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STATE OF NEW HAMPSHIRE

SITE EVALUATION COMMITTEE

April 18, 2017 - 1:03 p.m. DAY 4
49 Donovan Street **AFTERNOON SESSION ONLY**
Concord, New Hampshire

{Electronically filed with SEC 04-24-17}

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

PRESENT FOR SUBCOMMITTEE/SITE EVALUATION COMMITTEE:

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

ALSO PRESENT FOR THE SEC:

Michael J. Iacopino, Esq. Counsel to the SEC
Iryna Dore, Esq.
(Brennan, Caron, Lenehan & Iacopino)

Pamela G. Monroe, SEC Administrator

COURT REPORTER: Cynthia Foster, LCR No. 14

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P R O C E E D I N G S

PRESIDING OFFICER HONIGBERG: Ms. Pacik.

CROSS-EXAMINATION

BY MS. PACIK:

Q Dr. Bailey, Danielle Pacik representing the City of Concord, and I'm also the spokesperson for Municipal Group 3.

I have some questions for you and Dr. Johnson this afternoon. First for Dr. Bailey. There have been a number of studies about EMF, correct?

A (Bailey) Yes.

Q And Counsel for the Public, Attorney Roth, went through a number of them and I'm not going to repeat them, but many of these studies relate to health risks of EMFs, correct?

A (Bailey) Yes.

Q And you had talked to Attorney Roth about the World Health Organization website, right? And he pointed out the fact that there's some ongoing studies being done. Do you recall that conversation?

A (Bailey) Yes.

Q And hopefully we can get up that document.

1 Excellent. Could you go to the second page?

2 Okay.

3 You can see what I have highlighted. This
4 is from the World Health Organization website
5 that Attorney Roth had shown you earlier, and it
6 talks about a number of epidemiological studies
7 suggest small increases in risk of childhood
8 leukemia. Is that right?

9 A (Bailey) That's what it says.

10 Q And epidemiology is a branch of medicine that
11 studies the cause of disease?

12 A (Bailey) It's part of a much broader area of
13 investigation outside of medicine as well.

14 Q Okay. But it is a branch of medicine?

15 A (Bailey) It's one branch of medicine.

16 Q Okay, and just to confirm, you have a Ph.D.?

17 A (Bailey) That's correct.

18 Q Okay. And you're not a medical doctor, correct?

19 A (Bailey) Correct.

20 Q And you have not done clinical studies with
21 patients on this subject?

22 A (Bailey) No.

23 Q I'd like to turn to what we premarked as Joint
24 Muni Exhibit 29, and I'm showing a position of

1 this, but just so you know where this comes
2 from, this is a 1998 press release issued by the
3 National Institute of Environmental Health
4 Sciences that you referenced in your Prefiled
5 Testimony, do you recall that?

6 A (Bailey) Yes.

7 Q Okay. And this press release actually talks
8 about how the concern of leukemia started, and
9 it's in the paragraph that's shown above, but it
10 states that public concern first was raised in
11 1979 because studies showed that a group of
12 children who died from leukemia and other
13 cancers were 2 to 3 times more likely to have
14 lived within 131 feet of a high current
15 electrical transmission or distribution line.
16 Is that correct?

17 A (Bailey) That's what it says.

18 Q Okay. So overall, you would agree that there
19 are concerns about EMFs and the public safety
20 risks associated with them in general?

21 A (Bailey) As you just pointed out, these concerns
22 began to be raised in 1979 and continued over
23 the period of the years afterwards.

24 Q Okay. And you had testified earlier in response

1 to a question by Mr. Roth that you almost
2 exclusively represent or work for public
3 utilities, although there's been a few occasions
4 you worked for some governmental agencies, is
5 that correct?

6 A (Bailey) I would say most of my work has been
7 for public utilities, but as you noted, that I
8 also have had quite a number of clients of
9 government agencies as well.

10 Q Okay. And in all of the work that you've done,
11 have you ever found any sort of adverse effect
12 on public health and safety due to EMFs?

13 A (Bailey) As part of my assessments for these
14 projects, I have not.

15 Q Okay. Now, turning to your Prefiled Testimony
16 at page 5, you talk about the fact that there's
17 no federal standards for EMF exposure. Right?

18 A (Bailey) Just one moment. Correct.

19 Q And you also talk about that there's no New
20 Hampshire state standards?

21 A (Bailey) Correct.

22 Q So the standards you used are developed by
23 what's called an ICES and then ICNIRP, and
24 that's called ICNIRP; is that the abbreviation?

1 A Yes.

2 Q And ICNIRP is the International Committee on
3 Nonionizing Radiation Protection?

4 A Correct.

5 Q And ICES is the International Committee for
6 Electromagnetic Safety?

7 A Yes.

8 Q Now, I want to talk about the electric fields
9 within the AC overhead portion of the line, and
10 the exposure limits for these committees are
11 shown on Table 8 of Appendix 38 to the
12 Application.

13 Can you go to the next page, Chris, on the
14 Bailey pdf?

15 So this is a document, and what this is, I
16 put together a collection of some of the
17 exhibits, the relevant pages, and we've
18 premarked it as Joint Muni Exhibit 86, and we'll
19 provide this afterwards to the parties, but this
20 was Table 8 and that was shown or provided in
21 what was Appendix 38 to the Application, and I
22 don't know if this is a question for you,
23 Dr. Bailey, or Dr. Johnson. I assume it might
24 be Dr. Johnson, is that correct?

1 A (Johnson) I was the primary writer for Appendix
2 38 in this table. Yes.

3 Q Okay. So what this shows at Table 8 is for the
4 AC electric field there's limits that have been
5 set by ICNIRP and ICES, and the basic
6 restriction is, I've highlighted in yellow for
7 ICNIRP 36.4, and then the reference level is
8 4.2, right?

9 A (Johnson) Well, actually, if you're going to get
10 into a discussion between the differences
11 between the basic level or like the 4.2 and the
12 36.4 kV per meter shown in the parentheses, I
13 think I'm going to turn that over to Dr. Bailey.

14 Q Okay. And I kind of just want to confirm the
15 numbers that I'm reading and what they
16 represent. I think either of you could do that.
17 Dr. Bailey, would you prefer to have these
18 questions posed to you?

19 A (Bailey) Sure.

20 Q So what I just read was for the general public
21 exposure according to the ICNIRP guidelines, the
22 limits for the basic is 4.2 and then the
23 reference level is 36.4 kilovolts per meter. Is
24 that correct?

1 A (Bailey) No. That's not correct. The 4.2 kV
2 per meter refers to the reference level.

3 Q Okay.

4 A And the 36.4 kV per meter refers to an exposure
5 equivalent to the basic restriction, which is
6 the underlying limit in the standard.

7 Q Okay. So I had that reversed. I apologize.
8 Thank you for clarifying that. And then for
9 ICES, the general public exposure so the basic
10 restriction was which one?

11 A (Bailey) 26.8.

12 Q And then the reference level is 5.0.

13 A (Bailey) 5.0.

14 Q Can you turn to the next page?

15 I just want to confirm with you. This is
16 also in Appendix 38. This is page 49 from it,
17 and, Dr. Johnson, did you write this or was,
18 this was written by you, Dr. Johnson?

19 A (Johnson) This is from what page specifically?

20 Q Page 49 of Appendix 38.

21 A (Johnson) 38 is part of the material that I
22 prepared.

23 Q Okay. So it talks about what the difference is
24 between the basic restriction and the reference

1 level, and let me just read to you what I have
2 highlighted, and you can confirm I read it
3 correctly, but the basic restrictions limit the
4 maximum recommended electric field induced in
5 body tissues, and since levels of electric
6 fields induced in tissues are difficult to
7 measure, reference levels are provided as test
8 values to ensure that basic restrictions are not
9 exceeded. Is that right?

10 A (Johnson) That's read correctly. Yes.

11 Q So the reference levels are more stringent, you
12 could say.

13 A (Johnson) That would be like the 4.2 and the 5
14 kV per meter. It's not that they're more
15 stringent. It's where they're being applied.
16 The one, let's say the 36 --

17 A (Bailey) Here it is.

18 Q Do you want to go back to the other page? Right
19 there?

20 A (Johnson) Yes. I've got it here now. The one
21 would be if you went out and you tried to make
22 the measurement or if you're calculating the
23 field level, it would be for reference to that
24 level like 4.2 kV per meter, 5 kV per meter.

1 The one would be the field that would be induced
2 in the tissue, and Dr. Bailey can expound or
3 correct me if I'm wrong in that explanation.

4 Q Okay. When you did your measurements in the
5 field, you were looking at the reference level,
6 not the basic restriction which is found in the
7 body tissue, right?

8 A (Johnson) We were not looking at what would be
9 produced in body tissue. It would be the basic
10 reference level. So the calculated measurements
11 that are produced in the tables that I've done
12 in Appendix 38 would be what would be measured
13 or what would be produced out in the field. It
14 is not what would end up, say, being represented
15 in the body tissue.

16 Q Okay. Could you turn to the next page?

17 PRESIDING OFFICER HONIGBERG: Off the
18 record.

19 (Discussion off the record).

20 BY MS. PACIK:

21 Q So Dr. Johnson, what I understand you did is you
22 went out and you looked at different segments
23 along the proposed route and you took
24 measurements based on the configuration of the

1 structures, is that correct?

2 A (Johnson) We did not do measurements. We got
3 the information for the geometry of the lines or
4 the positioning of the lines, the size of the
5 conductors, the various input parameters and
6 then calculated the fields, and it's those
7 calculated fields for the lines as they will be
8 positioned at the different locations along the
9 right-of-way for basically worst case conditions
10 five percent over voltage. We calculated it for
11 the peak currents that would be on the lines to
12 give you the highest magnetic fields, and those
13 were also under assumptions where you're on flat
14 open terrain without any shielding or reduction
15 that would be produced by shrubs, trees or other
16 structures.

17 Q Okay, and that's correct, and I misspoke because
18 you weren't able to measure it because the
19 project is not built so you actually did
20 calculations, right?

21 A (Johnson) That's correct. To easily provide
22 examples, we looked at pre- and
23 post-construction and modeled it.

24 Q And there's a number of segments along the

1 proposed route, and you did not need to
2 necessarily calculate each segment because as
3 shown right now on the exhibit screen, this is
4 Table 1, from Appendix 38 also, and this shows
5 that some segments were similar to others; and
6 for the example, the one I have highlighted
7 here, shows Segment 1 you could use those
8 calculations to also look at structures in
9 Segment S1-2 and S1-3; is that right?

10 A (Johnson) That's correct. Table 1 shows in some
11 cases we grouped different cross-sections
12 because they were similar in the lines that were
13 on those cross-sections and the positioning and
14 currents on the lines, and what we did is in
15 those cases is picked the cross-section that
16 would be the either the narrowest or for some
17 particular reason would have the higher fields
18 being produced or sort of the worst case
19 conditions. For the other ones they are either
20 very similar in terms of the right-of-way width
21 or positioning and would have fields similar or
22 less than for the particular cross-section that
23 we actually did calculations for.

24 Q Okay. Now, I want to talk about Segments S1-2

1 and S1-3 which are reflected in, I think the
2 calculations you'd refer those to as S1-1.

3 A (Johnson) Correct.

4 Q And according to this table, the mileage that
5 would be applicable to those three sections is
6 8.9 miles in length, right?

7 A (Johnson) That's the information that, the best
8 information we had available, yes.

9 Q Could you turn to the next page?

10 The next page is Table 10 out of Appendix
11 38, and we can blow that up for you a little
12 bit. And S1-1, which we already discussed,
13 applies to S1-2 and S1-3 pre-project. If you're
14 in the max amount in the centerline of the
15 right-of-way, pre-project was 1.2 kV per meter
16 and post-project is 4.9 kV per meter; is that
17 correct?

18 A (Johnson) that's correct. That's what the table
19 shows.

20 Q What we're talking about is the reference level,
21 right?

22 A (Johnson) Yes.

23 Q Okay. And we had talked earlier about the
24 limits, and I'm not going to have to, I'm not

1 going to go back, but just to confirm, the
2 limits for ICNIRP were 4.2 and for ICES were
3 5.0, right?

4 A (Johnson) Those are the reference levels, yes.

5 Q So we have 4.9 and that exceeds the ICES
6 reference level, correct? Sorry. It exceeds
7 the ICNIRP reference level which 4.2. My
8 apologies.

9 A (Johnson) Yes. That sounds correct.

10 Q So could you go to the next page, please?

11 This actually shows, this was provided in
12 your Appendix 38, too, and this is the diagram
13 of the measurement for Segment S1-1 that we were
14 just talking about, and it shows those max areas
15 of 4.9. Is that right?

16 A (Johnson) The highest levels would be at around
17 that 4.9 level, yes.

18 Q Where it says zero, that's the center of the
19 right-of-way?

20 A (Johnson) That's the center I believe where the
21 new line would be positioned.

22 Q Okay. And where you see minus 100, that is the
23 actual edge of the right-of-way?

24 A (Johnson) Actually, in this case the edge of the

1 right-of-way is the dashed line which is a
2 little bit beyond 100 feet in this case.

3 Q Okay. And so the peak --

4 A (Johnson) And that's a hundred feet from the
5 center of the new NPT line.

6 Q Okay. So the peak, that max area, is not 100
7 feet away from the edge of the right-of-way.
8 It's probably closer to about 60 feet away from
9 the edge of the right-of-way. Is that correct?

10 A (Johnson) In this case, that looks approximately
11 correct, but it's definitely within that
12 right-of-way.

13 Q So I'm a visual person. So we have a tape
14 measure, and I just want to show what, for
15 example, 50 feet looks like, if you don't mind.
16 Mr. Chairman, could we just have 50 feet
17 measured out in this room for a moment? It
18 won't take long as all. In fact, they're
19 already doing it. So that's 50 feet, right? So
20 if you're standing at the max where Steven,
21 Attorney Whitley is, 50 feet away would be where
22 Will Abbott is, is that correct? Do you see
23 that?

24 A (Johnson) Okay. I'll assume that that's 50

1 feet. Sure.

2 Q Thank you. Just so we know what we're talking
3 about when we talk about 50 feet. Are you aware
4 where segments S1-2 and S1-3 are located?

5 A (Johnson) I have to go back to a map, but I know
6 in general terms it's probably north of Concord,
7 somewhere south of Franklin along the line
8 route.

9 Q Okay. So you're not aware whether it's in
10 Concord or not?

11 A (Johnson) Not at this point specifically, no.

12 Q Could you turn to the next page, please?

13 So what I'm showing you right now are the
14 project maps that were submitted as part of the
15 Application, and this shows where the
16 cross-sections are, the different segments, and
17 as you can see in the right column under
18 cross-section, a number of those are within the
19 S1-3 and S1-2 area. Is that right?

20 A (Johnson) S1-2 and S1-3, if you look at them,
21 they look very similar, and that's why they were
22 basically grouped together.

23 Q And that's similar to the S1-1 which is the
24 diagram that we just looked at.

1 Can you turn to the next page, please?

2 And I know you had mentioned that you
3 weren't sure whether this is in Concord, but
4 this is actually the map that relates to those
5 segments, and that's part in Canterbury and the
6 rest is in Concord. Does that sound familiar
7 now?

8 A (Johnson) I would have to take your word for it
9 at this point.

10 Q Okay. You have no reason to disagree though,
11 right?

12 A (Johnson) No. Not at this point. No.

13 Q Okay. Are you familiar with the Brookwood
14 Development in Concord?

15 A (Johnson) No.

16 Q Are you familiar with the fact that Concord is a
17 populated area?

18 A (Johnson) I am aware that Concord is a major
19 city in New Hampshire. Yes.

20 Q Could you blow that up a little bit to show
21 where the Brookwood Development is?

22 So the yellow dots on this map,
23 Dr. Johnson, those represent structures or
24 houses in this situation. And the red line is

1 where the edge of the right-of-way is. And so
2 according to the calculations that we looked at,
3 the max electric field which was 4.9 would be
4 about 60 feet away from that red line, right?

5 A (Johnson) From the one diagram, yes, it looks
6 like it probably would be about 60, 50 to 60
7 feet inside the right-of-way.

8 Q Okay. And are you familiar with 41 Hoyt Road?

9 A (Johnson) No.

10 Q Dr. Bailey, are you familiar with 41 Hoyt Road?

11 A (Bailey) No.

12 Q Okay. Christine, would you show where 41 Hoyt
13 Road is on this map?

14 See where it says 7934? Do you see the
15 building within that red line, within the
16 right-of-way?

17 A (Johnson) It's sort of the white structure
18 that's set back from the sort of yellow-ish dot?

19 Q Are you familiar with what that portion of the
20 building is used for?

21 A (Johnson) No.

22 Q You don't know that it's a garage?

23 A (Johnson) No.

24 Q Are you aware that it's being used for living

1 space on the top floor?

2 A (Johnson) No.

3 Q And that's within the right-of-way, right?

4 A (Johnson) If you say it, well, the white
5 structure that is shown here is within the red
6 lines of the right-of-way.

7 Q Okay. Now are you aware how long -- if you're
8 not familiar with this, I suppose you wouldn't
9 know how long that's been located in that area.

10 A (Johnson) No.

11 Q Okay. Could you turn to the next page, please?
12 Could you blow up again on 41 Hoyt Road?

13 Are you familiar, Mr. Johnson, with what
14 construction pads look like on these -- this is,
15 I'll represent to you, an alteration of terrain
16 map. And the areas in yellow are construction
17 pads. Are you familiar with this map?

18 A (Johnson) No, I'm not.

19 Q And this shows the proximity of the construction
20 pad to what I'll represent to you is the garage
21 on that house. Do you see that?

22 A (Johnson) Okay. The white structure right above
23 122-5-10 is that same structure that we were
24 looking at in the other previous figure?

1 Q Yes, it is.

2 A (Johnson) Okay.

3 Q Could you turn to the next page, please?

4 And here we have the house, you can see it,
5 it's a Google Earth image, but you can actually
6 see it in proximity to the existing lines. You
7 see that?

8 A (Johnson) I see the house.

9 Q Do we need to zoom in a little bit for you?

10 A (Johnson) Oh, okay. I see the lines that the
11 angle there going down toward the lower right
12 corner of the screen.

13 Q Okay. And the proposed structures, those are
14 actually coming closer to the garage, right?
15 They're moving the 115 line, and they're taking
16 that structure and bringing it closer to the
17 house?

18 A (Johnson) What do you mean by the structure? In
19 this particular right-of-way, they would
20 probably -- okay. What you're sort of
21 highlighting now, they were, I think, proposing
22 to move that structure. That's, as I remember
23 it one of the lower voltage lines that's
24 existing and moving it closer to what would be

1 the edge of the right-of-way and then putting
2 the new line more or less down through the
3 middle.

4 Q When you say towards the edge of the
5 right-of-way, you're talking about closer to
6 that house, right?

7 A (Johnson) That would be correct. That would be
8 basically down and to the left in this
9 photograph.

10 Q Okay. And that structure, the lower voltage
11 structure, you're talking about a 115 line?

12 A (Johnson) I have to go back and look at the
13 particular cross-section. That's just literally
14 off the top of my memory.

15 Q Okay. Can you go back a few pages to the
16 project map, please, Christine? There you go.
17 Could you zoom in on 41 Hoyt Road again?

18 Dr. Johnson, you see the square, the white
19 square that has an X in it?

20 A (Johnson) I see a number of them. You mean
21 close to Hoyt Road, what would be to my left as
22 I look at the screen?

23 Q Yes. So there's a, I'll represent to you that
24 that white box next to 7934 on the right of it

1 is the current 115 line that is getting
2 relocated and the green square is going to be
3 where it is relocated. Are you familiar with
4 these maps?

5 A (Johnson) Not this map particularly, but what
6 would be happening within the cross-section with
7 the relocation of the lower voltage line which I
8 think you indicate is presently the white square
9 with the X through it and it will be relocated
10 to where the green dashed line is.

11 Q Okay. Correct. Now, can you go down a few
12 pages, please? To page 12 on the pdf. Okay.

13 So now I'd like to talk about segment S1-4,
14 and it's highlighted for you. And this is the
15 total length represented by this Section 5.4,
16 and it also relates to S1-6, -7, -9 and -11. Do
17 you see that?

18 A (Johnson) Yes, I do.

19 Q Are you familiar with where these segments are
20 located?

21 A (Johnson) Not specifically, but I'd have to
22 refer to the cross-sections and the overhead
23 maps.

24 Q Can you turn to the next page, please?

1 Okay. So S1-4, we'll get to where they are
2 located in a moment, but just to confirm,
3 similar to S1-1, S1-4 also has a max on the
4 right-of-way of 4.9, right?

5 A (Johnson) Correct. That's what's shown.

6 Q And again, this is the reference level.

7 A (Johnson) Correct.

8 Q And again, the reference, the max reference
9 level for ICNIRP is 4.2 and for ICES is 5,
10 right?

11 A Correct.

12 Q Can you turn the next page? So here -- if you
13 zoom out a little bit, Chris, thanks.

14 On the left you can see the cross-sections,
15 and these relate to 6, 7, 8, and those would all
16 fall within the S1-4, right?

17 A (Johnson) Correct.

18 Q Okay. So the next page, please. This is the
19 map that correlates to the structures that I
20 I've just shown you, and are you familiar with
21 where this is?

22 A (Johnson) Not specifically.

23 Q Okay. You might see it says Concord on the map.
24 Do you see that?

1 A (Johnson) Yes.

2 Q And so you see where 393 is? On the left side
3 of the map? It's Interstate 393? Looks like a
4 big highway?

5 A (Johnson) Oh, Interstate 393. Yes.

6 Q Are you familiar with Alton Woods, Mr. Johnson?

7 A (Johnson) Not specifically, no.

8 Q Could you zoom in to Alton Woods, please?

9 I'll represent to you that Alton Woods is a
10 relatively large apartment complex in Concord.
11 And are you familiar with how they use that
12 right-of-way corridor currently?

13 A (Johnson) No.

14 Q Okay. Are you familiar with the fact that it
15 has a playground for kids?

16 A (Johnson) No, I'm not.

17 Q All right. So we had talked earlier when you
18 look at the red line, that's the edge of the
19 right-of-way, right?

20 A (Johnson) Correct.

21 Q And if you go about 50 or probably 60 feet in,
22 there's where you get the max field, right?
23 4.9?

24 A (Johnson) One thing I would question, you show

1 also white dashed lines as part of the proposed
2 project, is this a section where they're
3 widening the right-of-way?

4 Q No. It's not.

5 A (Johnson) Okay.

6 Q So going back to my question, you would agree
7 that from the red line which is the edge of the
8 right-of-way if you go about 60 feet in, that's
9 where you get the max electric field.

10 A (Johnson) In from that, correct.

11 Q Okay.

12 And could you turn to the next page,
13 please?

14 And this is the alteration of terrain map,
15 and it shows where some of the construction pads
16 are.

17 And if you go to the next page, I think
18 you're going to have to zoom up quite a bit.

19 I'll represent to you that this has been
20 submitted as Appendix 1 to the City of Concord's
21 Prefiled Testimony, and this is the playground
22 underneath the transmission lines. Do you see
23 the kids playing on the playground?

24 A (Johnson) Yes. It's over toward the right-hand

1 of the screen. I'll take your word that it's
2 within the right-of-way.

3 Q Okay. And could you go back two pages, please?

4 So we looked at Alton Woods just a moment
5 ago, and now I want to look at McKenna's
6 Purchase for a moment, could you zoom into
7 McKenna's Purchase, please? Are you familiar
8 with what McKenna's Purchase is?

9 A (Johnson) No, I'm not.

10 Q McKenna's Purchase is a condominium development
11 in Concord, and, again, I'll represent to you
12 that those yellow dots are all buildings, and in
13 this situation, they are the condominiums that
14 we're looking at. And the area that I'm looking
15 at, was looking at, maybe we can get it back.
16 Thank you. Where it says Brenda Court, James
17 Circle, Yvonne Court, do you see that?

18 A (Johnson) Those labels, yes.

19 Q So that's McKenna's Purchase. I'll represent
20 that to you. And you see some of the structures
21 are pretty close to that red edge of the
22 right-of-way, right?

23 A (Johnson) You're talking about the yellow dots?

24 Q The yellow dots. Yes.

1 A (Johnson) They appear to be.

2 Q Okay. Could you go to the next page, please?
3 One more?

4 All right. So the last segment I want to
5 talk to you about is S1-20, and that one and
6 I'll just, there's no correlation with other
7 segments, but that's just S1-20 is the only one,
8 and in that one the max on the right-of-way's
9 5.2 and that would exceed the restriction levels
10 for both ICNIRP and ICES; is that correct?

11 A (Johnson) If it was 5.2 it would be above the 5
12 kV per meter.

13 Q Are you familiar with the locations of where
14 this segment is?

15 A (Johnson) This would probably be towards the
16 southern end of the line, towards the last
17 segment. So Deerfield probably?

18 Q Yes. Correct. Could you turn to the next page,
19 please.

20 And this is one of those structure on the
21 project maps that shows where the different
22 cross-sections are, and as you can see, there's
23 S1-20 and the T, I believe, represents tall.
24 Someone can correct me on that if I'm wrong.

1 But there's S1-20 T and S1-20, and is it your
2 understanding that all of those have that 5.2
3 max?

4 A (Johnson) The 5.2 would be representative of the
5 worst case. If you look at those, the actual
6 positions although the type of structure may
7 change slightly or look a little bit different.
8 If you look at where the actual conductors would
9 be positioned those, would be essentially the
10 same so both would be represented by the 5.2.

11 Q There's several maps relating to Deerfield so
12 we'll just kind of scroll through them quickly.
13 Could you go to the next page?

14 This is a portion of Deerfield where you
15 can see it goes through Church Street.

16 And can you zoom in a little bit?

17 Candia Road looks like the other road. Do
18 you see that?

19 If you go left a little bit, Chris.

20 Thanks.

21 And the Deerfield people are yupping me
22 behind me so it sounds like I got that correct.
23 All right.

24 Can you go to the next page, please? Here

1 we have more S1-20s and can you go to the next
2 page? Zoom out.

3 And this shows the line and it goes
4 through, looks like a rural section and then
5 hits Nottingham Road. Do you see that? On the
6 right is Nottingham Road?

7 A (Johnson) Yes. I see Nottingham Road.

8 Q And there's some houses around Nottingham Road
9 or some structures.

10 And then the next page?

11 Here we have more S1-20.

12 Can you turn to the next page, please.

13 And that map relates to the rest of
14 Nottingham Road and then over towards the
15 Deerfield substation. Is that correct?

16 A (Johnson) Correct. The Deerfield substation
17 would be at the right edge of the screen.

18 Q Okay. We talked about 41 Hoyt Road. Are you
19 aware whether there's other structures that are
20 within the right-of-way on this project?

21 A (Johnson) Can you pull that and be a little bit
22 more specific because I'm not sure of the
23 references and not fluid with 41 Point Road or
24 something?

1 Q 41 Hoyt Road is the one where we saw a garage
2 was built in the right-of-way?

3 A (Johnson) The white structure, the garage?

4 Q Yes. Are you aware whether there are other
5 properties built within the right-of-way?

6 A (Johnson) No, I'm not.

7 Q Are you aware of with how the right-of-way is
8 being used by property owners along the proposed
9 route?

10 A (Johnson) Not specifically. No.

11 Q So we talked about the playground. Are you
12 familiar with whether people farm or do other
13 activities along the route in their
14 right-of-way?

15 A (Johnson) That's typically the case for most
16 lines that the right-of-way is in use or other
17 uses.

18 Q And are you aware whether people have parking
19 lots underneath the right-of-way? For example,
20 store tractors or other equipment in the
21 right-of-way?

22 A (Johnson) Not specifically, but I know that
23 those activities do occur.

24 Q Okay. And we talked about McKenna's Purchase,

1 and are you aware that they have actually an
2 overflow parking lot right underneath the
3 right-of-way where they store or allow people to
4 store large campers and other trailers?

5 A (Johnson) Not specifically, no.

6 Q Okay. I don't know if this question is either
7 for Dr. Bailey or Dr. Johnson, but I want to
8 talk about microshocks for a moment.

9 A (Johnson) Potentially what you get into would be
10 either one.

11 Q Okay. Could you turn to Joint Muni 21, please?

12 So this is what we've marked as Joint Muni
13 21, and this is the report from the Department
14 of Energy. Are you familiar with their report?

15 A (Johnson) This is in relation to the Draft
16 Environmental Impact Statement?

17 Q Yes.

18 A (Johnson) I'm in general terms, yes, aware of
19 it.

20 Q Okay. I hate to have to read to you, but I'm
21 going to. So they say that the conclusion of
22 their analysis is that outside of the
23 right-of-way there's no impact of the project
24 due to its electric and magnetic fields.

1 Do you see where I'm reading? It's in that
2 last paragraph.

3 A (Johnson) It's the last paragraph displayed on
4 the screen.

5 Q Okay. And then they talk about within the
6 right-of-way, there may be small potential
7 impacts, depending on the exposure
8 circumstances. In particular, the possibility
9 of annoying but nonhazardous microshock from
10 touching conductive grounded objects located in
11 the strongest electric fields beneath the lines.
12 And then they also go on to talk about the fact
13 that somebody with an implanted cardioverter
14 defibrillator might receive an inappropriate
15 therapy from small levels of contact current
16 experienced from touching a conductive object
17 beneath a line in the project, but there have
18 been apparently no reports of such incidents
19 beneath other transmission lines and the
20 likelihood of such events appears to be remote.

21 Generally read that correctly, right?

22 A (Johnson) That's correct. It appears to be what
23 they've written.

24 Q Okay. So, first of all, microshocks, they said,

1 could occur from touching a conductive grounded
2 object. And a conductive grounded object, for
3 example, could be a large trailer underneath the
4 electric transmission line?

5 A (Johnson) Yes. In the right circumstances, as
6 they say, there is a small potential depending
7 on exposure circumstances, and it's going to be
8 in these cases unique to the specific situation
9 and structure as to whether or not there would
10 be a perceivable shock or not.

11 Q And, for example, if somebody's storing their
12 tractor underneath the line, that might happen,
13 right?

14 A (Johnson) In my experience, no.

15 Q There could be, I mean, I realize there's
16 usually tires on a tractor. Is that why you say
17 no?

18 A (Johnson) Well, the combination. Not just
19 because there's tires, but because it's not
20 perfectly insulated and grounded, even though
21 there are tires on it. Typically, there is dust
22 and debris on the tires, the size of the object,
23 the magnitude of the electric field, all are
24 such that because of all those factors, I would

1 not expect a shock under typical situations.
2 Certain situations, again, super well-insulated,
3 high fields, no other surrounding or shielding
4 objects, there's a theoretical possibility.

5 Q Okay. So you've got the potential for
6 microshocks, and then you have this potential
7 for the implanted cardioverter, cardioverter
8 defibrillator having some sort of current
9 experienced, and I understand it's remote, but
10 it's a possibility, right?

11 A (Johnson) From my experience, first would be a
12 perception of the microshock. The chances that
13 it would have an impact on a cardiovascular
14 device or implanted device would be even more
15 remote. Less likely than having a perceivable
16 shock.

17 Q Okay.

18 A (Johnson) And that gets more into the health
19 realm, and if there are further questions along
20 that line, I'd defer to Dr. Bailey.

21 Q So one way and I understand Counsel for the
22 Public, Attorney Roth, talked to you a little
23 bit about this, but one way to prevent these
24 issues from happening is to mitigate. And, for

1 example, the closer you are to populated
2 regions, the more likely that there are these
3 risks associated, correct? For example, if
4 you're putting a line right next to a densely
5 populated community, the risk increases.

6 A (Johnson) The possibility that you're going to
7 have more people. So you're going to have, in
8 that respect I guess I'd have to say, if you
9 have more potential interaction or movement
10 through the area because you've just got more
11 people there.

12 Q Okay.

13 A (Johnson) In and of itself, the design or
14 anything else, doesn't make it more likely just
15 because it's near the people.

16 Q And then another way to mitigate these issues is
17 to have the line buried, right?

18 A (Johnson) That depends on what issues you're
19 talking about.

20 Q Let me clarify that, and you're correct. In
21 terms of the, first of all, in terms of the AC
22 electric field coming from the 345 line, one way
23 to mitigate that is to have the line buried.

24 A (Johnson) Yes. If you bury the line, that

1 basically reduces the electric field. Shields
2 it. You could also shield the electric field by
3 nearby structures, shrubs, trees. In the case
4 of the playground, I don't remember the picture
5 exactly, but it looked like there was some
6 shrubbery or trees near that that would be
7 reducing the electric field and the chances that
8 it would potentially cause a shock.

9 Q Are you aware that the project is proposing to
10 remove tree buffers in certain areas along the
11 route?

12 A (Johnson) In certain areas, if the trees would
13 be in too close a proximity, that's standard
14 practice to remove them so they don't contact
15 the line or cause other problems in that
16 respect. But the shielding provided by trees
17 can extend easily over 1500 feet or so depending
18 on the height of the tree or the shrub.

19 Q And you just talked about structures that you
20 could build structures in between and prevent
21 electric fields through having structures there,
22 but you're aware that there's, at least on the
23 maps that we looked at, there's lots of areas
24 where there's not even room for a structure

1 between the existing houses and the right-of-way
2 edge, correct?

3 A (Johnson) In some cases, there is, let's say,
4 close proximity or tight constraints.

5 Q Okay. I have nothing further.

6 PRESIDING OFFICER HONIGBERG: Mr. Whitley,
7 you're next.

8 (Recess taken)

9 PRESIDING OFFICER HONIGBERG: Mr. Whitley,
10 you may proceed.

11 **CROSS-EXAMINATION**

12 **BY MR. WHITLEY:**

13 Q Thank you, Mr. Chair. Good afternoon, Dr.
14 Johnson and Mr. Bell. I'll be directing my
15 questions to both of you. This is a topic that
16 has not really been touched on today which is
17 audible noise.

18 So Mr. Bell, I'd like to start with you,
19 please, and I will be kind of jumping back in
20 between you throughout the questions, but we'll
21 start with you, Mr. Bell.

22 You should have before you on the screen
23 there Appendix 39 which is Appendix 39 to
24 Applicant's 1 so it was part of the Application.

1 Is that what's before you on the screen there?

2 A (Bell) I see that, yes.

3 Q And I wanted to start and ask you about Sound
4 Report number 1. And your report is broken up,
5 I mean your broader report, not Sound Report
6 number 1, is broken up into five chapters or
7 categories. The first one is the baseline sound
8 monitoring that you conducted, and then the
9 other four segments of that report deal with
10 either converter stations, substations, or
11 construction noise. Is that accurate?

12 A (Bell) Not completely, no. Sound report 1
13 consisted of baseline sound monitoring along the
14 project route. There was baseline sound
15 monitoring in each of the subsequent three
16 reports, Sound Report 2, 3 and 4, which were
17 specific to the geographic areas around the
18 fixed stations.

19 Q And thank you. I didn't mean to imply that they
20 were separate but thank you. And can you
21 actually, off the record for a second.

22 (Discussion off the record)

23 Q So in Sound Report number 1, the baseline sound
24 monitoring that was the length of the line, I

1 wanted to first ask you about how you went about
2 gathering that data. I believe from the report
3 on page 2 there, you picked some locations and
4 did sound monitoring at those locations, is that
5 correct?

6 A (Bell) That is correct.

7 Q You see the locations are on the screen there.
8 And other than the other parts of your report,
9 and by that I mean other than the Franklin
10 converter section, the Deerfield substation
11 section, the Scobie Pond section and the project
12 construction, this table right here, these 17
13 locations, are the only places along the line
14 that you did sound monitoring. Is that correct?

15 A (Bell) As you stated it, other than Scobie Pond,
16 Deerfield and Franklin, yes.

17 Q Okay. And what was the purpose of your
18 measurements at these 17 locations?

19 A (Bell) Generally just to characterize lowest
20 background sound levels that might occur along
21 these routes, along the project route.

22 Q And I believe it's your assertion in the text of
23 this or your opinion that these 17 locations are
24 representative of the entire overhead segment of

1 the line.

2 A (Bell) That's correct.

3 Q And how did you come to that determination? How
4 did you pick these 17 places as representative
5 of the entire overhead portion of the line?

6 A (Bell) Well, it was based upon extensive review
7 of overhead photography of the project route.
8 There were goals to obtain a reasonable spacial
9 representation, north to south, as well as to
10 assess different types of communities. Rural
11 versus urban, et cetera.

12 Q But when I say representative, I guess I'm
13 thinking of, and correct me if I'm wrong, I mean
14 you picked these locations as being
15 representative of certain segments, certain
16 links along the line. Is that correct?

17 A (Bell) I'm not sure what you mean by links, no.

18 Q Certain distances. There's no term of art
19 there. Just certain distances along the line.

20 A (Bell) The goal was to cover the entire length
21 of the line with reasonable separation of some
22 sort. Yes.

23 Q Okay. So of these 17 locations, there is
24 something about each one of them that is unique

1 then, that separates them from another location?

2 A (Bell) Well, their geography at least, yes.

3 Q Other than geography though? Anything else?

4 A (Bell) They varied from point to point.

5 Q I guess I'm wondering, you know, how
6 representative these 17 locations are of the
7 entire overhead portion of the line. Did you do
8 any sort of field data to check?

9 A (Bell) I'm not sure what type of field data one
10 would gather to check representation.

11 Q Okay. So is that a no?

12 A (Bell) No.

13 Q To your knowledge, did you classify all segments
14 of the overhead portion of the line?

15 A (Bell) Again, I'm not certain what you mean by
16 classify here. What are you looking for there
17 in terms of classification?

18 Q You took the overhead portion of the line, and
19 for that entire length, there are one or more of
20 these 17 locations represent parts of that
21 length of overhead line, correct?

22 A (Bell) Yes.

23 Q Are there any portions of the overhead line that
24 are not represented by one of these 17

1 locations?

2 A (Bell) There may be.

3 Q Okay. Any sense of what you may have missed?

4 A (Bell) No.

5 Q But it's possible that you missed some, it
6 sounds like?

7 A (Bell) I don't feel that, in terms of the global
8 objective of this survey, I don't believe that
9 we missed anything.

10 Q Okay. But I thought you just said that you may
11 have missed some.

12 A (Bell) A specific geographic region, you know,
13 classification that you may come up with that I
14 hadn't considered perhaps.

15 Q Okay. Well, that's what I'm trying to figure
16 out is you selected these 17 locations and I
17 believe your position is that they all represent
18 the kind of spectrum of possibilities along the
19 overhead portion of the line. Is that fair?

20 A (Bell) I used my judgment, my professional
21 judgment, to make those determinations and
22 selections, yes.

23 Q Okay. And the table here, we don't have any
24 information such as town or address. That

1 information was provided to us in response to a
2 data request so I'm going to put that up just
3 for ease of reference. Just one second. You
4 see that on your screen there?

5 A (Bell) I do.

6 Q Again, this was provided to us in response to a
7 data request. This will be Joint Muni 87. And
8 it was the first technical session where you
9 were present, Mr. Bell. So those locations
10 there, do those look familiar?

11 A (Bell) Yes.

12 Q The locations that you selected, were they for
13 the most current design?

14 A (Bell) No.

15 Q And which locations do not reflect the current
16 design?

17 A (Bell) I believe I referenced that in my
18 testimony. I'll just check that now.

19 Q Sure. No, go ahead.

20 A That would be locations 8, 8 A, 9 CM and 10.

21 Q Okay. Thank you. And those are no longer part
22 of the current design because the project is
23 underground.

24 A (Bell) That's correct.

1 Q Or they slightly altered the route. One of
2 those two reasons, though, correct?

3 A (Bell) I believe that that section is
4 underground.

5 Q So now we're down to 13 locations to be
6 representative of the entire overhead portion of
7 the route, correct?

8 A (Bell) That's correct.

9 Q Okay. In eliminating 8, 8 A, 9, 9 CM and 10,
10 isn't it possible that there are sections of the
11 overhead route that are not represented?

12 A (Bell) Again, I believe that where the overhead
13 lines run, we have adequately represented them.

14 Q But I'm assuming in selecting these 17
15 locations, you wouldn't be repetitive. So, for
16 instance, and this is just purely for example,
17 if number 1, that location in Deerfield
18 represented a certain geography, a certain
19 topography or whatever other criteria, I would
20 assume that number 8, which you just testified
21 was no longer part of the current project,
22 didn't represent the same criteria and was
23 something different.

24 A (Bell) Again, if you look at the arrangement of

1 the measurement locations, they extend along the
2 entire route as we saw it then. If we were
3 given a hypothetical or if you want me to
4 suggest now, if I had seen the route with the
5 underground section, I may have only chosen 12
6 locations.

7 Q Okay. But at the time you prepared the report,
8 that's not the way it worked though, was it?

9 A (Bell) There was a longer extended route of
10 overhead lines, that's correct.

11 Q Okay. In terms of variables, I mean, it's more
12 than just geography as you just testified to.
13 Correct?

14 A (Bell) That's correct.

15 Q After these five locations were eliminated
16 because the route is no longer overhead there,
17 did you do any sort of reevaluation of the
18 remaining ones to make sure that it still
19 represented the entire overhead portion?

20 A (Bell) I have not.

21 Q In the course of your sound monitoring at these
22 locations, did you record precipitation?

23 A (Bell) The measurements were purposely made
24 without precipitation.

1 Q And can you tell us why?

2 A (Bell) Our objective was to identify and measure
3 lowest background sounds that occur in these
4 areas. As a result, generally during
5 precipitation or foul weather, there's higher
6 winds, there's noise precipitation, impacted
7 leaves and stuff like that so that that would
8 skew the result to a higher background sound
9 level which we were not interested in obtaining.
10 Our objective here, again, was to understand
11 lowest current conditions.

12 Q Are you aware that Dr. Johnson's modeling, one
13 of the projections that he did was with the
14 project in place in foul weather?

15 A (Bell) I am.

16 Q So the absence of any ambient monitoring at
17 these locations prevents us from comparing his
18 modeling in foul weather versus the ambient
19 conditions that you observed in foul weather.

20 A (Bell) At these locations during that survey,
21 that's correct.

22 Q And then you completed the monitoring on these
23 17 locations, and that ambient data was then
24 provided to Dr. Johnson for his modeling; is

1 that correct?

2 A (Bell) It was not provided for his modeling, but
3 only as a basis of reference as to what the
4 background conditions were.

5 Q Okay. That was going to be my next question to
6 Dr. Johnson so thank you.

7 So, Dr. Johnson, is that accurate that the
8 numbers or the data was provided for comparison
9 sake and not as an input into a model that you
10 performed?

11 A (Johnson) That's correct. It was to provide
12 basically background reference information as to
13 what conditions were there at the moment.

14 Q Okay. I want to switch now to Dr. Johnson for a
15 second. And, Dr. Johnson, do you have the
16 report with you that was attached to the
17 Application? So it's Appendix 38 on Applicant's
18 Exhibit 1.

19 A (Johnson) Yes, I do.

20 Q I'm going to ask you some questions on that, and
21 I'll pull it up on the screen, but if you have a
22 hard copy available, then by all means.

23 A (Johnson) That will make it much easier. Thank
24 you.

1 Q No. I understand. Let me pull it up here for
2 the benefit of everyone else. So just to
3 clarify, Dr. Johnson, your modeling did not
4 include any of the ambient noise data from
5 Mr. Bell.

6 A (Johnson) As part of the modeling, that's
7 correct. It basically is looking at the audible
8 noise, and I assume that's what you're in
9 reference to.

10 Q Yes.

11 A (Johnson) Just from the various AC and DC lines
12 that may be on the corridor.

13 Q For the AC line and the DC line, there are
14 different models that you ran.

15 Let me rephrase that. There are different
16 modeling software that you employed for the DC
17 line versus the AC line.

18 A (Johnson) That's correct. Where you have a
19 cross-section that has nothing but AC lines,
20 there's one sort of software that will predict
21 audible noise and does a fine job. If you have
22 a DC line also on the corridor in addition to
23 the AC lines, then there is, another set of
24 software is the one that you use to take that

1 into account.

2 Q Okay. And as you guessed, I mean we are talking
3 about audible noise, and that is due, the
4 audible noise from a transmission line is due to
5 the corona effect; is that accurate?

6 A (Johnson) That's correct, and that's due to
7 basically the fact that you have a voltage or
8 the conductors are energized.

9 Q Okay. In terms of AC versus DC, audible noise
10 is typically worse for the AC line than it is a
11 DC line?

12 A (Johnson) I wouldn't characterize it that
13 simply. There are differences in how audible
14 noise behaves with an AC line and what
15 conditions make it higher with AC lines than for
16 DC.

17 Q I don't mean to cut you off, but I'll give you
18 another criteria which I should have put in the
19 original question. I was thinking of foul
20 weather conditions. That in foul weather
21 conditions the AC line is louder or has a higher
22 level of audible noise than a DC line would.

23 A (Johnson) Depending on the line design, that's
24 true. The differences are in between fair

1 weather and foul weather. An AC transmission
2 line, the audible noise as you go from fair
3 weather to foul weather will increase. So an AC
4 line will provide more audible noise with the
5 same line design AC in foul weather than it does
6 in fair weather.

7 With a DC line, there it becomes a bit more
8 complicated because it's more seasonally
9 dependent as far as the audible noise the DC
10 line is producing, and for a DC line, when you
11 have foul weather, the audible noise from the DC
12 line actually decreases.

13 Q And the focus of my questioning is going to be
14 on that AC line from Franklin down to Deerfield.
15 And you say foul weather, foul weather just
16 means the presence of precipitation, correct?

17 A (Johnson) In simple terms, yes. When there's
18 precipitation.

19 Q And precipitation, I mean, rain, snow, mist, all
20 those things would classify as foul weather.

21 A (Johnson) In simple terms, yes. If the
22 conductor becomes wet, and it starts dripping
23 water droplets, that is when you have the
24 audible noise being produced.

1 Q Okay. And high humidity, would that also
2 trigger a foul weather classification?

3 A (Johnson) Generally not.

4 Q Is there a threshold that you think of? You
5 mentioned dripping just now. Is that an
6 appropriate way to think about when you go from
7 fair weather to foul weather?

8 A (Johnson) When you go from fair weather to foul
9 weather, generally it's when the conductor
10 becomes wet. Generally, fog or high humidity is
11 not sufficient to do that unless you're
12 basically at saturation levels where you're
13 producing water and it's dripping from the
14 conductor.

15 Q Okay. And the AC, I believe you just testified,
16 you agreed with me that in foul weather
17 conditions, the AC line typically has a higher
18 audible noise, and I believe that that is due to
19 the higher voltage of those lines. Is that
20 accurate?

21 A (Johnson) No.

22 Q Okay. What would you ascribe the higher audible
23 notification to then?

24 A (Johnson) In foul weather?

1 Q Yes.

2 A (Johnson) It's because you have the rain drops.
3 If you think about it, normally in fair weather
4 your conductor is relatively smooth, you'll have
5 individual strands in like the one inch or one
6 and a half inch diameter cable which is typical
7 on a higher voltage AC line. But in general
8 it's a nice smooth cylinder. If you start
9 putting water droplets on it and then the water
10 droplets start dripping off of it, let's say you
11 start out with the good conduct that's nice,
12 round, and smooth, now you've put a water
13 droplet on it that's going to come down to a
14 small point so you're basically getting a large
15 number of small points scattered along the
16 length of the conductor and its corona off of
17 those small points which is due to the voltage
18 on the conduct tore being there. But it's the
19 voltage on those raindrop points off of the
20 conductor that's causing the audible noise.

21 Q Okay. And the modeling that you ran, the values
22 that you presented in the report, and we'll dig
23 into it a little bit but just in a general
24 sense, the values are medium or L 50 values,

1 correct?

2 A (Johnson) Because it is statistical nature, as
3 you have a raindrop go into corona. The
4 raindrop drops off. That particular noise point
5 disappears and gets replaced by another raindrop
6 and so you'll have a little bit of fluctuation
7 in there. So what is generally reported is the
8 L 50 levels, you will have variation of a few dB
9 around that level.

10 Q Okay. And that, you got to my next question a
11 little bit. L 50 implies there's some
12 variability there. I mean, I believe the
13 explanation that's in your report is that L 50
14 means that whatever the value is, you can expect
15 that it would be exceeded 50 percent of the
16 time.

17 A (Johnson) Yes. The way the statistical
18 descriptors work, an L 50 indicates that 50
19 percent of the time you can be higher than that,
20 50 percent of the measurements are going to be
21 below that.

22 Q Right. So isn't it correct that that means that
23 at least 50 percent of the time the modeling
24 levels that you provided would be exceeded?

1 A (Johnson) The actual levels for that particular
2 instant, 50 percent of them would be higher, 50
3 percent would be lower. And I assume your next
4 question is going to be possibly by how much.
5 Maybe a few dB.

6 Q And that few dB, where does that calculation
7 come from?

8 A (Johnson) That's also based on measurements that
9 I and other people have done over the years and
10 the general characters and performance of
11 audible noise from conductors.

12 Q I want to turn now to the segments that you
13 selected, and we've gone over this a couple
14 times so I'm going to try not to be repetitive.
15 So just bear with me one second.

16 As you've testified earlier today, you
17 evaluated the length of the line, the whole
18 192-mile span, and you broke that down into 62
19 separate segments. And then you did further
20 analysis on 27 of them which I believe you said
21 were representative of the entire 62 segments of
22 the line. Is that accurate?

23 A (Johnson) That would be an accurate way of
24 summarizing it, yes.

1 Q Okay, and you did that for a variety of
2 criteria. Most prescient to us right now is
3 audible noise. By criteria, I meant you did
4 electromagnetic fields, radiofrequency, audible
5 noise. That's what I meant by criteria.

6 A (Johnson) Okay. I calculated basically electric
7 fields, magnetic fields, audible noise and
8 radiant noise for the various segments that were
9 chosen.

10 Q I'm going to turn now to that table. It will be
11 up on your screen shortly. If you're faster
12 than me and can get there, go ahead.

13 So this is the table that you've testified
14 to earlier today, and again, it's the one that
15 you've just described.

16 A (Johnson) Yes. That would be Table 1 on page 5
17 of Appendix 38. That looks at the different
18 cross-sections where calculations were actually
19 done, and then as a cross-reference, it shows
20 other cross-sections that would be represented
21 by that one particular cross-section that may
22 have had the calculations performed.

23 Q As I mentioned a second ago, our focus for this
24 afternoon is going to be on the AC-only portion

1 of your analysis so that's segments S1 through
2 20 which runs from the Franklin converter down
3 to the end of the line in Deerfield or to the
4 substation in Deerfield.

5 A (Johnson) Those would be the segments that have
6 only AC additions to them.

7 Q That's right. I want to draw your attention to
8 S1-19 and S1-20 down there at the bottom. One
9 of the columns you have here says the total
10 length of represented by model section. Do you
11 see that at the top?

12 A (Johnson) Correct.

13 Q And then for S1-19 and 20, S1-19 is 11.0 miles
14 and S1-20 is 3.6. Do you see that?

15 A (Johnson) Correct.

16 Q And at least two other segments are represented
17 by S1-19. That would be S1-15 which you see
18 there on the table, correct?

19 A (Johnson) Correct.

20 Q And then in response to a data request, I
21 believe you corrected this table and you moved
22 the S1-14 segment from the model S1-13 and you
23 moved it to S1-19. Is that correct?

24 A (Johnson) That's possible. I'd have to go back

1 and double-check, but --

2 Q Okay. Well, I'll represent to you that that is
3 the response we received to a data request that
4 provided that correction.

5 A (Johnson) That sounds roughly correct.

6 Q Okay. So the total length represented says 11
7 miles. I assume that that distance would apply
8 to any of the other segments that represent it.
9 Is that accurate?

10 A (Johnson) Not just total length. So if S1-14
11 came down and was represented by S1-19, that
12 would go up slightly by the looks of it maybe a
13 few tenths of a --

14 Q Okay. Okay. And S1-15?

15 A (Johnson) Well, no. S1-15 would be included
16 within the 11, I believe.

17 Q It's not additive is what I mean. Because S1-15
18 is represented under S1-19, do you tack on
19 another 22 miles? Is it 22 in total?

20 A (Johnson) No.

21 Q Thank you. S1-19 and S1-20, however, I believe
22 your opinion is that or your position is that
23 accounts for over 60 percent of the AC only
24 line.

1 A (Johnson) That looks like it would be around,
2 close to around 15 miles total.

3 Q I can, I'll represent to you, Dr. Johnson, that
4 we can flip to the page in your report that
5 verifies that but unless you --

6 A (Johnson) I mean, looking at it where you've got
7 8.9, just looking and doing the sums real quick,
8 that's probably correct.

9 Q Okay. Okay.

10 A (Johnson) And if I said so in my report
11 somewhere else, yes.

12 Q It must be true then. So I believe you
13 testified earlier today that it's difficult to
14 recall where these segments are just looking at
15 them. You know that they're along the line, but
16 you don't necessarily know where they are.

17 A (Johnson) I know roughly where along the line
18 because they go in order so I think S1-19, S1-20
19 is near the Deerfield substation. Closest
20 proximity. The other ones are further away, but
21 to know the exact location right off the top of
22 my head, I'd have to refer back to an aerial map
23 and a particular location for that
24 cross-section.

1 Q I pulled up here what has previously been
2 discussed. This is Counsel for the Public 82.
3 And let me just clarify, Mr. Chair, that what
4 I've pulled up here is not the version that
5 Counsel for the Public used. It's the exact
6 same thing. I just hadn't labeled it yet. I
7 was going to label it something different, but
8 it's the exact same thing.

9 PRESIDING OFFICER HONIGBERG: Okay.

10 Q So I'm not going to introduce it as an extra
11 exhibit, in other words.

12 Do you see that there, Dr. Johnson?

13 A (Johnson) Yes.

14 Q And looking at that, do you see where S1-19 and
15 S1-20 are?

16 A (Johnson) Yes.

17 Q Towards the end of the line?

18 A (Johnson) They're the last two cross-sections on
19 the line.

20 Q Yes.

21 A (Johnson) S1-19 roughly goes from Concord almost
22 over to the Deerfield substation. S1-20 is that
23 last cross-section before the Deerfield
24 substation.

1 Q Am I correct in understanding that you would
2 expect similar results, similar modeled results,
3 for S1-15 based on what you calculated for
4 S1-19?

5 A (Johnson) Correct. The cross-sections are
6 similar in terms of the positioning of the
7 conductors and locations of the various lines
8 that you would expect similar results.

9 Q Okay. Thank you. And again, S1-19 also
10 represents segment S1-14.

11 A (Johnson) Correct.

12 Q I want to turn now to the diagrams in the
13 Appendix that relate to some of these segments
14 because I'd just like you to explain what they
15 are showing. So I'm going to have you go to
16 page B-164-165 and I will pull it up here
17 momentarily. See that on the screen there is
18 the segment detail for S1-19. Correct?

19 A (Johnson) Correct. This is both the audible
20 noise plot showing the profile of the audible
21 noise levels for S1-19, and then a rough
22 schematic of what the right-of-way cross-section
23 looks like below it. It's B-164 in Appendix 38.

24 Q And for both S1-19 and S1-20, how wide is the

1 right-of-way in those locations? It appears to
2 be 150 feet; is that accurate?

3 A (Johnson) That looks about right. The new line
4 which is 3132 is going to go in in the plot at
5 the top of the page is at zero. And in the one
6 direction it looks like you're going about 120,
7 125 feet to the edge of the right right-of-way.
8 And on the other side, probably about 25 or 30
9 feet. So probably 150 is the right-of-way. I'd
10 have to go back to the detailed notes to know
11 for sure.

12 Q And you just answered my next question, and that
13 was the plus and minus of the right-of-way, the
14 structure itself is not necessarily going to be
15 right in the middle of the right-of-way. The
16 proposed structure, for instance, on S1-19 as
17 you just testified is going to be towards the,
18 we'll say the left on the sheet, the left-hand
19 side of that right-of-way.

20 A (Johnson) Correct. For the calculations, the
21 new Northern Pass structure line that's going in
22 is taken as a reference marker, the zero point.

23 Q Okay. And now I want you to turn to the
24 modeling results for S1-19, and that can be

1 found in A-31 Appendix 38. Just a second and
2 I'll put it up on the screen.

3 See that, Dr. Johnson?

4 A (Johnson) Correct. Page A 31 for S1-19, you've
5 got four rows of values.

6 Q So at the top of that it says Distance from
7 Centerline of NPT Circuit. So I read that in
8 your prior testimony just now that the 300 feet
9 in either direction is measured from the center
10 of the circuit as opposed to the center of the
11 right-of-way; is that accurate?

12 A (Johnson) That's correct.

13 Q So the minus right-of-way column and the plus
14 right-of-way column, those, however, are mixed.
15 Is that accurate?

16 A (Johnson) Those are fixed locations, yes.
17 Defined by the right-of-way.

18 Q Okay. So your structure, as you just testified,
19 may not be directly in the middle, but your
20 variables that you're measuring for are measured
21 at the right-of-way boundaries and then 300 feet
22 in other direction of the structure?

23 A (Johnson) Of the new structure.

24 Q Correct. Of the new structure, correct?

1 A (Johnson) Correct.

2 Q So for the S1-19 example that we just went
3 through, and we can refer back to the diagram,
4 the 300 feet is going to go well beyond the
5 right-of-way boundary?

6 A (Johnson) Correct.

7 Q Because I believe you just testified that S1-19
8 was, I forget the figure, but it was fairly
9 close to that right-of-way.

10 A (Johnson) The negative side.

11 Q Correct. I'm sorry. Did you answer?

12 A (Johnson) I think so. If you look at S1-19 and
13 you looked at the, let's say the plot or the
14 diagram in Appendix B that we first looked at,
15 they're the, what's called on here, the negative
16 right-of-way, what I would call the left-hand
17 side as you view it, is closer to the new
18 structure going in. So it may be 25, 50 feet
19 from the new structure. And then you jump out
20 to minus 300 feet from the new structure.

21 On the other side where you had more lines,
22 more right-of-way over there, you might go 120
23 feet from the new structure for the plus
24 right-of-way edge, and then at 300 feet from the

1 new structure, so another 200 feet to get to the
2 plus 300-foot location.

3 Q So you modeled, you modeled four things. You
4 modeled pre- and post-project which is pretty
5 self-explanatory, I believe, and then you
6 modeled fair and foul weather conditions,
7 correct?

8 A (Johnson) Correct.

9 Q And you modeled each of those things for the
10 various columns that you just described,
11 correct?

12 A (Johnson) Correct. Out to 300 feet on either
13 side of the new structure. And if you go into
14 Appendix B which is what we just looked at,
15 that's actually a graphic, in that is a
16 graphical plot basically showing where
17 everything is at and the actual audible noise
18 level, let's say, at the location shown in this
19 table as well as a number of other ones because
20 it's actually showing the variation as you go
21 from minus 300 to plus 300.

22 Q In terms of your modeling, you used the
23 benchmark of the EPA standards of L day/night
24 average 55 dBA, correct?

1 A (Johnson) For a reference level, if that's what
2 you're talking --

3 Q That is what I'm referring to. Yes. But you
4 also noted the WHO standard which is a little
5 lower. It's 40 dBA.

6 A (Johnson) That's a nighttime level. I believe
7 at the outside surface of the nearest residence
8 for the WHO guidelines.

9 Q And why did you choose those two kind of
10 guidelines or benchmarks?

11 A (Johnson) Those are the primary pieces of
12 information that are available for audible noise
13 levels and that have been traditionally,
14 particularly the USEPA guideline of 55
15 day/night, typical used to evaluate transmission
16 line audible noise performances.

17 Q But there's nothing, no SEC rule you're aware
18 of, no state law that requires you to use either
19 the EPA or the WHO guideline.

20 A (Johnson) Not that I'm aware of.

21 Q And your ultimate conclusions, are they based on
22 consistency or lack thereof with either of those
23 guidelines?

24 A (Johnson) Well, in all cases, in looking like at

1 the USEPA LDN guidelines, even in short-term
2 foul weather it is below that 55 LDN level.

3 Q And the WHO level?

4 A (Johnson) In the WHO case, that's a nighttime
5 level. There are, I think, a couple of the
6 cross-sections in foul weather, and this is like
7 even short duration foul weather, it might
8 slightly exceed the 40 dBA suggested by WHO, but
9 that's a nighttime level and that's figured as
10 more or less, when they talk about it, a
11 nighttime average over the long-term. These
12 foul weather things would be short duration, a
13 few hours.

14 Q Is it nighttime though when people are
15 particularly sensitive to increased noise levels
16 because they're trying to sleep?

17 A (Johnson) That was the thinking and basis that
18 USEPA considered in doing their LDN 55 dB level
19 and also the nighttime sleeping habits and
20 consideration for that with WHO when they talked
21 about the 40 dB.

22 Q So that's a yes.

23 A (Johnson) Yes. You would want lower nighttime
24 because people sleep during night, and those

1 have been reflected in the guidelines.

2 Q I want to run through some of the segment
3 specific results here. We're going to stay on,
4 I believe we've going to stay in this A 30
5 Appendix, Dr. Johnson, but let me make sure
6 we're on the right page here.

7 Okay. I've pulled up here the prior page
8 which is 140, A-30 to your Appendix, and I want
9 to walk through the modeling that you came up
10 with for S1-13. You see that there in front of
11 you?

12 A (Johnson) Yes.

13 Q So for S1-13, the modeling results there, for
14 either right-of-way boundary, it's 42 dBA and
15 then 43 dBA, correct?

16 A (Johnson) Correct. That's the post-project in
17 foul weather.

18 Q That's right. Thank you. And again, those are
19 the L 50 values so I believe you testified
20 earlier that one would expect that 50 percent of
21 the time they'd be above that number and 50
22 percent of the time they could be below that
23 number, correct?

24 A (Johnson) In foul weather and for the audible

1 noise that might be like one or two dB or a few
2 dB.

3 Q Okay. On the next page, page A-31, again,
4 looking at post-project in foul weather, the
5 right-of-way boundaries for S1-19, the values
6 are 42 on the negative right-of-way, 40 on the
7 positive right-of-way. Do you see that?

8 A (Johnson) Correct.

9 Q Then for S1-20 post-project in foul weather, the
10 negative right-of-way is 42 and the positive
11 right-of-way is 38, correct?

12 A (Johnson) That's correct. That's what's shown.

13 Q And again, these two segments in particular,
14 S1-19 and S1-20, represent over 60 percent of
15 the AC overhead line from Franklin to Deerfield.

16 A (Johnson) Right. Based on Table 1, that
17 represents about 15 miles of that S-1 to S-20.

18 Q Well, I'm going to take issue with your math a
19 little bit. The distance of the overhead line
20 is 33.7 miles. So I'll represent to you that 60
21 percent of 33.7 is about 20 miles actually.

22 A (Johnson) Okay.

23 Q So, again, for a 20-mile length and that's not
24 necessarily continuous, but for a 20-mile

1 length, from Franklin to Deerfield, at the edge
2 of the right-of-way, the values that you're
3 modeling post-project in foul weather would
4 exceed the WHO standard at night, would they
5 not?

6 A (Johnson) Actually, I'd have to look at that in
7 detail and compare it to, as strictly shown, the
8 WHO guideline of 40 LDN nighttime. That's at
9 the outside of the residence for one thing. So
10 what's being modeled is right at the edge of the
11 right-of-way. In most cases, in fact, I think
12 all cases, you would not have a residence window
13 right at the edge of the right-of-way. Also
14 that's a L nighttime long-term average 40 dB,
15 not just one night, group of nights, whereas the
16 calculations are like right at that sort of
17 short-term duration nighttime foul weather
18 level. So to really take a look and say does it
19 meet the 40 dB WHO guideline is where is it
20 measured, and what is the actual L nighttime in
21 foul weather at that location. You put all
22 those together, it's going to drive that level
23 down below 40, and in addition to that, that
24 level is calculated with an overvoltage on the

1 line and no intervening structures or other
2 thing that would possibly reduce the noise
3 level. On top of that, you would --

4 Q Excuse me. Excuse me, Dr. Johnson, but these
5 are L 50 values, are they not?

6 A (Johnson) Correct.

7 Q So, again, 50 percent of the time what we're
8 going to observe is going to exceed these
9 values, correct?

10 A 50 percent of the measurements, 50 percent of
11 that data. That doesn't mean 50 percent of the
12 time in the sense that I think you're using it
13 it would be the case. Let me say if you took 40
14 nights during the year that it was foul weather.

15 Q Dr. Johnson, I'm going to read to you now from
16 page 48 of your report where you're explaining
17 the L 50 level, and I can point you to the page
18 if you'd like. Says the L 50 level refers to
19 the sound level that has exceeded 50 percent of
20 the time and not exceeded the other 50 percent.
21 So I believe that's consistent with the way I
22 just described it.

23 A (Johnson) In the sense that you described it,
24 yes.

1 PRESIDING OFFICER HONIGBERG: Mr. Whitley,
2 I have a question. How important is that
3 percentage of this stretch that's represented by
4 S1-19 and S1-20? Because you're saying
5 something about his testimony that you haven't
6 gone through. He's testifying, I'm certain from
7 the table, about the mileage shown on the table.

8 MR. WHITLEY: Um-hum.

9 PRESIDING OFFICER HONIGBERG: And I'm
10 totally confused as to, A, how important it is,
11 and, B, what the actual percentage is. So do
12 you want to work that out maybe if there's
13 testimony that's inconsistent with Table 1,
14 reconcile that for me so at least I can put that
15 one out of my head?

16 MR. WHITLEY: I don't think that my
17 position is that there's testimony that's
18 inconsistent with what's in Table 1. I think
19 what I'm trying to get across is those two
20 segments represent more than half of the
21 overhead line.

22 PRESIDING OFFICER HONIGBERG: Okay. I'm
23 looking at Table 1, and I can do the math in my
24 head and see that it's not 60 percent.

1 MR. WHITLEY: Let me point you then,
2 Mr. Chair, because there's a reference in the
3 report on page 54 which I'll bring up. Just
4 give me a second but I'll read it to you quick.
5 It says Segments S1 -- let's see. Excuse me.
6 Two combined segments represent more than 60
7 percent of the AC route. It's S1-1, not 20.
8 That's my mistake, but it's S1-1 and S1-20.

9 PRESIDING OFFICER HONIGBERG: Okay. Well,
10 that explains it.

11 MR. WHITLEY: One second. Let me just go
12 back.

13 PRESIDING OFFICER HONIGBERG: Is it hugely
14 significant to you that S1-19 and S1-20 are a
15 significant percentage? I think the witness
16 would agree with you that it's a lot of that
17 track. Whether it's 60 percent or 40 percent,
18 it's a lot. Right?

19 MR. WHITLEY: I honestly wasn't going to
20 quibble with him the percentage anymore.

21 PRESIDING OFFICER HONIGBERG: But you did.
22 You did it twice. So I became interested in it.

23 MR. WHITLEY: That's because my math was
24 different than his. That's why I just wanted to

1 correct the math.

2 PRESIDING OFFICER HONIGBERG: I think we've
3 just done it, right?

4 MR. WHITLEY: He did, yes.

5 PRESIDING OFFICER HONIGBERG: And he was
6 right.?

7 MR. WHITLEY: I mean, I did 60 percent of
8 33.7 and I got 20 miles.

9 PRESIDING OFFICER HONIGBERG: Mr. Johnson,
10 how many miles are there --

11 MR. WHITLEY: But I understand --

12 PRESIDING OFFICER HONIGBERG: My turn. How
13 many miles are there from Deerfield, from
14 Franklin to Deerfield on the route?

15 WITNESS JOHNSON: Off the top of my head,
16 I'm not sure. I'd have to go back and look.

17 PRESIDING OFFICER HONIGBERG: Is it the sum
18 of the mileages listed at the bottom of Table
19 8.1?

20 WITNESS JOHNSON: That would be my
21 assumption.

22 PRESIDING OFFICER HONIGBERG: Probably a
23 pretty good assumption?

24 WITNESS JOHNSON: Yes.

1 PRESIDING OFFICER HONIGBERG: Let's just
2 take a minute. Why don't you eyeball it.

3 WITNESS JOHNSON: Taking a quick look at
4 Table 1, and looking, summing those, I get about
5 35 to 40 miles, and if I've got about -- okay.
6 It's not, well, looking at this, it's not 60
7 percent.

8 PRESIDING OFFICER HONIGBERG: That's right.
9 It's about 15 of about 33. Right?

10 WITNESS JOHNSON: Yes.

11 MR. ROTH: Mr. Chairman, I just ran Google
12 Earth, and Google Earth reports that it's 41
13 miles.

14 PRESIDING OFFICER HONIGBERG: Off the
15 record.

16 (Discussion off the record)

17 PRESIDING OFFICER HONIGBERG: You said 33
18 miles, right?

19 MR. WHITLEY: I did, yes, Mr. Chair.

20 PRESIDING OFFICER HONIGBERG: And the sum
21 of S1-19 and S1-20 plus we'll assume .3 for
22 S1-14 which is the maximum that it could be, we
23 get just under 15, right? 15 out of 33? You
24 can use that percentage going forward, and no

1 one's going to quibble with you.

2 MR. WHITLEY: Okay, Mr. Chair.

3 PRESIDING OFFICER HONIGBERG: Just for
4 planning purposes, how much more do you think
5 you have?

6 MR. WHITLEY: Probably say an hour.

7 PRESIDING OFFICER HONIGBERG: All righty
8 then. You may proceed.

9 BY MR. WHITLEY:

10 Q So Dr. Johnson, we were speaking about pages
11 A-30 and A-31. I just want to take us back to
12 that head space. We're talking about -- I'm
13 sorry. Are you there?

14 A (Johnson) Yes.

15 Q Okay. And we were going over some of the
16 modeling results there, and I believe you were
17 just responding to a question and stating there
18 was some uncertainty as to how close residences
19 were to the edge of the right-of-way. Does that
20 sound familiar?

21 A (Johnson) That would be one of the things that
22 would reduce the levels calculated to what they
23 would actually be at the edge of the residence.
24 The other thing is the WHO guideline of 40 dB is

1 a nighttime long-term average.

2 Q No, no. And I heard all that the first time you
3 said it. I just wanted to get us back on the
4 same page. Thank you.

5 A (Johnson) Okay.

6 Q Do you recall earlier today you were shown some
7 pictures in Concord of some residential
8 structures that were very close to the
9 right-of-way or within the right-of-way?

10 A (Johnson) Yes.

11 Q So those instances do occur along the line where
12 a residential structure is within the
13 right-of-way or just outside of the
14 right-of-way?

15 A (Johnson) Apparently, it shows some structures
16 within the right-of-way.

17 Q So for those structures that are in the
18 right-of-way, and it is a foul weather event,
19 and it's the AC portion of the line, it is
20 possible that the audible noise in those
21 conditions could violate the WHO standard.

22 A (Johnson) If there was residential occupation
23 within the right-of-way, based on these
24 calculations, the audible noise levels in fair

1 weather outside could be high. Could be above
2 the 40 dB and the WHO guidelines.

3 Q Is it possible, Dr. Johnson, for topography to
4 have any impact on audible noise?

5 A (Johnson) For the audible noise from
6 transmission lines, the topography would in
7 general reduce the level if there was
8 structures, terrain features, between the source
9 and the receptor.

10 Q Is it possible for topography to amplify or not
11 attenuate or cause the noise level not to
12 attenuate as it travels a distance?

13 A (Johnson) In general, for the frequencies that
14 are from corona noise, that's not the case.

15 Q I want to turn now to the body of the Appendix
16 again so we're going to go to page 85 and 86.

17 A (Johnson) This is in the main report?

18 Q Yes. Yes, Dr. Johnson. Yes. Let me pull that
19 up, one second. Are you there, Dr. Johnson?

20 A (Johnson) Yes, I am.

21 Q So this section of your report, you're
22 discussing your modeling results and you're
23 putting them in context of the ambient noise
24 levels. Is that a fair way to describe this

1 portion?

2 A (Johnson) I talked about the ambient or the
3 background type noise levels.

4 Q And you make reference here to two things which
5 I wanted to ask you some questions about. The
6 first is the incidence of foul weather. You
7 site here and it's really on page 86 as opposed
8 85, but it's the same paragraph there, that you
9 calculated the incidence of foul weather over a
10 four-year period at a variety of weather
11 stations around the state. Is that correct?

12 A (Johnson) Right, the weather is basically
13 referring to weather service data that's
14 available on the various sites close to the line
15 or the nearest one I could find close to the
16 line route in New Hampshire.

17 Q Okay. That was one of my questions. Did you
18 select weather stations that were as close to
19 the line as you could find?

20 A (Johnson) To my knowledge, yes.

21 Q Okay. And you did a four-year period from 2010
22 to 2014, correct?

23 A (Johnson) I think that was what was available on
24 the sites, yes.

1 Q Okay, and is that why you chose it because that
2 was what was available?

3 A (Johnson) That was readily available, yes.

4 Q Okay. And is it your position that that
5 four-year period of time is an accurate
6 representation of the incidence of foul weather?

7 A It's readily available. It's reported by a
8 government weather service, yes.

9 Q I don't mean though that the data that you're
10 getting, the hard data, is accurate. I trust
11 that if the weather station says that there was
12 a quarter of an inch of rain, there really was a
13 quarter of an inch of rain. My question is more
14 the frequency, the percent frequency of foul
15 weather. Is it your position that the four-year
16 period that you looked at is an accurate
17 representation of the frequency of foul weather?

18 A (Johnson) It's what the weather service reports
19 that they observe. I assume that their
20 information and measurement equipment is
21 accurate. There are indications that when they
22 felt it was not, they took it out of service and
23 it was not available.

24 Q It's possible then that the four-year period

1 that you examined is not an accurate predictor,
2 and that going forward the incidence of foul
3 weather may be far more frequent?

4 A (Johnson) If you have information to the
5 contrary, I'm more than willing to use it. It's
6 the best I could find.

7 Q The S1-19 segment at the southern end of the
8 line in Deerfield, do you know how far that
9 segment is from the nearest weather station that
10 you utilized?

11 A (Johnson) I can look that information up, but
12 off the top of my head, no.

13 Q I hesitate to offer a math calculation at this
14 point, but it looks like --

15 A (Johnson) It looks like looking at my notes one
16 of them was in Concord so probably within 10 or
17 15 miles.

18 Q I was going to say that I'll represent to you
19 that I believe the one that's the closest was
20 Concord Airport, and I believe that's about 15
21 to 20 miles away from --

22 A (Johnson) Portions of the segment.

23 Q S1-19 is correct. Yes. Is it your position
24 that in a 15-mile length that the weather is

1 going to be consistent throughout so if it's dry
2 in Concord for instance, it might be raining
3 around where the S1-19 and S1-20 segments are?

4 A (Johnson) I think we're all aware probably it's,
5 sometimes it's localized, it might be raining at
6 one location, and at four or five miles away
7 it's not, but by the same token, there are times
8 when it will be raining in your location and at
9 some other one it's not and flip-flop depending
10 on the time.

11 Q Did you incorporate that variability into your
12 analysis at all?

13 A (Johnson) I looked at the information that was
14 available from the weather station. That went
15 into the consideration.

16 Q Okay. I want to turn now to a statement you
17 make on the bottom of page 86 where we're
18 talking about the impact of rain and wind as a
19 masking agent for audible noise. And Mr. Chair,
20 I don't know when you might be considering a
21 break.

22 PRESIDING OFFICER HONIGBERG: We'll go
23 about 15 or 20 minutes.

24 Q Okay. You see that, Dr. Johnson?

1 A (Johnson) This would be the very last paragraph
2 on page 86?

3 Q Actually, let me pull it up. Go ahead. Yes.
4 And that statement there, and I'll just read it,
5 in addition to wind and rain that typically
6 occurs during foul weather are themselves likely
7 to generate levels of audible noise 41 to 63
8 dBA --

9 PRESIDING OFFICER HONIGBERG: Slow down.

10 Q I'm sorry. I'll try that again.

11 In addition, the wind and rain that
12 typically occurs during foul weather are
13 themselves likely to generate levels of audible
14 noise 41 to 63 dBA that are similar to or exceed
15 the levels of audible noise from the line,
16 therefore, would mask the transmission line
17 audible noise during those weather conditions.
18 And as a cite, you mention a paper by Mr. Miller
19 from 1978.

20 A (Johnson) Correct.

21 Q I'm going to put up on the screen here -- there
22 it is. The Miller paper that you provide as the
23 basis for that statement. Do you see that
24 there?

1 A (Johnson) I see the beginning of the paper, yes.

2 Q Okay. Is that the paper that you were referring
3 to and relying on?

4 A (Johnson) It looks correct.

5 Q Okay.

6 A (Johnson) Can you scroll down to the bottom of
7 it?

8 Q Yes. Absolutely. Want me to zoom in or out?

9 A (Johnson) No, I think it's the right -- that's
10 fine. Okay. That looks like it's correct
11 there.

12 Q If you want to take a second and look,
13 Dr. Johnson, feel free.

14 A (Johnson) Do you have the whole paper?

15 Q I don't, unfortunately, have it. I'm told that
16 it's CFP 83.

17 A (Johnson) Unfortunately, that doesn't help me
18 because I don't have access to the pdf right
19 now.

20 Q I've got it right here.

21 A (Johnson) Is there a particular question? I
22 mean, this looks correct roughly that it's 1978.

23 Q Yes, I have some questions, yes, but I want to
24 make sure that that's the one that you relied

1 on. Just wait one second. We have a hard copy
2 here coming.

3 A (Johnson) Oh, thank you.

4 (Document handed to the witness)

5 Q Dr. Johnson, if you want to take a look and
6 confirm that that is indeed the paper now that
7 you have a hard copy of it to look at?

8 A (Johnson) Okay. Thank you. Hang on here a
9 moment. That looks correct, yes.

10 Q Okay. Thank you. So several observations that
11 are relevant to our discussion Mr. Miller came
12 to in his paper here. First, I want to direct
13 you to Figure A-1 towards the end?

14 A (Johnson) Okay. That would be on the page
15 stamped NPT DIS 090454. Your right-hand corner?

16 Q That's correct. That's right. And Figure A-1,
17 Mr. Miller, and correct me if I'm wrong,
18 collected data on the amount of rainfall and its
19 correlation to audible noise and A-1 is a chart
20 of that relationship, and I believe he stated
21 that you can expect a 3 dB sound increase for
22 any doubling of rain. Does that sound accurate?

23 A (Johnson) If the rain intensity notably changes,
24 it can affect the audible noise being produced

1 by the rainfall.

2 Q Okay. And one of the next things that
3 Mr. Miller did is he looked at the types of
4 ground cover where this rain was occurring.
5 Correct?

6 A (Johnson) Correct.

7 Q And we'll go to that now. It's Table 3. Ground
8 curve number, but Table 3.

9 A (Johnson) Table 3 or Figure 3?

10 Q I believe it's Table 3. Yes. Table 3, page
11 103, of the article. It's up on the screen
12 right there.

13 A (Johnson) Okay. Yes.

14 Q And so Mr. Miller then observed various types of
15 ground cover where he collected rain data and he
16 classified that, those locations or those types
17 of ground cover into these various curve
18 numbers. Do you see that in Table 3?

19 A (Johnson) Yes. Okay. You're talking about the
20 R 1 through R 5 rating.

21 Q That's right. I'm saying ground cover, but
22 you're right, it's curve number is how he refers
23 to them. But yes. I'll represent to you,
24 Dr. Johnson, that some types of ground cover or

1 curve numbers are more susceptible to producing
2 higher audible noise than others are when
3 there's a rain event.

4 A (Johnson) Yes. Different types of terrain,
5 ground cover, is going to produce different
6 levels of background noise from that rainfall
7 depending on say whether it's bare, whether
8 you've got a lot of leafed-out trees, a lot of
9 structures for the rain to hit or some variation
10 in between.

11 Q Right. So if you have, and just to go a little
12 further with your thought process there, a
13 porous surface would make less sound, rain on a
14 porous surface would make less sound than rain
15 impacting on large less porous surfaces would.

16 A (Johnson) Okay. I think what you're saying is,
17 the way I think of it, if you have a freshly
18 plowed field for a farmer as opposed to that
19 same field being bare and just hard-bake packed
20 ground, the rainfall is going to make more noise
21 on that hard-bake packed ground than a freshly
22 plowed field.

23 Q Yes.

24 A (Johnson) Now if you put a lot of trees and

1 shrubs and leafed out objects on there, it may
2 make more noise.

3 Q Correct. I think that's consistent with what
4 Mr. Miller stated, yes.

5 Your statement in the body of the report is
6 that wind and rain that typically occurs during
7 foul weather are themselves likely to generate
8 levels of audible noise 41 to 63 dBA.

9 A (Johnson) Correct. That's on page 86 and
10 Appendix 38.

11 Q That's correct. But that range of impact is not
12 a prediction for foul weather in every location,
13 is it? That level of impact is limited to a
14 certain type of ground cover, is it not?

15 A (Johnson) It's a range of ground cover. It can
16 vary along those, like I think it's 41 to 63 dBA
17 depending on specific locations and ground
18 cover.

19 Q I believe that the conclusion that Mr. Miller
20 came to was that that range of expected audible
21 noise was limited to two observed types of
22 ground cover, and there's another chart here
23 that I wanted to direct you to which I think
24 speaks to this. It's Figure 1 on the bottom of

1 page 104. It's the bottom left chart on page
2 104. You see that chart right there?

3 A (Johnson) Okay. Figure 1, bottom of page 104,
4 Bates number like 90451.

5 Q That's correct. You see the chart there on the
6 bottom left?

7 A (Johnson) Yes. Figure 1 is what you're
8 referring to.

9 Q Yes. Yes, I am. So you see there that the
10 curve numbers or the types of ground cover are
11 represented on that chart by R 1, R 2, R 3, R 4,
12 R 5?

13 A Correct.

14 Q And you see the slope looks like the same for
15 all of them. However, the starting point and
16 the endpoint are different depending on the type
17 of ground cover, correct?

18 A (Johnson) Right.

19 Q So if you look at the R 4, R 5, R 4 and R 3.
20 Those are in the range of about 40 as a low and
21 it looks like they go up to mid 60s as a high,
22 correct?

23 A (Johnson) In the case of R 5 it goes up above 65
24 to the 66, 67 dB.

1 Q Right. But R 1 and R 2, however, have a lesser
2 range. The lower point of that range for R 1,
3 for instance, starts around 32 dBA.

4 A (Johnson) For basically zero rainfall rates.
5 For a rainfall rate of about --

6 Q But you're not answering my question. The R 1
7 curve though starts around 32.

8 A (Johnson) 32 for a rate of rainfall well below
9 .001 centimeters per hour at its lowest rate on
10 the graph.

11 Q So when you made the statement in your report
12 that wind and rain are likely to generate levels
13 of 41 to 63 dBA, did you do any sort of analysis
14 on the type of ground cover along the line to
15 make that range of impact accurate?

16 A (Johnson) The range of impact is based on this
17 graph at a rainfall rate of about .2 centimeters
18 per hour where it's raining, not just a light
19 mist, up through probably more like around three
20 centimeters per hour, and for the various ground
21 covers it varies from about 41 dB up to about 62
22 dB. So there was consideration of different
23 types of ground cover in giving that range.

24 Q And how did you evaluate that, the types of

1 ground cover? Did you go out and field check
2 various points along the line?

3 A (Johnson) No. In terms that there would be a
4 variety of ground cover that could potentially
5 be along the line and that may vary between
6 porous lowest, basically R 1 curve, and an R 5
7 curve.

8 Q But the example you cited in your report appears
9 to not include the R 1 and R 2 types of ground.

10 A (Johnson) Yes.

11 Q Because you went from a 41 minimum to --

12 A (Johnson) To 63.

13 Q Right.

14 A And if you look at this chart, if you have a
15 rainfall rate above .2 centimeters per hour and
16 you looked at R 1, that's around 41, 42. If you
17 have a rain rate of about two centimeters per
18 hour, heavy rain rate, for R 5, that goes up to
19 62, 63. So it was in consideration of different
20 rain rates and different ground covers that that
21 statement of 41 to 63 dBA came about.

22 Q And I understand your answer, but I don't think
23 you answered the question that I posed which is
24 did you go out and do anything to verify in the

1 field along the line the types of ground cover
2 that are present?

3 A (Johnson) I did not go out in the field and
4 verify particular ground covers along the line
5 route.

6 Q Is it possible, wouldn't you agree that it's
7 possible that the type of ground cover changes
8 from one place to another along the lines?

9 A (Johnson) Theoretically, it's possible. From
10 aerial photos, you see heavy forest, shrubs and
11 trees nearby in which case you'd be at the R 5
12 level. One might expect that. You also have
13 roadways or more areas of hardpack ground that
14 you can see from the aerial photos that might be
15 more represented by R 1 or R 2. So you have a
16 range of ground cover, and that rain rate would
17 vary, and looking at this curve I feel like I
18 covered that range.

19 Q Other than the article from Mr. Miller, your
20 statement on page 86, was there anything else
21 that you can cite to to support that? I guess
22 let me ask it a different way. You didn't do
23 any sort of independent analysis separate and
24 apart from Mr. Miller's article here?

1 A (Johnson) I've not published a particular paper
2 on it, but based on my experience at the High
3 Voltage Research Center where we've measured
4 rain rates and looked at audible noise being
5 produced on basically hardpack ground cover
6 which would be more or less his worst case with
7 different transmission line configurations, this
8 would be consistent.

9 Q But you didn't cite any of that in your report
10 though.

11 A (Johnson) No. As I said, I have not published a
12 particular paper on that nor did I give a
13 reference other than Miller.

14 MR. WHITLEY: I guess this is a good time
15 for a break.

16 PRESIDING OFFICER HONIGBERG: All right.
17 We'll take a 10 to 15-minute break. We'll come
18 back at 25 minutes before 4.

19 (Recess taken 3:20 - 335 p.m.)

20 PRESIDING OFFICER HONIGBERG: Mr. Whitley?

21 MR. WHITLEY: Thank you.

22 BY MR. WHITLEY:

23 Q Thank you, Mr. Chair. Before I move on, I
24 neglected a couple of weather-related questions,

1 Dr. Johnson, so I'm going to finish those up and
2 can move on to the next one.

3 Wouldn't you agree with me that the
4 majority of rain events are of extremely small
5 amounts?

6 A (Johnson) It could be. I mean, it depends on
7 where you cut the line at the majority of rain
8 events.

9 Q Say, greater than 50 percent?

10 A (Johnson) Well, at what level? .1 centimeter,
11 .2 centimeter? In terms of the US, a lot of
12 times it's reported like a trace, 10th of an
13 inch per hour type of rates. 10th of an inch an
14 hour would be about .2 centimeters per hour.

15 Q And less than that amount, the frequency of
16 those rain events?

17 A (Johnson) When it gets down to trace, usually
18 those don't produce the final weather audible
19 noise on a line.

20 Q And are you speaking from any data that you've
21 reviewed?

22 A General experience and measurements monitoring
23 that we did back at the High Voltage
24 Transmission Research Center.

1 Q But you didn't provide any of that data though,
2 did you?

3 A (Johnson) No, I did not.

4 Q And in terms of the weather stations you use,
5 isn't it true that the location of the weather
6 station versus the type of topography where the
7 line is located can create a difference in
8 whether there's a rain event at one versus
9 another?

10 A (Johnson) I guess I'm not quite sure how I can
11 answer that question as far as how the
12 topography of a particular weather station site
13 would affect its measurement of rain rate.

14 Q Let me ask it this way. Wouldn't you agree that
15 at higher altitude there are more frequent rain
16 events?

17 A (Johnson) It would depend, I guess, maybe on the
18 location within the country.

19 Q I'm not speaking so generally that I'm talking
20 about the continental United States. Let's just
21 keep it to New England, for instance. I'll make
22 it more concrete. Wouldn't you agree that the
23 Mt. Washington Observatory observes more rain
24 events than a weather station in the valley

1 below?

2 A (Johnson) I guess it's possible. I've not
3 really checked to see if that's the case and
4 compared two close proximity stations.

5 Q Is that difference and wouldn't you agree that
6 that difference is due in part to the altitude?

7 A (Johnson) At this point, I'm not sure I'm
8 willing to agree to that.

9 Q Okay. Wouldn't you agree that one possible
10 reason for the difference is the topography?
11 The surrounding topography?

12 MR. WALKER: Mr. Chairman, I'm going to
13 object to this line of questioning. It seems
14 like it's beyond Dr. Johnson's stated expertise,
15 and also I question the relevance.

16 PRESIDING OFFICER HONIGBERG: I think Mr.
17 Johnson is capable of telling Mr. Whitley what
18 he doesn't know. He's already done it a few
19 times. At some point, I assume Mr. Whitley will
20 become discouraged and move on.

21 BY MR. WHITLEY:

22 A (Johnson) In regards to your question the
23 topography of where a station is sited, other
24 than just location, different location, its

1 events may be different.

2 Q Did you do any sort of a comparison between the
3 altitude of the weather stations that you used
4 with the location of the line? The altitude of
5 the location of the line?

6 A (Johnson) No. A one-to-one comparison, I did
7 not. I know that the weather stations are at
8 various altitudes and so is the line.

9 Q And did you or have you looked at any data for
10 rain falling on snow and the audible noise that
11 would result when rain falls on snow?

12 A (Johnson) No.

13 Q Wouldn't you agree that snow can dampen the
14 audible noise when it rains? The audible noise
15 from rain?

16 A (Johnson) It would depend. I've had situations
17 living in western Massachusetts that maybe
18 initially if you have a soft snowfall, but as
19 the rain continues, the noise would pick up.

20 Q Turning away from weather, your conclusions in
21 your report, you didn't do any sort of a
22 comparison of the segments that you modeled
23 versus the baseline monitoring that Mr. Bell
24 observed? For instance, Mr. Bell's Location

1 number 1, I'll represent to you, is the southern
2 end of the line in Deerfield. Did you do any
3 sort of a comparison of your modeling for S1-19
4 and S1-20 versus his ambient noise calculations
5 for Location number 1?

6 A (Johnson) No. I did not do a specific
7 one-to-one comparison or try and compare his
8 particular locations to what would be the
9 closest segments.

10 Q So you don't have any opinion on the increase
11 that may be observed at those locations where
12 Mr. Bell did his ambient recording analysis or
13 observation?

14 A (Johnson) No. I did not report that.

15 Q I want to just take a look at the segments that
16 you've modeled that I've just mentioned in
17 Mr. Bell's location 1. So one second. Let me
18 pull up first Mr. Bell's ambient observations.
19 I've just pulled up on Appendix 39 from
20 Applicant's 1. This is Table 2 and it is
21 actually going to be Tables 2 through 5. Do you
22 see that on the screen there?

23 A (Johnson) I see a Table 2.

24 Q Table 2. That's right, and Table 2, as it says

1 there, is a summary of winter daytime data, and
2 I represent to you that Location 1 and I believe
3 Mr. Bell confirmed earlier that Location 1 is in
4 Deerfield, towards the southern end of the line,
5 and you see that very top row there for Location
6 1 records the L 90 ambient audio noise level
7 winter daytime. Do you see that?

8 A (Johnson) That's correct. You're talking about
9 the 35 dBA value?

10 Q That's right. Now I'll go down to the next
11 table, Table 3, and you see the same row,
12 Location 1, winter nighttime L 90 ambient, 30
13 dBA?

14 A That's correct for Location 1, 30 dBA, and that
15 was nighttime.

16 Q Table 4, summer daytime data, Location 1, L 90
17 ambient, 34 dBA, you see that?

18 A (Johnson) Correct.

19 Q And then the last one, summer nighttime data,
20 Location 1, L 90 ambient, 22 dBA. Do you see
21 that?

22 A (Johnson) Correct. Yes.

23 Q So those nighttime values for those four
24 measuring periods, winter daytime, winter

1 nighttime, summer daytime, summer nighttime, the
2 ambient levels there are 35, 30, 34, and 22 as
3 we just went over. I want you to now look at
4 your modeling for S1-19 and S1-20.

5 A (Johnson) All right.

6 Q I'm going to direct you to, that's A-39 of your
7 report. So A-39 to Appendix 38.

8 A (Johnson) Are you sure you don't mean A-31 or
9 S-19?

10 Q I do mean A-39. Thank you.

11 A Okay. So page A-39. Appendix 38.
12 Cross-sections S1-19, S1-20.

13 Q No. I'm sorry. That's not correct. Sorry.
14 A-31. It is A-31. S1-19, S1-20. There we go.
15 So S1-19 and S1-20 at the right right-of-way
16 boundaries post-project in foul weather, the
17 modeled values are for S1-19, 42, one side of
18 the right-of-way, 40 on the other. For S1-20
19 again, post-project in fall weather, your model
20 was 42 on one side of the right-of-way and 38 on
21 the other. Isn't that accurate?

22 A (Johnson) That's correct, and you pointed out
23 that's in foul weather and yet you just jumped
24 from Mr. Bell's data which was fair weather data

1 nighttime and daytime so we need to compare the
2 fair weather values to compare oranges to
3 oranges.

4 Q That would be great. Mr. Bell didn't calculate
5 that weather.

6 A (Johnson) Foul weather.

7 Q Correct.

8 A (Johnson) He reported fair weather. If we look
9 at the fair weather values, they're 17, 15, 17
10 and 13.

11 Q So when you look at the scenario then,
12 Dr. Johnson, where you go from a fair weather
13 nighttime to one of the modeling results that
14 you've come up with for the S1-19 or S1-20
15 segments, at the boundary of the right-of-way,
16 at most, you're looking at an increase of about
17 20 dBA. At the least, you're looking at an
18 increase of about 8 dBA. And again, your model
19 was L 50. So -- I'm sorry.

20 A (Johnson) Could you explain how you're coming up
21 with those numbers like, I mean, I look at 17 to
22 42. Or 15 to 40. Fair to foul weather.

23 Q Tell me what you're looking at.

24 A I'm looking at S1-19 and S1 -- I'm sorry. I'm

1 looking fair to foul weather for the
2 post-project. Are you looking pre-project, what
3 are you comparing?

4 Q I'm comparing the, I'm comparing Mr. Bell's
5 ambient noise levels that he calculated.

6 A In fair weather.

7 Q In the fair weather to your post-project foul
8 weather modeling simulation.

9 A (Johnson) Okay. The measurements that Mr. Bell
10 made were measurements in fair weather. If we
11 want to look at what I modeled, we need to look
12 at the fair weather to compare them to
13 Mr. Bell's numbers in fair weather.

14 Q And what I'm asking, I understand what you're
15 saying, Dr. Johnson, but I'm asking you to
16 consider the scenario where you go from a fair
17 weather situation to a foul weather one,
18 post-project, and what the possible increase in
19 audible noise would be under that circumstance.

20 A (Johnson) Okay. If I understand correctly,
21 you're trying to posit going to a fair weather
22 value without any other lines being there, just
23 your background ambient, then in post-project
24 getting rain and what that level due to the

1 lines would be but without considering what
2 increase you might have simply because of the
3 rain.

4 Q That's correct.

5 A (Johnson) In that case, I believe as you pointed
6 out in this, Mr. Bell's measurements in fair
7 weather, range from, I think, around somewhere
8 in the 20s to low 30s. The calculations
9 post-project in rain and now rain as Mr. Miller
10 showed in his paper is going to be in the 40 dB
11 and up, 41 dB and up. So in the rain we're
12 going post-project 42, 40, 42, 38. So it's
13 going to be comparable to the levels one might
14 expect from Mr. Miller in rain, with porous
15 ground conditions.

16 Q In Mr. Bell's report, and I believe it may be in
17 yours as well, there's some discussion about the
18 human ear's ability to perceive a difference in
19 audible noise, and if it's not in your report,
20 I'm not trying to misrepresent what's in there,
21 but my understanding of the school of thought on
22 that is that if you're around 1 to 3 decibels
23 that's about the limit of perceptible sound. Is
24 that accurate?

1 A (Johnson) Well, you missed -- I guess the simple
2 answer is no.

3 Q Okay.

4 A (Johnson) I think what you're talking about is
5 what's considered a just noticeable difference,
6 how much of a dBA increase you'd need to be able
7 to perceive a change in the noise or sound
8 level. And Mr. Bell can correct me if he wants,
9 but the just noticeable difference is usually
10 considered around 3 dB.

11 Q Okay. So if you're below 3 dB.

12 A (Johnson) If there's a difference at that
13 amount, you're not going to notice it.

14 Q Okay. Okay. Maybe I didn't say it very
15 precisely, but yes. And my understanding, and
16 correct me if I'm wrong, but if you had a
17 difference of around 10 dB, that can be
18 perceived as a doubling of audible noise.

19 A (Johnson) If you see a change level of 10 dB,
20 yes. That's correct. That's an interpretation
21 of it.

22 Q Okay. So for those segments along the line and
23 the scenario that I just described where you go
24 from fair weather to post-project and foul

1 weather. If you have an increase consistent
2 with what we've discussed, that could be
3 perceived as a doubling of the audible noise,
4 could it not?

5 A (Johnson) You could see a 10 dB increase between
6 the lowest fair weather values and foul weather
7 levels, and in this respect, it would be
8 regardless of whether the line is there or not
9 just going to the foul weather conditions
10 because of the rain.

11 Q But if there was an increase of 10 dBs or more,
12 it would be perceived as a doubling of the
13 audible noise?

14 PRESIDING OFFICER HONIGBERG: Already got
15 that one.

16 A (Johnson) Yes.

17 Q Mr. Bell, I'm going to turn back to you now just
18 for a little bit. I want to chat with you about
19 the Report 3 of your report which is the section
20 related to the substation in Deerfield, and your
21 report again is Appendix 39 to Applicant's 1.
22 Okay. The Deerfield-specific portion begins on
23 page -- you see that, Mr. Bell?

24 A (Johnson) Yes.

1 Q So when you did your analysis of what would
2 happen after the substation was upgraded, you
3 selected some sound monitoring locations,
4 correct?

5 A (Bell) Correct.

6 Q And were any of those locations at the fence
7 line or the property line of Eversource's
8 property?

9 A (Bell) No.

10 Q Why not?

11 A (Bell) Our interest was to assess and determine
12 accurately the background sound levels at the
13 nearest receptor properties.

14 Q So if you moved, well, hold on a second. You
15 have a map of the locations that you selected.
16 Let me just put that up here real quick. You
17 see that on the screen there, Mr. Bell?

18 A (Bell) I do.

19 Q This is Figure 1 to your Report 3. And you have
20 up there, it looks like three intermittent
21 recording stations and one continuous monitoring
22 station. Is that correct?

23 A (Bell) That's correct.

24 Q And then towards the middle of the picture there

1 is the current substation in Deerfield, correct?

2 A (Bell) Correct.

3 Q And then just kind of down and to the left,
4 maybe southwest, if you will, although I don't
5 know where north is, there's a little red
6 square, and that is meant to represent the
7 proposed location of the additional substation
8 that would be built in Deerfield, correct?

9 A (Bell) Correct.

10 Q So I believe your answer was, you didn't select
11 the fence line of the property line because you
12 wanted to get a reading at a structure as
13 opposed to at the fence line or the property
14 line?

15 A (Bell) Where people might be to receive sound.

16 Q Isn't it true then that if you did in fact put a
17 sensor at the property line or the fence line,
18 your readings, your audio noise readings,
19 audible noise, excuse me, your audible noise
20 readings would be louder because you'd be closer
21 to the source of the audible noise?

22 A (Bell) Generally, as you get closer to a source
23 of audible noise the level goes up.

24 Q For the new substation that is proposed here,

1 did you do any calculations about how that would
2 impact the ambient noise level at 10 to 100
3 percent of operating capacity?

4 A (Bell) I did not do any analysis of the noise
5 emissions from the SVC facility.

6 Q When you say SVC, just clarify what you mean by
7 that?

8 A (Bell) To be honest, I don't know what the
9 acronym stands for, but it's a component that's
10 being used as part of this project to stabilize
11 voltage is my understanding.

12 Q Okay. But do you mean the SVC as in the
13 upgraded new location?

14 A (Bell) The expanded yard. The new facility.

15 Q Okay. Okay. For the existing substation, you
16 didn't do any recordings of the ambient noise
17 levels at 10 to 100 percent of operating
18 capacity, did you?

19 A (Bell) No. Not explicitly. We made
20 measurements over a week-long period twice at
21 the CM-1 monitoring location.

22 Q I want to direct you to the Acoustic Design Goal
23 for the substation which I believe is on page 5
24 of this portion of your report. Do you have

1 that in front of you, Mr. Bell?

2 A (Bell) I do.

3 Q Okay. You state here at the bottom of page 5
4 that the Acoustic Design Goal was limiting the
5 project to less than 5 dBA above the nominally
6 lowest sound levels measured during your
7 surveys, correct?

8 A (Bell) Correct.

9 Q And again, those nominally lowest, those are the
10 L 90 levels that you recorded.

11 A It's much more conservative than that. Would
12 you allow me to explain that? I think it would
13 be useful for the Board to understand that.

14 Q No, I think you stated it in your report, and
15 you have counsel here that can ask you to answer
16 that question.

17 So you state that the goal, at the bullet
18 there, the maximum sound level for continuous
19 sound produced by the operation of all equipment
20 located at the facility shall not exceed 29 dBA
21 at any existing occupied residential receptor
22 property when measured within the boundaries of
23 the receptor property. Correct?

24 A (Bell) Correct.

1 Q And I wanted to know what you meant by that
2 descriptive phase at the end, and I'll read it
3 again. Existing occupied residential receptor
4 property when measured within the boundaries of
5 the receptor property.

6 Are you meaning within the property line?

7 A (Bell) Within the property boundaries, yes.

8 Q Okay. Why not use within the property line?

9 A (Bell) It's semantics as far as I'm concerned.
10 Maybe I don't know what the difference is.

11 Q Okay. But you have some language in here about
12 any existing occupied residential receptor
13 property. So if there was a residential
14 property that wasn't occupied, the acoustic
15 design goal wouldn't apply to that property.

16 A (Bell) That's correct.

17 Q And why not?

18 A (Bell) It's, there's nobody there to respond to
19 it.

20 Q But suppose that property became occupied?
21 Would the Acoustic Design Goal then apply?

22 A (Bell) The Acoustical Design Goal is for as-is
23 conditions at the site.

24 Q And how did you determine whether the existing

1 residential receptor properties were occupied or
2 not?

3 A (Bell) That's not even for me to determine.
4 That would be more the design team to design
5 their facility to meet the goals that we've set.

6 Q Did you do any sort of a verification among the
7 monitoring locations to see if they were, if
8 they fit this criteria?

9 A (Bell) Certainly monitoring locations where we,
10 the north monitoring location was in front of an
11 occupied home on Cate Road or at a transition of
12 Cate Road. The western location which would be
13 labeled IM-N which was in front of an occupied
14 home, IM-W was at an occupied home and IM-S is
15 along Nottingham Road where there were a number
16 of occupied homes along that road.

17 Q You're looking at the Figure 1 again?

18 A Figure 1. Yes.

19 Q Let me just pull that up and you can say that
20 again. Just give me one second.

21 Okay, Mr. Bell. Can you repeat what you
22 just responded with?

23 A (Bell) That IM-N is in front of an occupied
24 home. IM-W is at an occupied, on the street in

1 front of an occupied home. IM-S is not directly
2 adjacent, but is in sort of at the right-of-way,
3 but there are many occupied homes on Nottingham
4 Road in that area.

5 Q It appears from that map that there are other
6 residences in the area that were not used as
7 monitoring locations. Wouldn't you agree with
8 that?

9 A (Bell) Yes.

10 Q Do you know whether any of those are occupied or
11 not?

12 A (Bell) I can't state at this moment, no.

13 Q And if they were not occupied, I believe you
14 said that it wouldn't apply because it's as-is
15 right now.

16 A (Bell) That's correct.

17 Q I note, Mr. Bell, that in your report, I don't
18 believe that you offered an overall opinion on
19 whether the addition of the substation would
20 have little, minimal or significant impact on
21 audible noise. Isn't that correct? I believe
22 the sum total of your testimony is an Acoustic
23 Design Goal and not an actual opinion on the
24 impact of the project on audible noise.

1 A (Bell) I think you should turn your attention to
2 page 6 of that report.

3 Q Which report are you talking about?

4 A (Bell) Report number 3 that you were referencing
5 that we're looking at right now. Last sentence
6 of that, and I'll read it.

7 It is my professional opinion that as sound
8 produced by the proposed project meets the
9 above-stated acoustic design goals, it will not
10 produce a noticeable impact on the acoustic
11 environment and will not have an unreasonable
12 adverse affect at all surrounding properties.

13 Q So is it fair to say in the absence of
14 compliance with your design goal that this
15 conclusion, it wouldn't hold.

16 A (Bell) If the impacts of the SVC were greater
17 than the design goal that was established, then
18 the impacts, there might be, you might consider
19 that the impacts would be more significant. I
20 haven't had a chance to evaluate what that
21 significance would mean.

22 Q I think from the way you phrased it, I think
23 that if the acoustic design goal is not
24 satisfied it would produce a noticeable impact,

1 and, therefore, would have an unreasonable
2 adverse effect on the surrounding property.

3 A (Bell) I think you're making the jump from the
4 fact that a one decibel incremental change would
5 go from not noticeable to adverse, and I don't
6 agree with that characterization.

7 Q I'm just trying to understand what your opinion
8 is. That's why I'm asking the question. So I
9 believe you've answered it, but that's why I was
10 asking the question.

11 In that sentence that you just read to me
12 there, at the end, that is limited to Sound
13 Report 3, is it not?

14 A (Bell) I believe similar sentences appear in
15 other reports.

16 Q Okay. So, again, your report is broken down
17 into the Deerfield substation, the Franklin
18 converter station, the Scobie Pond station.

19 A (Bell) That's correct.

20 Q And then the baseline monitoring and then
21 construction impacts, correct?

22 A (Bell) That's correct.

23 Q So you believe that the other sections have a
24 similar sentence or conclusion attached to them?

1 A (Bell) I do. Because we developed acoustic
2 design goals for each of those facilities as
3 well.

4 Q Okay. But you're assuming that the other
5 reports have similar statements in them, and
6 that's not the same, though, as saying that the
7 entire project, the entire length of the line
8 doesn't have an adverse unreasonable impact on
9 audio noise values, is it?

10 A (Bell) Not from those reports, that's correct.

11 Q And you didn't look at that. That was not your
12 task to evaluate the length of the line and
13 render an opinion on the length of the line, was
14 it?

15 A (Bell) It was not.

16 Q That's all I have. Thank you, gentlemen.

17 PRESIDING OFFICER HONIGBERG: All right.

18 Next up. I have the Grafton County

19 Commissioners. I did see Ms. Saffo here.

20 **CROSS-EXAMINATION**

21 **BY MS. SAFFO:**

22 Q My questions are for Mr. Bell. How are you
23 today?

24 A Fine. Thank you.

1 Q So I'm going to be drawing your attention to
2 construction noise, and that would be Report 5
3 of Appendix 39. I have it as Volume XXXII. And
4 you, obviously, did a detailed report. It's 275
5 pages long. But is it fair to say the Report 5
6 is way at the end and is relatively short?

7 A (Bell) Yes.

8 Q And in fact, when we deal with construction
9 noise, the analysis is really one paragraph,
10 with nine sentences in it, correct?

11 A (Bell) I'm not sure what you're suggesting here.

12 Q Well, I'm just suggesting that when we talk
13 about the underground transmission lines in
14 construction and the noise levels, it's a pretty
15 small part of your report, correct? I have it
16 on page 266 as one paragraph, and about halfway
17 down, it has a bold caption, Underground
18 Transmission Line Construction.

19 A (Bell) Yes.

20 Q So I'd like to go through those particular lines
21 if you don't mind. Now, when you wrote this
22 report, what was your understanding of how much
23 underground lines there was going to be?

24 A (Bell) It was significantly less than is in part

1 of the plan now. As to the exact length, I
2 can't give you.

3 Q Exactly, but it was a lot less than as it turned
4 out, correct?

5 A Yes.

6 Q So now like for Grafton County, for example,
7 there's over 60 lines of underground
8 transmission lines, correct?

9 A (Bell) I'm sorry. I don't know what, all towns
10 involved in Grafton County so --

11 Q Sure. Grafton County is the Bethlehem, Easton,
12 Franconia, it actually goes all the way to
13 Plymouth, but I'm focusing right now on Route
14 116.

15 A (Bell) Yes.

16 Q And then obviously it turns on to Route 112
17 which is also Kancamagus Highway. Are you
18 familiar with that?

19 A (Bell) I'm familiar with the roads that you
20 listed, yes.

21 Q Okay. Because the Kancamagus area is
22 significantly wider road. Easton is a much more
23 narrow road and has many more houses and
24 residents along the way; is that your

1 recollection?

2 A (Bell) I can't speak specifically to that level
3 of detail.

4 Q Okay. Now, so the first line of your report
5 says the high voltage direct current, HVDC,
6 underground transmission line will be routed in
7 public highway rights-of-way, correct?

8 A (Bell) That's what it states, yes.

9 Q Is that still your understanding as far as the
10 underground portion, the 60-mile portion?

11 A (Bell) I'm sorry. I can't speak specifically to
12 that.

13 Q Okay. So when you considered the noise impact
14 of construction during the underground lines,
15 did you take into account where those lines
16 would be buried and the type of equipment that
17 would be needed?

18 A (Bell) Yes.

19 Q So when you're looking at Route 116, for
20 example, do you agree that the rights-of-way are
21 more narrow than other portions of this project?

22 A (Bell) I'm sorry. I can't speak specifically to
23 that without better information.

24 Q So when you took into account noise, did you

1 take into account the need to cut down trees?

2 A (Bell) With respect to the underground
3 transmission line that was not discussed, no.

4 Q Okay. Was it your understanding that it all
5 would be underneath pavement?

6 A (Bell) No.

7 Q What was your understanding?

8 A (Bell) That there would be areas where it would
9 not be underneath pavement as well. Certainly
10 in the northern sections, that would be the
11 expectation, some of the areas where the
12 underground transmission lines were at the time.

13 Q So your expectation in considering noise was
14 that some would be under pavement and some would
15 be under not pavement?

16 A (Bell) That's correct.

17 Q How would you describe not pavement?

18 A (Bell) There would be open areas where the
19 trenches would be laid, yes.

20 Q What about if those areas weren't open? Meaning
21 there's currently trees, houses, stone walls,
22 ledge, things of that nature. Did you take that
23 into account?

24 A (Bell) With regards to the equipment used with

1 the exception of tree removal, yes.

2 Q Okay. So would it surprise you to know that as
3 far as this much more longer segment than what
4 you anticipated when writing this report, there
5 would be a number of areas why we're looking at
6 tree removal, perhaps ledges, rock, things of
7 that nature?

8 A (Bell) I wouldn't be surprised if that would be
9 part of the process, no.

10 Q Okay. And your report goes on to the process
11 for installing underground transmission lines is
12 similar to that of laying underground piping,
13 correct?

14 A (Bell) Yes.

15 Q And pavement saw cutters, backhoes, excavators,
16 trenches and vacuum trucks would be used to
17 prepare trenches, correct?

18 A That's what it states, yes.

19 Q And then you had conduits for the cable
20 materials will be placed in trenches and covered
21 and the trenches would be backfilled, correct?

22 A Correct.

23 Q And then it went on to say extended work will
24 be required to construct the transition

1 stations, correct?

2 A That's correct.

3 Q And to perform horizontal direction drilling or
4 jack and bore operations at certain locations,
5 correct?

6 A That's correct.

7 Q And that noise mitigation plans would be
8 required in those locations, correct?

9 A That's correct.

10 Q Okay. And that's pretty much what your report
11 has until you reach the conclusion, correct?

12 A That's correct.

13 Q So as it turns out, there's going to be a lot of
14 drilling, correct?

15 A (Bell) I don't know that.

16 Q Okay. What have you been told as far as how
17 much drilling will be required now?

18 A (Bell) I don't have any information to that
19 effect.

20 Q So you couldn't comment on the noise?

21 A (Bell) I can comment on the noise from drilling.
22 I've experienced measured noise from those
23 activities.

24 Q Yeah. And one of the things you note in your

1 conclusion was that construction noise can be
2 temporary in nature, correct?

3 A (Bell) That's correct.

4 Q And that's certainly the hope, correct?

5 A (Bell) It is the reality that in most cases it
6 is that way.

7 Q So, however, if you're looking at a 60-mile
8 underground operation, and are you familiar with
9 the notion that they're hoping to cover 20 feet
10 to 100 feet a day in doing the underground
11 construction?

12 A (Bell) I have not heard those numbers, though.

13 Q Okay. So just presuming those numbers are
14 accurate?

15 A (Bell) Um-hum.

16 Q I'd like you to presume that they're able to go
17 50 feet a day, okay?

18 A Okay.

19 Q So if you want to go one mile going 50 feet a
20 day, that would be 105 days, correct? I can do
21 the math.

22 A (Bell) I can do the math. That's close to
23 correct. Yes.

24 Q Exactly. I did on my calculator on my phone.

1 So 105 days of construction noise is a lot of
2 construction noise, correct?

3 A (Bell) Well, your characterization that you
4 would hear something that's a mile away is
5 incorrect.

6 Q Well, do you think you'd be hearing this sort of
7 noise a quarter-mile away?

8 A (Bell) I think that typically with construction
9 noise, the distances once we get to 500 to 1000
10 feet are typically where the impacts become
11 relatively small, particularly along roadways.

12 Q Okay. So if you're in a house, and there is
13 this construction going on a quarter-mile away,
14 you don't think you'll hear that noise or be
15 impacted by that noise?

16 A (Bell) Minimally.

17 Q Okay. And then as it gets closer and closer to
18 you, within 500 feet, you will be impacted by
19 it, correct?

20 A I believe so.

21 Q So within 500 feet, that would be ten days of
22 noise within 500 feet on either side of a
23 residence so 20 days total.

24 A (Bell) Again, with it tapering significantly.

1 It's only, the significant portion of the noise
2 is when it's directly adjacent to the property.

3 Q So a house, though, if I live on one of these
4 roads and that's my house, there's going to be
5 considerable noise for 500 feet or even, let's
6 say, 100 feet this way and 100 feet this way.
7 You'll agree to that at least?

8 A Certainly.

9 Q For the animals living within this area, they'd
10 be experiencing that noise as well, correct?

11 A (Bell) I would presume if there was an animal in
12 the proximity, they would hear it as well. Yes.

13 Q Dogs?

14 A (Bell) Yes.

15 Q Okay. So as far as wildlife, did you take into
16 account the impact of construction noise of this
17 magnitude over this period of time for the
18 wildlife in the area?

19 A (Bell) I did not.

20 Q Or animals such as dogs that have a higher
21 ability to hear than people like me. Would you
22 agree that they would be impacted by the noise
23 more than human beings?

24 A I don't have any expertise on animal hearing.

1 Q But is it your understanding that dogs have a
2 keener sense of hearing than people?

3 A (Bell) No.

4 Q Okay. Is it correct that there was no sound
5 monitoring done near the proposed burial route
6 from Bethlehem to Bridgewater?

7 A (Bell) I'm sorry. I don't know the term you
8 just used. The proposed?

9 Q Was there any sound monitoring done near the
10 proposed burial route?

11 A (Bell) There were -- I don't know. I can't
12 answer that question. I have not compared the
13 underground route to where we measured.

14 Q Okay. And to your defense, it wasn't the plan
15 when you did your report, correct?

16 A (Bell) That's correct.

17 Q And is it correct that your report doesn't
18 contain a full list of proposed construction
19 equipment, typical decibel levels for any
20 equipment, typical duration of use for any
21 equipment? Actually, I'll take it one step at a
22 time. I'm giving you too much at once.

23 Is it correct your report doesn't contain a
24 full list of proposed construction equipment?

1 A That's correct.

2 Q Like, for example, it couldn't include cranes
3 that would be needed for the bunkers, correct?

4 A (Bell) When you're describing bunkers, I'm not
5 familiar with the term.

6 Q I might be using a different term than you. My
7 understanding is the vaults, like every 160
8 feet, I think it is, there's going to be vaults.

9 A Um-hum.

10 Q Is it fair to say those --

11 A (Bell) If it's part of the construction process,
12 then the crane would be part of that. That may
13 be possible, yes. Construction activities vary
14 from project to project always and the equipment
15 used varies depending on site conditions.

16 Q And so your report doesn't include the equipment
17 that would be used in this particular project to
18 bury the lines over the 60-mile area?

19 A (Bell) We looked at a generic list of equipment
20 that is typically used but not to the level of
21 specificity that you're suggesting.

22 Q And did you include equipment to bury the
23 vaults?

24 A (Bell) Would that be including graders and

1 backhoes? I don't know what -- you should
2 discuss what equipment you're suggesting.

3 Q So did anybody before you prepared your report
4 outline what equipment would be used to bury the
5 vaults for you?

6 A (Bell) I had meetings with the construction team
7 with regards to the typical equipment that they
8 expected to be using for these projects.

9 Q Okay. And your report doesn't include any
10 typical decibel levels for any equipment,
11 correct?

12 A (Bell) It does not.

13 Q And your report doesn't include any typical
14 duration for use of any equipment, does it?

15 A (Bell) No, it does not.

16 Q And your report doesn't include any estimates of
17 construction decibel levels at any locations,
18 correct?

19 A (Bell) It does not.

20 Q Okay. Does your report address any local limits
21 on construction noise?

22 A (Bell) We do not specifically discuss local
23 limits, but for the most part construction noise
24 is regulated through operation times in

1 localities as opposed to specific levels, and
2 those are discussed in this report.

3 Q One of the things you said in you report is it's
4 going to be for the most part limited to daytime
5 noise, correct?

6 A That's correct.

7 Q Whenever I see "for the most part," then I
8 wonder about the other part that's not the most
9 part. Do you have any examples of what would
10 not happen during daytime hours?

11 A There are particular construction activities
12 that might require a continuous process. When
13 you're pouring foundations, for example, then a
14 construction team may need to get a variance to
15 continue that activity beyond the local
16 requirements, local regulations. It's common,
17 again, practice in certain activities that they
18 might have to go beyond those hours. It can
19 happen.

20 Q And there's going to be a lot of concrete
21 pouring in this particular operation, correct?

22 A (Bell) As to whether those would need to be
23 continuous pours or not, I don't know.

24 Q So no one's told you one way or the other.

1 Now, I do have a husband that pours
2 concrete for a living so one of the things
3 that's a variable in that is weather. You know,
4 if it's raining, how quickly concrete has set.
5 Has anybody discussed that with you?

6 A (Bowes) No.

7 Q Okay. Can you describe an assessment of what
8 you would consider noise levels and vibrations
9 generated by the HDD, the horizontal drilling
10 equipment?

11 A I cannot. No.

12 Q Do you consider that typical equipment?

13 A (Bell) Certainly horizontal drilling is an
14 activity that's commonly done, yes.

15 Q And you noted performing horizontal direction
16 drilling or what you wrote here was extended
17 work will be required to construct the
18 transition statements, underground to overhead
19 transitions, and to perform horizontal direction
20 drilling or jack and bore operations at certain
21 locations.

22 Has anybody shown you those certain
23 locations?

24 A (Bell) No.

1 Q So you didn't take those certain locations into
2 account, have you?

3 A (Bell) I don't think they'd been totally
4 determined at the time that we were providing
5 this discussion.

6 Q Yeah, and that's one of our concerns. So right
7 now there's going to be significant horizontal
8 drilling in the town of Franconia, it's
9 anticipated, to get under the Gale River.
10 That's right in downtown. So do you have an
11 estimate as to how much time it might take to do
12 HDD under something like the Gale River, the
13 magnitude of that?

14 A (Bell) You'd be better off discussing that with
15 the construction team.

16 Q So you didn't take into account, for example --
17 well, never mind. Strike that. You already
18 said that.

19 Now, you also then didn't measure like
20 noise-sensitive areas along this underground
21 portion, have you?

22 A (Bell) I'm not sure what you're saying, measure
23 noise-sensitive areas.

24 Q So along the way did you stop at noise sensitive

1 areas and consider what kind of drilling and
2 what type of construction is going along those
3 areas?

4 A (Bell) No. Not specifically.

5 Q So did you report address the effects of
6 construction noise on like migratory fish,
7 wildlife species, things like that?

8 A No.

9 Q Did your report address the effects of
10 construction noise on particular residents who
11 might be home all day?

12 A (Bell) The expectation is that there are going
13 to be acoustic impacts at residences during the
14 day which are typical of construction activities
15 that occur on a regular basis such as paving a
16 road or other type activities.

17 Q But my road recently got paved. That didn't
18 take more than a day. Correct?

19 A I don't know how long it took.

20 Q But paving generally, when you're doing the
21 paving, it's generally a day to get a good
22 portion of the road done, correct?

23 A (Bell) Again, I think it varies.

24 Q And paving doesn't include drilling, trenching,

1 anything of that nature?

2 A No.

3 Q Okay. So it's fair to say your report doesn't
4 address any recommendations from Fish & Game,
5 Natural Heritage Bureau, United States Fish &
6 Wildlife Service. You haven't addressed any of
7 that with construction noise?

8 A (Bell) That's correct.

9 Q And so you did indicate that it was your
10 professional opinion that sound produced by the
11 construction of the proposed Northern Pass
12 project would not have an unreasonable adverse
13 effect in the community, correct?

14 A (Bell) That's correct.

15 Q So the towns that this is going through for
16 miles so this project will be going on and the
17 noise will be occurring in those towns for over
18 100 days, you don't consider that to be an
19 adverse effect on the community to have that
20 level of noise going on for entire seasons?

21 A (Bell) First of all, your suggestion of 100 days
22 I think is large for most activities.

23 Q Um-hum.

24 A I have a lot of experience with construction

1 projects and sound along construction projects,
2 and it's my opinion that they can be constructed
3 in a way that will minimize impacts to the
4 adjacencies and the residences along the route.

5 Q You can minimize impacts, of course?

6 A Um-hum.

7 Q And that, I'm sure, will be everybody's goal,
8 but you can't take away the impact, correct?

9 A That is correct. There will be noise received
10 by receptors.

11 Q And for this 52 mile swath, there will be noise
12 for a very long time along that 50-mile route,
13 right?

14 A In sections as the process proceeds, yes.

15 Q So Grafton County as a whole will be
16 experiencing high level of noise over a
17 significant period of time, correct?

18 A (Bell) There will be construction activity
19 through Grafton County, I would presume, for an
20 extended period of time.

21 Q Two and a half years by your report's estimate?

22 A That's for the, that was what we were told was
23 the entire duration of the entire project. I do
24 not have an estimate as to what the length of

1 time the underground section will take and what
2 the schedule is and how would it be possibly
3 divided up.

4 Q So if we were given the length of time of 20
5 feet to 100 feet a day, and then possibly
6 multiple teams going on at the same time, 20
7 feet to 100 feet a day over 52 miles is a very
8 long time, correct?

9 A I have no idea with respect to how many times
10 might be involved so I can't answer that. No.

11 Q Nor do we. It's like not only do you not know
12 that, we don't know that, correct?

13 A I don't know that.

14 Q I believe I have no further questions. Give me
15 one second to look at my notes.

16 One of the things you wrote, this is in
17 your Prefiled Testimony, page 7 of 8, line 22,
18 you say, during the detailed design process and
19 during construction, areas where activities may
20 occur for an extended periods of time will be
21 identified.

22 So do you know if those areas have yet to
23 be identified to anybody?

24 A I do not.

1 Q And then you go on to say the need for noise
2 mitigation measures at those locations will
3 depend on proximity to sensitive receptors and
4 the anticipated duration of sound impact.

5 Are you aware of any of those noise
6 mitigation measures being outlined for any of
7 the residents yet?

8 A (Bell) I do not.

9 Q And you do agree that construction noise is
10 difficult to control, correct?

11 A (Bell) Due to its mobile nature, yes.

12 Q Thank you. No further questions.

13 PRESIDING OFFICER HONIGBERG: All right.
14 Next on the list is the Forest Society.
15 Attorney Boepple? Off the record.

16 (Discussion off the record)

17 **CROSS-EXAMINATION**

18 **BY MS. BOEPPLE:**

19 Q I have just one question for you, Dr. Johnson.
20 Are you a meteorologist?

21 A (Johnson) No. I'm not trained as a
22 meteorologist.

23 Q Thank you. Mr. Bell, I have a couple of
24 questions for you. And I apologize. I should

1 have introduced myself first. Elizabeth Boepple
2 representing the Forest Society.

3 Mr. Bell, could you explain to me how the
4 scope of work was defined when you were retained
5 to work for Northern Pass?

6 A (Bell) I'm just trying to think back to that
7 period of time. It was a long time ago. The
8 initial contact I had was with regards to
9 discussions of assessing sound impact associated
10 with three fixed facilities of the Northern Pass
11 project which were the Scobie Pond, the
12 Deerfield substation expansion and the Franklin
13 converter terminal.

14 Q So it was very site specific.

15 A (Bell) Correct.

16 Q And your testimony is that it extended beyond
17 those three sites, correct?

18 A (Bell) I'm sorry?

19 Q Your Prefiled Testimony describes the scope of
20 your work as being more than those sites.

21 A (Bell) Yes. Our scope also then was later
22 expanded to include doing sound surveys along
23 the project route and to provide an assessment
24 of construction noise impacts.

1 Q Right. And you've already testified that the
2 construction noise impacts was done at a time
3 when the proposed route did not include
4 approximately 60 miles underground, correct?

5 A (Bell) That's correct.

6 Q And when the scope of your work was expanded
7 beyond those three sites, was that through
8 recommendations that you made or was that in
9 dialogue with your client?

10 A (Bell) It was requested by my client.

11 Q When you're engaged to provide your expertise,
12 do you make recommendations to your client about
13 the scope of work that they might want to
14 consider?

15 A (Bell) There is quite often a dialogue to that
16 effect, yes.

17 Q And have you ever considered in the scope of
18 work whether wildlife, for example, the effect
19 of noise of a project on wildlife should be
20 considered?

21 A (Bell) I did not. No.

22 Q I know you did not in this case. Do you in the
23 scope of your work for other projects ever
24 consider that or is that beyond the scope of

1 your --

2 A That's beyond my expertise. I do not.

3 Q Okay. So when you're retained to do work and
4 assess sound impacts, it's focused exclusively
5 on what?

6 A (Bell) Human receptors.

7 Q Could you say that again?

8 A (Bell) Human receptors.

9 Q Okay. So can we put that in English? That
10 means on people?

11 A People. Sure.

12 Q So that means businesses and homes? Where
13 people live, where people work, correct?

14 A (Bell) That's correct.

15 Q Okay. You also just, I believe you just
16 testified that construction impacts are
17 temporary, correct?

18 A (Bell) That is correct.

19 Q But part of your work for this project was to
20 assess the impact of the construction noise,
21 correct?

22 A (Bell) Yes.

23 Q Okay. So while it's temporary, don't you also
24 have to assess how that construction noise is

1 going to impact the business in a given
2 community, for example? Since that's a human
3 receptor, correct?

4 A (Bell) With respect to the human perception of
5 the sound, yes. Not in how it would affect
6 perhaps the business itself.

7 Q So did you do that in the construction noise
8 component of your report?

9 A (Bell) We have looked at the types of equipment
10 used for construction and have concluded that
11 the sound impacts can be controlled and
12 mitigated so that they would not create
13 significant undue adverse impact.

14 Q Isn't it true that how sound is heard, including
15 construction noises and construction trucks,
16 depend on the site location?

17 A (Bell) Could you rephrase that, please?

18 Q Isn't it true that noises and how they are
19 delivered to someone sitting 100 feet away
20 depends in part on what the environment is in
21 which the sound is made? For example, we're
22 sitting in this room and the sound is being
23 amplified, but if I step back and I'm projecting
24 to you, that's a different way for the sound to

1 be delivered, correct?

2 A (Bell) That's correct.

3 Q So it depends on the environment in which the
4 sound is being created, correct?

5 A (Bell) I think perception of sound is affected
6 by the acoustic environment, yes.

7 Q Okay. So when you say that construction noises
8 would not necessarily be heard a quarter of a
9 mile away, can you say that with absolute
10 certainty unless you know the environment in
11 which that construction noise is being created?

12 A (Bell) I agree that under certain circumstances
13 you might even hear construction noise at those
14 kind of distances.

15 Q Okay. Thank you. And you did not do an
16 assessment of that, is that correct? You didn't
17 take, for example, the entirety of the line and
18 say, let's see what the construction impact will
19 be and what the extent of it might be at any
20 given point on the line?

21 A (Bell) We did not do any modeling to estimate
22 levels of construction noise. That's correct.

23 Q Okay. So isn't it fair to say that you really
24 can't make a statement that the construction

1 noise of this project would not have an adverse
2 effect?

3 A My experience with construction noise, indicates
4 to me that I do not believe that it will have an
5 undue adverse impact. That's correct.

6 Q But you did not look at that specifically on
7 this entire route, correct?

8 A I did not model sound impacts for this route.

9 Q So --

10 A That's not --

11 Q Okay. Thank you. No other questions.

12 PRESIDING OFFICER HONIGBERG: All right. I
13 think we're going to break here. Let's go off
14 the record for a minute.

15 (Discussion off the record)

16 PRESIDING OFFICER HONIGBERG: We're
17 adjourning for the day, and we'll resume
18 tomorrow morning at the 9 o'clock.

19 (Hearing adjourned at 4:40 p.m.)

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C E R T I F I C A T E

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

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

Dated at West Lebanon, New Hampshire, this 20th day of April, 2017.

Cynthia Foster, LCR