STATE OF NEW HAMPSHIRE

SITE EVALUATION COMMITTEE

September 18, 2018 - 9:36 a.m. DAY 4
49 Donovan Street Morning Session ONLY
Concord, New Hampshire

{Electronically filed with SEC 10-01-18}

IN RE: SEC DOCKET NO. 2015-04
Application of Public Service Company of New Hampshire,d/b/a Eversource Energy, for a Certificate of Site and Facility.
(Adjudicative Hearing)

PRESENT FOR SUBCOMMITTEE/SITE EVALUATION COMMITTEE:

Patricia Weathersby (Presiding Officer)	Public Member
David Shulock, Esq.	Public Utilities Commission
Elizabeth Muzzey, Dir.	Div. of Historic Resources
Charles Schmidt, Admin.	Dept. of Transportation
Christopher Way, Dep.Dir.	Div. of Economic Dev.
Michael Fitzgerald, Dir.	Dept. of Env. Services
Susan Duprey	Public Member

ALSO PRESENT FOR THE SEC:

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

Pamela G. Monroe, SEC Administrator

(No Appearances Taken)

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

I N D E X

WITNESS: ROBERT D. ANDREW

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(NOTE: EXHIBITS REFERRED TO WERE PREMARKED)

P R O C E E D I N G S

PRESIDING OFFICER WEATHERSBY: Good morning, all. Welcome to Day 4 of our hearings. I thank you all for your patience while we worked through a slight issue with the stenography machine. Despite us thinking that perhaps the parties to this are the most important people, or their attorneys, or even the Committee, the most important people here really is the stenographer. As Chairman Honigberg has said, "If it's not on the record, it's as if it didn't exist."

So, without further ado, we'll proceed. And Mr. Andrew will be cross-examined by the Town of Durham, Mr. Patch. You may proceed. Oh, you need to be sworn in. Sorry. Attorney Needleman -- oh, the court reporter swears him in. That's right. Sorry.

(WHEREUPON, ROBERT D. ANDREW was duly sworn and cautioned by the Court Reporter.)

DIRECT EXAMINATION

BY MR. NEEDLEMAN:

Q. Would you please state your name and business position for record.

A. Yes. Robert Andrew. Call me "Bob." I go by that. And I'm director of systems solutions for Eversource Energy.

Q. And you have three pieces of testimony in front of you?

A. I do.

Q. The first one should be Exhibit 3, which is your April 12, 2016 prefiled testimony; the second should be Exhibit 70, which is your amended prefiled testimony from March 29, 2017; and the third should be Exhibit 139, which is your supplemental prefiled testimony from January 27, 2018. Do you have all those?

A. I have all three, yes.

Q. I'm sorry. July of 2018. You do have all of those?

A. Yes.

Q. And do you have any changes or corrections to any of those pieces of testimony?

A. No, I do not.
Q. Do you adopt and swear to each piece of testimony today?
A. Yes, I do.

MR. NEEDLEMAN: Okay. Thank you.

CROSS-EXAMINATION

BY MR. PATCH:
Q. Good morning, Mr. Andrew.
A. Good morning.
Q. My name is Doug Patch. I am counsel for the Town of Durham and University of New Hampshire. I'm going to start with Exhibit 3, which is actually -- hold on one second here -- which I believe is your original testimony. And I'm going to look at -- and I would ask you to look at Lines 3 to 19 on Page 3. And it appears from your testimony -- and you've been referred to a number of times in this proceeding already, that you are quite familiar with the ISO process that was used to review the alternative ways to address the need for reliability improvements in the Seacoast Region. Is that fair to say?

A. That's fair, yes.
Q. And did the ISO identify the possible solutions, or were they suggested by Eversource?
A. It's a combination effort. There is a study team that's put together, and it's a combination of the people that are there. Some are suggested. Some have been ideas and concepts that have been around for a long time and that everybody on the team is aware of. Others are just ideas that are brought forward, and people are then asked to go check the feasibility.
Q. So in this particular case, is there anything that you can point to about who went to who first?
A. No, not specifically. No.
Q. And how does the ISO evaluate what is the best overall option? What criteria do they use when they're doing that evaluation?
A. Well, first, there are -- typically they like to get multiple options on the table, different ways to solve the needs that are identified in the needs assessment. They

want at least a minimum of two to look at in depth. I believe in this case there initially were four options that were put on the table and studied to see if they met the reliability criteria, and then to get costs, you know, rough cost figures. From that information, typically they will filter down to two or three and then drill in depth into those options.

Q. Mr. Quinlan, in his prefiled testimony, Exhibit 2, Page 4, Line 14, but then also in his oral testimony to this Committee, said that the way that the ISO looks at it is, quote, unquote, whether or not the Project is, quote, unquote, the lowest cost and best overall option, end quote. Is that fair to say you think?

A. Yeah. Well, cost is a major consideration, you know, in anything we do, no matter what. Generally speaking, to be actively considered in the solution process, we have to have done studies that show it is a solution, that it works, that it meets and addresses all the needs. If it doesn't meet and address all

the needs, it falls off the table very quickly. Then we start to take a look at the solution. And I guess, really, costs are a big factor, you know, operating capabilities of it. There are numerous other factors that can get drawn into the decision. And the factors that the ISO does consider are typically enumerated in the solution study and discussed at the PAC when they are presenting what we call the "preferred solution."

Q. Do they have standard criteria that are listed in a tariff or somewhere else that they use to evaluate projects?

A. Well, I mean, beyond meeting the reliability needs of the system, the 10-year planning horizon, beyond cost being a major factor, then they tend to take a look at it kind of on a case-by-case basis. Sometimes one solution will give you some extra benefits in another area of the system, and they will point that out and say this was a factor in our decision.

Q. So it sounds like the answer to my question

is, no, there's nothing in the tariffs that list the criteria they have to use.

A. To my knowledge, there's no specific list of items that they must look at each and every time, no.

Q. In your April 2016 prefiled testimony, Exhibit 3, Page 3, Lines 27 to 28, you said that the electric transmission system serving the Seacoast Region was putting the reliability of the system serving that region at risk; correct?

A. Correct.

Q. And you said that it was susceptible -- a little higher on that page, Lines 15 to 16, "susceptible to a number of criteria violations"; correct?

A. Yes.

Q. And you said that the risk of system overloads could lead to potential power outages in the Seacoast Region and surrounding area. That's Lines 26 to 28.

A. Correct.

Q. You also said, on the next page, Page 5, Lines 6 to 8, that the criteria violations

need to be addressed to avoid risk of equipment damage and line and power outages and threats to public safety; correct?

A. Correct.

Q. And then in your testimony on Exhibit 5, Lines 12 to 13 on Page 5, you said two transmission alternatives were developed to meet the Seacoast Region needs; correct?

A. Correct.

Q. And one was the suite of projects that you've discussed in your testimony, and others have as well, and the other was the Gosling Road transformer. Those were the two that it came down to, essentially; correct?

A. Well, the Gosling Road alternative is also a suite of projects. It's not simply a transformer.

Q. Okay.

A. There are two suites that both address the area needs.

Q. Now, when he testified earlier in this proceeding, Mr. Quinlan said the Gosling Road option was, quote, unquote, technically inferior. Mr. Bowes said that it was, quote,

unquote, gold-plated. So what do you think?
A. They're both right. The Gosling Road alternative works. The ISO solution report shows that it works. It's far more expensive; hence, I think Mr. Bowes' "gold plating" comment. It provides far more capacity than the system needs; hence, maybe the "gold plating" alternative in terms of that. And so with those factors involved, it was not the chosen alternative.
Q. Mr. Quinlan, in his testimony, identified the suite, the alternative to the one that was chosen, identified the suite as, quote, the Madbury to Portsmouth suite of projects. Do you think that's accurate? And I can point you to where he said that in his testimony. You look a little perplexed?
A. Well, yeah, I don't exactly understand your question.
Q. Well, I haven't gotten to the question yet. But I just wanted to give you that background, first of all. It's on Page 2 of Mr. Quinlan's prefiled testimony, which is marked as Exhibit 2, and it's Page 4, Lines

12 to 13. I think I'm in the wrong exhibit there. But if you would just accept, subject to check so we can keep moving, he did identify that suite as "Madbury to Portsmouth suite of projects," would you agree with that, or do you think there's a better way to characterize that?

A. I guess can you give me the comment again then?

Q. Mr. Quinlan identified the suite that was chosen, the 10-project suite that involves SRP, as the, quote, Madbury to Portsmouth suite of projects, end quote. Would you agree with that characterization?

A. The suite of projects includes the Madbury to Portsmouth line, the SRP line. So, sure, I guess I agree with that.

Q. So I'm going to ask you to look at -- there's an exhibit, Newington Exhibit 1-7, which is a -- it looks like it's a PowerPoint of the NH/Vermont Transmission System Solutions Study Update, January 18, 2012. I'm looking at Page 5, which I have up here on the screen. And that has a list of the projects

included in Alternative 2, the one that was chosen. And on the right, for example, it has projects such as Scobie Pond to Chester, the 115kV line. Is that one of the projects in the suite?

A. Yes, I believe it is.

Q. And it has Chester Substation. Is that one of the projects in the suite?

A. Yes, I believe so.

Q. And it has Scobie Substation, fair to say?

A. Yeah, terminal upgrades. Yes.

Q. And then Scobie Pond to Kingston Tap?

A. Hmm-hmm.

Q. Now, none of those are in the area between Madbury and Portsmouth, are they?

A. No, I guess they're not.

Q. You indicated in Exhibit 3, Page 5, Lines 25 to 26, that the projects in the suite are dependent on each other to solve a criteria violation; is that fair to say?

A. Yes. Solve all of them, yes.

Q. And what do you mean when you say they're "dependent on each other"?

A. Well, to address all of the identified

problems in the area, you need to implement all of the projects.
Q. And "the area" here being what?
A. Seacoast area.
Q. What are the boundaries of the Seacoast area?
A. Electrically speaking, probably from Deerfield, where lines head eastward from Scobie, where lines head eastward to the Maine border and to the ocean.
Q. And where is Scobie?
A. Londonderry.
Q. Now, Mr. Quinlan had his testimony before this Committee last week and said that the SRP is, quote, the linchpin of the total package, end quote. Do you agree with that?
A. I do.
Q. So if that is correct, then could you explain to the Committee why you would go ahead and spend what I understand is $50 million on the other projects in the suite before this one was approved by this Committee?
A. When scopes of work come out of ISO-New England's studies, we proceed with all of the projects that are there. In fact, if you

look at this, the Seacoast is just a sub-area of the New Hampshire/Vermont study as a whole. I believe yesterday we had an exhibit, Applicant's 196, which was a page from the ISO-New England Regional System Project List. And that page lists approximately 40 projects which were the outcome of the study, ranging from Vermont to Northern New Hampshire, Central New Hampshire, Western New Hampshire, and one subset here on the Seacoast. So, once the study is done and the projects are on the Regional System project list, we have an obligation to move forward with these projects and build them.

Q. So of the other projects on that list, the 40 you just mentioned, how many required state approval first before they could be built?

A. I don't know exactly. I believe that this is the only one, subject to check.

Q. So, one out of 40.

A. Correct.

Q. In your supplemental testimony, Exhibit 139, Page 3, Lines 18 to 19, you indicate that

other reliability projects that were part of the same suite of projects as SRP have already been constructed; correct?

A. That's correct.

Q. And out of the 10, how many?

A. Ten in the Seacoast area?

Q. In the Alternative 2.

A. Well, there are three -- by the Regional System project list, there are three that involve this scope of work: The work in Portsmouth, the work at Madbury, and the line connecting the two. So, three remain.

Q. I'm sorry. Three what?

A. Three remain.

Q. Three remain. So, seven have been built.

A. Correct.

Q. And we've heard that the cost of those seven is $50 million; correct?

A. Approximately, yeah.

Q. Approximately. And you indicated in that same testimony, Exhibit 39 [sic], Page 3, Lines 19 to 20, that as a result of the other projects in the suite being constructed, the reliability of the Seacoast area improved;

correct?
A. Sure.
Q. Now, mr. Quinlan said that the total cost for the whole suite was about $135 million, obviously estimated at this point. Fifty's been done. Approximately 50. And 85 or so is what's estimated --
A. Sure.
Q. -- for the SRP project, and the other two that are part of the suite that haven't yet been done; is that fair?
A. I think the other two are included in that $80 million estimate.
Q. So, $135 million total. So if I did the math correctly, out of that $135 million, about 37 percent of the money required for the whole suite has been spent to date. Does that sound roughly correct?
A. Yeah, I don't challenge your math.
Q. So does that mean about 37 percent of the total work required to improve the region has been accomplished, or is that not the right way to look at it?
A. I don't believe that's the right way to look

at it because it is, as we call it, a "suite" or "package." To go out and do almost all the work you need to do isn't bringing the system into compliance with the reliability standards.

Q. But you did say that the other projects in the suite has "improved reliability to the Seacoast area"; correct?

A. Sure.

Q. And so I guess I'm trying to get a handle on how much has it improved the reliability in the Seacoast area.

A. I don't know of any way to quantify that. You know, when a study is done, there are multiple -- needs are identified. There are multiple sets of contingencies that cause problems. And when you do one upgrade, you may address one or two of those kind of problems, but then there's a laundry list remaining to be addressed. So I don't know how to quantify on a percentage basis.

Q. But it's fair to say that reliability in the Seacoast Region is better today than when your testimony was filed in 2016.

A. Sure. I mean, to some extent, yes.
Q. Have there been any outages or any other events in the Seacoast area that can be attributed to the failure to construct the SRP project?
A. Not to my knowledge. At this point, no.
Q. Now, you said in your supplemental testimony, Exhibit 139, Page 3, Lines 16 to 22 --
A. Yes.
Q. -- that the SRP project before this Committee is the last piece to enable the system to meet national, regional and New England regional reliability standards; correct?
A. Correct.
Q. Could you take each one of those standards and tell us what specific standards, including citations if there are any at this point in time that are not being met, starting with the national standard? What national standard is not being met because of the failure to build SRP?
A. Okay. NERC reliability standard, TPL-001. NERC reliability standards are broken into different categories. TPL, transmission

planning, hence "TPL." Within that standard there are requirements that the system be able to withstand different types and combinations of contingencies. And in the post-contingency configuration, that loading will remain within emergency levels and that voltages will remain within acceptable levels. And what happens in the Seacoast area is there are multiple sets of contingencies that cause line overloads and low-voltage violations.

Q. And those contingencies would be spelled out where?

A. The type of contingencies are spelled out in the standard, that you will address line contingencies, transformer contingencies, generation contingencies. You will address load patterns, varying load patterns, in the course of doing this study.

Q. And what about, then, if we look at regional standards that are not being met in the Seacoast region?

A. Okay. Well, let's see. Standards come, I guess, in four layers. You can have a

national standard, a NERC standard, which sets the floor. Everybody else can generate stricter requirements. They cannot generate looser requirements. We are audited every six years by NERC through the NPCC group. We've also had the pleasure of having FERC representatives, you know, there at audits. So, planning standards are audited every six years. Other engineering standards are on a six-year cycle. Operating standards are on a three-year cycle. And we actually host an audit team and present evidence that we have complied with all of these standards.

So the TPL standards set the floor. The next level within New England, the regional reliability organization, is known as "NPCC," Northeast Power -- I should be able to remember all that, but... they support NERC and do the audits and compliance investigations. They also, through a series of documents that are called "directories," can give some additional, I guess I'll call it "stricter requirements" on how we run the electric system within the NPCC footprint,

which is basically New England, New York, Ontario and the Maritimes, you know, together. I shouldn't say New York. New York is -- no, New York is in there. Excuse me.

Q. I mean, you're getting to my question; right?

A. Right.

Q. I'm asking about what regional standards are not being met because of the failure to build the SRP project.

A. Okay. So the regional standards also include addressing double-circuit tower contingencies and breaker-failure contingencies as a second contingency in the siting process.

The ISO-New England standards are a little bit stricter in relation to what are called "special protection systems"; however, there are no special protection systems in this area. And if there were, I couldn't tell you anyway. So the extra ISO ones don't really matter. And any Eversource standards apply to the local transmission system, which would more be radial lines. And they're not included in this scope anyway because this is

a regionally authorized project.
Q. If I understood what you said correctly, there are no ISO-New England reliability standards that the region is in violation of because of the failure to build SRP.
A. Well, I think I said that wrong. ISO standards and NPCC standards match the NERC standards. And then in some cases they have some extra ones. So, functionally it starts at NERC. And NPCC cannot go lower. They cannot, you know --
Q. No, I understand the general. But I'm trying to get specific about this project and what standards are not being met, because that's what your testimony says.
A. Well, the NERC, NPCC and ISO standards have the same requirements in them. So if you violate one, you violate them all.
Q. So it's basically the NPCC requirement that's being violated?
A. No, the NERC.
Q. The NERC requirement?
A. Yes.
Q. Okay. Now, as I understand it, this project

was originally filed, originally discussed by the ISO, somewhere in the 2010-2011 time frame?

A. That's correct.

Q. Can you be more specific?

A. Well, I think the initial New Hampshire/Vermont, that was a 2010 study that came out. And then due to multiple changing conditions, the ISO came back and did some supplemental studies, with the final supplemental solution report I believe in April of 2012 it was issued. So the study process is an ongoing process that sometimes gets kicked back to the beginning and started over again.

Q. So, in his 2016 original testimony, Mr. Quinlan said that there was a, quote, unquote, immediate need for this project. Is there still an immediate need?

A. Yes, there is.

Q. And in your original testimony, Exhibit 3, Page 6, you talk about "demand growth in the Seacoast." I don't see any mention of it in your subsequent two testimonies, Exhibit 70

and 139. But at least in your original talked about demand growth in the Seacoast region; correct?

A. Correct.

Q. What is your understanding of what the demand growth in the Seacoast region has been over the last 10 years?

A. It's been on the order of 1 percent, 1 to 2 percent, in that range.

Q. Has it gone down over the last 10 years?

A. Demand? Well, I guess I'll have to ask. Forecasted growth or actual metered values?

Q. Well, I think both would be of interest, but you can talk about both separately if you want.

A. Okay. Actual demand figures are very dependent on weather and weather conditions. So when you look at past historical data, the actual demand really needs to be correlated to the weather we had that summer. When you look forward at load forecasts, forecasts always assume a hot summer will take place. It's called the "90/10 forecast," which means, based on weather statistics, there's

only a probability of 10 percent that the weather will be worse than that. So when you look back, you have to be cognizant of the actual weather we experience. When you look forward, we're always assuming the worst.

Q. So have you looked at any specific figures, either forecasted or actual recently, insofar as demand growth in the region is concerned?

A. Yeah. I mean, I've looked at both. I think our demand forecasts going forward are still, you know, they're under 1 percent in that area.

Q. How recently did you look at those?

A. Month or two ago.

Q. And is it fair to say that demand growth in this region is the same as what's generally been happening in the ISO-New England region over the last 10 years?

A. I guess generally I would say no. I would say the Seacoast area is probably on the high end. When you look across New England, you will find the Metro Boston area has been flourishing, where western Mass. has been diminishing. So, one of the things you have

to be careful of when you look at ISO-New England as a whole is you will have areas of, I'll call it "spot growth." As an example, in Downtown Boston, we're constructing -- we're about to start on our third new substation due to the economic development in the area; whereas, you know, I think if you look at North Country, demand has not been growing. You know, it's stagnant at best, whereas other parts of the state which are seeing economic development, the engine at Pease, you know, is for the Seacoast area. So we tend to see more requests to interconnect to our system in that area with the economic efforts taking place. So --

MR. FITZGERALD: Madam Chair, the testimony he was referring to "percentage growth," can we get information as to what time period that is? Is that an annual percentage or over the 10 years since the Project?

PRESIDING OFFICER WEATHERSBY: Could you address that, Mr. Andrew, please.

THE WITNESS: I think our forecast going forward does call for positive growth in

the Seacoast area. I believe it's a little under 1 percent in there for demand. This is demand growth.

MR. FITZGERALD: But when you say 1 percent, is that 1 percent per year or 1 percent -- over what time period?

THE WITNESS: Yeah, compound annual growth. So, CAGR, yeah. So 1 percent per year.

MR. FITZGERALD: Thank you.

BY MR. PATCH:

Q. So, Mr. Andrew, on Exhibit 3, Page 3, and I think it's Footnote 2, you said that the Planning Advisory Committee is an open stakeholder forum that provides input and feedback to ISO-New England on the regional system planning process. Did I read that correctly?

A. That's correct.

Q. Were any portions of the review that the ISO did deemed confidential?

A. Review of what?

Q. Of what lead to the SRP project, of the potential alternatives.

A. Yes. Well, the portions of both the needs assessment report and portions of the solutions report are considered critical energy infrastructure information, so they're not publicly available. In fact, earlier I think you presented a PowerPoint slide listing the projects that were part of the whole SRP suite, and the picture to the left of it was grayed out. That picture is CEII information. So that had been redacted by somebody so that that slide could be used.

Q. So when you say "open stakeholder process," it's obviously not totally open. I mean, there are some aspects that are kept confidential.

A. No, you can gain access to CEII information if you go through -- contact the ISO, go through their appropriate process. You know, the CEII is available to people.

Q. Could you tell the Committee how you define "stakeholder" in that footnote?

A. Those words are actually the ISO's words, in terms of how they define the process. But a stakeholder is anybody who really wants to be

involved. There are people there who are independent consultants, kind of trolling for work. There are representatives of all the transmission owners. There are representatives of the generation owners, demand/response companies, wind companies, regulatory bodies. Most of the attorney general offices of the various states in New England have representatives there or tie in via phone. There really are very few limits.

Q. And how are all those people notified about what's going on?

A. They request -- you know, part of the request is you ask to be put on the mailing list and you get notification of meetings, agendas, notifications of reports that are now available and will be discussed at the next meeting, things of that nature. You simply have to ask.

Q. So I'm going to ask you to look at Exhibit 1, and it's Page 119 of the Application. I've got it up on the screen here. And there's a discussion in the Application about key stakeholders. And it says there that they

include, but are not limited to: Seacoast municipalities along the route, other municipalities in the region, the congressional delegation, the state legislature, University of New Hampshire, Seacoast chambers and businesses, et cetera. And it goes on from there. I mean, were any of those, what Eversource had said are "key stakeholders," notified about what was going on at the ISO?

A. I guess they could have been if they were registered with the ISO and wanted to be part of the process.

Q. So they would have had to have some sort of knowledge about the potential for a project that could affect them being presented to the ISO in order to be able to get on those lists; correct?

A. I don't know. That's supposition. You have to want to be there to be there, so...

Q. I just have a few more questions. Now, PSNH chose to use submarine cable, in large part because there was an existing underwater utility corridor in Little Bay; correct?

A. Correct.
Q. Now, we have heard some testimony that it was installed in the 1902 to 1906 time frame. Does that sound correct to you?
A. I heard that testimony also. Yes.
Q. Do you have any independent knowledge of that?
A. No. I wasn't around in 1902, so...
Q. Okay.
A. Even though my kids think otherwise.
Q. And do you know, was it a distribution line as opposed to a transmission line originally?
A. Well, one of the things as you go back in time, voltages today that we consider to be distribution voltages back in time were transmission voltages. As an example, New Hampshire, the dominant distribution voltage is 34-1/2kV within the state, and most of that was the old 33kV subtransmission system being converted up. So as time goes on -- or as you go back in time, you get much lower-level voltages that were considered transmission. The City of Cambridge, Mass., until a few years ago, had 13,800-volt

transmission lines in the city. So the transmission/distribution line gets blurred very quickly as you go back in time.

Q. Now, I've got up on the screen Exhibit 106, which is the existing cable removal plan. And on Page 1 of that, it has kind of a rundown of different cables that were installed and the voltage levels kind of along the lines of what you just described as the 13.8kV, for example. I mean, it looks like a fairly complicated history of what cables were there, when they were replaced, what kind of cable was used. But obviously, over the course of the last 110 or 115 years, you know, there were a number of cables that were installed there. But it looks like the last one was put in in the 1970s. Does that sound correct to you, or do you have any knowledge of that?

A. No, I don't. Not directly.

Q. Do you know when it went out of service?

A. I do not.

Q. I mean, and it's a little hard to tell from this description, and I'm not sure there's

anything else in the record that says that, but I would guess it was in the 1990s.

And there's a reference in here I think to some fault in the cable was discovered in 1995 near the east shore of Little Bay, and the cable was taken out of service. So I don't have any other knowledge than that. But does that sound consistent with your understanding generally?

A. I'm with you. That's the extent of my knowledge also.

Q. And so fair to say that it's been over 20 years since any cables were actively used in Little Bay?

A. Yes.

Q. Now, I've heard it said by a few people in connection with this project, and I believe it was mentioned yesterday, that a PSNH representative told someone in Newington that PSNH would never use the utility corridor under Little Bay again because it would raise too many environmental issues. Did you hear that yesterday, and is that -- do you have any knowledge of that or --

A. I have no knowledge of that whatsoever.
Q. Does it sound like kind of a common-sense reaction by somebody at PSNH?
A. I have no idea.
Q. Okay. That's all the questions I have. Thank you for your time.
PRESIDING OFFICER WEATHERSBY: Thank you, Attorney Patch.
Town of Newington, Attorney Geiger.

CROSS-EXAMINATION

BY MS. GEIGER:
Q. Good morning, Mr. Andrew. I'm Susan Geiger, and I represent the Town of Newington.
A. Good morning.
Q. Good morning. Do you have your prefiled direct testimony before you?
A. Yes, I do.
Q. On Page 3 -- oh, bear with me here. Mr. Andrew, if you'd look at Page 4, Lines 4 through 6 of your prefiled testimony, and that's Applicant's Exhibit 3, you state that the ISO Needs Assessment for this project started in 2010, with the study horizon out to 2020; is that correct?

A. That's correct.
Q. And this project was selected by ISO-New England in 2012; is that correct?
A. That's correct.
Q. Is the 2010 Needs Assessment still the operative document under which ISO-New England is looking at transmission needs solutions?
A. There was an amendment to that, a final amended report that I think was issued in April of 2012, that justified the Project and got the Project included in the regional system project list, yes.
Q. Okay. Turning to that list, I believe you had it with you this morning. And I don't think I'm going to put it up on the screen because it's really, tiny, tiny font. But you're generally familiar with that list. What is it?
A. Yes, I am. It is the list of projects that the ISO has authorized to take place across all of New England that are subject to regional cost recovery. And these are the solutions to needs that have been identified

that violate reliability standards.
Q. And if a project is listed on that document, does it necessarily mean that that project will be constructed and put into operation?
A. What it means is that once it's on this list, the appropriate transmission company has the obligation to proceed, to construct the project. And sometimes that's simple. You know, it's a small, simple project within a substation at a capacitor bank. And other times it's much more complicated and requires a lot of state and local approvals.
Q. And are those state and local approvals part of the obligation to proceed?
A. Yes.
Q. Are there any situations where projects are listed on that list and then are not constructed?
A. There are situations where there are projects that are on the list that are canceled.
Q. Isn't it true that on the document itself, at the very bottom of the second page, there are a number of projects that are indicated as "canceled"? Isn't that right?

A. Yes, that's correct.
Q. Okay. So just being on that list, obviously you said that the project sponsors have the responsibility to proceed with them, but there's no guaranty that they're actually going to be put into service; is that correct?
A. Well, the important point about the cancelation is the cancelations are typically because circumstances have changed and the project is no longer needed. The ISO has a responsibility under the NERC reliability standard to perform an annual assessment of the transmission system. And they're also, under the reliability standards, required to have a corrective action plan. And the project list is that corrective action plan. And if a corrective action is no longer needed, it comes off the list, and that's done via cancelation.
Q. And is the ISO currently undertaking a new needs assessment?
A. Yes, they are.
Q. And did that start in the November of 2017

time frame?
A. It's a constant, ongoing process. Needs assessments have a shelf life of -- anything more than five years, in NERC, you really have to explain yourself quite well to NERC while you're dealing with a report that's older than five years.
Q. So, given that we're now in the third quarter of 2018 and that there is a new needs assessment underway with ISO-New England, is the 2010 needs assessment still a valid basis upon which to claim that there's a need for the Seacoast Reliability Project?
A. Absolutely. In the 2012 report, the ISO defines for each of the projects that are selected what is called a "critical load level." And this is the load defined in ISO-New England peak values at which above that load, problems, violations, voltages, thermal overloads, things of that nature begin to occur in the area. The critical load level in the Seacoast area is 18,500 megawatts, ISO-New England load.
To put that in perspective, yesterday

when we were all here about 6 p.m., I got on the ISO app, and ISO-New England load was 18,650. So this occurs in summer, you know, on reasonably warm days. It can also occur in the winter. ISO-New England peak winter load is between 20- and 21,000 megawatts.

Q. And speaking of load, we heard from Mr. Quinlan. And I believe you were asked some questions about this from Attorney Patch, regarding the Seacoast Region's growth rate, in terms of its electricity load. And I believe Mr. Quinlan's testimony the other day was that that region is growing at a much faster rate than the entire New England region. Would you agree with that?

A. Yeah. I mean, it varies. There are load pockets. I described Boston earlier as being, you know, a large, developing area; whereas, Western Mass. is actually decreasing in load a little bit. So we see some urbanization going on, things of that nature. But within the whole, I would say the Seacoast area is on the positive side, yes.

Q. And while we're on that subject --

(Court Reporter interrupts.)
A. Which I guess is a good thing for us in New Hampshire.
Q. Well, if the Seacoast Region is growing at a faster rate than the rest of New England, is it still appropriate to look over a 10-year planning horizon for that region when you're looking at transmission system needs?
A. Yeah, well, the 10-year planning horizon has been defined by, you know, by the ISO in there. I think we saw an exhibit earlier which was from the 2017 ISO Electric System Outlook that indicated overall they expected demand growth to grow by .1 percent.
Q. Okay. So if we look at the Seacoast Region in particular -- are you familiar with that document, Mr. Andrew?
A. Yes, I think I am.
Q. That's a response that Eversource provided in response to a data request from the Town of Newington. If we could go through that.
Now, is it your understanding that this is a load growth projection out through, is it 2017 -- excuse me -- 2025?

A. Yes, it is.
Q. And did you prepare this?
A. No, I did not.
Q. But are you familiar with it?
A. I'm familiar with it. Yes, I know where it comes from and the load forecast data it comes from, yes.
Q. And we see on this exhibit -- and the question I have in particular is I think you testified earlier that load growth in the region was about 1 percent a year; is that right?
A. Yes, that's historical CAGR, .94.
Q. And if we look out into the future, we see about a 4-megawatt load growth projection for every year, except for between 2017 and 2018, and there we see a 20-megawatt jump.

MS. DUPREY: Excuse me, Madam Chair. We don't seem to have this exhibit. And they're difficult to read. Can we blow it up --

MS. GEIGER: Sure. Apologize for --

MS. DUPREY: And why do we not have it?

MS. GEIGER: Exhibit's been marked as Newington Exhibit 6.

MS. DUPREY: It's not that in the record. I'm looking at it.

(Pause in proceedings.)

MS. GEIGER: They were sent in on Friday. So I think we will continue with this and make sure you have them if you don't.

BY MS. GEIGER:

Q. I guess the question still stands, Mr. Andrew. Could you please explain why there's projected load growth for 2017 to 2018 of 20 megawatts?

A. That, off the top of my head, I do not know. I see exactly what you've circled there, and I would have to look into that.

Q. Okay. I'll move on.

So let's go back to your prefiled testimony, please. On Page 5, Lines 12 through 13, you talk about the two transmission solutions or alternatives that were developed to meet the Seacoast needs. And we've heard a lot about those before and this morning. And just to clarify the

record, we're talking about the two solutions being the Madbury-Portsmouth solution, for lack of a better term, and the Gosling Road auto transformer suite of projects; correct?

A. Correct.

Q. In your testimony, you stated that the final selection of the preferred solution was primarily decided by reliability impacts and the fact that it was less costly than the competing alternative. Is that your testimony?

A. Yes.

Q. Okay. And again, the competing alternative is Gosling Road; correct?

A. Correct.

Q. So, turning to the issue of reliability as a primary consideration for the selection of this project, your prefiled testimony at Page 1, Lines 27 to 29, states that transmission system reliability criteria are aimed primarily at maintaining bulk power system voltages and assuring the transmission lines are not overloaded. Is that your testimony?

A. That's correct.
Q. So would you agree that voltage control is a very important reliability criterion?
A. Sure. Yes, as long as you're within the band, the acceptable band.
Q. Okay. And also on the issue of reliability, when ISO compared Gosling Road to the Seacoast Reliability Project, isn't it true that on the issue of reliability, the Gosling Road autotransformer scored higher than the Seacoast project?
A. I don't believe so.
Q. Okay. I'm going to take a look at what's been marked as Exhibit Newington 1-7.
A. Okay.
Q. Can you see that?
A. Yes, I can.
Q. Okay. And there we have a comparison matrix; correct?
A. Yes.
Q. And this comparison is by its title a comparison of the leading alternatives; is that correct?
A. Yeah. At this point in the evaluation

process, there were really only two that were delved into in depth, and it was these two.

Q. And you're familiar with this presentation?

A. Yes. I sat through it, yes.

Q. Okay. And on Page 3, you talk about -- I believe it talks about the leading alternatives. And it shows the Gosling Road is No. 1 and Madbury is No. 2; is that correct?

A. Yeah, that's a designation. It's not a ranking. Yes.

Q. Well, that was my question. It's not a ranking. It's just that for purposes of discussion, Gosling Road was No. 1 and Madbury was No. 2.

A. Correct.

Q. Okay. Thank you.

Going back to Page 6 -- again, this is Newington 1-7. The last yellow column on the right relates to reliability -- or is captioned "Reliability"; is that correct?

A. Yes.

Q. And to the right of that heading there are eight other columns; correct?

A. Yes, eight.
Q. Okay. Are those all reliability attributes that the ISO looked at when it ranked these two projects?
A. Yeah, they were what they chose to put on there, yes.
Q. Okay. Because, again, there's no specific criteria that they look at when they decide to select a project?
A. No. In general, they would look at reliability, operation and maintenance, you know, the headings that are here, yeah.
Q. Okay. So, for this heading -- and turning to the rankings that the Gosling Road auto transformer and the Madbury-Portsmouth projects received, we look at the Reliability Attributes, and we see there that Gosling Road scored four checkmarks, which the legend below, at the very bottom of that page, indicates "positive attributes"; is that correct?
A. Yes.
Q. Okay. And for the same eight criteria, the Seacoast Reliability Project only scored two;

is that correct?
A. Yes.
Q. And you previously indicated that voltage control is an important transmission system reliability issue; correct?
A. Yes, it is.
Q. And according to this scoring sheet, Gosling Road scored an "A" for voltage control, and the Seacoast project scored an "A over B"; is that correct?
A. Yes.
Q. And for Load Growth, which we discussed earlier, according to this chart, we see that Gosling Road would add 400 megawatts; is that correct?
A. I believe it is 430 megawatts above what's needed in the 10-year planning horizon.
Q. Okay. Could you please explain that. I don't understand.
A. Okay. The solution study would use the projected loads at the 10-year point. In this case, it would have been the 2022 projected loads when this was finally done. And both met the criteria. They could not

have gotten on this sheet if they didn't meet the criteria. So what they did was scale up the loads slowly and see when the solution would break. So the Gosling Auto, you could scale up loads 430 megawatts beyond what's needed before it broke; whereas, the Madbury-Portsmouth line, you could scale it up 100 megawatts beyond what's needed before it broke, all right. So this is extra.

Q. Okay. But the scoring or the comparison matrix here shows that the Gosling Road solution scored higher; right?

A. It's obvious. It gives you more extra, so it gets checked.

Q. Is it too much? Is it too more -- is it too much more?

MR. NEEDLEMAN: Madam Chair, objection. Objection's based on relevance. The whole line of questioning seems to be designed to get this Committee to second-guess ISO and pick this project that was rejected long ago over the project that we're here to talk about today. I don't believe it's relevant under the statute, and I'm not sure

that the Committee is in a position to second-guess a determination that ISO has made, which the record makes abundantly clear at this point.

PRESIDING OFFICER WEATHERSBY: Ms. Geiger?

MS. GEIGER: Yes. Under 541-A:33, IV, I believe the Applicant has the right -- excuse me -- the Town of Newington and all other intervenors in a proceeding have the right to conduct cross-examination for a full and true accounting of the facts in the case. This witness, through his testimony, his direct testimony, has put the subject matter before this Committee, and I believe that the Town of Newington and others have the right to conduct a cross-examination for a full and true account of the facts in this case.

MR. NEEDLEMAN: Madam Chair, 541-A is the Administrative Procedure Act that relates to cross-examination generally. The cross-examination still has to tie to the relevance of what the Committee is inquiring into under 162-H. And I don't believe this has

any bearing under that controlling statute.

MS. GEIGER: I beg to differ and say that one of the very important things that this Committee has to decide is whether or not this project is in the public interest.

MR. NEEDLEMAN: And if you look at the 10 criteria and the regulations under the "Public Interest," which I have on the screen in front of me, I don't understand how a project that ISO rejected long ago is "in the public interest" in terms of that analysis.

MR. PATCH: Madam Chair, excuse me. Could other parties be heard on this issue, because I think this is a very important one?

PRESIDING OFFICER WEATHERSBY: Certainly. Go ahead.

MR. PATCH: I think the point, and hopefully it does not get lost on the Committee, is that the testimony that the Applicant submitted, the Application is replete with references to the "transformer alternative." It's throughout the record. It was brought in by them. You know, what Ms. Geiger is doing is essentially asking questions

about what they have already stated in their testimony and what they put in the Application. It seems like it's a very important issue. And I think they have to show by the burden of the evidence, by the preponderance of the evidence, they have to show you overall that it's "in the public interest." Obviously, one of the things we're trying to do is to point out to you that we think there are some issues you need to be aware of. And I just think this is a very important line of questioning.

PRESIDING OFFICER WEATHERSBY: Okay. I'm going to overrule the objection. Ms. Geiger, you may continue.

MS. GEIGER: Thank you. I have just a couple more questions about this and I'll move on.

PRESIDING OFFICER WEATHERSBY: Thank you.

BY MS. GEIGER:

Q. So we established, Mr. Andrew, I believe you testified -- and correct me if I'm wrong, if I misheard -- that the 400-megawatt solution is better than 190 because it provides more

capacity in the region; is that right?
A. No, I wouldn't say it's better by any means. It's potentially providing capacity that would never be used.
Q. Okay. Okay. And would that be considered "gold plating"? You're building something bigger than is needed?
A. It can be, yes.
Q. Okay. And why do you believe that the 400 megawatts solution was proposed here, if you know?
A. Well, no, it was -- that was not a design goal of this. It was an outcome of it.
Q. Could you explain to me what you mean by that.
A. Well, the design goal of both alternatives was to address the needs, the problems in the area. And what ISO tries to do is make sure that there are at least two alternatives that are actively considered and taken, you know, to the next step of evaluation to test that we've done well in the development of the solution process. And so as a consequence of adding the Gosling Road auto, you get this

extra 430 megawatts of capacity; as a consequence of adding the Madbury-Portsmouth line, you get an extra 100 megawatts. The 100 and the 430 are both extra. Is one better than the other? That's a very subjective thing. I guess is more extra better than less extra?

Q. So, from a flexibility standard, if two auto transformers were installed -- which I believe the Gosling Road suite included; is that correct?

A. I believe it did, yes.

Q. If one of them failed, would the other one come online immediately?

A. No. They would both be in service all the time. This is not a spare situation. They would both be interconnected.

Q. Okay. So if one went out, the other one would be backing them up?

A. Well, the other one is there, yes, instantly.

Q. Okay. If a submerged line in Little Bay went out of service for some reason, how long would it take to repair or replace that line?

A. To fix it? A month to several months.

Q. And I believe we heard testimony from Mr. Bowes. Would you have any reason to doubt that he said between 3 and 12 months?
A. Yeah, you know, there are a lot of factors. You have to find it, get the barge there, get the cable up, get it fixed, get it back underneath. So it's a variable. I've seen it take a month and a half, and I've seen it take six months.
Q. Okay. But is it fair to say that, in terms of flexibility or maintaining the system resiliency, repairing or replacing a single autotransformer would be faster than repairing or replacing a submerged cable?
A. Repairing -- well, replacing a failed auto would be a month if the spare is close, two to three months if it's further away.
Q. Okay. So, switching gears a little bit. Again, back to the matrix under the heading "Environmental." Gosling Road scored another "positive attribute" checkmark for three circuit miles; correct?
A. Yes.
Q. And the Seacoast project didn't get a

checkmark for its 19-circuit miles; is that correct?

A. Yes, that's what the chart says.

Q. And is it correct to assume that, on that particular criterion, Gosling Road scored a "positive attribute" mark because it would require fewer circuit miles than the Seacoast Reliability Project?

A. Yes, that's what it appears.

Q. And on the criterion for new circuit miles, we see that "Rebuild Circuit Miles" is listed there; is that correct?

A. Yes.

Q. And on that criterion, the Seacoast project actually scored a "positive attribute" checkmark for zero rebuilt lines; is that correct?

A. That's correct.

Q. But isn't it true that the Seacoast project requires 30 miles of existing 100kV overhead line to be upgraded?

Maybe if we look at Page 5. Do you agree that this relates to all of the upgrades that need to occur for the Madbury

to Portsmouth project? And more particularly, if you look at the last two entries there, we see 11 and 19 miles of upgrades, which adds up to 30.

A. Yeah, I guess I would have to go back to the people at the ISO who put this together. But that does seem to be -- no, no, no. Okay. Here we go. The H141 and R193 lines, they have an asterisk right next to them.

Q. Yes.

A. And down below it says, "all upgrades necessary to allow existing conductor to operate at 140-degree C." Overhead transmission lines, as they heat up, the conductors will sag. The metal actually expands and they will sag lower. And we have code requirements where we have to maintain adequate clearance to the ground so that -- the original code involved people on horseback. The current code involves, you know, four-wheelers with whip antennas, such that they will not electrocute themselves. And so what's involved here on these lengths of line is not changing the conductor --

Q. Is it re-sagging the line?
A. -- it's addressing sag, which may have been higher poles. It may have been more tension. There's a number of different ways.
Q. And could you explain why these upgrades, this 30 miles of re-sagging or upgrades, wasn't listed on the comparison matrix?
A. Back on the other page?
Q. Yes. It's not there.
A. That I don't know. I didn't generate that. But I think what they did say under the heading is "Rebuild Circuit Miles." So they apparently didn't consider this a rebuild, that the scope was not that large.
Q. Turning back to the prior page, we see that big gray box again that we had a little conversation about in response to questions from Attorney Patch. And I'm not asking you to divulge exactly what was in that box, but could you generally describe the type of information that would have been there.
A. Generally it's an electrical sketch of the system in that area.
Q. I see.

A. And there would be circles or something showing the changes. So it would be -- it would illustrate the changes listed on the right.
Q. Okay. Switching gears a little bit. Do you know whether in its selection process ISO-New England considered or assigned any value to the fact that the Gosling Road auto transformer solution would have avoided crossing Little Bay, as well as the residential and historic districts in Newington?
A. Not specifically, no. I have no knowledge about that.
Q. Are you aware that Little Bay is part of the Great Bay Estuary, which has been designated as a national estuary research preserve by the federal government?
A. Not specifically, no, those designations.
Q. Were you here yesterday when the construction panel testified about jet plowing in Little Bay?
A. Yes, I was.
Q. And would the Gosling Road auto transformer

require any jet plowing in Little Bay?
A. No, because the options didn't include construction across that area.
Q. Okay. Isn't it true that in the past, PSNH has -- or Eversource -- excuse me -- has avoided crossing Little Bay when it constructed transmission lines to the north and south of the bay?
A. I have no knowledge about that specifically.
Q. Have you knowledge of where, generally speaking, Eversource transmission lines are in that area?
A. Sure. I think if you take a look -- ah, there we go. That's the sketch I was going to refer to anyway, is that there are -- as we look at this, there was a route to the north and a route to the south and then the subject route.
MS. DUPREY: Madam Chair, the exhibit number?
MS. GEIGER: It's Newington Exhibit 7. It was with the packet that was sent on Friday.
MS. MONROE: I want to apologize.

They came in after I left the office on Friday, and I overlooked them yesterday. So they will -- I just sent them via e-mail to the Committee, and they'll have them later.

MS. GEIGER: Can everyone see this map?

BY MS. GEIGER:

Q. And so, again, I'm sorry, Mr. Andrew. You started talking about some route alternatives. Does this map depict the route alternatives that were considered for addressing the Seacoast Reliability Project?

A. Yeah, subject to check, I think that's correct.

Q. Okay. And is it true that the northern line, that blue line, does contain some high-voltage transmission lines currently?

A. I think that's correct, yeah, for at least parts of it.

Q. Parts of it. And how about the southern route? Are there high-voltage transmission lines there?

A. I think there are through parts of it also. I'm not sure of the exact lengths in each

case.
Q. And as far as the submerged cables that currently exist under Little Bay that are no longer providing service, do you know why they were never replaced?
A. No, I don't.
Q. So we'll turn to the subject now of costs. Is it your recollection that when this project was initially proposed to ISO-New England, that the projected costs were going to be $111 million? Is that right?
A. For this project alone or for the suite of projects?
Q. Well, I don't know. You tell me. We'll go back to the comparison matrix. And on the left-hand side there we see a cost of $111 million?
A. Yes, I believe that was for the suite of projects.
Q. Okay. And so now, again, back when ISO was looking at Gosling Road, the projection there was $136 million for that project; correct?
A. Correct.
Q. And presumably that was one of the reasons

why Gosling Road was not selected was because of the cost; is that right?

A. I think if we go to the checkmark comparison, you can see the checkmark is down below with the Madbury to Portsmouth line.

Q. Now, Mr. Quinlan has testified that right now the costs for this project are anticipated to be $135 million; correct?

A. Correct.

Q. And, again, you just pointed out the Madbury to Portsmouth line received a positive attribute checkmark for the cost criterion; correct?

A. Correct.

Q. Now, were the costs of burying the line in Durham included in the cost estimates that were provided to ISO?

A. Here?

Q. Yes.

A. At that point in time? I don't believe so because I think that was something that came later.

Q. And were the costs of burying the line in the Hannah Lane neighborhood in Newington

included in these costs?
A. Again, I think that was something that came later.
Q. Came later? How about the costs associated with easements in the Gundalow Landing area?
A. That I don't know specifically.
Q. How about the costs of purchasing underground easements from either residents at Hannah Lane or the Frinks? Do you know if those costs were included in the --
A. Again, I don't.
Q. Okay. Do you know whether compensatory wetlands mitigation figures were included?
A. No, I don't.
Q. So we have some actual costs now. There's some components of the suite of projects that have actually been constructed and are in service; correct?
A. Correct.
Q. And I believe you may have indicated, or others may have indicated, the cost of those components are $50 million; right?
A. Yes, approximately.
Q. So we have actuals. Those are the actual

figures; correct?
A. Yes.
Q. So when you add all these new costs that didn't exist back in 2012, including the actuals, is it your opinion that it's still more cost-effective to go with this project than Gosling Road?
A. Yes, it is.
Q. And is that because Gosling Road includes two auto transformers instead of one?
A. No, not specifically. No.
Q. Well, wouldn't installing one auto transformer be less expensive than installing two?
A. But it wouldn't be a valid solution. It wouldn't have made this list as a valid solution to the problems if there was only one auto transformer there.
Q. And why is that?
A. It didn't pass the reliability test, the contingency test. That's why there were two.
Q. Are you aware of other projects or other situations in New England where one auto transformer has been installed by itself?

A. Sure. It's different. In this case, to solve problems that are there, you need two. That's why there were two specified. We don't put extras in the design. There are other substations that have four.
Q. So did you need two 400-megawatt transformers?
A. I think 400 is a standard size. Because part of our issue going forward is if one fails, we don't want to have to stock 10 different-size transformers. So we use a standard size, and then we have one spare. Lead time on this kind of transformer is a year to 18 months.
Q. So you're saying that the second auto transformer would not have been put into service. It just would have been ordered and kept in case the first one went down?
A. Oh, no. I'm saying exactly the opposite. Both would have been in service all the time. Spares are not eligible for regional cost recovery. ISO would not allow us to do that.
Q. And when you said that 400 megawatts was a standard size, you can custom order

transformers at ratings lower than 400 megawatts; isn't that correct?

A. You can, yes.

Q. And so this is just Eversource's choosing to do this. This is just your company policy; is that right?

A. Well, the reason we choose it is to standardize on spare parts. If you have a smaller transformer and it fails and you go to put a bigger one in, it may not work. It can overload lines that are below it. So we go with the standard size. There are multiple restrictions: Size and weight, moving it across the roads; spare parts is one of the biggest ones that's there; and then the design of the station to solve the issues at hand.

Q. Does Eversource have other transformers other than those at the size of 400 megawatts, or do you always order 400-megawatt transformers?

A. Well, going forward, we try to order a standard size. If you get above a 400 megawatt rating, roughly, it now gets so

large that you have to go to three, single-phase units because of weight restrictions trying to transport to the substation locations.

Q. Okay. So turning to your supplemental prefiled testimony, and this was filed July 27, 2018 -- and this is Applicant's Exhibit 139 -- do you have that?

A. Yes, I do.

Q. On Page 2, Lines 11 to 13 you state that the ultimate plan is to expand the Portsmouth Substation by adding a second transformer. Is that your testimony?

A. At Portsmouth, yes. And that is a distribution transformer, not the large, 345 to 115 auto transformer.

Q. Okay. Well, you anticipated my next question, because I wanted clarification as to whether or not the Portsmouth Substation to which you are referring to is the same location where the Gosling Road auto transformer would have been constructed.

A. No. It's nearby, but it's not --

Q. Will the new, second transformer in

Portsmouth that you've just mentioned in your testimony contribute to transmission system reliability in the Seacoast area?

A. No, it will contribute to distribution system reliability. Well, actually, I shouldn't say that because the plan is still kind of in formulation. But nearby to Portsmouth is an older substation, known as "Resistance." And the plan is basically to retire the Resistance substation and move the distribution feeds over to Portsmouth. As part of adding the second transformer, we would probably add some breakers on the high side and reconfigure that, which would help with transmission reliability in the area, too.

Q. But the cost of the additional Portsmouth Substation transformer was not included with the cost of the Seacoast Reliability Project.

A. Oh, no. In fact, that is a separate project that would be -- the second Portsmouth transformer is a distribution project, and any associated transmission upgrades with that would be a local project and not under

the ISO regional plan.
Q. Okay. So, turning back to Newington Exhibit 1-7, on Page 6 here, you see on the right-hand side of the page that the existing load in the Seacoast area is 760 megawatts. Do you see that?
A. Yes.
Q. And the column to the left indicates that Gosling Road would add 400 megawatts; is that correct? Am I understanding that correctly?
A. No. Well, it would add 400 megawatts of capacity above what's needed in the area.
Q. And what's needed in the area?
A. I would have to go back into the cases and see what that was forecast at.
Q. Is it something above 760?
A. Well, yes, because the existing load in the area is 760 is what they're saying.
Q. Right.
A. What I'm not sure of is if they meant that to be at the end of the 10-year projection or if they really mean existing, like currently. I think it's at the 10-year projection, but I'd have to go back in the report to confirm

that.
Q. Well, assuming that that's correct, if you add the 400 megawatts to this 760 that currently exists, that's about 50 percent more load; correct?
A. Roughly.
Q. But if you add 190 megawatts with the Seacoast project, that's only about 25 percent more; right?
A. Yes.
Q. So if you're again looking at the cost there, we're looking at ISO saw back in 2012 that the Gosling Road solution would cost $25 million more; right?
A. Correct.
Q. And for $25 million more, they could add 50 percent more to the load, whereas at the Seacoast project they'd only be adding 25 percent more for --
A. Yes.
Q. Switching gears a little bit. If Eversource does not receive a Certificate of Site and Facility for this project, would Eversource need to go back to ISO-New England to develop

another solution to address the Seacoast reliability problem?
A. Well, I guess we would have to see what the terms -- what the issues and problems were. There are other routes that are possible. You know, so I mean we would certainly inform the ISO. And they're realistically aware of the outcomes of all the different siting hearings in different states.
Q. What does that mean? Does that mean they keep the project on the list or take it off?
A. What would the ISO do at that point?
Q. Right.
A. That I don't know.
Q. Would they conduct a new needs assessment, a solution study?
A. They could. That's always their choice. Since this solution study was done, they have started and restarted three times in the New Hampshire area. So I simply don't know what they would do.
Q. Do you know what ISO-New England did with respect to the Northern Pass project?
A. Northern Pass is a very different project

than this. That was what's called an "elective transmission upgrade," where this is a reliability project. Fundamentally, under the tariff and the transmission operating agreement, once a project is on the regional system plan list, we're obligated to proceed to construct it, to go through siting and the other processes. If we're denied by that same tariff, we have to write a report to them, and then they decide on what they're going to do. And I think they also, by the tariff, are required to submit a report to FERC, but --

Q. Is Northern Pass still part of the ISO-New England's regional system plan?

A. I believe it's still in there, yes.

Q. It's still in there?

A. It's still listed. Yeah, I guess the regional system plan does include ETUs, so...

Q. Okay. Is Gosling Road still technically a viable solution to the reliability problem in the Seacoast?

A. Yeah, the suite of projects is. I don't think anything has changed that make it so

that it wouldn't work anymore. Yes.
Q. And, again, we're talking about Gosling Road.
A. The suite of projects that are there, not just -- there's some references that were made that it's just adding a transformer there. It isn't. It's all the associated line work in the suite of projects.
Q. Do you know whether, when this project was initially being developed, that the plan was to bury it in the town of Newington, in the residential district, to avoid any potential aviation hazards?
A. Oh, that I don't know. I mean, we have had plenty of cases where we have lines near airports, and we've either had limited tower heights or -- you know, we deal with the FAA all the time on those kinds of issues.
Q. We heard yesterday, if Eversource were to bury the line in locations where ISO-New England thought there should be an overhead line, that those costs could be localized. Is that your understanding?
A. Yeah, that's correct. ISO has Planning Procedure No. 4, which is a public document

on their web site. And one of the attachments in the back, where we fill out what's called a "transmission cost allocation form," where we apply for regional cost recovery, those are some of the specific things that they look for.

Q. Okay. And I believe we heard -- were you here yesterday when we heard testimony, I think from Mr. Bowes or the construction panel, that the rule of thumb basically is for every 10 million -- for every mile of buried line, it costs about $10 million?

A. That's a high-level estimate, yes.

Q. Okay. And do you know if $10 million -- if an additional mile of burial were ordered by this Committee as a condition of the certificate, if those costs had to be localized, say $10 million, do you know what the cost to the average PSNH residential customer would be?

A. I don't. I'm not a rate specialist, by any means.

Q. Well, I'll show you what we got in response to a data request for information about how

you translate $10 million worth of project costs into rates. And would you accept, subject to check on your own, that we were told that the annual cost for a PSNH customer using 700 megawatts would be 12 cents a year, so a penny a month?

MS. DUPREY: For the record, the exhibit number, please?

MS. GEIGER: This is Newington 1-9. And I apologize. It doesn't show up very well at the top.

A. And this was a data request that Eversource responded to?

BY MS. GEIGER:

Q. Yes, this was a Town of Newington data request, and this is the response. I believe we got it from Mr. Jiottis, who is not here any longer.

A. Okay. Well, given that I know Mr. Jiottis left two years ago now, I guess I'd say, yes, it's approximately correct then.

Q. Thank you very much.

MS. GEIGER: That's all the questions I have for this witness.

PRESIDING OFFICER WEATHERSBY: I think we're probably due for a short break. Why don't we take a 10-minute, 15-minute break, come back at 11:25. At that time we will finish with Mr. Andrew. Up next is Attorney Ludtke, Conservation Law Foundation, followed by the Durham Residents. Thank you.

(Recess was taken at 11:15 a.m. and the hearing resumed at 11:33 a.m.)

PRESIDING OFFICER WEATHERSBY: Okay. We're going to get started. We will resume cross-examination of Mr. Andrew. Ms. Ludtke.

CROSS-EXAMINATION

BY MS. LUDTKE:

Q. Good morning, Mr. Andrew.

A. Good morning.

Q. I'm Leslie Ludtke, and I'm representing the Conservation Law Foundation. I have a few questions for you.

In going over your testimony, you summarize the purpose of your testimony as being to "address the Project being the least cost -- "the most cost-effective solution to meet the reliability needs." Is that

essentially what your testimony is?
A. That's correct.
Q. And you also testified that cost is a major consideration in deciding what project to move forward with?
A. Yes.
Q. Now going back to the ISO proceeding. That was in 2012?
A. Yes. The final solution report was issued in 2012, yes.
Q. Okay. So the proceeding started even before 2012.
A. Yes.
Q. Now, when you were looking at the cost of the comparative options, let's say in 2010, that would have been eight years ago?
A. Yes.
Q. How did you come up with the cost of this SRP suite of projects? And what I'm asking specifically is how did you develop the cost for crossing Little Bay?
A. Okay. Well, I think at that point in time they would have taken a look at the distance involved in crossing the bay and either had

some representative quotes we had received in the past for jet plow services, or they would have contacted some of the suppliers, the companies that do that, to ask for a budgetary number.

Q. Were you just given the cost then?

A. Yes, from construction people. Correct.

Q. All right. In your response, you mentioned the cost of a jet plow. So, in 2010, a decision was made to use a jet plow method of crossing Little Bay?

A. For underwater submarine cable insulation, jet plow is the typical method that's used.

Q. So as Attorney Geiger represented in her testimony, the Great Bay Estuary has national significance as a resource. You understood that.

A. Certainly.

Q. And so a decision was made back in 2010 to use jet plowing as a way of crossing Little Bay?

A. That's what the cost estimates were based on, yes.

Q. And at that point, no environmental studies

had been done to determine what the impact of jet plowing would be.
A. I don't believe so.
Q. So you didn't know what, for example, the sediment impact of jet plowing would be or the suspended sediments. You had no sediment characteristics to go on.
A. We had not gone through the evaluation process. In fact, at that point when we were developing costs, we didn't have a selected alternative. So you wouldn't have gone that far.
Q. Well, you know, going back to the ISO process, the issue in the ISO is cost is a major consideration. So you want to make sure you have some level of confidence in the costs that you're preparing, don't you?
A. The ISO process has guidelines, in terms of when we present cost estimates at different stages of the process, we're supposed to have a confidence range of minus 25/plus 50. And then if we continue on, then we get to minus 25/plus 25.
Q. So you had a high confidence that jet plowing

would be the way to go, regardless. Did you ever obtain any information at that point in time, back in 2010, of what the cost of a horizontal directional drill would be or horizontal directional drill with a shore landing? Was that even considered?

A. That I don't know, in terms of that level of detail. I know horizontal directional drill for the entire distance, I don't believe that would have been considered, mainly because when I first heard there was some discussion about this, my first reaction was, "You can't go that far." And then I was told that, no, the technology's advanced so that somebody successfully did it. However, I think of those long distances, it's a high-risk operation.

Q. So it was understood in 2010 that a horizontal directional drill was a feasible alternative for crossing Little Bay. But it wasn't even factored in in making the decision about which project to go with.

A. Oh, no. Quite the opposite. In 2010, horizontal directional drill would have been

looked at as an infeasible way. It was simply too long.

Q. Well, you said you understood it was feasible. And maybe I've got the timing wrong --

A. Just recently. When I heard --

(Court Reporter interrupts.)

A. I'm sorry. When I heard there was some discussion in this docket about directional drill, my first reaction was, "It's too far. You can't do that." And then I talked to some of our construction people, and they came back and said, "No, somebody has successfully done one out there." And I said okay. Time marches on, you know.

Q. Well, was this a subject of discussion during the ISO process?

A. No, not back then.

Q. And was there any discussion about using a jet plow methodology during the ISO process, so that if one of the stakeholders had come into the ISO process, that stakeholder would have been able to present concerns about using the jet plow process?

A. I don't believe jet plowing across the bay was specifically discussed. I remember nothing about that being discussed as a particular topic.
Q. Now, when Attorney Geiger asked you about comparative costs of the Gosling Road transformer to the SRP suite, I think the numbers I wrote down were $111 million for the SRP and $135 million for Gosling. Was that correct?
A. Those were the numbers on the presentation from 2012. Correct.
Q. So we're talking about a difference of $25 million.
A. At that point in time, yes.
Q. And would you agree that the cost of building the Gosling Road transformer has more certainty to it than the cost, for example, of crossing Little Bay, whether it be by jet plow or horizontal directional drill, and then putting lines in related to that bay crossing and some of the other issues that Attorney Geiger raised, that there would be less certainty in that suite of projects as

to the cost than the Gosling Road cost?
A. No, I disagree with that, because what's happened in the interim is the engineering has proceeded on the Seacoast Reliability Project. We now know, you know, exactly how we propose to do it. We have contractors who are prepared to sign on the dotted line to go do it. There's a lot of certainty around the cost. Frankly, the thing that's uncertain at this point is the outcome of our proceeding here today.
Q. So you think right now the cost of the jet plow is certain and built in, and there's no issue with that?
A. No. I mean, I think the only issue with that is, as time marches on, costs go up all the time. So the longer we take, you know, the more everything will go up.

And in fact, if we go back to the page that was displayed in 2012 dollars, the Gosling Road alternative costs have gone up. They're now up in the estimated neighborhood of $200-, $210 million.
Q. Well, what I'm focusing on is the

environmental work that was done to justify the selection of the jet plow methodology was done after the decision was made in the ISO proceeding to use a jet plow methodology to make this project cost-effective. Isn't that correct?

A. I don't -- I mean, what the ISO approved was a 115kV transmission line connecting Madbury to Portsmouth. As we saw in one of the presentations that Attorney Geiger I think had up, we had three routes: There was a northern route, the southern route and the route across the bay. So, in the process of the ISO making their decision, they weren't looking at, you know, the details of that construction.

Q. Okay. Well, the decision was made to go across Little Bay, and that decision -- part and parcel in that decision was the decision to use a jet plow methodology for going across Little Bay; correct?

A. Yes, that's what we've proposed.

Q. All right. And so after that decision was made in the ISO proceeding, Eversource moves

forward with a permitting process and actually does environmental work related to what the environmental impacts of the jet plow method will be on the water quality and the fish and the shellfish and eel grass and other areas of concern about Little Bay; isn't that correct?

A. Yes. I mean, we moved forward as part of this process, I believe.

Q. So what if the environmental information that is gathered after the decision has been made to move forward with this option comes out that, in fact, there is very significant negative environmental, adverse environmental impact on Little Bay from jet plowing, and the better method to avoid this environmental impact would be horizontal directional drill? Where would we be then?

A. Well, I don't know where we'd be. I guess that's supposition. You know, I'm not qualified to really make an environmental decision that way.

Q. Well, isn't that a bit of risk making a decision on moving forward with a project

without doing your due diligence on the environmental impacts of the project before the decision is made?

MR. NEEDLEMAN: Objection. The due diligence was done. That's what the entire siting process is about.

PRESIDING OFFICER WEATHERSBY: Sustained. You can respond. It's sustained. Sorry.

BY MS. LUDTKE:

Q. Well, let me rephrase that question.

In 2018, a decision was made in terms of looking at the relative costs of multiple projects that a jet plow method would be used to cross Little Bay; isn't that correct?

A. I don't know that the jet plow method was a great topic of discussion at that point in time.

Q. Well, your cost numbers --

A. It's one of the accepted ways of installing submarine cables.

Q. Your cost figures were based on using a jet plow method; correct?

A. They probably were, yes.

Q. So that was the cost that was used to compare the different options available to address the reliability needs.
A. Sure. It was one of the inputs, yes.
Q. And the question I have is: Isn't there risk of making a selection without doing environmental work to determine what the impact will be on Little Bay and Great Bay of using a jet plow method to cross Little Bay?
A. I would probably like to defer that question to the environmental panel. I am not an environmental scientist, you know, and I kind of --
Q. Well, my question wasn't really an environmental question. It was a risk analysis question. Isn't there risk of not doing the environmental work before a decision is made as to what method to use?
A. Well, there's a balance, right. We can't do a hundred percent engineering on every option that's put on the table for consideration because, No. 1, it will take forever; and No. 2, costs will skyrocket. That's why the ISO process is kind of more like a cone. You

start out with a high-level estimate, you work in solutions that work, and then you refine your estimates. And the ISO, too, is not in a position to make environmental decisions. That's not their purview. That's more in state agencies to do.

Q. So, going back to the question I asked you before. If you don't do the environmental work before making a decision, and understanding that, yes, this won't pose serious consequences on the water quality or any other factors that I mentioned on Little Bay, wouldn't it be reasonable to consider that the number you came up with may have a fair amount of uncertainty associated with it?

MR. NEEDLEMAN: Same objection. In Mr. Bowes's testimony, he specifically goes through the details of the routing selection and the various alternatives that were discussed, and he specifically talks about how a decision was reached to pick this route, including how environmental factored into it. So the continuous repeating of the idea that

environmental is not factored into the selection of this choice is just not right.

PRESIDING OFFICER WEATHERSBY: Ms. Ludtke.

MS. LUDTKE: I think that the issue has to do with timing and the ISO process selection. And I think the witness testified that environmental work had not been done in 2010. I think that's the testimony. And what I'm trying to do is elicit information from him as to what consequences that would have in terms of evaluating the certainty of the estimate, cost estimate and other factors.

MR. NEEDLEMAN: Madam Chair, whether or not ISO factors in environmental issues, and we already know from the testimony that they don't, is not relevant. That is the ISO process. And if Ms. Ludtke wants to attack the ISO process, she can do that in a different forum. We're here talking about the siting of this project. And the alternatives in the environmental factors that lead to this choice were put in the record, and Mr. Bowes spoke to that.

MS. LUDTKE: Well, CLF is extremely concerned about the environmental impacts of jet plowing. And we'll get into that a lot more when we have the environmental panel here. And I just want to find out more information regarding whether horizontal directional drilling is absolutely off the table. Are we wasting our time here because that can't even be considered?

MR. NEEDLEMAN: And HDD was an issue for the construction panel.

MS. LUDTKE: HDD is also an issue for the environmental panel because the environmental panel addressed the environmental impacts of HDD and shore landing HDD. So it is not purely a construction issue.

MR. NEEDLEMAN: I agree.

PRESIDING OFFICER WEATHERSBY: I think that line of questioning is probably better for the environmental panel. He has testified concerning how that number came to be, and it did not include a lot of extensive analysis of environmental. So that has been elicited by you. And as far as the specifics

of cost of HDD and environmental impacts, those are questions that are better for the environmental panel. So I'm going to sustain the objection. Let's move on.

MS. LUDTKE: Okay. I'll move on.

BY MS. LUDTKE

Q. Now, Mr. Andrew, did you obtain any cost about using horizontal directional drill at any point in your involvement in this process?

A. No, I did not. No.

Q. Do you have any idea what the cost of horizontal directional drill would be?

A. I believe there was an estimate created recently, but I don't know what the number was.

Q. Are you familiar with the request in the New Hampshire DES permit for doing a comparison, for Eversource to conduct a comparison of horizontal directional drill, shore-based horizontal directional drill, and jet plowing? Are you familiar with that report?

A. No, I'm not. That's where I have just kind of background information that I know people

were looking at it, but --
Q. Did you have a discussion with anyone who was working on that?
A. No, not directly about the report, no.
Q. And I understand your testimony is that cost is a major consideration --
A. Sure.
Q. -- in making a determination.
A. Sure.
Q. And are you familiar with the request in the DES permit that if cost is the reason given for determining that an alternative is not feasible, that a cost estimate should be provided from at least two companies experienced with jet plowing and two companies experienced with horizontal directional drilling?
A. No, I'm not familiar with those rules or regulations at all.
Q. Do you know whether any -- or were you involved in any request to get a cost estimate or a bid from two companies experienced with jet plowing or two companies experienced with horizontal directional

drilling?
A. No, I was not.
Q. And I wanted to read you a passage in the Executive Summary for the report that came out in response to the DES permit, and I want to see if you agree with that. And the sentence I wanted to present you with reads as follows: "The methodology chosen by Eversource to install the submarine cables in Little Bay, known as 'jet plow,' was chosen following careful consideration of other potential methods." Do you agree with that?
A. I believe that's a true statement. I wasn't -- I'm not an environmental scientist but --
Q. Well, it says the methodology --
A. -- I have faith that they looked at it in good detail.
Q. Well, wasn't it chosen in 2010 essentially by being part of your cost estimate?
A. Well, no. The cost estimate would be part of it, but those decisions are never absolutely final. I mean, I believe we've decided to underground additional portions of the

overhead line in the process of gaining approvals to construct the job. So things do change, you know, and are different from what they were years earlier when you thought they were going to come out a particular way.

Q. Well, this sentence says that jet plowing was chosen "following careful consideration of other potential methods." What other potential methods would there be to cross Little Bay?

MR. NEEDLEMAN: Objection. It's beyond the scope of this witness's testimony.

MS. LUDTKE: Well, he prepared the cost estimates that resulted in the selection of this project, and he said he was prepared to testify that these -- that this project was selected because it was cost-effective. So if he's prepared to testify that it's cost-effective, I think he should be prepared to testify as to other potential methods that might have been considered in crossing Little Bay.

MR. NEEDLEMAN: Mr. Bowes was the witness who was presented for purposes of

alternatives, bay crossing. That was the point of his testimony, and generally of the entire construction panel.

PRESIDING OFFICER WEATHERSBY: I'm going to overrule the objection. You may continue. But could you repeat your question, please.

MS. LUDTKE: Sure.

BY MS. LUDTKE:

Q. The part of the sentence I read to you says that the methodology of jet plowing was chosen following careful consideration of other potential methods. So my question to you is: What other potential methods were given careful consideration?

A. Well, anytime you've got a water crossing, right, directional drilling is a possibility. However, if you simply look at a Google Earth shot of the area, directional drill requires a very large pit on one end to drill and another large pit on the other end to receive. And so in this environment with houses right on the water, the distances involved -- in fact, when I learned fairly

recently we were considering directional drill, my reaction was, "You can't do. It's too long." So, back in the time frame where we were looking at this directional drill, the complete process certainly, you know, was off the table just from the distances involved. If you start to look at, say directional drill on either end, right, and jet plow in the middle kind of situation, which we've used that -- we have a cable out to Martha's Vineyard where that was exactly what we used. That's simply kind of a modification, if you will, of a jet plow. So it would have been in the minus 25/plus 50 percent band that's there. And we would not have gone to the level of doing detailed studies to find out if that was there. We simply would have said that was an adjustment that would be made when we got to the detailed engineering.

Q. So other potential methods that you're talking about would have been in the plus 50 percent from the projected cost of the jet plowing?

A. Well, yeah, in the -- I'll call it the "dead band," the minus 25/plus 50 accuracy range of the estimate you are presenting.
Q. So that included the other methods? That would include shore-based horizontal directional drill and --
A. No, not shore-based, because at the time we would have considered that not technically viable.
Q. Would it include horizontal directional drill that wasn't shore-based?
A. I don't know what you mean.
Q. Well, you said it was a plus 50 percent on the estimate was based on jet plowing. And were the other methods included or not included in that plus 50 percent?
A. Well, a full-length directional drill would not have been included in that length. If the jet plow was going to be modified so that one end or both ends were directional drilled out a couple 100 feet, then that would have been -- that's a detail that would have been figured out and would be included in the accuracy band of the cost estimate.

Q. So those are the other methods that were compared to jet plow in making the choice?
A. Yeah. Well, pretty much your only other choice is something that, to my knowledge, really isn't allowed anymore, and that's to direct-trench underwater.
Q. That's what I'm trying to understand, really, is what potential methods were on the table to give careful consideration to, given the ISO process where it had been determined to be the most cost-effective with a price estimate of $111 million.

MR. NEEDLEMAN: Objection. I think that mischaracterizes the testimony, when the testimony relating to "careful consideration" related to Mr. Jiottis's testimony, which Mr. Bowes adopted regarding the various route choices. It was not talking about the ISO phase.

PRESIDING OFFICER WEATHERSBY: Ms. Ludtke.

MS. LUDTKE: Well, the Executive Summary on comparing horizontal directional drilling and jet plow says, "The methodology of

jet plowing was chosen following careful consideration of other potential methods." The ISO process occurred before all this, and it was part and parcel of the process. And there were cost numbers given, which he said were a major consideration in the ISO process, and that was $111 million. So I'm trying to figure out, once the environmental work was done, what other potential methods were on the table that required careful consideration.

PRESIDING OFFICER WEATHERSBY: So I'm going to sustain the objection. I think that that's not his report. He worked on the numbers that went into the ISO figure. And he talked about the adjustment, that minus 25/plus 50 wiggle room, a lot of wiggle room in that. But he wasn't involved in the further studies, et cetera. So I think that that's probably better for a different witness, and I'll ask you to move on.

MS. LUDTKE: Well, let me clarify then.

BY MS. LUDTKE:

Q. When you had the $111 million estimate in the

ISO process, are you testifying that that $111 million figure was subject to the minus 25/plus 50 percent adjustment?

A. Yes, it would be -- the numbers presented in that screen at that point in the ISO process would be minus 25/plus 50 percent accuracy.

Q. Would that same minus 25/plus 50 apply to the Gosling Road transformer project?

A. Yes, it would.

Q. Okay. Now I have one more question, and it's a different issue.

Does Eversource have any transformer presently at less than 400 megawatts?

A. Well, yes. But I think I need to help you with the question a little bit.

Q. Okay.

A. You mean large, 345- to 115- --

Q. Yeah.

A. -- type transformers that would have been in the Gosling Road alternative?

Q. Right.

A. Yes. Installed on our system, the smaller size? Yes, we do.

Q. How many are there?

A. Oh, I don't know. I can think of three off the top of my head. But there's... there may be more. And there are also ones at 230 to 115, things of that nature. But frankly, you know, going forward, the cost difference between, say, a large auto of a 250 rating and a 400 rating isn't a lot of money. That's why we go to a standard size.

Q. Fair to say it's not uncommon on your system right now?

A. Well, it isn't common, but we have them. They're older units that have been there a long time. If they would have failed, we would work to replace them with a standard size going forward, with the goal of simplifying and minimizing spares.

Q. Thank you.

PRESIDING OFFICER WEATHERSBY: Cross-examination now from the Durham Residents, Mr. Fitch.

Off the record.

(Discussion off the record.)

CROSS-EXAMINATION

BY MR. FITCH:

Q. Hello, my name is Matthew Fitch. I'm one of the Durham, or part of the Durham intervenors group. I just have a few questions here today.

Does Eversource have the ability to rerun the reliability analyses that were used to support the New Hampshire/Vermont Needs Assessment to include the various reliability projects that have been completed since 2011?

A. You mean to redo the study using the same cases that were used then with everything but the Seacoast Reliability in it?

Q. Well, I guess what I'm trying to get at is to include the projects that have already been completed, essentially to determine they're in there.

A. Yes, I think we do. Yeah.

Q. Has that been done?

A. To a very limited extent, yes.

Q. Are you familiar with the results of those analyses?

A. Yes. The Project is still needed.

Q. So I guess that goes back to an earlier question about being able to quantify the

impact of those completed projects. Is there -- does re-running those analyses, does that enable you to quantify the impact of those completed projects?

A. If it were done in its entirety. I asked one of our planners to run one by looking at the system design in the area. My premise was one set of contingencies would be one of the worst. And it did, in the original case, result in voltage collapse in part of the area. And I asked them to rerun it based on today's current load forecast data, and it still resulted in that voltage collapse. So I took a single data point. I did not go back to ask for all of them that are done.

Q. Generally speaking, do reliability projects associated with the distribution grid help to improve the performance and reliability of the transmission grid?

A. In general, I would say no, because the amount of load you can move on the distribution system is much smaller. The reason we go to higher voltage lines is that they can move larger amounts of power. So,

the distribution projects, you know, it's one system. They're all connected. You can delay a project a little bit with a distribution by moving some load. But generally that's all you're doing is buying a little bit of time.

Q. If the distribution grid becomes more efficient and/or demands less load, does that ease the burden on the transmission grid call?

A. Absolutely. Yes. The transmission system is there to serve the load, and it's to connect the generating supply to the load. And if the load reduces -- which a lot of the energy-efficiency efforts that have been taking place, and distributed generation has a general similar effect -- then, yes, the transmission system needs to transport less power.

Q. Are you familiar with the New Hampshire Public Utilities Commission Docket No. DE 15-296 that's titled "Electric Distribution Utilities Investigation Into Grid Modernization"?

A. I'm aware of the grid mod docket in New Hampshire, yes. I'm not actively involved in it.
Q. Are you familiar with any of the comments that Eversource made in that docket?
A. No.
Q. As they are publicly available documents, I'm trying to speak to a comment that a representative of Eversource made in that docket, a Mr. Matthew Fossum, on September 17, 2015. He had made the comment in that docket that Eversource recently reported a 25 percent increase in reliability performance with the application of distribution automation devices. And I interpreted that to be a 25 percent increase in the reliability of the distribution component. Again, does that carry over any positive impact to the transmission grid?
A. I think the context of that is we produce -- actually, we produce them on a daily basis, outage numbers -- how many events occur, how long customers are out, you know, for the duration. Distribution automation doesn't

prevent outages. It allows you to quickly limit the scope. So your lights go out, but then they come back in 30 seconds. And while you're not happy with us, you're not sitting there for an hour and a half getting really angry with us either, which is always good. So, some of those -- actually, what DA allows us to do is keep load on the system. In the old version of things, if a transmission line supplied a substation or a transformer and the line went dead, the transformer went dead also, and everybody waited in the dark until we fixed it and brought it all back. Now, with distribution automation, if we have enough street ties, we can restore all that load from alternate sources. And our distribution engineering people are working on that constantly, trying to create the ties, and do that so that we have options to bring people back. We don't like it when you're in the dark, either.

Q. So, ultimately, though, those improvements do benefit the reliability of the transmission grid?

A. Well, yeah, I guess what they actually do is keep more load on the transmission system. We were talking earlier, before, that if we have a transmission event and the load disappears, we don't have to worry about serving it. If we have a transmission event and the load gets transferred to adjacent stations, then we still have to serve it. And those are things, those capabilities we do factor into how we plan the system. But for the most part, that shouldn't be a limiting factor in, you know, when we bring projects forward.

Q. Is it common or typical for a reliability project to expand the corridor that's primarily comprised of distribution poles to one that utilizes transmission-size poles?

A. It can be, yeah. It simply depends on the width of the right-of-way and what's in there. For the most part, if we're taking a right-of-way that only has distribution in it today and we're putting transmission in it tomorrow, or requesting to put transmission in it, that usually means we're not in a

dense, urban area, that we're in what used to be rural and is now probably suburban, and, you know, housing developments are springing up. You know, the town I grew up in had three farms when I was a kid. You know, you can't even buy a house lot anymore. You know, so as the system grows, as urban areas grow, that happens on the outer edges of growth.

Q. Can you cite another project where this has been done?

A. Not off the top of my head.

Q. On Page 4 of your April 12th, 2016 testimony, Lines 16 through 19, you state that violations occur under combinations of summer peak load, the unavailability of a local 115kV generation, and loss of system equipment.

Do violations occur under summer peak load alone?

A. Yes, depending on the nature of it. I think, as we discussed earlier, the ISO-New England report that justified this project had a critical load level of 18,500 megawatts in

ISO peak load. We reached that yesterday. And in the wintertime we go above that. Wintertime peak loads are up over 20,000 megawatts. So, you know, problems in this area can happen in the winter, in the summer. You know, generally they happen at the worst possible times in the extreme when we want to be really, really cool or really, really warm. But, yeah, loads above 18,500 occur a lot. I don't have an hourly number for that. We would have to reduce ISO summer peak loads by about a third and winter peak loads by, say 15, 20 percent, in order to get to the point where we did not need these additions to serve load reliably.

Q. When you reference those peak loads, are they a function of capacity?

A. Well, I'd say the peak loads more than anything else are driven by weather, you know, either very, very cold or very, very warm, you know, humid weather. We have enough generation capacity in New England to supply it. So the issues here are connecting the supply to the loads under various outage

conditions with lines, transformers, breakers, either out of service and/or failing and going out of service. So it's that combination.

Q. So in a perfect world, if outage conditions didn't exist, the peak load -- or excuse me -- the generation wouldn't have any issues meeting the peak load?

A. In the summer, yes. In the winter, we do have a natural gas supply issue in New England. So, that aside, yeah, if nothing failed, ever failed and went out of service, the system would be quite a bit smaller than it is today.

Q. Continuing that line of thought here, would violations occur with the unavailability of a local 115kV generator by itself, not in combination with other criteria?

A. No.

Q. And do violations occur with the loss of system equipment independently, not in combination with the other criteria?

A. Violations occur at both levels above 18,500 with loss of system equipment.

Q. Also on Page 4 of your testimony, Lines 18 to 24, you describe a possible scenario where two 115kV transmission circuits could go down at once, which you state cause the worst-case violations to occur. Has this kind of scenario happened in the Seacoast Region before?

A. I was going to say I don't know the complete outage history of the Seacoast Region going back in that. So I don't really have enough information to answer it from that perspective. I can say we are required under the planing process to simulate this, evaluate the consequences, and fix it if there is identified need, and that's what we have identified.

Q. In that possible scenario that you mentioned with the two 115kV circuits going down, generally speaking, is the Seacoast Region still able to receive power to operate?

A. Well, parts of the region are and other parts aren't. So it isn't a matter that the entire region in itself will just, you know, be in the dark instantly. It's under different

combinations, different parts of the region have problems.

Q. So, again referring to your testimony on Page 4, Lines 23 and 24, that the possible scenario you suggested could exceed the emergency thermal rating of the circuit -- and then you also state on Page 6, Lines 3 through 6, that the Seacoast Region solution, which includes SRP, directly provides system benefits by adding new transmission circuits, upgrading existing circuits to increase the amount of electric power that a circuit can carry, and adding circuit breakers and capacitor banks. With the projects associated with the Seacoast solution that are already completed, would the scenario you presented with those two 15kV circuits going down, still yield the same results?

A. Yes. I think I indicated earlier when you asked that, I tested one set that I felt would be pretty severe. And the answer came back, yes, it is severe. What I haven't done is test all the ones that create all the problems. So the reinforcements that have

been done in other places -- I think we spoke earlier about a couple of lines where we had the sag issue addressed -- you know, those help. They address some particular sets of overloads. Capacitor banks are used to improve voltage on the system in response to problems. But what we actually need is that final connection between Portsmouth and Madbury to address all the issues that are there.

Q. So, based on that, then, do I understand correctly that you've only modeled or forecast that single scenario with the improvements considered?

A. Well, yes. The only one I asked a planner to run using some of the models that are in the current study that's ongoing at the ISO was that particular one. It results in thermal overloads of two lines and extremely low voltages in a large area. So I knew that was probably one of the most extreme situations. And he confirmed for me that, well, basically what happens when you do things to extreme in a load flow case, it actually just doesn't

solve. It's what's called "non-convergent." And so he came back and said it didn't converge. So that's a recognition that that problem is still there.

Q. So, late yesterday, Exhibit 196 was submitted, which is a page from ISO-New England's Project List identifying this project as being listed as "planned" by ISO-New England. I understood that to imply that there is still a need for this project based on its status as "planned." Is that a -- do you interpret that as well?

A. Well, you know, the ISO process, when they issue a solutions report and they say here are the preferred solutions, the projects go on the list. And they will have a status that is "proposed," I think is what it is. We then move into the next phase of analysis where we do a proposed plan and application study. It's also called an "I-39 [sic] Evaluation." And you can see a column on here. It's the tenth column, "PPA (I-39) Approval." And there is a date in there. When the PPA approval is granted, status then

changes to "planned," all right. Then one of the next things is TCA approval, which is transmission cost allocation, which we applied for, you know, also. But in terms of it, that's what those columns mean.

Q. So, being defined as "planned" within this document, is that enough to deem there is a need for the project?

A. Yes. Frankly, it means that the Project has gone through -- has been identified as one that solves a need. The I-39 analysis is complete. That shows the Project works within the system, does no harm. It all is kind of the actual criteria. And once it's on there as "proposed," we're tasked under our obligation to build of moving forward with it. We can't actually plug in changes to the system until the I-39 is approved. So we could go do some construction, but until we have an approved I-39, we can't plug it in. With an approved I-39, we can. And so once it's built and ready to go in service, we schedule it through ISO operations to be brought into service.

Q. And these statuses sometimes change; correct?
A. They do. I mean, in a properly organized one, you would go from "proposed" to "planned" to "in construction" to "in service." And if you expand or you go to the root Excel spreadsheet that is the entire one, you'll find all those categories in there.
Q. We submitted Exhibit 12 just a short a while ago, which is a final version of that document, which I was able to find on the ISO-New England web site, that I believe references that page that you're talking about where all of the projects are listed here.
A. Yeah.
Q. And as I scroll through it, on column -- excuse me -- Line 133, I believe it references the Northern Pass project; is that correct?
A. Well, the 133 that I'm looking at is a National Grid project.
Q. Let's see. This is on... I think we're dealing with two separate versions of Excel.

This is on Page 8, and this is Durham Residents Exhibit 12.

Oh, I'm sorry. It is on the ISO-New England Project List, June 18th Tab and Line 133. So I believe this was -- is this the Northern Pass project listed on the document?

A. Yup. Queue 499, yes. I think Line 133 [sic], elective transmission upgrade, yeah.

Q. And then as I scroll from left to right and I begin to look at the various statuses, I see that on October 16th, the status -- or excuse me -- March 2017 status, it was still listed as "planned." Is this accurate there?

A. Yeah. Let's see. So, Northern Pass is an elective transmission upgrade. So when we -- when Northern Pass filed an application with the ISO, it would have gone on the project list, which looks like it went on March '15, as a "concept" project. Then studies were done. Northern Pass paid for the studies to be done. And then in October of '16, the I-39 analysis would have been completed and approved, and it moved to "planned" status. And if we can scroll a little bit to the

right, we should probably see that. Right, "Planned" October '16; PPA approval, 7/19/2016."

So this list is updated three times per year. So that's consistent. The PPA was approved in July, and it changed status in October.

Q. And so it changed from a -- I'm seeing this as changed from "planned" back to a "proposed" status; is that accurate?

A. Yeah. I'm not sure exactly why that did that. But it's an elective transmission upgrade, so it's a different animal than a reliability project.

Q. And then lastly, I'm just referring back to Applicant's Exhibit 196 submitted yesterday. At the bottom of that, lines... let's see. There's a delineation with a gray line here, these that we're looking at here on the screen. I believe all of the classifications of these are now listed as "canceled." And looking at them, I see that they're all listed as "Reliability Upgrades."

Do you have any familiarity with any of

these projects, at least the Eversource projects listed, to speak to why they may have been canceled?

A. Sure. In general, the New Hampshire/Vermont study began in 2010. So it had a 2020, 10-year load forecast as its goal. As it's evolved over time, it's been restarted with different, newer load forecasts. And the new load forecasts have been lower. So as they've gone through and redone the needs, they found needs disappeared at the lower levels, and then what the ISO does is cancels the Project. You know, so what happens is when the ISO puts projects on, they look at the list on a fairly constant basis. And when there's no longer a need, they cancel it and take it off. So the simple fact that SRP projects are still on there means the ISO knows the need is still there.

Q. Would you happen to know if any of these projects, when re-evaluated for their need, prior to being canceled, if the analysis that were run on them was just a single incident, or would they have considered the whole slew

of incidents that would have contributed to their reliability need?

A. Well, they would have considered the whole picture that way. There can be circumstances where it's a single set of circumstances. If you have three lines that serve an area and you lose two of them, and the last one's overloaded, then that's one set of circumstances. In other cases it can be multiple things that do it. So I'm not familiar enough off the top of my head to go through what the driver for each one is. But they do, you know, look at this on an ongoing basis. And if a need disappears, the project disappears, too.

Q. I just have a couple last questions here.

Are any of the cables, such as communication cables, being included in this project, being run under the bay and through the corridor?

A. Communication cables?

Q. Communications or non-electric?

A. Right. That I don't know. I would think -- I do know we installed a few years back a

cable out to Martha's Vineyard, and we did put fiber in the cable. But I don't know. I'd have to find that out. I would hope that we would do that, but I don't know that we did.

Q. In situations like that, I guess like Martha's Vineyard, when you're including the additional fiber, are those other cables, non-electric cables, also considered by ISO-New England in their reliability assessment?

A. No. Say a fiber type mixed in? No. They generally don't have anything to do with the reliability of the cable. We will use it for distribution automation. Say out on the Vineyard, we communicate to radio control switches out there via a fiber path because it's too long from the mainland to get there. We have a service center and we get data across it. The local cable company owns half of the fibers, and they use it for cable service. So I mean, we try and just -- you know, it's just generally smart and good business to try and get communication

infrastructure in place also.
Q. Is it safe to assume that that also provides additional revenue stream to the Company when doing that?
A. Generally, no. We did do some of the communication ventures in different areas in the Boston area. We were involved in the beginning with RCN and some things like that. But generally speaking today, we may sell off some of the fiber to somebody else and use that to defer some of the construction costs.
In the case of the Vineyard cable, I can't remember who the service provider is out there. They were already licensing their own fiberoptic cable, and we jumped on them to put in a combined power and fiber cable, which Massachusetts regulators loved. We actually loved it. It saved us a year and a half of permitting time. So...
Q. So, finally, when additional cables, non-electric cables like that are included, are they considered at all by ISO-New England in their reliability criteria?
A. No. There's no real reason to at that point.

Q. All right. That's all I have. Thank you very much.

PRESIDING OFFICER WEATHERSBY: Okay. Thank you.

Counsel for the Public, Attorney Aslin.

CROSS-EXAMINATION

BY MR. ASLIN:

Q. Good afternoon Mr. Andrew. How are you?

A. Good. Yourself?

Q. Fine, thanks. For the record, I'm Chris Aslin. I'm designated as Counsel for the Public for these proceedings.

I want to follow up on a couple questions that I had for Mr. Quinlan when he was here last month, I guess, regarding regionalized versus localized costs. Do I understand correctly that that's something that you know something about?

A. A little bit.

Q. Mr. Quinlan said you knew --

A. It's terrible to be last in the chain.

Q. Exactly.

So if I understand the process for a

project like this one, which is a reliability project, the costs can be regionalized through the ISO process; is that correct?
A. That's correct.
Q. And the mechanism for that being completed is for the utility to submit an application for regionalized cost status?
A. Transmission cost allocation. Or TCA is the shorthand. Yes.
Q. Okay. Thank you. And in that application, they'd request or would make a recommendation as to how much of the Project cost would be regionalized?
A. Yes. ISO-New England has a Planning Procedure No. 4 that outlines the general rules in the information that we are supposed to submit to them when requesting regional cost allocation.
Q. And based upon Mr. Quinlan's testimony, I understand that application typically goes in after the project is constructed?
A. Well, that has been past practice. The newer practice that I believe we've had an agreement in place with some of the various

state agencies is to endeavor to do that before we begin construction. So we're in a transition period right now of, I think there's a year, year and a half period where we're trying to work to the point where we always get them in before construction starts.

Q. And by "before construction," would that be after permitting has been completed, or is it even earlier than that, potentially?

A. Yes, because, I mean, realistically, we can't put a shovel in the ground until we have all the appropriate permits. So, yes, it would be after permitting.

Q. But I mean as far as submitting the application, does that occur potentially before permitting is complete, or is it always done after permitting?

A. No, it's generally always done after.

Q. Okay. And for this project it's not been submitted.

A. Not yet, no.

Q. Part of that Planning Procedure 4 is that there's an analysis of whether costs have

been incurred because of local requirements; is that a fair summary?
A. Yes, it is.
Q. And I think the Planning Procedure uses language of "costs that are a result of local and state regulatory and/or legislative requirements"?
A. Yes.
Q. In your experience -- well, what is your experience with those applications? Have you been involved with those for Eversource?
A. Yes. It varies. If we go in and have to, you know, as part of the TCA application state that to be in compliance with a local town ordinance, you know, our line within the town boundaries of Newington is underground, they're going to look at that and say, okay, that's a choice the town made to require that. You know, customers across New England are not going to pay for that. So it depends on the nature of the requirement. You know, if part of, you know, some of the -- if we did some additional undergrounding to get through historic districts and it's a

continuation of the underground in a submarine environment, they're apt to just say that's a reasonable accommodation. It isn't crystal clear, in terms of the criteria. It's an ISO decision, so...

Q. And is there a process by which you can obtain kind of advice from the ISO about what types of mitigation or other project changes might be deemed "localized"?

A. There is no formal, you know, process. I guess it's like we all do in our everyday jobs. I know the people who reviewed these. I can pick up the phone and ask them. But that is a decision that hasn't been vetted by ISO management, you know, at all either.

Q. So you could get sort of a feel for things, but it's not a formal decision of any kind.

A. Correct.

Q. Have you or are you aware of anyone else at Eversource having any informal discussions with the ISO about the particular mitigation proposed for this project?

A. Well, not for this project, no. In general, in my experience, if you ask them informally,

you right away get "No." And then when you actually submit it, you get more "Yes" than "No." But, you know, they take -- they look at it as they have a fiduciary responsibility to the ratepayers all across New England to make sure that only appropriate costs get regionalized, so...

Q. In your experience, how frequent is it that a utility's request for regionalized costs is denied, in part or in whole?

A. Well, I guess we could actually go back and look at the ISO TCA approval letters. But for the most part, on simple projects it's generally in whole. On complicated projects you will get parts done. The ISO is particularly on the lookout for installation of spare capacity.

We had a case where an underground line, we installed a spare duct bank for future use. And that was right away, you know, taken out. That's a local decision. You decided to do that. You pay for that.

We've had cases where we were required to do curb-to-curb paving, where the standard

was a cut and patch, you know, for an underground trench. The incremental costs of curb-to-curb paving were localized.

You know, the big one down in Connecticut was the undergrounding, which was really the thing that started this whole kind of review process, you know, at the ISO that way. But those are the things they really look for.

Q. And so if there were costs that were deemed localized, it would be some percentage of the total project cost?

A. Yes. They would ask what did this cost? And then we would do our best to carve out the cost of the doing the change over the cost of doing it the accepted way.

Q. And I don't know if you're a part of this decision. But based on Mr. Quinlan's testimony, I understand that the Project team -- or the Company believes that all the costs for this project are appropriately regionalized costs.

A. We'll apply for them all, and we'll do our best to go through. Most of what I've seen,

the changes that are in place aren't really big and extreme. You know, I think we'll be successful with that.

Q. And in your experience, mitigation costs, such as purchasing -- well, set aside purchasing easements. How about mitigation costs such as a stewardship fund that's proposed here for the Frink Farm? Is that something that's typically regionalized or localized?

A. Frankly, typically something like that can fly below the radar screen, you know, that it isn't necessarily called out as a particular line item, you know, when you apply. It's kind of like we try not to wave the red flag in front of the bull.

Q. Sounds wise.

A. Yeah.

Q. If the Applicant here puts in an application asking for full regionalized costs, what's your level of certainty that you'll get those?

A. Probably 80/20. I'd say we have an 80 percent chance of getting everything. It

will go back and forth. You know, they'll ask us questions. We'll fill out the report, send it in. They'll ask us questions. You know, much like anything else, the ISO reports to FERC. So if somebody does not like the outcome of an ISO ruling, your recourse is to complain to FERC, and then the ISO is under strict guidelines to produce answers within 60 or 90 days. So their process is somewhat slow. But it clearly documents each step in that, so that if there is a FERC complaint, they can respond quickly, you know, with detailed information.

So we'll put it in. They'll send us a letter asking a bunch of questions. We'll answer those questions. This all gets reviewed in front of the Reliability Committee. The Reliability Committee's task is to help the ISO identify any costs that should not be regionalized and provide a recommendation to the ISO about that. But the ISO is the ultimate deciding authority.

Q. Thank you. And do you have a sense of timing for this project, of when you anticipate that

TCA would be filed with ISO?
A. Well, I think once we have the Committee's ruling, probably within six months of that we would be filing it because, again, No. 1, most of our costs are pretty well known; and No. 2, we have an agreement to be better at getting our TCAs in faster. So we would be working on -- that's an approximate time frame.
Q. Okay. Thank you.

I want to turn briefly, the status of this as a reliability project would affect its future flexibility, in terms of being decommissioned or taken offline. Is that fair?
A. Yeah. Well, I think the system would have to evolve in a very different way for us to ever be able to retire this line in its entirety. Now, that said, in my career I've seen the system evolve a lot. So the people who succeed me I'm sure will see it evolve a lot.
Q. Is there a process at the ISO for making a decision about existing infrastructure that's no longer needed?

A. Well, I guess before you can retire -- again, before you can add to the system, you have to do the PPA I-39 analysis to show that there's no adverse impact. Before you can retire a line from the system, you would have to do that same analysis to show there was no impact of it. At this point, it's extremely rare. I can think of two instances in 35 years. One was a Boston Edison line that was decommissioned, and the other I believe is a 69kV line in Vermont that was maybe a year or so ago, our National Grid line.

Q. Were those decommissioned at the request of the incoming utility or at the request of the ISO?

A. At the request of the utility.

Q. Is there any -- within the FERC tariff and/or the ISO rules, is there any obligation to decommission a project at the end of its life?

A. No. Within the ISO rules? I would say no.

Q. Are you aware of whether an eventual decommissioning, whether the costs would be covered by the FERC tariff?

A. Removal costs are generally in there, yes. I mean, if we build a new line that involves removing other assets from it, those costs are allocated costs that go in the tariff. I don't know -- I don't think they're capital. I think they may be OEM, operations and maintenance.

Q. And if a decommissioning or removal obligation occurred for this project sometime in the future, maybe major system changes have occurred, how will the Company cover or obtain the capital to complete that removal?

A. Well, it would be, you know, part of the budget. Say at some point in the future it was decided that the cable had failed, it was at its end of life and we were going to do other things so that we didn't need it anymore. At that point we would have to apply for the appropriate permits to see are we supposed to remove the cable or is abandoning in place appropriate. You know, we would go through whatever permitting was required at that point in time. And the Company would fund it out of normal

operations.
Q. So that's not a cost that would necessarily be recoverable from customers?
A. Well, I guess it wouldn't be -- I don't believe it would be rate-based. It would be in OEM.
Q. Okay. Thank you very much.
PRESIDING OFFICER WEATHERSBY: Go off the record for just a minute.
(Discussion off the record)
PRESIDING OFFICER WEATHERSBY: Back on the record. Why don't we break for lunch and be back at ten minutes of two.
(Lunch recess taken at 12:51 and concludes the Day 4 Morning Session. The hearing continues under separate cover in the transcript noted as Day 4 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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