STATE OF NEW HAMPSHIRE
SITE EVALUATION COMMITTEE

June 8, 2017 - 9:05 a.m. DAY 13
49 Donovan Street Morning Session ONLY
Concord, New Hampshire

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IN RE: SEC DOCKET NO. 2015-06
Joint Application of Northern Pass Transmission, LLC, and Public Service Company 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:

Chrmn. Martin P. Honigberg (Presiding as Presiding Officer)	Public Utilities Comm.
Cmsr. Kathryn M. Bailey	Public Utilities Comm.
Dir. Craig Wright, Designee	Dept. of Environ. Serv.
Christopher Way, Designee	Dept. of Resources & Economic Development
William Oldenburg, Designee	Dept. of Transportation
Patricia Weathersby	Public Member
Rachel Whitaker	Alternate Public Member

ALSO PRESENT FOR THE SEC:

Michael J. Iacopino, Esq., Counsel to the SEC (Brennan, Caron, Lenehan & Iacopino)
Pamela G. Monroe, SEC Administrator

(No Appearances Taken)

COURT REPORTER: Susan J. Robidas, NH LCR No. 44

I N D E X

WITNESS: JULIA FRAYER

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P R O C E E D I N G S

CHAIRMAN HONIGBERG: All right. Good morning, everyone. Welcome back. Welcome back, Ms. Frayer.

WITNESS FRAYER: Thank you.

CHAIRMAN HONIGBERG: I understand that the other groups that would normally go before Counsel for the Public are not here or are done with their questions. If that's correct, and I see no one correcting me, then I think Counsel for the Public is up.

MR. PAPPAS: Thank you, Mr. Chairman.

CROSS-EXAMINATION

BY MR. PAPPAS:

Q. Good morning, Ms. Frayer. We met before. I represent Counsel for the Public. Before we start, let me just mention a ground rule. I'm going to ask you some questions in public session. Later on I'll be asking to go into confidential session because a great deal of your testimony and reports involves some confidential information. I will try to avoid asking any questions in the public

session about confidential information. But in case I make a mistake and accidentally ask a question about confidential information, please let me know, and please don't answer if it involves confidential information. If you do answer, everybody will assume that it's non-confidential information, since I think you're the one, or certainly LEI is the one who designated them confidential and so forth. Do you understand that?

A. Yes.

Q. Okay. Thank you.

So you started by producing a report in October of 2015, correct, in terms of -- your first Prefiled Testimony was October of 2015, and with it you had a report that went along with it; correct?

A. Yes.

Q. And your report addressed the wholesale electricity market impacts; is that right?

A. That was one of the topics, yes.

Q. And it also addressed the impacts on the local economy from NPT; correct?

A. Correct.

Q. And when I refer to "NPT," I'm referring to the Northern Pass Project, Northern Pass Transmission. Do you understand that?
A. Yes.
Q. It's the acronym I think most people have been using in their reports.
Now, as I understand it, you started work on your October 2015 report in September of 2015; is that right?
A. That sounds about right. I think it would have been in the fall. Early fall, late summer.
Q. All right. So you spent about a month or so preparing your first report; is that right?
A. I would say I spent a month or so doing the analysis for the first report. We had sketched out and thought about the content of our report even prior to September 2015.
Q. Okay. And in terms of the local economy, you analyzed the impact of NPT on the New Hampshire and New England economy. You analyzed its potential impact in terms of jobs; is that right?
A. Jobs was one of the econometric metrics. We

also reported state GDP impacts.
Q. Right. So those were the two things in terms of the local economy that your report addressed, jobs and Gross Domestic Product; correct?
A. Yes.
Q. And to perform your analysis, you, in terms of the local economy -- I will tell you this morning I'm going to focus mostly on the local economy aspects. To perform your analysis on the local economy, you used the REMI model?
A. I used the PI+ model, which is produced by REMI. REMI is the name of the firm.
Q. And they're out of Amherst, Mass.?
A. Yes, I believe so.
Q. Okay. And did you rent the model to do that?
A. Yes.
Q. How long did you rent it for?
A. I don't recall, off the top of my head. But I can say that we have rented the same model since we started work and produced this report. So we've continued to rent it up to this point in time.

Q. Okay. And in your October 2015 report, you did not analyze the economic impacts to New Hampshire from NPT's payment of property taxes; is that right?
A. We did look into this. Let me step back and say we didn't -- I didn't estimate the property taxes. Dr. Lisa Shapiro produced that estimate of property taxes for Northern Pass, and we used her estimates. We did look into it. But for the October 2015 report, as I state in the report, we decided conservatively not to include it in the simulation modeling done with the REMI PI+ model because we were not certain about how those taxes would flow through the economy and therefore wanted to be conservative.
Q. So you did not analyze or produce any economic impacts with respect to NPT's payment of property taxes; correct? That's not part of your October 2015 report?
A. We did not document it in the October 2015 report.
Q. And likewise, your October 2015 report did not provide economic impacts from NPT's

payment of state business income taxes; correct?

A. No, we did -- that is correct. We did not document any of those effects.

Q. Now, in your October 2015 report, you did some analysis on the carbon emissions reductions; correct?

A. Yes. As part of our analysis of electricity market impacts, we were able to estimate, project avoidance of carbon emissions reductions in New England.

Q. Okay. And what you did is you provided an estimate of how much carbon emissions would be reduced by NPT; correct?

A. Yes, we did that estimate, and we also calculated the monetary value to society of that emissions reduction.

Q. But in your October 2015 report, you did not provide a quantification for the economic impact on jobs from carbon emissions reductions; is that right?

A. Conservatively, we did not document that.

Q. And likewise, you did not provide a quantification for the economic impact on GDP

from carbon emissions reductions; correct?
A. Yes, that's correct. Conservatively, we recognized that there's this benefit, but we didn't implement it within the REMI PI+ model.
Q. Then in February of 2015 you provide an updated report; is that right?
A. In February 2017, we provided what we call an "Updated Analysis." That's the acronym we provide in our description. It's in response to data requests that were filed by certain parties. So it's an updated analysis. I think of it as a supplement to the Original Report.
Q. In your Updated Analysis or supplement to the Original Report, you likewise did not -- you did not update your analysis of the local economic impacts; correct?
A. Yes, that's correct.
Q. Okay. And you produced a corrected report in March; is that right?
A. Yes. There were some typographical issues and headers and footers that were off.
Q. Okay. And that corrected report, likewise,

didn't make any update to the local economics portion of your report; correct?

A. That's correct.

Q. Okay. Then, in April of 2017, you produced another report along with some prefiled testimony; correct?

A. Yes, we produced a rebuttal after having reviewed the evidence and reports put together by a number of intervening parties and their experts.

Q. Okay. And in your April 2017 report, for the first time you quantified the economic impacts to New Hampshire from NPT's payment of property taxes; correct?

A. I would say that in the April rebuttal, that was the first time where we documented how property taxes which we recognized from the original analysis were a benefit to local communities, how property taxes could impact the local economy, using the REMI PI+ model.

Q. And in your April 2017 report, for the first time you also quantified the economic impacts from NPT's payment of state business income taxes; correct?

A. In the same vein, yes. And again, this was, in some ways, I would suggest a rebuttal to the analysis performed by other experts and the reports that they produced in December 2016 that we were responding to in our April 2017 report.

Q. In your April 2017 report, for the first time you quantified the economic impact on jobs associated with carbon reductions; is that correct?

A. It was the first time that we took the carbon emissions reductions which we have always estimated and considered what their value to residents, to the population here in New England would be using the REMI PI+ model.

Q. You didn't do that for your October or your February reports; correct?

A. No, we did not conservatively do that in our reports. But in response to some of the discussions we had at technical sessions, and also to the intervenors' evidence, we felt it was a necessary addition in order for the Committee to have a complete picture of various impacts.

Q. No intervenor did that analysis, did they? No intervenor estimated the economic impact on jobs from carbon emissions reductions, did they?
A. No intervenor estimated the positive externalities of carbon emissions. But we had lengthy discussions with your experts --
Q. Yeah, but my question is: No intervenor did the analysis that you included in your April report; correct?
A. No intervenor did that analysis. But again, we had lengthy discussions about those positive externalities, and it was well recognized by many different experts that those are valid and important.
Q. And likewise, in your April report, for the first time you analyzed and quantified the economic impact on New Hampshire's GDP from carbon emissions reductions; is that correct?
A. Yes. I thought I just answered that question.
Q. The first question was with respect to jobs, the second question was with respect to GDP.
A. Yes, jobs and GDP go hand-in-hand as metrics

that get reported.
Q. And you used the REMI model to do that analysis; correct?
A. Yes, using two different approaches, one that represented my estimates approach and another method that represented Brattle Group's preferred methodology.
Q. So in your April 2017 report, for the first time you provided analysis and economic quantification on the effect of NTP [sic] paying property taxes, the impact of NTP paying state business income taxes, the impact on jobs from carbon emissions, and the impact on GDP from carbon emissions; isn't that correct?
A. Yes.
Q. And would I also be correct in saying that as of the time you did your October 2015 report, you had all of the information necessary to do that analysis? Correct?
A. We had the majority of information. But through the technical conferences that took place in early spring of this year, we gathered more information and came to an

understanding that there was a particular view being taken by other experts that we wanted to make sure there was sufficient documentation on. So I would say that we had the building blocks, but I didn't appreciate in October 2015 the consensus that other experts had about the positive externalities that exist with respect to those elements that you've just mentioned.

Q. So in other words, you had the data. You had the information in October of 2015 to do this analysis, but you didn't appreciate the approach others were taking about these four topics; is that right?

A. Yes.

Q. Okay.

A. The December 2016 evidence provided by various experts was very important in our decision to then prepare those materials in our April 2017 report.

Q. You didn't include them in your February update, did you?

A. The Update Analysis in February --

Q. The question is: You didn't include them in

your February update; is that correct?
A. Because the February update was very specific to a data request we received.
Q. Now, your October 2015 Prefiled Testimony did not include these four areas; is that correct?
A. Just like the report, they were not documented within the REMI PI+ aspect of the analysis.
Q. And the same thing applies for your February Prefiled Testimony; isn't that right?
A. The February Prefiled Testimony specifically talks to the Updated Analysis which we just discussed.
Q. And your April 2017 testimony does not discuss these four new areas of analysis, does it?
A. I think that the April 2017 Prefiled Testimony is a summary, a very high-level summary of what's in the report. So I would disagree with the implication that there is --
Q. Does your April --
A. -- a missing element to it.

Q. Does your April 2017 Prefiled Testimony discuss these four items?
A. It discusses the high-level report and suggests to the reader, if they're interested, they can read the full report.
Q. Do you have your April 2017 testimony in front of you?
A. Yes.
Q. Please show me where in your April 2017 testimony you discuss these four specific items.
A. If you bear with me...
Q. I'm a patient man.

MR. IACOPINO: Mr. Pappas, do you have an exhibit number for that testimony?

MR. PAPPAS: Yes, Exhibit 101.

MR. IACOPINO: Thank you.

(Witness reviews document.)

A. As an example, on Page 5 --
BY MR. PAPPAS:
Q. And Page 5 is the last page of your Prefiled Testimony?
A. Yes. And there's only five pages. It's a very short summary. But on Page 5 it says --

Q. Which line are you referring to?
A. Starting from the middle of Line 9 and going to Line 11. If you'd like, I can read the sentence.
Q. Sure.
A. Okay. "KRA has also only considered negative externalities in its long-term aggregate impact analysis, without quantifying the impact of positive externalities." And my interpretation of that sentence, if you also read the full report, is that they haven't considered, for example, the positive externalities that we have measured with respect to carbon emissions reductions. That's an example.
Q. Any other examples?
A. Line 4 through 6 on Page 5. "More importantly, LEI is concerned with the robustness of KRA's aggregate long-term analysis, which is geared to examining the combined effect of various factors associated with the Project on the New Hampshire economy."
CHAIRMAN HONIGBERG: Ms. Frayer,

if you're going to read, just read a little slower for the stenographer.

WITNESS FRAYER: I'm sorry. Sorry about that.

A. And I did not itemize the items you're talking about. But in my mind, these sentences are referring to specific aspects covered in my more detailed Rebuttal Report that addressed the issues that you're raising and talking about at the moment.

BY MR. PAPPAS:

Q. The two sentences you just read relate to KRA, which is Kavet Rockler & Associates; correct?

A. Yes.

Q. And the two sentences you just referred to relate to KRA's analysis; isn't that right?

A. The two sentences refer to our concerns about the KRA analysis.

Q. Right.

A. And our Rebuttal Report then addresses those concerns.

Q. And the fact is your Prefiled Testimony doesn't say anything about those four

specific items, does it?
A. My Prefiled Testimony is five pages, sir. My report, in contrast, I can tell you --
Q. My question is: It doesn't refer to those four items, does it?
A. No, it doesn't. But again, my report is 70-plus pages. So the Prefiled Testimony was really meant to just be a quick summary the reader. And I was hoping they would read the entire Rebuttal Report to get to the essence of what's indicated in the five summary pages.
Q. Okay. Now, when you produced your April 2017 report and your Prefiled Testimony, you did not produce any backup documents; correct?
A. I'm not sure what you mean by "backup documents."
Q. You didn't produce your REMI file; isn't that right?
A. No.
Q. And you didn't produce any model input spreadsheets; is that right?
A. We produced various appendices for various analyses that we documented, including source

citations, so somebody else could go through and check and understand those.

Q. You didn't produce any of your work papers, did you?

A. Work papers with respect to?

Q. To the April 2017 report.

A. Work papers with respect to the underlying data that goes into the REMI PI+ model?

Q. Correct.

A. In answer to that question, no, we did not produce any work papers.

Q. So, without this backup data, these work papers, the REMI input files and so forth, there's no way for someone to review and analyze your four new items without that information; correct?

A. I would disagree, wholeheartedly disagree, because there's information in our report, 70 pages of it, that goes through in detail some of these aspects.

Q. You would need that backup document if you were asked to review and analyze these four new areas of analysis and quantification; would you not?

A. I would argue not necessarily. I would read the report and see what's documented in the report, and then you would of course need access to the REMI model, the PI+ model. Our analysis was layered on top of the REMI PI+ model, workbooks and work papers that we had previously provided. So, between having the original foundation plus the information and description we have in the report, I believe that should be quite sufficient for an expert to make their way through the analysis.

Q. An expert would need your REMI input files that you used to prepare your April 2017 analysis; would they not?

A. No. They need to understand the description in our report and make an effort to review that.

Q. When you reviewed and analyzed KRA's analysis and their use of the REMI model, you asked for and received their REMI input files; did you not?

A. Yes.

Q. And you received all of their model input information; did you not?

A. Belatedly, but yes.
Q. And you needed that in order to check how they used the REMI model and to determine whether you agreed with their use of the REMI model; correct?
A. And we had provided similar spreadsheets that form the foundation as well.
Q. But you didn't provide those spreadsheets that you used for the April 2017 report on these four items; isn't that right?
A. But we provided a description of how we modeled those four items, so somebody would be able to take the words on the paper and translate that into an input.
Q. The words on the paper don't give the specific input that you put into the REMI model, specific input numbers that you put into your REMI model; correct?
A. I disagree. I think the words on the paper provide sufficient detail for an expert to do a backwards engineering of that analysis.
Q. Do they provide the specific input numbers or descriptions?
A. Yes. For example, on the carbon emissions

reductions, as I suggested, we used two different methods to analyze it. And one method used the very particular policy variable in the REMI PI+ model, non-pecuniary effects. We described it. The words are on the paper. We said this is the policy variable we used.

Q. For the business income taxes, did you provide the amount of taxes that you assumed NPT would pay?

A. We provided a description of how we estimated those business income taxes. And I believe we also referred the reader to Dr. Shapiro's testimony that provides additional detail.

Q. You didn't provide the numbers that you inputted into the REMI model in order to do the analysis for payment of business income taxes; isn't that right?

(Witness reviews document.)

A. We provided references to Dr. Lisa Shapiro's Supplemental Testimony on the specifics of the taxes.

Q. The REMI -- in order to do the carbon emissions analysis using the REMI model, did

you use the REMI amenity variable?
A. Yes.
Q. And the REMI amenity variable requires an amount of annual incremental earned income that you need to input; is that right?
A. The amenity value requires a dollar-associated value to the amenity that you're trying to model, and that is related to the carbon emissions reductions we reported in the Updated Analysis in March 2017.
Q. But you didn't provide the input number that you inputted into the REMI model with your April 2017 report, did you?
(Witness reviews document.)
A. The number was in the March 2017 report, the Updated Analysis, I should call it.
Q. What number was that?
A. It was... bear with me. I should find the page reference.
(Witness reviews document.)
A. So I can take you through it, sir.
Q. What page are you referring to?
A. I am first -- I'm looking at two different

pages. First I'm looking on Page 48.
Q. In which report?
A. Of the April 2017 report.
Q. And that's Applicant's Exhibit 102.
A. Yes. And I'm also looking at Page 25 of the Applicant's Exhibit 81, which is the Updated Analysis Report filed in March 2017.
Q. Hmm-hmm. So what specific number did you input into the REMI model?
A. So, just to explain --
Q. Can you tell me what specific number you inputted into the REMI model first and then you can explain?
A. So, with respect to your question about modeling the carbon emissions reductions using the amenity value -- is that your question, the amenity value? That would have been London Economics' estimate of the value of carbon emissions reduction, which is documented in Section 3.4.2, starting on Page 25 of the Updated Analysis. This is the March 2017 report.
Q. And that's Applicant's Exhibit 81?
A. Yes. And the actual dollar values per year

would have been taken from Figure 16. And if you notice, it has Social Cost of Carbon, Dollar Millions Nominal. Last three rows, unfortunately, I can't name the numbers because that is marked as confidential. But those are the numbers we would have used as input to that policy variable in the REMI PI+ model for that method.

We also simulated a method using Brattle Group's proposed approach, and that particular number is referenced in the April report. If we go back to the April report, it's specifically referenced in the second paragraph, the last sentence, on Page 48. That number is not confidential, so I can name it. It was $140 million per year, which was the lower estimate from Brattle Group's range of social benefits for New England from carbon emissions reductions produced by the Project.

Q. So is that the amount of annual incremental earned income you inputted into the REMI model?

A. That is the amount of subsidies avoided,

according to Brattle Group's expectation about valuing this positive externalities. So in that case, it doesn't use the amenity variable. It's looking at electricity costs and subsidies that would have otherwise been paid, the Opportunity Cost Method Brattle Group expected.

Q. So that's not the number you inputted in the REMI model for the amenity portion for annual incremental earned income; is that right?

A. Well, that's what I was trying to explain to you, and you wanted a number. There was two methods that we implemented to look at the value in the REMI PI+ model, as described very clearly in our April report. One uses the amenity value, and that's the number in Figure 16. It's using LEI's estimate of the social cost of carbon. The other approach is using Brattle Group's methodology of valuing the carbon emissions reductions for society based on opportunity costs, avoided subsidies.

Q. I get the method you used. What I was looking for is the specific input numbers.

A. And two methods, two separate inputs. That's what I was trying to explain. So, two different numbers, depending on which method. And in fact, that's what I documented in my results, two different results, too.

Q. So, looking at Figure 16, which you -- that's the figure on Page 26? Did I hear you correctly?

A. Of the March 2017 Updated Analysis.

Q. And looking at Figure 16, tell me -- you can't tell me the number. But tell me which -- you can tell me what the description is, the specific number you used for this input into the REMI model.

A. I used the bottom three rows because I did it with every one of those three scenarios. So the bottom three rows as part of their labeling have references to 2.5 DCR -- which is discount rate, I apologize -- 3 percent DCR, 5 percent DCR. Those are naming conventions for three different levels of projected social cost of carbon that the Interagency Working Group puts out. And I modeled those three rows, and that's what's

documented in Figure 8 and 9, in terms of results under the amenity value approach in those two tables for employment impacts and GDP impacts. There's three rows there as well. They correspond to each other, input and output.

Q. Your report doesn't indicate that, does it? It just gives the numbers. Doesn't indicate that's what you used for your input into the REMI model; correct?

A. I would expect that an expert --

Q. Is that correct, ma'am? It usually helps if you answer the question first and then explain. Is that correct?

A. My report does not spell it out. But my report is descriptive enough in using the exact same terminology between this report and the Updated Analysis, that someone should be able to understand that's what we did.

Q. And are all of the input numbers you used, when you used the REMI model for these four items, found somewhere in your reports, every single input number?

A. When you're referring, sir, to "the four

items," I think you're including --
Q. I'm including payment of property taxes, payment of business income taxes, jobs from carbon emissions reductions, and impact on GDP from carbon emissions reductions. Those are the four items I'm referring to.
A. Yeah, so the first two items, as stated in my April 2017 report, relate to business taxes and property taxes. And as I said earlier, I relied on Dr. Shapiro's Supplemental Testimony. So one would have had to go to her Supplemental Testimony to understand inputs as well. So we worked together on creating those on the inputs, and then the REMI modeling, because I'm the expert responsible for the REMI PI+ modeling, and she is the expert that developed those estimates of property tax impacts.
Q. So, does anywhere in your reports tell the reader what input numbers you used in REMI for what REMI factor or category?
A. Again, I believe that the policy variables that we used in the REMI PI+ model are written out in the text of the report. In

terms of the dollar inputs that we used, because the REMI model takes dollar input values, I think those are described as well. And where they're not described verbatim, there's a cross-reference in the citations to other experts' testimony where those should be described.

MR. PAPPAS: Mr. Chairman, I'm going to move to strike from LEI's report, April 2017 report, any discussion of these four new areas of analysis, specifically impacts from NTP's payment of property taxes, impacts from NTP's payment of business income taxes, impacts on jobs from carbon emissions, and impacts on GDP from carbon emissions reductions. I'd move to strike those from her April 17, 2017 report. Or alternatively, I'd move to allow us to conduct discovery on these items, obtain the backup documentation that was produced with respect to her prior report which used the REMI model, so that our experts can review it and have an opportunity to analyze it and, if necessary, submit a supplemental testimony report about them. Couple things --

CHAIRMAN HONIGBERG: And put succinctly, the reasons, the basis for your motion is?

MR. PAPPAS: That this analysis was not included in LEI's two prior reports, and nothing prevented them from doing so. The witness has indicated --

CHAIRMAN HONIGBERG: Put succinctly, the grounds are?

MR. PAPPAS: The grounds are that this analysis could have been done before. It wasn't. They had all the data, and it wasn't provided. And it doesn't constitute supplemental testimony. It constitutes new analysis on new areas which is beyond supplemental testimony. And so there's no ability to do discovery. There's no ability to have any meaningful opportunity to analyze and review it. And so I think fundamental fairness requires that either it be excluded or we be allowed the opportunity to conduct discovery and produce any supplemental report as necessary.

CHAIRMAN HONIGBERG: Mr.

Needleman.

MR. NEEDLEMAN: Two specific points here as to why this motion should be denied.

First point: The Committee, and I think it was you, Mr. Chair, issued a procedural order on March 1st, 2017. The last page of that procedural order, Paragraph 13, set out deadlines. And I'm going to read them. "Prehearing motions and stipulations on Track 2 topics shall be filed on or before April 24, 2017."

Any motion like this was due on that date, which was over six weeks ago. You didn't hear a single statement from Mr. Pappas as to why this motion is over six weeks late. You also didn't hear a single statement from the witness or Mr. Pappas that in any way indicated that there was any information just elicited from this examination that was not available to Counsel for the Public or Mr. Pappas at that time.

CHAIRMAN HONIGBERG: Okay, I got that ground, or I got that argument.

MR. NEEDLEMAN: Totally untimely.

Second issue: Mr. Pappas is conflating rebuttal and supplemental testimony. Supplemental testimony is updating testimony that was filed previously. Rebuttal testimony is typically reserved for the Applicant, and it's the right to rebut things that are said after they filed their initial testimony. I think it's well recognized in SEC practice that Applicants are permitted to do that. And in fact, the Applicant is allowed to do that because we are the only party in dockets like this with the burden of proof. And there comes a point where there has to be a last word, and I believe that last word is the rebuttal testimony of the Applicant. For those reasons, I think this motion needs to be denied.

CHAIRMAN HONIGBERG: Anything you want to add, Mr. Pappas?

MR. PAPPAS: I do. First of all, I want to mention that I did give

Applicants notice of this eight or nine days ago so they wouldn't be surprised. And I think his response probably reflects that.

Second, the SEC rules permit oral motions, and there's no time limit when oral motions can be done. I believe a motion to strike testimony is timely at any time during the proceeding.

CHAIRMAN HONIGBERG: What did you just learn after the deadline for filing motions to strike that was necessary to your raising this now? Because it seems to me that's a fairly good argument, that in fact you and other parties have been moving to strike aspects of Ms. Frayer's testimony over and over and there have been rulings denying those motions. So what's new since the deadline for motions to strike?

MR. PAPPAS: Candidly, since that motion to strike -- I mean since the deadline, which I believe was April 24 or -- April 24, candidly, nothing. But there's a reason for that. And I think there's a good reason for that. These hearings started on

April 13th. We were dealing -- we were in hearings dealing with witnesses -- there were 11 witnesses that we dealt with before we came to Ms. Frayer. They had Supplemental Prefiled Testimony. The parties were rather consumed in 11 or 12 days of hearings with other witnesses that went long, and very long, detailed things, who produced lots of information with their Prefiled Testimony, including the entire new survey maps and so forth from construction folks. So I think it's a little bit unrealistic to expect us to be able to read all of the Prefiled Testimony for all of the witnesses in Track 2, which is the remainder of their witnesses, and prepare motions when we're actively engaged in hearings, actively engaged in trying to review the witnesses that are coming up. And we did not -- I candidly did not expect to find brand new analysis in Supplemental Testimony. So I was focusing on the other witnesses that were before us, and when we finished with them and turned my attention to Ms. Frayer, I became aware of this. I then called the Applicants when I

became aware of it and let them know that this is an issue, that I was going to raise this, so they wouldn't be surprised. And so, candidly, no, I could theoretically have learned of this after -- or before the April 24th deadline. But I think it's a little unrealistic to expect that counsel were going to do that and deal with everything else in this very condensed proceeding that involved many witnesses.

So I think that the Chair has the ability to waive any deadline at any time. The Chair certainly has the ability to waive any requirement. And I think in these instances fairness requires that because of the circumstances. It's not a situation where, you know, you've got a few witnesses. We've got many.

CHAIRMAN HONIGBERG: I think Mr. Roth would like to add something or have you add something.

(Off-the-record discussion among counsel.)

MR. PAPPAS: Mr. Roth reminds me that the procedural order refers to supplemental testimony, not rebuttal testimony.

I will candidly admit this is my first SEC proceeding, so I'm -- but Mr. Roth has been through many of them, and he indicates to me that typically they see supplemental testimony, not brand new analysis filed with supplemental testimony.

CHAIRMAN HONIGBERG: Mr. Needleman, anything you want to add? I guess in responding to that, you might also give us an indication of what you view this as rebuttal to, because I think you articulated this in part "as rebuttal testimony" in addition to it being supplemental testimony. Is it both, or is it one or the other? And if it's rebuttal, what was it rebutting?

MR. NEEDLEMAN: It's certainly both. And I wish I could sit here and tick off the points for you as to why it's specifically rebuttal in certain places and supplemental in other. And if we had a timely motion, I would have had the time to do that. I can't sit here and tell you that. But I can tell you we had extensive discussions with Ms. Frayer about how to deal with this. And we focused very

carefully on what needed to be rebutted, and we did that. And if we had the time, I could sit here and I could tell you point by point which parts of her testimony were rebutting things that other witnesses said. But I will represent to you that I am highly confident that if we had the time to do that, we could show it was rebuttal. Again, I don't think it's fair to ask that we have to do that on the fly.

With respect to what Mr. Pappas said about the timing of this motion, I'm sympathetic to the fact that there's a lot of work to be done in this case, and there are tight deadlines to be met. Frankly, I still don't think that's an excuse for this. Counsel for the Public has available to him a large, highly capable litigation firm with the resources to be able to do this work and analyze these types of issues. And if there was any reason at the time that they felt that they couldn't have done it, they should have let us know, they should have let the Committee know, and they

should have filed a motion. They shouldn't have handled it this way and waited six weeks to raise this.

CHAIRMAN HONIGBERG: Mr. Pappas, I think you have a timeliness problem. I think you have a lot of resources. And I think if you had an indication that you needed to file a motion, it would have been appropriate to seek an extension of that deadline. There are certainly ways to get around that. I think Mr. Needleman has the better of these arguments. I think the Committee can take your arguments as part of an argument that this isn't an adequate presentation by the Applicant to justify the relief that it seeks ultimately. And I'm going to deny the motion.

MR. PAPPAS: How about the alternative motion for producing the backup documentation?

CHAIRMAN HONIGBERG: I think we've ruled on that a number of times with respect to requests for production of additional information from Ms. Frayer. She's testified as to how to access the information,

how to use the information that she's used, how to find it, and then I think it's up to you all to manipulate that as you see fit. So that motion -- that request is denied as well.

MR. PAPPAS: Okay. Thank you.

CHAIRMAN HONIGBERG: Off the record.

(Discussion off the record)

CHAIRMAN HONIGBERG: Mr. Pappas, you may proceed.

MR. PAPPAS: Thank you.

BY MR. PAPPAS:

Q. Ms. Frayer, what's on the screen, can you see it in front of you?

A. Yes, sir.

Q. Okay. What's on the screen in front of you is Page 7 from your April 17, 2017 report, which is Applicant's Exhibit 102. And I have highlighted the first sentence that reads, "On the local economic impact analysis, KRA agreed that, 'in general,' the economic impact analysis by LEI was well performed." Do you see that?

A. Yes, I see that.

Q. Now KRA, as we said earlier, is Kavet, Rockler & Associates.
A. KRA, yes.
Q. And they were the experts retained by Counsel for the Public?
A. Yes.
Q. Now, you did not completely quote KRA's report in your sentence here, did you?
A. Well, I believe this --
Q. Did you?
A. -- excerpt is from the KRA report.
Q. But you didn't include their complete -- you didn't include their complete quote, did you?
A. I don't have a copy of the KRA report handy right now. I can get it during a break and check. I don't recall.
Q. Well, we do.

MR. PAPPAS: Can you put up 146, Page 2?

Q. What I've put on the screen is from Counsel for the Public's Exhibit 146. This is from KRA's report which you were quoting.
A. Yes, I see it.
Q. And what KRA said was, "In general, the

Applicants' economic impact analysis was well performed. However, model specification errors resulted in an overstatement of employment impacts during the development and construction phase of approximately 20 percent. Ongoing operational impacts were very close to our estimates, but are relatively small." Do you see that?

A. I see that.

Q. So you quoted from the first portion of the first sentence that I just read; correct?

(Witness reviews document.)

A. As part of my paragraph on Page 7 that you highlighted, yes, I quoted just the first part of the sentence.

Q. Right. And --

A. But then I dealt with the second part of the sentence in the next sentence that you didn't highlight.

Q. You quoted them, and you put a period after "well performed"; correct?

A. The period is to end my sentence, yes.

Q. But you put a period and then you closed quotation marks; correct?

A. We can argue about the semantics of my editorials, but yes. And then in the next sentence I go on to address in my report the second part of their sentence.
Q. You're familiar with the use of an ellipsis in writing, are you, the three dots when there's more to a quote that's not being included?
A. I am familiar with that punctuation. Yes, sir.
Q. And it tells the reader that the writer is not including the entire quote; correct?
A. It tells the reader there is a continuation of some thought, yes.
Q. And when you quoted KRA, you did not tell the reader there's more to their quote, did you?
A. No, but I addressed the second part of their quote in my next sentence.
Q. The reader would think, reading your sentence, that that is all that KRA said, correct, because you didn't tell the reader there was more to KRA's quote?
CHAIRMAN HONIGBERG: Mr. Pappas, would you ask Mr. Roth to put up Ms. Frayer's

report and highlighted section so we can see how Ms. Frayer continued after the period, where she failed to include the magic ellipsis?

MR. IACOPINO: And also if you could please remind us of the number of that exhibit and the page number.

MR. PAPPAS: Sure. Yeah. What is on the screen now is Applicant's Exhibit 102, Page 7.

BY MR. PAPPAS:

Q. So what you went on to say is, "However, KRA also performed their own local economic analysis using the same modeling tools as LEI"; correct?

A. Yes.

Q. You didn't say anything about the 20-percent difference they indicated in the rest of the quote that you included; correct?

A. I didn't --

Q. Correct?

A. I didn't quote the rest of the quote, but I started explaining my rebuttal to the rest of the quote. So I started off recognizing that they did their own estimation, which refers

back to the fact that in their original quote they talk about, I believe, a 20-percent -- I don't have it on the screen -- but a 20-percent over-estimation. I'm starting to explain that. If you read on the next sentence, you can see my further explanation of that specific part of KRA's quote.

Q. You go on to say, "LEI found a number of discrepancies and data-related errors, as well as more conceptual flaws and improper assumptions"; correct?

A. Correct.

Q. You're referring to KRA's work; correct?

A. I am referring in this particular aspect to my review of KRA's work where they reached the conclusion that we over-estimated. I believe that's a flawed conclusion. In fact, I believe they made some pretty silly mistakes on data entry to get to that conclusion.

Q. But nowhere in your paragraph do you refer to their rather significant qualification of what you quoted; correct?

A. I don't quote the rest of their report or

paragraph.

Q. Would you agree with me that a more accurate approach would have been to quote their entire sentence rather than the truncated part you quoted? That would more accurately have reflected what KRA said?

A. I would agree that it's quite possible to write this paragraph and include the entire quote.

Q. Would you agree with me that if you included the entire quote, it would be a more accurate reflection of what KRA said?

A. If I had -- I included here the actual words that were in their quote. I could have included more of their actual words. And I don't believe that this gives the wrong impression because I continued to talk then about the local economic impacts that they estimated that led to the second part of their quote.

Q. Nowhere in your paragraph do you talk about KRA's view about model specification errors by LEI that resulted in an overstatement of employment impacts of approximately

20 percent; correct?
A. On Page 7 of my April report, which is labeled as the "Introduction" -- it's actually the first page of my report -- I provide a high summary. But I do go back and talk about this particular assertion from KRA and explain it in excruciating detail. If you'd like, I can take you where in my report I specifically address this assertion.
Q. My question is: You didn't include that portion of KRA's quote in the paragraph that you were referring to in your report; correct?
A. I did not include this entire paragraph from KRA's report in the first page of my introduction in the report.
Q. When you wrote in your report that, in general, the Applicant -- in general, KRA thought your analysis was well performed, did you intend the reader to rely on that?
(Witness reviews document.)
A. I'm not sure -- I wrote what I believed to be an important point, not the only point that KRA made of our report. And then I went on

to talk about some other aspects of KRA's work. In this way, again, this is a rebuttal to the evidence and analysis that KRA performed.

Q. When you wrote the sentence that says, "On the local economic impact analysis, KRA agreed that, 'in general,' the economic impact analysis by LEI was well performed," did you intend the reader to rely on that sentence?

A. Yes, among all the other elements of my report that I would like the reader to have reviewed and relied on.

Q. So you intended the reader to rely on a sentence that did not completely quote what KRA said; correct?

MR. NEEDLEMAN: I'm going to object. She just got done explaining exactly what she intended the reader to rely upon.

MR. PAPPAS: In cross-examination you're allowed to probe the witness.

CHAIRMAN HONIGBERG: Yeah, you are. I'm not sure how much more you want to do

with this. I think we probably got the point you're making. But you can certainly -- she's certainly able to answer that question I think.

MR. PAPPAS: Thank you.

A. Sir, can you repeat the question?

Q. Probably not.

(Question read back.)

A. I intended the reader to use all the words in my report and rely on all of them. But I appreciate and recognize the point, sir, you're making, that I didn't include the entire paragraph from KRA's report or the entire sentence. I had an excerpt here of one part of the sentence.

BY MR. PAPPAS:

Q. Okay. Ms. Frayer, I'm now putting on the screen Page 45 from your April 17, 2017, report which is Applicant's Exhibit 102. And on page --

MR. PAPPAS: Right at the bottom there.

Q. And on Section 5.1, that starts your rebuttal of KRA's report. Do you see that, where you say, "KRA's long-term economic impact

analysis is not reliable"?
A. Yes, I see that section.
Q. Okay. And in this section you go on to discuss your view of KRA's economic modeling; correct?
A. Yes, in this section of the report I am rebutting KRA's analysis.
Q. On Page 46 of the same report and exhibit, you conclude, "LEI does not find the long-term aggregate economic impact analysis presented in Figures 24 and 25 on Page 75-76 in the KRA Report to be believable because of the unreliable assumptions on which it is based and the long forecast period." Do you see that?
A. Yes, I see that sentence.
Q. And you described Figures 24 and 25 in KRA's report as, quote, long-term aggregate economic impact analysis; is that right?
(Witness reviews document.)
A. Yes, that's right.
Q. Okay. Now --
A. And I apologize. They may be Table 24 and Table 25 in KRA's report.

Q. Okay.
A. But I believe that's the actual table nomenclature. It's an "aggregate economic impact analysis."
Q. Now, in KRA's report, they included several tables; correct?
A. There are many tables in their report, yes.
Q. And each of those tables, with the exception of these two tables, used similar time periods that LEI modeled -- in other words, five or ten year periods; correct?
A. I'd have to get a copy of the report to answer that. But subject to check, I guess I would agree. I'd need to go through and have it in front of me to be satisfied with my answer, but...
Q. So as not to waste the Committee's time by going through each one, I'll represent to you that KRA has several tables, starting with Table 7. And it goes through several tables, and they use time frames similar to your time frames. In fact, most of the tables will have your findings and their findings next to it. But at the end of their report you find

these two tables, 24 and 25.

Now, this is from Counsel for the Public's Exhibit 146, and it's Page 75 of KRA's report. And KRA specifically says, "The below illustration is not meant to be a forecast of likely economic" -- "of likely impacts." Do you see that?

A. I see that sentence, yes.

Q. That's a little different than how you characterize Table 24; correct?

(Witness reviews document.)

A. I don't see where it's different. I wrote that I don't find their aggregate economic impacts to be believable.

Q. You say "economic impact analysis." But they specifically qualified Table 24; correct?

A. I'm not sure I understand your question. What do you mean, "they qualified"?

Q. Well, what I just read to you. They said... they said that LEI -- no. Wait a minute. Yeah. Thank you. They said, "The below illustration is not meant to be a forecast of likely impacts"; correct?

A. But I'm not suggesting that they were trying

to forecast likely impacts. I'm just saying that I don't believe these numbers even as an illustration.

Q. Ah, okay. So you go on, then, in your report to criticize KRA for what you say... you say at the top that you criticize KRA for not modeling negative externalities when they did the work for the Vermont project, the Clean Power Link; correct?

A. Can you find the reference?

Q. If you look right at the top on your screen, you say, "While criticizing LEI for not including certain negative externalities in the LEI Original Report, KRA did not model negative externalities like traffic delays, property valuation loss and loss of local business in their study for the New England Clean Power Link Project..." Do you see that?

A. Yes, I see that now. Thank you.

Q. Now, that project is completely underground; is it not?

A. That project is underground and underwater.

Q. Yeah. So that's a little different than the

Northern Pass Project; correct?
A. There are some differences. Yes, I would agree.
Q. The Northern Pass Project has 60 miles of underground construction?
A. That sounds, subject to check, about right.
Q. And the Northern Pass Project will involve lane closures throughout that 60 miles of underground construction?
A. I not familiar with the specifics, unfortunately, of the details of the construction. But subject to check...
Q. You're aware that the Northern Pass Project will require some road closures and traffic detours?
A. I would assume so. Again, I'm not aware of the details, but I would assume so.
Q. You're aware that the construction -- Northern Pass goes through the middle of various business districts, such as Plymouth or Franconia or Woodstock?
A. Yes.
Q. And the impact of traffic delays on the Northern Pass Project is very different than

the project in Vermont; is it not?
A. Well, again, I'm not familiar with the details of the construction of the New England Clean Power Link. But my understanding is they also have some undergrounding along roads of their project as well.
Q. Do you know if it goes through business districts?
A. I'm not sure. I'd have to refresh my memory. I haven't looked at that specific project in a while.
Q. And you chided KRA for not addressing property valuation loss as part of the Clean Power Link Project; correct?
A. Yes. Property valuation loss is included as an example in my sentence.
Q. And would you agree with me that property valuation loss results from visibility of a transmission line?
A. I'm not a property appraiser. I would agree that visibility, aesthetics has a potential element or criteria in it. But I suspect there's other amenity values of being near

various infrastructure corridors that may or may not be a consideration in a property appraisal. So --

Q. Do you know the basis for property valuation loss for a transmission line?

A. I am not a property appraiser. So, no, I don't think I would like to speak to that today.

Q. Okay. So, although you chided KRA for not including negative externalities, such as traffic delays and property valuation loss and loss of local businesses in the Vermont project, you really didn't know whether or not the Vermont project included or had negative externalities for traffic delays, property valuation loss or loss of business, did you?

A. What I did know is that Mr. Kavet, in his testimony before the Vermont Public Service Board on this project, did talk about negative externalities. And so I was -- I think, in fact, if you scroll down, I'm wondering if... no, we don't have the citation here. Oh, we do, actually. I think

Footnote 94.

So I was talking to the information that I do know and the specifics of what Mr. Kavet had sent before the Vermont Public Service Board about the externalities. He did say that they exist, but they're temporary in his opinion and not significant.

Q. Okay.

A. That's the quote, the next sentence that you didn't have highlighted.

Q. And then you go on to say, "Perhaps most concerning, KRA did not consider any offset or positive externalities in their aggregate analysis"; correct?

A. Yes, that's my next paragraph.

Q. But KRA did in fact consider positive externalities in their report; did they not?

A. They did not use any positive externalities, to my knowledge, in Table 24 and Table 25 of their report.

Q. My question is: Did they consider positive externalities in their report?

A. I don't recall. I'd have to go back and take a look at my notes.

Q. Do you recall that -- well, you indicated earlier that one of the things you rebutted was the fact that KRA included the positive externality of payment of property taxes that you did not include in your first report; correct?
A. I don't consider property taxes to be an externality, so --
Q. The payment of property taxes is not a positive externality?
A. It's a positive economic benefit. But when I was talking about externalities, I was talking about emissions reductions.
Q. Anything else that you consider positive externalities?
A. I would consider positive externalities to the extent that -- I don't know. Let me think a little bit about this. Other effects of the Project that aren't, I would say... let me... aren't necessarily related to the direct kind of costs, if you will, of the Project. So the property tax payments, I think of those as consistent with, for example, the local spending that needs to be

done, the economic development funding. I didn't put a label of "positive externalities" on those.

Q. Okay. But KRA included in its report the economic impact from payment of property taxes and the economic impact from the Forward New Hampshire Fund; correct?

A. Yes, they did.

Q. Okay. So, Ms. Frayer, I'm going to ask you some questions about your analysis of NPT's impact on the local economy.

A. Yes, sir.

Q. Okay. So what I've put up on the screen is Figure 40 from your October 2015 report. And this shows -- it's a chart that shows direct jobs created by NPT during the planning and construction phase in New England. Do you see that?

A. I see it. Yes, sir.

Q. And you didn't update this since this chart was put into part of your Prefiled Testimony; correct?

A. I have not updated it. There is no basis for updating. This is inputs to the modeling.

Q. Okay. So the first category is jobs during planning, 2015. Do you see that?
A. Yes.
Q. And that involves spending that has occurred since 2009; is that right?
A. I believe so.
Q. Yeah. And most of these funds have already been spent; have they not?
A. The premise would be that these funds would have been spent. But again, this was information that we relied upon when we were developing our Original Report in October 2015. I haven't come across any updates or anything like that.
Q. Would you agree with me that, as of this time, June 2017, most of the funds, the vast majority of the funds for planning have been spent?
A. Well, I think this process is continuing for at least a few more months. And I do believe that the funding for this process is generally considered part of the planning stage. So I think a lot of funds have been spent. Do I know if all or some percentage?

I can't tell you.
Q. Okay. So if most of the funds have been spent, most of the economic impact on job creation would have already occurred; is that right?
A. There is some year-over-year dynamics that carry over forward in the REMI PI+ model because it's chronological. But I would agree with you. If we assume that most of the direct jobs have already been implemented, then the indirect and induced jobs and the additional economic activity would have also occurred already.
Q. All right. So, then, in the construction phase we have direct jobs, which are essentially construction workers and construction services; correct?
A. Construction-related jobs are the majority. I would agree.
Q. And then you have indirect jobs, which are essentially professionals and technical service sector; correct?
A. No, I wouldn't agree. Direct jobs does include also --

Q. No, indirect jobs.
A. And so I'm saying I don't agree. Direct jobs could also include engineers and other professionals that are necessary for the construction phase of the Project.
Q. Sure. But indirect jobs includes professionals and technical service sector; correct?
A. So indirect jobs, which are not in this figure, by the way -- and I explain this in very detailed form in my report -- would be including jobs that are being created ancillary to the construction of the Project. It's in Footnote 83 on Page 76. I give some examples there. So it's basically jobs at businesses that are providing certain goods and services essential to the construction phase. For example, this project's going to require quite a lot of specialized services from the logging industry. And to the extent that the companies need to hire a secretary or additional assistant in the office, that wouldn't really be a direct job, being employed on site of the construction of the

Project, but it would be an indirect job.
Q. Okay. And then induced jobs are things such as jobs at restaurants or hotels or the healthcare industry; correct?
A. Yes. It's basically jobs created at a variety of other sectors of the economy because of the workers on site. They require various retail services, health services, accommodation services.
Q. Okay. Now, if you look at your chart, you have the construction phase over a four-year period. Do you see that?
A. Yes, sir.
Q. Now, there's been testimony that construction will last 2 to 2-1/2 years. Does your chart include some carryover? Is that why it includes 4 years? Why does your chart include 4 years if construction is going to be 2 to 2-1/2 years?
A. I think there's a ramping-up period for construction that, based on the schedule that we used to develop these which was provided to us by the Applicant, the end of 2016 -- some construction activities were intended to

start. It was before the schedule had expanded in this siting proceeding. And there was a ramp-up. And as you can see, even in my chart, 2017 and 2018 have the majority of the construction-related direct spending.

Q. Right. So there's a little ramp-up. There's a little at the end. But the majority is going to be in that two-year period.

A. That is correct.

Q. Okay. And do I have it correct that the way you counted jobs is, if there's a job in 2016 that existed as part of this project in 2016, that would be included in the number 38; if that same job still existed in 2017, that would be included in the 2017 number; and if that same job still existed in 2018, that would be in the 2018 number? Do I have that right?

A. Yes, that's correct. In other words, and that's standard procedure in this industry for this type of analysis. We looked each year discretely at how many jobs were being deployed for construction.

Q. So what you were looking at is jobs, not necessarily workers; correct?
A. It's total jobs per year. And it -- again, consistent with the Bureau of Labor Statistics and how these metrics are modeled.
Q. Okay. So, for instance, a worker could start in 2016, work the whole four-year period, and that worker would be included in each of those four years, in the numbers for those four years; correct?
A. Yes.
Q. Okay.
A. And that's for the -- that also explains why I don't have like a total or cumulative sum. What I'm presenting is a construction -- you could talk about construction at peak, which would have been the 1,249 jobs at construction peak, or you should, if you want to look at multiple years, talk about an average.
Q. Okay. So you've broken down the workers by the six New England states, then you have a total. Do you see that?
A. Yes.

Q. And do I understand correctly that, if a direct job -- if you expect a job to be filled, for instance, by somebody from Massachusetts, then that person -- that job would show up under the Massachusetts column; correct?
A. Yes. It's geographic-specific at the state level.
Q. Okay. So would I be correct in saying that about -- under your chart, it's expected that about 21 percent of the workers are going to come from, looks like Massachusetts? About 213 is about 20, 21 percent of 1,006?
A. Yes, that's correct.
Q. All right. And it looks like... and the math is fairly easy. You can tell it looks like a little over half of the workers are expected to come from New Hampshire.
A. On average, yes.
Q. On average. Okay. And the other workers are expected to come from outside of New Hampshire.
A. Yes. Based on the information we received from Eversource, they were budgeting some

workers from Maine and a few from Connecticut and a few from Vermont.

Q. Okay. Now, in terms of indirect jobs, indirect jobs arise as a result of supplying goods and services to the Project's suppliers; correct?

A. Yes.

Q. And most of the supplies from the Project will come from out of state; correct?

A. Well, there's a lot of services that are being provided within New Hampshire. I'm not sure what you mean by "supplies." That's a very, kind of generic word.

Q. Would you agree with me about 27 percent of the supplies will be sourced in New Hampshire?

A. So, again, I'm a little bit concerned about your word "supplies." If you go to Figure 41, which is on the next page of our report, we talk in the words and terminologies that I'm comfortable talking. We talk about labor and material spending. And I agree that there's very large portion of labor and material spending for the

Project that's coming from outside New England. That's what's documented in Figure 41. I don't know if you have a copy of that for the ELMO.

Q. What I'm putting up in front of you, this is from your October 2015 report, Applicant's Exhibit 1, Appendix 43. You indicate that spending on materials is projected to equal about, almost $506.7 million, of which almost 27 percent would be spent in New Hampshire. Do you see that?

A. Yes, I do.

Q. Okay.

A. And so I use the word "materials." That's why I got confused with your earlier question about the term "supplies." It was...

Q. Okay. What's on the screen now is Counsel for the Public's Exhibit 293, and this is a chart out of, again, your October 2015 report, Applicant's Exhibit 1, Appendix 43. And this shows the direct jobs, indirect jobs and induced jobs in the planning and construction phase that we just talked about. Do you see that?

A. Yes, sir.

MR. PAPPAS: I think the Committee can review it itself without me walking through it.

BY MR. PAPPAS:

Q. But essentially what this shows is there's a fair amount of direct jobs from New Hampshire, there's a modest amount of indirect jobs, and then there's an amount of induced jobs. But essentially what the Project provides is a two-year concentrated period where the job impact is the most, and then it falls off fairly dramatically. Do you see that?

A. Yes. And this is only with respect to the construction phase of the Project because --

Q. Yeah, it says it right there, "Construction Phase."

A. There's a lot of induced jobs for New Hampshire during the operations phase of the Project.

Q. We're getting to that next.

Okay. So this is... what's on the screen is Counsel for the Public's Exhibit

294, which is your Figure 49 from your October 2015 report, Applicant's Exhibit 1, Appendix 43. And this shows jobs created by the operation of the Project that you mentioned just a moment ago; correct?

A. This is our estimate from the Original Report about the jobs. Again, total jobs. So direct, indirect and induced, during the first 10 years of operation of the Project.

Q. Right. And what it shows is you're anticipating a fairly significant amount of induced jobs; correct?

A. Yes.

Q. And as the chart shows, you're showing sort of a ramp-up of induced jobs and sort of a ramp-down. And then eventually the induced jobs, there are no longer new induced jobs; correct?

A. Yes, that is correct. Again, and I can try to explain those if you'd like further to help the Committee understand the --

Q. I think that they can read your report. I'm just trying to move a little quickly through this.

So, essentially what we see is for the first six years or so there's the induced jobs or a significant amount of job impact from operations; correct?

A. Yes, and it's because of the electricity market impacts that we see most of these induced jobs. So this figure, in terms of its profile, looks very similar to the wholesale electricity market benefits that were estimated in another part of my report.

Q. Now, this is total jobs across New England; correct?

A. No, this is just for New Hampshire.

Q. Oh, yeah, I'm sorry. You're right. I can't read it from here.

A. The New England is Figure 50, yes.

Q. That's next. Okay. So these are the total jobs across New England; correct?

A. Yes.

Q. Okay. And the Committee can read this on its own. But essentially what it shows is there'll be more new jobs created in Connecticut and Massachusetts, and New Hampshire would have the third most new jobs;

correct?
A. Yes, and that's consistent with the distribution of the electricity market impacts that I mentioned a few minutes ago.
Q. And if I understand correctly, these induced jobs, and I think you mentioned a moment ago, are the direct result of your forecasted reduction in electric rates; correct?
A. The majority of the total new jobs during the operations phase are related to the electricity market impacts.
Q. And the vast majority, about 90 percent, of the lower electric rates result from benefits from wholesale capacity market; correct?
A. That's correct.
Q. So the causal link is about 90 percent of the reduced electric rates come from the wholesale capacity markets, and those reductions in electric rates result in increasing induced labor -- induced jobs; correct?
A. Yes.
Q. Okay. So, for instance, if NPT does not qualify for the Forward Capacity Auction,

most of these induced jobs will not materialize; correct?

A. I don't agree with your "if" statement. But if I take the "if" statement as a hypothetical, the logic is correct.

Q. And if NPT does not clear, if its offer price does not clear in the Forward Capacity Auction, most of these induced jobs will not materialize; correct?

A. Again, I don't believe that the "if" statement is realistic. But on a hypothetical basis, the logic connection is correct.

Q. And if NPT does not qualify and clear 1,000 megawatts, but only qualifies and clears some lesser amount, that will reduce the amount of induced jobs that materialize; correct?

A. Subject to the same caveats on my answer, the logic of your hypothetical is correct.

Q. Okay.

CHAIRMAN HONIGBERG: Off the record.

(Discussion off the record)

BY MR. PAPPAS:

Q. If NPT qualifies and clears in the Forward Capacity Auction and reduces the clearing price in the capacity market, those benefits will result in lower revenue for energy generators; is that right?
A. Like with any competitive supply, when you have a new entrant come in that's competitive and introduces its supply into the market, other existing suppliers will be selling less --
Q. Yeah, so --
A. -- energy capacity.
Q. Okay. So, generators will receive lower revenue if NPT qualifies and clears in the Forward Capacity Market -- Auction; correct?
A. Yes.
Q. Okay. Your analysis didn't model the economic impact of generators receiving less revenue, did it?
A. My REMI analysis did not consider that. In fact, it's because most of the larger generators, in terms of their flow of funds and income, are outside New England. If the modeling was national or global, then that

type of effect would have shown up.
Q. To the extent that generators in New England receive less revenue because NPT qualifies and clears in the Forward Capacity Auction, that would reduce the amount of induced jobs created; correct?
A. Not necessarily. For example, let's take a facility that has corporate owners. There's a number of facilities that have corporate owners outside New England. The shareholders, the corporation, will be receiving less revenues, but the workers will not be getting a pay cut. They will still be getting the same salaries. So when they go home and spend money at their local grocery store or at some local retailer, they'll continue to do so. So I don't agree with that premise.
Q. Well, you said "not necessarily." It could happen, it could not happen; correct? You'd have to model and analyze it to determine whether or not it will reduce some of these induced jobs; correct?
A. Again, for the logic that I've just

explained, I don't think it will happen.
Q. Well, it's possible that generators would hire less employees if they had less revenue; correct?
A. I think anything is possible. But I don't think the impacts we're talking about in my modeling, when you delve it down to the individual generator, are going to create the conditions that you're describing in your hypothetical. Most of these facilities are already being run with the right level of staffing. And our analysis shows that there aren't any generator retirements as a result of Northern Pass's entry into the market. So that type of condition you're thinking about, which would happen if a plant retired -- again, we're not predicting that's the case -- isn't present in our analysis.
Q. But if your prediction isn't correct and plants retire, then that would reduce the amount of induced jobs created by NPT; correct?
A. I guess in theory and a hypothetical, if a plant were to close down, yes, as a result of

Northern Pass.

Q. Okay.

MR. PAPPAS: Mr. Chairman, this is a good place to break.

CHAIRMAN HONIGBERG: All right. We will take morning break and be back in 15 minutes.

(Brief recess taken at 10:42 a.m., and the hearing resumed at 11:03 a.m.)

CHAIRMAN HONIGBERG: All right. Mr. Pappas, you may continue.

BY MR. PAPPAS:

Q. Ms. Frayer, I want to ask you questions about your use of the REMI model. Now, to develop your forecast on jobs, I understand you were supplied with data from Eversource. Is that correct?

A. Yes.

Q. And one of the things Eversource gave you was construction cost estimating guides for hourly rates; is that right?

A. Eversource provided us with -- yes, with compensation rates. I referred to them as "compensation rates."

Q. All right. As I understand it, they provided fully loaded wage rates; is that right?
A. Yes, that's correct.
Q. And fully loaded wage rates include, in addition to wages, benefits such as union dues and health benefits and so forth?
A. That is correct.
Q. Did it also include contractors' overhead costs and contractors' profit?
A. Yes, it would -- well, depending on what category, it could include that.
Q. Okay. Now, what I'm putting up on the screen is Counsel for the Public's Exhibit 296. And this is Table 3 from KRA's report, which is Counsel for the Public's Exhibit 146. And this table shows different workers and wage rates that you used in -- the wage rates for different workers. Do you see that?
A. So what I see that refers to our inputs would be the light yellow columns, or the columns that have the heading row in light yellow, "LEI Category, LEI Annual Compensation" numbers.
Q. And these were the annual compensation

numbers you used to input into the REMI model to do your analysis?

A. Yes, that is correct.

Q. Okay. Now, would you agree with me that the REMI model already counts for things such as union dues, contractors' overhead and contractors' profit?

A. Depending on how one uses the REMI model, it may or may not incorporate that. So the way that we had used the compensation data was internally consistent with a particular form of policy variables that we used which wouldn't double-count for any of those.

Q. Another way of saying that is did you turn off certain things in the REMI model to avoid double-counting?

A. It's not a question of turning off. It's a question of selecting the units of the metric or policy variable you're using. For example, if you will, I can explain it to the Committee in a little bit more detail the differences between the middle columns and, for example, the REMI categories. It's a very, I think, straightforward, intuitive

difference. The REMI categories are essentially looking at maybe what I would say is a typical salary paid to a worker in this particular industry category; whereas, our compensation rates are looking at what Northern Pass, in this instance, would be spending on services provided by workers within a typical industry category. So, for example, the invoiced amounts for Legal and Expert Witnesses, for Communications, Community and Legislative Outreach and so forth, it's the services that they're paying for that then go back and affect the economy. And the REMI model is flexible to use either/or.

Q. So if you look at the first category, which is Legal and Expert Witnesses, do you see that?

A. Yes, I do.

Q. And on the right it has what you used for annual compensation; correct? Is that what you used for annual compensation?

A. The figures that are listed in the two columns under "LEI Compensation"?

Q. Yes.
A. Yes.
Q. Okay. And that's per person?
A. That's essentially a per-job --
Q. Per job?
A. -- per-job element.
Q. So that's the figure you used for annual compensation per job.
A. Basically for the services paid by Northern Pass for services over the course of a year from that category of Labor; so, for a team of legal experts providing those services over the course of a year.
Q. "Per job," does that mean one person filling that job?
A. Well, actually, the total job definition, and I have this in my Original Report, isn't specific to FTE, part-time, seasonal worker. It's a concept, a job. And a job doesn't have to be a single individual. It --
Q. So some jobs may be a single individual and some jobs may not?
A. It's a composite.
Q. Do you break that out, in terms of which jobs

you use composites and which jobs you considered single individual?

A. No, and we don't need to in REMI.

Q. And as I understand it, you inputted your labor rates in order to determine essentially the impact on Gross State Product or Gross Domestic Product; correct?

A. We would have inputted compensation rates and the actual dollar spending. The two in combination work through the model to determine then the economic activity impacts and, of course, employment impacts.

Q. Okay. So you also obtained from Eversource the value for materials required for the Project; correct?

A. Yes. We had a full budget, and the full budget incorporated labor and non-labor expenses.

Q. And those are the two inputs you used in the REMI model.

A. Let me make sure I don't mistakenly answer the question. There's actually, I would say, multiple, more than two. On the labor side, we would need compensation, but we would also

need dollar spending on labor. The two have to go hand-in-hand. So that's already two inputs. And then, of course, there's also non-labor spending, materials spending, and that has its own input fields in the REMI PI+ model.

Q. In the REMI model, did you use the General Construction category for materials?

A. Yes, I believe we did.

Q. And the General Construction category includes a number of types of construction; correct?

A. Yes. It's an aggregate industry sector.

Q. It includes, for instance, transmission lines; correct?

A. A variety of different constructions, yes.

Q. It includes construction such as office buildings, warehouses, retail stores, residential buildings; correct?

A. Yes, although I think we used a subcategory of the Construction sector that wasn't including residential; so it was non-residential construction.

Q. Okay. And as I understand it, the REMI

Construction sector includes purchases of things such as plumbing and glazing and mill work and roofing insulation, things that go into commercial office buildings or warehouses and so forth; correct?

A. It incorporate a number of different services that would be demanded as part of a construction project, if that's the question.

Q. And those include purchases such as plumbing, glazing and mill work and roofing and insulation and so forth; correct?

A. Those include a variety of different services and different materials for those services.

Q. Right. And the materials I just listed are some of the materials included; correct?

A. Yes.

Q. Okay. Now, those types of materials -- plumbing, glazing, mill work, roofing -- are not needed for a transmission line, are they?

A. No, those aren't, but other construction materials are.

Q. But the Construction sector that you used in REMI includes spending for those types of materials; does it not?

A. It includes spending for a variety of materials.
Q. Including the ones I just listed; correct?
A. Yes. And the Project clearly requires spending on materials in the Construction sector. We didn't have within the REMI model the ability to focus just on the Construction sector for transmission. We focused on the broader Construction sector, Industry category.
Q. So the REMI model includes these additional purchases as part of its Construction sector that are not needed for a transmission line; correct?
A. I wouldn't describe it that way. The REMI model incorporates a representation of the General Construction sector, and we focused on non-residential. But it doesn't break it down further.
Q. Would you agree with me that adding purchases of this additional material would distort the number of induced jobs or the increase in the Gross Domestic Product?
A. No, I would not agree because I'm not telling

the model to purchase insulation or glazing. I'm telling the model that there is spending done for various materials that may be needed as part of construction of the line. And I know the dollar amounts of that spending. I can't direct the model to specify which individual subsectors. But the model isn't doing that 'cause it's higher. It's more aggregate.

Q. Let me ask you some questions about the payment of business income taxes that you included in your April 2017 report.

First of all, what state business income taxes are you referring to?

A. This would be the business income taxes payable by the Project.

Q. What are they?

A. I'm not sure I understand your question.

Q. Can you name me the state business income tax payable by the Project?

A. I don't think I have a specific category of the tax code for New Hampshire, if that's what you're recommending -- or suggesting.

Q. Do you know the specific state business

income tax that you included in your report?
A. I relied, as I suggested earlier, and coordinated with Dr. Lisa Shapiro. So I --
Q. So the answer is you don't know yourself.
A. I'm not sure I can provide you with the nomenclature for that business income tax.
Q. Do you know the tax rate?
A. No, I don't know it, off the top of my head.
Q. Do you know what income is taxed?
A. I am not familiar with those calculations, but I'm pretty sure Mrs. Shapiro -- Dr. Shapiro can help you.
Q. Okay. When you use the REMI model, you simulated the operation of NPT to determine the increase in jobs and the increase in Gross Domestic Product, correct, for the operational phase?
A. Yes, that's correct.
Q. Okay. And one of the things you simulated was a gain in utility employment; is that right?
A. Yes. The Project expects to make expenditures over the course of the operations of the line for operations and

maintenance of the line. And the labor component of that was simulated through direct utility employment. It's a very small number, but...

Q. And the REMI model estimates the economic effect of a change in utility employment; correct?

A. Can you repeat your question?

Q. Sure. The REMI model will estimate the economic effect from a change in employment resulting from -- let me back it up.

You estimated the change in employment from operations of the plant; correct?

A. I estimated that approximately -- there would be approximately two jobs per annum related to the operations and maintenance of Northern Pass, and that was included in the operations period impacts.

Q. Okay. And you also -- and so the REMI model then estimated the economic change from that; correct?

A. The REMI model would then look at those, and if it was done in isolation, let's just argue for the sake of clarity those two jobs, and

say, okay, what other sectors of the economy may be impacted by those two new jobs.

Q. And you also, as part of estimating the impact of business income taxes, estimated the increase of employment as a result of NPT; correct?

A. The business income taxes were modeled as payments made by Northern Pass.

Q. And when the REMI model estimates the economic effect of change in employment, does the REMI model implicitly estimate the payment of business taxes along with that change of employment?

A. I'm not sure -- I think I'm going to have to ask you to repeat the question again. I'm not following the words.

Q. Okay. So the REMI model, in order -- I'll back up.

One of your inputs into the REMI model is a change in employment; right? New employment; correct?

A. Yes.

Q. Okay.

A. And in the operations phase, it's related to

the O&M spending.
Q. And the REMI model then estimates the economic impact of that change in employment; correct?
A. Yes. So the two new jobs, those new jobs would be able to expand local retail services, housing and so forth in their incremental nature.
Q. And when the REMI model makes that estimation of the economic effect, does it implicitly include the payment of business income taxes?
A. It may or may not, depending on how you model that employment. And if I can also -- the way that we modeled business income taxes is it was a spending, a funding by Northern Pass. But essentially the policy variable we used to model business income taxes is the state government spending. So the state government received those business income taxes and then can spend on various programs.
Q. But my question is: The REMI model also implicitly includes an estimation for business income taxes; does it not?
A. It depends on how you model it, whether you

put it in as industry sales or whether you put it in as jobs. We put it in as jobs.

Q. And when you put it in as jobs, does the model assume that taxes will be paid?

A. When we put it in as jobs, there are some assumptions of taxes, but I don't believe business income taxes.

Q. So when you input it as jobs, it then -- the REMI model then estimates the spending by the utility; correct?

A. Yes.

Q. Yeah. And when the model then estimates the spending by utility, it includes the payment of business taxes; does it not?

A. No. The business taxes are being paid on income received by the utility, not expenses.

Q. But doesn't the REMI model implicitly include the payment of business taxes when it does this modeling?

A. Depends on how you model it. The REMI PI+ model is very flexible. You can model, for example, spending on a particular type of labor as industry sales or as jobs. And depending on how you choose to model it in

the model, it may or may not include other, what I would call "indirect demand effects" on other elements of the economy. We chose to model it, just for clarity, as incremental utility jobs.

Q. Now, your forecast predicts the retirement of four New Hampshire carbon-emitting plants in 2021; correct?

A. Sorry. Repeat the question. Our model --

Q. Your forecast predicts the retirement of four New Hampshire carbon-emitting plants in 2021; correct?

A. In the Updated Analysis, our modeling in the Base Case without Northern Pass predicted some retirements. I believe going beyond that, it gets us into confidential data.

Q. Okay. If I ask you about the Project Case, is that going to get into that confidential information in terms of retirement, without identifying specific plants?

A. Please go ahead and ask.

Q. Okay. Your Project Case also includes the retirement of four New Hampshire plants; correct?

A. Yes. So the way I like to actually just for the sake of clarity state this, our Project Case has the same plants retiring that we would expect to retire even in a world without Northern Pass. So the same plants are exiting the market. We don't have any incremental or new retirements of any kind across New England as a result of Northern Pass.

Q. Okay. So when you -- as part of estimating the impact on the payment of business income taxes, did you account for the retirement of these four New Hampshire plants? For instance, did you remove the business income taxes they would have paid?

A. We didn't have to because we're trying to capture the differences between the Base Case and the Project Case. In order to do that, we would have to adjust what we call the "REMI baseline," which is a default set of inputs that the REMI PI+ model comes with. And it would have resulted in the same exact numbers that we're presenting in our report. Our entire analysis, be that the economic

analysis, the electricity markets analysis, it's always looking between two states of world: A world without NPT, the Base Case, and a world with NPT. So if we change some assumptions that equally affect both states of the world, it would have no impact on the results we're presenting.

Q. So did you remove the effect of these four plants retiring when you did your analysis for the payment of business income taxes?

A. No, we did not. And again, because we're representing here the incremental, it's not necessary to do so.

Q. Well --

A. We're not presenting a forecast of future GDP levels. What we're presenting is how does this project affect GDP. And as I said, those four plants retiring aren't caused or a consequence of Northern Pass.

Q. Would you agree with me that ultimately customers pay business income taxes as part of the electric rates? In other words, what they pay in electric rates goes to the utility, and that's the revenue from which

utilities pay things such as business income taxes?

A. I would agree that electric rates, absolute rates revenues that are received by utilities do include accounting for taxes. But I don't believe that's necessarily one-to-one because we have unregulated activities in the sector that don't necessarily flow through dollar-for-dollar.

Q. Now, Counsel for the Public's local economic experts, KRA, also used the REMI modeling in this proceeding; correct?

A. Yes, that's my understanding.

Q. Yeah. And they also estimated different impacts from NPT as LEI did; correct?

A. Yes, they looked at the local economic impacts. They created their own estimates of the local economic impacts.

Q. And they -- in order to estimate, for instance, the jobs created, they, like you, used an input of the reduction in electricity rates, correct, the benefit -- essentially the benefit from the wholesale market?

A. Yes, I believe they did use that, among other

things in their analysis.
Q. Would you agree with me that the major difference between your estimate of job creation and KRA's estimate of job creation is that you used in your modeling what you thought would be the benefits, the wholesale benefits from NPT, and KRA used benefits that the Brattle Group estimated?
A. So, just to be clear that I understood, we're talking about electricity -- the economic impacts, local economic impacts associated from electricity market effects which would only -- we're talking about the operations period; is that correct?
Q. Correct. We're not talking about construction. We're talking about operations, yes.
A. I believe there are actually two reasons why the numbers differ. One of them is that my understanding is KRA relied on a particular scenario and a particular set of results from Brattle Group's analysis. But there's also another area that is combined in what they call "electricity market effects," and it's

their own assumption, KRA's own assumption that they made regarding certain plant closures that wasn't modeled or predicted by Brattle Group's analysis.

Q. Okay. Would you agree with me that the major difference, the driver of the difference between what LEI forecasted for job creation -- and again we're in the operations section -- and what KRA forecasted was that KRA used Brattle's estimate of wholesale benefits, and you used LEI's estimate of wholesale benefits? That's the major difference. The second part had some effect, but the major difference was you used your estimates of wholesale market benefits and KRA used an estimate from the Brattle Group.

(Witness reviews document.)

A. I don't know if it's possible to ask, but you had an exhibit earlier that had Table 24 from KRA's report. If it's possible to put it up on the screen, that would help me in answering the question. And I apologize. I just don't have it readily available, so...

Q. Is this what you'd like to look at, at that

table?

A. Yes, because you were asking about jobs; right? And this table is showing KRA's jobs impacts. And they have something called "electricity market effects," which is I believe what you're asking about, if they're the majority of the number. We can kind of almost ignore all the other rows. But this is -- the second column, 2020 to 2030, is an overlapping time period with our original analysis for the electricity market effects. They have 131 jobs here. There's also another table earlier in this report that talks about the same category and presents a slightly different number to this, which I believe is 263 jobs. And I think that just gives you a feel for the magnitude of the difference between those is that second element that I described, the assumptions made with respect to retirements of certain plants.

So I think that, in fact, probably for New Hampshire, I would say the two effects I'm talking about that differ between LEI's

analysis and KRA's analysis is not just the difference in electricity market benefits, but also this assumption of the jobs lost, essentially, that comes from a hypothetical assumption KRA makes around certain plant closures that neither LEI nor Brattle Group are predicting.

So I wouldn't agree with the word "majority," which is part of your question, that the majority is all related to differences in electricity market benefits. No. I think another important reason is this particular assumption KRA made in their analysis that we don't agree with.

Q. Did you analyze how much was out of one component -- one item and how much is out of another? Have you done that analysis?

A. So we did part of the analysis where we analyzed what would happen with and without those additional retirements, and that's in my Rebuttal Testimony -- sorry -- the April 2017 report, and it's documented on Page 50.

Q. Okay.

A. It starts on Page 49, of course, but continues to Page 50.
Q. So now I want to ask you some questions about increased Gross Domestic Product, or in the Battle Group -- I mean KRA, they call it "Gross State Product." That's the same item.
Now what's on the screen is Figure 48 from your October 2015 report which we separately marked as CFP Exhibit 298. And it shows your estimated increase in state GDP in New Hampshire and the rest of New England during the construction phase. Do you see that?
A. Yes, I do.
Q. Okay. And you estimated that -- as we saw in your prior chart, you have an estimate for increased GDP during the planning phase. Do you see that?
A. Yes.
Q. And would you agree with me that, as of today, probably most of those impacts have already occurred?
A. With the same reservation I had earlier today, yes, I would agree with that.

Q. And then you show the impact during the four years that you estimate for construction. And as before, we see a small impact on the ramp-up, if you will, a much greater impact for the two years of construction and then a small impact on the ramp-down side. Do you see that?
A. Yes.
Q. Okay. Now, would you agree with me that if -- and you probably don't disagree with the "if." But if you'd agree with me that if you inputted excessive wage rates for the construction part, that would have an impact on what you're estimating for Gross Domestic Product?
A. I would only agree to that if I was somehow modeling an impact where the wage rates themselves only changed without considering also the spending. So as I mentioned earlier, the dollar spending and the wage rates go hand-in-hand.
Q. Well, for instance, if the wage rates were actually lower than you used, you'd expect the spending to be lower, wouldn't it?

A. But that's not the case. We had inputs on spending dollars, wage rates dollars per job, and that dictated number of jobs. If you just change one, of course it distorts things. But we would never have done that because it doesn't make sense in the context of how this project impacts the economy. It's the two that go hand-in-hand.

Q. So if your wage rates were incorrectly higher, and your spending on materials was greater than actual, if the two items were greater in your model than actual, that would then have an impact on your estimated GDP increase during construction, correct, because those are the two items you just identified?

A. Well, it depends on how much each is off. So I don't know if I can answer the question. The model is looking at compensation. The model is looking at -- and you had a table earlier -- direct jobs. Direct jobs is an input, but it's an input that's a function of the compensation rate and the dollar spending. So if your, let's say, dollar

spending was high by 10 percent and your compensation rates were high by 10 percent, then when you divide one by the other, you get to the same number of total jobs. Might not make a big impact. I think it depends on the combination of inputs that are going into the modeling.

Q. We're talking about Gross Domestic Product here, not jobs.

A. Yes, but the jobs, the direct jobs, is what actually then drives economic activity. Direct jobs leads to indirect jobs, leads to induced jobs and expansion of the sectors directly impacted, but also expansion of other sectors indirectly impacted. And that's what drives GDP, or GSP as you call it.

Q. So would you agree with the basic premise that if you inputted a higher, fully loaded wage rate than actual, and if you inputted more material spending than actual, that would have an impact on your estimate of GDP during the construction phase, in the sense that it would -- your estimate would be

higher than if you'd used the lower figures?
A. I'm not sure I understand your hypothetical. If you're inputting wrong data into the model, you get wrong results. I'm confident that we did not input wrong data into the model.
Q. I understand you've expressed your confidence. That's not what I'm asking about. I'm asking about if you put the wrong data in, the wrong results come; correct?
A. I would say that about any model.
Q. Okay. And if you put -- if the wage rates and the construction material spending was too high, this estimate of GDP would be too high; correct?
A. In the hypothetical world, if you had wrong numbers to put in, yes, and they were too high, then you'd be over-estimating the economic benefits of a hypothetical project.
Q. Okay. So what's on the screen now is Counsel for the Public's Exhibit 299, which is Figure 41 -- Figure 51 from your October 2015 report. And this is an estimate of annual GDP during the first 11 years of operation of

NPT. Do you see that?
A. Yes, I do.
Q. Okay. Now, you estimated an increase in GDP for the six New England states, and the New England average is $1,156,000. Do you see that?
A. Yes, I do.
Q. And you estimate the New Hampshire average is $162 million per year. Do you see that?
A. Yes, I do.
Q. And my math tells me -- I should say my calculator tells me that New Hampshire's share is about 14 percent of the New England average.
A. Yes.
Q. Okay.
A. That's correct. Or subject to check. But that sounds in the ballpark.
Q. All right. Now, would you also agree with me that most of the GDP is a result of lower retail electric rates?
A. Yes, that is correct. In our analysis, most of the GDP impacts during commercial operations as estimated is being driven by

electricity market impacts.
Q. And the vast majority of lower retail electric rates, almost 90 percent, come from the wholesale capacity market benefits; correct?
A. That is correct.
Q. So if NPT does not qualify for the Forward Capacity Auction, the projected increase in GDP that you're showing on this figure will not occur; correct? Or the vast majority of it will not occur.
A. I don't agree with the "if" statement because that's not what our modeling showed. But I would agree with the logic that the capacity market benefits, the wholesale capacity market benefits are essentially driving the regional economic benefits we're seeing in my modeling.
Q. And the same applies if NPT's offer price does not clear in the Forward Capacity Auction. The projected increase in GDP that you're showing will not occur; correct?
A. Yes. In this hypothetical you're presenting, that's correct.

Q. So in terms of NPT's impact on Gross Domestic Product, we saw in the earlier slide the impact for a few years during construction, and then on this we see the impact for the first eleven years during operation. Would you agree with me that, unless NPT qualifies and clears in the Forward Capacity Auction, the estimated economic benefits, in terms of GDP for this project, are pretty much limited to the impact from construction?

A. I would agree under that hypothetical. You're basically saying if there's no project, there's no benefits, and I would agree with that.

Q. No, I'm saying if there's a project, but you don't realize the wholesale benefits, the wholesale market benefits by clearing and qualifying in the Forward Capacity Auction, essentially what you get is a two-year bump in GDP from construction.

A. Well, for New Hampshire -- let's step back.

Q. Wait a minute. Please answer my question first and then you're free to explain.

A. So your question -- can you repeat that so I

make sure I precisely answer it?
Q. Sure. Unless NPT qualifies and clears in the Forward Capacity Auction, the only benefit to New Hampshire's GDP is essentially a two-year bump during construction.
A. I don't agree. If your hypothetical holds that New Hampshire -- sorry -- that Northern Pass does not clear and does not qualify in the capacity market benefit, in my mind, at least in my personal professional view, that's equivalent to no project. You're basically creating a hypothetical where the Project doesn't get any capacity revenues.
Q. Do you think this project will go forward if it gets no capacity revenues?
A. I think the capacity revenues are an important element of the Project.
Q. Do you think this project will go forward without them?
A. I can't speak for the Project management. I don't know what their decision --
Q. Do you think the economics of the Project make sense if they don't receive capacity revenue?

A. I think the capacity revenues are an important part of the Project, based on my projections. But there might be other commercial arrangements that I'm not aware of.

Q. Based on what you're aware of, does this project make economic sense without receiving capacity revenue?

A. This project... maybe the way I need to answer this is I haven't evaluated this project without capacity market revenues. I've evaluated this project on the basis of my forecast which does show that it should be able to clear and qualify and clear the capacity market. And on that basis, the Project, on my numbers, looks very economic.

Q. So, because you haven't evaluated the Project on the basis of it not clearing and qualifying in the Forward Capacity Auction, if the Project does not clear and qualify in the Forward Capacity Auction, the Committee really should simply disregard your analysis because you didn't analyze that scenario; correct?

A. I didn't analyze that scenario because I don't think it's realistic or probable. This project is a new supply source, very competitive, a type of project that even the ISO has said they're seeking, that they're interested in having join their market. On all parameters that I've looked at, this project should clear -- should qualify, first of all, and then should clear in the capacity market.

Q. That's the basis upon which you did your analysis; correct?

A. It is. That is -- I won't say it's the basis. It's the results of my analysis.

Q. That was an assumption that you made as part of your analysis; correct?

A. It's an assumption that we started with. And then we tested, and we showed that there should be no problems qualifying the Project or clearing the capacity market based on our projections.

Q. Okay. And you started with that assumption because you felt that the Project didn't really make economic sense unless it received

capacity revenue; correct?
A. No, that's not correct. I started with that assumption because, to me, it was self-evident that this is a source of competitive supply that will be able to compete in these markets.
Q. So, before you did your analysis, you really, in your mind, had concluded that this project would qualify and clear in the Forward Capacity Auction, correct, and then your analysis simply corroborated what your opinion was?
A. Our analysis looked at the market rules, looked at the market fundamentals and conditions, and concluded that this project would be able to participate in the capacity market.
Q. But you had made that conclusion at the start, and your analysis corroborated your conclusion; is that right?
A. I don't know if I would say I made the conclusion that it would create these benefits. I made the conclusion that it is a competitive source of supply that should be

able to qualify and clear, subject to all the technical requirements that go along with it, and then we did analysis to show that that intuition is in fact correct.

Q. Ms. Frayer, what I'm showing you now on the screen is Counsel for the Public's Exhibit 263. And this is Figure 1 from I believe your April 2017 report, which I think is Exhibit 102. Now, this shows the difference between your October 2015 analysis and your updated February 2017 analysis. Do you see that?

A. Yes, I see the figure.

Q. And in October 2015 you had forecasted total wholesale market benefits of $81 million to $82.5 million; correct?

A. That's correct. Can I just make a correction? I just want to make sure everybody knows. This figure is from my Updated Analysis issued in February and then with some revisions reissued in March. This isn't from our April 2017 report.

Q. Okay. So this is from your March report.

A. Yes, just to make sure everybody's on the

same page.
Q. Thank you. And your October 2015 analysis forecasted $79.6 to $80 million of benefits from the capacity market; correct?
A. That is correct.
Q. And when you did your updated forecast, the total wholesale market benefits you estimated at $61.6 million. Do you see that?
A. Yes.
Q. That's about 25 percent less wholesale market benefits; correct?
A. Yes.
Q. Now, you indicated earlier that the wholesale market benefits drive the decrease in electric rates; correct?
A. Yes.
Q. Yeah. And the local economic benefits, once NPT begins operations, are a function of the wholesale electric market cost savings for ratepayers; correct?
A. Consistent with our Original Report, they're the biggest driver of local economic benefits across the region. They're not the only driver for New Hampshire, but they're the

biggest.
Q. They're about 90 percent, aren't they?
A. Yes, they're a large share.
Q. Okay. And you had estimated that the lower -- the local economic benefits once NPT begins operation would result in Gross Domestic Product of $162 million per year on average. Do you remember that?
A. I can find it. But subject to check, I'm assuming that you've captured the spirit of my analysis.
Q. I think I wrote it down correctly, but you're welcome to check it.
And you also had estimated that, on average, the job increase would be 1,148 jobs for New Hampshire.
A. That's correct.
Q. Okay. Now, since you now in your update had forecast a decrease in wholesale electric market benefits, you would expect a corresponding decrease in the local economic benefits from operations of NPT; correct?
A. Yes. Again, for New Hampshire, the electricity market effects aren't the only

driver, but they're the majority of the driver.

Q. And you forecasted 25 percent decrease in the amount of wholesale market benefits; right?

A. Correct.

Q. So you would expect a corresponding 25 percent decrease in the amount of electricity rate savings; correct?

A. That's approximately correct.

Q. And you'd also expect a corresponding 25 percent decrease in the forecasted local economic benefits; would you not?

A. It's going to be a little bit more -- I'm sorry -- a little bit less than 25 percent because, again, New Hampshire gets the benefit of some other drivers of economic activity, like the New Hampshire Forward Plan and the O&M spending by the Project and, you know, as estimated by KRA and then ourselves in the rebuttal, property taxes and so forth. But it is in that range.

Q. It is in that range; correct?

A. Yes.

Q. All right. So, would -- also in that range

would be a decrease in the estimated GDP increase and a decrease in the estimated job increase, correct, because those are the two economic, local economic benefits that you measured?

A. Those local economic benefits, jobs and GDP, do go generally hand-in-hand. There are some differences. But in the scale of things, we would expect somewhat lower GDP benefits as well because of the lower electricity market benefits.

Q. Okay. Now, when you did your October 2015 report, you did not discuss any economic benefit from NPT's payment of property taxes; correct?

A. We didn't include it in the REMI modeling. We acknowledged that they are an economic benefit, but we conservatively didn't include it in the REMI modeling.

Q. And you have since estimated those impacts; correct?

A. We have since, as part of the Rebuttal Testimony, incorporated an estimate of what those property tax benefits, which we

recognized even originally, what those could do to the local economy through local government spending.

Q. Right. So be fair to say that your estimate is no longer conservative in that respect, correct, because you didn't do it because you were being conservative. But now that you do it, that's no longer conservative.

A. The reason that we are doing it, in fact, is as part of a rebuttal to the analysis that KRA performed. We felt they did it incorrectly. So, to the extent that the Committee would like to see what that means, we wanted them to have access to correct numbers.

Q. And that would no longer be considered conservative; correct?

A. I think we were still in some ways perhaps conservative in the treatment that we assigned how we modeled it. But the number is definitely higher. It's not zero as it was in the original analysis.

Q. Now, you originally didn't discuss economic benefits from property taxes because you

thought all property tax payments would go to debt reduction and therefore not impact GDP; correct?

A. I didn't say that's what I thought. I said they could. In fact, if you go to Footnote 79 on Page 72 of our Original Report, that pretty clearly spells out our views on property taxes in the original analysis.

Q. But you indicated that you thought all property tax payments would go to debt reduction; correct?

A. No. I said they could go to pay off existing debt, and under that situation they would likely not generate additional economic activity.

Q. Okay.

A. I also went on to state that they could plausibly also be deployed to expand government spending, in which case they would positively affect the New Hampshire economy.

Q. Now, in your Supplemental Report, in estimating or forecasting the economic impact from the payment of property taxes, what

amount of tax revenue did you assume municipalities would spend?

(Witness reviews document.)

A. We assumed that... subject to check, but we assumed that all of the estimated property tax revenues that Dr. Shapiro projected would be used, but for local government spending, and that's described on Page 69 of my Appendix C to the Supplemental Rebuttal Report.

Q. And by assuming that all of those property taxes would be spent by the local governments, that produces the most impact on the economy; correct? Can't get any more than spending 100 percent.

A. Well, you could spend 100 percent on other. You could be very specific on what the local government spends it on, and there could be bigger multiplier effects. We didn't go that far. We didn't want to predict specific projects that the local government would take on. So we just used the generic local government spending policy variable.

Q. And KRA, in its analysis, assumed that the

local government would spend 50 percent of the tax payments and apply 50 percent to debt reduction; correct?

A. Subject to check, I think that sounds correct. I'd have to go back and take a look.

Q. And that approach would be a more conservative approach than assuming that the local government would spend 100 percent of the taxes on new spending; correct?

A. Their number was lower than the number we estimated. So I can verify that.

Q. That approach would be a more conservative approach; would it not?

A. I believe there were flaws in their approach.

Q. My question is: Assuming that the local government spent 50 percent on spending and used 50 percent for debt reduction is a more conservative approach than assuming the local government spent 100 percent on spending; correct?

A. It results in a lower economic impact, yes.

Q. Now, this project includes 60 miles of underground construction; is that correct?

A. Yes, that sounds right.
Q. Let me ask it this way: You indicated earlier that you're not familiar with the specifics of construction of this transmission line; is that right?
A. With the specific schedules and how they plan to stage it, I'm not familiar with that, no.
Q. And are you familiar with where the line goes underground?
A. Very generally. I know that it does.
Q. And are you familiar -- are you aware that as part of the underground construction there will be lane closures and some road closures and some traffic detours?
A. I would assume that there would have to be some traffic detours for the period of time that construction is occurring in a particular location.
Q. Okay. And you're aware that all the underground construction is north of Bridgewater, New Hampshire?
A. That is now getting into geographical specificity that I might not be able to confirm.

Q. Okay. Are you aware that all of the underground construction activity occurs in an area that is highly dependent on the tourism industry?
A. I have read that that is the -- I believe I read that assertion in the report KRA put together, but I haven't independently confirmed that.
Q. Okay. Would I be correct in saying that you did not factor into your analysis any disruption to businesses in New Hampshire during the 2-1/2 years of construction?
A. I would somewhat disagree with that statement. Northern Pass has retained experts that are more knowledgeable on those issues, like construction-related disruptions. And I have spoken to those experts to elicit their expert opinion on the impacts. And on the basis of the information they provided, in my Supplemental Report I made the conclusion that there would be no substantial lasting effects.
Q. When you did your October 2015 report, had you spoken to any of the other experts that

you just referred to?
A. We had spoken to them, yes.
Q. Who did you speak to?
A. I would have not spoken to them face-to-face, but we spoke with -- through the counsel to identify whether there were other issues that we had to take into account.
Q. Did you learn in October of 2015 whether or not the construction would have an impact on New Hampshire businesses during the two-year construction period?
A. What I learned in October is that there would be no significant long impacts that needed to be considered. Very high level and generally. I think everybody understands there are temporary effects. But, for example, with business traffic, a temporary effect may mean -- and I think I write this up in my Supplemental Testimony -- that there may be reduced traffic in one town and increased traffic in a neighboring town that might have the same services that it could offer to customers. So, since our analysis, our REMI analysis is really at the state

level, we don't go down to the locality, the county. We're keeping everything at the state level. We did not conclude that there was a measurable net negative.

Q. At the time you did your October 2015 report, had you read the reports of any of the other experts in this case?

A. I personally did not read them. I relied on summaries provided to me by counsel.

Q. And you haven't changed your local economic forecast since October 2015; correct?

A. We did not update the local economic benefits associated with construction -- there is no basis for it -- or the electricity market effects during the operations period.

Q. And you didn't yourself do any analysis to determine whether or not the 2- to 2-1/2-year construction period would have an adverse impact on local businesses along the 60-mile underground route, did you?

A. I did not personally do any type of traffic, construction analysis, tourism analysis. No, I did not.

Q. Or any analysis on the impact of businesses

along the 60-mile underground route; isn't that right?

A. I reviewed the conclusions and analysis of other experts to form my conclusions. But when we talk "analysis," it's such a broad term. So I didn't do any other number crunching or other quantitative analysis on those issues.

Q. Did you assume that there would be no adverse impact to businesses along the 60-mile route during the 2- to 2-1/2-year construction period?

A. I assumed that for New Hampshire state as a whole there would be no adverse impacts, yes.

Q. So if businesses along the 60-mile underground route suffered adverse business consequences, a reduction in their business by some factor, that would affect your conclusions on state GDP during construction; correct?

A. Hypothetically, yes. But we heard even last week from the construction panel that in fact some of those local businesses might see a boom during construction, if in fact

Eversource is going to give out vouchers for housing and local bed and breakfast inns and use of local restaurants. So there's ways to mitigate that.

Q. But you're not -- you didn't do any analysis to determine whether there's impact or whether there's mitigation or what the net effect is. You simply didn't do that analysis, did you?

A. I concluded --

Q. Did you do --

A. -- on a statewide basis that there was zero measurable impact. That's the conclusion in my report.

Q. No. Did you do any analysis to determine whether -- what the negative impact would be and whether there would be any positive mitigation? Did you do that analysis?

A. To the extent that you're speaking "analysis," as in doing quantitative estimates, no. But I listened to what other experts had stated and information about the Project to come to the conclusion of a zero effect.

Q. And you listened to that after you issued your October 2015 report; correct?
A. No, there was some information even available to me as part of discussions with counsel. Again, no independent number crunching, in case you're going to ask again. But I was informed by the opinion of other experts.
Q. And did any of those other experts give you any specific information about the impact on local businesses? Specific information.
A. I can't recall.
Q. All right. Now, you stated in your October 2015 report that you conservatively only considered 10 years of economic development spending; correct?
A. I believe in our report what we state is that we used the REMI model to only model the first, I think it's actually first 11 years of operations. And therefore, the local economic spending that was scheduled to happen within those 11 years was incorporated into our model.
Q. And you considered that a conservative approach; correct?

A. Well, my understanding is, for example, the New Hampshire Forward Plan will continue to fund activities in New Hampshire well beyond the first 11 years of operations of the Project. So, yes, I considered it in that regard to be conservative.

Q. And in your April 2017 report, you now include the full 20 years of economic development spending; correct?

A. I only include it as a form of rebuttal against the specific tables that KRA has included.

Q. So that's no longer a conservative approach; correct?

A. No. I think the point wasn't to make a less conservative assumption. The point was to correct for errors in KRA's analysis.

Q. Now, the REMI model has a category for adjusting for capital stock; correct?

A. Yes, it does dynamically consider capital stock.

Q. And adjusting for capital stock has a negative impact from displacement of investment?

A. It could have a negative impact. And over the longer term it could have a positive impact as well because the investment made before the transmission infrastructure actually spurs its own set of investments in other infrastructure. So it depends on what time frame you're talking about.

Q. But LEI did not make the adjustment for capital stock; correct?

A. We did not make an adjustment for capital stock.

Q. And had you done so, there would have been some negative impact certainly in the short term; correct?

A. And some positive impact in the longer term, which neutralizes each other over an average net present value basis.

Q. You didn't do that analysis, did you?

A. We did not originally do that analysis. We looked at that criticism as raised by KRA and did the calculation and confirmed that it's immaterial, as documented in my April 2017 Supplemental Report.

Q. Right. But you didn't include that in your

October 2015 report; correct?
A. We did not.
Q. Yeah. Now, in your April 2017 report, you added several positive externalities or positive impacts; correct?
A. We added consideration of some additional positive impacts. And the use of the word "externality," we incorporated one specific positive externality related to carbon emissions reductions.
Q. So you added things like the payment of property taxes and the payment of business income taxes and the additional 10 years of spending on economic development and effect from reduction of carbon emissions and so forth. Did you consider any negative factors in your 2017 report?
A. So, the specific elements that you are referring to are being -- were considered and documented in our April 2017 report to specifically rebut and address concerns we had in KRA's analysis that was released at the end of 2016 and insights we gathered regarding KRA's and Brattle's opinion on

certain things during the technical hearings. So -- and I apologize. I'm dragging on a little bit.

But to answer your specific question, what we wanted to do was to take a look at Table 24 and 25 in KRA's analysis, which had a number of different categories. And in our view, it had a lot of negative impacts, but really not a comprehensive discussion of both negative and positive. So we got back together and thought through what a comprehensive, aggregate picture would look like. And in doing so, we did again reach out to other experts that could provide input, their professional input on categories of negative impacts that KRA considered. So we did consider them, and in our analysis we determined that they should be documented with a zero-dollar impact for the state.

Q. So let me -- I'm going to ask you some questions about your estimating the impact from the reduction in carbon emissions. All right?

Now, you indicated earlier you used the

REMI PI+ model to estimate the economic consequences from reduced carbon emissions; correct?

A. Yes, that's correct.

Q. Had you used the REMI model to do that before?

A. Not in the context of Northern Pass, no.

Q. No. In any other case, had you used the REMI PI+ model to estimate the economic consequences of reduced carbon emissions?

A. We had used the REMI model to do something similar, although it wasn't just focused on carbon emissions, in another project.

Q. Okay. One other project?

A. One other project comes quickly to mind.

We've looked at also the methodology which we employed to represent the suggested approach of the Brattle Group to this issue. It's actually not specific to just carbon emissions. It's looking at implications on cost to consumers in the alternative but for this project and the carbon emissions that it produces. And we've used that methodology in other projects. Many other projects.

Q. Yeah, but I'm talking about your use of the REMI PI+ model to specifically estimate the economic consequences of reduced carbon emissions. And what I just heard is you haven't used it on another case specifically, but you used something like it in one other case. Is that right?
A. No, that's not correct, not completely correct. Just to clarify, there are two approaches that we documented --
Q. I'm interested in your use of the REMI PI+ model, not the other approach.
A. No, the two approaches are both related to the use in the REMI PI+ model. One approach which uses the amenity policy variable we hadn't used in other projects for this purpose --
Q. You had not.
A. We had not.
Q. Okay.
A. The other approach which uses the REMI model and is geared specifically over the detailed projections that Brattle Group put forward in their December report we have used in other

cases. We decided to present both because, in fact, the amenity value approach produces a lower, more conservative value. So we wanted the Committee to have the value of both approaches to review.

Q. And the amenity approach you used here was the first time you did that; correct?

A. It's the first time we've applied it to carbon emissions, yes.

Q. Okay. Now, am I correct that the theory is that people will choose to migrate from one region to another region based on some variables? Correct?

A. The amenity approach is basically looking at demographic changes in response to quality of life, essentially. It's proxying for quality of life considerations.

Q. And in order to do this analysis, you have to input certain things for these quality of life factors; correct?

A. Yes.

Q. So tell me what you used to input for the quality of life factors.

A. We had estimated the social cost of carbon --

we had estimated what the incremental social value to the New England region, including New Hampshire, would be from the carbon emissions reductions based on the social cost of carbon. The social cost of carbon is measuring society's, or at least a particular maybe stakeholder portion, but society's view on what the social value is to reducing carbon. We took those dollar amounts and used that as our adjustment factor in the amenity policy variable which gets represented through compensation to attract population to New England, because if New England is responsible for reducing carbon, at least one segment of the population will appreciate that and get attracted to come and live in New England. That's the theory behind the amenity value.

Q. So is that the only dollar input you used in the amenity value was your estimated social cost of carbon?

A. My estimates of what the incremental social cost of carbon is for New England region, yes. And that's just the amenity approach.

The approach using Brattle Group's methodology is a little bit different in terms of how it flows through the REMI model.

Q. Yeah, let's stick with one approach at a time.

CHAIRMAN HONIGBERG: Off the record.

(Discussion off the record)

BY MR. PAPPAS:

Q. So, Ms. Frayer, on the screen in front of you I have Page 47 of your April 2017 report, which is Applicant's Exhibit 102. And in the text, as well as in Footnote 96, you talk about the non-pecuniary amenity aspects. Do you see that?

A. Yes.

Q. What amount did you use in the REMI model?

A. So, essentially, if you go back to our March 2017 Updated Analysis, you will see in there a description, depending on the scenarios selected, there's a range -- again, I can't name the numbers because they're confidential -- but a range of incremental social benefits to the New England region per

year. Just for the sake of discussion, if we pick a number -- let's say the number for the New England region was $200 million in a particular year. We would then distribute that $200 million across the New England states as a quality of life adjustment, pro rata to the population of the states, to then attract, essentially serve as a way to attract additional labor force to the economy. And as you do that, because you're attracting additional labor force, you're basically giving a bump-up in economic activity.

Q. So you had to input a number; correct?

A. Yes.

Q. And the number is found in your March report?

A. Yes.

Q. You don't have to do it now, but I'd ask you at a break, because it's confidential, just to identify for me that number, okay. Make a note, okay. Thank you.

Now, you also indicate in your report that "proxies for observed regional distinctions." Do you recall that?

(Witness reviews document.)

A. You mean in the context of describing the amenity value policy variable?

Q. Yeah. It's on Page 47. You talk about "proxies for observed regional distinctions."

A. Yup, that's a description in some ways to explain how REMI, in order to estimate this effect in their model, because they need to be able to reflect this, they use statistical and economic data to estimate this amenity value.

Q. That's something in the REMI model. That's not something you inputted.

A. Exactly.

Q. All right. And then you talk about how the population values quality of life. Was that input that you used, or was that in the REMI model?

A. Again, that's a description of what the amenity value is representing. But in terms of the actual amenity value variable, REMI estimated all the components to it, and we simply used that policy variable in order to simulate the impact. We're not talking about

huge numbers here, just to kind of clarify. Under the various different estimates of region-wide social benefits from reducing carbon emissions for New Hampshire, for example, it was a range of about 5 to 37 jobs per annum.

Q. I understand. But I need to find out what you used to do it. Well, let me -- well...

Did you input into the REMI model any demographics of the labor force?

A. No, we used all the baseline assumptions that were part of the REMI model.

Q. Did you input any participation rates?

A. Excuse me?

Q. Did you input something known as "participation rates"?

A. As related to the labor force?

Q. Correct.

A. Again, we used all the same default sets of assumptions for the baseline projections in the REMI PI+ model.

Q. Would that include compensation rates or any change in compensation rates?

A. The only change in compensation rates we made

were related to the construction period, as we discussed earlier today, not for the operations period.

Q. Okay. But did you make those changes as part of analyzing the effect from reduced carbon emissions?

A. No.

Q. All right.

A. That's a different time frame of the model.

Q. Yeah, I'm sticking strictly on the carbon emissions analysis.

A. Thank you for clarifying.

Q. How about impact on housing costs? Did you input any figures for that?

A. No.

(Pause in proceedings)

Q. In your use of the amenity variable in the REMI model, did you input any non-monetary inputs?

A. Essentially we had to effect in the modeling -- so the short answer to your question is no. We basically modeled it through a change in real compensation to attract a migration of certain individuals to

the labor force in the region.
Q. Okay. Did you make any assumptions when using the amenity variable? For instance, assume any change in population, assume any change in government output, private output and so forth?
A. The model simulates that.
Q. Okay. So you didn't make -- change any assumptions of the model.
A. No. So the whole point of the REMI PI+ model is that it's a dynamic computer general equilibrium of the economy. So if you change one aspect of the economy -- in this case, we were enticing migration of labor force population to the region -- it would then assume knock-off effects throughout the economy, ripple effects throughout the economy as necessary.
Q. So, essentially what you did was input an increase in wages, and the model then estimated the impact of that.
A. Well, we used the amenity value which assumes a change in real compensation in order to attract migration to the region to represent

that relative perspective on quality of life.
Q. So, essentially what you did is you took the value you calculated for -- I'll use your social cost of carbon -- and put that into the model. The model then determines the change in compensation and determines the attraction of additional workers to then increase the jobs. Is that essentially how that works?
A. Yes. So, basically it takes the dollars of social value and converts that into, based on the amenity value principles that the model itself has calculated, how much additional migration it expects from that additional social value.
Q. Okay.
CHAIRMAN HONIGBERG: We're going to take our lunch break in just a second. Mr. Pappas, you have more to do after lunch?
MR. PAPPAS: I do indeed.
CHAIRMAN HONIGBERG: How much, just as a ballpark, do you think?
MR. PAPPAS: I'm probably going to take the better part of the afternoon.

CHAIRMAN HONIGBERG: All right. We'll take our break. We'll come back in about an hour.

MR. IACOPINO: Just so everybody's on the same page, it does not appear that Mr. Pappas is going to go into tomorrow. So be ready.

(Lunch recess taken at 12:36 p.m. and concludes the Day 13 Morning Session. The hearing continues under separate cover in the transcript noted as Day 13 Afternoon Session.)

C E R T I F I C A T E

I, Susan J. Robidas, a Licensed Shorthand Court Reporter and Notary Public of the State of New Hampshire, do hereby certify that the foregoing is a true and accurate transcript of my stenographic notes of these proceedings taken at the place and on the date hereinbefore set forth, to the best of my skill and ability under the conditions present at the time.

I further certify that I am neither attorney or counsel for, nor related to or employed by any of the parties to the action; 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.

_____

Susan J. Robidas, LCR/RPR
Licensed Shorthand Court Reporter
Registered Professional Reporter
N.H. LCR No. 44 (RSA 310-A:173)

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