

**STATE OF NEW HAMPSHIRE**  
**SITE EVALUATION COMMITTEE**

June 8, 2017 - 1:45 p.m. DAY 13  
49 Donovan Street Afternoon Session ONLY  
Concord, New Hampshire {REDACTED - for public use}

*{Electronically filed with SEC 07-14-17}*

**IN RE: SEC DOCKET NO. 2015-06**  
**NORTHERN PASS TRANSMISSION -**  
**EVERSOURCE; Joint Application of**  
**Northern Pass Transmission LLC and**  
**Public Service of New Hampshire d/b/a**  
**Eversource Energy for a**  
**Certificate of Site and Facility .**  
**(Hearing on the Merits)**

**PRESENT FOR SUBCOMMITTEE/SITE EVALUATION COMMITTEE:**

<b>Chmn. Martin Honigberg</b> <i>(Presiding Officer)</i>	Public Utilities Comm.
<b>Cmsr. Kathryn M. Bailey</b>	Public Utilities Comm.
<b>Dir. Craig Wright, Designee</b>	Dept. of Environ.Serv.
<b>Christoper Way, Designee</b>	Dept. of Resources & Economic Development
<b>William Oldenburg, Designee</b>	Dept. of Transportation
<b>Patricia Weathersby</b>	Public Member
<b>Rachel Whitaker</b>	Alternate Public Member

**ALSO PRESENT FOR THE SEC:**

Michael J. Iacopino, Esq. Counsel for SEC  
*(Brennan, Caron, Lenehan & Iacopino)*

Pamela G. Monroe, SEC Administrator

*(No Appearances Taken)*

**COURT REPORTER: Cynthia Foster, LCR No. 14**

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I N D E X

WITNESS	JULIA FRAYER	PAGE NO.
<i>(Resumed)</i>		
Cross-Examination continued by Mr. Pappas		4

NOTE TO READER:

**CONFIDENTIAL EXCERPTS** under separate cover  
containing portions of **Pages 31, 42, 43, 45,**  
**46 and 55**

**P R O C E E D I N G S****(Hearing resumed at 1:45 p.m.)**

PRESIDING OFFICER HONIGBERG: Mr. Pappas,  
you may proceed.

MR. PAPPAS: Thank you, Mr. Chairman.

**CROSS-EXAMINATION CONTINUED****BY MR. PAPPAS:**

Q Good afternoon, Ms. Frayer. I want to now ask  
you some questions about the New England  
electricity markets. I'm going to start with  
the wholesale electricity markets. Okay?

A Okay.

Q Now, the wholesale electricity markets include  
the wholesale energy markets and the wholesale  
capacity markets, correct?

A For the purposes of the evaluation that we've  
done, that is correct.

Q Thank you. Now, the wholesale energy market,  
wholesale energy is supplied by generators of  
energy, correct?

A It's supplied by a variety of resources, and  
they generate energy measured in megawatt hours.

Q All right. And your report included a chart of  
energy production by fuel type. Do you remember

1           that?

2           A     Yes.  I believe my original report included  
3           that.

4           Q     Okay.  And different suppliers of energy offer  
5           energy at different prices, sort of known as the  
6           bid stack, correct?

7           A     Yes.  Or in economic terms based on their short  
8           run marginal costs or opportunity costs.

9           Q     Okay.  And ISO New England determines the demand  
10          for energy on an hourly basis; is that right?

11          A     ISO New England administers a market that  
12          determines a price for energy on an hourly  
13          basis.

14          Q     And what, in laymen's terms, what essentially  
15          they do is they look at the bid stack, and if  
16          they determine, for instance, they need so much  
17          energy, the supplier at that point sets the  
18          price and everybody below that supplies energy  
19          and everybody above it does not, essentially?

20          A     Yes.  There's in the energy market a concept of  
21          a clearing price.  So I think your description  
22          for our purposes right now seems to be adequate.  
23          There's other complications with marginal costs  
24          of congestion marginal losses, but we don't have

1 to get into that.

2 Q Good. So just to use my oversimplification  
3 model, what I've done here is under Counsel for  
4 the Public's Exhibit 253, a hypothetical bid  
5 stack, if you will.

6 So, for instance, if ISO New England  
7 determines they need 1000 megawatts, and you see  
8 my blue line, the suppliers below that line  
9 essentially supply clearing price is \$0.04 per  
10 kilowatt hour, and that's essentially the bid  
11 stack we just talked about?

12 A I see your illustration, and for the purposes of  
13 showing how there are a variety of resources in  
14 the market, I'm comfortable. I don't  
15 necessarily agree with the relative stacking  
16 that you've done for different types of power  
17 generators. It's not universal under all  
18 conditions, but maybe that's not necessary for  
19 your illustration.

20 Q Good. So there are high demand periods, are  
21 there not?

22 A Demand varies.

23 Q Yes.

24 A From hour to hour and in fact more granularly

1           than hourly.

2           Q     And in New England, it's typically during the  
3                 summer months when we have our peak periods, is  
4                 that right?

5           A     From a electricity load perspective, our load is  
6                 typical summer peaking on a regional basis.

7           Q     And in Canada, it's typically peaking during the  
8                 winter months, correct?

9           A     Well, we need to be specific. I assume you're  
10                talking about Quebec?

11          Q     Let's talk about Quebec.

12          A     Okay. Yes. Quebec has been historically and is  
13                expected to continue to be a winter peaking  
14                system because of heating demand. Electric  
15                heating demand.

16          Q     So during low demand periods, if you will, price  
17                of energy tends to be lower?

18          A     Holding all else constant as long as the fuel  
19                cost during low demand periods is also lower  
20                because in effect if we look at your exhibit  
21                here, the reason that more efficient natural gas  
22                unit, for example, would bid three cents per  
23                kilowatt hour in your illustration, is because  
24                it's determined that it's fuel cost, plus

1 variable O&M cost, plus carbon emissions and  
2 other allowance costs add up to 3 cents.

3 If gas prices are higher, even though  
4 electric load is lower, you might have a much  
5 higher price of energy.

6 Q Okay. Now, in New England, the price of natural  
7 gas is the biggest driver of energy prices, is  
8 it not?

9 A Yes. I would agree with that statement in  
10 principal.

11 Q And there are approximately 840 operating power  
12 plant units in New England; does that number  
13 sound right to you?

14 A Haven't looked at the unit statistics, but I'll  
15 take it subject to check.

16 Q All right. And the annual demand for energy New  
17 England is approximately 36,000 megawatts?

18 A When you say annual demand, do you mean the  
19 summer highest hours demand? I'm a little  
20 confused.

21 Q Laymen's terms sort of the maximum, the summer  
22 peak?

23 A So that number is a little high.

24 Q Okay.

1 A But we can go to the ISO New England, what we  
2 call the CELT which basically has their load  
3 forecast to get the right number if we needed  
4 it.

5 Q Okay. My point is, in terms of the energy  
6 market, adding 1000 or a 1090 megawatts of new  
7 energy doesn't have a significant impact on the  
8 wholesale energy market, does it?

9 A I would not necessarily agree to that. It  
10 really depends not just on supply and demand but  
11 also underlying conditions. For example, gas  
12 prices. If gas prices are high, even at 1000  
13 megawatts can have a profound effect on energy  
14 prices, and, again, we showed this in our  
15 original report. We did an analysis of the  
16 insurance value under basically under the polar  
17 vortex conditions we actually experienced in the  
18 region in the winter of 2014/2015.

19 Q Okay. Now, the wholesale capacity market is a  
20 separate product, correct?

21 A Yes. It is a separate wholesale product.

22 Q Capacity is the ability to produce electricity  
23 at a point in time?

24 A I'm fine with that description.



1 Q And ISO New England procures enough capacity to  
2 ensure it can meet the expected and the  
3 unexpected peak demands of electricity?

4 A Yes. ISO New England procures capacity in  
5 excess of its expectation of peak demand.

6 Q Wants to keep the lights on and the AC going  
7 when it's really hot?

8 A I hope so.

9 Q Me, too. Now, we talked this morning about the  
10 Forward Capacity Auction, that's conducted by  
11 ISO New England every February, correct?

12 A Yes.

13 Q And energy generators bid at the Auction to  
14 provide capacity?

15 A I would use a slightly different set of terms,  
16 but energy generators participate in the Auction  
17 to provide capacity.

18 Q Okay. And they have to provide that amount of  
19 capacity beginning 40 months later.

20 A Yes. Approximately. A little over 3 years  
21 later.

22 Q And they're obligated to produce that capacity  
23 for a period of three years?

24 A No. For a period of one year.

1 Q Period of one year. Okay. And energy  
2 suppliers --

3 A And typically for a period of one year. There  
4 are options in New England for new resources to  
5 take a longer lock-in, and that would be a  
6 longer obligation.

7 Q Yes.

8 A But typically for most resources, it's one year.

9 Q And energy suppliers need to be qualified for  
10 the Forward Capacity Auction, correct?

11 Only qualified resources can participate or  
12 be successful in the Forward Capacity Auction?

13 A Yes. There are technical characteristics or  
14 criteria that ISO applies. In general, when you  
15 have previously participated in a Forward  
16 Capacity Auction, you're deemed an existing  
17 resource so you're assumed to have qualified,  
18 but new resources then do need to go through a  
19 qualification stage in advance of that first  
20 Auction.

21 Q Right. So, for instance, NPT would need to go  
22 through that qualification stage for its first  
23 Auction, correct?

24 A Yes. The shippers that want to sell capacity on

1 NPT would need to go through that qualification  
2 process.

3 Q All right. So I want to just quickly review the  
4 results of the Forward Capacity Auction #10 and  
5 we put on the screen is the first page of  
6 Counsel for the Public Exhibit 261 which is an  
7 ISO New England document titled Forward Capacity  
8 Auction #10 Results Summary. Do you see that?

9 A Yes.

10 Q So the second page of this document is a summary  
11 of FCA #10. And you see the beginning, the  
12 price at the beginning of the Auction, do you  
13 see that? The green box up in the left?

14 A Yes. The \$17.29 per kilowatt-month.

15 Q Correct. And then you have the amount of  
16 Qualified Resources Entering the Auction, 39,177  
17 megawatts?

18 A Yes. I see that.

19 Q And then at the end of the Auction, the Auction  
20 Clearing Price was \$7.03 kilowatt-month. Do you  
21 see that?

22 A Yes.

23 Q And looks like the resources that cleared  
24 uncapped were 35,567 megawatts. Correct?

1 A Yes.

2 Q What we've put up on the screen now is Counsel  
3 for the Public's Exhibit 255 which is another  
4 ISO New England document summarizing the Forward  
5 Capacity Auction #11. Do you see that?

6 A Yes. Thank you.

7 Q And what's on the screen now is the Summary of  
8 FCA #11 where you see the price at the beginning  
9 of the Auction and the Auction Clearing Price  
10 ends up being \$5.297. Do you see that?

11 A Yes.

12 Q And again, it shows, the Qualified Resources  
13 Entering the Auction at 40,421 megawatts, and  
14 eventually, 35,835 megawatts cleared, correct?

15 A Yes.

16 Q And this shows, for instance, new resources that  
17 came in, and it also shows in the far right-hand  
18 side megawatts that were exiting requesting to  
19 be de-listed, do you see that?

20 A Yes.

21 Q Now, the clearing price for an FCA Auction is  
22 essentially where the demand curve intersects  
23 the supply curve, correct?

24 A I know that's what people have colloquially

1 described. I disagree with that description  
2 because it is imparting some superficially false  
3 information to those who aren't familiar with  
4 how the New England Descending Clock Auction  
5 works.

6 Q Okay. Well, the demand curve is determined by  
7 ISO New England, is it not?

8 A It is. And I have a picture that, I believe, in  
9 my updated analysis from February, from March  
10 2017, we have a graphic of what it looks like.

11 Q We'll get there. And the demand curve set by  
12 ISO New England has prices set?

13 A The demand curve has price quantity payers. So  
14 basically it's representing ISO New England's  
15 willingness to pay for capacity. So if we have  
16 X megawatts of total capacity at a certain  
17 price, that basically is dictating their  
18 willingness to pay schedule.

19 Q Okay. You mentioned the shape of the demand  
20 curve. Previously the demand curve for ISO New  
21 England was essentially a vertical line, was it  
22 not? Before the recent changes?

23 A It was a downward sloping line.

24 Q And they have since changed that to more, to a

1 different configuration, correct?

2 A It has got some curvature to it now.

3 Q What we're putting on the screen now is Counsel  
4 for the Public's Exhibit 257. You see the shape  
5 of the demand curve which is the sort of light  
6 blue curve on these two examples?

7 A Yes. I see it.

8 Q Is that the shape of the demand curve?

9 A Yes, although this isn't my exhibit. I have a  
10 picture of what the demand curves look like, but  
11 I wouldn't disagree with that the demand curve  
12 has a bit of a curvature, depending on how you  
13 focus into it, and, actually, in the next couple  
14 years there's a transition curve so it has a  
15 little bit of a shelf in there, too, and so  
16 forth.

17 Q But the demand curve currently has a bit of a  
18 slope to it, correct?

19 A It always had a slope to it, but it has  
20 curvature to it.

21 Q And that's what we're looking here is an example  
22 or two examples, actually?

23 A Not my examples, but yes.

24 Q Okay.

1 A I agree with the demand curve illustration.

2 Q Now, you mentioned a moment ago rules for the  
3 Forward Capacity Auction, and new bidders, as  
4 you indicated, have to be qualified to  
5 participate, correct?

6 A Yes.

7 Q And the ISO New England determines their  
8 qualification based on ISO's rules, correct?

9 A Yes.

10 Q And ISO New England determines a supplier's  
11 summer seasonal capability and its winter  
12 seasonal capability, correct?

13 A Yes.

14 Q And ISO New England qualifies its supplier at a  
15 minimum of these two seasonal capabilities; is  
16 that right?

17 A Well, the qualifications for a new participant  
18 to engage in the Forward Capacity Auction isn't  
19 restricted to their Capacity Supply Obligation  
20 rating, the CSO. There's a number of other  
21 elements of their project that need to go  
22 through review to ensure that they are  
23 legitimate suppliers.

24 Q Right. I understand. But this is one fact,

1 this is one part of qualification, correct?

2 A Yes.

3 Q Another part of qualification is the fact that  
4 they have the capacity to be able to supply,  
5 correct?

6 A Yes.

7 Q Now, after a potential new bidder qualifies,  
8 their offer of price is reviewed by ISO's  
9 Internal Market Monitor; is that right?

10 A Yes.

11 Q And the Internal Market Monitor reviews prices  
12 because they want to make sure that they're,  
13 essentially, economically based, right? They  
14 don't want, for instance, subsidiaries to affect  
15 the price.

16 A That's generally correct, yes. I think you're  
17 talking about the Minimum Offer Price. So if a  
18 resource wants to participate in the Forward  
19 Capacity Auction at a price that's different  
20 from Offer Trigger Price that ISO sets in  
21 advance based on generic information about  
22 various technologies, they have to submit  
23 information to ISO New England's Internal Market  
24 Monitor to qualify.



1 Q The potential participant provides the Internal  
2 Market Monitor with their capital costs, their  
3 fixed costs and other cost items, correct?

4 A Yes. There's a whole list of information that  
5 the Project sponsor, the shipper, sorry, the  
6 resource that wants to get qualified needs to  
7 submit to the Internal Market Monitor.

8 Q Is it true that for new participants, they're  
9 assumed not to qualify until they establish that  
10 they, in fact, qualify?

11 A It is very much true that they have to go what  
12 we call a show of interest process where they  
13 gather, they gain their qualifications. A  
14 resource can't just show up on January 31st and  
15 participate, a new resource can't just show up  
16 January 31st and participate in the Forward  
17 Capacity Auction in February of each year.

18 Q And after the Internal Market Monitor reviews  
19 all of the information required of the new  
20 participant, the IMM, Internal Market Monitor,  
21 can mitigate the participant's price upward, can  
22 it not?

23 A The IMM has the ability to set what we call a  
24 Minimum Offer Price threshold for a Project, and

1           it will do so on the basis of its review and  
2           examination of the data provided by the Project  
3           sponsor.

4       Q     So if the IMM mitigates a new participant's  
5           price upward, that may knock the participant out  
6           of its price clearing in the Auction, correct?

7       A     Well --

8       Q     That can happen?

9       A     It could. It depends on how the price clearing  
10          process in the Descending Clock Auction unfolds  
11          and whether the prices get below that Minimum  
12          Offer Price that has been set by the Internal  
13          Market Monitor for the Project.

14      Q     Right. Right. So, and to summarize, a new  
15          participant has to qualify, one of the points of  
16          qualification is that the IMM looks at a number  
17          of things including costs, the IMM sets a  
18          minimum price for that new participant, and that  
19          minimum price may or may not clear the Auction,  
20          correct?

21      A     Yes.

22      Q     Okay.

23      A     That is the process.

24      Q     And for new participants, once the IMM sets

1 their Minimum Offer Price, that's the price  
2 which they submit to the Auction, correct?

3 A Yes. New participants actually do submit an  
4 offer. Existing resources don't submit an  
5 offer. They're price taking. They're in the  
6 Auction until they decide to leave, but new  
7 resources do actually have to put in an offer.

8 Q Right. And what we just reviewed was for a new  
9 participant, at the end of the day, their offer  
10 is going to be the Minimum Offer Price set by  
11 the IMM, the Internal Market Monitor, correct?

12 A The Minimum Offer Price approved, yes.

13 Q So what's on the screen now is Counsel for the  
14 Public's Exhibit 258 which is an actual electric  
15 bill from Eversource, and I just want to go  
16 through it and ask you a few questions about it.

17 Have you seen a Eversource electric bill  
18 before?

19 A Not for very long time. Well, I haven't seen an  
20 Eversource electric bill. I remember living in  
21 Connecticut at one point in seeing a NU bill,  
22 but --

23 Q Okay. Well, this is a, I'll represent to you,  
24 this is an Eversource electric bill for a New

1 Hampshire customer. Okay? And you see on, for  
2 this particular customer you see --

3 PRESIDING OFFICER HONIGBERG: Mr. Pappas,  
4 can you have this expand a little bit?

5 MR. PAPPAS: Sure.

6 BY MR. PAPPAS:

7 Q So if you see on the left-hand side in that  
8 little box, this service period was from April  
9 12, 2017, to May 9, 2017, for 27 days. Do you  
10 see that?

11 A Yes, I do.

12 Q And during that period, this customer used 89  
13 kilowatts, correct?

14 A 89 kilowatt hours, I believe.

15 Q Kilowatt hours. Yes. Thank you. And if you go  
16 over to the right-hand side, you have the  
17 charges. Do you see that?

18 A Yes.

19 Q And for supplier, which is Eversource, the  
20 Energy Charge for those 89 kilowatt hours is the  
21 89 times roughly 11.2 cents for \$9.94 which was  
22 the Energy Charge for this bill for this  
23 customer, correct?

24 A I see that. Yes.

1 Q And then down below you see delivery, and you  
2 see a number of other charges such as  
3 Distribution Charge, Transmission Charge,  
4 Stranded Cost Recovery Charge, Systems Benefits  
5 charge, do you see all those?

6 A Yes.

7 Q For purposes of our discussion today, and the  
8 potential impact of NPT on a customer's bill,  
9 would you agree with me that the potential  
10 impact would be to the Energy Charge of the  
11 bill?

12 A Theoretically, yes. That's where the wholesale  
13 market cost would flow through. I'm just not  
14 familiar with rate R. I don't know if there's  
15 some exclusions or whatnot to that particular  
16 rate schedule.

17 Q This is a residential customer. And if you look  
18 at the second page of this customer's bill, it  
19 shows that the Supply charge or Supply cost for  
20 this period was \$9.94, and all those Delivery  
21 charges added up to 19.11 cents. Do you see  
22 that?

23 A Yes. I see that.

24 Q Okay. So in terms of the Energy Charge for the

1 supplier, would you agree with me that that  
2 Energy Charge includes the cost for the  
3 wholesale energy market, a portion of the cost  
4 for capacity, and some ancillary services?

5 A Yes.

6 Q That makes up the Energy Charge, right?

7 A I think, again, generically, I would agree. I  
8 just am not familiar with the rate R here in New  
9 Hampshire, but I'll take that as a subject to  
10 check.

11 Q Okay. And so in order to provide economic  
12 benefit to this customer or any customer,  
13 Eversource customer in New Hampshire, the 11.170  
14 charge, that charge, that rate has to come down,  
15 correct? That's where the benefit will float  
16 through?

17 A That's where the wholesale electricity market  
18 benefits would flow through, and specifically  
19 the market price reduction components of the  
20 electricity market benefits. There's other  
21 types of benefits that are more system-wide like  
22 production cost savings. Those are not  
23 reflected directly here.

24 Q Right. So as we spoke about this morning, about

1 90 percent of the benefits are from the  
2 wholesale Capacity Market, and the rest from  
3 others and it's through that rate that those  
4 benefits would flow, correct? The rate being  
5 the Energy Charge of roughly 11.02?

6 A Yes.

7 Q So when LEI did its analysis, starting with your  
8 October 15, 2015, report, you considered that  
9 adding 1090 megawatts from the NPT Project would  
10 provide some economic benefit, and what you  
11 sought to do was to quantify that benefit; is  
12 that right?

13 A Yes. We first quantified the electricity market  
14 impacts, estimated whether there would be  
15 benefits from the electricity market, and then  
16 we considered how those would translate to  
17 economic benefits as measured by GDP and  
18 employment which we talked about earlier today.

19 Q Yes. And what you did is that you first  
20 forecast what you called was a Base Case for a  
21 period of 11 years, correct?

22 A Yes.

23 Q And that was your forecast of what the market  
24 would look like over the next 11 years or

1           actually from 2019 going forward if NPT was not  
2           built, correct?

3           A     Yes.

4           Q     And then you forecast what you called the  
5           Project Case which was your forecast of the same  
6           11-year period as if NPT was built, correct?

7           A     Yes.

8           Q     And in the Project Case, you always assumed that  
9           NPT would qualify and clear in the Forward  
10          Capacity Auction and that 1000 megawatts would  
11          qualify and clear in the Forward Capacity  
12          Auction, correct? That was one of the  
13          assumptions you used in your Project Case?

14          A     Well, the client provided us, as we described,  
15          with a CSO level, 1000 megawatts, and it seemed  
16          quite intuitive to me that it would, a  
17          competitive Project would like this, would be  
18          able to qualify and clear in the Capacity  
19          Market.

20          Q     You didn't model or forecast any scenario where  
21          NPT was built, but it did not qualify or clear  
22          in the Forward Capacity Auction, correct? You  
23          didn't model that possible scenario?

24          A     No. We did not.



1 Q Okay. And you didn't model any scenario where  
2 less than 1000 megawatts qualified and cleared  
3 in the Forward Capacity Auction, correct?

4 A No. We did not.

5 Q So essentially what you modeled was the best  
6 case scenario for Northern Pass with respect to  
7 the Forward Capacity Auction which is 1000  
8 megawatt qualify and clear in the Forward  
9 Capacity Auction, correct?

10 A Well, I'm not going to describe it as the best  
11 case. I modeled what I thought would be the  
12 most likely case, the most plausible and  
13 realistic case. In fact, if I wanted to be  
14 optimistic, I could have discussed with the  
15 client modeling it at its notional thermal  
16 rating which is more than 1000 megawatts.

17 Q But any scenario that would be less than 1000  
18 megawatts qualifying clearing would be a less  
19 optimistic scenario than you modeled, correct?

20 A It would have a different set of impacts on the  
21 market. I agree. I'm not sure how --

22 Q Those impacts would be less than the impacts  
23 that your model predicted, correct?

24 A Potentially. Depends on the supply/demand

1 fundamentals and the conditions that you're  
2 thinking of and considering.

3 Q Now, you would agree with me, would you not,  
4 that the ability of any economic model to  
5 accurately forecast the future depends upon the  
6 quality of the input and the assumption,  
7 correct?

8 A Yes. I would agree that that is the case  
9 generically for any type of modeling analysis.

10 Q Right. Or in laymen's terms, garbage in/garbage  
11 out?

12 A I've used that. Occasionally.

13 Q You'd also agree with me that there is  
14 uncertainty in all future forecasts; is there  
15 not?

16 A I would agree with that as well except the  
17 magnitude or relativity of the uncertainty and  
18 where it is derived from is not always the same.

19 Q Things could change that affect the forecast?

20 A Are you asking about my forecast?

21 Q I'm asking about your forecast or any forecast.  
22 After a forecast is completed, a forecast  
23 predicts the future, does it not?

24 A Yes.

1 Q And things could change after the forecast is  
2 done that could impact that forecast, correct?

3 A Yes.

4 Q Would you agree with me that no forecast is 100  
5 percent accurate?

6 A I would generally agree with that.

7 Q And do I have it correct that your forecast does  
8 not precisely predict the 11-year period  
9 forecasted, but it's your best estimate of what  
10 will occur in those 11 years?

11 A I would agree with that characterization as  
12 well.

13 Q Okay.

14 MR. PAPPAS: Mr. Chairman, at this point  
15 I'd request to go into confidential session  
16 because from here on in, I'm going to be asking  
17 a number of questions that will involve  
18 confidential information.

19 PRESIDING OFFICER HONIGBERG: My  
20 understanding is that NEPGA also has questions  
21 to be asked in confidential session, and the  
22 thinking was to have you do your confidential  
23 questions, have NEPGA do its confidential  
24 questions, and then we'd see where we are as to

1           what else might be accomplished today. Is that  
2           consistent with everyone's understanding?

3           MR. PAPPAS: Yes. I actually intend to  
4           probably stay in confidential for the rest of my  
5           questions and then be done.

6           PRESIDING OFFICER HONIGBERG: Right. And  
7           then we'd be done, we'd pick up with NEPGA and  
8           we have the same people in the room.

9           Mr. Needleman, is that consistent with your  
10          understanding?

11          MR. NEEDLEMAN: Yes, it is.

12          PRESIDING OFFICER HONIGBERG: Let's go off  
13          the record for a minute.

14                         (Discussion off the record)

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**CONFIDENTIAL**

PRESIDING OFFICER HONIGBERG: Mr. Pappas,  
you may proceed.

MR. PAPPAS: Thank you, Mr. Chairman.

**CONTINUED CROSS-EXAMINATION**

**BY MR. PAPPAS:**

Q Ms. Frayer, let me ask you some questions about  
some of the inputs for your 2015 report.

First, you inputted a load growth for your  
2015 report, correct?

A Yes.

Q And for that, you used the 2015 CELT report?

A Yes. That's correct.

Q And CELT report is published by ISO New England?

A It is.

Q And it forecasts capacity, energy loads and  
transmission for a 10-year period?

A It doesn't forecast generating capacity. It  
forecasts peak load and total electric  
consumption.

Q Okay.

A Across different parts of ISO New England.

Q Yes.

A And it provides a snapshot of where capacity

1 stands today.

2 Q The 2015 CELT Report which you used forecasted a  
3 greater load growth than the 2016 CELT Report  
4 forecast contained, correct?

5 A Yes. I believe that is correct. And it's  
6 described, I believe, in our March 2017 report.

7 Q Right.

8 A There's a Figure 61 that highlights, I'm sorry.  
9 Wrong figure. But there's a figure that  
10 describes the date. The differences.

11 Q The actual load growth did not increase as you  
12 had used as an input for your 2015 model,  
13 correct?

14 A Well, I don't know if I would say the actual  
15 load growth. I would say ISO New England in  
16 2016 projected a slower peak load forecast than  
17 it had back in 2015, and if you go to Figure 4  
18 and Figure 5 on page 13 of our March 2017  
19 report, and I believe it is confidential,  
20 confidentially marked, you will see the  
21 comparisons.

22 Q Now, LEI's use of the 2015 CELT Report affected  
23 the estimate in your model, correct? In other  
24 words, resulted in forecasting some greater

1 benefits than if you had used the 2016 CELT  
2 Report, correct?

3 A Holding all else constant without making any  
4 other changes, a lower demand forecast would  
5 mean lower energy market benefits and a lower  
6 peak demand forecast, could mean, not  
7 necessarily, could mean a different schedule of  
8 new entry and a different timing of Capacity  
9 Market benefits but not really necessarily lower  
10 Capacity Market benefits. It changes generic  
11 new entry assumptions and so forth so there's  
12 more of a timing effect there than anything  
13 else.

14

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17 *(Redacted portion in separate transcript)*

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21 Q Yes. Now, after your 2015 forecast was issued,  
22 two generators announced their retirements, one  
23 being Pilgrim Nuclear Power Plant, and the other  
24 being Bridgewater Harbor 3, correct?

1 A Bridgeport Harbor, yes.

2 Q Thank you. And your model did not predict these  
3 two retirements, did it?

4 A The model did not predict those specific  
5 retirements, but there's further context to  
6 that. Pilgrim's a nuclear plant. Our model  
7 didn't predict the nuclear plant existing.  
8 Bridgeport Harbor 3 is retiring because actually  
9 they're building onsite a new facility. So from  
10 a net megawatt perspective, it's not that we're  
11 losing a resource. They need the space to build  
12 a resource in its place.

13 Q The point is your models didn't predict these  
14 two retirements, did it?

15 A Not those specific plants.

16 Q Now, you'd agree with me that forecasting plant  
17 retirements is a difficult thing to do, is it  
18 not?

19 A I would agree that it takes a lot of analysis  
20 and care.

21 Q You need to know an individual plant's costs in  
22 order to effectively predict whether they're  
23 going to retire or not; isn't that right?

24 A Well, I think that in our analysis what's



1 important is that we capture the general scale  
2 of the retirements, the megawatts. We may not  
3 be able to necessarily pinpoint which plant is  
4 retiring, but I think understanding the  
5 candidates for retirement, why a particular  
6 plant might choose an economic retirement, you  
7 do need to understand cost information. And we  
8 do a lot of research to develop those cost  
9 projections.

10 Q The decision whether or not any particular plant  
11 retires is unique to that plant, is it not?

12 A I would always say that the decision is unique  
13 to the plant, but it's influenced by the market  
14 conditions, and those market conditions aren't  
15 unique to the plant. It's more of a question  
16 about that plant, how it stacks up to other  
17 resources. You introduce new resources that are  
18 more competitive. Naturally in any competitive  
19 market, older resources that are less  
20 competitive will retire. It's understanding  
21 those dynamics that are important to a forecast  
22 like we've done.

23 Q But the decision of any individual plant is  
24 going to be unique to that plant because it's

1 going to be unique to that plant's costs and its  
2 cost structure and other things relative to that  
3 plant, correct?

4 A Well, it's going to be based on the economics of  
5 that plant, but what I'm suggesting is that you  
6 can estimate those economics. A big part of  
7 those economics are market prices that are not  
8 unique to that plant. What is the market  
9 delivering in terms of an energy price, a  
10 capacity price. You need to understand its  
11 operating costs, but we have lots of information  
12 on that. These plants for years and years have  
13 filed very detailed data with FERC. Something  
14 called FERC Form 1 that like boils down to  
15 individual cost line items a lot of this  
16 information.

17 Q Each plant has individual cost items that they  
18 do not make publicly available, isn't that  
19 correct?

20 A In recent years, FERC has waived the requirement  
21 to make some of this information available, but  
22 we have very good records and many of these  
23 plants have been around for a very long time.

24 Q Each plant has a number of cost items that they

1 don't include in a FERC 1 form, isn't that  
2 right?

3 A In more recent years, because of the rise of  
4 kind of competitive information, FERC, as I  
5 said, has not required that certain information  
6 be published. For example, the number of staff.  
7 You can still see labor expenses, but they don't  
8 require you to public number of FTEs. But there  
9 are other sources for that. Some of these  
10 Projects actually naturally report that in the  
11 local press and local newspapers. "We have 200  
12 employees at this plant." So there's other  
13 sources for this information.

14 Q But there is quite a bit of cost information  
15 that each plant keeps pretty confidential  
16 because it's part of their operating procedure,  
17 or part of their operations, isn't that right?

18 A I would not argue against you that there's a lot  
19 of commercial sensitivity to this information.  
20 What I'm simply saying is that there's a lot of  
21 research that we spend in getting good estimates  
22 of that information.

23 Q So do I understand that what you have are  
24 estimates of costs for different plants rather

1 than the specific cost from the plants  
2 themselves?

3 A That, unless those specific costs have been  
4 disclosed in a FERC Form 1 or an EIA form, then  
5 we are using estimates. But, again, those  
6 estimates have been researched extensively,  
7 benchmarked against other third parties and  
8 other information.

9 And we're talking about here, I don't want  
10 to make it sound like it's ubiquitous, but there  
11 are distinctions in operating costs, for  
12 example, for nuclear plant versus gas-fired  
13 steam plant. And they're technology specifics.  
14 They're size specific. They're vintage  
15 specific. And that's the type of information we  
16 have collated over the years to support these  
17 types of analyses.

18 Q In the past, LEI has failed to accurately  
19 predict plant retirements, is that right?

20 A Well, I would not say yes to that statement. I  
21 think that we have made very accurate  
22 projections based on information available at  
23 hand. We have sometimes not predicted a  
24 specific retirement, but that retirement may

1 also be due to circumstances beyond just overall  
2 market conditions and economics. It may be due  
3 to like a catastrophe at the plant, a financing  
4 decision independent of wholesale electricity  
5 markets. A number of other things. That's just  
6 a few examples.

7 What I'm putting up on the screen now is  
8 Counsel for the Public's Exhibit 259 which is an  
9 LEI press release dated January 30, 2013. Do  
10 you see that?

11 A Yes, I see the press release.

12 Q And you see your name on this press release?

13 A Yes. I'm one of the contacts on the top.

14 Q And this, in this press release, if you look at  
15 the highlighted portion at the bottom, you  
16 indicate in this press release that, quote, "As  
17 renewable energy capacity increases, total  
18 installed coal-fired capacity in New England is  
19 expected to drop to 1630 megawatts by 2018 from  
20 2283 megawatts of installed coal-fired capacity  
21 as of this year." Close quote. Did I read that  
22 correctly?

23 A Yes.

24 Q So that was a forecast that you were part of in

1 January of 2013, correct?

2 A Yes.

3 Q Now, a year after you made this forecast,  
4 Brayton Point announced that its coal-fired  
5 plant would retire in 2017, correct?

6 A I think that's about right. Yes.

7 Q And Brayton Point has 1083 megawatts of  
8 coal-fired capacity, correct?

9 A Yes.

10 Q And so your forecast in January of 2013 did not  
11 accurately predict the retirement of that 1083  
12 megawatts of coal of Brayton Point; isn't that  
13 right?

14 A No. It's not right. We actually did. This is  
15 a great example of us actually predicting  
16 economic retirements. We captured Brayton  
17 Point.

18 Q Well, looking at your press release you say from  
19 2283 megawatts of installed coal-fired capacity  
20 is going to go down to 1638, right?

21 A Yes. But also you need to look at the next line  
22 item. Factoring -- and this was, this one  
23 sentence talked about it by 2018. This is a  
24 ten-year forecast. So it goes on to say in

1 addition, LEI's forecasting cumulative  
2 retirements of roughly 5,200 megawatts in other  
3 thermal generation.

4 Q But you specifically forecasted through --

5 A We captured Brayton Point. It's just the timing  
6 might have been a couple of years off, but  
7 Brayton Point was retired in this forecast over  
8 the forecast time frame. And Brayton Point as  
9 we all know is retiring, given the announcements  
10 made about a year later.

11 Q If you subtract 1638 megawatts from 2283  
12 megawatts, that number is less than the 1083  
13 megawatts retired of coal from Brayton Point,  
14 correct?

15 A Brayton Point was coal and oil-fired.

16 Q Right.

17 A Different units. We had a different schedule,  
18 but what I'm saying is we did capture it. If  
19 you had bought the CMI Forecast which is our  
20 multi-client price forecast that had all the  
21 detailed retirements for those that paid for the  
22 subscription, you would have seen Brayton Point  
23 on the list.

24 Q Brayton Point has got a 1083 megawatts of coal,

1 correct?

2 A I'd have to check the numbers. Some is coal,  
3 some is listed as oil technically.

4 Q On the screen now is Counsel for the Public's  
5 Exhibit 260, and this is an article where the  
6 owner reaffirms 2017 closing of Brayton Point  
7 plant. Do you see that?

8 A I see the -- I don't see the article. I see  
9 just the title of the article.

10 Q We're going to see it in a minute.

11 And then the first line is that the owner  
12 of Brayton Point Power Plant in Somerset said  
13 Monday it will retire the coal-fired facility as  
14 planned in 2017. Do you see that?

15 A Yes.

16 Q I'll represent to you that Brayton Point has  
17 1083 of coal and 446 megawatts of oil.

18 A And over the forecasting time frame, as I've  
19 said earlier, that included ten years, not just  
20 the one sentence that was in the press release,  
21 we captured the Brayton Point retirement.

22 Q The press release didn't talk about ten years,  
23 did it? It talked about a year.

24 A Because I was expecting people to buy the full



1 report. That's why we issue press releases. To  
2 tell people we have a ten-year forecast. Please  
3 purchase it. We think it's very reliable and  
4 very interesting.

5 Q Now, another thing that your model forecasted  
6 for October, in your October 2015 report, was  
7 the Forward Capacity Auction Clearing Prices,  
8 correct?

9 A Starting from, I believe, I always get the FCAs  
10 mixed up, but from a future FCA, I believe, let  
11 me just go through it. Starting from 2019  
12 delivery which would be FCA #10.

13 Q Yes. So what I'm putting up on the screen is  
14 Counsel for the Public Exhibit 265 which is  
15 Figure 21 from your October 2015 report. Do you  
16 recognize that?

17 A Yes. I do recognize it.

18

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21 (Redacted portion in separate transcript).

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2 Q What we're putting on the screen now is Counsel  
3 for the Public's Exhibit 262 which is a document  
4 from ISO New England, and as part of this  
5 document is a summary of Forward Capacity  
6 Auctions #1 through #11. Do you see that?

7 A Yes, I do. Well, on the screen right now we  
8 have 4 through 11 but yes.

9 Q If you look at this document, you will see that  
10 on the far right side is the Clearing Price. Do  
11 you see this?

12 A Yes, I do see that.

13

14

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16 *(Redacted portion in separate transcript)*

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20 A There were some -- and I can explain the  
21 difference.

22 Q Is that a yes or no?

23 A Yes to the numerical value, but there's a very  
24 good explanation if you're interested in why.

1 Q You'll have a chance -- we need to get through  
2 this. For FCA #11 --

3 PRESIDING OFFICER HONIGBERG: Mr. Pappas, I  
4 think, so we don't forget, if you don't mind,  
5 I'd like to have her offer that explanation for  
6 the difference. I know it just delays us a  
7 moment or two, but if it's okay with you, why  
8 don't we hear that explanation now.

9 MR. PAPPAS: That's fine. If the Committee  
10 would like that.

11 A Thank you, Chairman. I will try to make it  
12 brief.

13 There were a number of changes that  
14 happened between prior FCAs and FCA #9, 10 and  
15 11 and in between those, we introduced the  
16 demand curve, which if you can tell, created  
17 quite a big uplift in price and created an  
18 incentive that I like to describe as a clarity  
19 in the pricing outcomes and an incentive for new  
20 investment.

21 And, frankly, the FCA #10 was our first  
22 year that we really got in significant new  
23 investment, but they were unique Projects, they  
24 were repowering opportunities generally or

1 projects that had already been far along in  
2 development, for example, like the Towantic  
3 plant in Connecticut that had been developed,  
4 sited, I think, and had spent a lot of money but  
5 didn't continue and were waiting for this  
6 opportunity for market rules to really incite  
7 that investment.

8 There was also some additional updates  
9 through the installation of turbines at existing  
10 sites so that is the difference that we didn't,  
11 that we didn't anticipate the, those what I  
12 would call one-off opportunities at upgrading  
13 some of the existing site capacity or  
14 reconsidering new projects that are lower cost,  
15 low hanging fruit than new entry.

16 Then in FCA #11 we had actually market rule  
17 change, the demand curve changed that shape that  
18 we were discussing before and that was one of  
19 the drivers behind the data request that  
20 required us to put in the updated analysis.

21 We didn't anticipate that demand curve  
22 change, and, frankly, the ISO didn't announce it  
23 until after our report was complete.

24 PRESIDING OFFICER HONIGBERG: All right.

1           Sorry to break up the flow, Mr. Pappas.

2           MR. PAPPAS: That's okay.

3 BY MR. PAPPAS:

4           *(Redacted portion in separate transcript)*

5

6 A       Yes. Under the linear demand curve.

7 Q       And the actual Clearing Price for FCA #11 was  
8       5.30, correct?

9 A       Due to the change in market rules.

10 Q      Okay.

11 A      And the reduction in what we call the ICR,  
12      Installed Capacity Requirement, which was driven  
13      by ISO's revisions to its peak demand forecast.

14

15       *(Redacted portion in separate transcript)*

16

17 A      From before we changed the model to address the  
18      new market rules, it wasn't as big of an impact.  
19      If you actually go to the updated analysis --

20 Q      Let me stick you with my question because it  
21      works a little bit better.

22 A      Okay.

23 Q      The difference between what you forecasted for  
24      FCA #11 and what actually occurred was about a

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*(Redacted portion in separate transcript)*

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11 A The words you are stating are correct.

12 Q Thank you.

13 A But the impression you leave is not correct.

14

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*(Redacted portion in separate transcript)*

16

17 Q Thank you. Now, the trend for FCA #10 to FCA  
18 #11, actually the trend from FCA #9 to FCA #10  
19 was a downward trend in price, correct?

20 A There is no trend when you're changing market  
21 rules. That doesn't establish a trend just  
22 because you have a high number and a low number.  
23 You need to understand what the market rules  
24 were and the conditions that resulted in those

1 prices.

2 Q The price went down, did it not?

3 A I would agree with that. Doesn't mean it's a  
4 trend.

5 Q That's going downwards, is it not?

6 A Downwards with different market rules.

7 Q And you also, but you didn't, you didn't  
8 estimate a downward trend, did you?

9 A I estimated different market rules. Projected  
10 on the --

11 Q You didn't estimate a downward trend, did you?

12 A I estimated --

13 Q And the trend that you estimated from FCA #10 to  
14 FCA #11 was an upward trend and the actual trend  
15 was a downward trend, correct?

16 A Numerically, yes, that's correct.

17 Q Thank you. Now, you also didn't estimate the  
18 amount of new generation entering, correctly  
19 estimate the amount of new generation entering  
20 the market for FCA #10, correct?

21 A I actually explained that a few minutes ago.  
22 Yes. You're right.

23 Q Thank you. And you didn't estimate when we got  
24 to FCA #11 the amount of new demand resources

1 entering, correct?

2 A That's correct as well.

3 Q Thank you. So forecasting the Forward Capacity  
4 Auction, and I think what we just went through  
5 demonstrates forecasting the Forward Capacity  
6 Auction with precision is very tough to do; is  
7 it not?

8 A Precision is difficult in any forecast. Our job  
9 is to try to forecast an accurate forecast with  
10 the best available information we have at a  
11 given point in time.

12 Q And all forecasting in the energy markets have  
13 uncertainty, do they not?

14 A I think I've answered that question. So that  
15 would be a resounding yes, there are  
16 uncertainties in forecasts.

17 Q Now, when you did your updated forecast in  
18 February of 2017, you used the same methodology  
19 that you had used for your October 2015 report;  
20 is that right?

21 A Yes. In the sense that we started with a Base  
22 Case, updated to the latest information, and  
23 then had a Project Case so if that's the  
24 methodology you're referring to, I would agree.



1 Q And you used your same two internal economic  
2 models, correct?

3 A Yes.

4 Q And, obviously, you changed some of the inputs  
5 and some of the assumptions and you adjusted to  
6 some of the changes in the market, correct?

7 A Correct.

8 Q And, for instance, you used the 2016 CELT  
9 Report, correct?

10 A Yes, because it was available at the time.

11 Q And, admittedly, the 2017 CELT Report was not  
12 available to you, correct?

13 A Correct.

14 Q And when the 2017 CELT Report came out, it  
15 showed the load growth or demand forecast  
16 actually continuing to fall from 2016, correct?

17 A Yes. It is showing a lower consumption over  
18 time.

19 Q So would you agree with me that, all else being  
20 equal, lower energy consumption would result in  
21 lower energy market benefits from any Project  
22 like NPT?

23 A Holding all else constant, I would agree with  
24 that statement in principle.

1 Q All other things being equal, had you used the  
2 2017 CELT Report rather than the 2016 CELT  
3 Report in your updated forecast, it would have  
4 lowered the amount of benefits forecasted,  
5 correct?

6 A Energy market benefits, yes, holding all else  
7 constant and so forth.

8 Q Okay. Now, in your February 2017 forecast, you  
9 predicted that no generator or demand resource  
10 would seek to de-list in FCA #11, correct?

11 A Are you talking about the March 2017, the  
12 updated analysis?

13 Q Correct. When I refer to February 2017, I  
14 understand that March just corrected a few  
15 typographical errors, correct?

16 A Yes.

17 Q So I generically refer to February 2017 because  
18 that's when the update came out, but I'm  
19 referring to, when I say February 2017, it  
20 includes March 2017 with the typographical  
21 corrections.

22 A So your question was that predicted -- I just  
23 don't want to misstate it. Did we predict no  
24 de-lists? Is that the question?

1 Q Correct.

2 A Well, we did have de-lists. We had New York  
3 Imports which are capacity resource de-listing  
4 in the Project Case.

5 Q How many megawatts?

6 A 500 megawatts. It's described on page 17 of the  
7 updated analysis.

8 We also had retirements that hadn't been  
9 anticipated like Pilgrim Nuclear. Essentially  
10 that would be retirement, an exit or de-list  
11 from the supply stack because that had been  
12 announced in October 2015 once we were done with  
13 the analysis in the original report and that was  
14 closing in June 2019. So Pilgrim is, of course,  
15 still operating but down in the future it will  
16 be exiting the Capacity Market.

17 Q Okay.

18 A All of our assumptions for the updated analysis  
19 are contained within the updated analysis, and I  
20 believe we responded to many data requests from  
21 your experts on details, inputs and outputs  
22 relating to that analysis. So they're all, to  
23 my knowledge, in the record.

24 Q Would you agree with me that given the

1           uncertainty that exists and the difficulty in  
2           precisely forecasting the energy markets that  
3           much like your October 2015 report, your  
4           February 2017 report is unlikely to be precisely  
5           accurate for the 11-year period it forecasted?  
6        A    Precision and accuracy are two different things  
7           to a forecaster. I have never said that my  
8           forecasts are precise. If market conditions  
9           change and evolve in ways that we hadn't  
10          anticipated, then actual market conditions will  
11          differ which really relates back to accuracy  
12          from what we have modeled. But if actual market  
13          conditions are as predicted, then I feel our  
14          forecast is very accurate, and we should keep in  
15          mind that actual market conditions can go both  
16          ways. They can actually increase the benefits  
17          in ways that we haven't anticipated. We lose  
18          another resource unexpectedly that we hadn't  
19          anticipated losing, maybe another nuclear plant,  
20          maybe another large gas-fired facility, a  
21          project like Northern Pass creates significant  
22          insurance for consumers across the entire region  
23          against those types of events and what that  
24          could mean to prices. And we did capture that.

1           So if you were going to ask did we model it, we  
2           didn't model it, but it's --

3       Q     Excuse me. Do you remember my question? I  
4           didn't think so. So let me get back to my  
5           question.

6                     Given the uncertainty in energy markets and  
7           the difficulty in modeling in the future, would  
8           you agree with me that having a ten-year  
9           forecast be precisely accurate is extremely  
10          difficult, if not impossible?

11       A     I think I did answer your question.

12       Q     And the answer is? You agree with me.

13       A     The answer is that I wouldn't use the word  
14          precise and accurate side-by-side, but I agree  
15          with you that uncertainties will result in  
16          different conditions from what we've modeled if  
17          those uncertainties are meaningful.

18       Q     So if the market changes in the future, that's  
19          going to affect your forecast, correct? Just  
20          like we saw changes affected your October 2015  
21          forecast.

22       A     It might go up. It might go down.

23       Q     My question was it's going to affect it, would  
24          it not?

1 A It could affect it, yes.

2 Q It could or it would?

3 A Market conditions can change and it could not  
4 actually affect the benefits we're measuring.  
5 It might affect absolute price levels but not  
6 benefits. We're not interested in a forecast of  
7 absolute price levels. We're interested in how  
8 a new supply resource through competition lowers  
9 the price of energy, the price of capacity. So  
10 it's looking at the difference in prices.

11 Q So on the screen is Counsel for the Public's  
12 Exhibit 264 which is your Figure 13. Do you see  
13 that?

14 A Yes. I do see it.

15 Q Okay. And this is from your updated report,  
16 right?

17 A Yes.

18 Q And what you are showing and I've highlighted  
19 it, you're showing the capacity price reduction  
20 for the period of time that you have forecasted;  
21 do you see that?

22 A Yes.

23 Q And what we see is down on the bottom, you've  
24 translated that into dollar benefits, and I've

1 highlighted "New Hampshire." Do you see that?

2 A Yes.

3

4 (Redacted portion in separate transcript)

5

6

7 A Correct.

8 Q And the bulk of the benefits that you're

9 forecasting really appear in a five-year period

10 from FCA #14 through FCA #18; do you see that?

11 A Yes, because we have assumed the market will

12 properly function and rebalance itself as

13 quickly as possible.

14 Q So, essentially, what you're forecasting is NPT

15 would provide wholesale Capacity Market benefits

16 for, significant benefits for about a four or

17 five year period and you've identified those,

18 correct? And you've quantified what you predict

19 or forecast those benefits to be.

20 A The Capacity Market benefits. There are other

21 benefits that continue for much longer as a

22 result of the electricity market impacts.

23 Q I'm asking you about wholesale Capacity Market

24 benefits, correct?

1 A Yes. But your question actually didn't include  
2 the word capacity. That's why I answered it  
3 that way.

4 Q And am I correct that this is about, according  
5 to your forecast, this is about 90 percent of  
6 the economic benefits that you've forecasted for  
7 this project? We talked about that earlier.

8 A I don't want to confuse the Committee. It's 90  
9 percent of the wholesale electricity market  
10 benefits. There are other types of benefits  
11 that accrue that we discuss and actually that we  
12 start discussing right below this figure.

13 Q Now, we talked about earlier that what you  
14 forecasted was one scenario which was NPT would  
15 qualify and clear 1000 megawatts in the Forward  
16 Capacity Auction, and as a result these are the  
17 economic benefits that you forecasted would  
18 result from that, correct?

19 A This is the scenario with 1000 megawatts in  
20 these conditions. We have a different set of  
21 conditions and market rules that we presented in  
22 our original report. I could treat that as  
23 another scenario. And we have yet another  
24 scenario that we modeled in response to specific



1           discovery data request that is a variation on  
2           this that looks at a different set of other  
3           supply conditions in the market. But they all  
4           include 1000 megawatts of CSO for Northern Pass.

5       Q     Thank you. And just so that we're clear, you  
6           didn't forecast any other scenario where no  
7           megawatts would clear and qualify or less than  
8           1000 megawatts would clear and qualify, correct?

9       A     I did not model those as I didn't think it was  
10          realistic or probable.

11      Q     They are possible; would you agree with me?

12      A     Hypothetically.

13      Q     Hypothetically. It's possible. Is it not?

14      A     I would say hypothetically. I don't see how  
15          practically it's plausible.

16      Q     That's your opinion.

17      A     My professional opinion.

18      Q     Others could disagree with you, correct?

19      A     I welcome disagreement, yes.

20      Q     And other professionals could have a different  
21          view on whether or not NPT would qualify and  
22          clear, correct?

23      A     They could. Yes.

24      Q     And other professionals may believe that it's

1 more likely than not that NPT would not qualify  
2 and clear in the forward Capacity Market,  
3 correct?

4 A I don't know what data they're relying on for  
5 that opinion, but -- can't talk about others.  
6 Ask me questions about me.

7 Q Would you agree with me that another  
8 professional could have that opinion?

9 A Others can have whatever opinions they want.

10 Q Okay. So let me ask you some questions about  
11 NPT qualifying for the Forward Capacity Auction.  
12 Now, in order to do so, ISO New England must  
13 determine that there's sufficient HQS efficient  
14 excess capacity in order to qualify, correct?

15 A ISO will have to be comfortable that whoever is  
16 the sponsor of the capacity will have the  
17 resources to meet their obligation.

18 Q In this instance, we're talking about HQ, are we  
19 not?

20 A We are talking about an affiliate, a division or  
21 subsidiary of HQ most likely, yes, because of  
22 the Transmission Service Agreement.

23 Q Okay. So what we've put on the screen is  
24 Counsel for the Public Exhibit 266 which is from

1 your April 2017 updated report, correct?

2 A Correct.

3 Q And that is Applicant's Exhibit 102, and this  
4 exhibit is your analysis to conclude that HQ has  
5 1,527 excess capacity to allow qualification in  
6 the Forward Capacity Auction, correct?

7 A In the winter it has, based on our analysis for  
8 2021 1,527 megawatts for export. The reference  
9 to the winter is actually in the text preceding  
10 this figure.

11 Q So this is excess capacity during the winter in  
12 Quebec?

13 A Exactly. In the summertime, the number is  
14 multiples of this, much greater.

15 Q Now, you did this analysis by looking at the  
16 various sources listed on the right, correct?

17 A Correct.

18 Q So you pieced together this analysis from these  
19 different documents that we see cited, correct?

20 A Yes. I performed this analysis using these  
21 various primary sources.

22 Q And the first primary source you cite for number  
23 one, available generation, is HQP Capacity  
24 Demonstration December 2016; do you see that?

1 A Yes. That's a document that's filed with the  
2 regulator in Quebec, Regie, and it's  
3 specifically speaking to Hydro-Quebec  
4 Production's available generation because that's  
5 the relevant entity, as we've said multiple  
6 times, that needs to be evaluated.

7 Q What is on the screen is Counsel for the Public  
8 Exhibit 267. Annexe C. Do you see that?

9 A Yes.

10 Q Do you read French?

11 A Poorly.

12 Q Me, too. Is this the document you were  
13 referring to in the French version?

14 A This is a type of the document. I think this  
15 one is from an earlier, this is, if I'm --

16 Q Let's go to the second page and maybe that will  
17 help.

18 A Yes.

19 Q And do you see the number?

20 A Yes.

21 Q 39,729?

22 A Yes.

23 Q And that corresponds with the first number on  
24 your analysis?

1 A Yes.

2 Q Since it's been a while since I took French, we  
3 had that Exhibit 267 translated into Counsel for  
4 the Public's Exhibit 268. And if you see at the  
5 top it is the same document that we saw in the  
6 French version, do you see that?

7 A I see the translation, yes.

8 Q And if you look down, you see the Available  
9 Generation on Peak, the same number you had,  
10 39,729?

11 A Yes.

12 Q Is this the source of your starting point for  
13 your analysis?

14 A Yes.

15 Q If you look at the top, this is dated 12  
16 December 2016. Do you see that?

17 A Yes.

18 Q What we're putting on the screen now is Counsel  
19 for the Public's Exhibit 269 which is a document  
20 from Hydro-Quebec's Production website. Do you  
21 recognize that?

22 A I've looked at the website, yes, before.

23 Q And if you see, it has Generating Facilities,  
24 Installed capacity, 36,903 megawatts. Do you

1 see that?

2 A Yes, but that's not the right number to use in  
3 our analysis.

4 Q And it has Hydroelectric, 36,366 megawatts, do  
5 you see that?

6 A Yes.

7 Q And it indicates it has some footnotes for  
8 thermal, and then if you -- it also has other  
9 sources of supply, do you see that?

10 A Yes. One of the most important is actually  
11 Churchill Falls.

12 Q Full disclosure. We're getting there.  
13 Churchill Falls, it has 5,428 megawatts, do you  
14 see that?

15 A Yes.

16 Q And Churchill Falls is a hydroelectric power  
17 generating facility?

18 A Yes.

19 Q And it has some wind and some biomass and so  
20 forth. So is it your analysis that you have to  
21 add the Churchill Falls generating station to  
22 the installed capacity to get up to a higher  
23 number than the 36,903?

24 A Partially, but the other issue is this is

1 installed capacity, and we're not looking at  
2 installed capacity. We need to, if you go back  
3 to your translation, it was very specific. It  
4 talked about available capacity at peak. So we  
5 wanted to have that adjustment there as well.  
6 This is why the demonstrations are much better  
7 than relying on the website, which has a sort of  
8 different purpose in mind than looking at  
9 supply/demand balance.

10 Q So what we're putting up now is Counsel for the  
11 Public's Exhibit 270, and this is the Annual  
12 Report for Hydro-Quebec. Do you see that?

13 A Yes. I see the cover page.

14 Q Okay. And here it indicates that their  
15 generating capacity is 36,908 megawatts, do you  
16 see that?

17 A And it says in finer print, for generating  
18 stations operated by Hydro-Quebec. Hydro-Quebec  
19 doesn't operate Churchill Falls.

20 Q That's the same number that we saw on the prior  
21 document, correct?

22 A Possibly, yes.

23 Q Well, we'll show it to you. See the 36,903  
24 installed capacity?

1 A Yes.

2 Q Okay. Now --

3 A It's not exactly the same number but close  
4 enough.

5 Q So as I understand it, what you do is you add  
6 Churchill Falls in order to -- let's see what  
7 you did.

8 In order to get to the 39,729, did you add  
9 the Churchill Falls capacity?

10 A I didn't need to add it. As you showed in the  
11 first document, it's in the Regie, the  
12 regulators's official document about available  
13 generation for Hydro-Quebec Production.

14 Q So you just --

15 A But it is included, if that's your question.

16 Q All right. So I want to understand how you got  
17 there.

18 Now, looking back at the document that you  
19 relied upon, it had down below the reserves  
20 required to meet 0.1 days a year reliability  
21 criteria. Do you see that?

22 A Yes.

23 Q Did you back that out of the 39,729?

24 A Yes. It's line 13 in my table.



1 Q Okay. Then you also included in your table all  
2 of the, looks like degeneration from La Romaine  
3 plant. Correct?

4 A The remaining generation that is under  
5 construction currently that wouldn't be captured  
6 in the Regie document from the winter of 2016  
7 but will be on line before 2021.

8 Q Okay. If you look at your, you had that as  
9 number 3, 640 megawatts?

10 A Yes.

11 Q Now, La Romaine #3 is to be commissioned at the  
12 end of this year, correct?

13 A I believe so. I haven't checked recently,  
14 but --

15 Q Well, it's actually, if you look down in your  
16 footnote, you actually say that.

17 A Yes. Thank you. Yes.

18 Q And that's 295 megawatts?

19 A Yes.

20 Q And Romaine 4 is to be commissioned at the end  
21 of 2020, correct?

22 A Yes.

23 Q And that's 245 megawatts?

24 A Yes.

1 Q So you included those two amounts as part of  
2 your analysis?

3 A I have included those as resources available to  
4 Hydro-Quebec Production who will be owning and  
5 operating those resources.

6 Q And if for whatever reason one or the other or  
7 both of those don't get commissioned as  
8 scheduled, they won't be available come 2021,  
9 correct?

10 A If there's a reason for that -- if that occurs,  
11 yes. Mathematically, that's correct.

12 Q And then you also have a number 4, Ontario  
13 Electricity Trade Agreement, 500 megawatts, you  
14 see that?

15 A Yes.

16 Q And I understand that Ontario supplies 500  
17 megawatts of capacity to Quebec from December to  
18 March; is that right?

19 A Yes. It's part of a broader trade agreement  
20 between Ontario and Quebec.

21 Q And that agreement runs through 2023; is that  
22 right?

23 A Yes. That's the current term of the agreement.

24 Q And the reason HQ, one of the reasons HQ

1 receives that capacity is because HQ doesn't  
2 have sufficient capacity in the winter months,  
3 is that right? They have to procure capacity in  
4 their peak period in the winter?

5 A The entity that is a counterparty to the ISO,  
6 the Ontario system operator, is not HQD who's  
7 responsible to have sufficient capacity for  
8 Quebec. It's actually HQP. The purpose of that  
9 trade agreement is really to help Ontario meets  
10 its carbon emission reduction goals as it's  
11 implementing its new carbon tax regime.

12 Q Now, if that 500 megawatts of capacity doesn't  
13 continue after the year 2023, that would not be  
14 available as part of qualifying for FCA #12,  
15 correct?

16 A That is correct. And I believe Hydro-Quebec has  
17 actually planned for that contingency.

18 Something that we haven't included here but  
19 that they've specifically said is a substitute  
20 for this is uprates that they are working on for  
21 their facilities, and that's in one of your  
22 other exhibits. Perhaps even in the Annual  
23 Report, but definitely in the strategic plan.

24 Q Now, what's on the screen now is Counsel for the

1 Public's Exhibit 272 which is an article dated  
2 October 20, 2016, and if you look at the  
3 highlighted sections, it talks about Quebec  
4 being able to turn to Ontario during peak  
5 periods when very cold temperatures will  
6 increase electricity consumption, do you see  
7 that?

8 A I do see the highlighted portions, yes.

9 Q And it refers to the 500 megawatts of power made  
10 available from Ontario?

11 A Well, yes, it's referring to that trade  
12 agreement, but it's not a fulsome picture of  
13 what that trade agreement is about.

14 Q And it says "At present, Hydro-Quebec is often  
15 forced to buy at high energy prices in the  
16 United States to meet its electricity needs  
17 during the peak winter season." Do you see  
18 that?

19 A I see that statement, but it's a newspaper  
20 article. And I think for the purposes of our  
21 analysis when we're looking at supply and  
22 capacity, really it's an empirical analysis, one  
23 needs to go to the source which is the trade  
24 agreement, and the Ministry of Energy in Ontario

1 publishes all that documentation.

2 Q So the earliest NPT could participate in the  
3 Forward Capacity Auction would be FCA #12,  
4 correct?

5 A Yes. I think so.

6 Q Well, we've already had FCA #11, haven't we?

7 A Yes.

8 Q Okay. And if they participated in FCA #12, that  
9 would start 40 months after February 2018,  
10 correct?

11 A Yes.

12 Q That would be in, essentially, at the end of  
13 June 2025.

14 A No.

15 Q Oh, I'm sorry. July 2022.

16 A It would be June 2021 through May 2022.

17 Q All right. Correct. And then if they missed  
18 that, they'd have to go into FCA #13, correct?

19 A Yes. That is correct.

20 Q And then that would start a year later, correct?

21 A Yes.

22 Q Right?

23 A Yes.

24 Q Okay.

1           PRESIDING OFFICER HONIGBERG: Mr. Pappas,  
2           off the record.

3                           (Discussion off the record)

4           PRESIDING OFFICER HONIGBERG: Back on the  
5           record.

6   **BY MR. PAPPAS:**

7   Q   Now, looking back at your summary, if, for  
8       instance, La Romaine didn't materialize and the  
9       Ontario Trade Agreement didn't renew, that would  
10      consume most of the excess capacity, would it  
11      not?

12   A   It would lower the number, but as I said, we  
13      haven't considered other options that  
14      Hydro-Quebec has actually announced as stopgaps  
15      to the extent that -- I wouldn't even call them  
16      stopgaps. Other initiatives that they have  
17      announced to increase this surplus capacity. It  
18      is in their strategic plan. They've talked  
19      about 500 megawatts of uprates at existing  
20      facilities, programs that they have already  
21      begun and started.

22   Q   Well, their strategic plan talks about looking  
23      in the future, determining whether they're going  
24      to build more dams, does it not?

1 A It talks about operations, too. It's a  
2 wholesale look at everything that's happening.

3 Q Okay.

4 A But you're right. It does also talk about the  
5 potential, if necessary, to build more dams in  
6 the very long term, too.

7 Q Okay. Now, you didn't, HQ or its subsidiary of  
8 HQ is NPT's joint venture for the Northern Pass  
9 Project, correct?

10 A I don't know if I would say joint venture. A  
11 subsidiary of Hydro-Quebec is the counterparty  
12 to the Transmission Service Agreement.

13 Q Right. And HQ could provide documentation to  
14 definitively state whether they have access  
15 capacity or not, could they?

16 A I don't know. I guess, if you asked them, I'm  
17 sure they could respond to your request.

18 Q No, no, no. My question is, if HQ wanted to, it  
19 could produce documentation, its own  
20 documentation to establish what its capacity is  
21 and whether it has excess capacity to qualify  
22 for the Forward Capacity Auction, could it not?

23 A Well, it's going to have to provide  
24 documentation as a shipper and a sponsor of a

1 new resource in the Capacity Auction.

2 Q Right, but it didn't do that as part of this  
3 proceeding, did it?

4 A I didn't ask HQ to do that.

5 Q Instead of HQ doing that, you made an analysis  
6 that used various sources to come up with an  
7 estimate of excess capacity, correct?

8 A Yes. I used HQ's own primary source data to do  
9 the simple math here to show that they have  
10 surplus capacity for exports.

11 Q This is a good time to break.

12 PRESIDING OFFICER HONIGBERG: Why don't we  
13 take a ten-minute break here.

14 (Recess Taken 3:31 - 3:50 p.m.)

15 PRESIDING OFFICER HONIGBERG: Mr. Pappas,  
16 you may proceed.

17 MR. PAPPAS: Thank you, Mr. Chairman.

18 BY MR. PAPPAS:

19 Q Ms. Frayer, I want to now ask you some questions  
20 about the other, another requirement of the  
21 Forward Capacity Auction for new participants,  
22 and that's whether or not the offer price would  
23 clear. Okay? Now, ISO New England would assess  
24 NPT as an Elective Transmission Upgrade; is that



1 right?

2 A Yes. That's my understanding.

3 Q And that's referred to as an ETU?

4 A Yes.

5 Q Okay. Now, am I correct in saying that an ETU's  
6 Default Offer Price in a Forward Capacity  
7 Auction is the price cap in the Auction; is that  
8 correct?

9 A Less a penny, but yes.

10 Q If the Default Offer Price is too high to clear,  
11 then, obviously, they don't participate,  
12 correct?

13 A Yes. So the idea behind a very high default  
14 price is that those Projects need to submit  
15 information to the Internal Market Monitor to  
16 have their Project's specific Minimum Offer  
17 Price set.

18 Q Right. And that was going to be my next  
19 question is, that's where they start, and then  
20 the ETU, or in this case NPT, would submit that  
21 information to the Internal Market Monitor to  
22 try to have a lower price, correct?

23 A Yes, but it wouldn't be NPT. It would be the  
24 entity that would be selling capacity on the

1           Transmission Project that would submit the  
2           information.

3       Q     Okay.  So for purposes of my questioning, just  
4           to make it go easier, I'll refer to NPT and  
5           you'll understand I'm referring to the entity  
6           that actually has to submit the information.

7       A     Yes, which I would assume to be an entity that  
8           is working with Hydro-Quebec Production.

9       Q     Okay.  But I'll just refer to it as NPT because  
10          it's easier.  Okay?

11      A     Okay.

12      Q     And as we said earlier, the Internal Market  
13          Monitor reviews these offers by ETUs to prevent  
14          an ETU from offering an uncompetitively low  
15          price supported by out-of-market contracts?

16      A     Yes.  The purpose is to ensure the integrity of  
17          the competitive price signal of the Capacity  
18          Market.

19      Q     And it's the Minimum Offer Rule or otherwise  
20          known as the MOPR that is employed by the  
21          Internal Market Monitor when they look at the  
22          price, correct?

23      A     Yes.  That is correct.

24      Q     Okay.  And I think we mentioned earlier that one

1 of the things that the ETU has to submit are  
2 capital costs, and in this case NPT would have  
3 to submit capital costs to provide the 1000  
4 megawatts of highway provided; is that right?

5 A They would have to submit capital costs for the  
6 infrastructure which in this case is  
7 transmission, and then they would have to submit  
8 information on the cost of power. I wouldn't  
9 characterize that as capital cost information  
10 though.

11 Q Well, they'd have to submit capital costs on the  
12 cost to transmit the power, correct?

13 A Yes. So the transmission infrastructure. Yes.

14 Q Would they also have to supply the cost of any  
15 new generation needed to supply the power?

16 A If there was new generation, but that is  
17 actually a particular element of the  
18 application, a particular type of analysis and  
19 workbook. My understanding is that that would  
20 not apply in the instance of Northern Pass.

21 Q But if an ETU had to have new generation, the  
22 cost of that would be included in the MOPR  
23 analysis, correct?

24 A Yes. So, for example, if there's a wind farm

1 being built, and it needs a long transmission  
2 lead line to interconnect to the market, it  
3 would need to submit cost data on its wind  
4 turbines and on the transmission line.

5 Q And these costs, these capital costs are then  
6 amortized over a period of time?

7 A Yes, consistent with the type of technology  
8 we're talking about.

9 Q Okay. And in this instance, the Internal Market  
10 Monitor would determine the net costs of NPT to  
11 provide the 1000 megawatts of capacity and  
12 whether or not its price would clear in the  
13 Forward Capacity Auction, correct?

14 A Yes.

15 Q And those net costs would be reduced by the net  
16 energy revenues?

17 A Yes. That's correct. And the net costs include  
18 operating costs, not just capital costs.

19 Q And among those operating costs are fixed costs.

20 A Yes, and also the IMM would be looking at  
21 opportunity costs, if there are any, and so  
22 forth.

23 If I may, the ISO has, actually, a very  
24 standardized process for this. They publish an

1 Excel-based, a Microsoft Excel-based workbook  
2 that has a number of fields that you populate  
3 with data so the calculations and the mechanics  
4 are standardized. There isn't a lot of  
5 guesswork as to what the IMM would do.

6 Q In fact, if you go on their website, you can see  
7 that workbook, can't you?

8 A Yes. It's downloadable. Publicly available.

9 Q I tried it.

10 A And that's what we used to determine our cost  
11 estimate. Or I should say or MOPR estimate.

12 Q And the IMM translates NPT's net costs into a  
13 capacity offer, and capacity offers are a cost  
14 per kilowatt month, is that right?

15 A Capacity offers are dollars per kilowatt month.

16 Q Dollars per kilowatt month. Yes.

17 A Yes.

18 Q Now, there are a number of possible outcomes  
19 after the IMM sets the price that NPT can offer  
20 into the Forward Capacity Auction; would you  
21 agree with me?

22 A Sorry. There are a number of possible?

23 Q Outcomes. So the NPT or the ETU submits all  
24 this data, and the IMM is the one who does the

1 analysis, and it's the IMM's determination that  
2 counts, right?

3 A Yes. There's probably some recourse if there  
4 are some concerns, but it's the IMM's decision  
5 that's supposed to hold forth.

6 Q And at the end of this analysis by the IMM, a  
7 price is determined, dollar per kilowatt month,  
8 for that new participant. In this case, it  
9 would be, you know, we're talking NPT, correct?

10 A Yes.

11 Q And that price per kilowatt hour could either  
12 clear the Capacity Market or not clear the  
13 Capacity Market, correct?

14 A Yes. As the name implies, it's their offer  
15 floor. So the participant could start off  
16 higher, but they can't bid below their offer  
17 floor, and if the rounds of the Descending Clock  
18 Auction move to a price below that offer floor,  
19 it would not clear.

20 Q Right. So after a new entrance goes through  
21 this analysis by the Internal Market Monitor,  
22 gets their floor price, if you will, essentially  
23 one of two things could happen or a variant.  
24 They could clear everything they've requested or

1           they may not clear everything they seek to put  
2           into the Auction, correct?

3       A     Yes. Those are the two. They clear or they  
4           don't clear.

5       Q     Right.

6       A     Now, if they don't clear in a particular Auction  
7           they can try to clear again in the next Auction.

8       Q     No, no. That's a good point. If they miss the  
9           first Auction, they can try a year later to the  
10          next Auction, but they would go, as a new  
11          participant, they would still go through the  
12          same process, correct?

13      A     Essentially. And the MOPR is also set. Perhaps  
14          market petitions have changed. The IMM might  
15          require updates, but they would have to, again,  
16          have an offer floor, and they would have to see  
17          whether they can clear in that Auction, given  
18          their offer floor.

19      Q     Okay. Is there any limit on the number of  
20          Auctions they can try?

21      A     I don't believe there is, actually.

22      Q     Now, in your first report in October 2015, you  
23          assume that NPT's offer price in the Forward  
24          Capacity Auction would clear, correct? You

1           assume that the 1000 megawatts would clear and  
2           participate in the Forward Capacity Auction,  
3           correct?

4           A     Yes.

5           Q     Now, your October 2015 report did not include a  
6           MOPR analysis, did it?

7           A     No, because it's intuitive to me that that would  
8           not be binding on them clearing the market.

9           Q     So as part of your October 2015 analysis, you  
10          assumed that NPT would clear. That was one of  
11          your assumptions?

12          A     Based on my professional judgment, I thought  
13          there would be no constraint from a MOPR  
14          analysis for them for clearing.

15          Q     And then you were asked about that at a  
16          Technical Session, were you not?

17          A     Yes.

18          Q     And in your February 2017 update, or actually it  
19          wasn't your February 2017 update, it was in your  
20          April 2017 rebuttal or Supplemental Report, you  
21          included the MOPR analysis, correct?

22          A     Yes.

23          Q     Now, as part of your MOPR analysis and looking  
24          at the capital costs, you included the cost of



1 building the transmission line from Pittsburg to  
2 Deerfield, correct?

3 A I used the public \$1.627 billion number.

4 Q And it's your view that the Internal Market  
5 Monitor would include that number?

6 A Yes.

7 Q And that's because it's necessary to build that  
8 transmission line from Pittsburg to Deerfield in  
9 order to provide 1000 megawatts capacity in the  
10 Forward Capacity Auction, correct?

11 A Yes.

12 Q Your MOPR analysis does not include the cost to  
13 build a transmission line in Canada as part of  
14 the Northern Pass Project, is that right?

15 A That is correct. Nor should it.

16 Q Do you know from where the line from Canada  
17 meets the United States in Pittsburg, do you  
18 know where the other end of that is going to be  
19 in Canada?

20 A I don't recall. I've looked at descriptions of  
21 it in the past, but I don't recall the specific  
22 interconnection points.

23 Q Would the --

24 A And I'm not sure it's a single line, but there

1 are reinforcements that have to be made in  
2 Canada, in Quebec.

3 Q Currently, today, there is no transmission line  
4 starting in Pittsburg, New Hampshire, and going  
5 into Canada, correct?

6 A Yes. To my knowledge, yes.

7 Q And does Des Cantons substation ring a bell?

8 A Yes.

9 Q That's where the line starting in Pittsburg  
10 going into Canada is going to go to to receive  
11 this power, correct?

12 A Yes. That's one of the -- yes.

13 Q And do you recall how long that is?

14 A No. I don't recall.

15 Q And do you know, is it your understanding that a  
16 new HVDC line from Des Cantons substation in  
17 Canada to Pittsburg, New Hampshire, is going to  
18 be built as part of the Northern Pass Project?

19 A My understanding is that Hydro-Quebec  
20 TransEnergie which is the Transmission Division  
21 of Hydro-Quebec Corporate will need to make  
22 transmission investments to interconnect  
23 Northern Pass with their system.

24 Q So that line has to be built in order to

1 transmit power from HQ into the New England grid  
2 as part of the Northern Pass project, correct?

3 A Yes. That's correct.

4 Q So what I'm putting on the screen now is the  
5 cover page of the Transmission Service Agreement  
6 between Northern Pass Transmission, Inc., and an  
7 affiliate of HQ that you can't see, but it's  
8 lower on the page. So this is the cover page of  
9 the Transmission Service Agreement. Do you  
10 recognize that?

11 A Yes.

12 Q Okay. And then I have on the screen the first  
13 part of the Agreement where it talks about Hydro  
14 Renewable Energy, formerly known as HQ Hydro  
15 Renewable Energy, a corporation organized and  
16 existing under the laws of the State of Delaware  
17 as the Purchaser, and it's your understanding  
18 that that's the Canadian portion of this  
19 Project, correct, in terms of the Transmission  
20 Service Agreement?

21 A You're speaking about the paragraph in yellow at  
22 the bottom?

23 Q Well, actually, I was starting to talk --  
24 because it starts off with Northern Pass

1 Transmission, LLC, and then I highlighted the  
2 Canadian counterpart.

3 A Well, that's not a Canadian counterparty.

4 That's a US company incorporated in the US but a  
5 subsidiary of Hydro-Quebec Corporation.

6 Q Right. Right.

7 A My understanding is they're the counterparty to  
8 the Transmission Service Agreement.

9 Q That's what we're looking at.

10 A Yes.

11 Q And if you look at the highlighted part where it  
12 says whereas, it says, "Whereas, in order to  
13 permit the delivery of power from the  
14 Hydro-Quebec System for sale into the U.S.,  
15 Hydro-Quebec TransEnergie, a division of  
16 Hydro-Quebec, intends to develop, construct, own  
17 and maintain a 1200 megawatt, +/- 300 kV,  
18 high-voltage direct current transmission line  
19 from the converter station at the Des Cantons  
20 substation in the Province of Quebec to the U.S.  
21 border." Do you see that?

22 A Yes. I do.

23 Q And so that's the Canadian portion of Northern  
24 Pass Project necessary to transmit HQ hydropower

1 on the Northern Pass Transmission line for sale  
2 into the New England grid, correct?

3 A Well, I would call it, as they've defined it,  
4 the Quebec line that's necessary to interconnect  
5 Northern Pass with the Canadian system.

6 Q Yes.

7 A Okay.

8 Q What I've put on the screen now is Counsel for  
9 the Public's Exhibit 273 which is actually a  
10 Northern Pass document.

11 This is a document put out by Northern  
12 Pass, do you see that?

13 A Yes, I do.

14 Q And if you look at the highlighted portion, I'm  
15 not going to bother reading it all, but it  
16 refers to Northern Pass delivering the 1090  
17 megawatts of renewable energy, and it talks  
18 about transmission line from Des Cantons,  
19 Quebec, all the way to Deerfield, and it talks  
20 about the new line in Canada being approximately  
21 79 kilometers in Quebec. Do you see that?

22 A I do see it.

23 Q Then if you look further on in this document,  
24 the highlighted portion indicates that

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construction of 79 kilometers of the Canadian

1           portion of the line is valued at \$600 million  
2           Canadian, talks about at no cost to the New  
3           England customer, do you see that?

4           A     Yes, I do see that.

5           Q     And 600 million Canadian is about \$450 million  
6           US?

7           A     Sounds about right. Depends on where the  
8           exchange rate is these days.

9           Q     Okay. Yes. On the screen now is Counsel for  
10          the Public's Exhibit 274 which is on the  
11          highlighted part it talks about the goal of  
12          Hydro-Quebec. If you flip, it talks about  
13          connecting to the New England grid, and if you  
14          flip the page, at the top talks about the same  
15          320 kV direct line, about 79 kilometers long  
16          from Des Cantons, and it talks about the  
17          Franklin substation in southern New Hampshire.  
18          Do you see that?

19          A     I see the highlighted part, yes.

20          Q     Okay. Would you agree with me that that new 79  
21          kilometer transmission line in Canada is a part  
22          of the Northern Pass Project as a whole?

23          A     I would feel more comfortable to refer to it as  
24          the Quebec line that's necessary to interconnect

1 the Northern Pass project to Quebec. I think  
2 that's how the TSA talks about it, and I  
3 wouldn't want to recreate the wheel and give  
4 them a new definition.

5 Q Would you agree with me that the 79 kilometer  
6 transmission line in Canada is necessary for HQ  
7 to provide 1000 megawatts of capacity over the  
8 Northern Pass Transmission line into the New  
9 England grid?

10 A Yes. I would agree with that.

11 Q And would you agree with me that when the  
12 Internal Market Monitor looks at the capital  
13 costs necessary to deliver 1000 megawatts of  
14 capacity for the Forward Capacity Auction, that  
15 the Internal Market Monitor is going to include  
16 the cost of this 79 kilometer transmission line  
17 as part of the capital costs?

18 A No, I don't agree with that.

19 Q You don't think that these capital costs are  
20 necessary to deliver this 1000 megawatts of  
21 power?

22 A I have explained already that I agree with you  
23 that you need this transmission reinforcement,  
24 but I don't agree with you that it's a cost that



1 is going to be applied by the Internal Market  
2 Monitor as part of the MOPR. One needs to  
3 understand how the MOPR calculation works, and  
4 one needs to also understand who is funding and  
5 how they're funding this transmission  
6 investment.

7 Q Um-hum.

8 A And once one does understand all those facts,  
9 it's self-apparent that it shouldn't be part of  
10 the MOPR calculation.

11 Q Isn't the goal of the MOPR calculation to  
12 include all the costs necessary to provide the  
13 power for the Forward Capacity Auction?

14 A It is.

15 Q And isn't this 79-kilometer transmission line  
16 necessary to provide 1000 megawatts of power?

17 A Well, now you're playing word games. I've  
18 agreed that it's necessary, but it's not  
19 necessary to be reflected in the MOPR because of  
20 the way that this investment is being funded.  
21 This investment is going to be funded through  
22 existing transmission tariffs, and those  
23 transmission tariffs would have to be paid by  
24 HQP to HQT if they were going to ship power to

1 New England over Northern Pass or if they were  
2 going to ship power or for that matter sell  
3 capacity and then ship power to New York or  
4 Ontario or to any external market using the  
5 point-to-point tariff that HQT currently has in  
6 existence.

7 Q So the way it's funded determines whether the  
8 capital cost is included?

9 A Yes.

10 Q And not whether or not the capital cost itself  
11 is necessary to deliver the power?

12 A It's a combination of the way it's funded and  
13 also the source of energy and the opportunity  
14 costs for the shipper. If Hydro-Quebec  
15 Production can't sell capacity and, more  
16 importantly, energy to New England, it will look  
17 for other export destination markets, and in  
18 that case, it will have to pay that same  
19 Hydro-Quebec TransEnergie transmission tariff.

20 Q Well, would you agree with me that the only  
21 reason for this new 79-kilometer transmission  
22 line is to connect to the Northern Pass  
23 Transmission line in Pittsburg, New Hampshire?

24 A Well, there is a reason for that Project, yes.

1 Q Would you agree with me that HQ wouldn't be  
2 building this 79-kilometer transmission line to  
3 Pittsburg, New Hampshire, unless it was going to  
4 connect with Northern Pass's transmission line  
5 in Pittsburg, New Hampshire?

6 A I would agree that HQT, Hydro-Quebec  
7 TransEnergie, would not be building this without  
8 the request for this investment made by  
9 Hydro-Quebec Production.

10 Q If the Internal Market Monitor disagreed with  
11 your view in terms of this capital cost, roughly  
12 \$450 million US, and the Internal Market Monitor  
13 included this capital cost as part of the MOPR  
14 analysis, that would result in increasing NPT's  
15 offer price, would it not?

16 A Conceptually, yes, but I don't believe they  
17 would disagree with me on this point. Again,  
18 the documents, you've shown only part of the  
19 documents, but the document are very clear. You  
20 showed actually an earlier document from the  
21 Clean Energy RFP that also said the same thing,  
22 that New England consumers are not responsible  
23 for this cost.

24 Q I will tell you that's a debatable issue.

1           So just so I'm clear, though, if the  
2           Internal Market Monitor included the cost of  
3           this 79-kilometer transmission line, that would  
4           have an impact on NPT's MOPR price, correct?

5       A     It would, but the Internal Market Monitor  
6           shouldn't because Northern Pass nor the entities  
7           that would be counterparties in the TSA would  
8           have to pay this as an incremental capital cost  
9           above and beyond the transmission tariff they  
10          would otherwise have to pay for any export sale  
11          outside of Quebec.

12       Q     And if this \$450 million were included in NPT's  
13          MOPR price, that would increase NPT's MOPR  
14          price, correct?

15       A     If it was included, yes, it would, but it  
16          wouldn't be included, again.

17       Q     Now, the state of Massachusetts recently issued  
18          an RFP for long-term contracts for Clean Energy  
19          Projects, correct?

20       A     Yes.

21       Q     And are you familiar with the Mass. Clean Energy  
22          RFP?

23       A     I think I've reviewed drafts of the RFP and are  
24          generally familiar with the legislation. Yes.

1 Q Among other things, the state of Massachusetts  
2 is looking for contracts for hydropower?

3 A Yes. That is my understanding.

4 Q And NPT has indicated that it will enter a bid  
5 in the Mass. RFP, isn't that right?

6 A I believe so. I believe I recall, subject to  
7 check, reading something about that in the  
8 press.

9 Q I'll tell you there's been testimony that NPT  
10 hopes to be awarded a contract in that Mass.  
11 RFP. So to qualify under the Mass. RFP,  
12 hydrogeneration must be from a new generation of  
13 hydropower; is that right?

14 A It has to be new to New England. Not from a new  
15 plant.

16 Q Doesn't have to be from a new source of  
17 hydrogeneration?

18 A I didn't think it had to be from a new power  
19 plant. I think it has to be incremental or new  
20 to New England which would be more consistent  
21 with how they would then use it to achieve their  
22 Clean Energy goals.

23 Q So we're putting on the screen now the first  
24 page of the Mass. RFP. (CFP Ex 276) Do you see

1           that?

2           A     Yes.  I see it.

3           Q     Do you recognize the document?

4           A     Well, I see the document.  I might have not read  
5           this final version but yes.

6           Q     Fair enough.  So what we have on the screen now  
7           is Section 1.1 Purpose, do you see that?

8           A     Yes.

9           Q     Okay.  And if you go to the next page which  
10          continues under that Purpose, it has a  
11          highlighted paragraph under the purpose of the  
12          RFP.  Do you see that?

13          A     Yes, I see that.

14          Q     Now, I'm not going to take the time to read the  
15          whole thing.  You're welcome to do it if you'd  
16          like.  I want to draw your attention down to the  
17          last sentence that starts, the standards and  
18          criteria set forth.  Do you see that sentence?

19          A     Yes.

20          Q     Okay.  That sentence says, "The standards and  
21          criteria set forth in this RFP are designed so  
22          proposals selected for contract negotiations  
23          will serve the interests of Section 83D," and  
24          you understand Section 83D is the Mass. law?

1 A I do.

2 Q "Will serve the interests of Section 83D by  
3 furthering those projects that have a strong  
4 likelihood of being financed and constructed and  
5 that will provide a cost-effective source of  
6 long-term Clean Energy Generation to the  
7 Commonwealth." Do you see that?

8 A Yes, I do.

9 Q And you see the language that says, "have a  
10 strong likelihood of being financed and  
11 constructed." Do you see that?

12 A Yes.

13 Q Now, further in this RFP there's Section  
14 2.2.1.3, Eligible Bid Categories. Do you see  
15 that?

16 A Yes.

17 Q And one of the categories with the RFP is Clean  
18 Energy Generation from Incremental Hydroelectric  
19 Generation via Long Term Contract. Do you see  
20 that?

21 A Yes.

22 Q Is it your understanding that NPT when it bids  
23 into the Mass. RFP would be bid as an  
24 Incremental Hydroelectric Generation?

1 A I'm not privy to NPT's strategies around the  
2 Massachusetts RFP, but on a first glance, I  
3 guess that category would suit them.

4 Q Well, let me ask it this way. Are you aware of  
5 any other eligible category that NPT would fit  
6 into other than an Incremental Hydroelectric  
7 Generation?

8 A No, because I believe the next category would,  
9 well, I am aware of another category. It's  
10 right in that sentence, which talks about Class  
11 I RPS eligible resources, but I'm also aware  
12 that large hydro does not qualify currently for  
13 Class I eligible resources in Massachusetts.

14 Q So then let's look at the definition of  
15 Incremental Hydroelectric Generation.

16 On the screen now and I've highlighted the  
17 definition of Incremental Hydroelectric  
18 Generation. And you can read it to yourself.

19 A Yes. I'm done.

20 Q And this talks about a net increase in megawatt  
21 per year of hydroelectric generation as compared  
22 to the 3-year historical average, do you see  
23 that?

24 A Yes.



1 Q In order to qualify as an Incremental  
2 Hydroelectric Generation, you have to have a net  
3 increase compared to your prior three years,  
4 correct?

5 A Well, you have to read the entire sentence. It  
6 says, "As compared to the 3-year historical  
7 average and/or otherwise expected delivery of  
8 said hydroelectric generation from the bidder or  
9 an affiliate within or into the New England  
10 Control Area."

11 So my interpretation of this is that from  
12 the perspective of an affiliate of Hydro-Quebec  
13 if it were to be the counterparty providing this  
14 Firm Service Hydroelectric Generation, they  
15 can't reduce their energy sales, for example, on  
16 existing interties, which would be Phase II, and  
17 use that for energy flows on Northern Pass. It  
18 has to be incremental to the 3-year historical  
19 average flows that they have sent to New England  
20 historically into the New England Control Area.

21 Q That's the way you read it.

22 A Yes. That's how I read it.

23 Q All right. Fair enough.

24 Now, are you familiar with the Mass.

1 Department of Public Utilities Order regarding  
2 the Mass. RFP?

3 A I may have reviewed it. I can't remember off  
4 the top of my head.

5 Q Ms. Frayer, what I'm showing on the screen now  
6 is Counsel for the Public Exhibit 303 which is  
7 the first page of the Massachusetts Department  
8 of Public Utilities DPU Order 17-32. Do you see  
9 that?

10 A Yes, I do. Thank you.

11 Q And you'll see I highlighted this as Joint  
12 Petition to Approve, essentially, the RFP.  
13 Okay?

14 A Yes.

15 Q And then as part of this Order, one of the many  
16 things that it covered was the proposed bid  
17 requirement revisions, you see that?

18 A Yes.

19 Q And then one of the things it covered was some  
20 suggested bid requirement revisions regarding  
21 product definition. Do you see that?

22 A Yes.

23 Q And under product definition, one of the issues  
24 that was litigated was the definition of

1 Incremental Hydroelectric Generation, do you see  
2 that?

3 A Yes.

4 Q And then you'll see here it quotes the  
5 definition in the RFP that we just saw a moment  
6 ago. Do you see that?

7 A Yes.

8 Q So then I'm going to show you the page from this  
9 DPU Order 17-32 which is page 33, and it's the  
10 analysis and findings regarding the definition  
11 of Incremental Hydroelectric Generation, do you  
12 see that at the top?

13 A Yes.

14 Q So I've highlighted something from the Order  
15 that says, Section 83B's definition of new Class  
16 I renewable portfolio standard eligible  
17 resources states that there must be a, quote,  
18 "net increase from incremental new generating  
19 capacity." Close quote. Do you see that?

20 A I see that sentence.

21 Q And it refers to new generating capacity. Do  
22 you see that?

23 A With respect to Section 83B.

24 Q Yes. Yes. I understand. And then it goes on

1 to say because Section 83D was designed to,  
2 quote, "facilitate the financing of Clean Energy  
3 Generation resources," close quote, the  
4 Department finds that the electric distribution  
5 companies appropriately applied discretion when  
6 determining that hydroelectric generation should  
7 be incremental. Do you see that?

8 A Yes.

9 Q And it talks again, it again has the language  
10 about financing Clean Energy Generation  
11 resources, correct?

12 A I see that in the sentence, yes, but I also  
13 believe what you showed on the prior page stands  
14 for the interpretation that I've previously  
15 given. That is the words on the page. That  
16 they're measuring Incremental Hydroelectric  
17 Generation as a function of what that entity  
18 delivered into the New England Control Area over  
19 the prior three years.

20 In fact, if you go on, and now this is  
21 going from memory and might not be correct, but  
22 I believe there were parties that proposed  
23 alternative definitions, and I think the next  
24 sentence on this page refers to some of that,

1 and those were rejected.

2 Q Well, let me say this to be fair. Would you  
3 agree with me that whether or not the Mass. RFP  
4 requires new generation or not is probably a  
5 legal issue? Interpreting the 83D and this  
6 Order and any other legal document?

7 MR. NEEDLEMAN: Mr. Chair, I'm going to  
8 object at this point. First of all, it well  
9 might be a legal issue, then it's not  
10 appropriate, but more importantly, I just don't  
11 see the relevance to any of this line of  
12 questioning.

13 PRESIDING OFFICER HONIGBERG: Well,  
14 actually, that last question is probably the one  
15 question she's probably qualified to answer  
16 based on her expertise. Do you think that the  
17 interpretation of this contract is a legal  
18 question. Or this RFP is a legal question.

19 MR. PAPPAS: Yes.

20 A I think that the RFP will have an evaluation  
21 team, and I believe once a contract or a project  
22 or multiple projects are selected, those will  
23 have to undergo regulatory review, and it will  
24 be up to somebody above my pay grade to make

1           that determination.

2           Q     Yes. Fair enough. I don't mean to try to get  
3           you to agree to a legal interpretation.

4           A     I'm just interpreting the plain English on the  
5           page.

6           Q     I understand, and I was just, I walked you  
7           through that to see whether or not you had a  
8           particular understanding of it based on your  
9           experience or whatever, but, in fairness, I  
10          agree. I think it's a legal interpretation, and  
11          I don't think your, it's not within your  
12          bailiwick to provide legal interpretations. My  
13          only point is that it's an issue. Would you  
14          agree with me that it's an issue that needs to  
15          be decided, whether or not the Mass. RFP  
16          requires new generation or it doesn't?

17                 MR. NEEDLEMAN: Again, I'm going to object.  
18                 I think even that's a legal conclusion, and  
19                 again, I don't see the relevance.

20                 PRESIDING OFFICER HONIGBERG: I'm going to  
21                 sustain that. Is there any reason why any of  
22                 what we just did with Ms. Frayer was  
23                 confidential?

24                 MR. PAPPAS: No, but I'm at the last ten

1 minutes. So I figured I mean, I'm going to  
2 finish.

3 PRESIDING OFFICER HONIGBERG: Okay. I  
4 mean, I know the parties will go through the  
5 transcript and identify what needs to remain  
6 confidential, but that struck all of us, I  
7 think, up here as interesting in that regard.

8 MR. PAPPAS: Yes.

9 PRESIDING OFFICER HONIGBERG: That may be  
10 the only regard in which it was interesting. So  
11 what's the next topic we're going to touch on?

12 MR. PAPPAS: Let me just finish this one  
13 line of questioning, and then I'm going to jump  
14 to my last topic.

15 BY MR. PAPPAS:

16 Q And my question is just simply this, Ms. Frayer,  
17 and if you don't have an opinion, that's fine,  
18 but if NPT is successful in the Mass. RFP and  
19 the Mass. RFP required new generation as opposed  
20 to not requiring new generation, and the  
21 Internal Market Monitor included that in the  
22 cost analysis, would you agree with me that that  
23 would obviously have an impact on what NPT's  
24 Clearing Price would be in the Forward Capacity

1 Auction?

2 A Under the hypothetical concept you've thrown  
3 out, and it doesn't need to apply to Northern  
4 Pass, it can apply to any project, the Internal  
5 Market Monitor will not take into account, just  
6 for the record, any of the contracts in terms of  
7 revenue streams being offered by the Mass. RFP.  
8 That's the whole purpose of the MOPR analysis,  
9 to assume away any contracts and understand on  
10 the basis of wholesale spot market dynamics  
11 whether the project can stand on its own two  
12 feet.

13 But it may take notice of the fact that  
14 there are certain infrastructure requirements.  
15 What it would do to the calculus is that there  
16 would be a levelized cost for the investment,  
17 but then there would not be an opportunity cost  
18 for that energy because there is no opportunity  
19 cost if that energy doesn't exist today.

20 So it changes the line items that you would  
21 be analyzing in the spreadsheet. Does it  
22 necessarily increase the MOPR? No, I don't  
23 think I can make that conclusion. It will be an  
24 empirical tradeoff between having an opportunity



1 cost analysis for the power versus having an  
2 infrastructure levelized capital cost analysis.

3 Q And in that tradeoff analysis, the Internal  
4 Market Monitor could determine, could it not,  
5 that it should include the cost of this new  
6 generation? That's one possibility.

7 A Well, sorry. I'm confused now by your question.  
8 I thought I had answered that if it were to say  
9 that you need to include the levelized capital  
10 cost of generation, then you wouldn't include  
11 any opportunity costs for that power.

12 Q Yes.

13 A So I thought I answered that question.

14 Q And if that's the analysis the Internal Market  
15 Monitor made, that would affect the MOPR price,  
16 if you will, of NPT, would it not?

17 A It would change the calculus of the MOPR price.

18 Q And it's more likely than not that that would  
19 increase the MOPR price, would it not?

20 A I can't tell. No. Not based on my analysis.  
21 We would have to look at what we think is then  
22 the levelized capital costs. I haven't done  
23 that analysis to be able to suggest that that's  
24 more likely. That it would be higher than the

1 opportunity cost of power that we have included.

2 Q All right. So on that issue you don't have an  
3 opinion because you haven't done that analysis?

4 A I don't have an opinion, but I'm not willing to  
5 say that it's more likely than not which is what  
6 you were asking.

7 Q Yes, if you don't have opinion, then obviously  
8 you can't make that second. That's fine.

9 Your MOPR analysis included a 40-year  
10 amortization cost, correct?

11 A Yes.

12 Q Now, I understand you, that's your opinion that  
13 that's an appropriate amortization period,  
14 correct? Forty years?

15 A It's actually a value that ISO suggests in their  
16 cost spreadsheet, and I understand your expert  
17 also used that same 40 years in that analysis.

18 Q If somebody used a 20-year amortization period,  
19 that would impact the MOPR cost, correct?

20 A Yes.

21 Q And if someone used a 20-year amortization, that  
22 would probably add about \$4 to the MOPR Clearing  
23 Price?

24 A I can't confirm how much it would add.

1 Q Okay. Fair enough. Let me just ask you a quick  
2 question on opportunity costs.

3 Your analysis estimated the opportunity  
4 cost of HQ energy by assuming the HQ generation  
5 would sell into the Ontario market during  
6 offpeak hours; is that right.

7 A Yes. That's correct. Without Northern Pass,  
8 they would not have the ability to sell  
9 additional energy into New England of  
10 significant value or into New York onpeak or  
11 Ontario onpeak for that matter.

12 Q Ontario onpeak is significantly higher than  
13 offpeak, correct?

14 A That would be the case in most markets.

15 Q Yes. And Ontario offpeak is also different than  
16 selling in the New York market, correct, in  
17 terms of price?

18 A Actually, our analysis shows that selling into  
19 upstate New York offpeak will be quite similar  
20 to selling into Ontario. There might be  
21 differences, timing differences, but they're  
22 very similar.

23 Q Off the record for a second.

24 (Discussion off the record)

{WITNESS: JULIA FRAYER - REDACTED}

1                   PRESIDING OFFICER HONIGBERG: We'll adjourn  
2 for the day and resume again tomorrow morning at  
3 9 o'clock.

4                   (Whereupon Day 13 Afternoon Session  
5 adjourned at 4:45 p.m.)

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C E R T I F I C A T E

I, Cynthia Foster, Registered Professional Reporter and Licensed Court Reporter, duly authorized to practice Shorthand Court Reporting in the State of New Hampshire, hereby certify that the foregoing pages are a true and accurate transcription of my stenographic notes of the hearing for use in the matter indicated on the title sheet, as to which a transcript was duly ordered;

I further certify that I am neither attorney nor counsel for, nor related to or employed by any of the parties to the action in which this transcript was produced, and further that I am not a relative or employee of any attorney or counsel employed in this case, nor am I financially interested in this action.

Dated at West Lebanon, New Hampshire, this 11th day of June, 2017.

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Cynthia Foster, LCR

