact, that lower  
10 rate, which took effect on April 16, 2012, will have  
11 been in effect for a much longer time period than Mr.  
12 Mullen had anticipated, resulting in higher unrecovered  
13 deferred costs. As a result, in my testimony, I  
14 propose that a rate of 0.38 cents per kWh be approved  
15 to allow recovery of deferred costs over a seven-year  
16 period. This amount is seven-hundredths of a cent  
17 higher than the 0.31 cents per kilowatt-hour rates  
18 proposed by Mr. Mullen due to temporary rates being in  
19 place for a longer period of time than he anticipated.  
20 However, on a net basis, my overall proposed rate of  
21 1.85 cents per kWh is less than the 2.03 cents that Mr.  
22 Mullen had proposed.

23 Finally, as I stated in my prefiled  
24 testimony, PSNH will be finalizing the permanent rate

[WITNESS: Chung]

1 at the close of this docket. Ultimately, as with the  
2 ES and SCRC rates, the costs of the Scrubber will be  
3 fully reconciled as part of the routine rate-setting  
4 processes for Rate ES. Thank you.

5 MR. BERSAK: Thank you, Mr. Chung. Mr.  
6 Chung is available for cross-examination.

7 CMSR. HONIGBERG: Who's going to go  
8 first with Mr. Chung? Ms. Amidon.

9 MS. AMIDON: Mr. Frantz has a question,  
10 if I may allow him to direct that to Mr. Chung?

11 CMSR. HONIGBERG: Mr. Frantz.

12 MR. FRANTZ: Good afternoon, Mr. Chung.

13 WITNESS CHUNG: Good afternoon.

14 **CROSS-EXAMINATION**

15 BY MR. FRANTZ:

16 Q. I just really have one question I'd like you to  
17 address. You show on Attachment EHC-1, which is shown  
18 on Page 708 in the bottom right-hand corner, 32 million  
19 return on rate base. And, Mr. Mullen's attachment,  
20 which I adopted, SEM-14, has a different return on rate  
21 base, as a matter of fact, it's "38 million". Can you  
22 just walk us through the \$6 million difference between  
23 those two numbers?

24 A. If I understand your question, you're looking at EHC-1,

[WITNESS: Chung]

1           it's the line that says "Scrubber return on rate base"  
2           32, approximately 32 million?

3   Q.    Correct.

4   A.    And, subject to check, Mr. Mullen had "38 million", is  
5           that --

6   Q.    Yes.

7   A.    Okay. And, you're just generally looking for what the  
8           difference is?

9   Q.    Correct.

10   A.    Yes. We spoke to that in, give me one moment, I  
11           believe it's a response to TransCanada 6-259. And, we  
12           talked generally to the changes. In general, you know,  
13           we had got more updated figures than Mr. Mullen had. I  
14           think he was using the figures from the Docket 13-275.  
15           And, the projected return is different in our numbers,  
16           because -- primarily because I think there's an  
17           increase in deferred taxes that reduces the total rate  
18           base on the return that's calculated. So, a lower rate  
19           base would imply a lower return on rate base.

20   Q.    And, you also then updated the sales forecast compared  
21           to what was in SEM-14 also, correct?

22   A.    Yes. That's right.

23   Q.    And, can you state why you believe that that increased  
24           sales forecast was more appropriate than what's in

[WITNESS: Chung]

1 SEM-14 please?

2 A. Well, let's see if -- I'm going to look for SEM-14. If  
3 I'm recalling correctly, is that the migration number  
4 is at 52 percent?

5 Q. No, it's -- well, it's a sales forecast of "3.6 million  
6 megawatt-hours".

7 A. Okay. If you give me one moment, I'd like to see if I  
8 can just look at that number.

9 (Atty. Sheehan handing document to the  
10 witness ).

11 **BY THE WITNESS:**

12 A. Yes. I think, Mr. Frantz, again, Mr. Mullen used the  
13 numbers from the ES docket of 13-275, and we had  
14 updated numbers that we used at the time of our filing.  
15 I believe, subject to check, they reflect primarily  
16 different migration rates. But I think -- I think  
17 that's generally the cause of why the sales numbers are  
18 different. Just, in general, we feel we just have more  
19 updated numbers. Regardless, these numbers get updated  
20 at the end of this docket. So, I think we have to  
21 circle back regardless of the calculations.

22 MR. FRANTZ: Those are the only  
23 questions I have. Thank you.

24 CMSR. HONIGBERG: Does Staff have any

[WITNESS: Chung]

1 other questions for Mr. Chung?

2 MR. SHEEHAN: No, sir.

3 CMSR. HONIGBERG: Who's going to be  
4 next? Ms. Chamberlin.

5 MS. CHAMBERLIN: Thank you. Good  
6 afternoon.

7 WITNESS CHUNG: Good afternoon.

8 BY MS. CHAMBERLIN:

9 Q. The Merrimack plant doesn't run when its operating  
10 costs are more expensive than other plants serving New  
11 England. Is that a fair summary?

12 A. I think that's a fair summary.

13 Q. And, when there are less expensive market options, PSNH  
14 purchases power from the marketplace, correct?

15 A. That's generally correct.

16 Q. The lifetime of the Scrubber and the Merrimack plant is  
17 estimated at least through depreciation lives to be  
18 about 15 to 25 years, is that a fair characterization?

19 A. Yes. I think we use 25 years as our depreciable life  
20 of the Scrubber.

21 Q. And, Merrimack will be facing competitive pressure from  
22 the marketplace throughout that time period, correct?

23 A. I think we face a number of pressures. I think,  
24 certainly, those from competitors will be one of them.

[WITNESS: Chung]

1 I think just also existing in a volatile New England  
2 marketplace would be another one. But I would  
3 certainly agree that is one of them.

4 Q. And, when less expensive power supply becomes available  
5 to New England, whether from Hydro-Quebec or from  
6 somewhere else, that will affect Merrimack's ability to  
7 run, assuming its costs are higher than the less  
8 expensive power supply, is that correct?

9 A. Yes. It depends on a lot of factors. And, certainly,  
10 the advent of additional power, as you describe, would  
11 play in fact -- play a part in the price dynamics.

12 Q. And, PSNH has not sought from ISO-New England a finding  
13 that the Merrimack Station is required for reliability  
14 purposes, correct?

15 A. Well, that's not my area of expertise. So, I'm not  
16 sure.

17 MS. CHAMBERLIN: You don't know. Okay.  
18 That's all I have. Thank you.

19 CMSR. HONIGBERG: Mr. Patch or -- okay.

20 MS. GOLDWASSER: Hi, Mr. Chung.

21 WITNESS CHUNG: Good afternoon.

22 MS. GOLDWASSER: My name is Rachel  
23 Goldwasser. I'm an attorney at Orr & Reno. I'm here  
24 representing TransCanada.

[WITNESS: Chung]

1 BY MS. GOLDWASSER:

2 Q. A significant part of your job have is to analyze and  
3 develop rates for proceedings like this one, but also  
4 for energy service proceedings and things like that, is  
5 that right?

6 A. I'd clarify it's to oversee the preparation of the  
7 revenue requirement. Not so much to the rates side of  
8 things, but the revenue requirement that goes into that  
9 rate.

10 Q. Okay. And, that takes some -- I mean, here you're  
11 presenting testimony regarding specifically rates, is  
12 that right?

13 A. Yes.

14 Q. What information do you need to be able to develop a  
15 rate in a situation like this, for an energy service  
16 context? What are the variables you have to plug into  
17 the equation to figure out what the rate ought to be?

18 A. Is that at a general level you're talking about?

19 Q. Yes.

20 A. I take --

21 Q. Yes, I don't need the decimal points, but just at a  
22 general level.

23 A. Well, that's good, because I also don't have the  
24 decimal points. But, you know, this is true of this

[WITNESS: Chung]

1 rate, as well as the Energy Service rate, we developed  
2 a cost of service to calculate an overall rate. You  
3 know, in this case, there's an ongoing Scrubber rate  
4 that has different components of O&M and other  
5 variables, such as depreciation, return on rate base,  
6 *etcetera*.

7 Q. And, you need to know what your expected demand is  
8 going to be, is that right?

9 A. Yes. Depending on when the rate is calculated, it  
10 usually involves some sort of combination of actual and  
11 forecasted demand.

12 Q. And. As you just indicated in questions in response to  
13 Staff, PSNH has up-to-the-minute information or  
14 up-to-date information that other parties don't  
15 necessarily have?

16 A. I'm not sure I'd characterize it that way. We do have  
17 reporting requirements to this Commission for our load  
18 and our migration forecasts. We also report those  
19 numbers as part of the Energy Service filing. And,  
20 many of those -- all those reports that we submit to  
21 the Commission are available publicly. I don't -- I  
22 personally don't have up to the date such information,  
23 but, you know, certainly, we do track that.

24 Q. And, I don't think -- I'm trying to save time here,

[WITNESS: Chung]

1 recognizing that we have ten more minutes this  
2 afternoon. Mr. Baumann, in his testimony, he  
3 indicates, in RAB-4, I believe, that there's -- the  
4 "normal Scrubber rate level" is "1.1 cents per  
5 kilowatt-hour". Can you explain what "normal Scrubber  
6 rate level" means?

7 A. I think, by that expression, Mr. Baumann was referring  
8 to ongoing Scrubber costs. And, the equivalent of that  
9 in my Exhibit EHC-1 would be the 1.47 cents per  
10 kilowatt-hour.

11 Q. Great. Thank you. And, so, that's the rate going  
12 forward, without any prior unrecovered deferred  
13 Scrubber costs?

14 A. That's correct.

15 Q. And, why is there a difference between the June 15th,  
16 2012 rate and the rate that you're proposing today?

17 A. Yes, I believe we discussed that generally in a  
18 discovery response. But I'd say, generally speaking,  
19 it's the passage of time. Both in the numerator and  
20 the denominator, things change, sales expectations  
21 change, and also updated cost information gets  
22 reflected in later numbers. And, that will be the case  
23 when we go to true this up at the end of this  
24 proceeding.

[WITNESS: Chung]

1 Q. So, you indicate in your testimony, at Page 3, Line 17,  
2 that "The primary driver behind the increase in the  
3 ongoing Scrubber costs rate is lower projected sales  
4 due to increased migration since the development of the  
5 exhibits in the June 15th, 2012 testimony." Is that  
6 right?

7 A. Just make sure I'm with you. Can you give me a page  
8 and a line number again?

9 Q. Yes. Yes. It's Page 3 of your testimony, it's Bates  
10 Page 703. And, it's line 17 through 19.

11 A. Yes. Yes, I see that. That's what it says.

12 Q. And, that's still your testimony?

13 A. Yes.

14 Q. I'm going to provide you with a copy of Data Response  
15 6-258. I think that that might be the data response  
16 you were just referencing.

17 (Atty. Patch distributing documents.)

18 MS. DENO: Seventy-eight.

19 CMSR. HONIGBERG: This is "78".

20 (The document, as described, was  
21 herewith marked as **Exhibit 78** for  
22 identification.)

23 WITNESS CHUNG: I have it in front of  
24 me.

[WITNESS: Chung]

1 MS. GOLDWASSER: Great.

2 BY MS. GOLDWASSER:

3 Q. And, in the second sentence of that response, you  
4 indicate that "Migration assumptions are based on the  
5 most recent actual load data available at the time the  
6 rate adjustment analysis is prepared." Is that right?

7 A. Yes.

8 MS. GOLDWASSER: I have to send Mr.  
9 Patch walking again here, my apologies. I'm going to  
10 provide you with another data response. It's Data  
11 Response -- Doug, just make sure I handed you the right  
12 thing. Yes. Data Response 1-6.

13 (Atty. Patch distributing documents.)

14 CMSR. HONIGBERG: This will be "79".

15 (The document, as described, was  
16 herewith marked as **Exhibit 79** for  
17 identification.)

18 BY MS. GOLDWASSER:

19 Q. And, the question requests documents provided to  
20 elected or appointed officials in New Hampshire related  
21 to PSNH's position on the legislative action in the  
22 Scrubber Law in 2006, is that right?

23 A. That's what it says. I'll caveat that I wasn't with  
24 the Company at the time. But that is what it says on

[WITNESS: Chung]

1 the page.

2 Q. And, then, if you turn the page, it's a presentation  
3 that's dated "November 2005".

4 A. I see that.

5 Q. And, if you turn to what I believe is Bates Page 11,  
6 you'll see a chart. Are you with me?

7 A. Yes. I see it.

8 Q. Great. And, it's titled "Credit for CO2 Reductions  
9 Will Significantly Reduce Customer Cost". And, there's  
10 four lines. And, I know that they're not in color, so,  
11 let's just do our best to figure out what they are. I  
12 think we can probably agree. At the bottom, the key  
13 says "Mercury only" for one line; "High Case" -- "High  
14 Case SO2"; "Base Case SO2"; and "Low Case SO2". Do you  
15 see that?

16 A. Yes, I see that. I'll admit it's hard to make out  
17 which line is what. But maybe you can help me, if you  
18 have a specific line to look at.

19 Q. I'll do my best. The lawyer leading the spreadsheet  
20 person is -- I didn't mean to call you a "spreadsheet  
21 person", but the lawyer leading the numbers person is  
22 always going to be a problem. If you look at the top  
23 line, where it intersects with the first year of the  
24 program at about seven-tenths of a cent, I'm going to

[WITNESS: Chung]

1           posit to you that I believe that's the "mercury only"  
2           line.

3   A.    Okay.

4   Q.    Because this chart is an intent to show that the rates  
5           will be reduced if you include the savings from SO2.  
6           Why don't you take a look and decide if you agree with  
7           me about that.

8   A.    Yes.  I'm with you.  To be honest, I haven't seen this  
9           before.  So, we'll have to work together.  But it's  
10          also unclear to me what years 1 through 10 refer to.  
11          But, you know, let's keep going here.

12  Q.    I don't think we need to know what years those are for  
13          the purposes today.

14                   MS. GOLDWASSER:  And, maybe, actually,  
15   Mr. Chairman, this would be a fine time to stop, and then  
16   Mr. Chung can -- I'm looking at my clock and seeing it's  
17   3:56.  He can study this chart, and then we can resume  
18   with it when we call him back, or I can keep going here.  
19   It's up to you?

20                   CMSR. HONIGBERG:  That's a fine time to  
21   break.  I'll ask if anyone has a color version of this, it  
22   might make things just a little easier.  Although, I think  
23   Mr. Chung will be able to figure out what's what.

24                   WITNESS CHUNG:  Actually, probably not.

[WITNESS: Chung]

1 I should admit, I'm red/green colorblind. So, --

2 (Laughter.)

3 CMSR. HONIGBERG: Well, it will help the  
4 rest of us. No, that's fine. Let's break now. And,  
5 we'll come back on that cliffhanger. And, we're starting  
6 again, we'll be here for 9:00. I think you all will be  
7 here a little bit earlier, does that sound right? And,  
8 the plan tomorrow will be to finish Mr. Chung, and then  
9 move on to Dr. Stanton, is that correct?

10 MS. AMIDON: I would defer to Mr. Irwin.  
11 He may -- I don't know how much cross PSNH will have of  
12 Dr. Stanton, and whether she -- it would be better if she  
13 started first thing, I don't know.

14 CMSR. HONIGBERG: Well, let me ask it  
15 differently. Ms. Goldwasser, how much do you think you  
16 have for Mr. Chung?

17 MS. GOLDWASSER: Not a huge amount, but  
18 enough that I would not object to starting with  
19 Dr. Stanton, acknowledging that she's only available  
20 tomorrow, and then we can finish with Mr. Chung after  
21 we've done that.

22 CMSR. HONIGBERG: All right. Let's go  
23 off the record.

24 (Off-the-record discussion ensued.)

1 CMSR. HONIGBERG: All right. Thank you,  
2 all. See you tomorrow.

3 **(Whereupon the hearing was adjourned at**  
4 **3:57 p.m., and the hearing to resume on**  
5 **October 17, 2014, commencing at 9:00**  
6 **a.m.)**

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