

In The Matter Of:
DE 10-261 PUBLIC SERVICE COMPANY OF N.H.
Least Cost Integrated Resource Plan

April 4, 2012

SUSAN J. ROBIDAS, LCR
(603) 622-0068 shortprtr@comcast.net

- April 4, 2012
DE 10-261 PUBLIC SERVICE COMPANY OF N.H. Least Cost Integrated Resource Plan

Page 1

1 STATE OF NEW HAMPSHIRE
2 PUBLIC UTILITIES COMMISSION
3
4 April 4, 2012 - 1:20 P.M. DAY 1
5 Concord, New Hampshire AFTERNOON SESSION ONLY
6 RE: DE 10-261 PUBLIC SERVICE COMPANY OF NEW
7 HAMPSHIRE: Least Cost Integrated
8 Resource Plan
9 PRESENT: Chairman Amy L. Ignatius, Presiding
10 Commissioner Michael D. Harrington
11 Commissioner Robert R. Scott
12 Sandy Deno, Clerk
13 APPEARANCES:
14 Reptg. Public Service Co. of New Hampshire
15 Gerald M. Eaton, Esq.
16 Sarah B. Knowlton, Esq.
17 Reptg. TransCanada:
18 Douglas L. Patch, Esq. (Orr & Reno)
19 Reptg. Granite Ridge Energy:
20 Howard M. Moffett, Esq. (Orr & Reno)
21 Reptg. N.H. Sierra Club:
22 Arthur B. Cunningham, Esq.
23 Reptg. Conservation Law Foundation:
24 N. Jonathan Peress, Esq.

COURT REPORTER: SUSAN J. ROBIDAS, N.H. LCR NO. 44

Page 2

1 APPEARANCES: (C o n t i n u e d)
2
3 Reptg. Office of Energy & Planning:
4 Eric Steltzer
5 Joanne Morin, Director
6 Reptg. Residential Ratepayers:
7 Rorie E. P. Hollenberg, Esq.
8 Kenneth E. Traum
9 Office of Consumer Advocate
10 Reptg. PUC Staff:
11 Alexander F. Speidel, Esq.
12 George R. McCluskey, Electric Division
13
14
15
16
17
18
19
20
21
22
23
24

Page 3

I N D E X

1	WITNESS PANEL:	TERRANCE J. LARGE	
2		WILLIAM H. SMAGULA	
3		ELIZABETH H. TILLOTSON	
4		DAVID ERRICHETTI	
5			
6			PAGE
7	Cross-Examination by Mr. Cunningham		8
8	Cross-Examination by Mr. Peress		17
9	Cross-Examination by Mr. Speidel		87
10	Interrogatories by:		
11	Mr. Harrington		90
12	Mr. Scott		118
13	Chairman Ignatius		124
14	Redirect Examination by Mr. Eaton		155
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			

Page 4

E X H I B I T S

1	EXHIBITS		PAGE
2	Sierra Club 3	7/9/10 Letter to Ms. Roberge re: Haze Rule	16
3	CLF 1	2005-2011 Capacity Factor Charts	21
4	CLF 2	Record Request from PSNH to CLF re: underlying data for Schiller 4 and 6 capacity factor	33
5	CLF 3	PSNH Response to Data Request Q-CLF 02-003	39
6	CLF 4	10/25/11 RGGI annual report required by DES and PUC	46
7	CLF 5	PSNH response to Data Request CLF 01-003 from DE 10-160	53
8	CLF 6	PSNH response to TS-02 Q-Tech-002 from DE 11-215	61
9	CLF 7	PSNH response to CLF 01 Q-CLF-002	64
10	CLF 8	9/23/11 PSNH renewal permit	75
11	PSNH 5	Record Request re: Rate increase for Aug. 2009 and July 2011	154
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			

Page 5

1 PROCEEDINGS
2 CHAIRMAN IGNATIUS: Thank you,
3 everyone, for coming back promptly. We are
4 with Mr. Cunningham continuing
5 cross-examination.
6 Before we resume, is there
7 anything further on the possibly
8 confidential exhibit?
9 MR. CUNNINGHAM: Madam Chair,
10 Members of the commission, I've placed the
11 documents -- two sets of documents -- three
12 sets of documents on the rail. What it
13 includes is my letter asking for relief from
14 the confidentiality -- I got to get back --
15 asking for relief from the confidentiality
16 claim that PSNH entered and the ruling of the
17 Air Research Commission. And I would like
18 those marked as --
19 CHAIRMAN IGNATIUS: These have
20 been --
21 MR. CUNNINGHAM: -- exhibits,
22 both of them.
23 CHAIRMAN IGNATIUS: Well, before
24 we do that, have these been distributed to the

Page 6

1 parties?
2 MR. CUNNINGHAM: They have.
3 CHAIRMAN IGNATIUS: Looks like
4 the Clerk needs a set as well, if you have one
5 more set.
6 Mr. Eaton, do you have any
7 response?
8 MR. EATON: Yes. There's some
9 question of the credibility of the
10 November 3rd letter because it's signed by a
11 Robert Scott [laughter], but we're willing to
12 waive any more questions about that.
13 The letter dated November 22nd
14 from Mr. Cunningham is a request for an
15 extension of time, and it's dated after the
16 November 3rd, 2010 letter. So I think
17 it's -- that came from Mr. Scott. So I
18 don't know what the relevance of this letter
19 is, other than it looks like a pleading by
20 Mr. Cunningham, and then at the end, a
21 request to have more time to file written
22 comments, because by November 22nd, the
23 question of the document that we looked at
24 this morning had already been resolved.

Page 7

1 CHAIRMAN IGNATIUS: Well,
2 separate from these letters, do you -- Mr.
3 Eaton, do you know if the document we began
4 with, the June 7th -- I'm sorry.
5 MR. EATON: June 9th, 2010?
6 CHAIRMAN IGNATIUS: July 9th,
7 2010 document that says "confidential business
8 information," has that been no longer
9 considered confidential by PSNH?
10 MR. EATON: Yes, because of the
11 letter that says it's been placed into the
12 public record by DES.
13 CHAIRMAN IGNATIUS: All right.
14 If you, having seen the other documents, are
15 comfortable with it no longer being
16 confidential, is there even a need to put the
17 supporting information in?
18 MR. EATON: No.
19 CHAIRMAN IGNATIUS: All right.
20 Then why don't we -- I appreciate, Mr.
21 Cunningham, you tracking these down, because
22 it did help to resolve the question, and for
23 whatever assistance you got as well at PSNH,
24 Mr. Eaton. So why don't we keep the July 9,

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHER] Page 8

1 2010 letter in the packet of materials that
2 Mr. Cunningham may use, but he hasn't yet
3 introduced, and we won't need to mark the
4 supporting information. I don't think that
5 needs to be in our record.
6 MR. CUNNINGHAM: That's fine.
7 CHAIRMAN IGNATIUS: So, Mr.
8 Cunningham, further questions?
9 MR. CUNNINGHAM: Just a few more
10 questions.
11 CROSS-EXAMINATION BY MR. CUNNINGHAM (resumed)
12 Q. Mr. Smagula, when we broke for lunch, you
13 and I were discussing the EPA guidance --
14 the 2009 EPA Guidance on the Forward
15 Guidelines and so on. And your answer to
16 that data request was simply that PSNH does
17 not prepare analyses or scenarios based upon
18 possible regulatory rules or outcome, nor
19 has PSNH otherwise performed a request for
20 calculations.
21 What I'd like for you to do now, Mr.
22 Smagula, is take a look at the exhibit that's
23 included in the exhibit package entitled,
24 "Determination of Technology-Based Effluent

<p>[WITNESS PANEL: LARGE SMAGULA TILLOTSON ERRICHER Page 9</p> <p>1 Limits for the Flue Gas Desulfurization 2 Wastewater at Merrimack Station." 3 A. (By Mr. Smagula) Yes, I have that. 4 Q. And you're familiar with that document, 5 aren't you? 6 CHAIRMAN IGNATIUS: Mr. 7 Cunningham, we have an -- Mr. Eaton. 8 MR. EATON: Madam Chairman, this 9 is dated September 23rd, 2011, almost a year 10 after the Least Cost Plan was filed. So 11 therefore, I'm going to object that it be used 12 in cross-examination or admitted as an 13 exhibit, because it couldn't possibly be in 14 front of Mr. Smagula when he prepared the 15 Least Cost Plan. 16 CHAIRMAN IGNATIUS: I'm inclined 17 to agree with you. But Mr. Cunningham, a 18 response? 19 MR. CUNNINGHAM: Yes. I'd like 20 to ask just two subsequent questions that will 21 establish the relevance of this document. 22 CHAIRMAN IGNATIUS: All right. 23 But let's do it briefly. And I don't know how 24 to keep saying this to you. We're dealing</p>	<p>[WITNESS PANEL: LARGE SMAGULA TILLOTSON ERRICHER Page 11</p> <p>1 Information," and so on. 2 It's not your testimony, is it, that you 3 did no analysis prior to the submission of 4 that October 8, 2010 document? 5 A. (By Mr. Smagula) Excuse me. I'm reading this 6 paragraph carefully, and then I'll respond. 7 Q. Please do. 8 (Witness reviews document.) 9 A. (By Mr. Smagula) Would you repeat your 10 question? 11 Q. My question is: It's not your testimony, is 12 it, that you did no planning for the 13 scrubber effluent prior to the filing of 14 your Least Cost document? 15 A. (By Mr. Smagula) I think that was my 16 testimony. Yes, it was. 17 Q. And what, then, is this October 8, 2010 18 document that you filed with the EPA, if 19 that's not planning? 20 (Witness reviews document.) 21 A. (By Mr. Smagula) This is a response of Public 22 Service -- this is a response to informal EPA 23 request for supplemental information about the 24 scrubber. So as I --</p>
<p>[WITNESS PANEL: LARGE SMAGULA TILLOTSON ERRICHER Page 10</p> <p>1 with a planning process and filing made in 2 2010, so... 3 BY MR. CUNNINGHAM: 4 Q. Mr. Smagula, if you'd be good enough to look 5 at Page 4 of that document, under Subsection 6 1.4, the second paragraph. And I'll just 7 quote briefly, and I'd appreciate it if you 8 would read this paragraph. 9 "In 2009, PSNH began work on an 10 anti-degradation analysis under the direction 11 of NHDES." Do you see that language? 12 A. (By Mr. Smagula) Yes. 13 Q. And that analysis predated, did it not, the 14 filing of your Least Cost Plan? 15 A. (By Mr. Smagula)The beginning of that analysis 16 did, yes. 17 Q. Yeah. And then, on Page 5, first paragraph 18 on Page 5, and I'm quoting here in part, "In 19 response, PSNH submitted a document dated 20 October 8, 2010" -- just a little over a 21 week after your Least Cost Plan, entitled 22 "Public Service of New Hampshire, Merrimack 23 Station, Bow, New Hampshire, Response to 24 Informal EPA Request for Supplemental</p>	<p>[WITNESS PANEL: LARGE SMAGULA TILLOTSON ERRICHER Page 12</p> <p>1 Q. And did that -- 2 A. (By Mr. Smagula) And as I believe has been 3 mentioned before, a number of things proceed 4 in parallel. The Clean Power Act of New 5 Hampshire and the requirement of PSNH to 6 install a wet flue gas desulfurization system 7 was established in 2006. So the Least Cost 8 Plan efforts were proceeding in parallel with 9 the scrubber. But the scrubber was well 10 defined, well understood, and not something 11 that would be changing as part of the Least 12 Cost Plan. 13 Q. And was any information such as that 14 submitted to the EPA included in your Least 15 Cost Plan? 16 A. (By Mr. Smagula) I believe the -- well, like I 17 said, I'd have to check to see what was in the 18 Least Cost Plan regarding the need for a 19 scrubber. I mean, I believe that was 20 mentioned in there. 21 Q. Well, in particular here, I'm talking about 22 the treatment of effluent from the scrubber. 23 A. (By Mr. Smagula) Part of the design of the 24 scrubber had to -- part of the capital cost</p>

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Page 13

1 involved the installation of a
2 state-of-the-art wastewater treatment system,
3 which I think has -- which has been mentioned
4 to have been discussed with the DES, as far as
5 what the effluent would be and how that would
6 be -- that liquid effluent would be managed.
7 And that was ongoing in 2010. So, yes, there
8 were discussions with regard to treating
9 liquid effluent from the scrubber, the outcome
10 of which was concluded by the DES that the
11 effluent could be discharged to the river.
12 MR. CUNNINGHAM: I'd like to
13 mark that exhibit as the next New Hampshire
14 exhibit. I think it's 3.
15 MR. EATON: I think all it was
16 used for was to ask the witness those two
17 questions about -- on Pages 4 and 5, of
18 where -- whether we began work on an
19 anti-degradation analysis and whether we
20 submitted a report. The rest of the document,
21 again, is dated after the plan was filed;
22 therefore, it's not relevant.
23 CHAIRMAN IGNATIUS: Mr.
24 Cunningham, a quick response? I'll tell you,

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Page 14

1 I think that sounds -- the witness confirmed
2 both of the things you brought out. So it's
3 not in for questioning his credibility. And
4 I'm not sure what you get beyond what you've
5 already asked him and he agreed to.
6 MR. CUNNINGHAM: Well, one point
7 in that substantive information in that
8 document is cost information that obviously
9 was exchanged with EPA. And that's relevant
10 and was not included in the Least Cost Plan.
11 So --
12 CHAIRMAN IGNATIUS: But I'm not
13 sure that -- you asked him did he submit --
14 you asked him what he submitted, and he
15 answered it. Whatever this document says, why
16 is that relevant to your question about
17 whether or not he submitted information?
18 MR. CUNNINGHAM: It's planning
19 information that should have been included in
20 the Least Cost.
21 CHAIRMAN IGNATIUS: I'll deny
22 the request. It's dated 2011, and I don't
23 understand how the connection's been made.
24 Move on.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Page 15

1 MR. CUNNINGHAM: Just a few more
2 questions, Madam Chair. I would like the
3 information with respect to the Haze Rule
4 marked for identification and offer that into
5 evidence, which would be No. 4.
6 CHAIRMAN IGNATIUS: That is
7 which document?
8 MR. CUNNINGHAM: That's the one
9 that was claimed confidential.
10 CHAIRMAN IGNATIUS: The July 9,
11 2010 --
12 MR. CUNNINGHAM: Yes.
13 CHAIRMAN IGNATIUS: -- letter to
14 Ms. Roberge?
15 MR. CUNNINGHAM: Yeah.
16 CHAIRMAN IGNATIUS: You have a
17 question about it?
18 MR. EATON: Madam Chair, our
19 custom has been to mark exhibits for
20 identification so that they can be part of the
21 questioning. But I'm assuming that if -- at
22 the end of the proceeding there will be an
23 opportunity to object about whether certain
24 documents go into the record as evidence.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Page 16

1 CHAIRMAN IGNATIUS: As full
2 exhibits, yes.
3 MR. EATON: So I'm not rising
4 now, but that should come at the end.
5 MR. CUNNINGHAM: And I just have
6 one question about the document.
7 CHAIRMAN IGNATIUS: Certainly.
8 Let's mark it for identification as Sierra
9 Club 3.
10 (Sierra Club 3 marked for
11 identification.)
12 BY MR. CUNNINGHAM:
13 Q. And Mr. Smagula, with respect to the
14 document with respect to the BART Rule --
15 the original Haze BART Rule -- that
16 document -- in fact, there's a series of
17 documents there -- contains a cost
18 assessment of compliance with BART; does it
19 not?
20 A. (By Mr. Smagula) It contains some data with
21 regard to possible BART compliance costs that
22 were projected at that time, yes.
23 MR. CUNNINGHAM: I have no
24 further questions, Madam Chair.

<p>[WITNESS PANEL: LARGE SMAGULA TILLOTSON ERRICHETTI] Page 17</p> <p>1 CHAIRMAN IGNATIUS: Thank you. 2 Mr. Peress, I believe. 3 MR. PERESS: Thank you, Madam 4 Chair. 5 CROSS-EXAMINATION 6 BY MR. PERESS: 7 Q. If I may, I'd like to direct some questions 8 to Mr. Errichetti relating to the operations 9 of the -- I'm sorry -- the economics of the 10 generating assets as discussed in the plan. 11 And as I understand it, Mr. Errichetti, 12 your testimony is that you're the manager of 13 wholesale power contracts? Yes? 14 A. (By Mr. Errichetti) I am a manager in 15 wholesale power contracts. 16 Q. And that you are responsible for the bidding 17 and scheduling of PSNH generation assets to 18 meet energy service requirements? 19 A. (By Mr. Errichetti) I'm administratively 20 responsible for that group, yes. 21 Q. And that you are actively involved in the 22 ISO-New England wholesale energy market; is 23 that correct? 24 A. (By Mr. Errichetti) I pay attention to it,</p>	<p>[WITNESS PANEL: LARGE SMAGULA TILLOTSON ERRICHETTI] Page 19</p> <p>1 schedules relating to the projected output 2 from the various Merrimack and Schiller 3 units; is that correct? 4 A. (By Mr. Errichetti) Yes. 5 Q. And those schedules generally are consistent 6 with the observation in the plan that these 7 are projected to run as baseload units; is 8 that correct? 9 A. (By Mr. Errichetti) That was what was modeled 10 in the plan, yes. 11 Q. I guess I'd like to explore whether that was 12 a sound planning assumption. Was it a sound 13 planning assumption? 14 A. (By Mr. Errichetti) At the time, yes. 15 Q. Did you review or otherwise prepare these 16 sections of the plan? 17 A. (By Mr. Errichetti) We modeled those resources 18 in general as baseload. And I did review 19 them, and that's what should be reflected in 20 Appendix, I believe it's D. 21 Q. And are you familiar with the capacity 22 factors at which these asset -- these units 23 are operating at the time? 24 A. (By Mr. Errichetti) At the time? You mean in</p>
<p>[WITNESS PANEL: LARGE SMAGULA TILLOTSON ERRICHETTI] Page 18</p> <p>1 yes. 2 Q. As part of your job responsibilities. 3 A. (By Mr. Errichetti) Yes. 4 Q. Could you please turn to Page 32 in 5 Exhibit 1, which is the plan, with reference 6 to the section that's marked C.2.4, 7 entitled, "Forecasted Dispatch Patterns for 8 the Fossil Fuel [sic] Units." 9 A. (By Mr. Errichetti) Yes. 10 Q. Six lines down there's a sentence that 11 begins, "In general," on the right side of 12 the page. 13 (Witness reviews document.) 14 A. (By Mr. Errichetti) Yes. 15 Q. That sentence reads, "In general, the 16 coal-fired and wood-fired units (Merrimack 17 and Schiller) are economic in all periods 18 and, thus, are assumed to operate as 19 baseload resources outside of planned 20 maintenance periods." Is that what the 21 sentence says? 22 A. (By Mr. Errichetti) Yes. 23 Q. And in the plan, what's marked as 24 Appendix D, the plan includes generation</p>	<p>[WITNESS PANEL: LARGE SMAGULA TILLOTSON ERRICHETTI] Page 20</p> <p>1 the summer of 2010? 2 Q. Yes. 3 A. (By Mr. Errichetti) Yes. 4 Q. I guess let's start with Schiller. Weren't 5 the capacity factors for Schiller Unit 4 6 steadily declining beginning in 2007? 7 A. (By Mr. Errichetti) No, I would not say that 8 in 2007 Schiller's capacity factor was 9 declining. I would say that the economics of 10 the coal units started to suffer more toward 11 the second half of 2008. 12 Q. So, your testimony is that at the 13 beginning -- or I'm sorry -- in the second 14 half of 2008, the capacity factor for 15 Schiller Unit 4 was declining? 16 A. (By Mr. Errichetti) When gas prices and oil 17 prices collapsed in the second half of 2008 18 and we had long-term coal commitments, 19 Schiller units and Merrimack units started to 20 be affected. 21 Q. Okay. I'd like to address this on a 22 unit-by-unit basis, if that's okay. 23 A. (By Mr. Errichetti) We'll see. 24 Q. For Schiller Unit 4, is it correct to say</p>

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 21

1 that the capacity factor between January 1,
2 2008 to January 1, 2009 declined from just
3 over 80 percent to just over 60 percent?
4 A. (By Mr. Errichetti) If you can give me a
5 reference that I could look at, I might be
6 able to confirm that. I don't know, off the
7 top of my head.
8 Q. I'd be happy to do that.
9 MR. PERESS: May I?
10 CHAIRMAN IGNATIUS: Please.
11 MR. PERESS: What we have just
12 passed out is a graphical representation of
13 capacity factors taken from public
14 documents -- that is, EPA Air Markets Program
15 Data starting in 2005 and Energy Information
16 Administration Form 860 data that's submitted
17 by PSNH on an annual basis.
18 CHAIRMAN IGNATIUS: Are you
19 asking that this be marked as an exhibit?
20 MR. PERESS: I am. CLF 01,
21 please.
22 CHAIRMAN IGNATIUS: All right.
23 Marked for identification.
24 (CLF 1 marked for identification.)

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 22

1 BY MR. PERESS:
2 Q. If you turn to the second to the last page,
3 that's the capacity factor data for Schiller
4 Unit 4. Would you please do that, Mr.
5 Errichetti?
6 A. (By Mr. Errichetti) I'm on the penultimate
7 page.
8 Q. Did the unit -- did Schiller Unit 4's
9 capacity factor decrease from just over 80
10 percent to just over 60 percent between 2008
11 and 2009?
12 (Witness reviews document.)
13 A. (By Mr. Errichetti) I don't know the voracity
14 of the values on this page. The general trend
15 I would say take into account economics and
16 maintenance and outages? Looks like the
17 general trend that was being seen. But I
18 can't attest to the voracity of values.
19 Q. Can you turn to the next page, which is for
20 Schiller Unit 6.
21 A. (By Mr. Errichetti) Yes.
22 Q. Subject to check -- that is, assuming that
23 the data properly represents the public
24 records in EIA Form 860 and the EPA Clean

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 23

1 Air Markets data -- would you agree that the
2 capacity factor for Schiller Unit 6 declined
3 from just over 80 percent in 2008 to just
4 under 60 percent in 2009?
5 A. (By Mr. Errichetti) With those caveats, and
6 also including any possible maintenance that
7 was going on, yes. I'm just trying to clarify
8 it's not just economics that's in here.
9 Q. We'll get to that. Thank you.
10 CHAIRMAN IGNATIUS: Mr. Peress,
11 just one clarifying question. On your
12 exhibits, where do the little demarcation
13 marks fit? For example: Looking at 2005, is
14 the hash mark to the right of the date, is
15 that the end of 2005?
16 MR. PERESS: Yes, it is.
17 CHAIRMAN IGNATIUS: All right.
18 A. (By Mr. Errichetti) I'm sorry. It's not the
19 midpoint. Like 2008, the data point isn't
20 just above 80 percent.
21 Q. So the 80 percent for Schiller Unit 6 would
22 be the middle of 2008.
23 A. (By Mr. Errichetti) Okay. I may have
24 misunderstood back and forth.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 24

1 Q. And going back to Schiller Unit 4, prior to
2 the plan being submitted, does the data
3 demonstrate that the capacity factor
4 continued to further decline between 2009
5 and 2010?
6 A. (By Mr. Errichetti) In the development of the
7 plan, we generalized the operation of the coal
8 and wood units to be baseload. There was no
9 rigorous economic analysis performed. And
10 that was -- we said that in requests, data
11 requests. So that's what we did.
12 Q. We'll get to that. I would appreciate it if
13 you would answer the question.
14 A. (By Mr. Errichetti) I just did.
15 CHAIRMAN IGNATIUS: Can you
16 restate the question? I don't recall it.
17 BY MR. PERESS:
18 Q. Based on the data shown on this form for
19 Schiller Unit 4, did the capacity factor
20 continue to decline between 2009 and 2010
21 when the plan was submitted?
22 A. (By Mr. Errichetti) I don't recall if during
23 the first six or so months of 2010, when we
24 were preparing the plan for the September

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 25

1 filing, that Schiller was running less and
 2 less and less, or if it reflects what happened
 3 at the tail end of 2010. I honestly can't
 4 recall. What I do recall is that, while we
 5 didn't rigorously model economics in the plan,
 6 when you looked at the forward markets and you
 7 looked at their dispatch price, it looked like
 8 they were going to run a lot. In fact --
 9 well, I don't want to introduce new
 10 information. But I would say, even if you
 11 look at today's forward market, these units
 12 should all be running in the peak periods flat
 13 out, and then it's a question of whether it
 14 should cycle or run through the night and
 15 trade off the start.
 16 Q. Thank you for putting out today's market.
 17 We'll get to that, also.
 18 A. (By Mr. Errichetti) Fine.
 19 Q. So, based on the graph that's in front of
 20 you, would you agree that the graph shows
 21 that the capacity factor for Schiller Unit 4
 22 continued to decline between 2009 and 2010?
 23 A. (By Mr. Errichetti) Based on the information
 24 you're providing, and based on what's here, it

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 26

1 shows a decline.
 2 Q. Would you flip over the page to Schiller
 3 Unit 6, please. For Schiller Unit 6, would
 4 you agree that the data represented in this
 5 graph shows that the capacity factor for the
 6 unit continued to decline between 2009 and
 7 the time that your plan was submitted?
 8 A. (By Mr. Errichetti) Well, again, this is a
 9 2010 value, so it includes 12 months. We talk
 10 about September 30th, but, you know, this
 11 report actually kind of got finished up and
 12 got reviewed and went to print. So I'd say we
 13 were really looking at the first half of 2010.
 14 I will say that this shows a slight decline
 15 from '09 to '10.
 16 Q. Is it your testimony that the plan does
 17 not -- the content of the plan does not
 18 contain the status of PSNH's planning
 19 through September 30th, 2010?
 20 A. (By Ms. Tillotson) And while Dave's thinking
 21 about that, I do have a clarification. As we
 22 look at this, I think there's been two answers
 23 as to what the value is associated with --
 24 let's pick the year 2010 -- because I'm

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 27

1 familiar with this data. And I would say that
 2 this is an annual data point for 2010 that
 3 would not have been available September 30.
 4 So I'm just clarifying the year. Are these
 5 annual capacity factors for these
 6 representative years?
 7 Q. Yes, they are.
 8 A. (By Ms. Tillotson) So a 2010 annual number
 9 would certainly not exist until 2011--some
 10 period.
 11 Q. That's why I asked Mr. Errichetti if he
 12 follows the capacity factor and the amount
 13 of operations that these units are running
 14 on a regular basis, which he answered, yes,
 15 he does.
 16 A. (By Ms. Tillotson) And I was just commenting
 17 on the confusion, because I think you
 18 suggested it was mid-year. And being aware of
 19 how these data points are usually obtained, I
 20 just wanted to make sure we were comparing
 21 apples and apples with that September time
 22 frame.
 23 CHAIRMAN IGNATIUS: Can I ask a
 24 clarification, because I think what was just

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 28

1 testified to just doesn't make sense in
 2 looking at it. So, help me figure this out.
 3 If this is supposedly an
 4 annual figure, then why in the space for
 5 2010 does it make a number of different
 6 points? It's not just a single annual
 7 figure. So it has a gradual decline and
 8 then a steep decline. So, is it annual? Is
 9 it pointed --
 10 MR. PERESS: Madam Chair, the
 11 EPA Clean Air Markets data runs on a daily
 12 basis.
 13 CHAIRMAN IGNATIUS: I'm asking
 14 about your exhibit. You introduced this. So
 15 what is it that we're looking at?
 16 MR. PERESS: The exhibit
 17 represents the difference in capacity factors
 18 on an annual basis and not on a real-time
 19 basis.
 20 CHAIRMAN IGNATIUS: And how does
 21 it not just have a single point for each year?
 22 Well, I won't get into a discussion with you.
 23 But it --
 24 MR. PERESS: Actually, that's

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Pg 29

1 what it has, is a single point for each year.
2 I apologize for my confusion.
3 CMSR. HARRINGTON: Now you got
4 me confused, because if you look at 2010, it
5 has a single point for each year. You could
6 have a point on the beginning of the year and
7 a point on the end of the year and a straight
8 line that connects them. This starts out, and
9 then the slope goes gently, and then it
10 increases somewhere around mid-year, which is
11 to suggest that the capacity factors changed
12 throughout the year based on this data. So it
13 can't be for the whole year.
14 MR. PERESS: Yeah. So, my
15 apologies, Commissioner. If you look at the
16 starting point of the graph for Schiller
17 Unit 6, and the starting point is centered in
18 what's represented as 2005, so the capacity
19 factor as of -- for the full year of 2005 was
20 just over 80 percent. In essence, what would
21 probably be helpful is if there were points
22 drawn right above the year, in between each of
23 the two marks on either side of the year
24 listing, which would be the capacity factor

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Pg 30

1 for the year.
2 CMSR. HARRINGTON: I guess maybe
3 you're not following my question. If this is
4 a annual number, the slope of the line that
5 goes across the annual period for 2010 would
6 be constant; it wouldn't change. You have a
7 slope that starts at the beginning of the
8 year, the hash mark to the left of 2010.
9 There's a slight slope that continues to,
10 looks like about halfway through the year, and
11 then the slope increases -- meaning, if you
12 were taking the annual as being the capacity
13 factor at the beginning of the year and the
14 end of the year and just drawing a straight
15 line between them, the line would be straight.
16 So this must be -- you must have either more
17 data points or something that I just don't
18 understand.
19 MR. PERESS: Commissioner, I
20 apologize. So the mark for Schiller Unit 6
21 above 2010, which indicates that the capacity
22 factor is just under 60 percent, was the
23 capacity factor as of the end of 2010.
24 CMSR. HARRINGTON: End of 2009 I

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Pg 31

1 assume you mean.
2 MR. PERESS: As of the end of
3 2010. That's the 2010 capacity; right?
4 CMSR. HARRINGTON: No. The one
5 to the left, the hash mark to the left of
6 2010, you draw a line up, you're saying that
7 that represents the beginning of 2010?
8 MR. PERESS: No, the midpoints.
9 Basically, this is -- let me correct myself.
10 This is just using the annual
11 capacity factors on a -- for the entire
12 year.
13 CMSR. HARRINGTON: Then this
14 should be a step graph, not a linear one.
15 MR. PERESS: It is essentially a
16 step graph, because the point of inflection
17 for each year represents the capacity factor
18 for that year.
19 CMSR. HARRINGTON: What happened
20 in 2010, though? That's what I'm still trying
21 to figure out. The beginning of that, you
22 have about 59 percent, and then in the
23 midpoint it's somewhere around 58 percent, and
24 then at the endpoint down to -- I don't

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Pg 32

1 know -- 40-something percent.
2 MR. PERESS: The capacity factor
3 for 2010 would be the inflection point in the
4 line above the date 2010. So that would be
5 approximately 55 percent.
6 CMSR. HARRINGTON: So the
7 midpoint for each year represents the average
8 for that year is what you're saying, and then
9 you just connected those dots.
10 MR. PERESS: Yes, that's
11 correct.
12 CMSR. HARRINGTON: All right.
13 MR. PERESS: Sorry about the
14 confusion.
15 MR. EATON: Perhaps, could we
16 have CLF provide the data that's behind this
17 and where it came from? It might be depicted
18 in a better way. Because it seems to have --
19 the source was EPA Air Markets Program data,
20 but it seems to have been created -- or at
21 least the graphs were created by Synapse
22 Energy. And if the underlying data could be
23 supplied, it might be easier to understand.
24 CHAIRMAN IGNATIUS: Any

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 33

1 objection to that, Mr. Peress?
2 MR. PERESS: No objection.
3 CHAIRMAN IGNATIUS: All right.
4 Why don't we reserve a record request for the
5 underlying data that was used in just the
6 Schiller 6 and Schiller 4. Is that fair? We
7 don't need all of the other generating plants.
8 MR. PERESS: Yes.
9 (CLF 2 Record Request reserved)
10 CHAIRMAN IGNATIUS: And Mr.
11 Eaton, I assume we don't need all of -- well,
12 I guess it depends on how cumbersome it is.
13 We don't need all of the data for 2005, '06,
14 and '07, I assume?
15 MR. EATON: As long as no
16 questions are being asked about it.
17 MR. PERESS: It's not
18 cumbersome.
19 CHAIRMAN IGNATIUS: Okay. Then
20 why don't we do the full 2005 through 2011.
21 MR. PERESS: May I proceed?
22 CHAIRMAN IGNATIUS: Yes, please
23 do.
24 BY MR. PERESS:

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 34

1 Q. Mr. Errichetti, based on the data shown in
2 the chart for Schiller Unit 4 and Schiller
3 Unit 6, do you still consider those to be
4 baseload units as of the date of the plan?
5 A. (By Mr. Errichetti) As of the date of the
6 plan, based on the information we knew at the
7 time, we thought it was reasonable to portray
8 these units as baseload. Now, if you're
9 asking me -- if you're asking something
10 different, like sitting here today in 2012,
11 does it look like that assumption back in 2010
12 was good or bad, that's a different question.
13 Q. That's not what I'm asking you.
14 A. (By Mr. Errichetti) Okay.
15 Q. And just to clarify the question that I
16 previously asked, was this plan prepared
17 based on your understanding of the
18 circumstances through September 30, 2010?
19 A. (By Mr. Errichetti) I guess the plan is dated
20 September 30th, 2010. It represents our
21 planning as of that date. We didn't prepare
22 it on September 30th, 2010.
23 Q. So, do you remember the date on or about
24 which was the last time that you provided

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 35

1 input about the capacity factors of these
2 units for the plan?
3 A. (By Mr. Errichetti) What was modeled in the
4 Appendix D -- I believe it's Appendix D --
5 subject to check, was probably done late
6 summer. So I would say late August, early
7 September was when we finalized those tables.
8 Q. And you did not use any short-term energy
9 capacity market pricing when you finalized
10 those tables; is that correct?
11 A. (By Mr. Errichetti) That is correct.
12 Q. And you started explaining why it was that
13 these units were suffering from declining
14 capacity factors. It was because the
15 market -- maybe you can explain why they
16 were suffering from declining capacity
17 factors.
18 A. (By Mr. Errichetti) They're variable costs
19 that become less attractive, so they're
20 dispatching less.
21 Q. And as they're dispatched less, doesn't that
22 increase costs for the ratepayers?
23 A. (By Mr. Errichetti) No. In fact, when they
24 dispatch less and we replace them in the

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 36

1 market at lower prices, we're not -- it's
2 saving customers money versus dispatching the
3 units.
4 Q. When those units are not running, are the
5 ratepayers being asked to cover the fixed
6 costs for those units?
7 A. (By Mr. Errichetti) Yes, just as they are when
8 they do run.
9 Q. But when they don't run, the ratepayers are
10 covering the fixed costs in addition to the
11 cost of buying power from the market or
12 another source; isn't that correct?
13 A. (By Mr. Errichetti) The overall costs to
14 customers are less by replacing their output
15 with market purchases, because the fixed costs
16 are being paid in either case. It would raise
17 customer costs if we insisted on running the
18 units, even when they were above -- higher
19 than what we could get in the energy market.
20 Q. In comparison to a utility that buys its
21 power from the market and doesn't bear fixed
22 costs for what are essentially idle units,
23 does it cost the ratepayers money?
24 A. (By Mr. Errichetti) Depends on how you make

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHELLI] Page 37

1 those purchases. For instance: In our
2 affiliate, CL&P, we had a three-year ladder.
3 And we made commitments for full requirements
4 supplied three years before the market
5 crashed. And CL&P's prices were hung up for
6 two, two and a half years because of that
7 purchase pattern. So, knowing full
8 requirements doesn't necessarily translate
9 into anything.

10 Q. But in comparison to PSNH, such a utility
11 does not have to bear the fixed costs for a
12 unit that is not operating when it's buying
13 from the market; correct?

14 A. (By Mr. Errichetti) Could you repeat the
15 original question? I think I'm losing the
16 thread.

17 Q. I asked you whether in comparison to a
18 utility that does not own generation and
19 supplies all of its customers energy default
20 service through the market, doesn't the cost
21 associated with maintaining these units when
22 they're not running add costs to the
23 ratepayers?

24 A. (By Mr. Errichetti) And the answer to that is

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHELLI] Page 38

1 it depends. It depends on when the utility
2 who doesn't have the generation that's sitting
3 idle made their purchases to meet their
4 customers' needs. You're trying to idealize
5 it, and I've lived through it other which
6 ways.

7 Q. No, and then I asked you the simple question
8 of whether such a utility has to bear the
9 cost or impose the cost on its ratepayers
10 for the fixed cost of such generation when
11 they don't own any generation.

12 A. (By Mr. Errichetti) In that narrow sense, I
13 believe the answer would be they don't -- the
14 customers don't bear the cost of generation
15 that's not owned.

16 Q. Thank you.

17 MR. PERESS: I would like to
18 pass out and mark as CLF Exhibit 02 Public
19 Service Company of New Hampshire's response to
20 Data Request CLF-02, dated May 23rd, 2011.
21 May I approach?

22 CHAIRMAN IGNATIUS: Please do.
23 This is response to -- well, it's got two
24 different numbers -- Data Request CLF-02 at

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHELLI] Page 39

1 the top, and then two lines down says
2 "CLF-003."

3 MR. EATON: That stands for the
4 second set from Conservation Law Foundation
5 and the third question.

6 CHAIRMAN IGNATIUS: Thank you.
7 So that will be for identification as CLF 2.

8 MR. EATON: I'm sorry. We
9 reserved the record request that I made for
10 the underlying data behind CLF 1 as exhibit --
11 as CLF No. 2.

12 CHAIRMAN IGNATIUS: One moment.
13 (Discussion off the record)

14 CHAIRMAN IGNATIUS: We'll go
15 back on the record. So this Data Request Set
16 2, No. 3 from CLF will be marked as CLF 3.
17 (CLF 3 marked for identification.)

18 BY MR. PERESS:

19 Q. Mr. Errichetti, CLF 03 refers to PSNH
20 Exhibit 1, the plan, Section III on Page 33.
21 The bottom of the page on Page 33, starting
22 with the word "Also," the fourth line up,
23 that page -- that sentence in the plan
24 reads, "Also, each day normally includes a

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHELLI] Page 40

1 number of hours in which PSNH has surplus
2 supply that is sold into the ISO-New England
3 spot market." Is that correct, in terms of
4 what the plan says?

5 A. (By Mr. Errichetti) Yes.

6 Q. And CLF Request 3 asks whether PSNH sells
7 power into the spot market during hours when
8 the ISO-New England clearing price is lower
9 than PSNH's marginal cost for producing
10 energy at any of its then operating
11 generating units; does it not?

12 A. (By Mr. Errichetti) It does.

13 CMSR. HARRINGTON: Is he
14 answering your question or just agreeing that
15 that's what it says?

16 MR. PERESS: He's agreeing that
17 that's what it says.

18 CMSR. HARRINGTON: Okay. Just
19 so we're clear. Thank you.

20 BY MR. PERESS:

21 Q. And going to the last paragraph of PSNH's
22 response, doesn't that state that PSNH has
23 estimated that 3.4 percent of total resource
24 generation, parens, as defined in PSNH's

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 41

1 energy service cost reconciliation process,
2 end parents, aggregated over 1,766 hours was
3 sold into the spot market for the subject
4 time period under the stated conditions; is
5 that correct?
6 A. (By Mr. Errichetti) That is what the response
7 says.
8 Q. In effect, doesn't that mean that PSNH is
9 putting power into the market for a price
10 lower than it cost it to produce it?
11 A. (By Mr. Errichetti) No, because you dispatch a
12 unit on a commitment cycle. And as the
13 response points out, there are times when you
14 run a unit through the night because it made
15 economic sense across the day for customers to
16 run it above load in some hours where the LNP
17 is less than the assumed price of the unit.
18 And as the last paragraph points out, we used
19 an average -- we used an average cost per unit
20 that was based on annual fuel accounting
21 information that included start-ups, no-loads,
22 and the incremental energy cost. So the very
23 rough estimate -- to answer your question --
24 if you make money in 20 hours of the day and

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 42

1 lose money in 4, you have to net the 24 hours
2 before you decide it would hurt customers to
3 do what we did. And that's what this response
4 says.
5 Q. And if I understand it correctly, one of the
6 reasons that you would continue to operate
7 the unit, even though the locational
8 marginal price -- that is, the current
9 price -- is lower than the cost of operating
10 it is -- and I'm quoting from here -- is
11 "because the costs to cycle the unit off and
12 on, plus any lost hours of economic
13 operation due to unit operating
14 characteristics, exceed the loss that will
15 be incurred by running the unit during such
16 hours"?
17 A. (By Mr. Errichetti) I was good with you to the
18 last couple words, so I have to read it.
19 (Witness reviews document.)
20 A. (By Mr. Errichetti) I apologize. I'm not sure
21 I followed everything you said. But what's
22 written here in the data request I still stand
23 by.
24 Q. So let me just try to parse that, if I may.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 43

1 The cost of cycling the unit is such that
2 it makes sense to continue operating it rather
3 than shutting it down and restarting it the
4 next day; is that correct?
5 A. (By Mr. Errichetti) Overall, there is an
6 economic decision to be made that says that
7 running the unit through the night costs less
8 than cycling it through the night, given the
9 unit's operating characteristics. That's
10 true, yes. If that is what you said, then I
11 agree with you.
12 Q. Is there anywhere that you can point to me
13 in the plan that discusses whether it makes
14 economic sense to purchase power from the
15 market rather than run your generating
16 facilities?
17 A. (By Mr. Errichetti) I do believe it's
18 mentioned here and there in the plan. If I
19 can, I'll find one cite.
20 (Witness reviews document.)
21 A. (By Mr. Errichetti) Well, I mean, as an
22 example, if you go back to Page 32, C.2.4,
23 while we didn't use it for the five-year
24 planning period, the sentences that preceded

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 44

1 the one you quoted talk about that, you know,
2 we do look at the economics in deciding to
3 dispatch the units.
4 Q. But in this plan, you decided that these
5 units -- your planning was based on the
6 assumption that these units were running as
7 baseload units and that you would not be
8 replacing their operations with market
9 power.
10 A. (By Mr. Errichetti) In general, yes.
11 Q. And as the capacity factors for these units
12 have been decreasing -- that is, up through
13 the date of the plan -- does that increase
14 the amount of hours that they run during
15 which the spot market price is lower than
16 the cost of operating the units?
17 A. (By Mr. Errichetti) Not necessarily. They
18 just may not turn on. So then, they don't
19 have to -- there is no question about running
20 it through the night. I think what you're
21 finding is our reserve shut-downs are
22 increasing.
23 Q. Is it fair to say that, as the capacity
24 factors for these fossil-fuel-fired units

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 45

1 have decreased, Public Service Company of
2 New Hampshire's energy service rates have
3 increased in comparison to other utilities
4 in New Hampshire?
5 A. (By Mr. Errichetti) I'm more inclined -- well,
6 let's say I'm more inclined to say that the
7 biggest driver is the migration issue that we
8 had a docket on as opposed to the variable
9 cost of the units driving the prices.
10 MR. PERESS: I'd like to pass
11 out what I'd like to mark as CLF 04 for the
12 witness to look at. May I approach?
13 CHAIRMAN IGNATIUS: Please.
14 Before we mark this, Mr. Peress, could you
15 just give us a very brief description of the
16 source of all of these pages?
17 MR. PERESS: Yes, Madam Chair.
18 The front page is a copy of a table that is
19 found on Page 6 of a report that was prepared
20 by the Commission and the Department of
21 Environmental Services and submitted to the
22 legislature.
23 CHAIRMAN IGNATIUS: And the
24 remaining, is that the report itself that's

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 46

1 attached?
2 MR. PERESS: Yes. I'm just
3 focusing on the actual chart, but I thought it
4 would be prudent to provide the entire report.
5 CHAIRMAN IGNATIUS: So let's
6 mark this for identification as CLF 4.
7 (CLF 4 marked for identification.)
8 BY MR. PERESS:
9 Q. Mr. Errichetti, do you have the multi-
10 colored chart in front of you that I just
11 passed out?
12 A. (By Mr. Errichetti) Yes, sir.
13 Q. And does that chart show a representative
14 residential monthly bill price comparison
15 for energy as between Unitil, National Grid,
16 New Hampshire Electric Co-op and PSNH?
17 A. (By Mr. Errichetti) Sir, to be honest, I
18 don't know. I can't tell from the -- from
19 what's on this page if this is a total bill or
20 if it's just the energy service equivalent.
21 Q. I'm sorry. The total monthly bill. Excuse
22 me.
23 A. (By Mr. Errichetti) Well, is it?
24 Q. The report was prepared by the Public

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 47

1 Utilities Commission and DES, if you look at
2 Page 6. It makes it clear that it's a
3 monthly bill comparison.
4 A. (By Mr. Errichetti) All right. So the
5 representation is that this is like -- well,
6 okay. Again, does this represent a PSNH
7 customer taking ES, or does it represent a
8 customer of PSNH with a blend of third-party
9 suppliers and ES?
10 Q. There's no third-party suppliers.
11 A. (By Mr. Errichetti) Because that's explained
12 somewhere else in here?
13 Q. Yes.
14 A. (By Mr. Errichetti) Okay. So, subject to you
15 saying so, go on.
16 Q. So you testified that sometime earlier in
17 2008 natural gas prices started displacing
18 PSNH's fossil-fuel-fired units; is that
19 correct?
20 A. (By Mr. Errichetti) That's my recollection of
21 the situation, yes.
22 Q. And if you look at this chart, does the
23 chart show that sometime between
24 November 2008 and September 2009, PSNH's

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 48

1 representative residential monthly bill
2 started increasing?
3 (Witness reviews document.)
4 A. (By Mr. Errichetti) It appears that the total
5 cost to a PSNH residential customer had gone
6 up between -- you said November 2008 and
7 September 2009?
8 Q. Yes.
9 A. (By Mr. Errichetti) Yes.
10 A. (By Mr. Large) And just for clarification,
11 including generation component and
12 distribution component, transmission
13 component, and the stranded cost component,
14 total make-up of a monthly residential
15 customer's bill.
16 Q. And does the chart show that the residential
17 monthly bill for the customers for Unitil,
18 National Grid and New Hampshire Electric
19 Co-op were decreasing during that time?
20 A. (By Mr. Errichetti) What period am I looking
21 at again? If I'm looking at November 2008 to
22 September 2009, they went up and down.
23 Q. Well, how about from April 2009 to
24 September 2009?

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 49

1 A. (By Mr. Errichetti) Say that again, please.
2 Q. From April 2009 to September 2009?
3 A. (By Mr. Errichetti) It looks like the Co-op
4 was flat. Until appears to have gone done.
5 Grid appears to have gone down. So, one down
6 -- two down, one flat.
7 Q. And the Public Service Company of New
8 Hampshire, as part of its planning --
9 A. (By Mr. Errichetti) Although, during that
10 period, PSNH looks pretty flat, too.
11 Q. Public Service Company of New Hampshire, as
12 part of its planning, does not project its
13 energy service rates forward, does it?
14 A. (By Mr. Errichetti) Could you please repeat
15 the question?
16 Q. Does Public Service Company of New Hampshire
17 project forward its energy service rates as
18 part of its plan?
19 A. (By Mr. Large) No, we do not.
20 Q. Is there any place in the plan that projects
21 forward your energy services?
22 A. (By Mr. Large) The energy service computations
23 are cared for in energy service forecast
24 dockets, and the reconciliation of those costs

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 50

1 are cared for in energy service reconciliation
2 and prudence dockets, not in the Least Cost
3 Plan.
4 Q. So, in other words, there's nothing in the
5 plan that projects forward your energy
6 service rates?
7 A. (By Mr. Large) We have not forecast that in
8 the 2010 plan that's at question today.
9 Q. And does Public Service Company of New
10 Hampshire forecast its migration rates?
11 A. (By Mr. Large) Based upon the conversation
12 that I had with Mr. Patch earlier, we did not
13 forecast a level of migration. We examined a
14 range of potential migration that could be
15 experienced that would illuminate our
16 decision-making with respect to the plan.
17 Q. Is it fair to say that you would need to
18 forecast your energy service rates in order
19 to forecast migration as part of your
20 planning process?
21 A. (By Mr. Large) The PSNH energy service rate as
22 a stand-alone piece of information will not
23 illuminate or provide any information that
24 would help one understand expected trends in

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 51

1 migration.
2 Q. But wouldn't the energy service rate, in
3 comparison to market forecasts, help
4 illuminate trends with respect to future
5 migration?
6 A. (By Mr. Large) That would be one factor.
7 Q. Are there some others that you'd like to
8 discuss?
9 A. (By Mr. Large) Customer interest in going to a
10 competitive supplier, having had bad
11 experiences with competitive suppliers could
12 be a factor that we would have no information
13 to be able to factor into the planning
14 strategy. I'm sure there are many others.
15 Q. But, by and large, customers migrate away
16 from PSNH's energy default service to
17 competitive suppliers due to price; isn't
18 that correct?
19 A. (By Mr. Large) We do not ask customers. It is
20 not our place to consult with customers or
21 seek from them their reasons for choosing to
22 go to a competitive supplier. But we would
23 reach the conclusion that price is in fact a
24 factor.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 52

1 Q. Mr. Large, you're responsible for business
2 planning, aren't you?
3 A. (By Mr. Large) Yes, I am.
4 Q. Would you say price is the most significant
5 factor?
6 A. (By Mr. Large) I think it is a significant
7 factor. I don't know if it's the most.
8 Q. You think some of the other factors you just
9 mentioned are equally, if not more,
10 significant?
11 A. (By Mr. Large) I think for various customers
12 they can be and will be, yes.
13 Q. But I was speaking about in general in most
14 customers.
15 A. (By Mr. Large) Well, when we speak about
16 migration, it's not fair to speak about most
17 customers.
18 Q. Hasn't the rate of migration increased as
19 the delta between your energy service rate
20 and market prices have increased?
21 A. (By Mr. Large) There has been an increase, but
22 I don't think it's commensurate with the delta
23 in the energy service price.
24 Q. So it's your testimony that there is not a

<p>[WITNESS PANEL: LARGE SMAGULA TILLOTSON ERRICHELLI] Page 53</p> <p>1 relationship between the difference between 2 your energy service rate and the cost of 3 power available in the market with respect 4 to the amount of migration? 5 A. (By Mr. Large) My testimony is that it's not a 6 linear relationship, in that one depends only 7 on the other and that is the only driver that 8 causes a customer to make a decision about 9 where it chooses to take its energy service 10 from. 11 MR. PERESS: Madam Chair, I'd 12 like to pass out a document I'd like to show 13 the witness and mark as CLF 5. Right? 14 CHAIRMAN IGNATIUS: You may. 15 This is a response to CLF Set 1, Question 3; 16 is that correct? 17 MR. PERESS: It's in a different 18 docket, Madam Chair. It's in the migration 19 docket DE 10-160. 20 CHAIRMAN IGNATIUS: All right. 21 We'll mark this for identification as CLF 5. 22 (CLF 5 marked for identification.) 23 BY MR. PERESS: 24 Q. Mr. Large, I'd like to give you a minute to</p>	<p>[WITNESS PANEL: LARGE SMAGULA TILLOTSON ERRICHELLI] Page 55</p> <p>1 don't plan -- forecast energy service rates 2 as part of your planning process. 3 Mr. Large, do you know what PSNH's most 4 recent proposed energy services rate is? 5 A. (By Mr. Large) I don't, but I could certainly 6 consult with one of my team members to get 7 that number. 8 Q. Does anybody up there know what it is? 9 A. (By Mr. Large) I don't know if we're speaking 10 about the inclusion of temporary rates or... 11 CHAIRMAN IGNATIUS: Mr. Peress, 12 I'm going to ask you the same question I asked 13 Mr. Cunningham. Why is that relevant? You're 14 asking for the current energy service rate? 15 MR. PERESS: Madam Chair, I'm 16 just trying to address the concern that was 17 related by Mr. Errichetti, that this is not 18 reliable or inaccurate based on trueing it up 19 versus the current pending rate. 20 A. (By Mr. Large) My recollection is that our 21 current rate is in the high 8s, and that what 22 we're seeking with temporary rates that's been 23 discussed in that filing is in high 8s number. 24 Q. It's actually in the high 9s.</p>
<p>[WITNESS PANEL: LARGE SMAGULA TILLOTSON ERRICHELLI] Page 54</p> <p>1 review this data response before I ask a 2 question about it. 3 (Witness reviews document.) 4 A. (By Mr. Large) I've read it, Mr. Peress. 5 Q. Thank you. Is it fair to say that this data 6 response is a projection forward of PSNH's 7 energy service rates based on PSNH's 8 five-year forecast? 9 A. (By Mr. Large) The response is rife with 10 disclaimers and statements that it is not 11 viewed as an accurate assessment of those 12 prices. So it's responsive to a data request, 13 but contained within it is much concern and 14 doubt about the validity of these numbers. 15 Q. And as part of your planning process, are 16 you engaged in a five-year forecast with 17 respect to market prices; is that correct, 18 Mr. Errichetti? 19 A. (By Mr. Errichetti) This appears to have come 20 out of the corporate financial model where the 21 ES rate is a pass-through. But accounting or 22 financial planning wants a number, so a number 23 is ginned up. We don't plan with it. 24 Q. No, I'm aware that you responded that you</p>	<p>[WITNESS PANEL: LARGE SMAGULA TILLOTSON ERRICHELLI] Page 56</p> <p>1 CHAIRMAN IGNATIUS: Again, I'm 2 not sure what the relevance of it is. 3 Whatever the number may be, it is what it is 4 and it's in another docket. So why do you 5 need to inquire into the current energy 6 service rate? 7 MR. PERESS: Madam Chair, the 8 point of my cross-examination has thus far 9 been the extent to which PSNH's planning 10 process is adequate with respect to providing 11 least cost service to ratepayers as it 12 pertains to the operation of their 13 fossil-fuel-fired generators. And what this 14 data response demonstrates is that, as those 15 generators operate less in the market, PSNH's 16 prices are actually projected to increase, and 17 they have been in fact increasing. 18 CHAIRMAN IGNATIUS: That may be 19 your position. I still don't see why a data 20 response dated in 2010 about projections is 21 about a current rate in effect that may be the 22 same, different or higher or lower. I'm still 23 not seeing the connection to it. 24 MR. PERESS: Madam Chair, this</p>

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 57

1 response was dated August 13, 2010, which,
2 according to Mr. Errichetti, would represent
3 the thinking of the Company at the time they
4 actually prepared their plan.
5 CHAIRMAN IGNATIUS: But pursue
6 that. I understand that. I just don't
7 understand why we were talking about what the
8 2012 number may be. If it's not clear to
9 people yet, we've got to get through this.
10 We're already well into the afternoon of the
11 first day. The more we spend on things that
12 don't have to do with the 2010 plan and
13 planning process, the longer it's going to
14 take us. And we have a long way to go. So,
15 please try to focus the questions on what it
16 has to do with the planning process for the
17 plan that was submitted in September 2010.
18 MR. PERESS: Madam Chair, I'm
19 just trying to demonstrate that this was a
20 reasonable projection of rates. And I'll just
21 cut it short and ask a couple more questions.
22 BY MR. PERESS:
23 Q. Mr. Large, are you aware that Unitil just
24 got a rate of approximately 6.1 cents

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 58

1 approved for its residential energy service
2 rate and less than 6 cents for its
3 commercial and industrial rate?
4 A. (By Mr. Large) I am not aware of that.
5 Q. Are you aware that National Grid has
6 proposed a rate of less than 6 cents for its
7 residential rate?
8 A. (By Mr. Large) I am not aware of that.
9 Q. Is it fair to say that, as of August 2010,
10 PSNH's planning expected PSNH's energy
11 services rates to continue to increase?
12 A. (By Mr. Large) I would disagree with they
13 continued to increase.
14 Q. Can you please review the energy services
15 rate that's listed in this data response for
16 each year beginning in 2012?
17 A. (By Mr. Large) I have the document and I have
18 reviewed it and I --
19 Q. Can you read it out loud? Well, forgive me.
20 Does it not state that the projection,
21 with the caveats, for the 2012 energy services
22 rate is 10 cents; for 2013 it's 11.2 cents;
23 for 2014 it's 11.7 cents and for 2015 it's
24 11.8 cents? Is that what it states?

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 59

1 A. (By Mr. Large) The numbers listed on the page
2 next to the years as you called them out are
3 as you stated them, and the provisos, as
4 identified as by Mr. Baumann in the data
5 response, identifies that he is not convinced
6 that those are accurate representations of the
7 future prices.
8 Q. Mr. Errichetti, when you're doing your
9 planning, do you review the annual energy
10 outlook for natural gas pricing?
11 A. (By Mr. Errichetti) No. We rely on NYMEX.
12 Q. And so you reviewed the forward gas pricing
13 curves provided by NYMEX?
14 A. (By Mr. Errichetti) Electric.
15 Q. How about for natural gas?
16 A. (By Mr. Errichetti) We do look at the gas,
17 also. But we mainly focus on the electric.
18 We look at the gas to get a feel for the
19 implied heat rate to decide whether the
20 markets, in our opinion, may be overpricing
21 electricity.
22 Q. So you testified earlier that, beginning in
23 2008, natural gas prices started to decline
24 quite significantly causing the capacity

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 60

1 factors of the Schiller units to decline; is
2 that correct?
3 A. (By Mr. Errichetti) In real-time, day to day.
4 Q. And so in 2010, as part of the planning,
5 were you looking at the forward price curves
6 for natural gas?
7 A. (By Mr. Errichetti) In the context of ES rate
8 setting, when we're going in to do the annual
9 rate setting and we're in the mid-year, yes.
10 Q. And how about in the context of your
11 forecast for how much generation output you
12 would have from your fossil units?
13 A. (By Mr. Errichetti) In the Least Cost Plan?
14 No. As was stated on Page 32, as you
15 mentioned I think when you first started
16 examining me, we made the general assumption,
17 for purposes of this plan, that the units
18 would be baseload.
19 Q. And so you're acknowledging that as part of
20 the planning, PSNH was not looking at
21 forward gas price curves in concluding that
22 these units would be baseload?
23 A. (By Mr. Errichetti) I believe we've answered
24 data requests saying that we did not use a gas

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 61

1 forecast or an electric forecast in preparing
 2 this document.
 3 Q. Thank you. I have just a few more questions
 4 left that pertain to some of the
 5 environmental requirements.
 6 MR. PERESS: Oh, I'm sorry. I'd
 7 like to just pass out one more document as an
 8 exhibit that relates to the economics.
 9 CHAIRMAN IGNATIUS: All right.
 10 We'll mark this for identification as CLF 6.
 11 (CLF 6 marked for identification.)
 12 BY MR. PERESS:
 13 Q. Mr. Large, before you is a data response in
 14 Docket DE 11-215 provided as a result of a
 15 technical session. Do you see that
 16 document?
 17 A. (By Mr. Large) I have it, yes.
 18 Q. And can you tell me if there are seven
 19 months -- I'm sorry -- six months in 2012 in
 20 which PSNH is projecting that Schiller
 21 Unit 4 will not be economic?
 22 A. (By Mr. Large) No, I cannot.
 23 Q. If you look at the column that states
 24 "Schiller Unit 4," do you see the zeros that

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 62

1 go down for six of the months?
 2 A. (By Mr. Large) Yes.
 3 Q. And do you see the heading of the chart that
 4 says "Unit Capacity Factors"?
 5 A. (By Mr. Large) Unit Capacity Factors in the
 6 2012 energy service rate calculation, yes.
 7 Q. And did you see the six columns that have
 8 zeros in them for Schiller Unit 4?
 9 A. (By Mr. Large) I'm presuming you mean --
 10 Q. I'm sorry. Do you see the seven columns
 11 in --
 12 A. (By Mr. Large) I'm presuming you mean rows.
 13 Q. I'm sorry. Rows. Excuse me.
 14 A. (By Mr. Large) I see seven rows of zeros under
 15 the Schiller 4 column, yes.
 16 Q. And the projected capacity factor of
 17 25 percent?
 18 A. (By Mr. Large) Yes.
 19 Q. And the same for Schiller Unit 6, except
 20 that the projected capacity factor is
 21 26 percent?
 22 A. (By Mr. Large) Yes.
 23 Q. Mr. Errichetti, would you say that this is a
 24 consequence of a continuing market price for

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 63

1 natural gas versus the cost of generation
 2 for PSNH's units?
 3 A. (By Mr. Errichetti) This is the forecast of
 4 their economic dispatch.
 5 Q. So, is it fair that their economic dispatch
 6 continues to decrease?
 7 A. (By Mr. Errichetti) I don't know if it
 8 continues to decrease. I don't know -- I
 9 would say that their dispatch is low. I don't
 10 know if it's a continuing trend. I don't know
 11 if you can say next year there will be
 12 zero percent. Could happen. When you say
 13 "continuing decrease," I -- it all depends on
 14 the market. If gas turns around, these guys
 15 are going to turn around, too. So I don't...
 16 Q. But you're not looking at the forward gas
 17 curves; right?
 18 A. (By Mr. Errichetti) In this data response,
 19 it's looking at 2012 in the September 2010
 20 plan. Correct. I mean, just -- you're
 21 asking, for yucks, do we look at the forward
 22 energy markets and say are they going to
 23 continue to decline or are they going to turn
 24 around or are they going to stay flat. We do

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 64

1 look at that.
 2 Q. Thank you.
 3 MR. PERESS: Can I just take one
 4 minute? I need to change gears to the
 5 environmental.
 6 CHAIRMAN IGNATIUS: That's fine.
 7 MR. PERESS: Thank you. I would
 8 like to engage in a discussion about Public
 9 Service Company of New Hampshire's planning
 10 with respect to environmental requirements. I
 11 would like to pass out a data response for
 12 Witness Tillotson to review, since she
 13 prepared it. May I approach?
 14 CHAIRMAN IGNATIUS: Please.
 15 MR. SPEIDEL: And I presume this
 16 will be marked as CLF 7; is that correct?
 17 MR. PERESS: Yes.
 18 CHAIRMAN IGNATIUS: Thank you.
 19 (CLF 7 marked for identification.)
 20 Q. Ms. Tillotson, if I understand your earlier
 21 testimony, you work on legislative,
 22 regulatory and environmental requirements
 23 and considerations with respect to PSNH's
 24 generating fleet; is that correct?

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Page 65

1 A. (By Ms. Tillotson) Yes.
 2 Q. And when you say "legislative," do you mean
 3 requirements of statutes in addition to
 4 regulations?
 5 A. (By Ms. Tillotson) I believe it's a term that
 6 we use somewhat generically to understand that
 7 legislative issues become regulation. So, to
 8 the extent that they impact the operation of
 9 our plants, we certainly monitor all of that
 10 also.
 11 Q. A statutory requirement?
 12 A. (By Ms. Tillotson) Hmm-hmm.
 13 Q. Yes?
 14 A. (By Ms. Tillotson) Yes.
 15 Q. And in this data response, Conservation Law
 16 Foundation asked you about a number of
 17 upcoming environmental regulations and
 18 requirements. And you, on behalf of PSNH,
 19 replied that, as part of its Least Cost
 20 Integrated Resource Planning process, PSNH
 21 does not prepare analyses or scenarios based
 22 upon regulatory rules or outcomes; is that
 23 correct?
 24 A. (By Ms. Tillotson) Upon possible regulatory

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Page 66

1 rules or outcomes.
 2 Q. How about for regulatory outcomes that are
 3 dictated by existing statutes? Do you
 4 prepare analyses of such scenarios?
 5 A. (By Ms. Tillotson) To the extent that the
 6 obligation and the compliance requirement is
 7 clear and we can complete an analysis with
 8 enough of the inputs known, then we would move
 9 forward, because we would use the compliance
 10 period identified in that statutory
 11 requirement to anticipate full compliance by
 12 whatever the required date is.
 13 Q. Ms. Tillotson, would you turn to Page 154 of
 14 PSNH Exhibit 1, please.
 15 A. (By Ms. Tillotson) Yes.
 16 Q. And starting with the section that's
 17 entitled "Section 316(b), Withdrawal of
 18 Cooling Water," this section of the plan
 19 contains a discussion relating to the
 20 requirements of Section 316(b) of the Clean
 21 Water Act; is that correct?
 22 A. (By Ms. Tillotson) Yes, it does.
 23 Q. And the beginning of the discussion talks
 24 about a Phase II rule and some uncertainty

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Page 67

1 relating to that Phase II rule; is that
 2 correct?
 3 A. (By Ms. Tillotson) Correct.
 4 Q. Are you familiar with the language of
 5 Section 316(b) of the Clean Water Act?
 6 A. (By Ms. Tillotson) Generally. We do have
 7 people on staff that that's their specialty.
 8 But we're familiar with the discussion, yes.
 9 Q. Subject to check, would you agree that
 10 Section 316(b) of the Clean Water Act
 11 requires that cooling water intake
 12 structures reflect the best technology
 13 available for minimizing adverse
 14 environmental impact?
 15 A. (By Ms. Tillotson) Yes.
 16 Q. Do you know whether EPA's implementation of
 17 that requirement depends whether or not --
 18 excuse me. Strike that.
 19 Do you know whether EPA's implementation
 20 of that requirement depends on whether the
 21 Phase II rule referred to in the plan is
 22 finalized?
 23 A. (By Ms. Tillotson) You will have to say that
 24 again. I'm not quite sure -- you corrected

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Page 68

1 yourself, and now I'm confused what your
 2 question is.
 3 MR. PERESS: Madam Chair, is it
 4 okay if the court reporter rereads the
 5 question or --
 6 CHAIRMAN IGNATIUS: Why don't
 7 you just restate it.
 8 BY MR. PERESS:
 9 Q. Do you know whether EPA's implementation of
 10 that statutory requirement is dependent on
 11 whether the Phase II rule referred to in the
 12 plan is finalized?
 13 A. (By Ms. Tillotson) The obligation exists, and
 14 we're looking for clear direction from the
 15 rule-making.
 16 Q. I'm sorry. Did you say the obligations
 17 exist independent of the rule-making, but
 18 you're looking for direction?
 19 A. (By Ms. Tillotson) No, I -- what I attempted
 20 to say is that the Clean Water Act lays out a
 21 plan, and within that, EPA and the State
 22 provides implementation requirements
 23 associated with that. And I believe that what
 24 we're waiting for is clear guidance on the

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Pg 69

1 implementation requirements specific to our
2 plans.
3 Q. Do the requirements of Section 316(b) that
4 we just discussed depend on someone
5 providing you that guidance, or do they
6 operate independently?
7 MR. EATON: Are you asking for a
8 legal conclusion?
9 CHAIRMAN IGNATIUS: Mr. Peress,
10 Mr. Eaton asked is this seeking a legal
11 interpretation.
12 MR. PERESS: Thank you, Madam
13 Chair. Ms. Tillotson, I believe, stated that
14 she is the technical business manager and
15 works on regulatory and environmental issues.
16 I'm asking her whether she knows whether the
17 implementation of 316(b) depends on that
18 guidance that she implicitly or explicitly
19 said would come out in rules.
20 CHAIRMAN IGNATIUS: You may
21 answer the question.
22 A. (By Ms. Tillotson) And my response was trying
23 to avoid some of the confusion that occurs
24 when we play with words. I was simply

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Pg 70

1 clarifying that there is a Clean Water Act
2 that we understand exists. It sets up the
3 parameters for which we can get additional
4 guidance from both EPA and DES, and that
5 results in our NPDES permits that we then
6 satisfy. Clearly, we use our NPDES permits as
7 our ultimate guidance as to how any particular
8 unit or facility would satisfy the
9 obligations.
10 BY MR. PERESS:
11 Q. Do you know whether Section 316(b) is
12 implemented as part of your NPDES
13 permitting?
14 A. (By Ms. Tillotson) It will address 316(b) --
15 will be captured and addressed in our NPDES
16 permits.
17 Q. So you are aware that the requirement for
18 best technology available for cooling water
19 intake structures to minimize adverse
20 environmental impacts is implemented within
21 your NPDES permit; correct?
22 A. (By Ms. Tillotson) Yes.
23 Q. Now I'm going to paraphrase some of the
24 testimony of Mr. Smagula earlier. So, Mr.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Pg 71

1 Smagula, please feel free.
2 You said that PSNH had conducted numerous
3 studies looking at fish impacts and thermal
4 impacts, and those studies led the Company to
5 believe that there is no harm occurring; is
6 that correct?
7 A. (By Mr. Smagula) PSNH contracted with a
8 consulting company to consult to conduct those
9 studies, and that, yes, the conclusion of
10 those studies provided that analysis. Yes.
11 Q. And so, in response to Mr. Cunningham's
12 question, you then stated that it was not
13 necessary for you to plan for a cooling
14 water -- for cooling towers because your
15 studies indicated that there was no harm
16 occurring; is that correct?
17 A. (By Mr. Smagula) yes.
18 Q. Can you, Mr. Smagula, please turn to
19 Page 155 of the plan.
20 A. (By Mr. Smagula) I have it.
21 Q. And the third to the last paragraph within
22 the plan -- and I'm just going to read it
23 for purposes of the record. "At this time,
24 a high degree of regulatory uncertainty

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Pg 72

1 remains, and PSNH cannot predict the
2 outcome. PSNH could be required to take
3 certain actions determined to be potential
4 best technology available for Merrimack
5 Station based on cost, biological benefits
6 and risks ranging from installing an
7 improved fish return system with additional
8 monitoring requirements to investing in
9 wedge-wired screens with upgraded fish
10 return systems." Is that what it says?
11 A. (By Mr. Smagula) Yes.
12 Q. Now, would either of those technologies be
13 necessary if PSNH was not causing any harm?
14 A. (By Mr. Smagula) There continues to be
15 obligations that we have in order to institute
16 newer and better improvements to systems that
17 we have installed. For example: A fish
18 return system is based on the fact that we
19 have screens that do not allow fish to be
20 impacted, as we are sitting on a river. The
21 technology involves such that there are
22 improvements to these screen systems, and
23 screen systems do capture fish and provide an
24 opportunity to return fish to the river.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] 73

1 Improvements on the fish return system are, in
2 essence, providing a gentler, easier method of
3 return of these fish to the river in order to
4 continue to improve to avoid any impact to the
5 fish. So, yes, there may be a need to do
6 things that are moving in the appropriate
7 incremental direction to improve our
8 co-existence with the environment.
9 Q. And so if I put that simply: The planning
10 conducted as part of Exhibit 1 acknowledges
11 that, in order to meet the best technology
12 available requirement of Section 316(b) of
13 the Clean Water Act, it's possible that you
14 might be required to install an improved
15 fish return system with additional
16 monitoring requirements or to invest in
17 wedge-wired screens with upgraded fish
18 return systems; is that correct?
19 A. (By Mr. Smagula) I think that's the range of
20 things that could occur.
21 Q. Do you think that cooling towers are within
22 the range of things that could occur?
23 A. (By Mr. Smagula) No, I think my response to
24 questions in the past on that make it clear

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] 74

1 that that is not something that we think is
2 within the range of things that could occur,
3 based on the data and our analysis of the
4 data.
5 Q. And so you didn't plan for it; is that
6 correct?
7 A. (By Mr. Smagula) Correct.
8 MR. PERESS: Madam Chair, I'd
9 like to pass out one last exhibit, please.
10 CHAIRMAN IGNATIUS: All right.
11 So we will mark for identification --
12 actually, before we do that, Mr. Peress, can
13 you give us just a brief explanation of this
14 document which has "Draft" on it, what it --
15 where it's from and what it purports to be?
16 MR. PERESS: Yes. Thank you,
17 Madam Chair. Public Service Company of New
18 Hampshire has a renewal permit application
19 pending at EPA for its NPDES permit. On or
20 about September 23rd, 2011, U.S. EPA proposed
21 that renewal permit, and that's what I just
22 passed out.
23 CHAIRMAN IGNATIUS: And what's
24 the relevance to the 2010 Least Cost Plan?

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] 75

1 MR. PERESS: If you look at the
2 document, right on the front page it says that
3 this permit supersedes the permit issued on
4 June 25th, 1992. Maybe I could ask PSNH's
5 witness if they know when that renewal permit
6 application was filed so that we can get some
7 relevance to the plan.
8 CHAIRMAN IGNATIUS: We'll mark
9 it for identification as CLF 8.
10 (CLF 8 marked for identification.)
11 CHAIRMAN IGNATIUS: I'll give
12 you a question or two. But again, this isn't
13 about compliance with DES regulation. This is
14 about planning process.
15 So, with that, Mr. Eaton, yes?
16 MR. EATON: Yes. And also, it
17 was issued after the plan was filed, and well
18 after the plan was filed. And I think that if
19 we could have that one question about when we
20 applied for this permit, that would give you a
21 better idea of why this is not relevant to our
22 planning process in 2010.
23 CHAIRMAN IGNATIUS: All right.
24 Mr. Peress, if you can give us some relevance

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] 76

1 to it in a question or two, we'll consider it;
2 otherwise, move on.
3 BY MR. PERESS:
4 Q. Mr. Smagula, do you know when you applied
5 for NPDES permit renewal that's addressed by
6 this draft permit?
7 A. (By Mr. Smagula) I think the regulation
8 statement above it makes it clear that it has
9 to be -- it expires in five years from that.
10 So our renewal permit application was done
11 within five years after the 1992 date. I
12 believe it was done in 1997.
13 Q. So, sometime in 1997 you filed a renewal
14 permit application, and it was pending while
15 you were putting together the plan that is
16 Exhibit 1; is that correct?
17 A. (By Mr. Large) Repeat that question?
18 Q. That renewal permit application filed in
19 1997 was pending while you were preparing
20 your plan and while you were planning as per
21 PSNH Exhibit 1; is that correct?
22 A. (By Mr. Smagula) It was pending at the time of
23 this Least Cost Plan application, yes.
24 A. (By Mr. Large) And if I may add, similarly

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Page 77

1 pending at the time of PSNH's June 30th, 2005
 2 Least Cost Plan, and similarly pending as of
 3 September 28th when PSNH filed the previous
 4 Least Cost Plan.
 5 Q. And indeed, you've addressed in your plan
 6 the fact that your NPDES permit application
 7 was pending and that a 316(b) best
 8 technology available review was ongoing;
 9 isn't that correct?
 10 A. (By Mr. Smagula) I don't recall that
 11 statement. Where are you...
 12 Q. Actually, strike that, please.
 13 We've already reviewed the provisions of
 14 the plan that discuss your planning with
 15 respect to the BTA requirements under 316(b),
 16 and we've already reviewed the fact that those
 17 requirements were pending in a renewal permit
 18 filed in 1997 that was still outstanding
 19 during the planning period; is that correct?
 20 A. (By Mr. Smagula) Yes.
 21 Q. And the plan -- can you please turn to
 22 Page 27 of 29 of what has been marked as CLF
 23 Exhibit 8.
 24 A. (By Mr. Smagula) I have that page.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Page 78

1 Q. And there is a Section E that is entitled,
 2 "Cooling Water Intake Structure Requirements
 3 to Minimize Adverse Impacts From Impingement
 4 and Entrainment"; is that correct?
 5 A. (By Mr. Smagula) Yes.
 6 Q. And Ms. Tillotson, that would be the section
 7 that addresses the requirements of Section
 8 316(b) of the Clean Water Act that we were
 9 just discussing; is that correct?
 10 A. (By Ms. Tillotson) Correct.
 11 Q. And can you tell me what EPA's draft permit
 12 says with respect to best technology
 13 available in Subsection A under No. 1?
 14 MR. EATON: I don't think we've
 15 established the relevance yet. This is after
 16 the fact. It says something that happened
 17 after the plan was filed and doesn't go to the
 18 question of what was in their planning process
 19 at the time. Again, you know, if the plan
 20 were to be updated every time something else
 21 happened, we would never even get to a
 22 hearing; we'd continually be updating the
 23 plan. We haven't established that this is
 24 relevant to what was going on at -- in the

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Page 79

1 summer of 2010, as far as our planning was
 2 concerned.
 3 CHAIRMAN IGNATIUS: Could I just
 4 ask a clarifying question? Did I
 5 misunderstand? I thought that CLF Exhibit 8
 6 was something that was submitted in 1997. Oh,
 7 this -- oh, this, 8, is in response to
 8 something submitted in 1997. All right.
 9 MR. PERESS: That's correct.
 10 CHAIRMAN IGNATIUS: And did we
 11 ever get a date on when the response was
 12 issued?
 13 MR. PERESS: It was on or about
 14 September 2011. But Madam Chair, the point
 15 here is that Public Service Company of New
 16 Hampshire, in their planning documents,
 17 discussed these requirements, and discussed
 18 these requirements in the context of potential
 19 best technology available with respect to
 20 their pending permit application, with the
 21 understanding that this requirement applies to
 22 the facility. However, they didn't plan for,
 23 as they've admitted, or discuss the
 24 possibility that that pending permit

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Page 80

1 application would result in an order requiring
 2 cooling towers. All of that was pending
 3 during the -- while this plan was being
 4 prepared and during the pendency of this plan.
 5 And nobody's denying that.
 6 CHAIRMAN IGNATIUS: I think
 7 we're talking about two different things. Mr.
 8 Eaton's concern is that you can't update the
 9 plan every time something new happens. But I
 10 take it that's not your point, Mr. Peress.
 11 MR. PERESS: No, it's not my
 12 point.
 13 CHAIRMAN IGNATIUS: You're not
 14 asking them to update the plan. You're asking
 15 to what extent did the --
 16 MR. PERESS: Plan consider the
 17 possibility that cooling towers would be
 18 required.
 19 CHAIRMAN IGNATIUS: You've asked
 20 that numerous times, and the answer was that
 21 they didn't think it was necessary. So what
 22 else are you asking?
 23 MR. PERESS: Now I'm
 24 demonstrating that EPA has proposed cooling

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Pg 81

1 towers for the facility, in response to their
2 1997 permit application, which they didn't
3 plan for. And if you would let me continue,
4 Madam Chair, we can get to what some of the
5 implications are to Least Cost Planning with
6 respect to ratepayers impacts, which will be
7 quick.

8 CHAIRMAN IGNATIUS: Well, if the
9 purpose is to show that you think the planning
10 practice wasn't very good because it didn't
11 take into account something that perhaps is
12 now required, we can establish your view of
13 that. It's all of the details about what the
14 current permit may or may not say is what I'm
15 concerned about, because that is the point of
16 what this proceeding is.

17 MR. PERESS: And the current
18 permit has not been issued. So EPA has
19 proposed a decision on that 1997 permit
20 application that requires them to spend
21 \$100 million or more for cooling towers,
22 albeit as a proposed decision that is
23 currently being reviewed and has been
24 subjected to comment. But the point is that

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Pg 82

1 this is what EPA has proposed with such
2 ratepayer impacts in response to their
3 application. And they obviously didn't plan
4 for it, by their own admission.

5 CHAIRMAN IGNATIUS: One moment.
6 Mr. Eaton.

7 MR. EATON: The biggest word on
8 the page here is "draft." PSNH submitted
9 comments, which were 230 pages of actual
10 reports and studies that have been done since
11 the plant was built. It has been supported by
12 a group of industry-wide representatives of
13 similarly situated utilities who have also
14 submitted separate comments. This is the very
15 beginning of this process. And as we have
16 testified again and again, we don't think
17 that's an outcome that's likely to happen
18 until the end of the process. And to
19 cross-examine that this is in a sense what's
20 going to happen is not relevant. It's --
21 we're litigating the cooling towers case here.

22 MR. PERESS: Madam Chair, if I
23 may, I'm not suggesting that this is what the
24

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Pg 83

1 outcome is. I'm only suggesting that a
2 reasonable planning procedure and process
3 would have entailed consideration of what EPA
4 has indeed proposed in response to the permit
5 application that has been pending since 1997.

6 CHAIRMAN IGNATIUS: Well, I
7 think you've asked that, and the Company said
8 they didn't think that was something to take
9 into consideration. You obviously disagree
10 with that. Can we -- isn't this really what's
11 your closing argument?

12 MR. PERESS: It is, but only to
13 the extent that I'm allowed to put evidence on
14 that says they should have considered it by
15 virtue of the fact that EPA has proposed that
16 it be the technology in response to their 1997
17 permit application which was pending during
18 their planning process.

19 CHAIRMAN IGNATIUS: Well, Mr.
20 Eaton just laid out that this is something
21 that is a proposed finding. It's under
22 dispute. There's a long life ahead for it. I
23 think we can accept, for the record, that
24 there is a request. If you can do it in one

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Pg 84

1 or two questions, that's fine. But we are not
2 going to spend the afternoon talking about
3 what the EPA may or may not be doing on
4 cooling towers. That's not what this
5 proceeding is about.

6 MR. PERESS: And nor would I
7 ever suggest that it is, Madam Chair. I'm
8 only suggesting that planning for a statutory
9 requirement for BTA should entail
10 consideration of cooling towers in the costs
11 associated with cooling towers.

12 CHAIRMAN IGNATIUS: Couple
13 questions.

14 BY MR. PERESS:

15 Q. Ms. Tillotson, would the cost of cooling
16 towers be significantly larger than the cost
17 of an improved fish return system or
18 investments in wedge-wired screens?

19 A. (By Mr. Smagula) If you don't mind, I'll
20 respond. The cost of cooling towers would be
21 larger, yes, if they were ultimately required
22 to be installed.

23 Q. And Mr. Smagula or Ms. Tillotson, are you
24 familiar with any other power plants in New

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Page 85

1 England that EPA has required to install
2 cooling towers as part of their 316(b)
3 compliance within a NPDES permit?
4 A. (By Mr. Smagula) I'm not sure I know the
5 answer to that question. I do know that there
6 have been some cooling towers installed at a
7 generating facility in Massachusetts.
8 Q. Is that the Brayden Point facility?
9 A. (By Mr. Smagula) Yes.
10 Q. Thank you.
11 MR. PERESS: I just have one
12 more question, and it doesn't relate to
13 environmental issues.
14 CHAIRMAN IGNATIUS: That's fine.
15 BY MR. PERESS:
16 Q. Mr. Large, can you turn to Page 42 of the
17 plan, please?
18 A. (By Mr. Large) I have Page 42.
19 Q. At the top of that page which relates to the
20 CORE energy efficiency programs, it states,
21 and I'm paraphrasing, that the average cost
22 of kilowatt hours avoided was 2.4 cents
23 during the lifetime of the CORE programs.
24 Is that a correct summary?

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Page 86

1 (Witness reviews document.)
2 A. (By Mr. Large) Not completely. What that says
3 is that the average cost associated with
4 PSNH's measures on a lifetime kilowatt-hour
5 basis is 2.4 cents.
6 Q. And PSNH's energy services rate at the time
7 that plan was filed was somewhere in the
8 area of 9 cents per kilowatt hour; is that
9 correct?
10 A. (By Mr. Large) Subject to check. I don't have
11 the exact figure as I sit here now.
12 Q. Would you conclude, as part of your planning
13 process, that avoiding consumption has
14 lowered cost than actually meeting supply
15 through your generating assets?
16 A. (By Mr. Large) To a limit it is, on an
17 incremental basis.
18 Q. Do you think there's opportunity to expand
19 your energy efficiency program to save the
20 ratepayers money?
21 A. (By Mr. Large) That's the purpose of the
22 energy efficiency program section of the Least
23 Cost Plan as filed.
24 Q. I'm sorry. I didn't --

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Page 87

1 A. (By Mr. Large) That's what our document here
2 says.
3 Q. That there are opportunities --
4 A. (By Mr. Large) Yes.
5 Q. -- to expand programs.
6 MR. PERESS: Thank you very
7 much. No further questions, Madam Chair.
8 CHAIRMAN IGNATIUS: It's ten
9 after three. I think we should take a short
10 break. Let's go off the record a moment.
11 (Discussion off the record)
12 CHAIRMAN IGNATIUS: Why don't we
13 take a break for 10 minutes.
14 (Whereupon a brief recess was taken at
15 3:12 p.m and resumed at 3:28 p.m.)
16 CHAIRMAN IGNATIUS: Mr. Peress,
17 were you finished? I lost track.
18 MR. PERESS: Yes, I am.
19 CHAIRMAN IGNATIUS: Okay. Thank
20 you. Then I think we move to Ms. Hollenberg.
21 MS. HOLLENBERG: Yes. Thank
22 you. I have no questions.
23 CHAIRMAN IGNATIUS: Mr. Speidel.
24

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHIE] Page 88

1 CROSS-EXAMINATION
2 BY MR. SPEIDEL:
3 Q. All rightie. If we can begin, and I think
4 in general terms we'll be directing these
5 questions to Mr. Large. I'm sure he can be
6 assisted as necessary. But we'll be turning
7 to Page 55 of PSNH Exhibit 1.
8 A. (By Mr. Large) I have that, Mr. Speidel.
9 Q. Very good. Now, there's an exhibit here, a
10 table, that's marked as Exhibit IV-8 that
11 reads, "Market Potential By Customer
12 Sector." Do you see that, Mr. Large?
13 A. (By Mr. Large) I do.
14 Q. Okay. Now, can you confirm that the column
15 marked "Residential Annualized Savings" in
16 Exhibit IV-8 with figures in megawatt hours
17 does not incorporate the MMBtu savings from
18 expenditures on residential non-electric
19 programs? Now, that's a little bit of a
20 mouthful, but I can ask the question again.
21 A. (By Mr. Large) I can confirm that that is the
22 case.
23 Q. Okay. Very good. Thank you.
24 Now, could you also confirm that the

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 89

1 residential program expenditures shown in the
2 first column on this Exhibit IV-8 includes
3 expenditures on non-electric programs?
4 A. (By Mr. Large) I am confident that that is the
5 case as well.
6 Q. Okay. Now, given that the Residential
7 Program Expenditure column includes
8 accepting on non-electric programs, while
9 the column headed "Residential Annualized
10 Savings" does not include non-electric
11 savings, would you agree that the reasons
12 for the difference between the projected
13 increase in expenditures and the projected
14 increase in savings -- at the top of Page 55
15 you have these three bullet points there
16 discussing this -- should have referenced
17 non-electric programs as well?
18 A. (By Mr. Large) I'd like to have a moment to
19 review that material, please?
20 Q. Sure.
21 (Witness reviews document.)
22 A. (By Mr. Large) It would be completely accurate
23 to refer to the savings as you identified as
24 being electric savings only.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 90

1 Q. Thank you. Well, there's one more question
2 on this line. Let's turn to Exhibit IV-19,
3 and that would be on Page 66, I believe.
4 Yes, that's correct.
5 A. (By Mr. Large) I have that page.
6 Q. Very good. Now, this -- now let's take a
7 look at the Market Potential row, the first
8 row there. Could you please clarify whether
9 the Net Present Value column for TRC, which
10 is shorthand for total resource cost
11 benefit, which is marked as \$404,471,604,
12 includes the dollar benefit of fossil fuel
13 costs avoided by non-electric programs?
14 A. (By Mr. Large) I would have to do -- subject
15 to check, say that is included.
16 Q. Thank you. Very good. No further questions
17 from Staff.
18 CHAIRMAN IGNATIUS: Thank you.
19 Commissioner Harrington.
20 CMSR. HARRINGTON: Okay. I'm
21 going to give my questions to the panel.
22 Whoever feels most comfortable answering them
23 would probably be best.
24 A. (By Mr. Large) We appreciate that. Thank you.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 91

1 INTERROGATORIES BY CMSR. HARRINGTON:
2 Q. In looking at future, one of the things you
3 need to look at is load growth, or what you
4 expect the load to be in the future in your
5 service area under the -- what's the...
6 under 378, it talks about forecast of future
7 electrical demands for utility service area
8 is one of the things you need to address.
9 How have you incorporated the energy
10 efficiency forecast looking out into those
11 projections for that into this plan? What I'm
12 looking for is, you know, recently on the
13 regional level, ISO-New England has now taken
14 energy efficiency forecasts into their load
15 growth forecast for needs assessment, such as
16 the one that was just done on New Hampshire
17 and Vermont for transmission needs.
18 So, is there a similar-type thing done by
19 Public Service in this plan to show the
20 reduction in or the change in their future
21 electrical demand based on the implementation
22 of the energy efficiency, including demand
23 response?
24 A. (By Mr. Large) Yes. Yes, there is.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 92

1 Just as a point of background, if you
2 look at the requirements of the law for
3 Least Cost Resource Plans, there are several
4 bulleted items that fall in sequence. And
5 we've attempted to actually chapter our plan
6 to comport with those requirements, to make
7 it as easy as possible to follow along. And
8 if you were to look at Section 3 of the
9 plan, starting at Page 13, and then
10 specifically Page 22, Exhibit III-4,
11 Conservation/Load Management, you would see
12 how we have factored into our load forecast
13 that we build up. We subtract from that the
14 values that are shown in that table to
15 account for conservation/load management
16 contemplated in the plan.
17 Q. Okay. Thank you. Just one of the things I
18 wanted to get straight is this idea of
19 dispatch and cost. And maybe this is
20 probably you, Mr. Errichetti. There was a
21 lot of discussion on this. And see if I've
22 got this straight.
23 On the day-ahead market, PSNH would know
24 what the going-forward cost of their assets

[WITNESS PANEL: LARGE SMAGULA TILLOTSON ERRICHETTI] Page 93	[WITNESS PANEL: LARGE SMAGULA TILLOTSON ERRICHETTI] Page 95
<p>1 would be. They would be able to figure that</p> <p>2 out based on fuel cost and other things, and</p> <p>3 then they would bid into the market based on</p> <p>4 that on the day ahead, and they either would</p> <p>5 or wouldn't clear, based on the clearing</p> <p>6 price.</p> <p>7 A. (By Mr. Errichetti) Generally speaking, yes.</p> <p>8 We look at -- when you say the "going-forward</p> <p>9 cost," you're referring to the variable cost.</p> <p>10 Q. Variable cost, I should say.</p> <p>11 A. (By Mr. Errichetti) Yes.</p> <p>12 Q. So, on a daily basis, the plans either do or</p> <p>13 do not run based on that variable cost</p> <p>14 versus the clearing of the day-ahead market</p> <p>15 in a given hour.</p> <p>16 A. (By Mr. Errichetti) In a general answer, the</p> <p>17 answer is yes, there are operational</p> <p>18 considerations that sometimes can dictate the</p> <p>19 unit running or not running. Sometimes you</p> <p>20 have fuel supply concerns that can override</p> <p>21 the economics. But in the main, generally</p> <p>22 speaking, it's the economics.</p> <p>23 Q. But I think what you were saying earlier was</p> <p>24 that you would be willing in certain hours</p>	<p>1 Q. All right. Just want to make sure we got</p> <p>2 that straight. And there was a lot of</p> <p>3 discussion about making the assumption, I</p> <p>4 think it was on Page 31 of the plan, that</p> <p>5 the plants would run in, quote, baseload.</p> <p>6 Can you define "baseload" for me?</p> <p>7 A. (By Mr. Errichetti) Well, for purposes of the</p> <p>8 plan, we define "baseload" as full potential</p> <p>9 output less maintenance, less forced outage</p> <p>10 assumption. And the forced outage assumption</p> <p>11 was based on historical patterns.</p> <p>12 Q. So, given that you're looking at the</p> <p>13 classic, what I would call a baseload --</p> <p>14 like a Seabrook is a baseload, where their</p> <p>15 goal is to turn the plant on and have it run</p> <p>16 for as long as they can, subject to</p> <p>17 maintenance outages.</p> <p>18 A. (By Mr. Errichetti) Yes.</p> <p>19 Q. So, what would be the capacity factor in a</p> <p>20 baseload mode for these plants?</p> <p>21 A. (By Mr. Errichetti) Well, I can defer to you</p> <p>22 guys. I would say 80s to 90s.</p> <p>23 A. (By Mr. Smagula) On an annual basis, it would</p> <p>24 be in the 80s and low 90s for our coal plants.</p>
[WITNESS PANEL: LARGE SMAGULA TILLOTSON ERRICHETTI] Page 94	[WITNESS PANEL: LARGE SMAGULA TILLOTSON ERRICHETTI] Page 96

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 97

1 kind of circumstance where you start to see
2 some Schiller units. And then it would have
3 been 2010 where we first saw a more obvious
4 economic reserve due to, you know, much like
5 what we talked about today.
6 Q. Okay. So, in 2010, or the time of the
7 submission of the plan, the plant was -- the
8 coal plants were going under a --
9 transitioning from baseload plants to maybe
10 intermediate-run plants, or plants that
11 weren't economically dispatched all the
12 time.
13 A. (By Ms. Tillotson) Correct.
14 Q. Okay. And that lowering of the capacity
15 factors during the, let's say the 2010 year,
16 that would still have incorporated the times
17 when you ran for a few hours a day that were
18 uneconomical because it was overall more
19 economical to run than it was to shut down
20 and start up.
21 A. (By Mr. Errichetti) Yes.
22 Q. Okay.
23 A. (By Mr. Errichetti) And just to clarify Ms.
24 Tillotson's answer a second ago, in 2010, it

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 98

1 wasn't clear to us that gas prices were going
2 to continue to go down. So I don't know if
3 you can just take 2010 and say, ah-ha, they're
4 now peak or intermediate.
5 Q. Well, that brings me right to my next
6 question. How convenient.
7 What was Public Service's assumption for
8 natural gas prices for the two years after the
9 deadline for this plant as of 9/30/10?
10 A. (By Mr. Errichetti) For purposes of preparing
11 the plan, we didn't look at energy prices or
12 gas prices.
13 Q. Make sure I got that correct. For purposes
14 of preparing the plan for least cost
15 planning for the next two years in the
16 future, you didn't look at projected energy
17 or gas prices?
18 A. (By Mr. Errichetti) Well, in the Least Cost
19 Plan -- my area of interest in the plan is
20 estimating the ES purchase requirement and how
21 we would go about satisfying that requirement.
22 And in going from 2009 to 2010, as a result of
23 the ES rate setting and the reconciliation
24 dockets, we were moving to a more just-in-time

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 99

1 type of purchase strategy for filling that
2 gap. So we really --
3 Q. Excuse me one second. When you say
4 "just-in-time purchase," you're talking
5 purchase of fuel?
6 A. (By Mr. Errichetti) Energy.
7 Q. Purchase of energy. Okay.
8 A. (By Mr. Errichetti) We were moving away from
9 purchasing a hundred percent of our
10 forecasted -- we use the word "gap" in the ES
11 rate setting, where you're measuring the
12 difference between your expected generation
13 and your expected load.
14 When we were preparing this plan, we
15 did sensitivities on migration. And when
16 you look at increased migration, you're
17 looking at reduced purchase requirements.
18 If you assume less migration, you're looking
19 at fewer purchases. And increased or
20 decreased generation just swings that
21 purchase requirement. Since we were moving
22 from buy it a year ahead, buy it two years
23 ahead, to buy it much closer to the time of
24 need, some of that forecast wasn't needed in

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 100

1 preparing the plan or in describing the plan
2 process.
3 Q. And I'm assuming you're aware that the
4 marginal price in the day-ahead real-time
5 energy markets is almost all the time -- not
6 all the time, but a very high percentage of
7 the time set by natural gas plants?
8 A. (By Mr. Errichetti) There's a very high
9 correlation in New England.
10 Q. So I'm a little befuddled here. If you do
11 not look ahead for the price of natural gas
12 over the next two years, how can you
13 possibly plan on how much coal to buy, for
14 example? Because without knowing that --
15 without making a projection of how the --
16 what the clearing prices will be, which are
17 based on the price of natural gas, how are
18 you able to determine how often your coal
19 plants will run, so that you can buy fuel,
20 you know, adequate to supply them?
21 A. (By Mr. Errichetti) As the situation stands,
22 we actually have the bulk of our coal
23 purchases already lined up relative to their
24 dispatch.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHI Page 1] 01

1 But to answer specifically, if we were
 2 going out and looking at expending our coal
 3 purchase commitments, that is when we would
 4 look at the economics of the coal units and
 5 decide whether to buy coal or not, compared
 6 to the forward energy prices.
 7 Q. But you don't put that analysis as part of
 8 this plan?
 9 A. (By Mr. Errichetti) Correct, that was not part
 10 of this plan. It is a part of our process.
 11 It's just not something that was incorporated
 12 explicitly into this plan.
 13 Q. Okay. Let's look at a couple other things
 14 then. Getting to the migration area, that
 15 seems to be a -- that came up. Sounds like
 16 you said you ran some sensitivities -- I
 17 believe it's also on Page 31 of the report,
 18 where it talks about migration levels at
 19 zero, 25, 31 and 40 percent. Is that from
 20 the present level, or is that absolute
 21 from -- was does that exactly mean? Is that
 22 a change from 9/30/10?
 23 A. (By Mr. Errichetti) That's an absolute value.
 24 In other words, it's not incremental from

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHI Page 1] 02

1 where we were. Those are absolute total
 2 migration amounts.
 3 Q. And what was the migration amount in
 4 absolute terms on 9/30/10 when the plan was
 5 submitted?
 6 A. (By Mr. Errichetti) Approximately 31 percent.
 7 Q. About 31 percent. Okay.
 8 So, for purposes of looking at
 9 assumptions, I guess is what -- scenario
 10 assumptions is what they're called -- you were
 11 sitting at 31-percent migration level, and you
 12 chose to look at 25-percent and zero -- i.e.,
 13 energy service customers returning back to
 14 Public Service in two scenarios: One was to
 15 keep exactly the same, and one was to have the
 16 migration level go up to 40 percent, or
 17 increase by 9 percent. Am I reading that
 18 correctly?
 19 A. (By Mr. Large) Yes.
 20 Q. Now, as you look ahead over that time frame,
 21 since it makes it very difficult because you
 22 didn't project anything to do with energy
 23 service prices, so did you just -- I would
 24 think this would be a direct correlation

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHI Page 1] 03

1 between energy service prices, if they went
 2 up higher than people could buy at other
 3 places, either through wholesale or through
 4 a third-party or whatever, that the
 5 migration level would increase. But since
 6 you didn't project energy service prices,
 7 how would you -- how did you make those
 8 assumptions? Did you just pick 40 percent
 9 and say that's a good number to use?
 10 A. (By Mr. Large) We examined it as an upper
 11 limit. There's nothing that prevents the
 12 actual value going higher than that. But I
 13 can advise that existing customer migration is
 14 below that upper bound. And we can have a
 15 discussion about what our energy service rate
 16 is versus what's available in the marketplace
 17 conversation that I had with Attorney Peress
 18 to that point. We're currently below the
 19 40-percent upper limit that we utilized in
 20 this forecast.
 21 Q. When you say that you're currently below,
 22 meaning today?
 23 A. (By Mr. Large) Yes. For the past month
 24 customer migration was approximately

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHI Page 1] 04

1 35 percent.
 2 Q. Okay. And maybe it was too early in the
 3 process. But you didn't look at any costs
 4 associated with the scrubber for Merrimack
 5 because it wouldn't have come on during your
 6 two-year planning window? Is that what
 7 we're saying here?
 8 A. (By Mr. Large) Costs associated with Merrimack
 9 are not included in the cost forecast shown
 10 here.
 11 Q. So I look at some things, and your
 12 projections go out five years, and some of
 13 them go out more than that. And others go
 14 out -- they don't really say. So, is
 15 this -- the basis of this plan is what you
 16 thought was going to happen at the end of
 17 September 2010 through the end of
 18 September 2012?
 19 A. (By Mr. Large) Actually, it's a five-year
 20 look-ahead.
 21 Q. So it's a five-year look-ahead. So at a
 22 five-year look-ahead, since Merrimack
 23 Station was mandated by law to come online
 24 during that time frame, how come there's no

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 1105

1 cost of Merrimack associated with looking at
 2 this?
 3 A. (By Mr. Large) Cost associated with dispatch,
 4 or as Mr. Errichetti said, they're based on
 5 variable costs. And the scrubber has limited
 6 variable cost impact. So if our view was that
 7 Merrimack Station was going to run before the
 8 scrubber, it really shouldn't have changed
 9 after the scrubber, from a dispatch
 10 perspective.
 11 Q. Well, just staying right on that issue for a
 12 second, when the scrubber comes online, it's
 13 going to have somewhat of a parasitic load,
 14 as well as costs associated with maintaining
 15 the scrubber. So you are going to see a
 16 higher variable cost associated with
 17 Merrimack. And since it seems to be -- it's
 18 not a classic baseload plant that turns on
 19 and runs almost all the time because it's a
 20 price-taker and will be willing to take that
 21 like, say a wind plant would be, or a
 22 nuclear plant, there must be times when it's
 23 pretty close to the margin. So any increase
 24 in its variable cost would lead to it

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 1106

1 running less, I would think.
 2 A. (By Mr. Errichetti) Everything you said
 3 conceptually, directionally is correct.
 4 Q. Okay. And so if we look at the cost,
 5 getting back to the migration levels again,
 6 we have sort of two things that feed off of
 7 each other. You start out with migration
 8 levels because we have low gas prices which
 9 are driving down the costs associated with
 10 not only wholesale, but residential rates
 11 and other rates in New Hampshire, and now
 12 there's third-party people offering. That
 13 will lead to at least some people switching
 14 and going to someone else to be an energy
 15 supplier. And what I heard is, and I've
 16 read in here, as customers migrate, what
 17 happens is the energy supply as they move to
 18 a different energy supplier, your fixed cost
 19 associated with the generating plants is
 20 then distributed over fewer customers, which
 21 then causes more people to leave, which
 22 causes energy service rates to go up. Have
 23 you done any planning about how you might
 24 stop that spiral downward in this thing -- I

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 1107

1 wasn't able to find anything -- where energy
 2 service rates drive mitigation, mitigation
 3 drives energy service rates? Do you have a
 4 plan to stop that?
 5 A. (By Mr. Large) That's substantially and
 6 completely the subject of what's referred to
 7 as the "migration docket" that's been before
 8 the Commission for about a year and a half.
 9 Q. And maybe I can simplify things here. It
 10 sounds a little bit as if you're taking this
 11 least cost planning not as an overall view
 12 of the future for Public Service but as a
 13 thing that, what, picks up everything that's
 14 not covered by some other docket only?
 15 A. (By Mr. Large) The difficulty that we face is
 16 that many of the topics that are discussed in
 17 the Least Cost Plan are discussed in many
 18 other places. My best example is associated
 19 with conservation/load management, where the
 20 law requires us to speak to those issues. But
 21 I would say that the central place where C&LM
 22 decisioning is made, where decisions about
 23 management of the CORE programs on a statewide
 24 basis occurs, is not in PSNH's Least Cost Plan

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 1108

1 but in the CORE programs docket. So this is
 2 an attempt to account for and recognize and
 3 develop a plan going forward for a five-year
 4 forecast, five-year period, that cares for all
 5 the questions necessary to view our planning.
 6 But the central discussion about many of these
 7 topics does not occur in this docket, but
 8 occurs more specifically and more focused on
 9 things that come before the Commission.
 10 Q. Okay. Just a couple more questions. It's
 11 sort of -- I don't have the exact words in
 12 front of me. But it's almost a boiler
 13 plate. Every time you were asked a question
 14 about a potential result or potential
 15 consequence of a new regulation or rule, it
 16 was something like "PSNH does not prepare
 17 analyst" -- "does not prepare analysis or
 18 scenarios based on possible regulatory
 19 rules." And I understand some of these
 20 rules can be a moving target. But for least
 21 cost planning, for looking ahead to the
 22 future, doesn't it -- wouldn't it be prudent
 23 to say, okay, here's some scenarios we can
 24 look at. We have to build a cooling tower,

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICH|Page 11] 09

1 we don't have to build a cooling tower.
 2 There's a lot of information that's been
 3 published generically on the cost of
 4 implementation of the EPA MACT rules, for
 5 instance, at a coal plant. You wouldn't
 6 have to go out and do your own analysis.
 7 You could probably find that in a fairly
 8 short period of time and say, okay, we're
 9 going to run a scenario, assuming we have to
 10 do something and put out the cost of that.
 11 Why is it you just choose to say every time
 12 the rule isn't final, that you're not even
 13 going to look at it?
 14 A. (By Mr. Smagula) Maybe I could comment on
 15 that. We didn't say we're not going to look
 16 at it. What we said is we have looked at it.
 17 And we have indicated that, based on the
 18 improvements in the capital investments made
 19 to our facilities over the last 10 years, the
 20 scrubber being the more recent and larger one,
 21 NCRs in Merrimack, SNCRs at Schiller Station,
 22 over-fired air systems in their combustion
 23 process at Newington and at Schiller, low-NOx
 24 burners at Schiller and at Newington Station.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICH|Page 11] 10

1 And there are a number of other things that I
 2 could expand on that indicate that we have
 3 been making investments to our facilities over
 4 the last 10 years. And the summation and the
 5 culmination of all that puts us in what we
 6 feel is a good position with all of these
 7 merging regulations going forward.
 8 So it's -- the response, I believe, is
 9 correct, but it's based on the fundamental
 10 position that, looking at all of these
 11 emerging regulations, whether it's the
 12 utility match or BART or others, there are
 13 some operational changes that we could
 14 consider with regards to fuels, with regards
 15 to our operating parameters. But we don't
 16 envision any large capital investment in
 17 spite of what a lot of people may believe is
 18 imminent.
 19 Q. And that's fair enough. But I guess I keep
 20 looking at this boiler plate response that
 21 shows up over and over again as part of the
 22 Least Cost Integrated Resource Planning
 23 process. "PSNH does not prepare analyses or
 24 scenarios based upon possible regulatory

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICH|Page 11] 11

1 rules or outcomes." So it sounds like
 2 you're saying you have done some analysis.
 3 A. (By Mr. Smagula) Well, we -- I think what I've
 4 said is we've made some judgments. We have a
 5 lot of experience. We know our facilities.
 6 We're cognizant of the emerging regulations.
 7 So we haven't put a team of engineers in a
 8 room and say prepare me a 15-page document to
 9 do that. We read the rules. We look at our
 10 equipment. We look at some other information.
 11 And we know our equipment. When you look at
 12 other studies, whether it be studies by other
 13 regions or the EPA or other guidance documents
 14 that are collections of generic information
 15 that indicate that certain units of certain
 16 sizes that have certain potential emission
 17 reduction needs will install a bag house, will
 18 install certain pieces of equipment. We look
 19 at the specific language in the regulations as
 20 they exist, look at our facilities,
 21 site-specific, and come to what we believe is
 22 a PSNH approach. We didn't hire an
 23 engineering company to do it because we're
 24 familiar with it. So ours is tailored -- our

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICH|Page 11] 12

1 opinions are tailored to our belief of the
 2 future and the cost investment.
 3 Q. And I'm not doubting that all that was done.
 4 It just seems when you keep answering over
 5 and over again as part of the Least Cost
 6 Integrated Resource Planning, that you don't
 7 do it -- I'm assuming it's not in this plan.
 8 If you're doing all that, why not take
 9 credit for it and put it in the plan so
 10 people can see what your analysis was?
 11 A. (By Ms. Tillotson) We certainly reviewed to
 12 come here today. And I think one of the
 13 recognitions we had is the utility and the
 14 generating department were typically
 15 compliant. Strategy at the end of the day:
 16 What is that compliance tool going to be?
 17 So when we think in terms of studies
 18 and analyses, it's because we have a rule
 19 that's final. We have a limit. We have a
 20 very specific obligation. And that's when
 21 we would absolutely kick into kind of that
 22 study mode of what's the Least Cost Plan to
 23 get us from the rule today to a
 24 three-year -- end of three-year compliance

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 13

1 period. And that's what we're saying we
2 didn't include here, because the timing of
3 so much of this regulation was not timely.
4 We would have been sort of chasing a moving
5 target. That is certainly very different
6 than the day-in-and-day-out review that our
7 team does to get a broad view that does not
8 result in all the spreadsheets, that I think
9 sometimes we would say there's the study
10 you're looking for. But a qualitative
11 analysis is done on an ongoing basis.
12 And to Mr. Smagula's point, we are at a
13 place right now with the investment over the
14 last 10 or 15 years, and certainly the
15 scrubber at Merrimack Station, put the
16 criticality of some of these and the
17 compliance period at a point where we didn't
18 have to go out and invest in a study. Some
19 of that will come over the next two years as
20 some of these rules are finalized.
21 Q. Well, again, I understand that. But I'm
22 trying to -- what I'm trying to comprehend,
23 I guess, maybe what you think the purpose of
24 this Least Cost Plan study is, because what

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 14

1 it says in 378:38 is, "Pursuant to the
2 policies established under R.S.A. 378:37,
3 each electric utility shall file a Least
4 Cost Integrated Resource Plan." And then it
5 goes on to say those various bullets you
6 talked about. But 378 says, "The general
7 court declares that it should be the energy
8 policy of this state to meet the energy
9 needs of its citizens and businesses of the
10 state at the lowest reasonable cost while
11 providing for reliability and diversity of
12 energy sources." And then it goes on from
13 there.
14 How can you have a plan that shows that
15 you're going to meet the energy needs of the
16 citizens or businesses of the state at the
17 lowest reasonable cost if you're not
18 projecting energy service rates, if you're not
19 projecting migration customer rates, if you're
20 not projecting future capacity factors of your
21 plants based on gas plants? In fact, you're
22 not even projecting future gas plants which we
23 all agree sets the clearing price of the
24 market in New England. I guess I'll leave

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 15

1 that as a rhetorical question.
2 And to finalize, I guess one more
3 question which you may or may not answer,
4 depending on your position. Do you feel --
5 does PSNH feel least cost planning is
6 accomplishing anything other than complying
7 with a requirement to file a Least Cost Plan?
8 Is it actually a tool that you'll go back to
9 with this plan and say we're going to pull
10 this out every other day and look at it and
11 make decisions and act accordingly? Or is
12 this simply filing a report because there's a
13 requirement to file a report?
14 A. (By Mr. Large) It sadly has very limited
15 value. And when we recognize that we're now
16 in April of 2012 with respect to a plan that
17 was filed in September of 2010 -- and, as Mr.
18 Errichetti spoke, you know, it was really
19 constructed in June and July of 2010 -- its
20 import to decisions that we make real-time,
21 many of the things that have been discussed
22 about these environmental regulations that
23 have changed to be more clear or less clear
24 subsequent to that point in time, it is a

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page 16

1 snapshot in time that examines what we view
2 the world to be at that point. But does it in
3 fact drive decision-making? To a very limited
4 degree.
5 Q. And I have one last question, I guess, and
6 that will be it.
7 In 369-B:3, Authority to Issue Finance
8 Orders -- I don't know why it's in this law,
9 but it is -- Section 1(A) says, From
10 competition day to completion of the sale of
11 PSNH's ownership interest in fossil and hydro
12 generation assets located in New Hampshire,
13 PSNH shall supply all, except as modified
14 pursuant to R.S.A. 374-F:3, which is the
15 renewable portfolio standard, transition
16 service and default service in its retail
17 electric service territory from its generation
18 assets, and, if necessary, through
19 supplemental power purchases in a manner
20 approved by the Commission.
21 I'm just trying to reconcile that, having
22 read that and having heard the discussion
23 earlier today. As this appears, it says you
24 shall supply all the power from your

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page | 17

1 generating. But it seems like the practice
2 [sic] has nothing on discouraging the
3 practice. But you look and say what's the
4 most economical way to provide it, which may
5 be through your generation or maybe not
6 running a generation and buying it in the
7 market at a cheaper price. Am I missing
8 something, or is there a conflict with the law
9 on that?
10 A. (By Mr. Errichetti) Well, on the variable cost
11 side, I think we feel like we're complying
12 with the law. We are using our generations.
13 Q. Even when it's not running?
14 A. (By Mr. Errichetti) When it's not economic to
15 run, that wouldn't be in the customer's best
16 interest. So we have the generation. We're
17 clearly using the capacity. You know, we use
18 everything out of it that's prudent. And
19 then -- I don't know if "prudent" is the right
20 word to use. Yes.
21 Q. Well, maybe that's a subject for a different
22 one. But I was just curious with the idea
23 that this says "will supply all" and now we
24 know there are times when -- and then it

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page | 18

1 talks about, if necessary, through
2 supplemental power purchase. And it appears
3 that "if necessary" is being read to mean if
4 necessary to get a better price. But that's
5 for a different day, I guess. I was just --
6 I thought I might have been missing
7 something in the law. But I guess it's not
8 that obvious.
9 CMSR. HARRINGTON: All right.
10 That's all I have.
11 CHAIRMAN IGNATIUS: Commissioner
12 Scott.
13 CMSR. SCOTT: You know, I can't
14 decide if I like going after Mr. Harrington or
15 not. I always write all my questions down,
16 and by the time he's done, I've gotten most of
17 them answered. So --
18 CMSR. HARRINGTON: Well, next
19 time we go the other way.
20 CMSR. SCOTT: It's a good thing.
21 INTERROGATORIES BY CMSR. SCOTT:
22 Q. Back to the intent of the IRP itself.
23 Obviously, the statute says it has to be
24 filed at least biannually. And again, I'll

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page | 19

1 start with the same caveat that Commissioner
2 Harrington did. Whoever wants to answer is
3 fine with me. I'm more interested in the
4 answer than who.
5 It has to be filed at least biannually
6 and, my understanding, use a five-year
7 planning horizon; is that correct?
8 A. (By Mr. Large) That is correct. That's
9 evolved over the filing of the last three
10 integrated least costs we submitted, including
11 this one.
12 Q. Well, that would imply to me -- and don't
13 let me put words in anybody's mouth -- that
14 that's kind of an ongoing, continuing
15 process. Does that sound correct? Or do
16 you just -- when do you start the next one I
17 guess is my question?
18 A. (By Mr. Large) Well, if we were to base the
19 next filing -- our expectation of when the
20 next filing would be made, based upon the
21 Commission's orders in the last two filings,
22 we would believe that the clock would start on
23 the next filing to be made two years hence
24 from the final order in this docket.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page | 20

1 Q. So it's not a continuing process for you.
2 You basically, at some point between now and
3 two years, in theory, start to pick up a pen
4 and pencil to start working on it?
5 A. (By Mr. Large) To prepare a filing of this
6 nature, that is correct.
7 Q. Okay. And again, going back to some of
8 Commissioner Harrington's questions, what --
9 how do you use this document? You prepare a
10 -- what does PSNH do with this document? Is
11 this your planning document or -- let me ask
12 that first.
13 A. (By Mr. Large) It is a planning document. Its
14 purpose is to satisfy the requirements of law,
15 first and foremost. It provides an
16 opportunity for our organization to look at
17 the questions that are posed by the law and
18 give us time and inclination to consider
19 integration; make sure that we give due
20 consideration the conservation/load management
21 in an integrated fashion with operation of our
22 facilities; to look at, as we do on a
23 minute-by-minute, day-by-day, year-by-day
24 basis, but take a little bit longer view with

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHPAGE] 21

1 respect to REC obligation and how we're
2 planning on purchasing RECs and make decisions
3 about that. So it's a pause that causes us to
4 examine a somewhat longer time horizon than is
5 typically the case because our cycles are
6 going to be predominantly one year to two
7 years.

8 Q. So, following that, is there a -- I can
9 understand, obviously, you have a statute,
10 and the statute says do certain things. So
11 I understand that's what you would do. Is
12 there a parallel planning document that PSNH
13 uses for long-term planning that's not this?

14 A. (By Mr. Large) We have a budget planning
15 document, kind of a corporate strategic
16 planning document, that examines where we may
17 be going directionally as PSNH or a subsidiary
18 of the Northeast Utility System, but nothing
19 that is, I will say, as voluminous or
20 comprehensive as what's provided here.

21 Q. Okay. Thank you. Also within the plan, for
22 instance, for, if I remember right,
23 migration, you use a range. Obviously, you
24 don't have a crystal ball. So I saw the

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHPAGE] 22

1 zero to 40 percent figure in there for
2 demand. Again, I understand you don't have
3 a crystal ball. So you have a range in your
4 planning, if I remember, in the IRP document
5 itself.

6 A. (By Mr. Large) That's what we submitted, yes.

7 Q. And again, going back to the earlier
8 discussion, but for -- and I do understand
9 there's a moving target, especially for
10 environmental regulation and law and courts,
11 et cetera. But why in those cases where you
12 have an uncertainty you put a range, but yet
13 for environmental compliance you don't have
14 a range that I see in the document?

15 A. (By Mr. Large) If I can just consult with Mr.
16 Smagula for just a second? May I?

17 (Discussion off the record)

18 A. (By Mr. Large) So, while the previous
19 conversation was going on with Mr. Smagula and
20 Ms. Tillotson, I jotted down some thoughts. I
21 think whether it's been plainly said or
22 clearly said in the plan, I think it is
23 appropriate for PSNH to identify that we have
24 no plans to make significant investments to

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHPAGE] 23

1 meet undefined environmental requirements as
2 a -- as we interpreted those environmental
3 requirements in July, August, September of
4 2010. On the judgment of Mr. Smagula and Ms.
5 Tillotson, and our assessment, we do not
6 foresee the need for major capital
7 investments, major investments to achieve
8 compliance.

9 And I would add, if we look at our
10 history of compliance, and following a very
11 similar path for decision-making and
12 planning, in quotes, okay, I believe the
13 Company has demonstrated a very high degree
14 of success of compliance, of fulfilling the
15 obligations of law and rule as they became
16 known. And we believe that we will continue
17 that path of success. But the judgment made
18 when this plan was filed is that there were
19 not going to be the need for major capital
20 investments. It's a plan as opposed to, if
21 you will, thinking or musing or speculating.
22 We've defined very narrowly what our
23 expectations are, and it is that we will not
24 need to make major capital investments. I

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHPAGE] 24

1 turn to my friends to correct how I phrased
2 that.

3 CMSR. SCOTT: That's all. Thank
4 you.

5 CHAIRMAN IGNATIUS: I have a few
6 questions.

7 INTERROGATORIES BY CHAIRMAN IGNATIUS:

8 Q. Mr. Large, your comment, which was very
9 forthright, and I appreciate, is that the
10 Least Cost Plan that's filed in accordance
11 with the statute is of limited value. And
12 it may not be the forum here to define what
13 a better planning requirement would be,
14 because that's ultimately a legislative
15 call. But it strikes me as we've got
16 everybody here thinking about this and
17 spending an enormous amount of time leading
18 up to it. And this case, similar to other
19 Least Cost Plan dockets for this company and
20 other companies, they take up a lot of time
21 and a lot of energy, and if they are not
22 serving any particular purpose that's useful
23 for everyone, then we ought to all ask
24 ourselves: How can we do a better job?

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page | 25

1 Do you have any thoughts right now on
 2 what a Least Cost Plan that would be of
 3 greater value would look like?
 4 A. (By Mr. Large) I would be happy to give that
 5 consideration. I don't have a good answer for
 6 you, as I sit here today.
 7 Q. Well, that's fair.
 8 A couple of specifics in the plan itself.
 9 You said repeatedly that you don't forecast
 10 energy prices, although in the plan itself
 11 there's a reference to forecast of electricity
 12 prices on Page 21 in the Summary section. Can
 13 someone explain to me what -- it's in B.3.2 --
 14 and I'm looking here at a sentence that says,
 15 "The forecast of electricity prices is based
 16 on current and projected rate levels as of
 17 April 2010." And then you have a visual
 18 depiction on the next page that runs out
 19 through 2015 of retail electricity prices. So
 20 what do you project, what do you not project?
 21 Is there a difference between the word
 22 "project," "forecast," "estimate" that's the
 23 problem here?
 24 A. (By Mr. Large) The forecast that's being

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page | 26

1 referred to in this section is utilized
 2 specifically for the purposes of creating a
 3 load forecast, how many megawatt hours we
 4 would anticipate that customers will take on
 5 the delivery system into the future. So that
 6 is a variable that will influence the price
 7 elasticity, that customers will take more or
 8 less power. It is not for making
 9 generation/dispatching decisions. It's
 10 simplifying input to try to create this
 11 forecast of load.
 12 Q. All right. Well, let's just stick with
 13 planning. I understand it's not about
 14 dispatch decisions.
 15 Does the Company forecast electricity
 16 prices out for five years for energy service?
 17 A. (By Mr. Errichetti) As I think it was
 18 mentioned earlier this afternoon -- how about
 19 if we turn the mic on.
 20 For purposes of the corporate financial
 21 model, one of the inputs they need is a
 22 price. And so a projection is made. As I
 23 also mentioned, it's a pass-through. It
 24 cancels out. And we ask them every year:

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page | 27

1 Why do you need that? Other than using it
 2 in the financial model, we don't use a
 3 five-year-out price of electricity
 4 calculation, except for what's done here to
 5 do the year-over-year price of electricity
 6 elasticity components of the sales forecast.
 7 Q. Well, let's not talk about what corporate
 8 asked for. I'm asking about what's in this
 9 docket that you presented for us. You've
 10 got some representation for five years out
 11 of retail electricity prices in different
 12 classes. Are you telling me these are
 13 reliable, they're not reliable, they're good
 14 for one purpose, but not for another? If
 15 you think so little of them, why are they in
 16 the document?
 17 A. (By Mr. Errichetti) They are in the document
 18 because they drive -- they are an input for
 19 the load forecast. My understanding is that
 20 it may be portrayed here, you know, like GNP.
 21 You know, economic growth indicators get in
 22 here. And the year-to-year change in the
 23 price of electricity is what drives the
 24 forecast, not the price of electricity itself,

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page | 28

1 is my understanding. So it's used as an
 2 indicator to drive the direction of the sales
 3 forecast, and it's a necessary input to the
 4 sales forecast.
 5 Q. On the question of whether the Merrimack and
 6 Schiller units should be considered baseload
 7 units that you were having some discussion,
 8 I think with Mr. Peress about, and looking
 9 at Page 32 of the plan, you conclude that --
 10 and this is as of the filing of the plan in
 11 2010 -- that the coal-fired and wood-fired
 12 units at Merrimack and Schiller are economic
 13 and are assumed to operate as baseload
 14 resources other than plant maintenance.
 15 At the time that you were assuming --
 16 that you were developing this plan, what were
 17 the capacity factors for Merrimack and
 18 Schiller? And I know that we've been through
 19 this. But Mr. Errichetti, you were very
 20 guarded in your response to Mr. Peress's
 21 questions about capacity factor, as if you
 22 weren't sure that his numbers looked reliable,
 23 and wouldn't concede they were good numbers,
 24 only that that's what the chart shows. So

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page | 29

1 what's your understanding of the capacity
2 factors for those units at the time the plan
3 was filed?
4 A. (By Mr. Errichetti) In 2010, they were being
5 put in economic reserve more often than they
6 had been previously. But what was happening
7 in 2010 wasn't necessarily a harbinger of what
8 the future held. And if we looked back just
9 two years prior, they were baseload. So, for
10 the purposes of this plan, we put them back up
11 to baseload.
12 Q. Do you know what the capacity factors were
13 for those units when you were developing the
14 plan?
15 A. (By Mr. Errichetti) You mean like -- well, the
16 capacity factor is a measure of generation
17 over possible generation. So you do that
18 calculation over any time period. I'm not
19 quite sure what time period you're referring
20 to when you say "capacity factor." Were they
21 running a lot in the middle of 2010? During
22 the summer they were running well. In the
23 prior spring they had run less, but there was
24 also maintenance. With respect to -- well,

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page | 30

1 that was what was going on.
2 Q. Well, you testified earlier that 85 percent,
3 low 90 percent was a figure that would be
4 appropriate to consider a baseload plant to
5 be running at.
6 A. (By Mr. Errichetti) Absent maintenance and,
7 yeah, taking into account forced outages,
8 that's a good...
9 Q. Okay. So in 2010, were those units running
10 at that 85-, 90-, 95-percent level?
11 A. (By Mr. Errichetti) No.
12 Q. What were they running at?
13 A. (By Mr. Errichetti) I don't know the exact
14 number, but it was less.
15 Q. Is there somewhere in the plan or in the
16 appendices to the plan that would show that?
17 A. (By Mr. Errichetti) In the plan itself, no.
18 Well, hmm. Let me -- hold on a moment. I
19 know there's an average of five years'
20 historical generation in part of the report.
21 And I know we have... there were data requests
22 where we provided, for instance, economic
23 reserve hours, which gives you a sense as to
24 but for planned and forced outages, what the

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page | 31

1 capacity factor would have been.
2 Q. All right.
3 A. (By Mr. Errichetti) But in the plan itself,
4 what's being referred to as Exhibit 1, I do
5 not believe historical capacity factors are in
6 here.
7 Q. Well, I'm looking for -- and if it's in a
8 data response, that's all right -- what
9 gives you the confidence that designating
10 these units as baseload in your planning was
11 appropriate.
12 A. (By Mr. Errichetti) While we didn't do any
13 rigorous calculations, in this process when
14 the question was raised, well, for the plan
15 for the five-year projection, what are we
16 going to run the units at, my department, I
17 want to say casually -- I don't want -- I
18 don't know quite what the adjective is. But
19 we did look at the forward energy prices and
20 we did look at the estimated dispatch price.
21 It was nothing rigorous. It was kind of a
22 quick review. And when they said -- when we
23 were preparing and I was working, you know,
24 with the various people in preparing the

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page | 32

1 document, they said, well, what's it look
2 like? How do our units appear to be looking
3 at the forward market? And the answer was,
4 well, if the prices hold up and our dispatch
5 prices are about right, they're going to run a
6 good deal. They're going to run close to
7 baseload. So the idea was, all right, we'll
8 just say they'll run baseload, generally
9 speaking. But we did not adopt a particular
10 gas forecast, energy forecast and coal price
11 forecast. It was more simplistic. And when
12 all the questions came in about adopting a gas
13 price forecast or an energy price forecast,
14 because we didn't do a rigorous calculation,
15 the answer was we didn't have one because we
16 didn't rely on one. We looked and said they
17 look baseload. We'll just assume, generally
18 speaking, they're baseload.
19 Q. When did the natural gas market pricing
20 significantly begin to drop?
21 A. (By Mr. Errichetti) Second half of 2008.
22 Q. And so for 2009, natural gas prices were
23 pretty low; were they not?
24 A. (By Mr. Errichetti) They have gone lower. So

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page | 33

1 it's a relative thing. Our units were still
 2 running pretty well in '09. I mean, not flat
 3 out and all hours, but they were still running
 4 well.
 5 Q. And the gas prices in 2010 were lower than
 6 they've been in 2009?
 7 A. (By Mr. Errichetti) My recollection is yes, or
 8 flat. Flat to down a bit. They've really
 9 come down this year.
 10 Q. There is a dispute in this docket as to
 11 whether it should be the variable cost of
 12 operation of plants or an all-in cost. And
 13 some of this relates to the Newington study,
 14 but it also relates to what we've been
 15 looking at today and the plan overall for
 16 the generating units. What is the source of
 17 the Company's view that we should only be
 18 looking at variable costs -- whoever would
 19 like to take that?
 20 A. (By Mr. Errichetti) Both types of costs have
 21 their place. When you're looking at --
 22 referring back to Commissioner Harrington's
 23 reference to legislation, our generation is a
 24 given to serve ES so long as we have it. So

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page | 34

1 in a way, the fixed costs of those plants are
 2 sunk. They're there. So, for me, the only
 3 question is: Does it make economic sense to
 4 run a unit, or does it make more economic
 5 sense to buy the energy from the market? So
 6 it's just one component that's being
 7 considered. That's where my thinking comes
 8 from; the variable, where you have a choice,
 9 and then there's the fixed, where we're
 10 committed to it.
 11 Q. And do you envision any scenario where you
 12 look beyond the notion that the fixed costs
 13 are sunk, and you're only looking at the
 14 cost of running versus the cost of a market
 15 purchase?
 16 A. (By Mr. Errichetti) Okay. I lost the thread.
 17 I'm sorry. Could you repeat that question?
 18 Q. Is there any point in the operation of a
 19 unit where you might say we need to be
 20 looking at the overall cost, not just the
 21 fixed cost being sunk, and only looking at
 22 variable to run versus the cost of purchase
 23 on the market? I mean, is there a point at
 24 which it runs so rarely or the costs are so

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page | 35

1 high -- fixed costs are so high, that it
 2 just -- that the variable model isn't making
 3 any sense anymore from a ratepayer
 4 perspective?
 5 A. (By Mr. Errichetti) Well, that's a large
 6 question.
 7 Q. It's probably too late in the day for it,
 8 too.
 9 A. (By Mr. Large) If in the Company's view the
 10 cost to continue to operate a unit or a
 11 significant capital investment -- and this was
 12 specifically called out by the Commission in
 13 their last order to us -- that a substantial
 14 capital investment's going to be required, we
 15 would need, prior to making that investment,
 16 to file a continued operation study for your
 17 review. So I believe that, fundamentally, you
 18 have given us the guidance to say if there's
 19 major capital improvements, large dollars of
 20 capital investment necessary, that there needs
 21 to be a time-out and an examination of that.
 22 Q. What if there is no large capital investment
 23 needed, just the ongoing fixed costs of the
 24 unit are high and the use is extremely low?

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] Page | 36

1 Let's say we get down to, you know,
 2 2 percent that it's operating.
 3 A. (By Mr. Large) I believe that's being given
 4 consideration in the migration docket and
 5 how -- what potential resolutions are to that.
 6 But the Company's position is that, if the
 7 investments that we have made previously are
 8 prudent and our operations of the units are
 9 prudent, that we will be allowed recovery of
 10 the investments that have not been recovered
 11 to date, and we would consider retirement or
 12 divestiture on our own volition if we viewed
 13 that the long-term benefits to customers would
 14 not be served by continuing to operate.
 15 A. (By Mr. Smagula) And if I might add, just to
 16 emphasize, that I think the Company's view is,
 17 as Mr. Large indicated, is a long-term view,
 18 and that while the generating facilities have
 19 provided a large amount of value over the last
 20 number of years, we have to look at the
 21 changes that could occur. And in most cases,
 22 a number of assumptions do not always play out
 23 to be exactly right. And we have to take a
 24 long-term view as to the value to our

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHPAGE] 137

1 customers. And there are a number of things
 2 that are currently in place now that won't be
 3 in place in the next few years. But it's hard
 4 to make that a definitive opinion, but rather
 5 a likelihood that things will change.
 6 Q. Let me ask a question about distribution
 7 system upgrades and the energy-efficiency
 8 issues. I think in Mr. Large's testimony,
 9 which is Exhibit PSNH 3, Pages 16 and 17 --
 10 A. (By Mr. Large) I have it.
 11 Q. -- there's discussion in response to the
 12 OCA's testimony that the Company has not
 13 pursued some efficiency investments that it
 14 might have. And what I want to get at is
 15 whether there are any opportunities for
 16 energy-efficiency investments that would
 17 bring down -- that would forestall the need
 18 for distribution system upgrades.
 19 A. (By Mr. Large) I'm looking at Page 13 of that
 20 exhibit.
 21 Q. All right. Maybe it starts there. And so
 22 can you describe -- I know your general
 23 conclusion is, well, you haven't seen the
 24 load growth to call for such an investment.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHPAGE] 138

1 But we know that there are a number of
 2 distribution upgrades that are being
 3 proposed by the Company. So help me
 4 understand. How do you assess where a
 5 distribution upgrade would be -- could be
 6 forestalled by an energy-efficiency venture
 7 as opposed to other distribution needs?
 8 A. (By Mr. Large) Certainly. We reference the
 9 policy that we've put in place and the work
 10 that is done with our engineering group to sit
 11 and review load pockets, load growth areas in
 12 the company, and judge whether an
 13 investment -- a targeted investment in energy
 14 efficiency could be utilized to forestall
 15 distribution system upgrades as you posed.
 16 I'll give a corollary example: Rather
 17 than making a distribution substation
 18 investment, we implemented a small
 19 one-megawatt portable generator in the New
 20 Boston area that has put off by one year,
 21 maybe as many as three years, the need for
 22 the upgrade of a substation in that area.
 23 So the characteristics that are going
 24 to define whether a targeted

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHPAGE] 39

1 energy-efficiency program can provide the
 2 benefits and cause a deferral is going to
 3 be, so what's the customer base in that
 4 area? What's the usage pattern in that
 5 area? Can we rely on these
 6 energy-efficiency programs to be effective
 7 and provide a reduction in power? But the
 8 primary driving force is going to be what is
 9 the load growth. And for the majority of
 10 our system, it's built with a margin of
 11 reserve that can accept some degree of load
 12 growth into the future. But the examination
 13 of when we would apply the targeted
 14 energy-efficiency programs is going to be
 15 when there is more load growth than we're
 16 experiencing at this point in time.
 17 Q. So does that mean that there are no
 18 distribution upgrades the Company is
 19 pursuing right now that -- or was pursuing
 20 as of 2010, that are occasioned by load
 21 growth? They're all as a result of some
 22 other need?
 23 A. (By Mr. Large) Needs beyond load growth,
 24 including load growth. But we have very

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHPAGE] 40

1 limited load growth at this point in time.
 2 Q. And have you assessed -- and as of 2010,
 3 really, I guess I'm asking, had you assessed
 4 areas that appeared to be at the margin, and
 5 that load growth, if it were to happen,
 6 would be a good place for that kind of
 7 targeted energy-efficiency investment to be
 8 made?
 9 A. (By Mr. Large) We've not defined that there
 10 were any areas where that trade-off was
 11 plausible at this time. The one example that
 12 I do have is the New Boston substation, where
 13 a one megawatt's value of -- a different
 14 measure than a transformer, if you will, what
 15 was implemented.
 16 Q. And when you say you haven't identified it,
 17 have you studied it and found none, or you
 18 haven't yet studied it and therefore haven't
 19 identified it?
 20 A. (By Mr. Large) They have been studied and
 21 found none.
 22 Q. And in the planning for the next five years,
 23 starting with 2010, will there continue to
 24 be an investigation of opportunities like

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICH Page 1] 41

1 that?

2 A. (By Mr. Large) Yes, there will. It's an

3 ongoing process that occurs at least annually,

4 and preferably twice annually.

5 Q. So if load growth were to increase in

6 certain areas, that would be something that

7 you could continue to look at.

8 A. (By Mr. Large) That would be the trigger for

9 review of how can -- is it possible -- is it

10 plausible for a targeted conservation/load

11 management program to serve the same purpose

12 that I described in New Boston. Different

13 tool, same outcome.

14 Q. Does the plan tell you when will you make

15 that next step of the investment and a

16 further identification and study of targeted

17 energy efficiency?

18 A. (By Mr. Large) We were not as clear about that

19 possibility or that activity in the plan. And

20 that's what resulted in some discovery and

21 some commentary by intervenors in the

22 process -- most notably, Mr. Traum -- which is

23 what resulted in my rebuttal testimony

24 attempting to clarify and explain the

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICH Page 1] 42

1 situation more clearly.

2 Q. A number of times in testimony and on the

3 stand today you've referred to -- and Ms.

4 Tillotson, I know you referred to the plan

5 as "a snapshot" of conditions in place at

6 the time that it was filed. And I have a

7 hard time understanding how a document

8 that's supposed to live with you for a

9 five-year projection could be at the same

10 time considered a snapshot, which sounds

11 sort of frozen in one particular moment.

12 So, can you explain more what you mean by

13 "snapshot"?

14 Or maybe more importantly, how does the

15 plan live? How does it -- how is it used,

16 which I know Commissioner Scott was asking

17 earlier?

18 A. (By Mr. Large) Well, in order to make a plan,

19 one needs to make some assumptions. And the

20 assumptions that we center on as we compile

21 all the information and assemble it into a

22 document that gets filed here is to take a

23 snapshot in time. And that snapshot is what

24 are the regulations, what are the costs, what

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICH Page 1] 43

1 are all the things that are assumptions that

2 go into the many words that make up this

3 multi-hundred-page plan. It doesn't mean that

4 we stop thinking about those issues as time

5 goes on. But as far as what it is that we are

6 filing in this plan and arguing before you,

7 that is that snapshot in time. We believe

8 that the appropriate standard for you to use

9 to judge if this plan is adequate is what was

10 our thinking at that point.

11 Our thinking continues to change. The

12 markets continue to change. So we continue

13 to react and respond. As I was saying

14 earlier, much of what comes before you is in

15 year-long or two-year-long bites. It is not

16 in a five-year long bite. So this five-year

17 examination has a beginning and an end for

18 the assumptions that go into it. But from

19 the filing of this document, its primary

20 purpose is for discovery and discussion with

21 all of the folks here in this room today.

22 But in terms of it being the driving force

23 and setting the path that we will take a

24 year from now or six months from now, it's

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICH Page 1] 44

1 dated information. And new information

2 causes us to react and behave and take

3 different actions than what we might have

4 thought at this point in time.

5 Q. But I think the difference that I have is --

6 I hear what you say -- is that it's not a

7 guide. You don't use it as a guide for

8 anything. Is that fair? It's recording

9 assumptions you had the day you filed it,

10 but it's not a guide that you use over the

11 coming years.

12 A. (By Mr. Large) It's our view of what the next

13 five years will result in based upon the

14 assumptions that existed at that point in

15 time. But it's not a playbook for PSNH's

16 strategic implementation. It's a definition

17 of at that moment in time, the things that we

18 do, the things that we're thinking of doing --

19 I don't want to say thinking -- planning to

20 do, that we've incorporated in budgets and

21 have made commitments that we will achieve, as

22 it stands at that moment.

23 Q. And does it include at any point things such

24 as, if we turn out to be wrong in our

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 45

1 projection of whatever you want it to be --
2 the operation of Merrimack and Schiller or
3 the migration level -- if Assumption A turns
4 out to be too high or too low, then the
5 Company response would be and is set forth
6 in the plan? Is there anything like that?
7 A. (By Mr. Large) I would say that many of the
8 parameters that we've defined in the plan by
9 establishing bounds as opposed to point values
10 is identifying that we don't know what the
11 future will hold. So that much of our
12 planning is, if you want to call it
13 contingencies planning, "what if." As far as
14 defining capital costs associated with
15 environmental projects, we're not "what
16 if"-ing. We've been very clear on that point.
17 But as it relates to the migration question,
18 we need to establish some reasonable potential
19 expectations from which we say how will we
20 react? What is the best decision for us to
21 make in terms of planning to provide energy
22 service? And as Mr. Errichetti I think
23 discussed, based upon that information, we
24 decided to move away from long-term power

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 46

1 purchases and moved more to short-term power
2 purchases. If migration were to completely
3 unfold and we would be back at a hundred
4 percent of our customers, we would now be
5 buying power in the open market on a
6 day-ahead, week-ahead, month-ahead basis,
7 which has not been our practice previously.
8 So we are recognizing, as a result of this
9 plan, that our behavior should change to
10 factor in or to care for what could be
11 expected to occur.
12 Q. All right. Thank you. Commissioner Scott
13 had another question.
14 CMSR. SCOTT: Sure. Thank you.
15 I'll be brief.
16 INTERROGATORIES BY CMSR. SCOTT:
17 Q. Getting back to the plan itself, this is not
18 the first time you've done the plan. You
19 did 2007 and before that, I believe; right?
20 A. (By Mr. Large) We had a number of years where
21 we filed and were granted requests to waive
22 the Least Cost Plan filing requirement. I can
23 go back and identify it. This is the third in
24 a sequence of plans that have been filed.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 47

1 Q. That's all I want to know. It's not the
2 first one. Just to save time.
3 So can you -- I understand you might not
4 have this off the top of your head. Can you
5 give me an order of magnitude of how much it
6 costs PSNH to do a proceeding for a filing
7 like this?
8 A. (By Mr. Large) I believe we're approaching a
9 half-million dollars in expenditures
10 associated with the continued unit operations
11 study, recognizing that costs associated with
12 all of our staff personnel are essentially
13 sunk costs. So there's limited incremental
14 costs associated with producing it, but it
15 does take a lot of time away from doing other
16 things.
17 Q. The Newington issue's a little bit separate
18 from this.
19 A. (By Mr. Large) Yes.
20 Q. Do you have an idea for the IRP itself?
21 A. (By Mr. Large) I don't. Hundreds and hundreds
22 of hours of staff time.
23 Q. And you don't have to answer this. Again,
24 going back to some of the earlier comments

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHETTI] 48

1 and the Chair's request to you, do you have
2 suggestions on how this could be done
3 better? I would think with the type of
4 investment we're talking about for the
5 ratepayer, obviously, we'd want to --
6 everybody would have an interest in making
7 this as valuable as possible.
8 A. (By Mr. Large) We would concur.
9 CMSR. SCOTT: Thank you.
10 CHAIRMAN IGNATIUS: Commissioner
11 Harrington.
12 CMSR. HARRINGTON: Yeah, just a
13 couple follow-up questions.
14 INTERROGATORIES BY CMSR. HARRINGTON:
15 Q. Commissioner Scott mentioned about the cost
16 of this. And let's stay away from Newington
17 for a second. You said there was a lot of
18 staff charges embedded. Do you have a
19 charge number that people charge their time
20 to when they're working on this particular
21 project?
22 A. (By Mr. Large) We have not specifically
23 identified those costs separately, but we
24 would be able to estimate them.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHPAGE] 149

1 Q. But there is no charge number associated
 2 with this as a separate billing.
 3 A. (By Mr. Large) That is correct.
 4 Q. Okay. It sounds like the way this is going
 5 to work out with the dates is you finish
 6 this plan the end of September of 2010, and
 7 now, here it is 2012, and you said, based --
 8 you'd be waiting for the Commission's order
 9 to come out, and that when that was issued,
 10 that would be basically when you'd start
 11 looking at the next five-year plan. So
 12 that's about a year and a half, maybe more
 13 than that, where the planning process as far
 14 as required for this plan stopped. And it
 15 will start up again a year and a half, maybe
 16 a year and three quarters later; is that
 17 correct?
 18 A. (By Mr. Large) What I was recounting has been
 19 the history of the last three filed Least Cost
 20 Plans. When we filed Plan A, if you will --
 21 A, B and C, this being the third, C -- we went
 22 through a process of review. A final order
 23 was issued from the Commission, and the
 24 Commission's direction to us was to file the

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHPAGE] 150

1 next plan 24 months from that. We filed that
 2 plan, Plan B, went through its deliberative
 3 process. When the order was issued, the
 4 requirement was to file the plan 24 months
 5 from then, which would have been April of
 6 2010. But the issue associated with the
 7 Newington continued unit operations study
 8 surfaced in late 2009, and it was agreed to
 9 join those two items together into this
 10 docket. So that moved it, then, to September.
 11 Q. I guess my point was, if this was a valuable
 12 tool internally to PSNH to actually use to
 13 make their operation more efficient or
 14 better in any way, September -- October 1st,
 15 2010, you would have started on your next
 16 plan and been working on that, if it was
 17 indeed a valuable tool. It sounds like you
 18 suspended working on the plan once this one
 19 was issued, waiting for the Commission to
 20 come out and say start working on another
 21 plan, which kind of makes me suspect as to
 22 how much value it actually has as a tool for
 23 Public Service to use.
 24 And just out of curiosity, you mentioned

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHPAGE] 151

1 the waivers, and that it does a waiver of all,
 2 except for the transmission and distribution
 3 sections, which would cut this report down to
 4 about 20 pages. Why didn't you file for a
 5 waiver this time?
 6 A. (By Mr. Large) Because in the last Least Cost
 7 Plan docket, B, if you will, in my example, we
 8 reached a partial settlement with many of the
 9 parties that included items that we would be
 10 incorporating in the next Least Cost Plan to
 11 be filed. So we agreed at that point in time
 12 to make another filing.
 13 Q. Okay. Thank you.
 14 CHAIRMAN IGNATIUS: Thank you.
 15 Any redirect from the Company?
 16 MR. EATON: Yes, and I'll try to
 17 make this brief. Without questioning a
 18 witness, I'm looking at CLF 4. This is the
 19 chart. And I'd like to make a motion for the
 20 Commission to take administrative notice
 21 regarding PSNH's retail rates. And I'd like
 22 you to take administrative notice of Docket DE
 23 09-035, which was our last retail distribution
 24 rate case. And my memory is that there was a

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICHPAGE] 152

1 temporary rate increase on October 1st of --
 2 I'm sorry -- August 1st of 2009 and a
 3 permanent rate increase on July 1st, 2010.
 4 And we can provide the actual numbers for that
 5 if you want.
 6 CHAIRMAN IGNATIUS: I think what
 7 would be better is to put a -- reserve a
 8 record request exhibit for those numbers
 9 rather than take official notice of the
 10 docket, which then moves all of the documents
 11 into this file. And we've got enough
 12 documents as it is.
 13 So is it to establish the PSNH
 14 retail rates as of -- in effect at the time
 15 that this Least Cost Plan was filed? Is
 16 that what you're asking?
 17 MR. EATON: Well, it's to
 18 respond to the questions from CLF concerning
 19 where our rates were going. And I understand
 20 this document includes a total rate. So that
 21 would go to that question of what were the --
 22 what's happening with the total rates for PSNH
 23 customers at that time.
 24 CHAIRMAN IGNATIUS: All right.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICH Page 153]

1 I'm not understanding, though. Are you asking
2 for introduction of the rates in effect at the
3 time the plan was filed, or something
4 different than that?
5 MR. EATON: The connotation that
6 CLF put on this document was that our energy
7 service rates were causing this change and
8 other energy service rates were going down.
9 And all I wanted to do was make the record
10 clear that there were other factors that were
11 contributing in 2009 and 2010 to our total
12 retail residential monthly bill moving in that
13 direction. So, by simply stating that there
14 were rate increases on August 1st, 2009 and
15 July 1st, 2010, we could provide what those
16 rate increases were from the Commission's
17 records.
18 CHAIRMAN IGNATIUS: Well, I'm
19 still not following. We can put the number
20 in. I get that. But it sounds like you want
21 something other than the number. You want
22 some explanation of reasons why the rates were
23 as they were. And I'm reluctant to go there,
24 just because it opens up an awful lot.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICH Page 154]

1 MR. EATON: No, just the
2 numbers.
3 CHAIRMAN IGNATIUS: Okay. So
4 the rates that were in effect at the time that
5 the 2010 Least Cost Plan was filed.
6 MR. EATON: The rate increases.
7 The rate increases that took place on those
8 two dates, the ones that were approved by the
9 Commission.
10 CHAIRMAN IGNATIUS: All right.
11 And which two dates, please?
12 MR. EATON: August 1st, 2009,
13 which was a temporary rate increase, and
14 July 1st, 2010, which was a permanent rate
15 increase.
16 CHAIRMAN IGNATIUS: All right.
17 I don't see any objection. Anyone troubled by
18 that? I think that's PSNH Exhibit 5?
19 THE CLERK: That's correct.
20 CHAIRMAN IGNATIUS: We'll
21 reserve that.
22 (PSNH 5 Record Request reserved.)
23 MR. EATON: And could I also
24 include in that exhibit the energy service

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICH Page 155]

1 rate that was approved by the Commission in
2 Docket 11-215? There were some questions from
3 Attorney Peress about the existing ES rate and
4 the proposed ES rate. And I would like to add
5 to that exhibit what the rate was actually
6 approved by the Commission in Docket 11-215
7 and what is proposed in Docket 11-250.
8 CHAIRMAN IGNATIUS: And as I've
9 asked Mr. Cunningham and Mr. Peress, what's
10 the relevance to the 2010 Least Cost Plan?
11 MR. EATON: It has to do with
12 rather than doing redirect about what really
13 is the request for rates in those cases.
14 CHAIRMAN IGNATIUS: Well, I
15 understand the record may not be accurate on
16 what the true rate was, but no one objected to
17 it coming in. What's the relevance of the
18 rate to the Least Cost Plan consideration?
19 MR. EATON: I didn't think there
20 was much relevance to Attorney Peress's
21 questions, either. So the record is what it
22 is in those proceedings.
23 CHAIRMAN IGNATIUS: All right.
24 I'm going to deny the second request.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICH Page 156]

1 MR. EATON: Okay.
2 REDIRECT EXAMINATION
3 BY MR. EATON:
4 Q. Ms. Tillotson, do you have Sierra Club
5 Exhibit 3 in front of you? This is the
6 document that was talked about, the July 9,
7 2010 letter to Michelle Roberge.
8 A. (By Ms. Tillotson) Yes.
9 Q. Could you briefly describe what's contained
10 in those documents? What was the context of
11 that exchange?
12 A. (By Ms. Tillotson) Certainly. As we discussed
13 this morning, Regional Hayes is addressed by
14 the State through what sometimes is termed as
15 the "BART rule." And the State was getting
16 ready to propose a rule. That was done, I
17 believe in 2011. Prior to that effort, DES
18 reached out to not only us, but others, to
19 request information on "what if" scenarios, to
20 the extent that rates or limits were suggested
21 for some of the BART requirements, what would
22 in fact be some of the costs, operational, et
23 cetera, associated with those rates.
24 So in response to some specific

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICH Page 157]

1 scenarios that DES laid out for us, we did
2 provide information to them so that they
3 could then draft what turned out to be the
4 2300 rules that were culminated in 2011.
5 Q. So, are the calculations in Exhibit 3 PSNH's
6 analysis of how it will comply with the BART
7 regulations?
8 A. (By Ms. Tillotson) No, because at this point
9 in time, the actual requirements of the BART
10 regulation were still in discussion stages,
11 that there was no numbers there. So these
12 were not costs for compliance with the ruling
13 yet to be drafted and completed.
14 Q. And were the inputs provided by the
15 Department of Environmental Services as to
16 what they wanted?
17 A. (By Ms. Tillotson) They walked through a
18 number of scenarios and -- "what if" scenarios
19 I think is the best term. And with those
20 guidance -- with that guideline, we provided
21 our best estimate of how we would respond to
22 that and what some of the costs would be under
23 those, I'll call them "hypothetical"
24 scenarios.

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICH Page 158]

1 MR. EATON: Thank you. That's
2 all I have on redirect.
3 CHAIRMAN IGNATIUS: Thank you.
4 Then I think we will conclude for the day. I
5 take it we're done with this panel, although
6 maybe some panelists may return in the other
7 panel. But we will go tomorrow morning to
8 begin with the next witnesses related to the
9 Least Cost Plan issues, which we hear are Dr.
10 Sahu, Mr. Hurley, Mr. Traum and Mr. McCluskey.
11 We'll begin at 9:00 tomorrow morning.
12 And I'd ask you tonight to
13 just to look at April 10th as the likely
14 next date if we need a third day. Won't say
15 that we will. But if we do, that's now free
16 on the calendar and would be our next
17 available time. Ms. Knowlton?
18 MS. KNOWLTON: We have checked
19 that date already with all of our witnesses,
20 and we have one witness who has a conflict
21 that is very difficult to reschedule for that
22 day. We have other dates that week and the
23 week thereafter that were available. I'm
24 wondering if it's possible to get some

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICH Page 159]

1 alternative dates for consideration.
2 CHAIRMAN IGNATIUS: I'll take a
3 look tonight. I know there aren't a lot, but
4 we'll look.
5 MS. KNOWLTON: Thank you.
6 CHAIRMAN IGNATIUS: Anything
7 further this afternoon? If not, we stand
8 adjourned and see you at 9:00 tomorrow. Thank
9 you. I appreciate you're staying a little
10 late tonight.
11 (Whereupon Day 1 PM Session was adjourned
12 at 4:55 p.m.)
13
14
15
16
17
18
19
20
21
22
23
24

[WITNESS PANEL: LARGE|SMAGULA|TILLOTSON|ERRICH Page 160]

1 C E R T I F I C A T E
2 I, Susan J. Robidas, a Licensed
3 Shorthand Court Reporter and Notary Public
4 of the State of New Hampshire, do hereby
5 certify that the foregoing is a true and
6 accurate transcript of my stenographic
7 notes of these proceedings taken at the
8 place and on the date hereinbefore set
9 forth, to the best of my skill and ability
10 under the conditions present at the time.
11 I further certify that I am neither
12 attorney or counsel for, nor related to or
13 employed by any of the parties to the
14 action; and further, that I am not a
15 relative or employee of any attorney or
16 counsel employed in this case, nor am I
17 financially interested in this action.
18
19
20 Susan J. Robidas, LCR/RPR
21 Licensed Shorthand Court Reporter
22 Registered Professional Reporter
23 N.H. LCR No. 44 (RSA 310-A:173)
24

- April 4, 2012
DE 10-261 PUBLIC SERVICE COMPANY OF N.H. Least Cost Integrated Resource Plan

	155:7	34:11,18,20,22;50:8; 56:20;57:1,12,17;58:9; 60:4;63:19;74:24;75:22; 79:1;97:3,6,15,24;98:3, 22;104:17;115:17,19; 123:4;125:17;128:11; 129:4,7,21;130:9;133:5; 139:20;140:2,23;149:6; 150:6,15;152:3;153:11, 15;154:5,14;155:10; 156:7	137:9;156:5;157:5	
\$	12 (1) 26:9		3.4 (1) 40:23	5
\$100 (1) 81:21	13 (3) 57:1;92:9;137:19		3:12 (1) 87:15	5 (8) 10:17,18;13:17;53:13, 21,22;154:18,22
\$404,471,604 (1) 90:11	15 (1) 113:14		3:28 (1) 87:15	55 (3) 32:5;88:7;89:14
[154 (1) 66:13		30 (2) 27:3;34:18	58 (1) 31:23
[laughter] (1) 6:11	155 (1) 71:19	2011 (8) 9:9;14:22;33:20; 38:20;74:20;79:14; 156:17;157:4	30th (5) 26:10,19;34:20,22; 77:1	59 (1) 31:22
[sic] (2) 18:8;117:2	15-page (1) 111:8		31 (5) 95:4;101:17,19;102:6, 7	6
0	16 (1) 137:9	2011-some (1) 27:9	316b (13) 66:17,20;67:5,10; 69:3,17;70:11,14;73:12; 77:7,15;78:8;85:2	6 (16) 22:20;23:2,21;26:3,3; 29:17;30:20;33:6;34:3; 45:19;47:2;58:2,6; 61:10,11;62:19
01 (1) 21:20	17 (1) 137:9	2012 (10) 34:10;57:8;58:16,21; 61:19;62:6;63:19; 104:18;115:16;149:7	31-percent (1) 102:11	6.1 (1) 57:24
02 (1) 38:18	1992 (2) 75:4;76:11	2013 (1) 58:22	32 (4) 18:4;43:22;60:14; 128:9	60 (4) 21:3;22:10;23:4;30:22
03 (1) 39:19	1997 (10) 76:12,13,19;77:18; 79:6,8;81:2,19;83:5,16	2014 (1) 58:23	33 (2) 39:20,21	66 (1) 90:3
04 (1) 45:11	1A (1) 116:9	2015 (2) 58:23;125:19	35 (1) 104:1	7
06 (1) 33:13	1st (8) 150:14;152:1,2,3; 153:14,15;154:12,14	21 (1) 125:12	369-B3 (1) 116:7	7 (2) 64:16,19
07 (1) 33:14	2	22 (1) 92:10	374-F3 (1) 116:14	78 (1) 96:10
09 (2) 26:15;133:2	2 (5) 33:9;39:7,11,16;136:2	22nd (2) 6:13,22	378 (2) 91:6;114:6	7th (1) 7:4
09-035 (1) 151:23	2.4 (2) 85:22;86:5	230 (1) 82:9	378:37 (1) 114:2	8
1	20 (2) 41:24;151:4	2300 (1) 157:4	378:38 (1) 114:1	8 (9) 10:20;11:4,17;75:9, 10;77:23;79:5,7;94:7
1 (15) 18:5;21:1,2,24;39:10, 20;53:15;66:14;73:10; 76:16,21;78:13;88:7; 131:4;159:11	2005 (8) 21:15;23:13,15;29:18, 19;33:13,20;77:1	23rd (3) 9:9;38:20;74:20	3rd (2) 6:10,16	8- (1) 82:10
1,766 (1) 41:2	2006 (1) 12:7	24 (4) 42:1;94:6;150:1,4	4	80 (6) 21:3;22:9;23:3,20,21; 29:20
1.4 (1) 10:6	2007 (3) 20:6,8;146:19	24-hour (1) 94:5	4 (20) 10:5;13:17;15:5;20:5, 15,24;22:4;24:1,19; 25:21;33:6;34:2,42:1; 46:6,7;61:21,24;62:8,15; 151:18	80s (3) 95:22,24;96:5
10 (6) 26:15;58:22;87:13; 109:19;110:4;113:14	2008 (15) 20:11,14,17;21:2; 22:10;23:3,19,22;47:17, 24;48:6,21;59:23;96:18; 132:21	25 (2) 62:17;101:19	4:55 (1) 159:12	85 (2) 96:1;130:2
10,000 (1) 82:10	2009 (26) 8:14;10:9;21:2;22:11; 23:4;24:4,20;25:22; 26:6;30:24;47:24;48:7, 22,23,24;49:2,9;96:23; 98:22;132:22;133:6; 150:8;152:2;153:11,14; 154:12	25-percent (1) 102:12	40 (4) 101:19;102:16;103:8; 122:1	85- (1) 130:10
10-160 (1) 53:19	2010 (80) 6:16;7:5,7,8;10:2, 20;11:4,17;13:7;15:11; 20:1;24:5,20,23;25:3,22; 26:9,13,19,24;27:2,8; 28:5;29:4;30:5,8,21,23; 31:3,3,6,7,20;32:3,4;	25th (1) 75:4	40-percent (1) 103:19	860 (2) 21:16;22:24
10th (1) 158:13		26 (1) 62:21	40-something (1) 32:1	8s (2) 55:21,23
11.2 (1) 58:22		27 (1) 77:22	42 (2) 85:16,18	9
11.7 (1) 58:23		28th (1) 77:3	4's (1) 22:8	9 (5) 7:24;15:10;86:8; 102:17;156:6
11.8 (1) 58:24		29 (1) 77:22		9/30/10 (3)
11-215 (3) 61:14;155:2,6		3		
11-250 (1)		3 (12) 13:14;16:9,10;39:16, 16,17;40:6;53:15;92:8;		

- April 4, 2012
DE 10-261 PUBLIC SERVICE COMPANY OF N.H. Least Cost Integrated Resource Plan

98:9;101:22;102:4 9:00 (2) 158:11;159:8 90 (2) 96:1;130:3 90- (1) 130:10 90s (2) 95:22,24 95-percent (1) 130:10 9s (1) 55:24 9th (2) 7:5,6	72:3;144:3 actively (1) 17:21 activity (1) 141:19 actual (5) 46:3;82:9;103:12; 152:4;157:9 actually (15) 26:11;28:24;55:24; 56:16;57:4;74:12;77:12; 86:14;92:5;100:22; 104:19;115:8;150:12, 22;155:5 add (5) 37:22;76:24;123:9; 136:15;155:4 addition (2) 36:10;65:3 additional (3) 70:3;72:7;73:15 address (4) 20:21;55:16;70:14; 91:8 addressed (4) 70:15;76:5;77:5; 156:13 addresses (1) 78:7 adequate (3) 56:10;100:20;143:9 adjective (1) 131:18 adjourned (2) 159:8,11 Administration (1) 21:16 administrative (2) 151:20,22 administratively (1) 17:19 admission (1) 82:4 admitted (2) 9:12;79:23 adopt (1) 132:9 adopting (1) 132:12 adverse (3) 67:13;70:19;78:3 advise (1) 103:13 affected (1) 20:20 affiliate (1) 37:2 afternoon (4) 57:10;84:2;126:18; 159:7 again (22) 13:21;26:8;47:6; 48:21;49:1;56:1;67:24;	75:12;78:19;82:17,17; 88:20;106:5;110:21; 112:5;113:21;118:24; 120:7;122:2,7;147:23; 149:15 aggregated (1) 41:2 ago (1) 97:24 agree (8) 9:17;23:1;25:20;26:4; 43:11;67:9;89:11; 114:23 agreed (3) 14:5;150:8;151:11 agreeing (2) 40:14,16 ahead (7) 83:22;93:4;99:22,23; 100:11;102:20;108:21 ah-ha (1) 98:3 Air (6) 5:17;21:14;23:1; 28:11;32:19;109:22 albeit (1) 81:22 all-in (1) 133:12 allow (1) 72:19 allowed (2) 83:13;136:9 almost (4) 9:9;100:5;105:19; 108:12 along (1) 92:7 alternative (1) 159:1 Although (3) 49:9;125:10;158:5 always (2) 118:15;136:22 amount (6) 27:12;44:14;53:4; 102:3;124:17;136:19 amounts (1) 102:2 analyses (5) 8:17;65:21;66:4; 110:23;112:18 analysis (16) 10:10,13,15;11:3; 13:19;24:9;66:7;71:10; 74:3;101:7;108:17; 109:6;111:2;112:10; 113:11;157:6 analyst (1) 108:17 annual (16) 21:17;27:2,5,8;28:4,6, 8,18;30:4,5,12;31:10;	41:20;59:9;60:8;95:23 Annualized (2) 88:15;89:9 annually (2) 141:3,4 answered (4) 14:15;27:14;60:23; 118:17 anticipate (2) 66:11;126:4 anti-degradation (2) 10:10;13:19 anymore (1) 135:3 apologies (1) 29:15 apologize (3) 29:2;30:20;42:20 appear (1) 132:2 appeared (1) 140:4 appears (6) 48:4;49:4,5;54:19; 116:23;118:2 appendices (1) 130:16 Appendix (4) 18:24;19:20;35:4,4 apples (2) 27:21,21 application (14) 74:18;75:6;76:10,14, 18,23;77:6;79:20;80:1; 81:2,20;82:3;83:5,17 applied (2) 75:20;76:4 applies (1) 79:21 apply (1) 139:13 appreciate (6) 7:20;10:7;24:12; 90:24;124:9;159:9 approach (4) 38:21;45:12;64:13; 111:22 approaching (1) 147:8 appropriate (5) 73:6;122:23;130:4; 131:11;143:8 approved (5) 58:1;116:20;154:8; 155:1,6 approximately (5) 32:5;57:24;96:1; 102:6;103:24 April (6) 48:23;49:2;115:16; 125:17;150:5;158:13 area (9) 86:8;91:5,7;98:19;	101:14;138:20,22;139:4, 5 areas (4) 138:11;140:4,10; 141:6 arguing (1) 143:6 argument (1) 83:11 around (5) 29:10;31:23;63:14,15, 24 assemble (1) 142:21 assess (1) 138:4 assessed (2) 140:2,3 assessment (4) 16:18;54:11;91:15; 123:5 asset (1) 19:22 assets (6) 17:10,17;86:15;92:24; 116:12,18 assistance (1) 7:23 assisted (1) 88:6 associated (23) 26:23;37:21;68:23; 84:11;86:3;94:8,18; 104:4,8;105:1,3,14,16; 106:9,19;107:18; 145:14;147:10,11,14; 149:1;150:6;156:23 assume (5) 31:1;33:11,14;99:18; 132:17 assumed (3) 18:18;41:17;128:13 assuming (6) 15:21;22:22;100:3; 109:9;112:7;128:15 assumption (10) 19:12,13;34:11;44:6; 60:16;95:3,10,10;98:7; 145:3 assumptions (10) 102:9,10;103:8; 136:22;142:19,20;143:1, 18;144:9,14 attached (1) 46:1 attempt (1) 108:2 attempted (2) 68:19;92:5 attempting (1) 141:24 attention (1) 17:24
A				
able (6) 21:6;51:13;93:1; 100:18;107:1;148:24 above (7) 23:20;29:22;30:21; 32:4;36:18;41:16;76:8 Absent (1) 130:6 absolute (4) 101:20,23;102:1,4 absolutely (1) 112:21 accept (2) 83:23;139:11 accepting (1) 89:8 accomplishing (1) 115:6 accordance (1) 124:10 according (1) 57:2 accordingly (1) 115:11 account (5) 22:15;81:11;92:15; 108:2;130:7 accounting (2) 41:20;54:21 accurate (4) 54:11;59:6;89:22; 155:15 achieve (2) 123:7;144:21 acknowledges (1) 73:10 acknowledging (1) 60:19 across (2) 30:5;41:15 Act (9) 12:4;66:21;67:5,10; 68:20;70:1;73:13;78:8; 115:11 actions (2)	72:3;144:3 actively (1) 17:21 activity (1) 141:19 actual (5) 46:3;82:9;103:12; 152:4;157:9 actually (15) 26:11;28:24;55:24; 56:16;57:4;74:12;77:12; 86:14;92:5;100:22; 104:19;115:8;150:12, 22;155:5 add (5) 37:22;76:24;123:9; 136:15;155:4 addition (2) 36:10;65:3 additional (3) 70:3;72:7;73:15 address (4) 20:21;55:16;70:14; 91:8 addressed (4) 70:15;76:5;77:5; 156:13 addresses (1) 78:7 adequate (3) 56:10;100:20;143:9 adjective (1) 131:18 adjourned (2) 159:8,11 Administration (1) 21:16 administrative (2) 151:20,22 administratively (1) 17:19 admission (1) 82:4 admitted (2) 9:12;79:23 adopt (1) 132:9 adopting (1) 132:12 adverse (3) 67:13;70:19;78:3 advise (1) 103:13 affected (1) 20:20 affiliate (1) 37:2 afternoon (4) 57:10;84:2;126:18; 159:7 again (22) 13:21;26:8;47:6; 48:21;49:1;56:1;67:24;	75:12;78:19;82:17,17; 88:20;106:5;110:21; 112:5;113:21;118:24; 120:7;122:2,7;147:23; 149:15 aggregated (1) 41:2 ago (1) 97:24 agree (8) 9:17;23:1;25:20;26:4; 43:11;67:9;89:11; 114:23 agreed (3) 14:5;150:8;151:11 agreeing (2) 40:14,16 ahead (7) 83:22;93:4;99:22,23; 100:11;102:20;108:21 ah-ha (1) 98:3 Air (6) 5:17;21:14;23:1; 28:11;32:19;109:22 albeit (1) 81:22 all-in (1) 133:12 allow (1) 72:19 allowed (2) 83:13;136:9 almost (4) 9:9;100:5;105:19; 108:12 along (1) 92:7 alternative (1) 159:1 Although (3) 49:9;125:10;158:5 always (2) 118:15;136:22 amount (6) 27:12;44:14;53:4; 102:3;124:17;136:19 amounts (1) 102:2 analyses (5) 8:17;65:21;66:4; 110:23;112:18 analysis (16) 10:10,13,15;11:3; 13:19;24:9;66:7;71:10; 74:3;101:7;108:17; 109:6;111:2;112:10; 113:11;157:6 analyst (1) 108:17 annual (16) 21:17;27:2,5,8;28:4,6, 8,18;30:4,5,12;31:10;	41:20;59:9;60:8;95:23 Annualized (2) 88:15;89:9 annually (2) 141:3,4 answered (4) 14:15;27:14;60:23; 118:17 anticipate (2) 66:11;126:4 anti-degradation (2) 10:10;13:19 anymore (1) 135:3 apologies (1) 29:15 apologize (3) 29:2;30:20;42:20 appear (1) 132:2 appeared (1) 140:4 appears (6) 48:4;49:4,5;54:19; 116:23;118:2 appendices (1) 130:16 Appendix (4) 18:24;19:20;35:4,4 apples (2) 27:21,21 application (14) 74:18;75:6;76:10,14, 18,23;77:6;79:20;80:1; 81:2,20;82:3;83:5,17 applied (2) 75:20;76:4 applies (1) 79:21 apply (1) 139:13 appreciate (6) 7:20;10:7;24:12; 90:24;124:9;159:9 approach (4) 38:21;45:12;64:13; 111:22 approaching (1) 147:8 appropriate (5) 73:6;122:23;130:4; 131:11;143:8 approved (5) 58:1;116:20;154:8; 155:1,6 approximately (5) 32:5;57:24;96:1; 102:6;103:24 April (6) 48:23;49:2;115:16; 125:17;150:5;158:13 area (9) 86:8;91:5,7;98:19;	101:14;138:20,22;139:4, 5 areas (4) 138:11;140:4,10; 141:6 arguing (1) 143:6 argument (1) 83:11 around (5) 29:10;31:23;63:14,15, 24 assemble (1) 142:21 assess (1) 138:4 assessed (2) 140:2,3 assessment (4) 16:18;54:11;91:15; 123:5 asset (1) 19:22 assets (6) 17:10,17;86:15;92:24; 116:12,18 assistance (1) 7:23 assisted (1) 88:6 associated (23) 26:23;37:21;68:23; 84:11;86:3;94:8,18; 104:4,8;105:1,3,14,16; 106:9,19;107:18; 145:14;147:10,11,14; 149:1;150:6;156:23 assume (5) 31:1;33:11,14;99:18; 132:17 assumed (3) 18:18;41:17;128:13 assuming (6) 15:21;22:22;100:3; 109:9;112:7;128:15 assumption (10) 19:12,13;34:11;44:6; 60:16;95:3,10,10;98:7; 145:3 assumptions (10) 102:9,10;103:8; 136:22;142:19,20;143:1, 18;144:9,14 attached (1) 46:1 attempt (1) 108:2 attempted (2) 68:19;92:5 attempting (1) 141:24 attention (1) 17:24

DE 10-261 PUBLIC SERVICE COMPANY OF N.H. Least Cost Integrated Resource Plan

<p>attest (1) 22:18</p> <p>Attorney (3) 103:17;155:3,20</p> <p>attractive (1) 35:19</p> <p>August (7) 35:6;57:1;58:9;123:3; 152:2;153:14;154:12</p> <p>Authority (1) 116:7</p> <p>available (12) 27:3;53:3;67:13; 70:18;72:4;73:12;77:8; 78:13;79:19;103:16; 158:17,23</p> <p>average (6) 32:7;41:19,19;85:21; 86:3;130:19</p> <p>avoid (2) 69:23;73:4</p> <p>avoided (2) 85:22;90:13</p> <p>avoiding (1) 86:13</p> <p>aware (8) 27:18;54:24;57:23; 58:4,5,8;70:17;100:3</p> <p>away (5) 51:15;99:8;145:24; 147:15;148:16</p> <p>awful (1) 153:24</p>	<p>55:18;65:21;72:5,18; 74:3;91:21;93:2,3,5,13; 95:11;96:21;100:17; 105:4;108:18;109:17; 110:9,24;114:21; 119:20;125:15;144:13; 145:23;149:7</p> <p>baseload (30) 18:19;19:7,18;24:8; 34:4,8;44:7;60:18,22; 95:5,6,8,13,14,20;96:8, 15,20;97:9;105:18; 128:6,13;129:9,11; 130:4;131:10;132:7,8, 17,18</p> <p>Basically (3) 31:9;120:2;149:10</p> <p>basis (15) 20:22;21:17;27:14; 28:12,18,19;86:5,17; 93:12;95:23;104:15; 107:24;113:11;120:24; 146:6</p> <p>Baumann (1) 59:4</p> <p>bear (4) 36:21;37:11;38:8,14</p> <p>became (1) 123:15</p> <p>become (2) 35:19;65:7</p> <p>befuddled (1) 100:10</p> <p>began (3) 7:3;10:9;13:18</p> <p>begin (4) 88:3;132:20;158:8,11</p> <p>beginning (13) 10:15;20:6,13;29:6; 30:7,13;31:7,21;58:16; 59:22;66:23;82:16; 143:17</p> <p>begins (1) 18:11</p> <p>behalf (1) 65:18</p> <p>behave (1) 144:2</p> <p>behavior (1) 146:9</p> <p>behind (2) 32:16;39:10</p> <p>belief (1) 112:1</p> <p>below (3) 103:14,18,21</p> <p>benefit (2) 90:11,12</p> <p>benefits (3) 72:5;136:13;139:2</p> <p>best (13) 67:12;70:18;72:4; 73:11;77:7;78:12;79:19;</p>	<p>90:23;107:18;117:15; 145:20;157:19,21</p> <p>better (9) 32:18;72:16;75:21; 118:4;124:13,24;148:3; 150:14;152:7</p> <p>beyond (3) 14:4;134:12;139:23</p> <p>biannually (2) 118:24;119:5</p> <p>bid (1) 93:3</p> <p>bidding (1) 17:16</p> <p>biggest (2) 45:7;82:7</p> <p>bill (8) 46:14,19,21;47:3; 48:1,15,17;153:12</p> <p>billing (1) 149:2</p> <p>biological (1) 72:5</p> <p>bit (5) 88:19;107:10;120:24; 133:8;147:17</p> <p>bite (1) 143:16</p> <p>bites (1) 143:15</p> <p>blend (1) 47:8</p> <p>boiler (2) 108:12;110:20</p> <p>boilers (1) 96:12</p> <p>Boston (3) 138:20;140:12;141:12</p> <p>both (4) 5:22;14:2;70:4;133:20</p> <p>bottom (1) 39:21</p> <p>bound (1) 103:14</p> <p>bounds (1) 145:9</p> <p>Bow (1) 10:23</p> <p>Brayden (1) 85:8</p> <p>break (2) 87:10,13</p> <p>brief (5) 45:15;74:13;87:14; 146:15;151:17</p> <p>briefly (3) 9:23;10:7;156:9</p> <p>bring (1) 137:17</p> <p>brings (1) 98:5</p> <p>broad (1) 113:7</p>	<p>broke (1) 8:12</p> <p>brought (1) 14:2</p> <p>BTA (2) 77:15;84:9</p> <p>budget (1) 121:14</p> <p>budgets (1) 144:20</p> <p>build (3) 92:13;108:24;109:1</p> <p>built (2) 82:12;139:10</p> <p>bulk (1) 100:22</p> <p>bullet (1) 89:15</p> <p>bulleted (1) 92:4</p> <p>bullets (1) 114:5</p> <p>burners (1) 109:24</p> <p>business (3) 7:7;52:1;69:14</p> <p>businesses (2) 114:9,16</p> <p>buy (8) 99:22,22,23;100:13, 19;101:5;103:2;134:5</p> <p>buying (4) 36:11;37:12;117:6; 146:5</p> <p>buys (1) 36:20</p>	<p>66:7;70:3;71:18;74:12; 75:6,24;77:21;78:11; 81:4,12;83:10,23,24; 85:16;88:3,5,14,20,21; 93:18,20;95:6,16,21; 98:3;100:12,19;103:13, 14;107:9;108:20,23; 112:10;114:14;121:8; 122:15;124:24;125:12; 137:22;139:1,5,11; 141:9;142:12;146:22; 147:3,4;152:4;153:19</p> <p>cancels (1) 126:24</p> <p>capacity (50) 19:21;20:5,8,14;21:1, 13;22:3,9;23:2;24:3,19; 25:21;26:5;27:5,12; 28:17;29:11,18,24; 30:12,21,23;31:3,11,17; 32:2;35:1,9,14,16;44:11, 23;59:24;62:4,5,16,20; 95:19;96:21;97:14; 114:20;117:17;128:17, 21;129:1,12,16,20; 131:1,5</p> <p>capital (12) 12:24;109:18;110:16; 123:6,19,24;135:11,14, 19,20,22;145:14</p> <p>capture (1) 72:23</p> <p>captured (1) 70:15</p> <p>care (1) 146:10</p> <p>cared (2) 49:23;50:1</p> <p>carefully (1) 11:6</p> <p>cares (1) 108:4</p> <p>case (7) 36:16;82:22;88:22; 89:5;121:5;124:18; 151:24</p> <p>cases (3) 122:11;136:21;155:13</p> <p>casually (1) 131:17</p> <p>cause (1) 139:2</p> <p>causes (5) 53:8;106:21,22;121:3; 144:2</p> <p>causing (3) 59:24;72:13;153:7</p> <p>caveat (1) 119:1</p> <p>caveats (2) 23:5;58:21</p> <p>center (1) 142:20</p>
B		C		
<p>B3.2 (1) 125:13</p> <p>back (21) 5:3,14;23:24;24:1; 34:11;39:15;43:22;94:7; 102:13;106:5;115:8; 118:22;120:7;122:7; 129:8,10;133:22;146:3, 17,23;147:24</p> <p>background (1) 92:1</p> <p>bad (2) 34:12;51:10</p> <p>bag (1) 111:17</p> <p>ball (2) 121:24;122:3</p> <p>BART (9) 16:14,15,18,21; 110:12;156:15,21;157:6, 9</p> <p>base (3) 94:19;119:18;139:3</p> <p>based (37) 8:17;24:18;25:19,23, 24;29:12;34:1,6,17; 41:20;44:5;50:11;54:7;</p>	<p>88:3;132:20;158:8,11</p> <p>10:15;20:6,13;29:6; 30:7,13;31:7,21;58:16; 59:22;66:23;82:16; 143:17</p> <p>begins (1) 18:11</p> <p>behalf (1) 65:18</p> <p>behave (1) 144:2</p> <p>behavior (1) 146:9</p> <p>behind (2) 32:16;39:10</p> <p>belief (1) 112:1</p> <p>below (3) 103:14,18,21</p> <p>benefit (2) 90:11,12</p> <p>benefits (3) 72:5;136:13;139:2</p> <p>best (13) 67:12;70:18;72:4; 73:11;77:7;78:12;79:19;</p>	<p>both (4) 5:22;14:2;70:4;133:20</p> <p>bottom (1) 39:21</p> <p>bound (1) 103:14</p> <p>bounds (1) 145:9</p> <p>Bow (1) 10:23</p> <p>Brayden (1) 85:8</p> <p>break (2) 87:10,13</p> <p>brief (5) 45:15;74:13;87:14; 146:15;151:17</p> <p>briefly (3) 9:23;10:7;156:9</p> <p>bring (1) 137:17</p> <p>brings (1) 98:5</p> <p>broad (1) 113:7</p>	<p>C&LM (1) 107:21</p> <p>C2.4 (2) 18:6;43:22</p> <p>calculation (5) 62:6;94:15;127:4; 129:18;132:14</p> <p>calculations (3) 8:20;131:13;157:5</p> <p>calendar (1) 158:16</p> <p>call (6) 94:2;95:13;124:15; 137:24;145:12;157:23</p> <p>called (3) 59:2;102:10;135:12</p> <p>came (4) 6:17;32:17;101:15; 132:12</p> <p>can (63) 15:20;21:4;22:19; 24:15;27:23;35:15; 43:12,19;52:12;58:14, 19;61:18;63:11;64:3;</p>	

- April 4, 2012
DE 10-261 PUBLIC SERVICE COMPANY OF N.H. Least Cost Integrated Resource Plan

centered (1) 29:17	charges (1) 148:18	114:23	comment (3) 81:24;109:14;124:8	completion (1) 116:10
central (2) 107:21;108:6	chart (10) 34:2;46:3,10,13; 47:22,23;48:16;62:3; 128:24;151:19	Clearly (4) 70:6;117:17;122:22; 142:1	commentary (1) 141:21	compliance (15) 16:18,21;66:6,9,11; 75:13;85:3;112:16,24; 113:17;122:13;123:8,10, 14;157:12
cents (10) 57:24;58:2,6,22,22,23, 24;85:22;86:5,8	chasing (1) 113:4	Clerk (2) 6:4;154:19	commenting (1) 27:16	compliant (1) 112:15
certain (9) 15:23;72:3;93:24; 111:15,15,16,18;121:10; 141:6	cheaper (2) 94:5;117:7	CLF (31) 21:20,24;32:16;33:9; 38:18;39:7,10,11,16,16, 17,19;40:6;45:11;46:6, 7;53:13,15,21,22;61:10, 11;64:16,19;75:9,10; 77:22;79:5;151:18; 152:18;153:6	comments (5) 6:22;82:9,10,15; 147:24	comply (1) 157:6
Certainly (9) 16:7;27:9;55:5;65:9; 112:11;113:5,14;138:8; 156:12	check (6) 12:17;22:22;35:5; 67:9;86:10;90:15	CLF-003 (1) 39:2	commercial (1) 58:3	complying (2) 115:6;117:11
cetera (2) 122:11;156:23	checked (1) 158:18	CLF-02 (2) 38:20,24	commission (14) 5:10,17;45:20;47:1; 107:8;108:9;116:20; 135:12;149:23;150:19; 151:20;154:9;155:1,6	component (5) 48:11,12,13,13;134:6
Chair (22) 5:9;15:2,18;16:24; 17:4;28:10;45:17;53:11, 18;55:15;56:7,24;57:18; 68:3;69:13;74:8,17; 79:14;81:4;82:23;84:7; 87:7	choice (1) 134:8	clock (1) 119:22	Commissioner (11) 29:15;30:19;90:19; 118:11;119:1;120:8; 133:22;142:16;146:12; 148:10,15	components (1) 127:6
CHAIRMAN (97) 5:2,19,23;6:3;7:1,6,13, 19;8:7;9:6,8,16,22; 13:23;14:12,21;15:6,10, 13,16;16:1,7;17:1;21:10, 18,22;23:10,17;24:15; 27:23;28:13,20;32:24; 33:3,10,19,22;38:22; 39:6,12,14;45:13,23; 46:5;53:14,20;55:11; 56:1,18;57:5;61:9;64:6, 14,18;68:6;69:9,20; 74:10,23;75:8,11,23; 79:3,10;80:6,13,19;81:8; 82:5;83:6,19;84:12; 85:14;87:8,12,16,19,23; 90:18;118:11;124:5,7; 148:10;151:14;152:6, 24;153:18;154:3,10,16, 20;155:8,14,23;158:3; 159:2,6	choose (1) 109:11	close (2) 105:23;132:6	Commitment (1) 41:12	comport (1) 92:6
Chair's (1) 148:1	chooses (1) 53:9	closer (1) 99:23	Commission's (4) 119:21;149:8,24; 153:16	comprehend (1) 113:22
change (10) 30:6;64:4;91:20; 101:22;127:22;137:5; 143:11,12;146:9;153:7	choosing (1) 51:21	closing (1) 83:11	commitment (1) 41:12	comprehensive (1) 121:20
changed (3) 29:11;105:8;115:23	chose (1) 102:12	Club (3) 16:9,10;156:4	commitments (4) 20:18;37:3;101:3; 144:21	computations (1) 49:22
changes (2) 110:13;136:21	circumstance (1) 97:1	CL&P (1) 37:2	committed (1) 134:10	concede (1) 128:23
changing (1) 12:11	circumstances (1) 34:18	CL&P's (1) 37:5	companies (1) 124:20	conceptually (1) 106:3
chapter (1) 92:5	cite (1) 43:19	coal (13) 20:10,18;24:7;95:24; 97:8;100:13,18,22; 101:2,4,5;109:5;132:10	Company (23) 38:19;45:1;49:7,11, 16;50:9;57:3;64:9;71:4, 8;74:17;79:15;83:7; 111:23;123:13;124:19; 126:15;137:12;138:3, 12;139:18;145:5;151:15	concern (3) 54:13;55:16;80:8
characteristics (3) 42:14;43:9;138:23	clarification (3) 26:21;27:24;48:10	coal-fired (2) 18:16;128:11	Company's (4) 133:17;135:9;136:6, 16	concerned (2) 79:2;81:15
charge (3) 148:19,19;149:1	clarify (5) 23:7;34:15;90:8; 97:23;141:24	co-existence (1) 73:8	compared (1) 101:5	concerning (1) 152:18
	clarifying (4) 23:11;27:4;70:1;79:4	cognizant (1) 111:6	comparing (1) 27:20	concerns (1) 93:20
	classes (1) 127:12	collapsed (1) 20:17	comparison (7) 36:20;37:10,17;45:3; 46:14;47:3;51:3	conclude (3) 86:12;128:9;158:4
	classic (2) 95:13;105:18	collections (1) 111:14	competition (1) 116:10	concluded (1) 13:10
	Clean (10) 12:4;22:24;28:11; 66:20;67:5,10;68:20; 70:1;73:13;78:8	colored (1) 46:10	competitive (4) 51:10,11,17,22	concluding (1) 60:21
	clear (15) 40:19;47:2;57:8;66:7; 68:14,24;73:24;76:8; 93:5;98:1;115:23,23; 141:18;145:16;153:10	column (7) 61:23;62:15;88:14; 89:2,7,9;90:9	compile (1) 142:20	conclusion (4) 51:23;69:8;71:9; 137:23
	clearing (5) 40:8;93:5,14;100:16;	combustion (1) 109:22	complete (1) 66:7	concur (1) 148:8
		comfortable (2) 7:15;90:22	completed (1) 157:13	conditions (2) 41:4;142:5
		coming (3) 5:3;144:11;155:17	completely (4) 86:2;89:22;107:6; 146:2	conduct (1) 71:8
		commensurate (1) 52:22		conducted (2) 71:2;73:10
				confidence (1) 131:9
				confident (1) 89:4
				confidential (5) 5:8;7:7,9,16;15:9
				confidentiality (2) 5:14,15
				confirm (4)

DE 10-261 PUBLIC SERVICE COMPANY OF N.H. Least Cost Integrated Resource Plan

<p>21:6;88:14,21,24 confirmed (1) 14:1 conflict (2) 117:8;158:20 confused (2) 29:4;68:1 confusion (4) 27:17;29:2;32:14; 69:23 connected (1) 32:9 connection (1) 56:23 connection's (1) 14:23 connects (1) 29:8 connotation (1) 153:5 consequence (2) 62:24;108:15 Conservation (2) 39:4;65:15 Conservation/Load (5) 92:11,15;107:19; 120:20;141:10 consider (7) 34:3;76:1;80:16; 110:14;120:18;130:4; 136:11 consideration (8) 83:3,9;84:10;120:20; 125:5;136:4;155:18; 159:1 considerations (2) 64:23;93:18 considered (5) 7:9;83:14;128:6; 134:7;142:10 consistent (1) 19:5 constant (1) 30:6 constructed (1) 115:19 consult (4) 51:20;55:6;71:8; 122:15 consulting (1) 71:8 consumption (1) 86:13 contain (1) 26:18 contained (2) 54:13;156:9 contains (3) 16:17,20;66:19 contemplated (1) 92:16 content (1) 26:17</p>	<p>contention (1) 94:17 context (4) 60:7,10;79:18;156:10 contingencies (1) 145:13 continually (1) 78:22 continue (14) 24:20;42:6;43:2; 58:11;63:23;73:4;81:3; 98:2;123:16;135:10; 140:23;141:7;143:12,12 continued (7) 24:4;25:22;26:6; 58:13;135:16;147:10; 150:7 continues (5) 30:9;63:6,8;72:14; 143:11 continuing (7) 5:4;62:24;63:10,13; 119:14;120:1;136:14 contracted (1) 71:7 contracts (2) 17:13,15 contributing (1) 153:11 convenient (1) 98:6 conversation (3) 50:11;103:17;122:19 convinced (1) 59:5 Cooling (21) 66:18;67:11;70:18; 71:13,14;73:21;78:2; 80:2,17,24;81:21;82:22; 84:4,10,11,15,20;85:2,6; 108:24;109:1 Co-op (3) 46:16;48:19;49:3 copy (1) 45:18 CORE (4) 85:20,23;107:23; 108:1 corollary (1) 138:16 corporate (4) 54:20;121:15;126:20; 127:7 corrected (1) 67:24 correctly (2) 42:5;102:18 correlation (2) 100:9;102:24 Cost (110) 9:10,15;10:14,21; 11:14;12:7,12,15,18,24; 14:8,10,20;16:17;36:11,</p>	<p>23;37:20;38:9,10,14; 40:9;41:1,10,19,22;42:9; 43:1;44:16;45:9;48:5, 13;50:2;53:2;56:11; 60:13;63:1;65:19;72:5; 74:24;76:23;77:2,4; 81:5;84:15,16,20;85:21; 86:3,14,23;90:10;92:3, 19,24;93:2,9,10,13; 94:8,18;98:14,18;104:9; 105:1,3,6,16,24;106:4, 18;107:11,17,24;108:21; 109:3,10;110:22;112:2, 5,22;113:24;114:4,10, 17;115:5,7;117:10; 124:10,19;125:2;133:11, 12;134:14,14,20,21,22; 135:10;146:22;148:15; 149:19;151:6,10; 152:15;154:5;155:10, 18;158:9 costs (40) 16:21;35:18,22;36:6, 10,13,15,17,22;37:11, 22;42:11;43:7;49:24; 84:10;90:13;94:23; 104:3,8;105:5,14;106:9; 119:10;133:18,20;134:1, 12,24;135:1,23;142:24; 145:14;147:6,11,13,14; 148:23;156:22;157:12, 22 couple (7) 42:18;57:21;84:12; 101:13;108:10;125:8; 148:13 court (2) 68:4;114:7 courts (1) 122:10 cover (1) 36:5 covered (1) 107:14 covering (1) 36:10 crashed (1) 37:5 create (1) 126:10 created (2) 32:20,21 creating (1) 126:2 credibility (2) 6:9;14:3 credit (1) 112:9 criticality (1) 113:16 cross-examination (6) 5:5;8:11;9:12;17:5; 56:8;88:1</p>	<p>cross-examine (1) 82:20 crystal (2) 121:24;122:3 culminated (1) 157:4 culmination (1) 110:5 cumbersome (2) 33:12,18 cumulatively (1) 94:4 Cunningham (29) 5:4,9,21;6:2,14,20; 7:21;8:2,6,8,9,11;9:7,17, 19;10:3;13:12,24;14:6, 18;15:1,8,12,15;16:5,12, 23;55:13;155:9 Cunningham's (1) 71:11 curiosity (1) 150:24 curious (1) 117:22 current (9) 42:8;55:14,19,21; 56:5,21;81:14,17;125:16 currently (4) 81:23;103:18,21; 137:2 curves (4) 59:13;60:5,21;63:17 custom (1) 15:19 customer (11) 36:17;47:7,8;48:5; 51:9;53:8;88:11;103:13, 24;114:19;139:3 customers (22) 36:2,14;37:19;38:14; 41:15;42:2;48:17;51:15, 19,20;52:11,14,17; 102:13;106:16,20;126:4, 7;136:13;137:1;146:4; 152:23 customers' (1) 38:4 customer's (2) 48:15;117:15 cut (2) 57:21;151:3 cycle (3) 25:14;41:12;42:11 cycles (1) 121:5 cycling (2) 43:1,8</p>	<p>8:16;16:20;21:15,16; 22:3,23;23:1,19;24:2,10, 18;26:4;27:1,2,19; 28:11;29:12;30:17; 32:16,19,22;33:5,13; 34:1;38:20,24;39:10,15; 42:22;54:1,5,12;56:14, 19;58:15;59:4;60:24; 61:13;63:18;64:11; 65:15;74:3,4;130:21; 131:8 date (13) 23:14;32:4;34:4,5,21, 23;44:13;66:12;76:11; 79:11;136:11;158:14,19 dated (11) 6:13,15;9:9;10:19; 13:21;14:22;34:19; 38:20;56:20;57:1;144:1 dates (5) 149:5;154:8,11; 158:22;159:1 Dave's (1) 26:20 day (21) 39:24;41:15,24;43:4; 57:11;60:3,3;93:4;94:1, 22;97:17;112:15; 115:10;116:10;118:5; 135:7;144:9;158:4,14, 22;159:11 day-ahead (4) 92:23;93:14;100:4; 146:6 day-by-day (1) 120:23 day-in-and-day-out (1) 113:6 DE (3) 53:19;61:14;151:22 deadline (1) 98:9 deal (1) 132:6 dealing (1) 9:24 decide (4) 42:2;59:19;101:5; 118:14 decided (2) 44:4;145:24 deciding (1) 44:2 decision (6) 43:6;53:8;81:19,22; 94:18;145:20 decisioning (1) 107:22 decision-making (3) 50:16;116:3;123:11 decisions (6) 107:22;115:11,20; 121:2;126:9,14</p>
--	---	---	--	--

declares (1) 114:7	depend (1) 69:4	107:15	docket (20) 45:8;53:18,19;56:4; 61:14;107:7,14;108:1,7; 119:24;127:9;133:10; 136:4;150:10;151:7,22; 152:10;155:2,6,7	30:14
decline (11) 24:4,20;25:22;26:1,6, 14;28:7,8;59:23;60:1; 63:23	dependent (1) 68:10	direct (2) 17:7;102:24	61:14;107:7,14;108:1,7; 119:24;127:9;133:10; 136:4;150:10;151:7,22; 152:10;155:2,6,7	drawn (1) 29:22
declined (2) 21:2;23:2	depending (2) 96:6;115:4	directing (1) 88:4	119:24;127:9;133:10; 136:4;150:10;151:7,22; 152:10;155:2,6,7	drive (4) 107:2;116:3;127:18; 128:2
declining (5) 20:6,9,15;35:13,16	depends (10) 33:12;36:24;38:1,1; 53:6;63:13;67:17,20; 69:17;96:3	direction (7) 10:10;68:14,18;73:7; 128:2;149:24;153:13	dockets (4) 49:24;50:2;98:24; 124:19	driver (2) 45:7;53:7
decrease (4) 22:9;63:6,8,13	depicted (1) 32:17	directionally (2) 106:3;121:17	document (54) 6:23;7:3,7,9;4,21; 10:5,19;11:4,8,14,18,20; 13:20;14:8,15;15:7; 16:6,14,16;18:13;22:12; 42:19;43:20;48:3;53:12; 54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	drives (2) 107:3;127:23
decreased (2) 45:1;99:20	depiction (1) 125:18	disagree (2) 58:12;83:9	6:23;7:3,7,9;4,21; 10:5,19;11:4,8,14,18,20; 13:20;14:8,15;15:7; 16:6,14,16;18:13;22:12; 42:19;43:20;48:3;53:12; 54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	driving (4) 45:9;106:9;139:8; 143:22
decreasing (2) 44:12;48:19	DES (8) 7:12;13:4,10;47:1; 70:4;75:13;156:17; 157:1	discharged (1) 13:11	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	drop (1) 132:20
default (3) 37:19;51:16;116:16	describe (2) 137:22;156:9	disclaimers (1) 54:10	74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	due (5) 42:13;51:17;96:11; 97:4;120:19
defer (1) 95:21	described (1) 141:12	discouraging (1) 117:2	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	during (15) 24:22;40:7;42:15; 44:14;48:19;49:9;77:19; 80:3,4;83:17;85:23; 97:15;104:5,24;129:21
deferral (1) 139:2	describing (1) 100:1	discovery (2) 141:20;143:20	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	
define (4) 95:6,8;124:12;138:24	description (2) 45:15;94:16	discuss (3) 51:8;77:14;79:23	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	E
defined (6) 12:10;40:24;96:8; 123:22;140:9;145:8	design (1) 12:23	discussed (11) 13:4;17:10;55:23; 69:4;79:17,17;107:16, 17;115:21;145:23; 156:12	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	
defining (1) 145:14	designating (1) 131:9	discusses (1) 43:13	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	earlier (13) 47:16;50:12;59:22; 64:20;70:24;93:23; 116:23;122:7;126:18; 130:2;142:17;143:14; 147:24
definition (1) 144:16	Desulfurization (2) 9:1;12:6	discussing (3) 8:13;78:9;89:16	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	early (2) 35:6;104:2
definitive (1) 137:4	details (1) 81:13	discussion (18) 28:22;39:13;64:8; 66:19,23;67:8;87:11; 92:21;95:3;103:15; 108:6;116:22;122:8,17; 128:7;137:11;143:20; 157:10	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	easier (2) 32:23;73:2
degree (4) 71:24;116:4;123:13; 139:11	Determination (1) 8:24	discussions (1) 13:8	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	easy (1) 92:7
deliberative (1) 150:2	determine (1) 100:18	discussing (3) 8:13;78:9;89:16	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	Eaton (37) 6:6,8;7:3,5,10,18,24; 9:7,8;13:15;15:18;16:3; 32:15;33:11,15;39:3,8; 69:7,10;75:15,16;78:14; 82:6,7;83:20;151:16; 152:17;153:5;154:1,6, 12,23;155:11,19;156:1, 3;158:1
delivery (1) 126:5	determined (1) 72:3	discussion (18) 28:22;39:13;64:8; 66:19,23;67:8;87:11; 92:21;95:3;103:15; 108:6;116:22;122:8,17; 128:7;137:11;143:20; 157:10	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	eat (1) 80:8
delta (2) 52:19,22	develop (1) 108:3	discussions (1) 13:8	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	economic (21) 18:17;24:9;41:15; 42:12;43:6,14;61:21; 63:4,5;94:11,14,20; 96:19;97:4;117:14; 127:21;128:12;129:5; 130:22;134:3,4
demand (3) 91:21,22;122:2	developing (2) 128:16;129:13	Dispatch (15) 18:7;25:7;35:24; 41:11;44:3;63:4,5,9; 92:19;100:24;105:3,9; 126:14;131:20;132:4	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	economical (2) 97:19;117:4
demand (1) 91:7	development (1) 24:6	dispatched (3) 35:21;94:4;97:11	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	economically (2) 94:3;97:11
demarcation (1) 23:12	dictate (1) 93:18	dispatching (2) 35:20;36:2	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	economics (10) 17:9;20:9;22:15;23:8; 25:5;44:2;61:8;93:21,
demonstrate (2) 24:3;57:19	dictated (1) 66:3	displacing (1) 47:17	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	
demonstrated (1) 123:13	difference (7) 28:17;53:1;89:12; 94:20;99:12;125:21; 144:5	dispute (2) 83:22;133:10	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	
demonstrates (1) 56:14	different (16) 28:5;34:10,12;38:24; 53:17;56:22;80:7; 106:18;113:5;117:21; 118:5;127:11;140:13; 141:12;144:3;153:4	distributed (2) 5:24;106:20	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	
demonstrating (1) 80:24	difficult (2) 102:21;158:21	distribution (11) 48:12;137:6,18;138:2, 5,7,15,17;139:18;151:2, 23	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	
deny (2) 14:21;155:24	difficulty (1)	diversity (1) 114:11	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	
denying (1) 80:5		divestiture (1) 136:12	54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	
Department (4) 45:20;112:14;131:16; 157:15			54:3;58:17;61:2,7,16; 74:14;75:2;86:1;87:1; 89:21;111:8;120:9,10, 11,13;121:12,15,16; 122:4,14;127:16,17; 132:1;142:7,22;143:19; 152:20;153:6;156:6	

<p>22;101:4 effect (5) 41:8;56:21;152:14; 153:2;154:4 effective (1) 139:6 efficiency (9) 85:20;86:19,22;91:10, 14,22;137:13;138:14; 141:17 efficient (1) 150:13 Effluent (7) 8:24;11:13;12:22; 13:5,6,9,11 effort (1) 156:17 efforts (1) 12:8 EIA (1) 22:24 eight (1) 94:13 either (8) 29:23;30:16;36:16; 72:12;93:4,12;103:3; 155:21 elasticity (2) 126:7;127:6 Electric (8) 46:16;48:18;59:14,17; 61:1;89:24;114:3; 116:17 electrical (2) 91:7,21 electricity (10) 59:21;125:11,15,19; 126:15;127:3,5,11,23,24 else (4) 47:12;78:20;80:22; 106:14 embedded (1) 148:18 emerging (2) 110:11;111:6 emission (1) 111:16 emphasize (1) 136:16 end (18) 6:20;15:22;16:4; 23:15;25:3;29:7,30:14, 23,24;31:2;41:2,82:19; 104:16,17;112:15,24; 143:17;149:6 endpoint (1) 31:24 energy (82) 17:18,22;21:15;32:22; 35:8;36:19;37:19;40:10; 41:1,22;45:2;46:15,20; 49:13,17,21,22,23;50:1, 5,18,21;51:2,16;52:19,</p>	<p>23;53:2,9;54:7;55:1,4, 14;56:5;58:1,10,14,21; 59:9;62:6;63:22;85:20; 86:6,19,22;91:9,14,22; 98:11,16;99:6,7;100:5; 101:6;102:13,22;103:1, 6,15;106:14,17,18,22; 107:1,3;114:7,8,12,15, 18;124:21;125:10; 126:16;131:19;132:10, 13;134:5;138:13; 141:17;145:21;153:6,8; 154:24 energy-efficiency (7) 137:7,16;138:6;139:1, 6,14;140:7 engage (1) 64:8 engaged (1) 54:16 engineering (2) 111:23;138:10 engineers (1) 111:7 England (7) 17:22;40:2,8;85:1; 91:13;100:9;114:24 enormous (1) 124:17 enough (4) 10:4;66:8;110:19; 152:11 entail (1) 84:9 entailed (1) 83:3 entered (1) 5:16 entire (2) 31:11;46:4 entitled (5) 8:23;10:21;18:7; 66:17;78:1 Entrainment (1) 78:4 environment (1) 73:8 Environmental (17) 45:21;61:5;64:5,10, 22;65:17;67:14;69:15; 70:20;85:13;115:22; 122:10,13;123:1,2; 145:15;157:15 envision (2) 110:16;134:11 EPA (24) 8:13,14;10:24;11:18, 22;12:14;14:9;21:14; 22:24;28:11;32:19; 68:21;70:4;74:19,20; 80:24;81:18;82:1;83:3, 15;84:3;85:1;109:4; 111:13</p>	<p>EPA's (4) 67:16,19;68:9;78:11 equally (1) 52:9 equipment (3) 111:10,11,18 equivalent (1) 46:20 Errichetti (134) 17:8,11,14,19,24;18:3, 9,14,22;19:4,9,14,17,24; 20:3,7,16,23;21:4;22:5, 6,13,21;23:5,18,23;24:6, 14,22;25:18,23;26:8; 27:11;34:1,5,14,19;35:3, 11,18,23;36:7,13,24; 37:14,24;38:12;39:19; 40:5,12;41:6,11;42:17, 20;43:5,17,21;44:10,17; 45:5;46:9,12,17,23;47:4, 11,14,20;48:4,9,20;49:1, 3,9,14;54:18,19;55:17; 57:2;59:8,11,14,16;60:3, 7,13,23;62:23;63:3,7,18; 92:20;93:7,11,16;94:10, 24;95:7,18,21;97:21,23; 98:10,18;99:6,8;100:8, 21;101:9,23;102:6; 105:4;106:2;115:18; 117:10,14;126:17; 127:17;128:19;129:4, 15;130:6,11,13,17; 131:3,12;132:21,24; 133:7,20;134:16;135:5; 145:22 ES (10) 47:7,9;54:21;60:7; 98:20,23;99:10;133:24; 155:3,4 especially (1) 122:9 essence (2) 29:20;73:2 essentially (3) 31:15;36:22;147:12 establish (4) 9:21;81:12;145:18; 152:13 established (4) 12:7;78:15,23;114:2 establishing (1) 145:9 estimate (4) 41:23;125:22;148:24; 157:21 estimated (2) 40:23;131:20 estimating (1) 98:20 et (2) 122:11;156:22 even (10) 7:16;25:10;36:18;</p>	<p>42:7;78:21;94:1,3; 109:12;114:22;117:13 everybody (2) 124:16;148:6 everyone (2) 5:3;124:23 evidence (3) 15:5,24;83:13 evolved (1) 119:9 exact (3) 86:11;108:11;130:13 exactly (4) 94:15;101:21;102:15; 136:23 examination (4) 135:21;139:12; 143:17;156:2 examine (1) 121:4 examined (2) 50:13;103:10 examines (2) 116:1;121:16 examining (1) 60:16 example (8) 23:13;43:22;72:17; 100:14;107:18;138:16; 140:11;151:7 exceed (1) 42:14 except (4) 62:19;116:13;127:4; 151:2 exception (1) 96:16 exchange (1) 156:11 exchanged (1) 14:9 Excuse (5) 11:5;46:21;62:13; 67:18;99:3 exhibit (37) 5:8;8:22,23;9:13; 13:13,14;18:5;21:19; 28:14,16;38:18;39:10, 20;61:8;66:14;73:10; 74:9;76:16,21;77:23; 79:5;88:7,9,10,16;89:2; 90:2;92:10;131:4;137:9, 20;152:8;154:18,24; 155:5;156:5;157:5 exhibits (4) 5:21;15:19;16:2;23:12 exist (3) 27:9;68:17;111:20 existed (1) 144:14 existing (3) 66:3;103:13;155:3 exists (2)</p>	<p>68:13;70:2 expand (3) 86:18;87:5;110:2 expect (1) 91:4 expectation (1) 119:19 expectations (2) 123:23;145:19 expected (5) 50:24;58:10;99:12,13; 146:11 expending (1) 101:2 Expenditure (1) 89:7 expenditures (5) 88:18;89:1,3,13;147:9 experience (1) 111:5 experienced (1) 50:15 experiences (1) 51:11 experiencing (1) 139:16 expires (1) 76:9 explain (4) 35:15;125:13;141:24; 142:12 explained (1) 47:11 explaining (1) 35:12 explanation (2) 74:13;153:22 explicitly (2) 69:18;101:12 explore (1) 19:11 extended (1) 96:11 extension (1) 6:15 extent (6) 56:9;65:8;66:5;80:15; 83:13;156:20 extremely (1) 135:24</p>
F				
			<p>face (1) 107:15 facilities (7) 43:16;109:19;110:3; 111:5,20;120:22;136:18 facility (5) 70:8;79:22;81:1;85:7, 8 fact (13) 16:16;25:8;35:23;</p>	

51:23;56:17;72:18;77:6; 16:78:16;83:15;114:21; 116:3;156:22 factor (33) 20:8,14;21:1;22:3,9; 23:2;24:3,19;25:21; 26:5;27:12;29:19,24; 30:13,22,23;31:17;32:2; 51:6,12,13,24;52:5,7; 62:16,20;95:19;96:21; 128:21;129:16,20; 131:1;146:10 factored (1) 92:12 factors (23) 19:22;20:5;21:13; 27:5;28:17;29:11;31:11; 35:1,14,17;44:11,24; 52:8;60:1;62:4,5;97:15; 114:20;128:17;129:2, 12;131:5;153:10 failures (1) 96:12 fair (10) 33:6;44:23;50:17; 52:16;54:5;58:9;63:5; 110:19;125:7;144:8 fairly (1) 109:7 fall (1) 92:4 familiar (7) 9:4;19:21;27:1;67:4,8; 84:24;111:24 far (6) 13:4;56:8;79:1;143:5; 145:13;149:13 fashion (1) 120:21 feed (1) 106:6 feel (6) 59:18;71:1;110:6; 115:4,5;117:11 feels (1) 90:22 few (6) 8:9;15:1;61:3;97:17; 124:5;137:3 fewer (2) 99:19;106:20 figure (8) 28:2,4,7;31:21;86:11; 93:1;122:1;130:3 figures (1) 88:16 file (9) 6:21;114:3;115:7,13; 135:16;149:24;150:4; 151:4;152:11 filed (31) 9:10;11:18;13:21; 75:6,17,18;76:13,18; 77:3,18;78:17;86:7,23; 115:17;118:24;119:5; 123:18;124:10;129:3; 142:6,22;144:9;146:21, 24;149:19,20;150:1; 151:11;152:15;153:3; 154:5 filing (17) 10:1,14;11:13;25:1; 55:23;115:12;119:9,19, 20,23;120:5;128:10; 143:6,19;146:22;147:6; 151:12 filings (1) 119:21 filling (1) 99:1 final (4) 109:12;112:19; 119:24;149:22 finalize (1) 115:2 finalized (5) 35:7,9;67:22;68:12; 113:20 Finance (1) 116:7 financial (4) 54:20,22;126:20; 127:2 find (3) 43:19;107:1;109:7 finding (2) 44:21;83:21 fine (6) 8:6;25:18;64:6;84:1; 85:14;119:3 finish (1) 149:5 finished (2) 26:11;87:17 first (12) 10:17;24:23;26:13; 57:11;60:15;89:2;90:7; 97:3;120:12,15;146:18; 147:2 fish (13) 71:3;72:7,9,17,19,23, 24;73:1,3,5,15,17;84:17 fit (1) 23:13 five (9) 76:9,11;94:12;104:12; 126:16;127:10;130:19; 140:22;144:13 five-year (14) 43:23;54:8,16;104:19, 21,22;108:3,4;119:6; 131:15;142:9;143:16, 16;149:11 five-year-out (1) 127:3 fix (1) 96:13 fixed (13) 36:5,10,15,21;37:11; 38:10;106:18;134:1,9, 12,21;135:1,2,3 flat (8) 25:12;49:4,6,10; 63:24;133:2,8,8 fleet (1) 64:24 flip (1) 26:2 Flue (2) 9:1;12:6 focus (2) 57:15;59:17 focused (1) 108:8 focusing (1) 46:3 folks (1) 143:21 follow (1) 92:7 followed (1) 42:21 following (4) 30:3;121:8;123:10; 153:19 follows (1) 27:12 follow-up (1) 148:13 force (2) 139:8;143:22 forced (5) 95:9,10;96:17;130:7, 24 forecast (39) 49:23;50:7,10,13,18, 19;54:8,16;55:1;60:11; 61:1,1,63:3;91:6,10,15; 92:12;99:24;103:20; 104:9;108:4;125:9,11, 15,22,24;126:3,11,15; 127:6,19,24;128:3,4; 132:10,10,11,13,13 Forecasted (2) 18:7;99:10 forecasts (2) 51:3;91:14 foremost (1) 120:15 foresee (1) 123:6 forestall (2) 137:17;138:14 forestalled (1) 138:6 forgive (1) 58:19 Form (3) 21:16;22:24;24:18 forth (2) 23:24;145:5 forthright (1) 124:9 forum (1) 124:12 Forward (19) 8:14;25:6,11;49:13, 17,21;50:5;54:6;59:12; 60:5,21;63:16,21;66:9; 101:6;108:3;110:7; 131:19;132:3 Fossil (4) 18:8;60:12;90:12; 116:11 fossil-fuel-fired (3) 44:24;47:18;56:13 found (3) 45:19;140:17,21 Foundation (2) 39:4;65:16 fourth (1) 39:22 frame (3) 27:22;102:20;104:24 free (2) 71:1;158:15 friends (1) 124:1 front (7) 9:14;25:19;45:18; 46:10;75:2;108:12; 156:5 frozen (1) 142:11 Fuel (7) 18:8;41:20;90:12; 93:2,20;99:5;100:19 fuels (1) 110:14 fulfilling (1) 123:14 full (7) 16:1;29:19;33:20; 37:3,7;66:11;95:8 fundamental (1) 110:9 fundamentally (1) 135:17 further (8) 5:7;8:8;16:24;24:4; 87:7;90:16;141:16; 159:7 future (16) 51:4;59:7;91:2,4,6,20; 98:16;107:12;108:22; 112:2;114:20,22;126:5; 129:8;139:12;145:11 Gas (31) 9:1;12:6;20:16;47:17; 59:10,12,15,16,18,23; 60:6,21,24;63:1,14,16; 98:1,8,12,17;100:7,11, 17;106:8;114:21,22; 132:10,12,19,22;133:5 gears (1) 64:4 general (13) 18:11,15;19:18;22:14, 17;44:10;52:13;60:16; 88:4;93:16;94:16;114:6; 137:22 generalized (1) 24:7 generally (6) 19:5;67:6;93:7,21; 132:8,17 generating (12) 17:10;33:7;40:11; 43:15;64:24;85:7;86:15; 106:19;112:14;117:1; 133:16;136:18 generation (22) 17:17;18:24;37:18; 38:2,10,11,14;40:24; 48:11;60:11;63:1;99:12, 20;116:12,17;117:5,6, 16;129:16,17;130:20; 133:23 generation/dispatching (1) 126:9 generations (1) 117:12 generator (1) 138:19 generators (2) 56:13,15 generic (1) 111:14 generically (2) 65:6;109:3 gentler (1) 73:2 gently (1) 29:9 gets (1) 142:22 ginned (1) 54:23 given (7) 43:8;89:6;93:15; 95:12;133:24;135:18; 136:3 gives (2) 130:23;131:9 GNP (1) 127:20 goal (1) 95:15 goes (5) 29:9;30:5;114:5,12;
--

G

gap (2)
99:2,10

<p>143:5 going-forward (2) 92:24;93:8 good (17) 10:4;34:12;42:17; 81:10;88:9,23;90:6,16; 103:9;110:6;118:20; 125:5;127:13;128:23; 130:8;132:6;140:6 gradual (1) 28:7 granted (1) 146:21 graph (6) 25:19,20;26:5;29:16; 31:14,16 graphical (1) 21:12 graphs (1) 32:21 greater (1) 125:3 Grid (4) 46:15;48:18;49:5;58:5 group (3) 17:20;82:13;138:10 growth (14) 91:3,15;127:21; 137:24;138:11;139:9,12, 15,21,23,24;140:1,5; 141:5 guarded (1) 128:20 guess (17) 19:11;20:4;30:2; 33:12;34:19;94:2;102:9; 110:19;113:23;114:24; 115:2;116:5;118:5,7; 119:17;140:3;150:11 guidance (10) 8:13,14;68:24;69:5, 18;70:4,7;111:13; 135:18;157:20 guide (3) 144:7,7,10 guideline (1) 157:20 Guidelines (1) 8:15 guys (2) 63:14;95:22</p>	<p>10:22,23;12:5;13:13; 45:4;46:16;48:18;49:8, 11,16;50:10;74:18; 79:16;91:16;106:11; 116:12 Hampshire's (3) 38:19;45:2;64:9 happen (5) 63:12;82:18,21; 104:16;140:5 happened (4) 25:2;31:19;78:16,21 happening (2) 129:6;152:22 happens (2) 80:9;106:17 happy (2) 21:8;125:4 harbinger (1) 129:7 hard (2) 137:3;142:7 harm (3) 71:5,15;72:13 HARRINGTON (20) 29:3;30:2,24;31:4,13, 19;32:6,12;40:13,18; 90:19,20;91:1;118:9,14, 18;119:2;148:11,12,14 Harrington's (2) 120:8;133:22 hash (3) 23:14;30:8;31:5 Hayes (1) 156:13 Haze (2) 15:3;16:15 head (2) 21:7;147:4 headed (1) 89:9 heading (1) 62:3 hear (2) 144:6;158:9 heard (2) 106:15;116:22 hearing (1) 78:22 heat (1) 59:19 held (1) 129:8 help (5) 7:22;28:2;50:24;51:3; 138:3 helpful (1) 29:21 hence (1) 119:23 here's (1) 108:23 high (12)</p>	<p>55:21,23,24;71:24; 96:5;100:6,8;123:13; 135:1,1,24;145:4 higher (5) 36:18;56:22;103:2,12; 105:16 hire (1) 111:22 historical (3) 95:11;130:20;131:5 history (2) 123:10;149:19 hmm (1) 130:18 Hmm-hmm (1) 65:12 hold (3) 130:18;132:4;145:11 Hollenberg (2) 87:20,21 honest (1) 46:17 honestly (1) 25:3 horizon (2) 119:7;121:4 hour (2) 86:8;93:15 hours (20) 40:1,7;41:2,16,24; 42:1,12,16;44:14;85:22; 88:16;93:24;94:6,12,13; 97:17;126:3;130:23; 133:3;147:22 house (1) 111:17 hundred (3) 96:15;99:9;146:3 Hundreds (2) 147:21,21 hung (1) 37:5 Hurley (1) 158:10 hurt (1) 42:2 hydro (1) 116:11 hypothetical (1) 157:23</p>	<p>141:16 identified (6) 59:4;66:10;89:23; 140:16,19;148:23 identifies (1) 59:5 identify (2) 122:23;146:23 identifying (1) 145:10 idle (2) 36:22;38:3 ie (1) 102:12 if-ing (1) 145:16 IGNATIUS (96) 5:2,19,23;6:3;7:1,6,13, 19;8:7;9:6,16,22;13:23; 14:12,21;15:6,10,13,16; 16:1,7;17:1;21:10,18,22; 23:10,17;24:15;27:23; 28:13,20;32:24;33:3,10, 19,22;38:22;39:6,12,14; 45:13,23;46:5;53:14,20; 55:11;56:1,18;57:5; 61:9;64:6,14,18;68:6; 69:9,20;74:10,23;75:8, 11,23;79:3,10;80:6,13, 19;81:8;82:5;83:6,19; 84:12;85:14;87:8,12,16, 19,23;90:18;118:11; 124:5,7;148:10;151:14; 152:6,24;153:18;154:3, 10,16,20;155:8,14,23; 158:3;159:2,6 II (4) 66:24;67:1,21;68:11 III (1) 39:20 III-4 (1) 92:10 illuminate (3) 50:15,23;51:4 imminent (1) 110:18 impact (4) 65:8;67:14;73:4;105:6 impacted (1) 72:20 impacts (6) 70:20;71:3,4;78:3; 81:6;82:2 Impingement (1) 78:3 implementation (9) 67:16,19;68:9,22; 69:1,17;91:21;109:4; 144:16 implemented (4) 70:12,20;138:18; 140:15 implications (1)</p>	<p>81:5 implicitly (1) 69:18 implied (1) 59:19 imply (1) 119:12 import (1) 115:20 importantly (1) 142:14 impose (1) 38:9 improve (2) 73:4,7 improved (3) 72:7;73:14;84:17 improvements (5) 72:16,22;73:1;109:18; 135:19 inaccurate (1) 55:18 inclination (1) 120:18 inclined (3) 9:16;45:5,6 include (4) 89:10;113:2;144:23; 154:24 included (8) 8:23;12:14;14:10,19; 41:21;90:15;104:9; 151:9 includes (8) 5:13;18:24;26:9; 39:24;89:2,7;90:12; 152:20 including (5) 23:6;48:11;91:22; 119:10;139:24 inclusion (1) 55:10 incorporate (1) 88:17 incorporated (4) 91:9;97:16;101:11; 144:20 incorporating (1) 151:10 increase (16) 35:22;44:13;52:21; 56:16;58:11,13;89:13, 14;102:17;103:5; 105:23;141:5;152:1,3; 154:13,15 increased (5) 45:3;52:18,20;99:16, 19 increases (6) 29:10;30:11;153:14, 16;154:6,7 increasing (3) 44:22;48:2;56:17</p>
H		I		
<p>half (9) 20:11,14,17;26:13; 37:6;107:8;132:21; 149:12,15 half-million (1) 147:9 halfway (1) 30:10 Hampshire (16)</p>	<p>help (5) 7:22;28:2;50:24;51:3; 138:3 helpful (1) 29:21 hence (1) 119:23 here's (1) 108:23 high (12)</p>	<p>idea (5) 75:21;92:18;117:22; 132:7;147:20 idealize (1) 38:4 identification (19) 15:4,20;16:8,11; 21:23,24;39:7,17;46:6,7; 53:21,22;61:10,11; 64:19;74:11;75:9,10;</p>	<p>impacts (6) 70:20;71:3,4;78:3; 81:6;82:2 Impingement (1) 78:3 implementation (9) 67:16,19;68:9,22; 69:1,17;91:21;109:4; 144:16 implemented (4) 70:12,20;138:18; 140:15 implications (1)</p>	

- April 4, 2012
DE 10-261 PUBLIC SERVICE COMPANY OF N.H. Least Cost Integrated Resource Plan

<p>incremental (5) 41:22;73:7;86:17; 101:24;147:13</p> <p>incurred (1) 42:15</p> <p>indeed (3) 77:5;83:4;150:17</p> <p>independent (1) 68:17</p> <p>independently (1) 69:6</p> <p>indicate (2) 110:2;111:15</p> <p>indicated (3) 71:15;109:17;136:17</p> <p>indicates (1) 30:21</p> <p>indicator (1) 128:2</p> <p>indicators (1) 127:21</p> <p>industrial (1) 58:3</p> <p>industry-wide (1) 82:13</p> <p>inflection (2) 31:16;32:3</p> <p>influence (1) 126:6</p> <p>Informal (2) 10:24;11:22</p> <p>information (28) 7:8,17;8:4;11:1,2,3; 12:13;14:7,8,17,19;15:3; 21:15;25:10,23;34:6; 41:21;50:22,23;51:12; 109:2;111:10,14; 142:21;144:1,1;145:23; 156:19;157:2</p> <p>input (4) 35:1;126:10;127:18; 128:3</p> <p>inputs (3) 66:8;126:21;157:14</p> <p>inquire (1) 56:5</p> <p>insisted (1) 36:17</p> <p>install (5) 12:6;73:14;85:1; 111:17,18</p> <p>installation (1) 13:1</p> <p>installed (3) 72:17;84:22;85:6</p> <p>installing (1) 72:6</p> <p>instance (4) 37:1;109:5;121:22; 130:22</p> <p>institute (1) 72:15</p> <p>intake (3)</p>	<p>67:11;70:19;78:2</p> <p>Integrated (6) 65:20;110:22;112:6; 114:4;119:10;120:21</p> <p>integration (1) 120:19</p> <p>intent (1) 118:22</p> <p>interest (5) 51:9;98:19;116:11; 117:16;148:6</p> <p>interested (1) 119:3</p> <p>intermediate (1) 98:4</p> <p>intermediate-run (1) 97:10</p> <p>internally (1) 150:12</p> <p>interpretation (1) 69:11</p> <p>interpreted (1) 123:2</p> <p>INTERROGATORIES (5) 91:1;118:21;124:7; 146:16;148:14</p> <p>intervenors (1) 141:21</p> <p>into (31) 7:11;15:4,24;22:15; 28:22;37:9;40:2,7;41:3, 9;51:13;56:5;57:10; 81:11;83:9;91:10,11,14; 92:12;93:3;94:14; 101:12;112:21;126:5; 130:7;139:12;142:21; 143:2,18;150:9;152:11</p> <p>introduce (1) 25:9</p> <p>introduced (2) 8:3;28:14</p> <p>introduction (1) 153:2</p> <p>invest (2) 73:16;113:18</p> <p>investigation (1) 140:24</p> <p>investing (1) 72:8</p> <p>investment (14) 110:16;112:2;113:13; 135:11,15,20,22;137:24; 138:13,13,18;140:7; 141:15;148:4</p> <p>investments (12) 84:18;109:18;110:3; 122:24;123:7,7,20,24; 136:7,10;137:13,16</p> <p>investment's (1) 135:14</p> <p>involved (2) 13:1;17:21</p> <p>involves (1)</p>	<p>72:21</p> <p>IRP (3) 118:22;122:4;147:20</p> <p>ISO-New (4) 17:22;40:2,8;91:13</p> <p>issue (4) 45:7;105:11;116:7; 150:6</p> <p>issued (8) 75:3,17;79:12;81:18; 149:9,23;150:3,19</p> <p>issues (7) 65:7;69:15;85:13; 107:20;137:8;143:4; 158:9</p> <p>issue's (1) 147:17</p> <p>items (3) 92:4;150:9;151:9</p> <p>IV-19 (1) 90:2</p> <p>IV-8 (3) 88:10,16;89:2</p>	<p>119:14;121:15;131:21; 140:6;150:21</p> <p>knew (1) 34:6</p> <p>knowing (2) 37:7;100:14</p> <p>Knowlton (3) 158:17,18;159:5</p> <p>known (2) 66:8;123:16</p> <p>knows (1) 69:16</p>	<p>104:23;107:20;116:8; 117:8,12;118:7;120:14, 17;122:10;123:15</p> <p>lays (1) 68:20</p> <p>lead (2) 105:24;106:13</p> <p>leading (1) 124:17</p> <p>Least (53) 9:10,15;10:14,21; 11:14;12:7,11,14,18; 14:10,20;32:21;50:2; 56:11;60:13;65:19; 74:24;76:23;77:2,4; 81:5;86:22;92:3;98:14, 18;106:13;107:11,17,24; 108:20;110:22;112:5, 22;113:24;114:3;115:5, 7;118:24;119:5,10; 124:10,19;125:2;141:3; 146:22;149:19;151:6, 10;152:15;154:5; 155:10,18;158:9</p> <p>leave (2) 106:21;114:24</p> <p>led (1) 71:4</p> <p>left (4) 30:8;31:5,5;61:4</p> <p>legal (2) 69:8,10</p> <p>legislation (1) 133:23</p> <p>legislative (4) 64:21;65:2,7;124:14</p> <p>legislature (1) 45:22</p> <p>less (21) 25:1,2,2;35:19,20,21, 24;36:14;41:17;43:7; 56:15;58:2,6;95:9,9; 99:18;106:1;115:23; 126:8;129:23;130:14</p> <p>letter (9) 5:13;6:10,13,16,18; 7:11;8:1;15:13;156:7</p> <p>letters (1) 7:2</p> <p>level (8) 50:13;91:13;101:20; 102:11,16;103:5; 130:10;145:3</p> <p>levels (4) 101:18;106:5,8; 125:16</p> <p>life (1) 83:22</p> <p>lifetime (2) 85:23;86:4</p> <p>likelihood (1) 137:5</p> <p>likely (2)</p>
		J	L	
		<p>January (2) 21:1,2</p> <p>job (2) 18:2;124:24</p> <p>join (1) 150:9</p> <p>jotted (1) 122:20</p> <p>judge (2) 138:12;143:9</p> <p>judgment (2) 123:4,17</p> <p>judgments (1) 111:4</p> <p>July (9) 7:6,24;15:10;115:19; 123:3;152:3;153:15; 154:14;156:6</p> <p>June (5) 7:4,5;75:4;77:1; 115:19</p> <p>just-in-time (2) 98:24;99:4</p>	<p>ladder (1) 37:2</p> <p>laid (2) 83:20;157:1</p> <p>language (3) 10:11;67:4;111:19</p> <p>Large (11) 48:10;49:19,22;50:7, 11,21;51:6,9,15,19;52:1, 3,6,11,15,21;53:5,24; 54:4,9;55:3,5,9,20; 57:23;58:4,8,12,17;59:1; 61:13,17,22;62:2,5,9,12, 14,18,22;76:17,24; 85:16,18;86:2,10,16,21; 87:1,4;88:5,8,12,13,21; 89:4,18,22;90:5,14,24; 91:24;102:19;103:10, 23;104:8,19;105:3; 107:5,15;110:16; 115:14;119:8,18;120:5, 13;121:14;122:6,15,18; 124:8;125:4,24;135:5,9, 19,22;136:3,17,19; 137:10,19;138:8; 139:23;140:9,20;141:2, 8,18;142:18;144:12; 145:7;146:20;147:8,19, 21;148:8,22;149:3,18; 151:6</p> <p>larger (3) 84:16,21;109:20</p> <p>Large's (1) 137:8</p> <p>last (19) 22:2;34:24;40:21; 41:18;42:18;71:21;74:9; 96:7;109:19;110:4; 113:14;116:5;119:9,21; 135:13;136:19;149:19; 151:6,23</p> <p>late (5) 35:5,6;135:7;150:8; 159:10</p> <p>later (1) 149:16</p> <p>Law (13) 39:4;65:15;92:2;</p>	
		K		
		<p>keep (5) 7:24;9:24;102:15; 110:19;112:4</p> <p>kick (1) 112:21</p> <p>kilowatt (2) 85:22;86:8</p> <p>kilowatt-hour (1) 86:4</p> <p>kind (8) 26:11;97:1;112:21;</p>		

<p>82:18;158:13 limit (4) 86:16;103:11,19; 112:19 limited (6) 105:5;115:14;116:3; 124:11;140:1;147:13 Limits (2) 9:1;156:20 line (8) 29:8;30:4,15,15;31:6; 32:4;39:22;90:2 linear (2) 31:14;53:6 lined (1) 100:23 lines (2) 18:10;39:1 liquid (2) 13:6,9 listed (2) 58:15;59:1 listing (1) 29:24 litigating (1) 82:22 little (9) 10:20;23:12;88:19; 100:10;107:10;120:24; 127:15;147:17;159:9 live (2) 142:8,15 lived (1) 38:5 LNP (1) 41:16 load (22) 41:16;91:3,4,14; 92:12;99:13;105:13; 126:3,11;127:19; 137:24;138:11,11;139:9, 11,15,20,23,24;140:1,5; 141:5 located (1) 116:12 locational (1) 42:7 long (7) 33:15;57:14;83:22; 95:16;96:24;133:24; 143:16 longer (5) 7:8,15;57:13;120:24; 121:4 long-term (6) 20:18;121:13;136:13, 17,24;145:24 look (58) 8:22;10:4;21:5;25:11; 26:22;29:4,15;34:11; 44:2;45:12;47:1,22; 59:16,18;61:23;63:21; 64:1;75:1;90:7,91:3;</p>	<p>92:2,8;93:8;98:11,16; 99:16;100:11;101:4,13; 102:12,20;104:3,11; 106:4;108:24;109:13, 15;111:9,10,11,18,20; 115:10;117:3;120:16, 22;123:9;125:3;131:19, 20;132:1,17;134:12; 136:20;141:7;158:13; 159:3,4 look-ahead (3) 104:20,21,22 looked (8) 6:23;25:6,7,7;109:16; 128:22;129:8;132:16 Looking (39) 23:13;26:13;28:2,15; 48:20,21;60:5,20;63:16, 19;68:14,18;71:3;91:2, 10,12;95:12;99:17,18; 101:2;102:8;105:1; 108:21;110:10,20; 113:10;125:14;128:8; 131:7;132:2;133:15,18, 21;134:13,20,21;137:19; 149:11;151:18 Looks (6) 6:3,19;22:16;30:10; 49:3,10 lose (1) 42:1 losing (1) 37:15 loss (1) 42:14 lost (3) 42:12;87:17;134:16 lot (13) 25:8;92:21;95:2; 109:2;110:17;111:5; 124:20,21;129:21; 147:15;148:17;153:24; 159:3 loud (1) 58:19 low (7) 63:9;95:24;106:8; 130:3;132:23;135:24; 145:4 lower (8) 36:1;40:8;41:10;42:9; 44:15;56:22;132:24; 133:5 lowered (1) 86:14 lowering (1) 97:14 lowest (2) 114:10,17 low-NOx (1) 109:23 lunch (1) 8:12</p>	<p style="text-align: center;">M</p> <p>MACT (1) 109:4 Madam (23) 5:9;9:8;15:2,18;16:24; 17:3;28:10;45:17;53:11, 18;55:15;56:7,24;57:18; 68:3;69:12;74:8,17; 79:14;81:4;82:23;84:7; 87:7 magnitude (1) 147:5 main (1) 93:21 mainly (1) 59:17 maintaining (2) 37:21;105:14 maintenance (9) 18:20;22:16;23:6; 95:9,17;96:16;128:14; 129:24;130:6 major (5) 123:6,7,19,24;135:19 majority (1) 139:9 makes (6) 43:2,13;47:2;76:8; 102:21;150:21 make-up (1) 48:14 making (9) 95:3;96:9;100:15; 110:3;126:8;135:2,15; 138:17;148:6 managed (1) 13:6 Management (6) 92:11,15;107:19,23; 120:20;141:11 manager (3) 17:12,14;69:14 mandated (1) 104:23 manner (1) 116:19 many (10) 51:14;107:16,17; 108:6;115:21;126:3; 138:21;143:2;145:7; 151:8 margin (3) 105:23;139:10;140:4 marginal (3) 40:9;42:8;100:4 mark (17) 8:3;13:13;15:19;16:8; 23:14;30:8,20;31:5; 38:18;45:11,14;46:6; 53:13,21;61:10;74:11; 75:8</p>	<p>marked (20) 5:18;15:4;16:10;18:6, 23;21:19,23,24;39:16, 17;46:7;53:22;61:11; 64:16,19;75:10;77:22; 88:10,15;90:11 market (40) 17:22;25:11,16;35:9, 15;36:1,11,15,19,21; 37:4,13,20;40:3,7;41:3, 9;43:15;44:8,15;51:3; 52:20;53:3;54:17;56:15; 62:24;63:14;88:11;90:7; 92:23;93:3,14;114:24; 117:7;132:3,19;134:5, 14,23;146:5 marketplace (1) 103:16 Markets (9) 21:14;23:1;25:6; 28:11;32:19;59:20; 63:22;100:5;143:12 marks (2) 23:13;29:23 Massachusetts (1) 85:7 match (1) 110:12 material (1) 89:19 materials (1) 8:1 may (35) 8:2;17:7;21:9;23:23; 33:21;38:20,21;42:24; 44:18;45:12;53:14;56:3, 18,21;57:8;59:20;64:13; 69:20;73:5;76:24;81:14, 14;82:24;84:3,3;110:17; 115:3,3;117:4;121:16; 122:16;124:12;127:20; 155:15;158:6 maybe (17) 30:2;35:15;75:4; 92:19;97:9;104:2;107:9; 109:14;113:23;117:5, 21;137:21;138:21; 142:14;149:12,15;158:6 McCluskey (1) 158:10 mean (17) 12:19;19:24;31:1; 41:8;43:21;62:9,12; 63:20;65:2;101:21; 118:3;129:15;133:2; 134:23;139:17;142:12; 143:3 meaning (2) 30:11;103:22 measure (2) 129:16;140:14 measures (1) 86:4</p>	<p>measuring (1) 99:11 meet (6) 17:18;38:3;73:11; 114:8,15;123:1 meeting (1) 86:14 megawatt (2) 88:16;126:3 megawatt's (1) 140:13 Members (2) 5:10;55:6 memory (1) 151:24 mentioned (10) 12:3,20;13:3;43:18; 52:9;60:15;126:18,23; 148:15;150:24 merging (1) 110:7 Merrimack (18) 9:2;10:22;18:16;19:2; 20:19;72:4;104:4,8,22; 105:1,7,17;109:21; 113:15;128:5,12,17; 145:2 method (1) 73:2 mic (1) 126:19 Michelle (1) 156:7 middle (2) 23:22;129:21 midpoint (3) 23:19;31:23;32:7 midpoints (1) 31:8 mid-year (3) 27:18;29:10;60:9 might (13) 21:5;32:17,23;73:14; 94:11,11;106:23;118:6; 134:19;136:15;137:14; 144:3;147:3 migrate (2) 51:15;106:16 migration (32) 45:7;50:10,13,14,19; 51:1,5;52:16,18;53:4,18; 99:15,16,18;101:14,18; 102:2,3,11,16;103:5,13, 24;106:5,7;107:7; 114:19;121:23;136:4; 145:3,17;146:2 million (1) 81:21 min (1) 94:12 mind (1) 84:19 minimal (1)</p>
--	---	--	---	---

<p>96:23 minimize (2) 70:19;78:3 minimizing (1) 67:13 minute (2) 53:24;64:4 minute-by-minute (1) 120:23 minutes (1) 87:13 missing (2) 117:7;118:6 misunderstand (1) 79:5 misunderstood (1) 23:24 mitigation (2) 107:2,2 MMBtu (1) 88:17 mode (2) 95:20;112:22 model (5) 25:5;54:20;126:21; 127:2;135:2 modeled (3) 19:9,17;35:3 modified (1) 116:13 moment (8) 39:12;82:5;87:10; 89:18;130:18;142:11; 144:17,22 money (5) 36:2,23;41:24;42:1; 86:20 monitor (1) 65:9 monitoring (2) 72:8;73:16 month (1) 103:23 month-ahead (1) 146:6 monthly (7) 46:14,21;47:3;48:1, 14,17;153:12 months (8) 24:23;26:9;61:19,19; 62:1;143:24;150:1,4 more (40) 6:5,12,21;8:9;15:1; 20:10;30:16;45:5,6; 52:9;57:11,21;61:3,7; 81:21;85:12;90:1;97:3, 18;98:24;104:13; 106:21;108:8,8,10; 109:20;115:2,23;119:3; 126:7;129:5;132:11; 134:4;139:15;142:1,12, 14;146:1;149:12;150:13 morning (4)</p>	<p>6:24;156:13;158:7,11 most (11) 52:4,7,13,16;55:3; 90:22;96:23;117:4; 118:16;136:21;141:22 motion (1) 151:19 mouth (1) 119:13 mouthful (1) 88:20 Move (6) 14:24;66:8;76:2; 87:20;106:17;145:24 moved (2) 146:1;150:10 moves (1) 152:10 moving (8) 73:6;98:24;99:8,21; 108:20;113:4;122:9; 153:12 much (12) 54:13;60:11;87:7; 97:4;99:23;100:13; 113:3;143:14;145:11; 147:5;150:22;155:20 multi- (1) 46:9 multi-hundred-page (1) 143:3 musings (1) 123:21 must (3) 30:16,16;105:22 myself (1) 31:9</p>	<p>73:5;91:3,8;99:24; 123:6,19,24;126:21; 127:1;134:19;135:15; 137:17;138:21;139:22; 145:18;158:14 needed (2) 99:24;135:23 needs (12) 6:4;8:5;38:4;91:15,17; 111:17;114:9,15; 135:20;138:7;139:23; 142:19 net (2) 42:1;90:9 New (29) 10:22,23;12:4;13:13; 25:9;38:19;45:2,4; 46:16;48:18;49:7,11,16; 50:9;64:9;74:17;79:15; 80:9;84:24;91:16;100:9; 106:11;108:15;114:24; 116:12;138:19;140:12; 141:12;144:1 newer (1) 72:16 Newington (6) 109:23,24;133:13; 147:17;148:16;150:7 next (26) 13:13;22:19;43:4; 59:2;63:11;98:5,15; 100:12;113:19;118:18; 119:16,19,20,23;125:18; 137:3;140:22;141:15; 144:12;149:11;150:1, 15;151:10;158:8,14,16 NHDES (1) 10:11 night (5) 25:14;41:14;43:7,8; 44:20 nobody's (1) 80:5 no-loads (1) 41:21 none (2) 140:17,21 non-electric (6) 88:18;89:3,8,10,17; 90:13 nor (2) 8:18;84:6 normally (1) 39:24 Northeast (1) 121:18 notably (1) 141:22 notice (3) 151:20,22;152:9 notion (1) 134:12 November (7)</p>	<p>6:10,13,16,22;47:24; 48:6,21 NPDES (9) 70:5,6,12,15,21;74:19; 76:5;77:6;85:3 nuclear (1) 105:22 number (26) 12:3;27:8;28:5;30:4; 40:1;54:22,22;55:7,23; 56:3;57:8;65:16;103:9; 110:1;130:14;136:20, 22;137:1;138:1;142:2; 146:20;148:19;149:1; 153:19,21;157:18 numbers (9) 38:24;54:14;59:1; 128:22,23;152:4,8; 154:2;157:11 numerous (2) 71:2;80:20 NYMEX (2) 59:11,13</p>	<p>21:6;25:15;39:13; 42:11;87:10,11;106:6; 122:17;138:20;147:4 offer (1) 15:4 offering (1) 106:12 official (1) 152:9 often (2) 100:18;129:5 oil (1) 20:16 once (1) 150:18 one (54) 6:4;14:6;15:8;16:6; 23:11;31:4,14;39:12; 42:5;43:19;44:1;49:5,6; 50:24;51:6;53:6;55:6; 61:7;64:3;74:9;75:19; 82:5;83:24;85:11;90:1; 91:2,8,16;92:17;99:3; 102:14,15;109:20; 112:12;115:2;116:5; 117:22;119:11,16; 121:6;126:21;127:14; 132:15,16;134:6; 138:20;140:11,13; 142:11,19;147:2; 150:18;155:16;158:20 one-megawatt (1) 138:19 ones (1) 154:8 ongoing (6) 13:7;77:8;113:11; 119:14;135:23;141:3 online (2) 104:23;105:12 only (15) 53:6,7;83:1,12;84:8; 89:24;94:11;106:10; 107:14;128:24;133:17; 134:2,13,21;156:18 open (1) 146:5 opens (1) 153:24 operate (7) 18:18;42:6;56:15; 69:6;128:13;135:10; 136:14 operating (10) 19:23;37:12;40:10; 42:9,13;43:2,9;44:16; 110:15;136:2 operation (11) 24:7;42:13;56:12; 65:8;94:14;120:21; 133:12;134:18;135:16; 145:2;150:13 operational (3)</p>
--	---	--	---	---

<p>93:17;110:13;156:22 operations (6) 17:8;27:13;44:8; 136:8;147:10;150:7 opinion (2) 59:20;137:4 opinions (1) 112:1 opportunities (3) 87:3;137:15;140:24 opportunity (4) 15:23;72:24;86:18; 120:16 opposed (4) 45:8;123:20;138:7; 145:9 order (12) 50:18;72:15;73:3,11; 80:1;119:24;135:13; 142:18;147:5;149:8,22; 150:3 Orders (2) 116:8;119:21 organization (1) 120:16 original (2) 16:15;37:15 others (5) 51:7,14;104:13; 110:12;156:18 otherwise (3) 8:19;19:15;76:2 ought (1) 124:23 ours (1) 111:24 ourselves (1) 124:24 out (51) 14:2;21:12;25:13,16; 28:2;29:8;31:21;38:18; 41:13,18;45:11;46:11; 53:12;54:20;58:19;59:2; 61:7;64:11;68:20;69:19; 74:9,22;83:20;91:10; 93:2;101:2;104:12,13, 14;106:7;109:6,10; 113:18;115:10;117:18; 125:18;126:16,24; 127:10;133:3;135:12; 136:22;144:24;145:4; 149:5,9;150:20,24; 156:18;157:1,3 outage (4) 95:9,10;96:11,23 outages (7) 22:16;95:17;96:3,4, 17;130:7,24 outcome (6) 8:18;13:9;72:2;82:18; 83:1;141:13 outcomes (4) 65:22;66:1,2;111:1</p>	<p>outlook (1) 59:10 output (4) 19:1;36:14;60:11;95:9 outside (1) 18:19 outstanding (1) 77:18 over (26) 10:20;21:3,3;22:9,10; 23:3;26:2;29:20;41:2; 94:4;100:12;102:20; 106:20;109:19;110:3,21, 21;112:4,5;113:13,19; 119:9;129:17,18; 136:19;144:10 overall (6) 36:13;43:5;97:18; 107:11;133:15;134:20 over-fired (1) 109:22 overpricing (1) 59:20 override (1) 93:20 own (5) 37:18;38:11;82:4; 109:6;136:12 owned (1) 38:15 ownership (1) 116:11</p>	<p>parameters (3) 70:3;110:15;145:8 paraphrase (1) 70:23 paraphrasing (1) 85:21 parasitic (1) 105:13 parens (2) 40:24;41:2 parse (1) 42:24 part (25) 10:18;12:11,23,24; 15:20;18:2;49:8,12,18; 50:19;54:15;55:2;60:4, 19;65:19;70:12;73:10; 85:2;86:12;101:7,9,10; 110:21;112:5;130:20 partial (1) 151:8 particular (7) 12:21;70:7;94:22; 124:22;132:9;142:11; 148:20 parties (2) 6:1;151:9 pass (6) 38:18;45:10;53:12; 61:7;64:11;74:9 passed (3) 21:12;46:11;74:22 pass-through (2) 54:21;126:23 past (2) 73:24;103:23 Patch (1) 50:12 path (3) 123:11,17;143:23 pattern (2) 37:7;139:4 Patterns (2) 18:7;95:11 pause (1) 121:3 pay (1) 17:24 peak (2) 25:12;98:4 pen (1) 120:3 pencil (1) 120:4 pendency (1) 80:4 pending (14) 55:19;74:19;76:14,19, 22;77:1,2,7,17;79:20,24; 80:2;83:5,17 penultimate (1) 22:6 people (10)</p>	<p>57:9;67:7;103:2; 106:12,13,21;110:17; 112:10;131:24;148:19 per (3) 41:19;76:20;86:8 percent (34) 21:3,3;22:10,10;23:3, 4,20,21;29:20;30:22; 31:22,23;32:1,5;40:23; 62:17,21;63:12;96:1,10, 15;99:9;101:19;102:6,7, 16,17;103:8;104:1; 122:1;130:2,3;136:2; 146:4 percentage (1) 100:6 Peress (82) 17:2,3,6;21:9,11,20; 22:1;23:10,16;24:17; 28:10,16,24;29:14; 30:19;31:2,8,15;32:2,10, 13;33:1,2,8,17,21,24; 38:17;39:18;40:16,20; 45:10,14,17;46:2,8; 53:11,17,23;54:4;55:11, 15;56:7,24;57:18,22; 61:6,12;64:3,7,17;68:3, 8;69:9,12;70:10;74:8,12, 16;75:1,24;76:3;79:9, 13;80:10,11,16,23; 81:17;82:23;83:12;84:6, 14;85:11,15;87:6,16,18; 103:17;128:8;155:3,9 Peress's (2) 128:20;155:20 performed (2) 8:19;24:9 Perhaps (2) 32:15;81:11 period (15) 27:10;30:5;41:4; 43:24;48:20;49:10; 66:10;77:19;94:5;108:4; 109:8;113:1,17;129:18, 19 periods (3) 18:17,20;25:12 permanent (2) 152:3;154:14 permit (25) 70:21;74:18,19,21; 75:3,3,5,20;76:5,6,10,14, 18;77:6,17;78:11;79:20, 24;81:2,14,18,19;83:4, 17;85:3 permits (3) 70:5,6,16 permitting (1) 70:13 personnel (1) 147:12 perspective (2) 105:10;135:4</p>	<p>pertain (1) 61:4 pertains (1) 56:12 Phase (4) 66:24;67:1,21;68:11 phrased (1) 124:1 pick (3) 26:24;103:8;120:3 picks (1) 107:13 piece (1) 50:22 pieces (1) 111:18 place (11) 49:20;51:20;107:21; 113:13;133:21;137:2,3; 138:9;140:6;142:5; 154:7 placed (2) 5:10;7:11 places (2) 103:3;107:18 plainly (1) 122:21 Plan (174) 9:10,15;10:14,21; 12:8,12,15,18;13:21; 14:10;17:10;18:5,23,24; 19:6,10,16;24:2,7,21,24; 25:5;26:7,16,17;34:4,6, 16,19;35:2;39:20,23; 40:4;43:13,18;44:4,13; 49:18,20;50:3,5,8,16; 54:23;55:1;57:4,12,17; 60:13,17;63:20;66:18; 67:21;68:12,21;71:13, 19,22;74:5,24;75:7,17, 18;76:15,20,23;77:2,4,5, 14,21;78:17,19,23; 79:22;80:3,4,9,14,16; 81:3;82:3;85:17;86:7, 23;91:11,19;92:5,9,16; 95:4,8;96:14;97:7; 98:11,14,19,19;99:14; 100:1,1,13;101:8,10,12; 102:4;104:15;107:4,17, 24;108:3;112:7,9,22; 113:24;114:4,14;115:7, 9,16;121:21;122:22; 123:18,20;124:10,19; 125:2,8,10;128:9,10,16; 129:2,10,14;130:15,16, 17;131:3,14;133:15; 141:14,19;142:4,15,18; 143:3,6,9;145:6,8;146:9, 17,18,22;149:6,11,14, 20;150:1,2,2,4,16,18,21; 151:7,10;152:15;153:3; 154:5;155:10,18;158:9 planned (3)</p>
--	---	---	---	---

P

- April 4, 2012
DE 10-261 PUBLIC SERVICE COMPANY OF N.H. Least Cost Integrated Resource Plan

<p>18:19;96:3;130:24 planning (70) 10:1;11:12,19;14:18; 19:12,13;26:18;34:21; 43:24;44:5;49:8,12; 50:20;51:13;52:2;54:15; 22:55:2;56:9;57:13,16; 58:10;59:9;60:4,20; 64:9;65:20;73:9;75:14; 22:76:20;77:14,19; 78:18;79:1,16;81:5,9; 83:2,18;84:8;86:12; 98:15;104:6;106:23; 107:11;108:5,21; 110:22;112:6;115:5; 119:7;120:11,13;121:2, 12,13,14,16;122:4; 123:12;124:13;126:13; 131:10;140:22;144:19; 145:12,13,21;149:13 plans (6) 69:2;92:3;93:12; 122:24;146:24;149:20 plan's (1) 94:19 plant (11) 82:12;94:21;95:15; 97:7;98:9;105:18,21,22; 109:5;128:14;130:4 plants (18) 33:7;65:9;84:24;95:5, 20,24;97:8,9,10,10; 100:7,19;106:19;114:21, 21,22;133:12;134:1 plate (2) 108:13;110:20 plausible (2) 140:11;141:10 play (2) 69:24;136:22 playbook (1) 144:15 pleading (1) 6:19 Please (24) 11:7;18:4;21:10,21; 22:4;26:3;33:22;38:22; 45:13;49:1,14;57:15; 58:14;64:14;66:14;71:1, 18;74:9;77:12,21;85:17; 89:19;90:8;154:11 plus (2) 42:12;94:10 pm (4) 87:15,15;159:11,12 pockets (1) 138:11 point (40) 14:6;23:19;27:2; 28:21;29:1,5,6,7,16,17; 31:16;32:3;43:12;56:8; 79:14;80:10,12;81:15, 24;85:8;92:1;103:18;</p>	<p>113:12,17;115:24; 116:2;120:2;134:18,23; 139:16;140:1;143:10; 144:4,14,23;145:9,16; 150:11;151:11;157:8 pointed (1) 28:9 points (7) 27:19;28:6;29:21; 30:17;41:13,18;89:15 policies (1) 114:2 policy (2) 114:8;138:9 portable (1) 138:19 portfolio (1) 116:15 portray (1) 34:7 portrayed (1) 127:20 posed (2) 120:17;138:15 position (5) 56:19;110:6,10;115:4; 136:6 possibility (3) 79:24;80:17;141:19 possible (12) 8:18;16:21;23:6; 65:24;73:13;92:7; 108:18;110:24;129:17; 141:9;148:7;158:24 possibly (3) 5:7;9:13;100:13 potential (11) 50:14;72:3;79:18; 88:11;90:7;95:8;108:14, 14;111:16;136:5;145:18 Power (19) 12:4;17:13,15;36:11, 21;40:7;41:9;43:14; 44:9;53:3;84:24;116:19, 24;118:2;126:8;139:7; 145:24;146:1,5 practice (4) 81:10;117:1,3;146:7 preceded (1) 43:24 predated (1) 10:13 predict (1) 72:1 predominantly (1) 121:6 preferably (1) 141:4 prepare (11) 8:17;19:15;34:21; 65:21;66:4;108:16,17; 110:23;111:8;120:5,9 prepared (7)</p>	<p>9:14;34:16;45:19; 46:24;57:4;64:13;80:4 preparing (9) 24:24;61:1;76:19; 98:10,14;99:14;100:1; 131:23,24 Present (2) 90:9;101:20 presented (1) 127:9 presume (1) 64:15 presuming (2) 62:9,12 pretty (4) 49:10;105:23;132:23; 133:2 prevents (1) 103:11 previous (2) 77:3;122:18 previously (4) 34:16;129:6;136:7; 146:7 price (32) 25:7;40:8;41:9,17; 42:8,9;44:15;46:14; 51:17,23;52:4,23;60:5, 21;62:24;93:6;100:4,11, 17;114:23;117:7;118:4; 126:6,22;127:3,5,23,24; 131:20;132:10,13,13 prices (34) 20:16,17;36:1;37:5; 45:9;47:17;52:20;54:12, 17;56:16;59:7,23;98:1,8, 11,12,17;100:16;101:6; 102:23;103:1,6;106:8; 125:10,12,15,19;126:16; 127:11;131:19;132:4,5, 22;133:5 price-taker (1) 105:20 pricing (4) 35:9;59:10,12;132:19 primary (2) 139:8;143:19 print (1) 26:12 prior (7) 11:3,13;24:1;129:9, 23;135:15;156:17 probably (6) 29:21;35:5;90:23; 92:20;109:7;135:7 problem (1) 125:23 procedure (1) 83:2 proceed (2) 12:3;33:21 proceeding (5) 12:8;15:22;81:16;</p>	<p>84:5;147:6 proceedings (1) 155:22 process (30) 10:1;41:1;50:20; 54:15;55:2;56:10;57:13, 16;65:20;75:14,22; 78:18;82:16,19;83:2,18; 86:13;100:2;101:10; 104:3;109:23;110:23; 119:15;120:1;131:13; 141:3,22;149:13,22; 150:3 produce (1) 41:10 producing (2) 40:9;147:14 Program (8) 21:14;32:19;86:19,22; 89:1,7;139:1;141:11 programs (12) 85:20,23;87:5;88:19; 89:3,8,17;90:13;107:23; 108:1;139:6,14 project (8) 49:12,17;102:22; 103:6;125:20,20,22; 148:21 projected (10) 16:22;19:1,7;56:16; 62:16,20;89:12,13; 98:16;125:16 projecting (5) 61:20;114:18,19,20,22 projection (8) 54:6;57:20;58:20; 100:15;126:22;131:15; 142:9;145:1 projections (3) 56:20;91:11;104:12 projects (3) 49:20;50:5;145:15 promptly (1) 5:3 properly (1) 22:23 propose (1) 156:16 proposed (13) 55:4;58:6;74:20; 80:24;81:19,22;82:1; 83:4,15,21;138:3;155:4, 7 provide (11) 32:16;46:4;50:23; 72:23;117:4;139:1,7; 145:21;152:4;153:15; 157:2 provided (9) 34:24;59:13;61:14; 71:10;121:20;130:22; 136:19;157:14,20 provides (2)</p>	<p>68:22;120:15 providing (5) 25:24;56:10;69:5; 73:2;114:11 provisions (1) 77:13 provisos (1) 59:3 prudence (1) 50:2 prudent (6) 46:4;108:22;117:18, 19;136:8,9 PSNH (53) 5:16;7:9,23;8:16,19; 10:9,19;12:5;17:17; 21:17;37:10;39:19;40:1, 6,22;41:8;46:16;47:6,8; 48:5;49:10;50:21;60:20; 61:20;65:18,20;66:14; 71:2,7;72:1,2,13;76:21; 77:3;82:8;88:7,9,22;23; 108:16;110:23;111:22; 115:5;116:13;120:10; 121:12,17;122:23; 137:9;147:6;150:12; 152:13,22;154:18,22 PSNH's (25) 26:18;40:9,21,24; 47:18,24;51:16;54:6,7; 55:3;56:9,15;58:10,10; 63:2;64:23;75:4;77:1; 86:4,6;107:24;116:11; 144:15;151:21;157:5 public (20) 7:12;10:22;11:21; 21:13;22:23;38:18;45:1; 46:24;49:7,11,16;50:9; 64:8;74:17;79:15;91:19; 98:7;102:14;107:12; 150:23 published (1) 109:3 pull (1) 115:9 purchase (13) 37:7;43:14;98:20; 99:1,4,5,7,17,21;101:3; 118:2;134:15,22 purchases (8) 36:15;37:1;38:3; 99:19;100:23;116:19; 146:1,2 purchasing (2) 99:9;121:2 purports (1) 74:15 purpose (8) 81:9;86:21;113:23; 120:14;124:22;127:14; 141:11;143:20 purposes (9) 60:17;71:23;95:7;</p>
---	---	---	--	---

<p>98:10,13;102:8;126:2, 20;129:10</p> <p>Pursuant (2) 114:1;116:14</p> <p>pursue (1) 57:5</p> <p>pursued (1) 137:13</p> <p>pursuing (2) 139:19,19</p> <p>put (17) 7:16;73:9;83:13; 101:7;109:10;111:7; 112:9;113:15;119:13; 122:12;129:5,10;138:9, 20;152:7;153:6,19</p> <p>puts (1) 110:5</p> <p>putting (3) 25:16;41:9;76:15</p>	<p>6,7,15,22;59:19;60:7,9; 62:6;86:6;94:19;98:23; 99:11;103:15;125:16; 151:24;152:1,3,20; 153:14,16;154:6,7,13, 14;155:1,3,4,5,16,18</p> <p>ratepayer (3) 82:2;135:3;148:5</p> <p>ratepayers (9) 35:22;36:5,9,23; 37:23;38:9;56:11;81:6; 86:20</p> <p>rates (31) 45:2;49:13,17;50:6, 10,18;54:7;55:1,10,22; 57:20;58:11;106:10,11, 22;107:2,3;114:18,19; 151:21;152:14,19,22; 153:2,7,8,22;154:4; 155:13;156:20,23</p> <p>rather (6) 43:2,15;137:4;138:16; 152:9;155:12</p> <p>reach (1) 51:23</p> <p>reached (2) 151:8;156:18</p> <p>react (3) 143:13;144:2;145:20</p> <p>read (9) 10:8;42:18;54:4; 58:19;71:22;106:16; 111:9;116:22;118:3</p> <p>reading (2) 11:5;102:17</p> <p>reads (3) 18:15;39:24;88:11</p> <p>ready (1) 156:16</p> <p>really (10) 26:13;83:10;94:19; 99:2;104:14;105:8; 115:18;133:8;140:3; 155:12</p> <p>real-time (4) 28:18;60:3;100:4; 115:20</p> <p>reasonable (6) 34:7;57:20;83:2; 114:10,17;145:18</p> <p>reasons (4) 42:6;51:21;89:11; 153:22</p> <p>rebuttal (1) 141:23</p> <p>REC (1) 121:1</p> <p>recall (5) 24:16,22;25:4,4;77:10</p> <p>recent (2) 55:4;109:20</p> <p>recently (1) 91:12</p>	<p>recess (1) 87:14</p> <p>recognitions (1) 112:13</p> <p>recognize (2) 108:2;115:15</p> <p>recognizing (2) 146:8;147:11</p> <p>recollection (3) 47:20;55:20;133:7</p> <p>reconcile (1) 116:21</p> <p>reconciliation (4) 41:1;49:24;50:1;98:23</p> <p>record (18) 7:12;8:5;15:24;33:4,9; 39:9,13,15;71:23;83:23; 87:10,11;122:17;152:8; 153:9;154:22;155:15,21</p> <p>recording (1) 144:8</p> <p>records (2) 22:24;153:17</p> <p>recounting (1) 149:18</p> <p>recovered (1) 136:10</p> <p>recovery (1) 136:9</p> <p>RECs (1) 121:2</p> <p>redirect (4) 151:15;155:12;156:2; 158:2</p> <p>reduced (1) 99:17</p> <p>reduction (3) 91:20;111:17;139:7</p> <p>refer (1) 89:23</p> <p>reference (5) 18:5;21:5;125:11; 133:23;138:8</p> <p>referenced (1) 89:16</p> <p>referred (7) 67:21;68:11;107:6; 126:1;131:4;142:3,4</p> <p>referring (3) 93:9;129:19;133:22</p> <p>refers (1) 39:19</p> <p>reflect (1) 67:12</p> <p>reflected (1) 19:19</p> <p>reflective (1) 96:24</p> <p>reflects (1) 25:2</p> <p>regard (2) 13:8;16:21</p> <p>regarding (2)</p>	<p>12:18;151:21</p> <p>regards (2) 110:14,14</p> <p>regional (2) 91:13;156:13</p> <p>regions (1) 111:13</p> <p>regular (1) 27:14</p> <p>regulation (7) 65:7;75:13;76:7; 108:15;113:3;122:10; 157:10</p> <p>regulations (9) 65:4,17;110:7,11; 111:6,19;115:22; 142:24;157:7</p> <p>regulatory (9) 8:18;64:22;65:22,24; 66:2;69:15;71:24; 108:18;110:24</p> <p>relate (1) 85:12</p> <p>related (2) 55:17;158:8</p> <p>relates (5) 61:8;85:19;133:13,14; 145:17</p> <p>relating (4) 17:8;19:1;66:19;67:1</p> <p>relationship (2) 53:1,6</p> <p>relative (2) 100:23;133:1</p> <p>relevance (10) 6:18;9:21;56:2;74:24; 75:7,24;78:15;155:10, 17,20</p> <p>relevant (7) 13:22;14:9,16;55:13; 75:21;78:24;82:21</p> <p>reliability (1) 114:11</p> <p>reliable (4) 55:18;127:13,13; 128:22</p> <p>relief (2) 5:13,15</p> <p>reluctant (1) 153:23</p> <p>rely (3) 59:11;132:16;139:5</p> <p>remaining (1) 45:24</p> <p>remains (1) 72:1</p> <p>remember (3) 34:23;121:22;122:4</p> <p>renewable (1) 116:15</p> <p>renewal (8) 74:18,21;75:5;76:5, 10,13,18;77:17</p>	<p>repeat (5) 11:9;37:14;49:14; 76:17;134:17</p> <p>repeatedly (1) 125:9</p> <p>replace (1) 35:24</p> <p>replacing (2) 36:14;44:8</p> <p>replied (1) 65:19</p> <p>report (11) 13:20;26:11;45:19,24; 46:4,24;101:17;115:12, 13;130:20;151:3</p> <p>reporter (1) 68:4</p> <p>reports (1) 82:11</p> <p>represent (3) 47:6,7;57:2</p> <p>representation (3) 21:12;47:5;127:10</p> <p>representations (1) 59:6</p> <p>representative (3) 27:6;46:13;48:1</p> <p>representatives (1) 82:13</p> <p>represented (2) 26:4;29:18</p> <p>represents (6) 22:23;28:17;31:7,17; 32:7;34:20</p> <p>request (23) 6:14,21;8:16,19; 10:24;11:23;14:22;33:4, 9;38:20,24;39:9,15; 40:6;42:22;54:12;83:24; 148:1;152:8;154:22; 155:13,24;156:19</p> <p>requests (5) 24:10,11;60:24; 130:21;146:21</p> <p>required (9) 66:12;72:2;73:14; 80:18;81:12;84:21;85:1; 135:14;149:14</p> <p>requirement (19) 12:5;65:11;66:6,11; 67:17,20;68:10;70:17; 73:12;79:21;84:9;98:20, 21;99:21;115:7,13; 124:13;146:22;150:4</p> <p>requirements (29) 17:18;37:3,8;61:5; 64:10,22;65:3,18;66:20; 68:22;69:1,3;72:8; 73:16;77:15,17;78:2,7; 79:17,18;92:2,6;96:9; 99:17;120:14;123:1,3; 156:21;157:9</p> <p>requires (3)</p>
Q				
<p>qualitative (1) 113:10</p> <p>quarters (1) 149:16</p> <p>quick (3) 13:24;81:7;131:22</p> <p>quite (4) 59:24;67:24;129:19; 131:18</p> <p>quote (2) 10:7;95:5</p> <p>quoted (1) 44:1</p> <p>quotes (1) 123:12</p> <p>quoting (2) 10:18;42:10</p>				
R				
<p>rail (1) 5:12</p> <p>raise (1) 36:16</p> <p>raised (1) 131:14</p> <p>ran (6) 96:7,10,14,15;97:17; 101:16</p> <p>range (8) 50:14;73:19,22;74:2; 121:23;122:3,12,14</p> <p>ranging (1) 72:6</p> <p>rarely (1) 134:24</p> <p>rate (45) 50:21;51:2;52:18,19; 53:2;54:21;55:4,14,19, 21;56:6,21;57:24;58:2,3,</p>				

67:11;81:20;107:20 requiring (1) 80:1 rereads (1) 68:4 reschedule (1) 158:21 Research (1) 5:17 reserve (9) 33:4;44:21;96:23; 97:4;129:5;130:23; 139:11;152:7;154:21 reserved (3) 33:9;39:9;154:22 reserves (1) 96:19 residential (14) 46:14;48:1,5,14,16; 58:1,7;88:15,18;89:1,6, 9;106:10;153:12 resolutions (1) 136:5 resolve (1) 7:22 resolved (1) 6:24 resource (7) 40:23;65:20;90:10; 92:3;110:22;112:6; 114:4 resources (3) 18:19;19:17;128:14 respect (17) 15:3;16:13,14;50:16; 51:4;53:3;54:17;56:10; 64:10,23;77:15;78:12; 79:19;81:6;115:16; 121:1;129:24 respond (5) 11:6;84:20;143:13; 152:18;157:21 responded (1) 54:24 response (43) 6:7;9:18;10:19,23; 11:21,22;13:24;38:19, 23;40:22;41:6,13;42:3; 53:15;54:1,6,9;56:14,20; 57:1;58:15;59:5;61:13; 63:18;64:11;65:15; 69:22;71:11;73:23;79:7, 11;81:1;82:2;83:4,16; 91:23;110:8,20;128:20; 131:8;137:11;145:5; 156:24 responsibilities (1) 18:2 responsible (3) 17:16,20;52:1 responsive (1) 54:12 rest (1)	13:20 restarting (1) 43:3 restate (2) 24:16;68:7 result (8) 61:14;80:1;98:22; 108:14;113:8;139:21; 144:13;146:8 resulted (2) 141:20,23 results (1) 70:5 resume (1) 5:6 resumed (2) 8:11;87:15 retail (7) 116:16;125:19; 127:11;151:21,23; 152:14;153:12 retirement (1) 136:11 return (10) 72:7,10,18,24;73:1,3, 15,18;84:17;158:6 returning (1) 102:13 review (14) 19:15,18;54:1;58:14; 59:9;64:12;77:8;89:19; 113:6;131:22;135:17; 138:11;141:9;149:22 reviewed (7) 26:12;58:18;59:12; 77:13,16;81:23;112:11 reviews (10) 11:8,20;18:13;22:12; 42:19;43:20;48:3;54:3; 86:1;89:21 rhetorical (1) 115:1 rife (1) 54:9 right (43) 7:13,19;9:22;18:11; 21:22;23:14,17;29:22; 31:3;32:12;33:3;47:4; 53:13,20;61:9;63:17; 74:10;75:2,23;79:8; 94:15;95:1;98:5;105:11; 113:13;117:19;118:9; 121:22;125:1;126:12; 131:2,8;132:5,7;136:23; 137:21;139:19;146:12, 19;152:24;154:10,16; 155:23 rightie (1) 88:3 rigorous (4) 24:9;131:13,21; 132:14 rigorously (1)	25:5 rising (1) 16:3 risks (1) 72:6 river (4) 13:11;72:20,24;73:3 Roberge (2) 15:14;156:7 Robert (1) 6:11 room (2) 111:8;143:21 rough (1) 41:23 row (2) 90:7,8 rows (3) 62:12,13,14 RSA (2) 114:2;116:14 Rule (14) 15:3;16:14,15;66:24; 67:1,21;68:11;108:15; 109:12;112:18,23; 123:15;156:15,16 rule-making (2) 68:15,17 rules (11) 8:18;65:22;66:1; 69:19;108:19,20;109:4; 111:1,9;113:20;157:4 ruling (2) 5:16;157:12 run (29) 19:7;25:8,14;36:8,9; 41:14,16;43:15;44:14; 93:13;94:1,3,5,6,9,5; 15;96:14;97:19;100:19; 105:7;109:9;117:15; 129:23;131:16;132:5,6, 8;134:4,22 running (26) 25:1,12;27:13;36:4, 17;37:22;42:15;43:7; 44:6,19;93:19,19;94:21; 96:8,20;106:1;117:6,13; 129:21,22;130:5,9,12; 133:2,3;134:14 runs (4) 28:11;105:19;125:18; 134:24	same (8) 55:12;56:22;62:19; 102:15;119:1;141:11, 13;142:9 satisfy (3) 70:6,8;120:14 satisfying (1) 98:21 save (2) 86:19;147:2 saving (1) 36:2 Savings (7) 88:15,17;89:10,11,14, 23,24 saw (2) 97:3;121:24 saying (11) 9:24;31:6;32:8;47:15; 60:24;93:23;96:20; 104:7;111:2;113:1; 143:13 scenario (3) 102:9;109:9;134:11 scenarios (12) 8:17;65:21;66:4; 102:14;108:18,23; 110:24;156:19;157:1,18, 18,24 schedules (2) 19:1,5 scheduling (1) 17:17 Schiller (38) 18:17;19:2;20:4,5,15, 19,24;22:3,8,20;23:2,21; 24:1,19;25:1,21;26:2,3; 29:16;30:20;33:6,6; 34:2,2;60:1;61:20,24; 62:8,15,19;97:2;109:21, 23,24;128:6,12,18;145:2 Schiller's (1) 20:8 Scott (13) 6:11,17;118:12,13,20, 21;124:3;142:16; 146:12,14,16;148:9,15 screen (2) 72:22,23 screens (4) 72:9,19;73:17;84:18 scrubber (16) 11:13,24;12:9,9,19,22, 24;13:9;104:4;105:5,8,9, 12,15;109:20;113:15 Seabrook (1) 95:14 second (13) 10:6;20:11,13,17; 22:2;39:4;97:24;99:3; 105:12;122:16;132:21; 148:17;155:24 section (19)	18:6;39:20;66:16,17, 18,20;67:5,10;69:3; 70:11;73:12;78:1,6,7; 86:22;92:8;116:9; 125:12;126:1 sections (2) 19:16;151:3 Sector (1) 88:12 seeing (1) 56:23 seek (1) 51:21 seeking (2) 55:22;69:10 seems (6) 32:18,20;101:15; 105:17;112:4;117:1 self-schedule (1) 94:2 sells (1) 40:6 sense (10) 28:1;38:12;41:15; 43:2,14;82:20;130:23; 134:3,5;135:3 sensitivities (2) 99:15;101:16 sentence (5) 18:10,15,21;39:23; 125:14 sentences (1) 43:24 separate (4) 7:2;82:15;147:17; 149:2 separately (1) 148:23 September (27) 9:9;24:24;26:10,19; 27:3,21;34:18,20,22; 35:7;47:24;48:7,22,24; 49:2;57:17;63:19;74:20; 77:3;79:14;104:17,18; 115:17;123:3;149:6; 150:10,14 sequence (2) 92:4;146:24 series (1) 16:16 serve (2) 133:24;141:11 served (1) 136:14 Service (60) 10:22;11:22;17:18; 37:20;38:19;41:1;45:1, 2;46:20;49:7,11,13,16, 17,22,23;50:1,6,9,18,21; 51:2,16;52:19,23;53:2,9; 54:7;55:1,14;56:6,11; 58:1;62:6;64:9;74:17; 79:15;91:5,7,19;102:13,
S				
		sadly (1) 115:14 Sahu (1) 158:10 sale (1) 116:10 sales (3) 127:6;128:2,4		

14,23;103:1,6,15; 106:22;107:2,3,12; 114:18;116:16,16,17; 126:16;145:22;150:23; 153:7,8;154:24 Services (8) 45:21;49:21;55:4; 58:11,14,21;86:6;157:15 Service's (1) 98:7 serving (1) 124:22 session (2) 61:15;159:11 set (7) 6:4,5;39:4,15;53:15; 100:7;145:5 sets (4) 5:11,12;70:2;114:23 setting (5) 60:8,9;98:23;99:11; 143:23 settlement (1) 151:8 seven (3) 61:18;62:10,14 several (1) 92:3 shall (3) 114:3;116:13,24 short (3) 57:21;87:9;109:8 shorthand (1) 90:10 short-term (2) 35:8;146:1 show (7) 46:13;47:23;48:16; 53:12;81:9;91:19; 130:16 shown (5) 24:18;34:1;89:1; 92:14;104:9 shows (7) 25:20;26:1,5,14; 110:21;114:14;128:24 shut (2) 94:7;97:19 shut-downs (1) 44:21 shutting (2) 43:3;94:8 side (3) 18:11;29:23;117:11 Sierra (3) 16:8,10;156:4 signed (1) 6:10 significant (5) 52:4,6,10;122:24; 135:11 significantly (3) 59:24;84:16;132:20	similar (2) 123:11;124:18 similarly (3) 76:24;77:2;82:14 similar-type (1) 91:18 simple (1) 38:7 simplify (1) 107:9 simplifying (1) 126:10 simplistic (1) 132:11 simply (6) 8:16;69:24;73:9; 94:22;115:12;153:13 single (4) 28:6,21;29:1,5 sit (3) 86:11;125:6;138:10 site-specific (1) 111:21 sitting (4) 34:10;38:2;72:20; 102:11 situated (1) 82:14 situation (3) 47:21;100:21;142:1 Six (6) 18:10;24:23;61:19; 62:1,7;143:24 sizes (1) 111:16 slight (2) 26:14;30:9 slope (5) 29:9;30:4,7,9,11 Smagula (45) 8:12,22;9:3,14;10:4, 12;11:5,9,15,21;12:2,16, 23;16:13,20;70:24;71:1, 7,17,18,20;72:11,14; 73:19,23;74:7;76:4,7,22; 77:10,20,24;78:5;84:19, 23;85:4,9;95:23;96:3; 109:14;111:3;122:16, 19;123:4;136:15 Smagula's (1) 113:12 SmagulaThe (1) 10:15 small (1) 138:18 snapshot (7) 116:1;142:5,10,13,23, 23;143:7 SNCRs (1) 109:21 sold (2) 40:2;41:3 someone (3)	69:4;106:14;125:13 sometime (3) 47:16,23;76:13 sometimes (4) 93:18,19;113:9; 156:14 somewhat (3) 65:6;105:13;121:4 somewhere (4) 29:10;31:23;86:7; 130:15 somewheres (1) 47:12 sorry (15) 7:4;17:9;20:13;23:18; 32:13;39:8;46:21;61:6, 19;62:10,13;68:16; 86:24;134:17;152:2 sort (4) 106:6;108:11;113:4; 142:11 sound (3) 19:12,12;119:15 sounds (8) 14:1;101:15;107:10; 111:1;142:10;149:4; 150:17;153:20 source (4) 32:19;36:12;45:16; 133:16 sources (1) 114:12 space (1) 28:4 speak (3) 52:15,16;107:20 speaking (6) 52:13;55:9;93:7,22; 132:9,18 specialty (1) 67:7 specific (4) 69:1;111:19;112:20; 156:24 specifically (6) 92:10;101:1;108:8; 126:2;135:12;148:22 specifics (1) 125:8 speculating (1) 123:21 SPEIDEL (4) 64:15;87:23;88:2,8 spend (3) 57:11;81:20;84:2 spending (1) 124:17 spiral (1) 106:24 spite (1) 110:17 spoke (1) 115:18	spot (4) 40:3,7;41:3;44:15 spreadsheets (1) 113:8 spring (1) 129:23 staff (5) 67:7;90:17;147:12,22; 148:18 stages (1) 157:10 stand (3) 42:22;142:3;159:7 stand-alone (1) 50:22 standard (2) 116:15;143:8 stands (3) 39:3;100:21;144:22 start (14) 20:4;25:15;94:7;97:1, 20;106:7;119:1,16,22; 120:3,4;149:10,15; 150:20 started (8) 20:10,19;35:12;47:17; 48:2;59:23;60:15; 150:15 starting (8) 21:15;29:16,17;39:21; 66:16;92:9;94:9;140:23 starts (3) 29:8;30:7;137:21 start-ups (1) 41:21 state (8) 40:22;58:20;68:21; 114:8,10,16;156:14,15 stated (5) 41:4;59:3;60:14; 69:13;71:12 statement (2) 76:8;77:11 statements (1) 54:10 state-of-the-art (1) 13:2 states (3) 58:24;61:23;85:20 statewide (1) 107:23 stating (1) 153:13 Station (8) 9:2;10:23;72:5; 104:23;105:7;109:21, 24;113:15 status (1) 26:18 statute (4) 118:23;121:9,10; 124:11 statutes (2)	65:3;66:3 statutory (4) 65:11;66:10;68:10; 84:8 stay (2) 63:24;148:16 staying (2) 105:11;159:9 steadily (1) 20:6 steep (1) 28:8 step (3) 31:14,16;141:15 stick (1) 126:12 still (11) 31:20;34:3;42:22; 56:19,22;77:18;97:16; 133:1,3;153:19;157:10 stop (3) 106:24;107:4;143:4 stopped (1) 149:14 straight (6) 29:7;30:14,15;92:18, 22;95:2 stranded (1) 48:13 strategic (2) 121:15;144:16 strategy (3) 51:14;99:1;112:15 Strike (2) 67:18;77:12 strikes (1) 124:15 Structure (1) 78:2 structures (2) 67:12;70:19 studied (3) 140:17,18,20 studies (9) 71:3,4,9,10,15;82:11; 111:12,12;112:17 study (9) 112:22;113:9,18,24; 133:13;135:16;141:16; 147:11;150:7 Subject (10) 22:22;35:5;41:3; 47:14;67:9;86:10;90:14; 95:16;107:6;117:21 subjected (1) 81:24 submission (2) 11:3;97:7 submit (1) 14:13 submitted (18) 10:19;12:14;13:20; 14:14,17;21:16;24:2,21;
---	--	---	---	---

26:7;45:21;57:17;79:6; 8;82:8,15;102:5;119:10; 122:6 Subsection (2) 10:5;78:13 subsequent (2) 9:20;115:24 subsidiary (1) 121:17 substantial (1) 135:13 substantially (1) 107:5 substantive (1) 14:7 substation (3) 138:17,22;140:12 subtract (1) 92:13 success (2) 123:14,17 suffer (1) 20:10 suffering (2) 35:13,16 suggest (2) 29:11;84:7 suggested (2) 27:18;156:20 suggesting (3) 82:24;83:1;84:8 suggestions (1) 148:2 summary (2) 85:24;125:12 summation (1) 110:4 summer (4) 20:1;35:6;79:1;129:22 sunk (4) 134:2,13,21;147:13 supersedes (1) 75:3 Supplemental (4) 10:24;11:23;116:19; 118:2 supplied (2) 32:23;37:4 supplier (4) 51:10,22;106:15,18 suppliers (4) 47:9,10;51:11,17 supplies (1) 37:19 supply (8) 40:2;86:14;93:20; 100:20;106:17;116:13, 24;117:23 supported (1) 82:12 supporting (2) 7:17;8:4 supposed (1)	142:8 supposedly (1) 28:3 sure (16) 14:4,13;27:20;42:20; 51:14;56:2;67:24;85:4; 88:5;89:20;95:1;98:13; 120:19;128:22;129:19; 146:14 surfaced (1) 150:8 surplus (1) 40:1 suspect (1) 150:21 suspended (1) 150:18 swings (1) 99:20 switching (1) 106:13 Synapse (1) 32:21 system (13) 12:6;13:2;72:7,18; 73:1,15;84:17;121:18; 126:5;137:7,18;138:15; 139:10 systems (6) 72:10,16,22,23;73:18; 109:22	72:12 technology (9) 67:12;70:18;72:4,21; 73:11;77:8;78:12;79:19; 83:16 Technology-Based (1) 8:24 telling (1) 127:12 temporary (4) 55:10,22;152:1; 154:13 ten (1) 87:8 term (2) 65:5;157:19 termed (1) 156:14 terms (6) 40:3;88:4;102:4; 112:17;143:22;145:21 territory (1) 116:17 testified (5) 28:1;47:16;59:22; 82:17;130:2 testimony (14) 11:2,11,16;17:12; 20:12;26:16;52:24;53:5; 64:21;70:24;137:8,12; 141:23;142:2 theory (1) 120:3 thereafter (1) 158:23 therefore (3) 9:11;13:22;140:18 thermal (1) 71:3 thinking (10) 26:20;57:3;123:21; 124:16;134:7;143:4,10, 11;144:18,19 third (5) 39:5;71:21;146:23; 149:21;158:14 third-party (4) 47:8,10;103:4;106:12 though (5) 31:20;42:7;94:1,3; 153:1 thought (6) 34:7;46:3;79:5; 104:16;118:6;144:4 thoughts (2) 122:20;125:1 thread (2) 37:16;134:16 three (9) 5:11;37:4;87:9;89:15; 94:13;119:9;138:21; 149:16,19 three-year (3)	37:2;112:24,24 throughout (1) 29:12 thus (2) 18:18;56:8 Tillotson (39) 26:20;27:8,16;64:12, 20;65:1,5,12,14,24;66:5, 13,15,22;67:3,6,15,23; 68:13,19;69:13,22; 70:14,22;78:6,10;84:15, 23;96:18;97:13;112:11; 122:20;123:5;142:4; 156:4,8,12;157:8,17 Tillotson's (1) 97:24 timely (1) 113:3 time-out (1) 135:21 times (7) 41:13;80:20;96:23; 97:16;105:22;117:24; 142:2 timing (1) 113:2 today (11) 34:10;50:8;97:5; 103:22;112:12,23; 116:23;125:6;133:15; 142:3;143:21 today's (2) 25:11,16 together (2) 76:15;150:9 tomorrow (3) 158:7,11;159:8 tonight (3) 158:12;159:3,10 took (1) 154:7 tool (6) 112:16;115:8;141:13; 150:12,17,22 top (5) 21:7;39:1;85:19; 89:14;147:4 topics (2) 107:16;108:7 total (10) 40:23;46:19,21;48:4, 14;90:10;102:1;152:20, 22;153:11 toward (1) 20:10 tower (2) 108:24;109:1 towers (14) 71:14;73:21;80:2,17; 81:1,21;82:22;84:4,10, 11,16,20;85:2,6 track (1) 87:17	tracking (1) 7:21 trade (1) 25:15 trade-off (1) 140:10 transformer (1) 140:14 transition (1) 116:15 transitioning (1) 97:9 translate (1) 37:8 transmission (3) 48:12;91:17;151:2 Traum (2) 141:22;158:10 TRC (1) 90:9 treating (1) 13:8 treatment (2) 12:22;13:2 trend (3) 22:14,17;63:10 trends (2) 50:24;51:4 trigger (1) 141:8 troubled (1) 154:17 true (2) 43:10;155:16 trueing (1) 55:18 try (4) 42:24;57:15;126:10; 151:16 trying (9) 23:7;31:20;38:4; 55:16;57:19;69:22; 113:22,22;116:21 turn (15) 18:4;22:2,19;44:18; 63:15,23;66:13;71:18; 77:21;85:16;90:2,95:15; 124:1;126:19;144:24 turned (1) 157:3 turning (1) 88:6 turns (3) 63:14;105:18;145:3 twice (1) 141:4 two (30) 5:11;9:20;13:16; 26:22;29:23;37:6,6; 38:23;39:1;49:6;75:12; 76:1;80:7;84:1;96:12; 98:8,15;99:22;100:12; 102:14;106:6;113:19;
T				
table (3) 45:18;88:10;92:14 tables (2) 35:7,10 tail (1) 25:3 tailored (2) 111:24;112:1 talk (3) 26:9;44:1;127:7 talked (4) 96:22;97:5;114:6; 156:6 talking (6) 12:21;57:7;80:7;84:2; 99:4;148:4 talks (4) 66:23;91:6;101:18; 118:1 target (3) 108:20;113:5;122:9 targeted (6) 138:13,24;139:13; 140:7;141:10,16 team (3) 55:6;111:7;113:7 technical (2) 61:15;69:14 technologies (1)				

DE 10-261 PUBLIC SERVICE COMPANY OF N.H. Least Cost Integrated Resource Plan

119:21,23;120:3;121:6; 129:9;150:9;154:8,11	unit's (1) 43:9	103:19;126:1;138:14	157:17	witnesses (2) 158:8,19
two-year (1) 104:6	unplanned (1) 96:4	V	wants (2) 54:22;119:2	wondering (1) 158:24
two-year-long (1) 143:15	up (30) 26:11;31:6;37:5; 39:22;44:12;48:6,22; 54:23;55:8,18;70:2; 92:13;94:7,9;97:20; 100:23;101:15;102:16; 103:2;106:22;107:13; 110:21;120:3;124:18, 20;129:10;132:4;143:2; 149:15;153:24	validity (1) 54:14	Wastewater (2) 9:2;13:2	wood (1) 24:8
type (2) 99:1;148:3	upcoming (1) 65:17	valuable (3) 148:7;150:11,17	Water (12) 66:18,21;67:5,10,11; 68:20;70:1,18;71:14; 73:13;78:2,8	wood-fired (2) 18:16;128:11
types (1) 133:20	update (2) 80:8,14	value (12) 26:9,23;90:9;101:23; 103:12;115:15;124:11; 125:3;136:19,24; 140:13;150:22	way (8) 32:18;57:14;96:20; 117:4;118:19;134:1; 149:4;150:14	word (5) 39:22;82:7;99:10; 117:20;125:21
typically (3) 96:24;112:14;121:5	updated (1) 78:20	values (4) 22:14,18;92:14;145:9	ways (1) 38:6	words (7) 42:18;50:4;69:24; 101:24;108:11;119:13; 143:2
U	upgrades (5) 137:7,18;138:2,15; 139:18	variable (17) 35:18;45:8;93:9,10, 13;94:22;105:5,6,16,24; 117:10;126:6;133:11, 18;134:8,22;135:2	wedge-wired (3) 72:9;73:17;84:18	work (5) 10:9;13:18;64:21; 138:9;149:5
ultimate (1) 70:7	upgrade (2) 138:5,22	various (4) 19:2;52:11;114:5; 131:24	week (3) 10:21;158:22,23	working (6) 120:4;131:23;148:20; 150:16,18,20
ultimately (2) 84:21;124:14	upgraded (2) 72:9;73:17	vary (1) 96:21	week-ahead (1) 146:6	works (1) 69:15
uncertainty (3) 66:24;71:24;122:12	upgrades (5) 137:7,18;138:2,15; 139:18	venture (1) 138:6	Weren't (3) 20:4;97:11;128:22	world (1) 116:2
undefined (1) 123:1	upon (8) 8:17;50:11;65:22,24; 110:24;119:20;144:13; 145:23	Vermont (1) 91:17	wet (1) 12:6	written (2) 6:21;42:22
under (14) 10:5,10;23:4;30:22; 41:4;62:14;77:15;78:13; 83:21;91:5,6;97:8; 114:2;157:22	usage (1) 139:4	versus (7) 36:2;55:19;63:1; 93:14;103:16;134:14,22	what's (25) 18:23;25:24;29:18; 42:21;46:19;74:23; 82:20;83:10;91:5; 103:16;107:6;112:22; 117:3;121:20;127:4,8; 129:1;131:4;132:1; 139:3,4;152:22;155:9, 17;156:9	wrong (1) 144:24
underlying (3) 32:22;33:5;39:10	upper (3) 103:10,14,19	viability (1) 94:21	Whereupon (2) 87:14;159:11	Y
understood (1) 12:10	use (21) 8:2;35:8;43:23;60:24; 65:6;66:9;70:6;99:10; 103:9;117:17,20;119:6; 120:9;121:23;127:2; 135:24;143:8;144:7,10; 150:12,23	view (13) 81:12;105:6;107:11; 108:5;113:7;116:1; 120:24;133:17;135:9; 136:16,17,24;144:12	whole (1) 29:13	year (38) 9:9;26:24;27:4;28:21; 29:1,5,6,7,12,13,19,22, 23;30:1,8,10,13,14; 31:12,17,18;32:7,8; 58:16;63:11;96:6,7; 97:15;99:22;107:8; 121:6;126:24;133:9; 138:20;143:24;149:12, 15,16
uneconomical (1) 97:18	used (7) 9:11;13:16;33:5; 41:18,19;128:1;142:15	viewed (2) 54:11;136:12	wholesale (5) 17:13,15,22;103:3; 106:10	year-by-day (1) 120:23
unfold (1) 146:3	useful (1) 124:22	virtue (1) 83:15	willing (3) 6:11;93:24;105:20	year-long (1) 143:15
Unit (44) 20:5,15,24;22:4,8,8, 20;23:2,21;24:1,19; 25:21;26:3,3,6;29:17; 30:20;34:2,3;37:12; 41:12,14,17,19;42:7,11, 13,15;43:1,7;61:21,24; 62:4,5,8,19;70:8;93:19; 134:4,19;135:10,24; 147:10;150:7	uses (1) 121:13	visual (1) 125:17	wind (1) 105:21	year-over-year (1) 127:5
unit-by-unit (1) 20:22	using (4) 31:10;117:12,17; 127:1	volition (1) 136:12	window (1) 104:6	years (28) 27:6;37:4,6;59:2;76:9, 11;98:8,15;99:22; 100:12;104:12;109:19; 110:4;113:14,19; 119:23;120:3;121:7; 126:16;127:10;129:9; 136:20;137:3;138:21; 140:22;144:11,13; 146:20
Unitil (4) 46:15;48:17;49:4; 57:23	usually (1) 27:19	voluminous (1) 121:19	Withdrawal (1) 66:17	years' (1) 130:19
Units (51) 18:8,16;19:3,7,22; 20:10,19,19;24:8;25:11; 27:13;34:4,8;35:2,13; 36:3,4,6,18,22;37:21; 40:11;44:3,5,6,7,11,16, 24;45:9;47:18;60:1,12, 17,22;63:2;97:2;101:4; 111:15;128:6,7,12; 129:2,13;130:9;131:10, 16;132:2;133:1,16; 136:8	utilities (3) 45:3;47:1;82:14	voracity (2) 22:13,18	within (9) 54:13;68:21;70:20; 71:21;73:21;74:2;76:11; 85:3;121:21	year-to-year (1)
	utility (10) 36:20;37:10,18;38:1, 8;91:7;110:12;112:13; 114:3;121:18	W	without (3) 100:14,15;151:17	
	utilized (3)	waiting (3) 68:24;149:8;150:19	Witness (18) 11:8,20;13:16;14:1; 18:13;22:12;42:19; 43:20;45:12;48:3;53:13; 54:3;64:12;75:5;86:1; 89:21;151:18;158:20	
		waive (2) 6:12;146:21		
		waiver (2) 151:1,5		
		waivers (1) 151:1		
		walked (1)		

DE 10-261 PUBLIC SERVICE COMPANY OF N.H. Least Cost Integrated Resource Plan

127:22
yucks (1)
63:21

Z

zero (4)
63:12;101:19;102:12;
122:1
zeros (3)
61:24;62:8,14