

STATE OF NEW HAMPSHIRE  
SITE EVALUATION COMMITTEE

NOVEMBER 27, 2012 - 1:27 p.m. DAY 6  
Concord, New Hampshire AFTERNOON SESSION ONLY

IN RE: SITE EVALUATION COMMITTEE:  
DOCKET NO. 2012-01: Application  
of Antrim Wind, LLC, for a  
Certificate of Site and Facility  
for a 30 MW Wind Powered Renewable  
Energy Facility to be Located in  
Antrim, Hillsborough County,  
New Hampshire.  
(Hearing on the merits)

PRESENT: SITE EVALUATION COMMITTEE:

|  |                                    |
|--|------------------------------------|
| Kate Bailey, Engineer<br>(Presiding Officer) | Public Utilities Comm.             |
| Amy L. Ignatius, Chrmn.                      | Public Utilities Comm.             |
| Harry T. Stewart, Dir.                       | DES - Water Division               |
| Johanna Lyons, Designee                      | Dept. of Resources &<br>Econ. Dev. |
| Craig Green, Designee                        | Dept. of Transportation            |
| Brad Simpkins, Dir.                          | DRED-Div. Forests & Land           |
| Ed Robinson, Designee                        | Fish & Game Department             |
| Richard Boisvert, Designee                   | Div. Historic Resources            |
| Brook Dupee, Designee                        | Dept. Health & Human Svs.          |

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Kenneth Kimball

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1 (Whereupon the hearing resumed after the  
2 lunch break at 1:27 p.m.)

3 MS. BAILEY: We're back on the  
4 record, and we are going to have the last  
5 applicant witness, Mr. Colin High.

6 You may proceed.

7 (WHEREUPON, COLIN HIGH was duly sworn  
8 by the Court Reporter.)

9 COLIN HIGH, SWORN

10 DIRECT EXAMINATION

11 BY MS. GOLDWASSER:

12 Q. Good afternoon, Dr. High. Can you please  
13 state your name and address for the record?

14 A. Good afternoon. My name's Colin High. My  
15 business address is Resource Systems Group,  
16 also known as RSG, Inc., at 55 Railroad Row,  
17 White River Junction, Vermont, 05001.

18 Q. Thank -- go ahead.

19 A. My employment qualifications are -- have been  
20 given before. But briefly, I'm one of the  
21 co-founders and a principal consultant for  
22 Resource Systems Group.

23 Q. What is your -- oh, go ahead.

24 A. And I was formerly a member of the faculty at

1 Dartmouth College and at Columbia University  
2 in New York, where I, in both cases, taught  
3 environmental sciences, including meteorology  
4 and matters related to climate change.

5 Q. What is your role in the Antrim Wind Project?

6 A. I have led a group that has analyzed the  
7 environmental, particularly air quality and  
8 greenhouse gas impacts of the operation of  
9 the wind farm and how it displaces generation  
10 at fossil fuel plants in the New England  
11 power market -- the ISO New England region.

12 Q. Does your report also include an analysis of  
13 water usage?

14 A. Yes. It also provides an evaluation of the  
15 amount of water consumption that will be  
16 avoided by the operation of this plant  
17 through the displacement of generation at  
18 fossil fuel facilities.

19 Q. Are you the same Colin High who submitted  
20 prefiled testimony in this docket which has  
21 been marked as Exhibit AWE 1?

22 MS. GOLDWASSER: And for the  
23 Committee, that would be contained in Volume  
24 1, Section 6.

1 A. Yes.

2 BY MS. GOLDWASSER:

3 Q. And did you also submit supplemental prefiled  
4 testimony in this docket which has been  
5 marked as Exhibit AWE 9?

6 MS. GOLDWASSER: And for  
7 purposes of the Committee, that's Exhibit 9,  
8 the fourth supplement to the Application in  
9 Tab B6.

10 A. Yes.

11 BY MS. GOLDWASSER:

12 Q. Do you have any corrections or updates to  
13 either your prefiled or your supplemental  
14 prefiled testimony?

15 A. No.

16 Q. Beginning -- excuse me.

17 If you were asked the same questions  
18 contained in Exhibit 1 and 9 today under  
19 oath, would your answers be the same as those  
20 contained in Exhibits 1 and 9?

21 A. Yes.

22 Q. Okay. I'm going to ask you a few questions  
23 in response to supplemental testimony that  
24 was filed in this case on the same day that

1           you filed supplemental testimony. I'm going  
2           to refer you to Exhibit IWAG 2, which is  
3           Ms. Linowes' supplemental testimony dated  
4           October 11th, 2012.

5                     (Witness reviews document.)

6   A.    Thank you. Now I have that document.

7   Q.    Ms. Linowes, beginning on Page 3 of her  
8           testimony, provides an analysis regarding the  
9           ability of wind energy plants to offset  
10          demand in the New England market. Is there  
11          anything you would like to say in response to  
12          Ms. Linowes' testimony?

13   A.    Yes. I feel that she misinterprets the  
14          information provided in that report, in the  
15          sense that she implies that the plants will  
16          have to be displaced in order to achieve  
17          environmental benefits.

18                 And what actually happens is that the --  
19                 when you generate electricity with wind, it  
20                 will -- it becomes like a must run facility.  
21                 It displaces those units which are on the  
22                 margin of those hours when it's running. And  
23                 as a result, it reduces the amount of fossil  
24                 fuel burned and reduces greenhouse gases and



1 reduces conventional air pollutants, such as  
2 NOx, sulfur dioxide, et cetera.

3 And it also, because it reduces  
4 generation, it reduces the need for cooling  
5 water and other operational uses. So it  
6 reduces the consumption of water in the whole  
7 New England system when that's going on.

8 So it provides clear environmental  
9 benefits. And these benefits are  
10 attributed -- or should be attributed  
11 directly to the generation by wind. And it  
12 isn't necessary for a plant -- for a wind  
13 farm to actually cause a power plant to be  
14 closed down or retired in order to achieve  
15 these reductions. These reductions occur  
16 simply because the existing fossil-fuel  
17 dispatched plants are generating less.

18 Q. In the same supplemental testimony  
19 Ms. Linowes testified about a report by the  
20 Department of Energy called the "20 percent  
21 Wind Energy by 2030" report. She indicates  
22 that that report supports her conclusions.  
23 Have you reviewed that report?

24 A. Yes, I've reviewed at least those sections

1           which are relevant.

2       Q.    And does that report change any of the  
3           conclusions that you draw in your testimony,  
4           report and supplemental testimony?

5       A.    No, it doesn't change it at all, nor does it  
6           change what I've just said a few minutes ago.

7       Q.    In her same testimony, Ms. Linowes testifies  
8           that the New England Wind Integration Study  
9           supports her conclusions. Have you reviewed  
10          that report?

11      A.    Yes.

12      Q.    And does that report change any of the  
13           conclusions that you draw in your testimony,  
14           report, or supplemental testimony?

15      A.    No, it doesn't.

16                       MS. GOLDWASSER: The witness  
17           is available for cross-examination.

18                       MS. BAILEY: Thank you. So  
19           now I think we're going to start with Counsel  
20           for the Public. Is that correct? Oh, sorry.  
21           No, I'm one witness ahead.

22                       Okay. Mr. Froling.

23                       MR. FROLING: No questions.

24                       MS. BAILEY: Is Mr. Beblowski

1           here?

2                   (No verbal response.)

3                   MS. BAILEY:   Mr. Jones?

4                   (No verbal response)

5                   MS. BAILEY:   Ms. Sullivan?

6                   (No verbal response)

7                   MS. BAILEY:   Ms. Osler?

8                   (No verbal response)

9                   MS. BAILEY:   Ms. Longgood?

10                  (No verbal response)

11                  MS. BAILEY:   Mr. Stearns?

12                  MR. STEARNS:   No questions.

13                  MS. BAILEY:   Ms. Pinello or

14                  Mr. Levesque?

15                  (No verbal response)

16                  MS. BAILEY:   Ms. Manzelli?

17                  MS. MANZELLI:  No questions.

18                  Thank you.

19                  MS. BAILEY:   Ms. Allen?

20                  MS. ALLEN:    No questions.

21                  MS. BAILEY:   Mr. Block?

22                  MR. BLOCK:    No questions.

23                  MS. BAILEY:   Appalachian

24                  Mountain Club?

1 MR. KIMBALL: No questions.

2 MS. BAILEY: Would you like to  
3 state your name for the record?

4 MR. KIMBALL: Kenneth Kimball.

5 MS. BAILEY: Ms. Linowes?

6 MS. LINOWES: Yes, Madam

7 Chair. Thank you.

8 CROSS-EXAMINATION

9 BY MS. LINOWES:

10 Q. Hello, Dr. High.

11 A. Hello, Ms. Linowes. It's nice to meet with  
12 you again.

13 Q. Okay. For the questions I want to ask, I'm  
14 going to be referencing your prefiled direct  
15 testimony, AWE 1; your supplemental  
16 testimony, AWE 9; Appendix 10, which is  
17 AWE 3; your report; as well as three exhibits  
18 that I have submitted -- these will be  
19 IWAG-EM1, EM2 and EM3. And I may be making  
20 reference to Exhibit AWE 28, which is out of  
21 the "20 Percent Wind Energy by 2030" report  
22 just referenced by DOE, as well as Exhibit PC  
23 17, which is a data request set. Is that  
24 okay?

1 A. Yes. It looks like quite a list. I may need  
2 a little help in finding some of these, but  
3 we'll work through it.

4 Q. That sounds good.

5 Okay. On Page 3 of 9 in your  
6 supplemental testimony -- this would be from  
7 October, if we could turn to that.

8 A. Supplemental prefiled testimony on behalf of  
9 Antrim Wind, October 11th, 2012.

10 Q. Yes. Correct.

11 A. Yes.

12 Q. You have a table shown there. And I just  
13 want to make sure I'm clear what is going on  
14 there.

15 When you originally ran your report --  
16 ran your numbers or modeled the emission  
17 avoidance, you were basing that model on  
18 older EPA data. And then new data was made  
19 available, and you're showing the difference  
20 in terms of the fuel mix within New England;  
21 is that correct?

22 A. Yes.

23 Q. So it's showing that there's a slight  
24 decrease in coal from 2007 to 2009, a fairly

1           significant decrease in oil, and an increase  
2           in gas and increase in nuclear; is that  
3           correct?

4    A.    Yes.

5    Q.    Okay. And you state that there would be a  
6           modest change in emission reduction based on  
7           that -- based on the updated numbers.

8                   Can you explain what that means, that  
9           there would be a -- how your emissions report  
10          or the results change?

11   A.    Well, we re-ran the model for 2009 and  
12          compared the results with 2007, and that's  
13          how we got that. And we estimated what the  
14          change in emissions would be between those  
15          two years for each of these fuels. And the  
16          calculation is approximately a 4-percent  
17          decline averaged across all of these.

18   Q.    So if I were to look -- if I could direct  
19          your attention just momentarily -- we'll be  
20          going back to this again later. But on Page  
21          6 of your report -- so, Page 6 of AWE 3 --  
22          there is a Table 5 there, Scenario B?

23   A.    If you'll excuse me one moment. I think I  
24          printed -- I'm sorry. Excuse me one moment.

1 (Pause in proceedings)

2 A. Go ahead.

3 BY MS. LINOWES:

4 Q. Okay. The 4-percent difference, if I  
5 understand you correctly -- and please  
6 correct me if I'm wrong -- the numbers that  
7 you're saying that this project will avoid,  
8 in terms of CO2, NO2, et cetera, are -- all  
9 of these numbers across the board will be  
10 4 percent less?

11 A. No. It's averaged across the board.

12 Q. So these numbers that we're looking at -- the  
13 59,573, or 60,000 tons of CO2 emissions --

14 A. Just which -- could you tell me which page  
15 and line you're talking about?

16 Q. I'm on Page 6 of your report.

17 A. Yes.

18 Q. Table B -- Table 5, Scenario B.

19 A. I'm sorry. On Page 6 of my document there's  
20 a Table 3 and a Table 4 -- oh, and a Table 5.

21 I'm sorry. Yes. Go ahead.

22 Q. Scenario B.

23 A. Yes.

24 Q. You have the avoided emissions from under the

1           2007 data, and then you said that you up --  
2           re-ran the model. And now you have lower --  
3           so that the environmental benefit will be  
4           reduced; is that correct? It's not going to  
5           be the numbers that we see here?

6                     (Witness reviews document.)

7   A.    I'm saying that they will be reduced, yes --

8   Q.    So --

9   A.    -- by an average across all pollutants, about  
10         4 percent.

11   Q.   Do you know what the reduction will be on  
12         carbon?

13   A.   I think that would be in the same -- I don't  
14         know. I'm saying it's about 4 percent across  
15         all of them.

16   Q.   Okay. Now I would like to direct your  
17         attention to IWAG-EM3. Okay. And now this  
18         is a --

19   A.   Just one moment. Let me -- IWAG...

20   Q.   EM3. Specifically Slide 17.

21   A.   EM...

22   Q.   I have an extra copy.

23   A.   I'm sorry. I think I've... yes.

24   Q.   Slide 17.



1 A. Is that Page 17?

2 Q. I'm not sure if the cover is -- it has a 17  
3 in the lower right-hand corner.

4 A. Yes, it's entitled "Capacity and Energy  
5 Production in New England."

6 Q. That's correct.

7 A. Yes, I have that.

8 Q. Okay. Now, going back again to your table in  
9 your testimony on Page 3 of 9, your October  
10 testimony, what -- I want to compare now 2011  
11 fuel mix in New England to the 2007 and '9  
12 fuel mix that you have, okay.

13 Under 2011, according to the exhibit  
14 we're looking at, the IWAG-EM3, you can see  
15 coal, it's the fourth number up, is now  
16 5.9 percent. This is in the last column.  
17 Coal represented is 5.9 percent of the fuel  
18 mix in 2011 versus 11.9 percent in 2009. Do  
19 you see that?

20 (Witness reviews document.)

21 A. In my supplemental testimony, coal is -- in  
22 2009, coal is 11.9 percent.

23 Q. Hmm-hmm. And on the exhibit that I provided  
24 you or that you're looking at, coal

1 represents, in 2011, 5.9 percent of the fuel  
2 mix? Do you see that?

3 A. On this table.

4 Q. Yes.

5 A. I mean on this bar chart.

6 Q. Yes.

7 A. I see that.

8 Q. Okay. And oil represented .6 percent versus  
9 1.5 percent. Do you see that?

10 A. Well, I see in my table that oil is  
11 1.5 percent. And I see in the table numbered  
12 17, I see 6.8 percent.

13 Q. It's the -- these numbers -- I'm sorry. Let  
14 me be more clear. This is not in color. But  
15 if you look on the legend on the right-hand  
16 side, it goes natural gas, oil, nuclear,  
17 reading up. It's the same reading up the  
18 chart. So natural gas was 51.3 percent, oil  
19 was .6 percent. Can you see that?

20 A. Yeah. I see 5.9 and then 6.8, which you're  
21 telling me coincides, if it was colored,  
22 with... you're saying 6.8 percent is oil. Is  
23 that what you're saying?

24 Q. No. I'm saying reading from bottom up,

1           .6 percent is oil. Natural gas is on the  
2           bottom, oil is next up, followed by nuclear,  
3           followed by coal, reading from the bottom up  
4           of that bar chart or stat chart.

5   A.    51.3 for natural gas.

6   Q.    Correct.

7   A.    Yes.

8   Q.    And oil is .6?

9   A.    I see that, yes.

10   Q.    Okay. And natural gas was 42 percent in  
11           2009, according to your table, and was  
12           51.3 percent in 2011. Do you see that?

13   A.    Yes.

14   Q.    So, in essence, we've had a 50-percent  
15           reduction in coal use in -- from 2009 to  
16           2011, as well as roughly that of oil. Do you  
17           agree with that?

18   A.    We've -- yes, approximately. Yes.

19   Q.    And an increase in natural gas?

20   A.    We've had an increase in natural gas, yes.

21   Q.    So would you conclude that our air in 2011 is  
22           cleaner than it was even in 2009?

23   A.    Well, with respect to that part of the total  
24           pollution load which comes from fossil

1 fuel-fired generation, yes.

2 Q. Okay. So, if you were to -- if you had the  
3 numbers to run for 2011, would you  
4 conclude -- you're not able to run them,  
5 obviously, today. But based on the numbers  
6 of the fuel mix in 2011, would you -- would  
7 it be reasonable for you to conclude that, in  
8 fact, the avoidance -- emission avoidance  
9 would actually be even less?

10 A. I would expect the general trend to be down.

11 Q. Now, going back to your Scenario B, Table 5  
12 on Page 6 of your report --

13 A. Table 5, yes.

14 Q. Yes. Okay. You state that the Antrim Wind  
15 Project will produce, based on the capacity  
16 factors that you were given, 102,725 megawatt  
17 hours a year; is that correct?

18 A. Can you just restate your question?

19 Q. Sure. Based on the capacity factors that you  
20 were given, annual capacity factors that you  
21 were provided, you state --

22 A. Let me clarify that. Capacity factors for  
23 the Antrim Wind Farm.

24 Q. Correct. You were showing an annual

1 production of 102,725 megawatt hours.

2 A. Yes.

3 Q. Now, going back to that EM3 slide, slide 17  
4 that we were looking at, do you see at the  
5 very bottom of that chart, that stat chart  
6 that we were looking at, the total energy  
7 production in gigawatt hours -- or megawatt  
8 hours, I'll say, for New England in 2011 was  
9 120,612,000 [sic] megawatt hours? Do you see  
10 that? It's on the bottom --

11 (Court reporter interjects.)

12 A. I see 120,612 gigawatt hours shown for 2011.

13 Q. So, assuming my math is correct, on a yearly  
14 basis, the Antrim Wind Project, at a roughly  
15 39-percent capacity factor -- or based on the  
16 numbers you have here, will be .085 percent  
17 of the generation in New England. Is that  
18 taking the 102 -- 102,000 divided by the 120  
19 million?

20 A. I'll let you be responsible for your own  
21 math.

22 Q. Is the calculation right, though?

23 A. I don't have any way of -- I didn't bring a  
24 calculator. But I'll accept it as being

1 right, subject to check, as I believe --

2 Q. If you divide -- but just asking the math, if  
3 you divide the number of megawatt hours that  
4 Antrim Wind will produce by the number of  
5 megawatt hours of generation in the New  
6 England region, that will be how you  
7 produce -- calculate the percentage; is that  
8 correct?

9 A. Yes.

10 Q. Okay. Now, you had some questions -- or you  
11 were asked to comment before the  
12 cross-examination on a project displacing  
13 versus replacing fossil generation. And I  
14 have a question for you.

15 Are you -- do you know the difference  
16 between energy and capacity?

17 A. Yes.

18 Q. Can you explain what that is?

19 A. Capacity is the energy generation that is  
20 available and can be dispatched and is firm.  
21 Usually it's firm. Whereas generation is  
22 generation. Energy is what is generated,  
23 which is typically less than the capacity.

24 Q. And if you had to compare the definition of

1 "capacity" to "energy," which of those two  
2 would you say we rely on for most of our --  
3 to run our hospitals and our businesses and  
4 our homes?

5 A. I think that's not the right way of  
6 characterizing it. We run our businesses and  
7 our homes on electricity that is generated,  
8 and the total capacity in the system is  
9 greater than that which is generated. So  
10 I'm -- I don't think we rely on either of  
11 them -- or rather, I should say we rely on  
12 both of them, the energy which is actually  
13 generated, and also that which is firm  
14 capacity which enables us to plan and manage  
15 the system.

16 Q. If we could look at Slide 17 for just a  
17 second. You see that there are two columns:  
18 One set aside for capacity and one that talks  
19 about energy. Do you see that?

20 A. Yes.

21 Q. And if you look at the very top, it's a  
22 little bit hard to see. But this was from  
23 2011. And I'm taking -- we don't have to  
24 reference it, but out of Mr. Magnusson's

1 report, he did state at the end of 2011 New  
2 England had 396 megawatts of wind installed.

3 Now, at the very, very top there of  
4 energy on that column, you'll see for 2011  
5 wind -- that's wind at the top, 760,000  
6 megawatt hours -- or 760 gigawatt hours. You  
7 see that? Wind contributed .6 percent of the  
8 generation -- of energy on the grid. Do you  
9 see that?

10 A. Yes.

11 Q. But on the capacity side, it was  
12 significantly -- it was very little. Do you  
13 see that? Of that 396 megawatts installed,  
14 how much was actually firm?

15 A. If I read this, I think it says .1 percent.

16 Q. Okay. So to what extent is New England  
17 relying on any wind for powering its economy?

18 A. Would you like to rephrase that question?  
19 Because powering its economy -- well, okay.  
20 Can you be more precise or specific?

21 Q. That's okay. We'll move on.

22 So I wanted to know -- talk a little bit  
23 about ozone. On Page 5 of 9 in your  
24 supplemental testimony -- this is the



1           October 11 testimony -- on Line 15 you state,  
2           "Based on actual data from the site, which  
3           has been considered in the TMM model" -- your  
4           model -- "I have concluded that the project  
5           will reduce the occurrence of high ozone days  
6           in New England and Eastern Canada." Is that  
7           correct? Is that what it says?

8    A.    Yes.

9    Q.    Okay. Now I'd like to draw your attention to  
10           Exhibit IWAG-EM1. And in particular, we're  
11           looking at again another Slide 17 or Page 17.

12                       (Witness reviews document.)

13   A.    IWAG-EM1, Environmental Update --

14   Q.    That's correct.

15   A.    -- dated October the 19th, 2012.

16   Q.    That's right. Now, are you familiar with  
17           EPA's National Ambient Air-Quality Standards?

18   A.    Generally, yes.

19   Q.    Okay. Now, this chart shows ozone days in  
20           the six New England states that exceeded the  
21           2008 ozone NAAQS, National Ambient Air  
22           Quality Standards.

23                       MS. GOLDWASSER: Ms. Linowes,  
24           just to clarify, you're on Page 17 of that

1 presentation?

2 MS. LINOWES: Correct.

3 A. Just for clarification, the document that I'm  
4 looking at here is -- I should turn to  
5 Page 17.

6 BY MS. LINOWES:

7 Q. That's right.

8 A. Thank you.

9 This is -- Page 17 is titled "Number of  
10 Days Ozone Monitors in Each New England State  
11 Exceeded 2000" --

12 Q. Correct.

13 A. -- "Exceeded the 2008 Ozone NAAQS."

14 Q. That's exactly right.

15 A. Thank you.

16 Q. Now I want to look at -- each state is  
17 represented, going left to right, by year.  
18 So if you look at 2010, it appears that  
19 Vermont had no ozone days where it exceeded  
20 the standard. Do you see that?

21 MR. IACOPINO: What year are  
22 you looking at?

23 MS. LINOWES: 2010.

24 A. It appears to be like that.

1 BY MS. LINOWES:

2 Q. And in 2011, does it appear to you that  
3 Vermont may have had one day and New  
4 Hampshire may have had three days -- or two  
5 days?

6 A. Something close to that.

7 Q. So when you say this project will reduce the  
8 occurrence of high ozone days in New England,  
9 we don't -- what are -- are you talking  
10 partial days? I don't know what you're --  
11 we're pretty low down as it is I think from  
12 this table. I mean, what are you referring  
13 to?

14 A. I'm referring to the fact that when wind  
15 displaces generation from fossil fuel  
16 plants -- coal, gas and oil -- those coal,  
17 gas and oil plants are producing NOx;  
18 therefore, the concentration of NOx in the  
19 air will, all other things being equal, go  
20 down. And therefore, this facility will have  
21 the effect of reducing the number of high  
22 ozone days because the particular cutoffs  
23 that the producers of this table, you know,  
24 doesn't show that it's very large. But it

1           doesn't alter the fact that it is reducing  
2           ozone and therefore reducing the number of  
3           high ozone days.

4   Q.   Dr. High, do you disagree with the standard  
5           for high ozone days?  Is that what you're  
6           saying, that you think that that standard  
7           should be lowered?

8   A.   No, I'm not saying that.

9   Q.   Okay.  All right.  Then I want to now draw  
10          your attention to Slide 16 in that same  
11          report.  It should be a slide that looks like  
12          this, if you can... do you have that?

13   A.   Slide 16 in the same --

14   Q.   I believe it is in the same --

15   A.   Slide 16 that I have is titled "Ozone  
16          Transport Commission" --

17   Q.   Yes.

18   A.   -- "Preliminary Eight-Hour Ozone Design  
19          Hours."

20   Q.   That's correct.

21               Now, if you look at this slide, it shows  
22          the monitoring areas and the -- if you look  
23          in the legend, you see the triangle shows  
24          less than 71 parts per billion.  And if you

1           were to look at this in color, those would be  
2           green.

3                     Do you see that the ozone levels are in  
4           compliance throughout Maine, New Hampshire,  
5           Vermont, much of New York, upstate New York,  
6           much of Massachusetts, much of Rhode Island?  
7           Do you see that?

8   A.     Just give me a moment to...

9                     (Witness reviews document.)

10   A.    Certainly there's quite a lot of area that is  
11          in compliance, or appears to be in  
12          compliance, anyway.

13   Q.    And would you agree, looking at that slide,  
14          that the largest area of non-compliance  
15          appears to be New York City, New Jersey,  
16          eastern Pennsylvania, Connecticut?

17   A.    Yes.

18   Q.    Okay. Isn't it true that pollution from  
19          cars, trucks, factories, paint, hairspray,  
20          power plants and a lot of other things  
21          contribute to the formation of ozone?

22   A.    Yes.

23   Q.    Will building this project reduce our use of  
24          cars, factories, hairspray in southwestern

1 Connecticut, southeastern New York and  
2 other -- in those areas?

3 A. No.

4 Q. So the high level of ozone will still be  
5 there.

6 Okay. Now, I want to direct you to  
7 page --

8 MS. GOLDWASSER: Objection.  
9 That was a statement not a question.

10 MS. LINOWES: Sorry. I could  
11 wait for him to confirm.

12 A. Please phrase your question.

13 BY MS. LINOWES:

14 Q. It's okay. I was merely asking --

15 MS. BAILEY: You're not  
16 allowed to merely say your conclusions.

17 MS. LINOWES: I wasn't. I was  
18 looking for a "Yes" or "No" answer, but I'm  
19 ready to move on.

20 MR. IACOPINO: Are you  
21 withdrawing your question?

22 MS. LINOWES: I'll withdraw  
23 the question.

24 MR. IACOPINO: Thank you.

1 BY MS. LINOWES:

2 Q. Now I would like to direct your attention to  
3 Page 5 of your supplemental testimony,  
4 beginning on Line 19. This is just a little  
5 further down from where we were.

6 A. Page 5 --

7 Q. Correct.

8 A. -- of 9?

9 Q. Hmm-hmm.

10 A. Okay. Go ahead. Tell me. Yes. Go ahead.

11 Q. And you restate a sentence in my testimony  
12 that said, where I stated, "The State has  
13 already achieved its greenhouse gas reduction  
14 goals under RGGI." And then you make the  
15 statement that that is incorrect and not  
16 relevant to the consideration of the air  
17 emissions benefits of the project.

18 Now, Dr. High, if we look -- first look  
19 at the question of correctness in this  
20 statement, I would like to draw your  
21 attention to Exhibit IWAG-EM2.

22 Now, you have stated that I was  
23 incorrect in making this statement, that the  
24 State has already achieved its greenhouse gas

1 and emission reductions under RGGI.

2 A. Okay. So I'm looking at IWAG-EM2, a one-page  
3 document that is titled "Fewer Than Expected  
4 Bid for Cap and Trade Emission Permits."

5 Q. Correct.

6 A. Thank you.

7 Q. And you stated that I was incorrect in making  
8 this statement, that the State has met its  
9 RGGI allowance -- RGGI limits.

10 Now, can you read the last paragraph of  
11 that page, that exhibit that starts "Power  
12 plants..."

13 A. "Power plants covered by RGGI emitted an  
14 average of just 126 million tons of carbon  
15 dioxide during RGGI's first three-year  
16 compliance period, well below the cap set at  
17 180 million tons."

18 Q. So why is my statement, that the State has  
19 met its RGGI requirements, why is that  
20 incorrect?

21 A. Because the reason why I made that statement  
22 is that the requirements of RGGI extend  
23 beyond that period, and there are further  
24 reductions that will have to be made.



1 Q. And Dr. High, do you know -- you do go into  
2 that on the next page in your testimony. On  
3 Line 2, you state, "RGGI will require further  
4 reductions."

5 A. We're speaking of Page 6?

6 Q. Yes, that's correct.

7 Dr. High, what is the obligation -- if  
8 you looked at all nine states that are  
9 participating in RGGI right now, what is the  
10 cap?

11 A. I don't know.

12 Q. Do you know what it was before New Jersey  
13 pulled out?

14 A. I don't remember.

15 Q. Okay. Then if you don't know, how is it you  
16 can make the statement it's wrong? It says  
17 in this sentence that you read, "Power plants  
18 covered by RGGI emitted an average of just  
19 126 million tons of carbon dioxide during  
20 RGGI's first three-year compliance period,  
21 well below the cap set at 188 million tons."

22 A. It's because my interpretation of this was  
23 that we were -- I was explaining that there  
24 are further restrictions which are embodied

1           in RGGI, and into the future there will be  
2           additional reductions.

3                   This is in the context of the ongoing  
4           benefits which are achieved by reducing  
5           emissions in the New England area as a result  
6           of this wind project.

7   Q.   When you're talking about the 10-percent  
8           reduction that will occur after 2015 -- the  
9           progressive or 2 1/2 percent reduction every  
10          year that you state --

11   A.   I'm speaking of all future reduction targets,  
12          some of which have been specifically  
13          articulated and laid down in rules and others  
14          which will undoubtedly occur.

15   Q.   That are goals beyond 2018? Is that what  
16          you're saying?

17   A.   No, I'm saying that there are additional  
18          requirements which we placed on the region  
19          under RGGI that will be -- will need to be  
20          met. That is why there will be continuing  
21          benefits from the wind farms' reduction of  
22          pollutants from the operation of fossil fuel  
23          plants which are -- the generation for which  
24          is being avoided or displaced.

1 Q. Okay. On the question of relevance then --  
2 so you also state that the sentence, the  
3 statement itself is not relevant.

4 Are you aware the project will result in  
5 the industrialization of an otherwise  
6 unindustrialized or undeveloped area?

7 A. I'm aware that a facility will be built. I  
8 would not characterize -- I would not want to  
9 characterize it in that way.

10 Q. Have you visited the site?

11 A. No.

12 Q. So you can't characterize it.

13 A. I don't want -- I'm not offering any opinion  
14 on that matter.

15 Q. Okay. Do you think that it's appropriate for  
16 the State of New Hampshire to examine the  
17 emissions benefit in the context of state  
18 policy and try to balance whether the  
19 emission benefit of the project outweighs the  
20 project's construction and ongoing  
21 operational impacts?

22 A. Are you asking me a legal question, or are  
23 you asking --

24 Q. No.

1 A. -- for just my general opinion?

2 Q. General opinion.

3 A. I think that we should balance the effects of  
4 reductions and air emissions, which will  
5 contribute to the reduction in greenhouse  
6 gases first, because greenhouse gases, if  
7 they're continued to be emitted at present  
8 rates, will bring about severe climate  
9 disturbances, which will impact all aspects  
10 of the environment, including the survival of  
11 some of our iconic species, such as maples in  
12 this region. So it's an opinion based upon  
13 that -- those -- those considerations.

14 Q. I would like to direct you to Exhibit PC 17.  
15 This was a data request.

16 MS. LINOWES: Madam Chair, I'm  
17 almost done. I only have three more  
18 questions.

19 A. I'm looking at a document labeled "PC 17,  
20 "State of New Hampshire Site Evaluation  
21 Committee Docket No. 2012.

22 BY MS. LINOWES:

23 Q. You were asked to provide the total  
24 percentage of global CO2 emissions that will

1           be avoided by this proposed project; is that  
2           correct?

3    A.    Yes.

4    Q.    And what was your answer in terms of  
5           percentage of estimated global CO2 emission  
6           reductions?

7    A.    .002 percent of the estimated global CO2  
8           emissions.

9    Q.    Is it not .0002?

10   A.    I'm sorry. I thought that's what I said.  
11           Three zeros two percent.

12   Q.    Dr. High, is it your position that any wind  
13           project that is proposed to be built should  
14           be permitted and built?

15   A.    That's -- I guess, could you just restate the  
16           question so I -- I'll try to answer it with a  
17           "Yes" or "No" answer.

18   Q.    Is it your position that any wind project  
19           that is proposed should be permitted and  
20           built?

21   A.    No.

22   Q.    Have you ever refused to testify in favor of  
23           a wind project on the grounds that the  
24           emission reductions were not worth the other

1 impacts?

2 A. Can you just clarify what you mean by "other  
3 impacts"?

4 Q. Are you aware that wind projects create  
5 impacts, environmental impacts and other  
6 societal and economic impacts? Are you aware  
7 of that?

8 A. Yes.

9 Q. So is there any project in your -- that you  
10 have ever refused to testify on because you  
11 believed that the environmental, economic or  
12 social impacts of that project exceeded the  
13 environment -- the emission-reduction benefit  
14 that you believe to be brought forward?

15 A. I don't believe that I've ever refused to  
16 work on any wind project of any kind. I  
17 mean, all of the times that I've been  
18 requested to work, perform analysis and  
19 provide expert opinions on wind projects, I  
20 have always accepted that assignment.

21 Q. So if I could -- this is my last question.  
22 On Page 9 of your report, the very last  
23 sentence -- and in fact, I believe it's the  
24 last sentence of your entire report for the

1           appendices -- you state, "This important  
2           environmental benefit of avoided emissions  
3           should be considered in balancing other  
4           impacts of the Antrim Wind farm."

5                       So you -- but you don't have any  
6           statement about what the impacts are. You're  
7           not making -- it is not your testimony at any  
8           point during this proceeding that you have  
9           looked at other impacts, only the emission  
10          avoidance; is that correct?

11   A.    I have worked principally on impact avoidance  
12          in the areas of greenhouse gas emissions and  
13          other air emissions resulting from  
14          displacement of generation. In recent years,  
15          that's been principally what I have worked  
16          on. I have in the past worked on other  
17          aspects, but that is not the work that I'm  
18          doing at the present time.

19   Q.    Thank you, Dr. High.

20                       MS. LINOWES: Thank you, Madam  
21          Chair.

22                       MS. BAILEY: Thank you.

23                       Mr. Roth.

24                       MR. ROTH: No questions.

1           Thank you.

2                           MS. BAILEY: Questions from  
3           the Committee? Chairman Ignatius.

4                           CHAIRMAN IGNATIUS: Thank you.

5 INTERROGATORIES BY CHAIRMAN IGNATIUS:

6 Q.    It may be in your testimony, I just have lost  
7           track of it.

8                    Is there a reason why you weren't able  
9           to use more updated fuel-mix data in your  
10          analysis? Am I right that 2009 is the most  
11          recent data you were using for a 2012  
12          project?

13 A.    Yes, you're correct. 2009 is the most recent  
14          data that we used here. And at the time that  
15          we completed this work, 2009 was the most  
16          recent year for which we had a complete set  
17          of data available to us.

18                    Principally, data collected by  
19          continuous emission monitors and generation  
20          information recorded by the U.S. EPA and  
21          reported to -- through their data system.  
22          And that's what we rely on, and most other  
23          people that are working in this field rely on  
24          this. It's just the standard data set. It's



1           very hard to get any other data that is as  
2           reliable as that and that is more up to date.

3       Q.   Doesn't ISO-New England produce a fuel-mix  
4           report annually?

5       A.   It does, but it does not produce the  
6           unit-by-unit air emissions and fuel use that  
7           are provided by the EPA.  So in that respect,  
8           it's not as good as EPA's data.  And it  
9           would -- we would not be able to run a model  
10          as sophisticated and accurate if we were to  
11          use the more recent ISO-New England data.

12      Q.   Since 2009, there's been a precipitous drop  
13          in the price of natural gas; isn't that  
14          right?

15      A.   That is correct.

16      Q.   And so that the units that are being  
17          dispatched are really changing because of  
18          what's economic to run; correct?

19      A.   Yes.

20      Q.   By not having that data, isn't that leaving  
21          out a pretty big piece of the picture?  I  
22          mean, you told Ms. Linowes you would agree  
23          that the trend would be downward for the  
24          amount of emissions with the change in the

1 fuel mix from her numbers from 2011. I'm  
2 just surprised that you didn't want to even  
3 ballpark it, even come up with any kind of  
4 estimate, even if it wasn't as reliable as  
5 the numbers that you like to use. How do we  
6 get a full picture of the current situation  
7 without delving into the change in natural  
8 gas pricing?

9 A. Well, the model could be -- I mean, it's  
10 possible for the model to be adapted and  
11 brought up to a more recent -- I mean, more  
12 recent data. And I'm sure that would be --  
13 would show a continual decline -- reduction  
14 in the average air emissions by about --  
15 by -- of all the fossil fuel units, but most  
16 notably by the increase in the amount of  
17 generation which is brought about by the --  
18 by the low pricing and wide availability and  
19 fuel switching to natural gas. That is a  
20 nationwide phenomenon.

21 I don't think that it would alter in any  
22 way the fundamental conclusions of this  
23 study, which is that this wind farm will  
24 displace generation at coal, gas and oil

1 plants, and it will reduce all those  
2 pollutants and greenhouse gases and water  
3 consumption as a result.

4 If we were to be able to do a more  
5 up-to-date study, say bringing the data up to  
6 2010 -- I think would be the last year -- we  
7 would be looking at further declines. Based  
8 on the changes between 2007 and 2009, which  
9 we were able to document, I would expect a  
10 somewhat similar decline -- reduction in  
11 emissions avoidance as the overall mix gets  
12 cleaner, becomes more gas, less coal, less  
13 oil.

14 And so it's going to be a small  
15 reduction on a yearly basis, perhaps 2 to  
16 4 percent might be a reasonable estimate. I  
17 don't think that would alter any of the  
18 conclusions, nor should it alter the -- any  
19 overall evaluation of the air quality and  
20 greenhouse gas benefits which result from the  
21 operation of the facility.

22 Q. Well, if I understand you right, you may have  
23 a lesser amount of reduction, but it's still  
24 significant to have reductions in those

1 pollutants.

2 A. Yes.

3 Q. As we become more dependent on natural gas,  
4 is there a benefit to developing other forms  
5 of generation as an offset to that  
6 dependence?

7 A. Yes, there are always benefits to having a  
8 range of alternatives of different  
9 technologies and so on. So there are  
10 benefits in having wind because it's not a  
11 complete alternative to natural gas, but at  
12 certain times it is an alternative to natural  
13 gas. And although natural gas is a cleaner  
14 fuel than coal or heavy oil, which we have --  
15 we have been and still are using, it  
16 nevertheless puts out greenhouse gases and  
17 some amount of NOx and other pollutants.

18 So, to the extent that we can build more  
19 wind, and I should say solar as well, into  
20 the system, we would be improving air quality  
21 and reducing greenhouse gases.

22 Q. And the reason for the reduction in water  
23 usage with a displacement of some of those  
24 units to wind is what?

1     A.     Wind reduces the amount of generation at  
2           fossil fuel plants. Fossil fuel plants only  
3           use water for cooling purposes. And so, to  
4           the extent that those plants are turned down,  
5           or in some cases turned off completely when  
6           wind is blowing, then you get that reduction  
7           in water.

8     Q.     Thank you. Nothing else.

9                     CHAIRMAN IGNATIUS: Thank you.

10                    MS. BAILEY: Any further  
11           questions from Committee Members?

12           Mr. Simpkins.

13                    DIR. SIMPKINS: Yeah, just one  
14           follow-up.

15   INTERROGATORIES BY DIR. SIMPKINS:

16   Q.     You mentioned about how natural gas is  
17           cleaner burning than the other fossil fuels  
18           and the avoided emissions would be reduced  
19           because of the switch we're seeing over to  
20           natural gas.

21                    Could you give kind of a brief synopsis  
22           of what the magnitude of difference is  
23           between natural gas and the emissions, the  
24           COx, CO2 and NOx versus, say, coal and oil.

1     A.    Yes.  Coal will produce the greatest amount  
2           of emissions of all pollutants.  For carbon  
3           dioxide, it's approximately around 2,000 on  
4           average.  It's around 2,000 pounds of CO2 per  
5           megawatt hour.  And gas is the cleanest.  
6           Typically, for older units, around a  
7           thousand, approximately a half.  But for the  
8           most efficient combined-cycle, gas plants  
9           which -- gas turbines which are -- which have  
10          heat recovery, those can drop down in CO2  
11          emissions to maybe 8- or 900 pounds.

12                 So the shift from coal -- sorry -- and I  
13                 should say that heavy oil is somewhere  
14                 halfway between the natural gas number and  
15                 the emission rate for the coal, traditional  
16                 coal plants.

17                 There are some other benefits as well as  
18                 greenhouse gases, because coal especially is  
19                 producing mercury, large amounts of  
20                 particulates, and is a much more serious  
21                 health problem than natural gas.

22                 So you are -- you are getting many  
23                 benefits by this switch.  But I think it's  
24                 important to realize that wind is essentially

1           zero carbon and near zero for all emissions,  
2           and all of the fossil fuels are still very  
3           significant and serious contributors to  
4           public health issues, and water pollution,  
5           too, acid rain especially, and toxic metals  
6           in the -- in lakes, which are a local problem  
7           for some.

8                               DIR. SIMPKINS:   Okay.   Thank  
9           you.

10   INTERROGATORIES BY IACOPINO:

11   Q.    Thank you, Dr. High.

12                Would it be correct to characterize the  
13           analysis that you did as an analysis that  
14           relies on all other things remaining equal?

15   A.    Excuse me one moment.

16                       (Pause in proceedings)

17   A.    I think that's actually a very fair statement  
18           about our analysis.  There are clearly a few  
19           things which are not equal, in that we are  
20           getting -- if you were to extrapolate from  
21           present into the future on a continuing  
22           basis, assuming this plant is going to  
23           operate for many years, there will be -- the  
24           avoided emissions will be smaller as the

1           emission rate for the fossil fuel part of the  
2           fuel mix in New England shifts towards gas,  
3           in previous questions I've dealt with.

4    Q.    But I guess what I was thinking is, as far as  
5           what if there were -- I mean, it's based on  
6           sort of an analysis of what the demand  
7           presently is; correct?

8    A.    Yeah.

9    Q.    So if there were some unexpected increase in  
10          demand in the future for electricity, it's  
11          possible that that demand would be met with  
12          the addition of both renewable energy plants  
13          and fossil fuel plants; is that correct?

14   A.    Yes, it is. And we actually can expect  
15          models like the NEMS model, the Department of  
16          Energy's NEMS model, which predicts future  
17          use of energy on the grid, and other models,  
18          all tend to show a fairly substantial  
19          increase in the use of electricity. And one  
20          of those -- one of the big variables will be  
21          whether or not electric vehicles really gain  
22          traction and really take off in the  
23          marketplace. If they do, that will greatly  
24          increase demands for electricity. But even



1           still, we should expect increased demand for  
2           electricity from the growth of data centers,  
3           IT and other technologies which are heavily  
4           demanding of electricity.

5           So that would -- that would increase the  
6           demand for electricity. I'll probably have  
7           all kinds, but to the extent the public  
8           policy provides incentives for low carbon  
9           renewables, such as wind, solar, et cetera,  
10          then we can expect even more change.

11   Q.     So I guess what you're saying then is, if  
12           politically there's a trend towards favoring  
13           renewable energy, that what will happen is  
14           renewable energy will become a larger part of  
15           the mix and ultimately displace more and more  
16           dirtier fuels.

17   A.     Yes.

18   Q.     That part I get.

19           Now, in your particular analysis, you've  
20           determined that this project, this proposed  
21           project with Antrim Wind, is going to  
22           displace a certain -- I forget what the  
23           numbers are, but will displace some dirtier  
24           production of energy.

1     A.    Yes.

2     Q.    Can you just maybe -- I understand  
3           conceptually what you're saying. But as a  
4           physical or practical matter, how does that  
5           actually happen? How does the amount of  
6           energy that will be produced by the Antrim  
7           Wind Project, if it's permitted, how is that  
8           going to reduce what's being produced either  
9           at, you know, Londonderry or Newington or  
10          even in Seabrook, for that matter?

11    A.    So what happens is that the wind -- the  
12          nature of the contracts with wind are such  
13          that they will be priced in such a way that  
14          they will run, because the incremental cost  
15          of running a wind farm after you've built it  
16          and maintained it is very small. So that  
17          means that wind will run to the maximum  
18          extent possible for whatever the prevailing  
19          wind conditions are.

20                 That generation then is going to enter  
21          the grid and takes precedence in a way over  
22          plants which are more expensive in some  
23          incremental cost of operation, notably the  
24          fossil fuels because they have high

1 incremental costs.

2 So that's what causes us to -- what  
3 causes the system, through the bidding  
4 structure, to push wind in and push coal, gas  
5 and oil out. And that's done automatically  
6 every day and -- through the bidding process  
7 and other controllers that the ISO uses. So  
8 that's what happens.

9 Q. So what you're saying is wind will come in at  
10 a lower cost because of the way the system is  
11 set up than natural gas, which is the  
12 predominant fuel.

13 A. I don't want to say that it's at a lower  
14 cost.

15 Q. Lower price.

16 A. But it will come in because of the way the  
17 bidding structures are contracted. And  
18 that's a necessary part of the power purchase  
19 agreements and all of the other processes  
20 which have to be gone through in order to  
21 integrate a new unit into the system.

22 So it works. And this is pretty  
23 universal throughout the company --  
24 throughout the United States, anyway.

1 Q. So if that market structure changes, though,  
2 then your analysis would have to change.

3 A. It would have some effect on our analysis if  
4 it was radically different. But I don't want  
5 to pretend that I'm an expert on the markets.  
6 But as far as I understand it, we're likely  
7 to see incremental rather than radical  
8 change.

9 MS. BAILEY: Thank you.  
10 Redirect.

11 MS. GOLDWASSER: Can we have  
12 just a five-minute recess?

13 MS. BAILEY: Okay.

14 MS. GOLDWASSER: Thank you.  
15 (Whereupon a brief recess was taken at  
16 2:40 p.m., and the hearing resumed at  
17 2:57 p.m.)

18 MS. BAILEY: We're back on the  
19 record.

20 Is there any redirect?

21 MS. GOLDWASSER: Yes, thank  
22 you.

23 REDIRECT EXAMINATION

24 BY MS. GOLDWASSER:

1 Q. The first area of redirect concerns that  
2 issue of ozone. Dr. High, can you please  
3 turn to your report at Page 3.

4 MS. GOLDWASSER: For the  
5 Committee, that is Appendix 10A in Volume 3.

6 BY MS. GOLDWASSER:

7 Q. Now, your report discusses displaced  
8 facilities. Do the facilities that a wind  
9 project displaces need to be in New Hampshire  
10 or even in northern New England?

11 A. No, they don't need to be, and they are not.  
12 We are part of the ISO-New England system,  
13 and wind farms in New Hampshire or Vermont  
14 can displace generation in Massachusetts and  
15 Connecticut. And that's where most of the  
16 large fossil fuel plants are that are being  
17 displaced.

18 Q. So if you look at the map on Page 3 in your  
19 report --

20 MR. ROTH: I'm going to object  
21 here. We're now asking the witness to  
22 interpret his prefiled testimony and report  
23 as a matter of redirect. I've yet to hear  
24 what the connection is to a cross-examination

1 issue.

2 MS. GOLDWASSER: I was going  
3 to have Dr. High compare this map to a map  
4 that Ms. Linowes provided cross-examination  
5 on in one of her exhibits and indicating the  
6 resulting ozone improvements as a result of  
7 the project.

8 MS. BAILEY: Okay.

9 MS. GOLDWASSER: Thank you.

10 BY MS. GOLDWASSER:

11 Q. Dr. High, if you look at EM -- I believe it's  
12 EM1, IWAG-EM1, Page 16.

13 (Witness reviews document.)

14 Q. The title of the page I'm asking you to look  
15 at is "Ozone Transport Commission Preliminary  
16 Eight-Hour Ozone, 2010 to 2012 Design  
17 Values." Are you there?

18 A. Yes.

19 Q. Can you read the third bullet down on that  
20 page? It starts with "Preliminary..."

21 A. "Preliminary 2012 ozone season data shows  
22 increases in poor air-quality episodes across  
23 southern New England, Connecticut, and  
24 Massachusetts."

1 MS. BAILEY: Excuse me.

2 Dr. High, is your microphone turned on?

3 THE WITNESS: It was turned  
4 on, yes. And I believe it's -- I'm seeing a  
5 red light.

6 MS. BAILEY: Okay. Thank you.

7 BY MS. GOLDWASSER:

8 Q. Dr. High, does this map -- can you please  
9 explain to the Committee what this map and  
10 what that bullet indicates about ozone  
11 concentrations and air quality in southern  
12 New England?

13 A. Yes. This shows that ozone concentrations  
14 are higher in the southern New England area  
15 and also in New York, New Jersey,  
16 Massachusetts, and areas down through the  
17 mid-Atlantic states.

18 Q. And can you explain any correlation between  
19 the map that's on Page 3 of your report and  
20 the conclusions that are drawn in IWAG-EM1  
21 regarding ozone in southern New England?

22 A. You're referring to the number -- Slide  
23 No. 17?

24 Q. No. I'm sorry. I'm still on Slide No. 16.

1           And just indicating the comparison between  
2           the increases in poor air quality in southern  
3           New England and the locations of the power  
4           plants which are indicated on Page 3 of your  
5           report.

6       A.   Yes, I think we can -- what we would expect  
7           to have happen here is that displacement of  
8           fossil fuel generation by the Antrim Wind  
9           farm will reduce ozone concentrations not  
10          only in the northern part of the New England  
11          region, but also in the southern part of the  
12          New England region where the ozone problem is  
13          much more serious.

14       Q.   Would you expect the reduction of use of the  
15           plants in southern New England to improve air  
16           quality in those areas?

17       A.   Yes, there will be air-quality improvement in  
18           those areas. And indirectly, that will  
19           benefit New Hampshire, because there are some  
20           westerly air flows that bring pollution,  
21           particularly ozone precursors, into southern  
22           New Hampshire.

23       Q.   Now, Dr. High, to change paths a little bit,  
24           there's been a lot of discussion this



1           afternoon regarding natural gas and increases  
2           in natural gas in New England. I think  
3           you've testified that prices for natural gas  
4           has gone down. Can you explain why that is?

5       A.   Yes. The most important reason why the price  
6           of natural gas has gone down is due to the  
7           increased availability, domestic availability  
8           of natural gas, especially from shale  
9           deposits in New York, Pennsylvania, and some  
10          other parts of the eastern and midwestern  
11          states.

12               Those shale gas deposits are not --  
13           don't produce gas in the same way that  
14           conventional and natural gas wells do, which  
15           are largely a by-product of oil drilling.  
16           But rather, the natural gas that is coming  
17           from the shale deposits is producing --

18                       MR. ROTH: Excuse me. I feel  
19           compelled to object at this point. I've yet  
20           to hear any establishment of this witness'  
21           qualifications to opine upon the mechanisms  
22           and technology, et cetera, for the production  
23           of shale gas, or any kind of gas.

24                       MS. GOLDWASSER: This witness

1 is an expert in the air emissions resulting  
2 from energy uses, which would include the  
3 life-cycle analysis of the energy use. And  
4 he is going to be testifying regarding the  
5 air-emissions impact of fracked gas, the  
6 shale gas that he's referenced, in comparison  
7 with conventional gas. It's well within his  
8 areas of expertise.

9 MS. BAILEY: I'm going to  
10 overrule the objection.

11 THE WITNESS: If I may be  
12 allowed to extol my qualifications. I have  
13 done a considerable amount of work, not only  
14 in the air pollution, but also the  
15 technologies and related air pollution  
16 associated with the development of fracked  
17 gas and other alternative fuels under  
18 contract to the U.S. Department of Energy.  
19 And so I am -- I am quite knowledgeable about  
20 this technology.

21 MR. ROTH: To have this be  
22 brought up at this point on redirect I think  
23 is highly irregular and objectionable. If he  
24 wants to talk about the emissions of fracked

1 gas, I will withdraw my objection. But to  
2 the extent that he's going to make opinions  
3 and testimony on redirect, where this body  
4 has not given anybody the opportunity to  
5 recross, there has not been any opportunity  
6 to conduct discovery of this witness'  
7 qualifications or on his previous opinions  
8 about this stuff, I thinking it's really  
9 unfair. But for him to make opinions about  
10 the emissions, because that's the core of  
11 what his testimony is about, I don't have any  
12 objection. And I'd ask that the Chair limit  
13 his comments on emissions issues and not any  
14 other environmental issues associated with  
15 gas or fracked gas.

16 MS. BAILEY: Ms. Linowes?

17 MS. LINOWES: Yes, Madam  
18 Chair. If I understand where this is going  
19 as well, he has modeled data -- he has  
20 modeled the reduction of emissions based on a  
21 certain fuel mix. If we're now going to  
22 introduce speculation as to what the future  
23 fuel mix will be based on traditional sources  
24 of natural gas versus frack and whether or

1 not there's going to be a difference there, I  
2 think we're way into an area of speculation,  
3 and I just think that it doesn't belong in  
4 this proceeding.

5 MS. GOLDWASSER: The  
6 cross-examination of Dr. High considered the  
7 question of increases in natural gas in  
8 comparison with other fuel sources. The  
9 question to Dr. High is why did this increase  
10 occur, and to some extent he's testified now  
11 that it's due to fracking. The next question  
12 I was going to ask him was, how would this  
13 impact carbon impacts on -- in his analysis.  
14 So how do you compare fracked gas with  
15 conventional gas? That's directly related to  
16 the question this Committee has been asking,  
17 which is what are the air-quality  
18 implications of a project of this sort.

19 MR. ROTH: I still think this  
20 goes way beyond his direct or the cross and  
21 takes him into a whole new area of opinion  
22 that should have been in his original report  
23 and in his original testimony, which all the  
24 parties would have had an opportunity to test

1 him on during the whole process. To have  
2 this all come out now, without any due  
3 process rights of preparing for  
4 cross-examination that would be adequate to  
5 this kind of thing I think is unfair and  
6 prejudicial.

7 (Discussion among Committee members.)

8 MS. BAILEY: I think that it's  
9 fair to do redirect on the emissions based on  
10 the cross-examination about the increase in  
11 production of natural gas. So I will just  
12 ask you to try to get to the point about  
13 emissions.

14 MR. ROTH: If I can just make  
15 sure that we understand what we're talking  
16 about in terms of emissions. If he's talking  
17 about emissions from the combustion of gas,  
18 then, as I said before, I really don't have  
19 any objection because that's core to his  
20 testimony, and I don't really have a problem  
21 with that.

22 But if he's going to delve  
23 into, you know, emissions that occur from the  
24 production of that fracked gas from wells in

1 New York and Pennsylvania or wherever it's  
2 coming from, I think that that's overreaching  
3 on the part of this witness, and I think that  
4 it should be very strictly limited, if not  
5 allowed at all.

6 MS. GOLDWASSER: I think I got  
7 a ruling from the bench. I'm not sure what  
8 I'm waiting for now.

9 MS. BAILEY: I think you  
10 should proceed.

11 BY MS. GOLDWASSER:

12 Q. So, Dr. High, can you please explain the  
13 carbon impacts of fracked gas or shale gas  
14 versus conventional gas?

15 MR. ROTH: Again, the  
16 objection is -- the ruling was that he could  
17 speak about emissions, not about the carbon  
18 impacts of gas or fracked gas. And I think  
19 this is why this is really, I think, a tender  
20 area for him to tread in light of the  
21 non-availability of any of this testimony  
22 during the discovery phase of this case.

23 MS. GOLDWASSER: Are you  
24 waiting for me to respond to that again?

1 MS. BAILEY: I was.

2 MS. GOLDWASSER: Okay. Sorry.

3 MS. BAILEY: I thought you  
4 were looking for something.

5 MS. GOLDWASSER: Yeah, I mean,  
6 I do have notes here. I don't know that this  
7 is in the record. But I believe that  
8 Attorney Roth himself asked questions about  
9 embodied energy associated with wind  
10 projects. Surely if he asked that question,  
11 which is -- you know, he asked a question at  
12 a tech session regarding the life-cycle  
13 emissions associated with development of a  
14 wind project, if that was fair game for  
15 Dr. High, I don't see why this question,  
16 which is the product of questioning from the  
17 Bench and questioning from Ms. Linowes  
18 regarding the life-cycle costs of this new  
19 gas that's available on the market, is any  
20 different.

21 MR. ROTH: I might have asked  
22 Mr. High, you know, whether he had a nice  
23 trip to Concord during the tech session. I  
24 don't remember. And I'm not sure what she's

1           referring to. But whether we brought a  
2           particular subject, I think the analogy is  
3           fairly strained.

4                       But I think as a matter of  
5           fairness to the parties here, you know, if he  
6           wants to talk about whether fracked gas  
7           combusts differently, I think that's a fair  
8           question. But if he's -- if the question  
9           that was asked was to speak about the carbon  
10          impacts of using fracked gas, whatever the  
11          whole universe of that might be, I think that  
12          that's something that is not fairly brought  
13          up in this proceeding at this point in this  
14          context.

15                   (Discussion among Committee members.)

16                   CHAIRMAN IGNATIUS: Maybe I  
17          can speak to this for a moment, since it was  
18          my question that's engendered all of this.  
19          And we were so excited to be making good  
20          progress, and then look what's happened.

21                   It seems to me --

22                   MR. ROTH: My apologies.

23                   CHAIRMAN IGNATIUS: No, it's  
24          not you. I think it's just -- the question



1           that I raised was why the data had not been  
2           updated in light of dropping natural gas  
3           prices. It was not about changes in the  
4           analysis of emissions. And it certainly  
5           wasn't what's your take on fracking and the  
6           future of natural gas markets, which I think  
7           is something that, in my view, would not be  
8           appropriate in redirect, was not at all  
9           addressed in direct testimony. And so I  
10          think it's sort of hard to know where this is  
11          going.

12                        But if it's a response to my  
13           question about data and why was it not  
14           updated, then that's perfectly appropriate on  
15           redirect. But if it's -- I heard the word  
16           "natural gas," and that makes me think of  
17           fracking and all the things that that might  
18           raise, then that's obviously not appropriate.

19                        And I'm not suggesting that,  
20           Ms. Goldwasser, that's your question. But it  
21           seems to me those are the two extremes here.  
22           You know, we've got to stay limited to what  
23           the questioning was for redirect. The  
24           questioning about natural gas markets had to

1 do with the drop in prices. And your  
2 question has been very broad. So it's hard  
3 to know if you're within that or not within  
4 that.

5 MS. GOLDWASSER: I think the  
6 reason that this is relevant is that the  
7 Bench asked several questions about how to  
8 project the future -- and this is associated  
9 with Ms. Linowes' line of questioning also --  
10 how to project the future when the source of  
11 energy is changing. Every year, you know, we  
12 have a different source of energy in New  
13 England.

14 And Dr. High's report is based  
15 on what the source of energy is. If coal  
16 goes up, then emissions go up and avoided  
17 emissions go up. If coal goes down, then  
18 there may be other consequences.

19 The consequence of a future  
20 reliance on additional shale gas is that  
21 production of shale gas is much, much dirtier  
22 than production of conventional gas.

23 MR. ROTH: I'm going to object  
24 to this. Now she's testifying about shale

1 gas.

2 MS. GOLDWASSER: Well, I was  
3 asked by the Chair to provide a proffer of  
4 why this was relevant. I'm providing the  
5 proffer so that a decision can be made by the  
6 Committee and we can move on.

7 CHAIRMAN IGNATIUS: Well, I  
8 think my concern is that your witness chose  
9 not to get into these sorts of projections  
10 about the future, was happy to live with  
11 testimony -- with the data from 2009. And so  
12 at this late date, I have to agree that it's  
13 not appropriate to start from the stand and  
14 making projections about the future. And my  
15 question was to point that out. It wasn't to  
16 say let's start over again.

17 MS. GOLDWASSER: Okay.

18 BY MS. GOLDWASSER:

19 Q. Moving on, Dr. High. You took a look at  
20 ISO-New England numbers regarding 2001 with  
21 Ms. Linowes which showed that there had been  
22 a decrease in coal -- reliance on coal and an  
23 increase in reliance on natural gas. And in  
24 response to questions, you indicated that

1           there'd be reductions over time in emissions.

2                   Are those reductions sort of forever  
3           at -- you know, forever and ever to be  
4           decreased at whatever percent every year or  
5           two, or is there a backstop there?

6    A.   No, it -- no, it won't automatically decrease  
7           forever and ever because you need to have a  
8           certain amount of fossil fuel in the system  
9           as it's configured today. And so as I  
10          previously testified, we can expect that  
11          change to reflect a change in the fossil fuel  
12          mix, notably an increase of gas in the  
13          system. And that gas will come predominantly  
14          from fracked gas, as is most of the new gas  
15          that is already in the system. So it is, in  
16          my opinion, appropriate to consider the total  
17          emissions of fracked gas in the system. And  
18          that's what I would offer. And fracked  
19          gas --

20                   MR. ROTH: Madam Chairman,  
21           there's already been a ruling on this, and  
22           now the witness is off on his own  
23           interjecting the testimony that has already  
24           been ruled as inappropriate.

1 MS. BAILEY: All right. Can  
2 you ask the next question, please,  
3 Ms. Goldwasser?

4 MS. GOLDWASSER: Yeah.

5 BY MS. GOLDWASSER:

6 Q. Is it possible that in the future gas will be  
7 replaced by a dirtier option? I'm not asking  
8 about fracking. But we've assumed going --  
9 the assumption that's been made in the  
10 questioning is that gas will continue to  
11 increase and that other sources of fossil  
12 fuels will continue to decrease. I'm merely  
13 asking if that's a foregone conclusion or  
14 not, because if other fossil fuel types were  
15 to increase, such as coal, then the emissions  
16 rates going forward would -- that were  
17 avoided would go up.

18 CHAIRMAN IGNATIUS: Well, to  
19 the extent it's appropriate, that wasn't my  
20 assumption in the question. It was just  
21 asking about current numbers, not projecting  
22 anything in the future.

23 MS. GOLDWASSER: I wasn't  
24 directing specifically to the Chair's

1 question. There have been several questions  
2 about that.

3 MR. ROTH: And I'm going to  
4 make the same objection that I made before.  
5 The witness is now being asked to sort of  
6 blandify this notion about fracked gas with  
7 now sort of the idea of dirtier sources of  
8 energy. I think that the Chair --  
9 Commissioner Ignatius has described it well.  
10 He's made a decision not to have an opinion  
11 based on predictions about the future, and  
12 now he's trying to, you know, readjust his  
13 opinion to account for this, and doing it  
14 from the stand. He has -- you know, he has  
15 to sort of live or die on the opinion that he  
16 already rendered. And I think for him to, at  
17 this point, you know, change the opinion or  
18 increase the opinion based on, you know, the  
19 fact that maybe it didn't hold up so well on  
20 cross is inappropriate.

21 MS. BAILEY: Ms. Goldwasser,  
22 can you just move on, please, to a different  
23 line?

24 MS. GOLDWASSER: Yes.

1 BY MS. GOLDWASSER:

2 Q. Dr. High, Ms. Linowes has pointed out that  
3 the impacts of this project are a very small  
4 percentage of the overall greenhouse gas  
5 emissions in the world and a very small  
6 percentage of the energy produced in New  
7 England. Do you have any response to that  
8 criticism of the project or of your report?

9 A. Yes. It is a small percentage. But when  
10 plants are compared with other facilities,  
11 relatively small, you know, compared with  
12 nuclear plants and very large coal plants.  
13 All are large in their unit size, typically a  
14 thousand megawatts or more in capacity.

15 Most wind farms are very, very much  
16 smaller than that. And therefore, every --  
17 in every proceeding that takes place, every  
18 inquiry or project that is evaluated, if you  
19 say that this only produces .0 percent or  
20 .00 percent of the world and therefore it's  
21 inconsequential, then that same argument  
22 would apply to every wind farm that was going  
23 to be built, and therefore you would build no  
24 wind plants. And that would be --

1 mischaracterize the benefits of building wind  
2 plants. And if we are to achieve significant  
3 reductions in greenhouse gas emissions and  
4 other air pollutants over the next two or  
5 three decades, we're going to need to build  
6 many, many relatively small wind farms and  
7 solar farms or arrays and hydro and biomass,  
8 all of which are very small. Any one of them  
9 would look insignificant if you used the kind  
10 of arguments that Ms. Linowes is putting  
11 forward.

12 MS. GOLDWASSER: Thank you.

13 We have no further questions.

14 MS. BAILEY: Thank you.

15 Thank you for your testimony,  
16 Dr. High. You're excused.

17 THE WITNESS: Thank you.

18 MS. BAILEY: And I think now  
19 may be a good time to take a 10-minute break  
20 until 3:30, and then we will proceed with the  
21 Public Counsel's witnesses -- witness.

22 (Whereupon a brief recess was taken at  
23 3:24 p.m., and the hearing was resumed  
24 at 3:37 p.m.)



1 MS. BAILEY: Okay. We're back  
2 on the record. And Mr. Roth, are you ready  
3 to proceed with your witness?

4 MR. ROTH: Yes. Yes, I am.

5 MS. BAILEY: Thank you.

6 (WHEREUPON, TREVOR LLOYD-EVANS was duly  
7 sworn and cautioned by the Court  
8 Reporter.)

9 TREVOR LLOYD-EVANS, SWORN

10 DIRECT EXAMINATION

11 BY MR. ROTH:

12 Q. Good afternoon, Trevor.

13 A. Good afternoon, Mr. Roth.

14 Q. Would you please tell the Committee and the  
15 reporter and the record your name and your  
16 title, if you will.

17 A. My name is Trevor Lloyd-Evans. I'm a senior  
18 staff biologist at the Manomet Center For  
19 Conservation Sciences in Manomet,  
20 Massachusetts.

21 Q. And before you on the table are Public  
22 Counsel Exhibit, I believe it's 3 and 6?

23 A. Yes, sir.

24 Q. Are those your prefiled testimonies in this

1 case?

2 A. They are.

3 Q. And could you first explain some -- or set  
4 forth some of your background, and then we'll  
5 get into the purpose of your testimony.

6 A. For a very long time, 40-plus years, I have  
7 worked on bird populations, bird migration in  
8 this country and also in Central America and  
9 in Europe. My background is in census  
10 techniques and assessing populations. And I  
11 believe this will be the third testimony for  
12 Counsel for the Public in New Hampshire. So  
13 I've testified on two other Site Evaluation  
14 Committee sites in New Hampshire.

15 Q. And what were those sites?

16 A. They were the Groton and Granite Reliable in  
17 Coos County.

18 Q. Thank you.

19 And what is the purpose of the testimony  
20 that was made by you in the two prefilled  
21 exhibits?

22 A. Well, I was asked to review the data provided  
23 by the Applicant and to comment on the  
24 appropriateness of their techniques; the

1           amount, the number of their studies, the  
2           duration of their studies, and also,  
3           particularly the Avian and Bat Protection  
4           Plan for the Antrim Wind Energy Project, and  
5           again, the appropriateness and duration.

6   Q.    Okay. Is there anything in your testimony at  
7           this point that you believe you need to  
8           correct or amend?

9   A.    I don't believe so.

10   Q.   Okay. And if you were called upon to make  
11           the same testimony and answer the questions  
12           you were asked today, would you answer them  
13           the same way that you did when you wrote  
14           those?

15   A.    I would.

16   Q.    Okay. Now, before I release you to the  
17           cross-examination process, where you'll be  
18           pretty much on your own, I thought -- we have  
19           an opportunity for you to speak to, in  
20           rebuttal, some of the things that may have  
21           been said about your testimony on the record  
22           and in supplemental prefiled testimony.

23           Have you had an opportunity to -- you  
24           were present when Mr. Gravel spoke a couple

1           of weeks ago; correct?

2    A.    Yes.

3    Q.    And do you recall when he commented on the  
4           necessity of conducting additional data, as  
5           you had recommended in your supplemental  
6           prefiled testimony?

7    A.    I do.

8    Q.    And do you have any comment that you'd like  
9           to make about that, about his testimony on  
10          that issue?

11   A.    This is in relation to the Avian and Bat  
12          Protection Plan that would follow  
13          construction -- post-construction mortality  
14          plan?   Yes?

15   Q.    Yes.

16   A.    Yes.   Thank you.

17   Q.    If I may, he said in his testimony that he  
18          thought one year was enough, with the  
19          adaptive management to follow.

20   A.    Yes, precisely.   I do disagree with that,  
21          having collected long-term data sets over  
22          many, many years.   I think we all know how  
23          things vary.   I noticed in the study of  
24          Arnett, et al, in 2010, that has been quoted

1 by the proponent, where they did alter  
2 turbine speeds and do a very similar  
3 experiment. This was the first experiment.  
4 It was conducted over two years.

5 I noticed that in 2008 there was a  
6 44-percent reduction of mortality in that  
7 study. They repeated it exactly in 2009, and  
8 there was a 93-percent reduction in  
9 mortality. This serves as an example, I  
10 think, of the fact that we have to look at  
11 more than one season's data to get a good  
12 idea of what is going on in terms of  
13 production of young, in terms of migration,  
14 in terms of different wind patterns. We find  
15 that cohorts of birds or bats vary from year  
16 to year, and so I think it would be  
17 appropriate to do a three-year study.

18 Q. Thank you.

19 And do you recall in Mr. Gravel's  
20 testimony where he spoke about your  
21 submission of the material from the  
22 Sheffield -- I believe it was Sheffield --  
23 the taking permit for the little brown bat  
24 issued by the State of Vermont?

1 A. I do.

2 Q. And do you have any comment that you would  
3 like to make on whether -- on Mr. Gravel's  
4 statement that they weren't relevant?

5 A. I think Mr. Gravel was quite correct, in that  
6 there are not endangered species or  
7 threatened species for the State of New  
8 Hampshire in their studies. And I believe he  
9 was making that point.

10 However, again, from their own studies  
11 from the 2011 bat survey in the spring, I  
12 think there were 1,483 call sequences, 4.9  
13 per detector night. And in the spring -- in  
14 the summer, there were 35,450 call sequences;  
15 that would be 52.4 per detector night.

16 And I note the species groups -- it's  
17 not necessarily possible to identify these  
18 detected calls to individual species -- where  
19 the myotis -- the little brown bats, the  
20 myotis group -- big brown, silver-haired  
21 group, hoary and eastern red tri-colored  
22 group in both seasons, and in New Hampshire,  
23 eastern red bat, hoary bat, northern  
24 long-haired bat, which is a myotis,

1 silver-haired bat and tri-colored bat are all  
2 species of special concern. And I would  
3 assume that the Committee would want to  
4 ascertain the -- the numbers of these and any  
5 possible mortality of these species that have  
6 already been shown to be present.

7 And so again, I think this calls for a  
8 thorough study, post-construction mortality,  
9 given that the Applicant essentially  
10 performed one year of pre-construction  
11 surveys. That, again, just seems appropriate  
12 to me and of concern with those particular  
13 species.

14 Q. And what about the idea of requiring a taking  
15 permit or something like that as a condition  
16 of the permit in this case?

17 A. That would be a legal requirement. I'm sure  
18 that New Hampshire Fish and Game and U.S.  
19 Fish and Wildlife would be consulted in that.  
20 But that would be very much, I guess, up to  
21 the Committee to make that recommendation or  
22 not.

23 Q. Okay. Is there anything else that -- is  
24 there anything further that you would like to

1 say about Mr. Gravel's testimony or the  
2 supplemental prefiled or the remarks that he  
3 made a couple weeks back?

4 A. No, I think that covers my main comments.

5 Q. Okay. Thank you.

6 MR. ROTH: If you're ready,  
7 the witness is available for  
8 cross-examination by the other parties.

9 MS. BAILEY: Okay. Thank you.  
10 Mr. Froling.

11 MR. FROLING: No questions.

12 MS. BAILEY: Mr. Beblowski  
13 here?

14 (No verbal response)

15 MS. BAILEY: Mr. Jones?

16 (No verbal response)

17 MS. BAILEY: Ms. Sullivan?

18 (No verbal response)

19 MS. BAILEY: Ms. Longgood --  
20 or Longwood. Sorry. Oh, Longgood.

21 (No verbal response)

22 MS. BAILEY: Mr. Stearns?

23 MR. STEARNS: No questions.

24 MS. BAILEY: Ms. Pinello?



1 MS. PINELLO: No questions.

2 MS. BAILEY: Ms. Manzelli?

3 MS. MANZELLI: No questions.

4 Thank you.

5 MS. BAILEY: Ms. Allen?

6 MS. ALLEN: No questions.

7 Thank you.

8 MS. BAILEY: Mr. Block,

9 Mrs. Block?

10 MS. BLOCK: I have a couple.

11 MS. BAILEY: Okay.

12 CROSS-EXAMINATION

13 BY MS. BLOCK:

14 Q. Good afternoon.

15 A. Good afternoon, ma'am.

16 Q. When I read through your testimony, I sense a  
17 great deal of concern for bats and White Nose  
18 Syndrome. And I'm wondering, are there  
19 specific geographic pockets that you have  
20 more concern for, for this condition?

21 A. I am not an expert on that particular  
22 syndrome. I have not worked with it in any  
23 sort of veterinary sense. As far as I know,  
24 it started in the Appalachians and has moved

1 up into New England. It's now been here for  
2 several years and is of concern. In Europe,  
3 it's quite widespread and does not [sic]  
4 cause mortality. So I think we are dealing  
5 with another example of a disease that may  
6 have come from abroad to populations within  
7 North America that had not been exposed to  
8 that disease, and this is why it's causing  
9 such mortality. But it is now spreading  
10 throughout the whole country.

11 Q. Does this give you -- I guess this is just  
12 from personal observation. I know there used  
13 to be large colonies of bats on Willard -- on  
14 the rocks on Willard Pond, and they don't  
15 appear to be there anymore. And I'm  
16 wondering, in an area that seems to have a  
17 presence of bats, is there more concern when  
18 you have a wind facility so close to that  
19 area? Would that pose a question?

20 A. I think it's a very legitimate concern, yes.

21 Q. I guess that's probably all the questions I  
22 have right now.

23 A. Thank you.

24 MS. BAILEY: Mr. Kimball?

1 MR. KIMBALL: No questions.

2 MS. BAILEY: Ms. Linowes?

3 MS. LINOWES: Thank you, Madam  
4 Chair. I don't have a lot of questions.

5 CROSS-EXAMINATION

6 BY MS. LINOWES:

7 Q. Mr. Lloyd-Evans, in reading the Avian Bat and  
8 Protection Plan -- Avian and Bat Protection  
9 Plan, the Applicant appears to be on -- take  
10 the position that he -- there is no -- he's  
11 not expecting a high mortality on bats. And  
12 do we have enough information about operating  
13 wind projects in New England and public  
14 information that's available to tell us that  
15 that is a conclusion that he can draw?

16 A. We do not have a tremendous amount of  
17 information on mortality caused by wind  
18 turbines because wind turbines have not been  
19 in operation for very many years in New  
20 England. From the proponent's first  
21 supplement to the revised Avian and Bat  
22 Protection Plan -- and I'm just quickly  
23 looking at the bat fatalities in the  
24 northeast, 2011, produced by Stantec --

1 eastern red bat, 121; hoary bat, 462;  
2 northern long-haired bat, 2; silver-haired  
3 bat, 223; tri-color bat, 2.

4 A species of some concern to the state  
5 of New Hampshire right now is little brown  
6 bat because of the decrease recently, and I  
7 think there are 245 fatalities.

8 So those -- I'm quite sure that the  
9 proponent's figures are correct up to 2011,  
10 as far as we know. We really don't know, of  
11 course. But as far as we know, that seems  
12 like a fair summary. Seems like a lot of  
13 bats for this region.

14 Q. Do you know, or does he state in there the  
15 number -- break that down based on bats per  
16 megawatt or bats per turbine?

17 A. I don't believe so.

18 Q. The concern about bat mortality and the  
19 current situation with White Nose is that we  
20 are having decreasing populations; is that  
21 correct?

22 A. Apparently, yes.

23 Q. So it is reasonable to -- for this Committee  
24 and for the State of New Hampshire to be very

1           protective of our current population that is  
2           remaining of all species of bat.

3    A.    I would think so, yes.

4    Q.    The Applicant seems to make several -- it  
5           does make several comments, that  
6           mitigation -- or at least the protection  
7           plan -- the mitigation plan should go so far  
8           as long as it is served to be economically  
9           beneficial to the -- or at least not  
10          detrimental to the Applicant. Do you recall  
11          reading that?

12   A.    I recall reading a discussion about that  
13          point, yes.

14   Q.    Okay. And then the project -- you're  
15          familiar with the Sheffield Wind Project in  
16          Vermont?

17   A.    I have seen some of their correspondence,  
18          yes.

19   Q.    And you submitted the incidental take permit  
20          that was issued for that project as part of  
21          your --

22   A.    Yes, what I thought was relevant.

23   Q.    And that project is a similar -- I would say  
24          similarly sized. It's a 40-megawatt,

1           16-turbine project. And this project is a  
2           30-megawatt, 10-turbine project.

3    A.    Yes.

4    Q.    If you look at the capacity -- average  
5           capacity factors that were proposed for the  
6           Sheffield project, which is around  
7           30 percent, and this project, which is closer  
8           to 40 percent, the actual production numbers,  
9           at least for an average production over the  
10          course of a year, would be about the same.  
11         Do you agree?

12   A.    I take your word for it. Sounds good.

13   Q.    Okay. Now, that Sheffield project, when it  
14          was permitted, it went -- it was required  
15          under the permit to have a mitigation plan in  
16          place. Are you aware of that?

17   A.    Yes.

18   Q.    And are you aware -- now, this -- are you  
19          familiar with the details of that mitigation  
20          plan, not since the incidental take permit  
21          was put in place, but from the point when it  
22          went operational?

23   A.    Not in detail. I gather that there have been  
24          something on the order of -- is it 70 dead

1           bats found at this site? Something of that  
2           order. And that would be just the sheer  
3           number. Once these figures are written up,  
4           two other factors are usually taken into  
5           concern: That would be the scavenger removal  
6           rate of bats and the detection rate of the  
7           observers who are looking for the bats under  
8           the turbines. So I think those are sort of  
9           raw numbers.

10       Q.    So actual bats found dead at the turbines was  
11           somewhere around 70 to 75?

12       A.    Somewhere.

13       Q.    But we don't know -- there's no public  
14           information available at this time as to the  
15           actual number -- the projected number of bats  
16           that were killed at that project because we  
17           have -- you're saying it has not taken into  
18           account scavenger effects and searcher  
19           efficiency; is that correct?

20       A.    That's correct.

21       Q.    So it could be many more turbines -- many  
22           more bats?

23       A.    It wouldn't be less than that. It could be  
24           more, yes.

1 Q. It would not be less. Okay.

2 In the incidental permit that was  
3 issued, it appears that the State of Vermont  
4 is requiring that every turbine, all 16  
5 turbines, feather their blades up to 120  
6 nights -- I'm reading this out of the permit  
7 that you submitted as part of the -- I don't  
8 know what the exhibit number is. This is  
9 part of your testimony, I believe, the  
10 supplemental testimony.

11 A. Yes, I have it in front of me. That would be  
12 Condition I, yes.

13 Q. Yes.

14 MR. ROTH: That was Public  
15 Counsel Exhibit 6.

16 MS. LINOWES: Thank you.

17 BY MS. LINOWES:

18 Q. It says, "The permittee shall feather the  
19 blades of the wind turbines for up to 120  
20 nights" --

21 MR. ROTH: Just one second.  
22 Do you have it?

23 THE WITNESS: I do, yes.  
24 Thank you.



1 MS. GEIGER: Could I have a  
2 page number, please?

3 MS. LINOWES: It is Page 5.

4 A. Page 5, and Condition Capital I.

5 BY MS. LINOWES:

6 Q. Under a section called "Specific Conditions  
7 and Authorizations."

8 So that's 120 nights, which would be  
9 every night in a period from June 1 to  
10 September 30th. And the conditions are that  
11 ambient air temperature is greater than  
12 49 degrees and wind speeds are under 6 meters  
13 per second; is that correct?

14 A. Yes, that would be the maximum. On windy  
15 nights when bats don't tend to fly so high,  
16 then that would not be a requirement. So  
17 that 6 meters per second, or 13.4 miles an  
18 hour, is the wind speed at which these  
19 conditions would cut in. So it could be up  
20 to 120 nights or less, assuming that there  
21 were windy nights.

22 Q. Okay. Now, when this project was permitted  
23 and went into operation, which was October of  
24 2011, half of the turbines were required to

1 follow that mitigation plan. Are you aware  
2 of that?

3 A. Yes.

4 Q. And they had -- they found -- at least  
5 70-plus took bats, which is what triggered  
6 this incidental take permit?

7 A. I'm not aware of exactly what triggered the  
8 incidental take permit. I think it was  
9 concern about those protected species in  
10 Vermont particularly.

11 Q. Okay. Now, if I look at the mitigation  
12 proposal, they don't go into a lot of  
13 details. This is the Applicant now. But I  
14 believe they do not establish a temperature  
15 on those nights. It's a different period of  
16 nights. They also state that the wind speed  
17 should be under 5 meters per second, and  
18 they -- the time of feathering would be a  
19 half-hour after sunset. And then I  
20 believe -- I don't know if there's any  
21 distinction as to a half-hour before or after  
22 sunrise. But those are subtle differences.

23 And I'm wondering, if we know enough  
24 about this type of mitigation of feathering

1           the blades during low wind conditions,  
2           whether there's a big difference between 5  
3           meters per second and 6 meters per second, a  
4           big difference between --

5                       MR. ROTH: Can you just cite  
6           one at a time, please?

7                       MS. LINOWES: Sure.

8 BY MS. LINOWES:

9 Q.    There are several conditions under which  
10       temperature --

11 A.   Right. Five meters per second wind speed. I  
12       believe it was from the 15th of July through  
13       the 30th of September. Yes.

14 Q.   As well as the time at which the mitigation  
15       would go into effect?

16 A.   I was a little unclear about whether that was  
17       going to be a half-hour before sunset until  
18       sunrise or whether the witnesses for the  
19       Applicant changed that. But a half-hour  
20       before sunset until sunrise is sort of  
21       traditional for the three previous studies,  
22       anyway.

23 Q.   Okay. Now, given that there might be some  
24       debate surrounding that, would it be

1           prudent -- or what would your position be  
2           if -- with regard to our state next door to  
3           us having done work on an already existing  
4           project, should we change the parameters? Or  
5           would you recommend the State of New  
6           Hampshire adopt the parameters used in  
7           Vermont?

8       A.    I would think this would be a model. The  
9           final details should be perhaps worked out by  
10          the people who know the area best. This  
11          would be New Hampshire Fish and Game and U.S.  
12          Fish and Wildlife, along with the proponent's  
13          biologists who have taken the data so far.  
14          These seem to be the most appropriate people  
15          to work out the exact details. But we do  
16          have models, and it would seem sensible to  
17          follow those models.

18       Q.    Would it be your recommendation that that  
19           plan be worked out independent -- excuse  
20           me -- independent of this proceeding? Or  
21           would it be your recommendation that the  
22           parties and the Committee be over -- at least  
23           the Committee overseeing that? Where do  
24           you -- where would you go with that?

1     A.    I think this is very clearly a question for  
2           the Committee.  The Site Evaluation Committee  
3           in the state of New Hampshire can say yes or  
4           no to the entire permit, and they can say yes  
5           or no to the details and establish  
6           requirements if the permit is granted.

7                 So I think this is very much a Committee  
8           responsibility.  I'm sure they would want to  
9           take advice from the other people we  
10          mentioned.

11    Q.    So if they -- is it sufficient that this  
12           Committee approve the project and -- subject  
13           to a mitigation plan being agreed to and then  
14           it's the end of it?  Or do you think that  
15           the -- it should be the Committee's oversight  
16           ongoing as the mitigation is -- the effect of  
17           mitigation is evaluated?

18    A.    I think there are precedents for the  
19           Committee requiring the details as a part of  
20           the permit.  And so that would be -- that  
21           would be appropriate, that the details should  
22           be worked out first and presented to the  
23           Committee and then made part of the permit.  
24           That will avoid confusion.

1           After that, then we have U.S. Fish and  
2           Wildlife, New Hampshire Fish and Game, and  
3           the proponent's biologists continuing with  
4           the projects and presumably adaptively  
5           managing as they go on, which they've  
6           proposed to do.

7           But again, it seems foolish to have just  
8           one year of data. And so a mandated  
9           three-year project would give the State of  
10          New Hampshire a very firm, scientific base to  
11          be able to continue with whatever mitigation  
12          they chose afterwards, whatever adaptation.  
13          With any luck, no bats are killed and  
14          everything is fine. But we don't know until  
15          we collect the data.

16   Q.    When you say one year, are you talking about  
17          one year pre-construction?

18   A.    Post-construction mortality I'm talking  
19          about.

20   Q.    Post-mortality. Okay.

21   A.    Yes.

22   Q.    Now, again, looking back at the incidental  
23          take permit, again, that was granted in  
24          Vermont. I'm now looking at letter L, which

1           is a couple of paragraphs down from what we  
2           were reading.

3    A.    Would that be K, Ms. Linowes?

4    Q.    No, L.

5    A.    L?

6    Q.    Under Mitigation.

7    A.    Okay.

8    Q.    It states, "The permittee shall participate  
9           in a research cooperative to conduct bat  
10          fatality monitoring as described in the  
11          avian" -- "'Evaluating Avian and Bat  
12          Post-Construction Impacts at the Sheffield  
13          Wind Farm,'" which is appended to this  
14          permit.

15                It says, "Such surveys include daily  
16          searches at eight randomly selected turbines  
17          from the 16 total available turbines from  
18          April 1 to 31 and then from October 1 to 31  
19          each year." But then it states, "All  
20          turbines will be searched during the  
21          operational mitigation study from June 1 to  
22          September 30." So, every turbine searched.

23   A.    Yes.

24   Q.    Do you -- have you been involved with

1 searcher -- post-construction search  
2 programs?

3 A. I did a test on a local turbine in  
4 Massachusetts this summer, as it happens. It  
5 was just a brief, one week, to determine the  
6 scavenger removal and the efficiency of the  
7 observer. We used a volunteer observer.

8 And we found that the scavenger removal  
9 rate was not very great there. But even in a  
10 fairly ideal situation where the  
11 recently-tilled soil had been flattened out  
12 and seeded, it was a little bumpy. There  
13 were some stones, some clumps of earth, but  
14 essentially a flat situation. We found that  
15 the observer could only find a little less  
16 than 50 percent of the birds and bats that we  
17 had actually placed there at GPS points. So  
18 it's not easy, and it requires effort. And I  
19 think this is a good model. I would  
20 recommend it to the parties involved.

21 Q. That every turbine be searched during that  
22 period?

23 A. That probably would make sense. But again,  
24 this adaptive management would take place



1       after the third year, ideally, and at that  
2       point it can be adapted to whatever is  
3       required. Some turbines may seem to have  
4       more mortality, some less. We don't know  
5       until we collect data.

6               So, merely sort of stressing that we  
7       should collect the data and make a thorough  
8       job of that before these decisions are made.

9    Q.   Now, one last question. I was mentioning the  
10       production numbers from these two, that if we  
11       were to compare the Sheffield project to the  
12       Antrim Wind project. My question for you is:  
13       The developer of the Sheffield project  
14       clearly had the project built and is working  
15       closely with the State of Vermont and wants  
16       his project to continue to be operating.

17               Is it reasonable -- I mean, would you  
18       expect that any developer who's seeking to  
19       get their project built, that if this  
20       Applicant -- the Sheffield Wind Project, if  
21       that developer is able to make that  
22       mitigation work, that a project of comparable  
23       size, at least in output capacity factor,  
24       would you expect a same kind of enthusiastic

1 response, or at least cooperative response?

2 A. I'm not quite sure how to answer that. But  
3 I'm sure that Antrim Wind Energy is equally  
4 eager to find the data. And I hope that they  
5 will do it in as efficient a manner.

6 Q. And would it -- in the -- I guess following  
7 that question, is it the State of New  
8 Hampshire's obligation to put its resources  
9 first in balance in the case of a declining  
10 bat population?

11 A. Yes. I think in these cases, and in our  
12 previous studies in New Hampshire, we have  
13 asked the site evaluation committees to be  
14 fairly detailed about the conditions for  
15 permits that were granted. And I'm sure that  
16 will continue in this case.

17 Q. Thank you.

18 MS. LINOWES: Thank you, Madam  
19 Chair.

20 MS. BAILEY: Ms. Geiger.

21 MS. GEIGER: Yes. Thank you.

22 CROSS-EXAMINATION

23 BY MS. GEIGER:

24 Q. Good afternoon, Mr. Lloyd-Evans.

1 A. Good afternoon, Ms. Geiger.

2 Q. Just following up on the last point that you  
3 made about, I believe you said "detailed  
4 conditions." Are you familiar with the Avian  
5 and Bat Protection Plan that the Applicant  
6 has put forth?

7 A. Yes, I am.

8 Q. Would you agree that that's a fairly detailed  
9 plan, in that it's about 69 pages long?

10 A. It is fairly detailed.

11 Q. And isn't it true that that also contains,  
12 similar to the Vermont information that you  
13 were just reciting, a wildlife mortality  
14 monitoring program?

15 A. Yes. And it also has the 5 out of 10  
16 turbines cut in and delineates the wind  
17 speeds at which that will happen. That part  
18 is very efficient.

19 Q. Do you think that's a fairly good and  
20 reasonable set of conditions for this  
21 Committee to impose on the Applicant?

22 A. I'd like a clarification of the half-hour  
23 before sunset until sunrise. I seem to  
24 remember there was some discussion about

1           that, and I honestly don't know what the  
2           upshot was.

3       Q.    And I'll have to defer to the transcript on  
4           that, because I don't want to muddy the  
5           record and speculate as to what the witnesses  
6           have said. So I would respectfully decline  
7           to give you that at this point.

8       A.    But the main problem I have with it is that I  
9           think we need independent data, and I think  
10          we need at least three years of it. So it's  
11          the duration in particular.

12      Q.    Okay. Fair enough. So it's fair to say that  
13           it's the -- the fact that the Applicant is  
14           saying that it will do one year of  
15           post-construction monitoring under this plan,  
16           and you're suggesting that there should be  
17           three years; correct?

18      A.    Yes.

19      Q.    Okay. But isn't it true that the State of  
20           New Hampshire does not have any statute or  
21           rules that address post-construction avian  
22           and bat mortality monitoring studies, or any  
23           duration for them for wind projects?

24                           MR. ROTH: I'm going to object

1 to this question. This witness is not an  
2 attorney or licensed to practice law in New  
3 Hampshire, and it's a legal question.

4 MS. BAILEY: I'll ask you to  
5 answer the question if you know the answer.

6 THE WITNESS: I'm sorry, Madam  
7 Chair, but I do not know the answer of the  
8 detail, nor of New Hampshire. It would be  
9 foolish of me to attempt it.

10 BY MS. GEIGER:

11 Q. So you're not aware if the State -- and, sir,  
12 you're testifying, obviously, before the New  
13 Hampshire Site Evaluation Committee in making  
14 recommendations. But you don't know if the  
15 State of New Hampshire has any requirements  
16 for these avian and bat protection plans.

17 A. None that I know of.

18 Q. Okay. Are you familiar with the U.S. Fish  
19 and Wildlife Services Land-Based Wind Energy  
20 Guidelines? And I believe Public Counsel has  
21 marked these as Exhibit PC 21.

22 A. Yes, I am somewhat familiar. I can't land my  
23 hands on them right now.

24 MR. ROTH: Susan, are you

1 going to ask him to look at it?

2 MS. GEIGER: Not unless he --  
3 he said that he's somewhat familiar with it.  
4 And I'm not going to ask him specifically to  
5 read anything from it.

6 A. Yes, I've read through it.

7 BY MS. GEIGER:

8 Q. You have. Okay.

9 These are voluntary guidelines, not  
10 mandates; correct?

11 A. Yes.

12 Q. So the federal government hasn't mandated any  
13 particular post-mortality avian and bat  
14 protection studies; is that correct?

15 A. Not mandated, to my knowledge.

16 Q. Okay. So would you agree that the purpose of  
17 these guidelines, these voluntary guidelines,  
18 is to provide guidance to wind energy  
19 developers with respect to avian and bat  
20 protection issues that the U.S. Fish and  
21 Wildlife Service has concerns about?

22 MR. ROTH: I'm going to object  
23 to this question. The guidelines speak for  
24 themselves.

1 MS. BAILEY: I think you can  
2 answer it, to the extent you know.

3 A. To the extent that I know, yes.

4 BY MS. GEIGER:

5 Q. Okay. Now, are you aware that Antrim Wind  
6 consulted with U.S. Fish and Wildlife Service  
7 before conducting field studies in the  
8 development of its initial avian and bat  
9 protection plan that was submitted with the  
10 Application on January 31st?

11 A. Yes, I'm aware of it.

12 Q. And are you aware that Antrim Wind has  
13 updated that original ABPP -- I'll use that  
14 acronym, if that's okay -- as a result of  
15 going through the U.S. Fish and Wildlife  
16 Services Guidelines, Tier 1, 2 and 3  
17 consultation processes?

18 A. Yes, that was revised 15th of June.

19 Q. Yes.

20 A. Yes.

21 Q. Are you aware that in applying the Tier 1, 2  
22 and 3 assessments, that AWE, Antrim Wind, has  
23 concluded that the project's impacts to birds  
24 and bats are expected to be low?

1                   MR. ROTH: I'm going to -- I  
2                   let the first one go by, but what I'm seeing  
3                   here is the witness is being asked to  
4                   characterize what Antrim Wind has done in  
5                   meetings that it's had with the U.S. Fish and  
6                   Wildlife Service. There may have been  
7                   testimony about that. But I think, you know,  
8                   that testimony should speak for itself. And  
9                   this witness, I don't believe he's testified  
10                  that he was present at any of those meetings  
11                  or any of those consultations. So I think  
12                  it's a little bit unfair for Attorney Geiger  
13                  to put words in his mouth about what happened  
14                  at those meetings or what the result of those  
15                  meetings was.

16                 MS. GEIGER: And I'm just  
17                 laying the foundation for another question.  
18                 And just to let Mr. Lloyd-Evans, and to  
19                 refresh Attorney Roth's memory, the statement  
20                 about the "low expectations" is contained in  
21                 Mr. Valleau's and Mr. Gravel's supplemental  
22                 prefiled testimony at Page 6. So that's  
23                 something that's in the record here already,  
24                 and I don't believe that's been challenged.



1                   MR. ROTH: That's fine. I  
2                   just don't want there to be any implication  
3                   or intonation that Mr. Lloyd-Evans agrees  
4                   with the truth of any of those statements  
5                   that were made in Mr. Valleau's and  
6                   Mr. Gravel's testimony.

7                   MS. GEIGER: I'm not asking  
8                   him to agree. I'm just asking him if he  
9                   knows that that's what Antrim Wind has  
10                  determined.

11          A.     Yes.

12          BY MS. GEIGER:

13          Q.     Thank you.

14                   And isn't it true that, under the U.S.  
15                   Fish and Wildlife Guidelines, if studies  
16                   indicate low probability of significant  
17                   adverse impacts, then the Tier 4 recommended  
18                   duration of post-construction monitoring is  
19                   just one year, not three years?

20          A.     Yes.

21          Q.     Okay. Now, are you aware that Sara Nystrom,  
22                   the northern states' bald and golden eagle  
23                   coordinator for the Northeastern Region of  
24                   U.S. Fish and Wildlife Services, indicated in

1           an e-mail on October 26th, 2012, that,  
2           according to her review, Antrim Wind's Avian  
3           and Bat Protection Plan is consistent with  
4           U.S. Fish and Wildlife's Land-Based Wind  
5           Energy Guidelines, and that she has no  
6           additional comments or suggested revisions to  
7           the plan at this time?

8                       MR. ROTH: Is that an exhibit?

9                       MS. GEIGER: Yes, I'd like to  
10          refer the witness to what's been marked for  
11          identification as Antrim Wind Energy 43.

12       A. I have this in my hand.

13       BY MS. GEIGER:

14       Q. Great.

15       A. Thank you.

16       Q. So you're aware of the information in the  
17       e-mail that I just referenced?

18       A. Yes.

19       Q. Okay. And are you also aware -- I guess you  
20       would be aware if you looked at that e-mail,  
21       that Ms. Nystrom has also indicated that the  
22       ABPP for Antrim Wind, its adaptive management  
23       and phased consultation process will be  
24       sufficient to meet U.S. Fish and Wildlife

1 Services' requirements for future  
2 consultation?

3 A. Yes. One of the phrases that struck me there  
4 was -- I don't have additional comments or  
5 suggestions at this time. And I assume that  
6 there will be further suggestions and  
7 comments as the bodies work together.

8 I also don't see anything saying one  
9 year, two years or three years in this  
10 letter. So I think that has yet to be  
11 determined.

12 Q. Right. But isn't it true that the ABPP,  
13 which is referenced in the e-mail, only  
14 requires -- or only sets forth a commitment  
15 for a one-year post-construction study? Is  
16 that correct?

17 A. Followed by adaptive management, yes.

18 Q. Correct. Followed by adaptive management.

19 So, in so far as you've just mentioned  
20 adaptive management, do you believe that a  
21 commitment by this Applicant to pursuing  
22 adaptive management to address any potential  
23 project impacts on avian and bat species is  
24 preferable to just simply doing multiple

1           years of post-construction studies with no  
2           adaptive management?

3       A.   Well, I think that to get a solid basis of  
4           information post-construction of mortality --  
5           in this case, of bats, although your client  
6           will also be looking at raptors and other  
7           bird species in the mortality study there --  
8           I really believe that you need multiple years  
9           because of the inherent variation that one  
10          sees in terms of population size and with the  
11          very dynamic situation we now have with bat  
12          populations in New Hampshire, which is not  
13          good. And it's not as if there are no bats  
14          present and your surveys have shown that  
15          there are many bats detections around the  
16          proposed area. So as a solid basis, I think,  
17          then, that would be the point at which to go  
18          on to adaptive management. And we're really  
19          only disagreeing about the one year versus  
20          the three years.

21       Q.   Okay. Well, isn't it true -- speaking about  
22           the bat situation, isn't it true that neither  
23           New Hampshire Fish and Game nor U.S. Fish and  
24           Wildlife Service have directed Antrim Wind to

1 take any particular steps with respect to  
2 either the little brown bat or any other  
3 species of bat?

4 MR. ROTH: I'm going to object  
5 to that. There's no foundation for that.

6 MS. BAILEY: Ms. Geiger.

7 MS. GEIGER: Yeah, my response  
8 to that is that he said that he thought that  
9 there would be some concerns here in New  
10 Hampshire. And I was just, you know, trying  
11 to elicit from the witness his understanding  
12 of whether or not he understands that there  
13 have been no requests made of the Applicant  
14 to do anything in particular with respect to  
15 bat species.

16 MR. ROTH: That's not a  
17 foundation. That's an assertion that's  
18 unsupported by any foundation.

19 MS. GEIGER: No, I think if  
20 you read the record --

21 MS. BAILEY: I think it's a  
22 fair question. It's cross-examination. You  
23 did bring it up.

24

1 BY MS. GEIGER:

2 Q. In any event, we obviously agreed,  
3 Mr. Lloyd-Evans, with the e-mail from Fish  
4 and Wildlife Services, that there is, at this  
5 time, nothing further that they required from  
6 this Applicant; correct?

7 A. Yes.

8 Q. Okay.

9 MS. GEIGER: May I have a  
10 moment, please?

11 MS. BAILEY: Yes.

12 (Pause in proceedings)

13 BY MS. GEIGER:

14 Q. Mr. Lloyd-Evans, getting back to the Avian  
15 and Bat Protection Plan, I believe that in  
16 response to questions from Ms. Linowes about  
17 what's going on in Vermont with this species  
18 taking permit that was issued to the  
19 Sheffield Project, you talked about -- or the  
20 permit talks about implementing a detection  
21 or a monitoring program, such that the folks  
22 that are out in the field are required to  
23 make reports of species that they find, and  
24 they're also required to go out and do

1 structured mortality surveys; is that  
2 correct?

3 A. Yes.

4 Q. And are you aware that under the Avian and  
5 Bat Protection Program that the Applicant has  
6 put forth, that there would be training  
7 provided to all of its personnel at the plant  
8 who would be responsible when they're out in  
9 the field for conducting similar activities?

10 A. I did read that, yes.

11 Q. Okay. In addition to that, I think there was  
12 a comment made very early in your testimony.  
13 And I apologize if I get this wrong. But the  
14 gist of it was that -- I think Ms. Linowes  
15 asked you that the -- whether the ABPP would  
16 somehow terminate if the Applicant found it  
17 to no longer be economically viable, or words  
18 to that effect. In other words, that if it  
19 were not -- the inference I drew is that if  
20 it would cost the Applicant too much money,  
21 that it would no longer implement this ABPP.  
22 Is that what you understood her to be asking  
23 you?

24 MR. ROTH: I don't think

1           that's a fair characterization of her  
2           question. I think she was referring to a  
3           particular adaptive management approach, not  
4           the entire ABPP, if I'm not mistaken. But  
5           I'll let Ms. Linowes speak to that.

6                       MS. GEIGER: Yeah, I'd like to  
7           hear it from Ms. Linowes instead of Mr. Roth  
8           on this.

9                       MS. LINOWES: I wasn't  
10          speaking to the point of the adaptive  
11          management program being stopped if there was  
12          an economic impact on the developer. What I  
13          was stating was that there is -- it appeared  
14          that the Applicant was presenting a concern  
15          about economic impact, and to what extent  
16          that should be taken into consideration as  
17          part of the plan, and whether it -- and  
18          basically that's it.

19                      MS. GEIGER: I guess, then,  
20          based on that, I guess the question I have  
21          for Mr. Lloyd-Evans is: Could you point to  
22          me someplace in the ABPP where it says what  
23          Ms. Linowes is suggesting?

24                      MR. ROTH: I think you should



1 ask Ms. Linowes that question.

2 MS. GEIGER: Well, he answered  
3 the question, and I think he agreed with  
4 Ms. Linowes. And so I'd like to know upon  
5 what basis he's agreeing with her assertion.

6 MS. BAILEY: I think it's a  
7 fair question, and then Ms. Linowes will have  
8 a chance to answer the question addressed in  
9 her testimony.

10 But can you answer the  
11 question?

12 THE WITNESS: I'm sorry.  
13 Could you repeat the question?

14 BY MS. GEIGER:

15 Q. Again, the question that I had was a  
16 follow-up to a question that Ms. Linowes had  
17 posed to you about when the ABPP would  
18 conclude.

19 A. Right.

20 Q. I believe that. And I think she agreed --  
21 you agreed with the question that she posed  
22 to you.

23 MR. ROTH: Madam Chairman,  
24 again, I think she's mischaracterizing Ms.

1 Linowes' question after Ms. Linowes actually  
2 clarified what the question was, and I think  
3 that's unfair to the witness.

4 MS. GEIGER: Maybe I -- I  
5 apologize. The hour is late, and I think I  
6 need a little help from Ms. Linowes in  
7 understanding what her question was all  
8 about. Because I heard an agreement from  
9 this witness, and I believe his answer was  
10 that there is something in this Applicant's  
11 plan that supports his answer, which was in  
12 the affirmative to a question posed by  
13 Ms. Linowes. And I want to know where it is,  
14 because I can't find it.

15 MS. BAILEY: Can you answer  
16 that question? Do you understand?

17 THE WITNESS: I don't believe  
18 that -- I don't believe that there is  
19 anything specific in the plan. I don't think  
20 I was answering that question. But I  
21 apologize if I gave you the wrong impression.

22 MS. LINOWES: Madam Chairman,  
23 I could point to what I was referring to if  
24 that would be helpful.

1 MS. BAILEY: Ms. Geiger.

2 MS. GEIGER: Yes, that would  
3 be helpful.

4 MS. BAILEY: Okay. Thank you.

5 MS. LINOWES: I'm looking at,  
6 unless this changed, this is Page 53 of the  
7 ABPP, under Section 8.2, Additional  
8 Mitigation Actions for Bats.

9 THE WITNESS: Right.

10 MS. LINOWES: And it states in  
11 that first paragraph, under that section,  
12 last sentence, "AWE offers this mitigation  
13 [sic] action approach in lieu of committing  
14 to a multiple-year mortality study. AWE  
15 believes that such a multiple-year study is  
16 inappropriate because it will" -- and then  
17 proceeds to talk about cost. "Cost more than  
18 life-of-project curtailment to determine that  
19 fatality is low and that no mitigation is  
20 needed."

21 But the point I was making --  
22 the question I was asking was: Does it  
23 appear that the Applicant is putting economic  
24 interests ahead of doing -- of the mitigation

1           plan?

2                           THE WITNESS: I really can't  
3           answer what the Applicant meant by this --

4                           MS. BAILEY: Let's wait --

5                           THE WITNESS: -- but I do see  
6           your question about costs. Thank you.

7                           MS. BAILEY: Let's wait for a  
8           question from the Applicant.

9   BY MS. GEIGER:

10   Q.   Right. And so I guess I'll simply ask this  
11           question: On that same page, on Page 56 --  
12           is that correct?

13   A.   Yes.

14   Q.   So as Ms. Linowes indicated, the Applicant  
15           has said that a multiple-year study is  
16           inappropriate because it will either cost  
17           more than the life of project -- cost more  
18           than life of project curtailment to determine  
19           if fatality is biologically significant and  
20           mitigation is necessary.

21           But, you know, isn't it true that -- or  
22           would you agree that, if doing studies, in  
23           and of themselves which cost money, do not  
24           compel the Applicant to take any adaptive

1 management -- in other words, just do three  
2 years of studies and nothing more -- do you  
3 believe that's better than doing the one year  
4 of study and then doing adaptive management,  
5 taking action?

6 MR. ROTH: I object to the  
7 question. It poses a false choice to the  
8 witness.

9 MS. BAILEY: I don't think it  
10 does. I have the same question in my mind.  
11 So I'm going to ask it if you don't let her.

12 A. I believe you've presented this as an  
13 either/or situation. I assumed that there  
14 was as part of this plan, and it states in  
15 the plan that there would be consultation  
16 with U.S. Fish and Wildlife --

17 Q. Yes.

18 A. -- and New Hampshire Fish and Game at all  
19 stages, in all years.

20 Q. Right.

21 A. And so I would assume that if the SEC decided  
22 to ask for three years of  
23 biologists-controlled careful studies, that  
24 there would always be continual consultation

1           with U.S. Fish and Wildlife and with New  
2           Hampshire Fish and Game.

3       Q.    Right.  But as you pointed out, there will be  
4           consultation during year one, right --

5       A.    Yes.

6       Q.    -- with Fish and Game and U.S. Fish and  
7           Wildlife --

8       A.    Yes.

9       Q.    -- the parties that you said to this  
10           Committee that they should take counsel from?

11           Would you agree that, if during that one  
12           year -- after that one-year study, in  
13           consultation with those agencies, there is --  
14           they decide that there is some adaptive  
15           management, but no further need to study,  
16           wouldn't that result be preferable than just  
17           studying for three years and making no  
18           commitment to adaptive management?  And I am  
19           posing an either/or.

20                       MR. ROTH:  I guess I don't  
21           even understand the question.  I'm confused  
22           by the way it was set up.  Could you make  
23           it --

24                       MS. GEIGER:  I apologize for

1           that.

2                               MR. ROTH: I know. I think  
3           we're all tired and stuff. But I didn't  
4           follow it.

5 BY MS. GEIGER:

6 Q. I guess what I'm posing is, we have an  
7       adaptive management. And if I understand it  
8       correctly, there will be one year of  
9       post-construction study; there will be  
10      consultation with the agencies I just  
11      mentioned; and then, if everyone agrees,  
12      there will be adaptive management. Is that  
13      right?

14 A. I believe that's your proposal, yes.

15 Q. Yes, that's the proposal.

16 A. Absolutely.

17 Q. Okay. So that's one choice.

18 A. Right.

19 Q. The other choice is, as you've suggested, go  
20      out and do three years of post-construction  
21      study, period. Those are the two choices.

22                       Which one do you believe is preferable?

23                               MR. ROTH: I object. That was  
24      not -- that was not what Mr. Lloyd-Evans

1 testified.

2 MS. BAILEY: Well, can he say  
3 that?

4 MR. ROTH: If I may finish.  
5 His testimony was three years and then you do  
6 the adaptive management. That's what he said  
7 earlier right here on the stand this  
8 afternoon. He didn't say just do three years  
9 worth of data and just sit there. He said  
10 three years, then adaptive management. So  
11 that's what I mean about the false choice.

12 BY MS. GEIGER:

13 Q. But isn't it true, Mr. Lloyd-Evans, that in  
14 the Groton Wind case you only recommended  
15 three years of post-construction study, with  
16 no adaptive management?

17 A. Yes.

18 MS. GEIGER: Okay. I have no  
19 further questions.

20 MS. BAILEY: Okay. Thank you.  
21 Redirect? Do you want a minute?

22 MR. ROTH: Yes.

23 MS. BAILEY: Okay. Oh, I'm  
24 sorry. Wait, wait, Peter -- Mr. Roth.



1 Committee questions before redirect.

2 MR. ROTH: Okay.

3 MS. BAILEY: Sorry. Who wants  
4 to start?

5 Mr. Robinson.

6 MR. ROBINSON: I do have a  
7 couple of questions.

8 INTERROGATORIES BY MR. ROBINSON:

9 Q. My first question has to do with migrating  
10 common nighthawks.

11 A. Yes.

12 Q. During the Applicant's fall and spring avian  
13 surveys, they picked up very few migrating  
14 common nighthawks, in part because they  
15 weren't looking during the time frame when  
16 these birds typically migrate through the  
17 state. And I asked that question. And part  
18 of the answer was that the high topography of  
19 the proposed project area shouldn't result in  
20 migratory nighthawks coming through that  
21 area.

22 Would you agree with that, or do you  
23 think additional observations for migratory  
24 nighthawk populations should be considered?

1     A.     I would think it would be very sensible to  
2            have additional considerations. I think the  
3            nighthawk was not found during a particular  
4            survey, and so it wasn't necessarily  
5            expected. But migrating nighthawks certainly  
6            move in the daytime and move down to ridge  
7            lines. Yes, in to answer your question.

8     Q.     Thank you. And I have one further question.  
9            As far as the studies post-construction, in  
10           your opinion, do you think the best scenario  
11           would be three years' worth of studies and  
12           the adaptive management approach?

13    A.     Yes, sir. I really think you need three  
14            years to get a strong basis of numbers, and  
15            particularly with this study with bat species  
16            that are already of concern or of special  
17            concern, protected by the state. And  
18            particularly, I understand that the State is  
19            concerned about bat populations in New  
20            Hampshire declining rapidly because of White  
21            Nose Syndrome.

22            So this just seems a very sensible thing  
23            to do. We were not perhaps aware of the  
24            declining populations in previous years, in

1 previous studies for previous developments.  
2 But in this case, three years will give a  
3 good basis, and adaptive management would  
4 obviously be the way to go afterwards. With  
5 any luck, there is little or no bat mortality  
6 and everything will be fine. But we should  
7 find out first.

8 Q. We've talked a lot about the bat mortality.  
9 But do you feel that three years' worth of  
10 study for the avian birds would be  
11 appropriate as well?

12 A. I think that would be part of the study.  
13 And, yes, absolutely.

14 Q. Okay. Thank you.

15 MS. BAILEY: Anybody else?  
16 Chairman Ignatius.

17 CHAIRMAN IGNATIUS: Thank you.

18 INTERROGATORIES BY CHAIRMAN IGNATIUS:

19 Q. A moment ago you said -- and earlier this  
20 afternoon you had said that we should get  
21 the -- we should study -- we should get the  
22 information first. And yet, you're talking  
23 about post-construction studies; are you not?

24 A. Yes. This is post-construction mortality

1 studies. The Applicant has essentially  
2 conducted one year of studies at this point,  
3 which is not a lot. And so the  
4 post-construction mortality study, with its  
5 adaptations and with its cut-in survey to see  
6 whether they could reduce mortality under  
7 those wind conditions and under those  
8 temperature conditions, seems like a very  
9 good way of approaching at this point.

10 Some data on whether animals, birds, or  
11 bats of interest to the State are being  
12 affected by this turbine once it's up -- and  
13 this is assuming that the permit is granted.  
14 So if you do go ahead and you do grant a  
15 permit, I think it would make sense then to  
16 have a good, solid data base of whether there  
17 is actual harm to these animals as opposed to  
18 what we can estimate from pre-construction.

19 Q. I found my scribbles here, and I wrote down  
20 that you had said we should collect the data  
21 before these decisions are made. So what are  
22 the decisions you're referring to that would  
23 benefit from the data?

24 A. I think the main decisions are how long there

1       should be a detailed post-construction  
2       mortality study by biologists. And I think,  
3       really, the difference between the  
4       proponent's counsel and myself comes down to  
5       whether there should be one year or three  
6       years of data to estimate whether there is  
7       harm before adaptive management happens.

8       Q. All right. Well, I think I'm getting  
9       confused. We may be using words differently  
10      here.

11             You're asking for no more studies prior  
12      to construction. You are asking for  
13      studies -- no more data prior to  
14      construction, but that post-construction,  
15      there be three years of studies in order to  
16      inform decisions about adaptive management.

17      A. In one part of my testimony I did ask for  
18      more fall migration raptor studies. But we  
19      are dealing now with post-construction, and I  
20      think the -- I believe there was agreement  
21      that perhaps there would be more studies of  
22      the common nighthawk, since that has now  
23      appeared as a species, and obviously of  
24      concern to the State since it is protected.

1 Q. But it's your view that the Committee has  
2 enough data to make a decision about whether  
3 to permit the facility. It's a question of  
4 whether there should be further data beyond  
5 the one year that's been proposed  
6 post-construction before making a decision  
7 about adaptive management strategies.

8 A. Yes. And I would hope that U.S. Fish and  
9 Wildlife and New Hampshire Fish and Game  
10 would provide information prior to the  
11 Committee making detailed commitments there.

12 Q. Does that mean that if after a year of  
13 study -- let's assume three years were  
14 required -- the project's permitted, it's  
15 built, and in the first year of  
16 post-construction studies you find a  
17 troublesome mortality record. Does that mean  
18 you'd still have to study for two more years  
19 before you'd require some adaptation?

20 A. Not at all.

21 Q. Your testimony referenced the change in the  
22 cut-in speeds and that that had a good effect  
23 in reducing mortality. But I didn't see that  
24 you were making that recommendation here. Is

1           that because you'd need to see the data of  
2           the study you're talking about before making  
3           any sort of recommendation about cut-in  
4           speeds, or did I misunderstand?

5       A.    I believe the cut-in speed scenario has  
6           already been addressed by the Avian and Bat  
7           Protective Plan.  So they were suggesting  
8           that for 5 of the 10 turbines, that they  
9           would do an experimental and presumably  
10          switch-around from time to time.  And that  
11          that would be at 3.5 meters per second, I  
12          believe, going up to 5 meters per second in  
13          the experimental, and it would be under those  
14          conditions of temperature.

15                So it was at a time when bats,  
16           particularly, are likely to be flying around  
17           the turbines.  This has proved effective in  
18           Pennsylvania, and so I believe that it's  
19           pretty much detailed in the study.

20       Q.    And you find those provisions in the  
21           Applicant's plan to be appropriate.

22       A.    I would work with -- I would ask the  
23           Applicant to work with New Hampshire Fish and  
24           Game and U.S. Fish and Wildlife and look at

1       other studies, such as the one in Vermont  
2       which is ongoing now, and previous studies,  
3       such as Arnett, et al, in Somerset County,  
4       Pennsylvania and decide on detail. I think  
5       these are the people best able to decide on  
6       exact detail, and then present that to the  
7       Committee.

8    Q.   But getting back to my same question, present  
9       to the Committee before we make a decision  
10       about permitting the facility, or present to  
11       the Committee after post-construction  
12       operations?

13   A.   No, before. I think as a condition of  
14       permitting the facility is where these things  
15       are normally put. So this would be asking  
16       them to conduct a good study, a good  
17       science-based study, as well as has been done  
18       in the past, and that can be presented to the  
19       Applicant.

20               And then the post-construction  
21       mortality, if the permit is granted would  
22       continuing afterwards to make sure that what  
23       we have tried to do as best we can was  
24       actually being effective on the ground.



1 Q. So, forgive me for belaboring this, but  
2 you've lost me again.

3 A. I'm sorry.

4 Q. I go back to the -- what is the study you're  
5 suggesting should take place prior to a  
6 decision on permitting?

7 A. I'm merely suggesting that the exact details  
8 of which month, half an hour before dusk, at  
9 dusk, half an hour after dusk, these details  
10 be ironed out before the permit is granted,  
11 and that it be made a clear condition so that  
12 everyone knows where they are.

13 Q. So a possible revision to the plan's  
14 provisions for cut-in speeds after these  
15 other folks have had a chance to study it and  
16 comment?

17 A. Whatever they feel is appropriate. These are  
18 the experts in the local area. Yes.

19 Q. In your supplemental testimony, you made a  
20 reference to findings of -- not your own  
21 study, I don't believe -- but that you were  
22 aware of findings that facilities in the  
23 northeast, 19 out of 20 had found bat  
24 fatalities, and that included Lempster, and

1           in fact, the little brown bats being among  
2           the populations that had suffered  
3           mortalities. Do you know any more about the  
4           Lempster data?

5       A.    I did not study Lempster for the state of New  
6           Hampshire, so I actually know very little  
7           more than that. That was taken from reports.

8       Q.    All right. Thank you. Nothing else.

9       A.    Thank you.

10                               MS. BAILEY: I have a few  
11           questions.

12   INTERROGATORIES BY MS. BAILEY:

13   Q.    This is the first time that I've sat on the  
14           Site Evaluation Committee to this degree, and  
15           so my questions are to get your expertise  
16           about the plan, the ABPP. And I guess I'll  
17           start with, on other projects with which you  
18           are familiar, has an Applicant ever been  
19           required to do three years of study and then  
20           a mitigation plan?

21   A.    I believe in the -- excuse me one minute.

22                               (Witness reviews document.)

23   A.    In the Granite Reliable order, there was an  
24           order for three consecutive years'

1 post-construction mortality with New  
2 Hampshire Fish and Game approving and  
3 reviewing, and for breeding bird surveys in  
4 years one, three and five post-construction.

5 Q. Approving and reviewing what?

6 A. The post-construction mortality study.

7 Q. So, was there any idea that Fish and Game and  
8 U.S. Fish and Wildlife would sit down with  
9 that Applicant and change the way they do  
10 things if they found a high mortality rate?

11 A. Yes.

12 Q. And that's part of the -- your understanding  
13 is that's part of what that means?

14 A. Yes.

15 Q. I mean, it sounds to me when you read it --  
16 it sounded to me when you read it, and it was  
17 my impression from the testimony that we've  
18 heard before, is that they were just studying  
19 it and that those agencies would have input  
20 into how it was studied, but not change  
21 anything after the study was concluded.

22 A. I don't believe there was a formal -- as  
23 Attorney Geiger said, I don't believe there  
24 was a formal adaptive management study

1           thereafter written out, as far as I know. I  
2           believe --

3       Q.     So we got data from those three to five years  
4           of study.

5                               MR. ROTH: Not yet.

6       A.     Not yet.

7       BY MS. BAILEY:

8       Q.     Okay. Where are we on that?

9                               THE WITNESS: Can you help me,  
10          Attorney Roth?

11      Q.     It's not --

12                              MR. ROTH: Granite Reliable  
13          has just gone in operation in March or April,  
14          and Groton has still not constructed.

15                              And further to the point about  
16          whether adaptive management -- the Groton  
17          order requires consultation, annual reports  
18          submitted to and discussed with Fish and Game  
19          and Fish and Wildlife to serve as the basis  
20          for mitigation efforts. I would ask him that  
21          on redirect, but it seems -- you know, it's  
22          in the Commission's -- Committee's orders in  
23          both of those cases, so I'll spare the  
24          redirect.

1 MS. GEIGER: And I would  
2 object to any characterization by Attorney  
3 Roth of what those orders say. I would  
4 respectfully ask that the Committee take  
5 official notice of the orders in both the  
6 Granite and the Groton cases, which the  
7 Committee is authorized to do under 541-A:33.

8 MR. ROTH: I would agree.

9 MS. GEIGER: Okay. Thank you.

10 MS. BAILEY: We will do that.  
11 We will take official notice.

12 MS. GEIGER: And I think the  
13 orders speak for themselves. Thank you.

14 MS. BAILEY: Okay.

15 UNKNOWN SPEAKER: Is there a  
16 reason why we're leaving Lempster out --

17 (Court Reporter interjects.)

18 MS. BAILEY: Should we take  
19 official notice of Lempster as well?

20 MS. GEIGER: Absolutely. I  
21 think that that's probably the first one you  
22 should read.

23 MS. BAILEY: Okay. We will do  
24 that.

1                   MR. ROTH: I would just -- in  
2                   terms of the taking official notice, in that  
3                   case, nobody but the Applicant produced a  
4                   witness to offer testimony about impacts on  
5                   avian species.

6                   The other two cases, Groton  
7                   and Granite Reliable, both had  
8                   Mr. Lloyd-Evans in addition to the  
9                   Applicant's witnesses. They were very much  
10                  contested, and a great deal of time spent,  
11                  and the deliberations on those was also very  
12                  intense.

13 BY MS. BAILEY:

14 Q.     Okay. Mr. Lloyd-Evans, if the Applicant had  
15           offered in the ABPP a three-year study period  
16           and the adaptive management plan, would that  
17           have been better than the other two more  
18           recent --

19 A.     Yes, ma'am.

20 Q.     It would. Okay.

21                   So is the process on this sort of  
22                   iterative, where, you know, we learn from the  
23                   past and we just keep adding conditions to  
24                   make it better? Is that what you're

1 recommending here?

2 A. I think we are learning from the PAST. We  
3 have very little data from New England. But  
4 it is slowly mounting up. And I hope we  
5 learn from the past and make it better as we  
6 go.

7 Q. Well, we don't have any adaptive management  
8 plans in place yet. We have some provisions  
9 in the other two orders --

10 A. Yes.

11 Q. -- that we're going to figure out what they  
12 mean.

13 A. Yes.

14 Q. Is there -- so your testimony was that, if we  
15 did three years and an adaptive management  
16 plan, that would be the best that we've had  
17 so far?

18 A. Yes.

19 Q. Is there a magic significance to three years?  
20 Would two years be better than one year, or  
21 do we need three? Why do we need three?

22 A. Well, you're asking a biologist who has 45  
23 years of data when he starts addressing  
24 questions. You know biologists, they always

1       want more data. There is known variation in  
2       breeding success for any animal in any  
3       particular year across populations. There is  
4       known variation in numbers of animals on  
5       migration routes due to wind patterns. And  
6       there will be variations in weather  
7       conditions that may make it more or less  
8       dangerous for bats or birds at this  
9       particular site. We don't know yet.

10               And so, as in the Arnett study in  
11       Pennsylvania, they found tremendous  
12       differences in two years. Three years will  
13       give you better data than two years. Two  
14       years will give you better data than one  
15       year. The Committee is, of course, quite  
16       able to make any number of years they wish.

17   Q.    Okay. Thank you.

18                       MS. BAILEY: Are there any  
19       other Committee questions?

20                       Okay. Mr. Iacopino.

21   INTERROGATORIES BY MR. IACOPINO:

22   BY MR. IACOPINO:

23   Q.    Mr. Lloyd-Evans, let me start off with the  
24       assertion on Page 56 in the ABPP that the



1           three years is -- the cost of doing a  
2           three-year is more than the cost of life of  
3           project curtailment. Why shouldn't the  
4           Committee just order life of project  
5           curtailment?

6    A.    You could.

7    Q.    And what would your recommendation, if they  
8           were inclined to do that, be? What would the  
9           curtailment be?

10   A.    Life of project curtailment at that  
11           temperature and those wind conditions you're  
12           referring to as mentioned in the ABPP.

13   Q.    Okay. So their mitigation experiment plan  
14           that you're talking about, those conditions  
15           contained in there, where they were going to  
16           curtail the cut-in speeds of half of the  
17           units for a period of time under certain  
18           conditions? Are those --

19   A.    Well, I suppose -- I mean, I'm obviously not  
20           an expert in the finances. So I have no idea  
21           how that would --

22   Q.    Well, I'm not asking you to tell me what it  
23           would cost. They've asserted --

24   A.    Right.

1 Q. -- that it would cost more than life of  
2 project curtailment. And my question --  
3 which you said life of project curtailment  
4 would satisfy you. But I'm just trying to  
5 ask what type of curtailment over the life of  
6 the project would satisfy you?

7 A. The curtailment that has worked so far has  
8 been at either 5 meters per second or  
9 6 meters per second, in that range. They're  
10 suggesting 5 here, which might be reasonable.  
11 If you went that way, then I suppose that  
12 would be the answer.

13 Q. And when you say five, though, what you're  
14 referring to is their plan -- the curtailment  
15 plan that is contained in the ABPP?

16 A. Yes.

17 Q. Okay. All right. Everybody keeps talking  
18 about post-construction studies, okay.  
19 Please tell us exactly what those studies are  
20 that you would anticipate if we were to go  
21 along with your recommendation for  
22 post-construction studies. Is it simply a  
23 mortality study?

24 A. There have been various studies looking at

1 pre-construction estimates of migrating  
2 birds, how many are within the turbine-swept  
3 area, these sorts of things, and then  
4 comparing those in turbine areas and  
5 comparing those with post-construction  
6 mortality. And the record is not  
7 particularly good. I think largely we do the  
8 initial studies to find out what species are  
9 there which are of importance, at which times  
10 of year, and which are of State significance  
11 from a legal protection point of view. So I  
12 think that's why we do those.

13 And then if we go ahead with the Antrim  
14 Bat Protection Plan, more or less as it is,  
15 they will have biologists looking for raptors  
16 that may be killed. They will certainly have  
17 a very efficient survey of bats that have  
18 been killed. They will know the exact  
19 species. If you look at their impact study,  
20 you will find that very often these bat  
21 species are grouped because that's the best  
22 that technology can do for us nowadays. When  
23 you have a body in the hand, you know exactly  
24 what you're dealing with, and you're much

1       better able to assess the concern that the  
2       State would have for that species at that  
3       place, at that time. So I think you end up  
4       with hard data.

5               All I'm really saying is that three  
6       years of good hard data of those and possibly  
7       some extra studies of the two other points of  
8       concern that have been made, which are  
9       migrating nighthawks, which are certainly of  
10      State concern and rather caught us, I think,  
11      all by surprise. And also, there seems to be  
12      a moderate risk on bald eagles. And fall  
13      raptors are not inconsiderable at the --  
14      raptor migration is not inconsiderable at the  
15      Antrim Wind Energy area.

16              So those would seem to be the sensible  
17      groups to study, and that would give us real  
18      data.

19   Q.   Let me take those groups one at a time, then,  
20       so that I understand.

21              The mortality studies that you're  
22      talking about, you want those to go on for  
23      three years; correct?

24   A.   Yes.

1 Q. And is the plan for those studies that is  
2 contained, even though they only -- even  
3 though they only ask for one year, is the  
4 plan as it is contained in the ABPP  
5 satisfactory to you -- in other words, the  
6 details of how those searches would be  
7 conducted, how those -- how mortality studies  
8 would be conducted?

9 A. Yes, I think it's a good plan. And I would  
10 like to see agreement by Fish and Game and by  
11 U.S. Fish and Wildlife. There might be some  
12 tweaking about exact times or --

13 Q. Okay. But my question is whether --

14 A. Yes.

15 Q. -- they satisfy you.

16 A. Yes.

17 Q. We have other evidence about Fish and Game  
18 and U.S. Fish and Wildlife. But from your  
19 perspective, you find that to be a  
20 satisfactory plan; you just disagree over the  
21 length of time.

22 A. Yes, essentially.

23 Q. Okay. You mentioned fall migration raptor  
24 studies. You want that to be done

1 post-construction as well?

2 A. I think the ideal time would be to do it now,  
3 but --

4 Q. Well, I don't think there's going to be a  
5 decision this fall.

6 A. It's not going to happen in 2012. So that  
7 could happen before construction.

8 Q. Okay. And do you -- in your opinion, should  
9 the certificate be conditioned on some kind  
10 of outcome of a fall migration raptor study?

11 A. We have one year of study so far. One thing  
12 that might come out of it might in fact be --  
13 I noticed in a U.S. Fish and Wildlife letter  
14 that we have all referred to, the service  
15 generally recommends the project with a risk  
16 assessment in the moderate category pursue a  
17 take permit under the bald eagle and golden  
18 eagle. We might find more information on  
19 that. Those would be the sort of outcomes.

20 And a second year of data would show  
21 whether this is a much more significant or  
22 much less significant site than we thought  
23 from one year. One year's data is not good.

24 Q. I understand your position with that. But

1           with respect to conditions that might  
2           generate out of this Committee if a  
3           certificate is determined to be issued, is  
4           there some result of a fall raptor migration  
5           study that should change the mind of the  
6           Committee that they shouldn't issue a  
7           certificate? In other words, if there's so  
8           many -- if there's a certain number of  
9           raptors that fly through the project area, do  
10          you have information for us as to what should  
11          cause the Committee such great concern that a  
12          certain number would be an unreasonable  
13          adverse impact on that species, those  
14          species?

15       A.    I think for actual numbers, I would defer to  
16              the experts on the ground, New Hampshire Fish  
17              and Game.

18       Q.    Okay. And the issue with the common  
19              nighthawks, you indicated that this is a  
20              surprise to everybody. And that's because  
21              they are found to be migrating? Is that the  
22              surprise?

23       A.    I think that they were not -- correct me if  
24              I'm wrong. But I think that they were not

1 found in any of the formal surveys. And I  
2 think they were, if I may sort of put it  
3 simply, stumbled across, and then, oh, yes,  
4 there were nighthawks there. There has since  
5 been a nighthawk death at a different  
6 turbine.

7 Q. In Lempster.

8 A. In Lempster. Okay. And I think that raised  
9 the awareness of nighthawks. As the  
10 Committee member said, we do not have any  
11 information on the migration of the common  
12 nighthawk. And so that would make sense to  
13 collect that information.

14 Q. And with respect to that study of common  
15 nighthawks, what would you call that study?  
16 What would it be called?

17 A. Migration study during the migration period  
18 in New Hampshire, again with Fish and Game  
19 advice on what the exact period would be.

20 Q. And again, is that something that you would  
21 consider to be a -- something that should be  
22 done on a pre-construction basis or after  
23 construction?

24 A. I think that would be pre-construction,



1           because this is a protected species in New  
2           Hampshire, and the sooner we have the  
3           information the better.

4       Q.   And I'll ask you the same question about that  
5           study that I did about the raptors. Is there  
6           some level where you believe that there's --  
7           that the project shouldn't be built?

8       A.   I would not be able to put a number to it.

9       Q.   You were asked, I think during Ms. Linowes'  
10          cross-examination of you, about the project  
11          in Sheffield, Vermont.

12      A.   Yes.

13      Q.   And she used some numbers about fatalities  
14          found at that particular project.

15               Are you familiar with that project? Is  
16          that one that you've worked on the studies  
17          or --

18      A.   No, I've merely seen the correspondence that  
19          Attorney Roth passed on to me. I just know  
20          of the mortalities. And I have seen the  
21          State of Vermont permit.

22      Q.   And are you familiar with the fatality --  
23          with fatalities, post-construction studies  
24          out of Lempster?

1 A. No.

2 Q. You are not or you are?

3 A. No, that's not one of the areas that I  
4 studied.

5 Q. Just as a biologist, do you think that -- as  
6 opposed to Lempster or Sheffield, which one  
7 of those projects would more approximate the  
8 same conditions that will be found on the  
9 ridge in Antrim?

10 A. That's a good question.

11 Q. Do you know?

12 A. I don't think anyone knows.

13 Q. Okay. I don't have any further questions.

14 A. Thank you, sir.

15 MS. BAILEY: Okay. Let's take  
16 a 10-minute break, and then we'll do  
17 redirect.

18 MR. ROTH: Probably only need  
19 five.

20 MS. BAILEY: Well, but I think  
21 the court reporter may need -- well, yes, I  
22 think the court reporter needs 10 minutes.

23 MR. ROTH: Okay.

24 MS. BAILEY: Thank you.

1 (Whereupon recess was taken at  
2 5:56 p.m., and the hearing resumed at  
3 6:11 p.m.)

4 MS. BAILEY: We're back on  
5 record, and we're going to have redirect by  
6 Mr. Roth.

7 MR. ROTH: We're back.

8 REDIRECT EXAMINATION

9 BY MR. ROTH:

10 Q. During your cross-examination, you were asked  
11 some questions about whether -- and I don't  
12 want to mischaracterize mischaracterizations.  
13 But in general, the problem was whether there  
14 was -- whether you agreed with the suggestion  
15 that something about the ABPP could be  
16 terminated because of economics. Do you  
17 remember that discussion and kerfuffle?

18 A. I was here when Mr. Gravel made that point in  
19 his testimony.

20 Q. And that's where I'm going. You were here  
21 when Mr. Gravel testified a couple weeks ago.

22 A. Yes.

23 Q. I'm going to read from the transcript here  
24 and just refresh your recollection and see if

1           this is what may have influenced you.

2           He said -- and this is on Page 229 of  
3           the transcript. "The other part of it is  
4           that this is -- these studies are very  
5           labor-intensive. Everything comes down to  
6           money. So money is a big deal to all of us,  
7           I think. And we need to look at -- and also,  
8           in my situation here, the wildlife is also  
9           very important, in my opinion."

10           When you were asked the question about  
11           do we end the studies because it cost too  
12           much money, is that what you were thinking?

13   A.   No, sir. We need to do the studies;  
14           otherwise, we will have no idea what  
15           mortality we are causing post-construction.

16   Q.   Okay. During the, I believe it was the  
17           Committee questioning, there was a fair  
18           amount of discussion about the curtailment  
19           issue. And it came up in two areas. And the  
20           first one is, do you remember that  
21           Ms. Linowes asked you some questions about  
22           the curtailment that was proposed in the  
23           Vermont order?

24   A.   Yes.

1 Q. And then there was some questions about  
2 whether the curtailment was proposed in -- as  
3 proposed in the Applicant's ABPP.

4 A. Yes.

5 Q. Do you have anything further that you want to  
6 say about what would be the best choice?

7 A. Well, the Vermont order has more detail. And  
8 I would -- it's very close to the ABPP. Of  
9 the two, since you asked, I think the Vermont  
10 order is more precise and has more details.  
11 So I would go with that, personally.

12 Q. Okay. And then also with respect to  
13 curtailment, there was a question from the  
14 Committee, I believe, about whether it would  
15 be, in your mind, appropriate to simply go  
16 with the curtailment order for the life of  
17 the project, and I think the implication was,  
18 and not do studies and adaptive management.  
19 Do you remember that?

20 A. Well, in that case, I think I gave the wrong  
21 impression.

22 Q. Okay. You want to clarify what you had in  
23 mind?

24 A. I really do want to clarify. Yes, we do need

1           to do the studies. Exactly what happens  
2           after the studies depends on the studies.  
3           But if we don't have the data, we will not  
4           know what damage we are or are not doing  
5           should these turbines be built.

6    Q.    And just so that we are clear, do you  
7           understand -- did you understand -- what you  
8           were trying to say is a choice between  
9           studies and curtailment versus studies and an  
10          undefined adaptive management plan?

11   A.    Exactly.

12   Q.    And which do you prefer of those two?

13   A.    I think I would do the studies, and then I  
14          would make up my mind. And when I say "my,"  
15          this would be, again, our trio of the  
16          Applicant and U.S. Fish and Wildlife and New  
17          Hampshire Fish and Game.

18                 But at the end of the studies, we will  
19                 know whether we need to continue curtailment  
20                 or not. And I assumed that that was part of  
21                 the adaptive management plan. I don't really  
22                 see a lot of difference.

23   Q.    Okay. Thank you. That's all I have.

24   A.    Thank you.

1 MS. BAILEY: Okay. Thank you  
2 for your testimony.

3 MS. GEIGER: Could I ask some  
4 questions on recross, please? They'll be  
5 limited to the scope of redirect.

6 MS. BAILEY: I'm told we don't  
7 usually do that.

8 MR. ROTH: And I realize I may  
9 have gotten the opportunity to do that maybe  
10 once in the last month, and I was shut down.  
11 And I have not even asked for it since then.  
12 So I'd respectfully suggest that it not be  
13 allowed in this case.

14 MS. BAILEY: Okay. No.

15 MS. GEIGER: All right.  
16 Thanks.

17 MS. BAILEY: Thanks.

18 THE WITNESS: Thank you Madam  
19 Chair. Thank you, Committee.

20 MR. ROTH: Thank you,  
21 Mr. Lloyd-Evans.

22 MS. BAILEY: Okay. So,  
23 earlier in the day somebody asked me to  
24 predict whether we would have time to start

1 Ms. Vissering tonight. And I would really  
2 like to keep going if we could. But earlier  
3 in the day I said, no, we'll never get to Ms.  
4 Vissering. And here we are 5:15, and I think  
5 we could go for a little bit longer. So when  
6 I realized an hour or two ago, probably at  
7 the last break, that maybe we would be  
8 finished in time to have another witness, I  
9 noticed that Dr. Kimball from the AMC is  
10 here. And I intended that everybody be asked  
11 if they would like to proceed with Dr.  
12 Kimball today, and I'm not sure that the  
13 Applicant was notified of that.

14 MS. GEIGER: We were not.

15 MS. BAILEY: I apologize. So  
16 I will leave it up to you, if you want to  
17 proceed with Dr. Kimball or if you want to  
18 just call it a day right now and --

19 MS. GEIGER: Dr. Kimball is  
20 scheduled, on the schedule that was  
21 circulated to the parties several weeks ago,  
22 to testify last on Friday.

23 MS. BAILEY: Right.

24 MS. GEIGER: And we planned



1           accordingly.

2                       MS. BAILEY:   You're right.

3                       MS. GEIGER:   So we're not  
4           prepared, and I would object to having to go  
5           today.   But if the Committee needs him to go,  
6           we'll go, and we'll do the best we can.

7                       MS. BAILEY:   No, that's --  
8                       (Court Reporter interjects.)

9                       MR. IACOPINO:  Madam Chair,  
10          Dr. Kimball has since informed us that he  
11          cannot be here on Friday.

12                      MS. BAILEY:   Well, I think  
13          it's a disadvantage to the Applicant.  I was  
14          trying to move the schedule along because I  
15          thought that's what you wanted us to do.

16                      MS. GEIGER:   We were prepared  
17          to start cross-examination of Ms. Vissering.

18                      MS. BAILEY:   Right.  And I  
19          understand that.  But we can't always --

20                      MS. GEIGER:   That's okay.  If  
21          you need to put him on, put him on.  We'll do  
22          the best we can.

23                      MS. BAILEY:   Okay.

24                      Dr. Kimball, are you available tomorrow

1           if we start you today?

2                       MR. KIMBALL:   Yes, I am.

3                       MS. BAILEY:   All right.   So  
4           why don't we at least do the direct and the  
5           cross of everybody else -- from everybody  
6           else.   And then we'll see what time we are,  
7           and maybe you could cross him tomorrow --  
8           would that be all right -- before Ms.  
9           Vissering?

10                      MS. GEIGER:   Okay.   All right.

11                      MS. BAILEY:   Well, I'm asking  
12           you to tell me what you would like to do  
13           because I'm trying to accommodate your  
14           request to move this along.

15                      MS. GEIGER:   Right.   And I  
16           appreciate that very much.   And as I said,  
17           we'll do the best we can.   If you need to put  
18           him on tonight, we'll put him on tonight and  
19           just keep going.   I'd like to reserve the  
20           right to call him back, though, if we need  
21           to.

22                      Like I said, we have a  
23           schedule.   We've had it for weeks.   We  
24           planned accordingly.   He was last on the

1           schedule. We're not prepared to go forward  
2           today with him. But we'll do the best we  
3           can.

4                       MS. BAILEY: Yeah, I think I  
5           would prefer, if you're not prepared to do  
6           direct, then everybody else said that they  
7           were prepared to ask their questions of him,  
8           and then we'll allow you to ask your  
9           questions tomorrow morning.

10                      MS. GEIGER: Thank you very  
11           much. I think that would be a big help.  
12           Thank you.

13                      MS. BAILEY: All right.  
14           Dr. Kimball, I appreciate your willingness to  
15           accommodate us.

16                      And I would also ask everybody  
17           to do -- make your best efforts, because  
18           we're going to keep moving through. And I  
19           don't know how many witnesses we're going to  
20           get through tomorrow. So we're going to try  
21           to do the best we can to keep this moving.

22                      Could you swear the witness  
23           in, please.

24                      (WHEREUPON, KENNETH KIMBALL was duly

1                   sworn and cautioned by the Court  
2                   Reporter.)

3                   KENNETH KIMBALL, SWORN

4                   DIRECT EXAMINATION

5 BY MR. IACOPINO:

6 Q.   Dr. Kimball, since you don't have anybody  
7       here to take you through your very short  
8       direct exam, I will do that on behalf of the  
9       Committee.

10               First of all, please state your name and  
11               business address.

12 A.   Yes, I'm Kenneth Kimball. I'm the Director  
13       of Research for the Appalachian Mountain  
14       Club, and my office is in Gorham, New  
15       Hampshire.

16 Q.   And are you the same Dr. Kimball that's filed  
17       prefiled testimony in this case on behalf of  
18       the Appalachian Mountain Club as an  
19       intervenor?

20 A.   Yes, I am.

21 Q.   Okay. And has that prefiled testimony been  
22       marked as AMC 4?

23 A.   Yes, it is.

24 Q.   And you have that before you?

1 A. Yes, I do.

2 Q. Do you have any changes to make to that  
3 testimony?

4 A. No, I do not.

5 Q. If you were asked the same questions  
6 contained in that testimony today, would you  
7 give the same answers?

8 A. Yes, I would.

9 Q. And I think I also put in front of you AMC 5?

10 A. Yes, you did.

11 Q. And please tell the Committee what AMC 5 is.

12 A. AMC 5 is the terms of agreement that was  
13 worked out between the Appalachian Mountain  
14 Club and the Applicant.

15 Q. What does that agreement pertain to?

16 A. It pertains to dealing with the impacts of  
17 nighttime lighting.

18 Q. Did you have anything that you wanted to add  
19 to either your prefiled testimony or your --  
20 or about the agreement?

21 A. I do not.

22 MR. IACOPINO: The witness is  
23 ready for cross-examination.

24 MS. BAILEY: Thank you. So,

1 Mr. Roth, you go first; right?

2 MR. ROTH: I do?

3 MS. BAILEY: Well, "Witnesses  
4 for other parties shall be examined in the  
5 following order..."

6 MR. ROTH: Okay.

7 MS. BAILEY: Does he go next?  
8 Yes, that's -- this is the prehearing  
9 conference report that we have.

10 MR. ROTH: Very well.

11 MS. BAILEY: Thank you.

12 CROSS-EXAMINATION

13 BY MR. ROTH:

14 Q. Dr. Kimball, in your prefiled testimony, I  
15 think you spoke about the need for a 10-mile  
16 viewshed impact?

17 A. That is correct.

18 Q. And I'm going to ask you to have a look at  
19 what has been marked as, I believe, PC 16.

20 A. Yes.

21 Q. And have you seen this document before?

22 A. Yes, I have.

23 Q. Okay. And can you identify it for the  
24 Committee?

1     A.     This is data response of July 12th from the  
2           Applicant's visual expert.

3     Q.     And what does it appear to be to you beyond  
4           simply a simple title?

5     A.     It basically is giving a list of visual  
6           resources that could be impacted by the  
7           project.

8     Q.     And that's within the 10-mile viewshed?

9     A.     Yes. From the 5 to 10 miles, yes. In the  
10          Application, there have been same sort of  
11          lists from zero to 5 miles.

12    Q.     Okay. And with respect to the visual  
13          resources on that list, are there any that  
14          are of particular importance to the  
15          Appalachian Mountain Club?

16    A.     Yes. I mean, we had actually requested that  
17          visual studies be done on areas like Pitcher  
18          Mountain.

19    Q.     Okay. Any others on the list?

20    A.     Yes. The Gregg Trail at the Crotched  
21          Mountain Center. And what we had worked out  
22          was that we wanted to see at least four  
23          additional sites, which they did provide to  
24          us.

1 Q. What do you mean? I don't understand what  
2 your answer is.

3 A. Actually, there was two components to the  
4 visual study. One was an overall computer  
5 simulation of the areas that would be  
6 potentially impacted, and they had only  
7 supplied information up to 5 miles. We  
8 requested that to be brought out to 10 miles,  
9 which was more the norm in these types of  
10 studies.

11 And then there are specific sites that  
12 could be more sensitive or a higher value to  
13 the public. And those are usually analyzed  
14 using visual simulations as a tool. They're  
15 not the ultimate answer. And we had  
16 requested that several -- that four or more  
17 pictures be taken in that 5- to 10-mile zone  
18 at least and supplement the visual analysis  
19 that came forward.

20 Q. Okay. So what you asked for and received  
21 from the Applicant was some more visual  
22 simulations?

23 A. That is correct.

24 Q. And in terms of the quality and approach of



1           the visual impacts assessment or analysis --  
2           I'm not sure what you called it exactly --  
3           that was done by the Applicant's expert with  
4           respect to the 5-mile range, were you  
5           satisfied with that, that that was an  
6           appropriate report?

7    A.    The methodology that they used was fairly  
8           standard, with the exception that it was a  
9           much shorter distance than we're accustomed  
10          to seeing. I think we -- well, I won't say I  
11          think. I know that we did have concerns  
12          about the interpretation of the data.

13   Q.    And have they performed that work for you  
14          with respect to the 5- to 10-mile range?

15   A.    I would say that they performed it for  
16          everybody, not just us, because a number of  
17          other groups asked for that same type of  
18          data.

19   Q.    But they used the same approach --

20   A.    Yes, they did.

21   Q.    And have you seen Ms. Vissering's report?

22   A.    Yes, I have.

23   Q.    And do you think that is a -- how would you  
24          characterize that? Is that a satisfactory or

1 a better approach? Or do you have anything  
2 you would say about that?

3 A. Well, I think Ms. Vissering went to the heart  
4 of the question here about the level of  
5 impact.

6 Q. Okay. And is that more useful to you?

7 MS. GEIGER: I'm going to  
8 object to this question. I don't think  
9 Mr. Kimball has been offered up as a visual  
10 impact expert in this case. So I don't think  
11 he's qualified to make a judgment or answer  
12 questions concerning the appropriateness or  
13 inappropriateness of the visual impact  
14 studies that various witnesses have done.

15 MR. ROTH: Well, two points.  
16 One, I didn't hear her objecting when he was  
17 assessing the visual impact study that was  
18 done by the Applicant's expert; and secondly,  
19 the witness did testify about visual impacts  
20 and the importance of them being properly  
21 assessed. So I think the question is  
22 appropriate.

23 MS. BAILEY: All right. I'm  
24 going to allow the question and give it the

1 weight that it deserves.

2 A. Could you please restate the question?

3 BY MR. ROTH:

4 Q. No, I probably couldn't.

5 Do you think that Ms. -- and this may be  
6 a different question, and I apologize if I'm  
7 shifting a little bit here.

8 But do you think that Ms. Vissering's  
9 approach provides you a -- or provides one,  
10 maybe that's you, a better understanding of  
11 the extent of the visual impacts at a  
12 particular location?

13 A. Yes, I did take the step of trying to assess  
14 what the data really meant.

15 Q. Okay. And with respect to her conclusions  
16 about the Willard Pond and the Audubon  
17 Wildlife Refuge area, do you agree with her  
18 assessment that that is an unreasonable  
19 adverse impact?

20 A. I would not disagree with it.

21 Q. And do you think that Ms. Vissering's  
22 approach should be adopted and employed at  
23 some of these spots in the 5- to 10-mile  
24 range that you identified?

1 A. Yes, we do.

2 Q. Okay. That's all. Thank you.

3 MS. BAILEY: Thank you.

4 Mr. Froling.

5 MR. FROLING: No questions.

6 MS. BAILEY: Mr. Beblowski,  
7 Mr. Jones, Ms. Sullivan, Ms. Longgood.

8 (No verbal response)

9 MS. BAILEY: Mr. Stearns.

10 MR. STEARNS: No questions.

11 MS. BAILEY: Ms. Pinello.

12 MS. PINELLO: No questions.

13 MS. BAILEY: Ms. Manzelli.

14 MS. MANZELLI: No, thank you.

15 MS. BAILEY: Ms. Allen.

16 MS. ALLEN: No questions.

17 MS. BAILEY: Mr. Block,

18 Mrs. Block.

19 MS. BLOCK: Yes, thank you. I  
20 have a few questions for Dr. Kimball. And  
21 I'm sorry, because a lot of my notes are  
22 actually in my car, and I realized I'd get  
23 locked out if I went out to get them. But...

24 CROSS-EXAMINATION

1 BY MS. BLOCK:

2 Q. In terms of the radar-activated lighting, are  
3 you aware that this was something that had  
4 been promised all along to the people of  
5 Antrim?

6 A. I'm not aware that it was promised. But I  
7 believe it was actually part of the original  
8 application, which we were aware of.

9 Q. Okay. Thank you.

10 And do you know -- and I'm sorry. I  
11 think we've talked about this before -- and I  
12 don't have that again -- the distance and  
13 altitude that aircraft actually trigger the  
14 lights?

15 A. It varies from the technology, and I'm not  
16 expert on all the fine details of the  
17 engineering. But these can detect planes up  
18 to 30 miles out and can detect planes up to  
19 approximately 20,000 feet high, based on  
20 their brochures.

21 Q. And do you know at what point it actually  
22 activates the lights?

23 A. That would be determined, in part, by how the  
24 FAA makes its final regulations, I would

1       assume. There's the capability of the  
2       technology, and then there's what the FAA  
3       would require.

4   Q.   And do you have any idea when this may  
5       actually come into play, this technology,  
6       that it will be approved?

7   A.   It is our understanding -- we've had  
8       communications with the FAA, and a sister  
9       organization that we worked with on similar  
10      issues recently contacted FAA again. And the  
11      most recent information that we've had is  
12      that they would possibly be putting out the  
13      final version of this sometime late this year  
14      or early next year, and then they would have  
15      to have the public hearing process is the  
16      last that I understood.

17   Q.   Okay. And that's --

18   A.   But as we all know, the FAA is going to go on  
19      its calendar.

20   Q.   Have you actually researched the amount of  
21      air traffic? I mean, I'm just -- you know, I  
22      see that ridge all night long, and I always  
23      see a plane in my view. So I'm just curious  
24      how this is actually going to help.

1     A.   Well, getting to your question, if I  
2           researched the number of air flights over  
3           that ridge, the answer is no.

4                 I would want to clarify, though, that  
5           the intention of this technology, at least  
6           from our understanding, is really to not go  
7           after commercial air flight, which are  
8           typically flying much higher and not a  
9           concern because they're flying at 25-,  
10          30,000 feet.

11                The normal use of this would be for  
12          lower flying aircraft, which typically would  
13          be non-commercial, though there may be some  
14          commercial, unless you were very close to an  
15          airport.

16    Q.   It does seem like it's on a landing path.

17                So you don't actually know -- I think  
18          you said something about the lights kind of  
19          just come on. They wouldn't flash at that  
20          point? Was that -- am I remembering that  
21          correctly?

22    A.   Our understanding of the technology is that,  
23          once it's been determined by the FAA as to  
24          what the trigger point would be necessary, as

1           they would determine for safety purposes,  
2           once it detects the plane, then it would turn  
3           the lighting on so that the plane could pick  
4           up that there was actually an obstruction in  
5           its pathway.

6   Q.    Okay.

7   A.    And at other times, once the plane has passed  
8           back out of that zone, then the lights would  
9           go back off.

10  Q.    The AMC Quiet Water Canoe Guide, I think it  
11          is -- and I had a quote from this someplace,  
12          and I know it's in my testimony, actually --  
13          that talks about Willard Pond, are you aware  
14          of that?

15  A.    I am aware that the AMC puts out still water  
16          paddling guidebooks, of which there are many  
17          from many different states. And I would not  
18          be surprised if Willard Pond would be in  
19          there.

20  Q.    I believe -- and I'm paraphrasing because,  
21          I'm sorry, I don't have it -- that it talks  
22          about Willard as being "a gem." And I guess  
23          my question would be: This is helping at  
24          night, the activated lighting --



1 A. That's correct.

2 Q. -- but not necessarily going to have any  
3 impact during the day.

4 A. I think, as we stated in our testimony, there  
5 is a visual impact during the day and there  
6 is a visual impact during the night. And we  
7 saw this as a solution to mitigate but not  
8 completely remove the nighttime pollution  
9 that's coming from these projects.

10 Q. I actually think that's the end of my  
11 questions. Thank you very much.

12 MS. BAILEY: Thank you.

13 Ms. Linowes.

14 MS. LINOWES: Thank you, Madam

15 Chair.

16 CROSS-EXAMINATION

17 BY MS. LINOWES:

18 Q. I only have a few questions for you, picking  
19 up on some of the questions that Ms. Block  
20 asked you. In your testimony on Page 4, Line  
21 17, you state -- this is where you're talking  
22 about the likelihood of this technology being  
23 made available, approved by FAA. And  
24 actually, it's Line 24. You say that -- I'm

1       sorry -- Line 27. You say that there's a  
2       high likelihood that the FAA will approve  
3       this technology in the near future as  
4       compared to the lifespan of the project. But  
5       you don't really know what "near" -- it could  
6       be 15 years out, or you think within a couple  
7       of years?

8       A. We're very hopeful it will be in a couple of  
9       years. There's a lot of pressure on FAA just  
10      because there's a lot of wind projects  
11      similar to this that have the same kind of  
12      pressure. So, obviously, I can't sit here  
13      and guaranty when FAA is going to make a  
14      decision, nor can anybody here.

15             But in the correspondence that we've had  
16      with them, they signaled to us that in the  
17      next year or so this could be approved.

18      Q. Okay. And do you know what this will add in  
19      terms of cost to the project? Do you have  
20      any idea? I know -- I understand that it's  
21      not your project. But do you have a sense of  
22      that?

23      A. I do not. There are -- I mean, I think what  
24      our observation is, is at first OCAS came

1 out, and now -- and then there's the Heritage  
2 Detect System. And now there's even a third  
3 one that you can find on the Internet. And  
4 the cost of these initially could be less as  
5 you move forward because there would be more  
6 competition. And our understanding from FAA  
7 was that they were somewhat concerned  
8 originally because OCAS was the only system  
9 out there, and they were somewhat nervous  
10 about acquiring a product that was only  
11 produced by one manufacturer at that time.  
12 So competition could drop the price of these  
13 in the future.

14 Q. Do you have a sense of magnitude, though? Is  
15 it in the millions of dollars?

16 A. It is our understanding that the cost would  
17 be quite variable, depending upon the kind of  
18 project and the design of the project,  
19 because if it's a relatively condensed one,  
20 you may only need one radar. If it was a  
21 system that had turbines spread out over  
22 different ridges, you have to make sure that  
23 you've got 360 degrees. So the number of  
24 radar systems that you would need to set up

1 is going to vary depending upon the layout of  
2 the project.

3 Q. Okay. But you don't know that now. To your  
4 knowledge, has anyone from one of the  
5 companies that manufactures this device or  
6 devices, has anyone actually visited the site  
7 or been given a copy of the plan with the  
8 terrain so that they can talk about what the  
9 effectiveness of it will be, or at least the  
10 size, scale?

11 A. I don't know whether somebody has been to the  
12 site or not.

13 Q. So it was sufficient for you, for AMC, to say  
14 we're fine with this, as long as you agree  
15 sometime in the future, when it's available;  
16 we will not raise any other objections to the  
17 project?

18 A. That is correct.

19 Q. On Page 8, Line 10 of your testimony, you  
20 mentioned Pitcher Mountain. And you say,  
21 "Pitcher Mountain in particular is a  
22 regionally significant viewpoint from which  
23 additional analyses is necessary."

24 Are you satisfied with the analysis

1           that's been done so far now?

2    A.    Yes, they did take the pictures from there.

3    Q.    And, of course, the nighttime lights only, as  
4           Ms. Block said, only apply to nights. So  
5           during the daytime, do you believe -- or do  
6           you have any comment about whether or not the  
7           impact of -- visual impact on Pitcher  
8           Mountain will be unreasonably adverse?

9    A.    This technology would not change the daytime  
10          impact. That is correct.

11   Q.    So what is your --

12   A.    There is -- in the future, there is the  
13          possibility of having these discussions with  
14          FAA. The tower coloration could be changed  
15          because of the use of this technology. But  
16          FAA was not willing to go there at this  
17          point.

18   Q.    Do you have any comment about the  
19          characterization of the impact to Pitcher  
20          Mountain if this project is built, based on  
21          the simulations that you looked at?

22   A.    Yes, it would add a second wind farm that  
23          would be visible from Pitcher Mountain,  
24          because you can see Lempster from there as

1 well.

2 Q. Do you see that cumulative effect as going  
3 from -- is it adverse? Is it unreasonably  
4 adverse? Is it we don't care? Do you have  
5 any way of characterizing that?

6 A. I would not characterize it that we do not  
7 care. AMC has put a lot of time trying to  
8 get the State to develop the siting policy,  
9 and cumulative impacts is a serious concern  
10 and that we do care.

11 Q. Is it an unreasonably adverse effect if this  
12 project were built on Pitcher Mountain?

13 A. I'm going to probably dance around your  
14 question a little bit. But AMC, when we got  
15 in this, I think we were pretty clear in our  
16 testimony that we have looked at impacts at  
17 local levels to local regions of the state,  
18 state regional to national, and we are -- as  
19 an organization, because of the large area  
20 that cover, which is from Washington, DC to  
21 Maine, cannot engage in every project.

22 And in this particular project, we  
23 engaged not so much that they were resources  
24 that were probably -- at least from where our

1 organization would come from, were from state  
2 to national-level impacts. However, there  
3 was a major change in technology here as the  
4 towers keep going higher and the addition of  
5 the extra turbine capacity that was going  
6 with these as well. And we felt that if the  
7 technology was going to be going in that  
8 direction, it was also essential that the  
9 technologies that are evolving to reduce the  
10 impacts should also be in play here.

11 So we did not enter this project trying  
12 to make a determination whether there was an  
13 unreasonable impact on resources that are  
14 local to local, regional, based on the way  
15 that we look at projects and resources that  
16 we have.

17 Q. So if this project were engaging a 400-foot  
18 tower with blades, as opposed to 495 feet or  
19 492, would you have become involved?

20 A. Yes, we would, because we felt that it was  
21 really time to start requiring this  
22 technology to be required. That's the reason  
23 why we decided to engage in this project.

24 Q. In your testimony on -- you state that this

1 is the only objection you're raising. But  
2 you are not making any statement or  
3 diminishing or commenting on anyone else --  
4 any of the other intervenors' concerns that  
5 they're raising, that they may well have  
6 merit. Do you remember saying that? I can  
7 find the specific location.

8 A. Yes, we did. I think we were very clear  
9 about that.

10 Q. If you engaged on more than one issue, would  
11 there be -- is there anything else that,  
12 after looking through the -- hearing any of  
13 the cross-examination, looking at any of the  
14 testimony, is there anything that stands out  
15 as problematic, even though you did not raise  
16 it as an objection or raise it as part of  
17 your testimony?

18 A. I think it's pretty clear, and it's the  
19 reasons why AMC engaged in a process that  
20 ended up being, in part, the product that you  
21 can see on the SEC's web site. But there's  
22 numerous issues that come up when a wind farm  
23 is developed, if I'm getting to your  
24 question. So --



1 Q. Yeah, you are. Specific to this one, though.  
2 Do you --

3 A. We did not have the expertise nor the time to  
4 look in on issues like wildlife and so forth.  
5 But those are pretty common impacts that  
6 we're very familiar with. But do I have  
7 expertise on that or do we spend time  
8 studying those in detail? The answer is no.

9 Q. There was a specific issue that you had  
10 raised -- that AMC had raised as part of a  
11 Coos County project, and that was the layout  
12 of the roads or the construction of the roads  
13 to encourage better stormwater runoff, as I  
14 recall. Is that something that you've looked  
15 at? Is it considered as part of this  
16 project? Or is it something -- let me step  
17 back and rephrase that.

18 Is that something that you would  
19 generally recommend for all ridgeline wind  
20 energy projects?

21 A. Generally, yes. But wind projects are  
22 changing in nature considerably. I mean,  
23 we're in discussions with a developer in  
24 Maine right now where they would build a

1 project that is not up on real steep slopes.

2 Since you're referring to the Granite  
3 Reliable project, they were -- that project  
4 was going above 2700 feet. You were getting  
5 into subalpine soils, which are quite  
6 different, which was the primary reasons that  
7 we brought that case forward. This  
8 particular project does not have any  
9 subalpine soils.

10 Q. Okay. And then one last couple of questions,  
11 and it's specific to the radar-activated  
12 lighting. I did a quick check to see how  
13 many airports are in range within 50 miles of  
14 Antrim. And there are 50 of them, amazingly.  
15 But one in particular is very close. It's  
16 called the Hawthorne-Feather Airpark Airport.

17 To your knowledge -- well, are you aware  
18 that when the FAA identifies "no presumed  
19 hazard," it does not mean that the flying  
20 conditions stay the same pre- and  
21 post-construction? Are you aware of that?

22 A. I'm not an expert on all the FAA's fine  
23 print. But that would not surprise me, from  
24 what I have read.

1 Q. So it is possible that pilots that fly over  
2 the ridge today using visual rather than  
3 instrumentation may have to change to now use  
4 their flight rules -- change the flight  
5 rules -- perhaps change their approach to  
6 this airport, perhaps change a number of  
7 things once these towers are up?

8 A. I'm not an expert in that.

9 Q. Then, to your knowledge, you have not -- in  
10 your investigations with FAA with regard to  
11 this radar-activated lighting, has anyone --  
12 has any pilot that you know of within Antrim,  
13 or any that use the airports within the  
14 vicinity of Antrim, raised concerns regarding  
15 whether or not now that area is going to be  
16 problematic with or without the radar  
17 activated? And to that extent, has FAA  
18 suggested, because of the proximity of nearby  
19 airports, it may be a problem to use the  
20 radar-activated lighting?

21 A. That is a possibility. I'm not sure that  
22 it's a big possibility. But we did not  
23 research every airport out there.

24 We did take into consideration whether

1       there's a major commercial airport, such as  
2       Manchester, which is a little different. But  
3       we also made the assumption that a lot of the  
4       flights that are going to go on from these  
5       smaller airports would be daytime flights.  
6       It's not entirely true, but a lot of these  
7       smaller airports are not lit and so forth for  
8       nighttime flying.

9     Q.    Okay. But it is -- you don't know, though.

10               When you spoke with the FAA, they  
11       hadn't -- to your knowledge, had they done  
12       any analysis with regard to radar-activated  
13       lighting in this area in proximity to nearby  
14       airports?

15    A.    They have not done it, to our knowledge, at  
16       this particular site.

17    Q.    And in your opinion, do you think that that  
18       should be something that should come forward  
19       to the Committee, to the extent that the  
20       Committee may have an obligation to protect  
21       the current flying conditions in that area  
22       and may want to take public input, if it  
23       turns out that the radar-activated lighting  
24       actually prohibits or makes it very difficult

1           for commercial -- or rather, recreational  
2           flying in that area?

3    A.    I'm not sure I fully understood the question.  
4           So if you could just synthesize it down.

5    Q.    Yes, I will.   I'm sorry.

6                   If it turns out, after the -- if the  
7           Committee permits this project conditioned  
8           upon -- and also includes as part of it the  
9           agreement that you have signed, and the  
10          condition that radar-activated lighting be  
11          part of the project when available, if it  
12          turns out that, when FAA truly does its  
13          evaluation and finds that, yes, such  
14          activated lighting can be put in place, but  
15          there's going to be a changing in the flight  
16          rules in this area that may impact  
17          recreational pilots flying in the area, would  
18          it be reasonable for the Committee to take  
19          public input on that and decide whether or  
20          not it is better to preserve the flight up --  
21          flight patterns that are recreational  
22          opportunities today and not have the lighting  
23          go in -- radar-activated lighting go in  
24          effect?

1     A.    Well, I think it's always reasonable that the  
2           Committee here would take into consideration  
3           all societal issues, if I'm --

4                   (Court Reporter interjects.)

5     A.    I said it would be reasonable for the  
6           Committee to take into consideration all  
7           societal issues, if I'm interpreting your  
8           question correctly.

9     Q.    So, but that might come after the fact.  If  
10           the Committee permits this project and says  
11           if/when radar-activated lighting is  
12           available, it shall be put in place, when is  
13           the opportunity for the public to be heard?

14    A.    I was assuming that that was part of this  
15           process.

16    Q.    What was part of this process?

17    A.    Well, this is the public process here.  The  
18           Application has been modified relative to  
19           putting this lighting in, so --

20    Q.    Would you think it was reasonable for the  
21           Committee today -- upon approval, that in  
22           fact this be left open pending -- that this  
23           particular element be left open pending a  
24           full evaluation by FAA on whether it would

1           have impacts on recreational flights today?

2           Is that reasonable?

3    A.    Yes.

4    Q.    Thank you.

5                               MS. LINOWES:   Thank you, Madam  
6           Chair.

7                               MS. BAILEY:   Okay.   Thank you.  
8           I'd like to go off the record and talk about  
9           the schedule for the rest of the week, and  
10          then I think we're finished with  
11          cross-examination for today.

12                               (Discussion off the record)

13                               MS. BAILEY:   Okay.   We're back  
14          on the record.   So we've taken a short break  
15          to discuss the remainder of the witness  
16          order.   And for tomorrow, Day 7, we're going  
17          to finish up with Dr. Kimball.   And then  
18          we're going to move on to Ms. Vissering,  
19          Mr. Tocci, Mr. James, then Mr. and Mrs.  
20          Block, if we have time.

21                               And then do you want to go  
22          through --

23                               MR. IACOPINO:   Following  
24          them -- so then, the following -- well, let

1 me start off by saying we reserve Friday  
2 morning for the panel of witnesses from the  
3 Audubon Society of New Hampshire: Carol  
4 Foss, Peter Nickerson and Paul Brown. And  
5 it's also my understanding that the Blocks  
6 will see if Ms. Morse can testify Friday as  
7 well.

8 The order after Mr. and Mrs.  
9 Block testify, which is as far as the Chair  
10 went, is the panel of the remaining North  
11 Branch intervenors -- Ms. Voelcker, Mr.  
12 Cleland and Ms. Law -- followed by --  
13 originally it was going to be Susan Morse,  
14 but it looks like she's going to be Friday --  
15 followed by Jeffrey Jones from the Stoddard  
16 Conservation Commission, Peter Beblowski from  
17 the Antrim Conservation Commission, then the  
18 Edwards and Allen panel, followed by Ms.  
19 Pinello and Mr. Levesque from the Antrim  
20 Planning Board, followed by Ms. Linowes from  
21 Industrial Wind Action, followed by the  
22 abutters -- who are Janice Duly Longgood, Mr.  
23 Schaefer and Mr. Craig -- followed by  
24 Catherine Sullivan. And that will be the



1 conclusion of all the witnesses.

2 MS. VOELKER: I was just  
3 thinking, I don't know whether Annie Law or  
4 Mr. Sullivan could do it, but maybe it would  
5 be better for our panel to end up Wednesday  
6 night, because the Blocks are going to be a  
7 much more concentrated thing. And if she  
8 wants to go in the morning --

9 MR. IACOPINO: Are you  
10 suggesting switching with --

11 MS. VOELKER: The Blocks.

12 MR. IACOPINO: I think we're  
13 going to have to see where we are tomorrow is  
14 probably the best way to answer that.

15 MS. VOELKER: Okay.

16 MS. BAILEY: So if everybody  
17 can come prepared tomorrow to do  
18 cross-examination on Mr. and Mrs. Block and  
19 the Voelcker, Cleland, Law panel, that would  
20 be good. And we'll play that by ear,  
21 depending on the time.

22 Does anybody have anything  
23 else?

24 CHAIRMAN IGNATIUS: I just --

1       let me add to what you were saying, that I  
2       think we all have to be prepared to take  
3       anything in any order we get to as we get to  
4       the end of this. And if it means swapping  
5       out and changing the order, so be it.

6               I think we're trying to  
7       accommodate people's travel schedules. And,  
8       you know, some of these are impossible, and  
9       we can't accommodate everything. But we've  
10      got to keep on and we've got to reach a  
11      conclusion.

12             And so I think, you know,  
13      everyone's flexibility will be greatly  
14      appreciated. I know that we've already been  
15      doing that, and we'll have to keep on being a  
16      little bit loose. We're sort of projecting a  
17      schedule here. But it may be that we have to  
18      swap in and out if we've got a short period  
19      of time and a short witness as opposed to a  
20      longer one or somebody who's got a  
21      last-minute change in their scheduling and  
22      can't be here at the time we were expecting.  
23      So I think it's sort of an aspirational  
24      rather than a set schedule.

1 MS. BAILEY: Thank you.

2 Does anybody have anything  
3 else for today?

4 (No verbal response)

5 MS. BAILEY: All right. Well,  
6 I thank everybody. And we're going to start  
7 at 8:30 every day this week, and we'll go at  
8 least until 6:00.

9 MR. ROTH: So we'll resume  
10 tomorrow with Mr. Kimball?

11 MS. BAILEY: Yes.

12 (Whereupon the AFTERNOON SESSION hearing  
13 adjourned at 6:00 p.m.)

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C E R T I F I C A T E

I, Susan J. Robidas, a Licensed  
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Susan J. Robidas, LCR/RPR  
Licensed Shorthand Court Reporter  
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**DAY 6 - AFTERNOON SESSION ONLY - November 27, 2012**  
**SEC 2012-01 ANTRIM WIND ENERGY HEARING ON THE MERITS**

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(1)</b><br>34:9<br><b>1:27 (1)</b><br>5:2<br><b>10 (7)</b><br>12:16;99:15;127:8;<br>146:22;159:9;160:8;<br>172:19<br><b>102 (1)</b><br>21:18<br><b>102,000 (1)</b><br>21:18<br><b>102,725 (2)</b><br>20:16;21:1<br><b>10A (1)</b><br>53:5<br><b>10-mile (5)</b><br>158:15;159:8;<br>160:17;161:14;<br>163:23<br><b>10-minute (2)</b><br>72:19;146:16<br><b>10-percent (1)</b> | 34:7<br><b>10-turbine (1)</b><br>86:2<br><b>11 (1)</b><br>25:1<br><b>11.9 (2)</b><br>17:18,22<br><b>11th (2)</b><br>8:4;13:9<br><b>120 (5)</b><br>21:18;88:5,19;<br>89:8,20<br><b>120,612 (1)</b><br>21:12<br><b>120,612,000 (1)</b><br>21:9<br><b>121 (1)</b><br>84:1<br><b>126 (2)</b><br>32:14;33:19<br><b>12th (1)</b><br>159:1<br><b>13.4 (1)</b><br>89:17<br><b>15 (2)</b><br>25:1;170:6<br><b>156 (1)</b><br>4:5<br><b>158 (1)</b><br>4:7<br><b>15th (2)</b><br>91:12;103:18<br><b>16 (8)</b><br>28:10,13,15;54:12;<br>55:24;88:4;95:17;<br>158:19<br><b>165 (1)</b><br>4:8<br><b>169 (1)</b><br>4:9<br><b>16-turbine (1)</b><br>86:1<br><b>17 (17)</b><br>12:23;16:20,24;<br>17:1,2;18:12;21:3;<br>23:16;25:11,11,24;<br>26:5,9;36:14,19;<br>55:23;169:21<br><b>180 (1)</b><br>32:17<br><b>188 (1)</b><br>33:21<br><b>19 (2)</b><br>31:4;129:23<br><b>19th (1)</b><br>25:15<br><br><b>2</b><br><br><b>2 (8)</b><br>8:2;33:3;34:9;<br>43:15;84:2,3;103:16,<br>21 | <b>2,000 (2)</b><br>46:3,4<br><b>2:40 (1)</b><br>52:16<br><b>2:57 (1)</b><br>52:17<br><b>20 (3)</b><br>9:20;12:21;129:23<br><b>20,000 (1)</b><br>165:19<br><b>2000 (1)</b><br>26:11<br><b>2001 (1)</b><br>67:20<br><b>2007 (5)</b><br>13:24;14:12;16:1;<br>17:11;43:8<br><b>2008 (3)</b><br>25:21;26:13;77:5<br><b>2009 (14)</b><br>13:24;14:11;17:18,<br>22;19:11,15,22;<br>40:10,13,15;41:12;<br>43:8;67:11;77:7<br><b>2010 (5)</b><br>26:18,23;43:6;<br>54:16;76:24<br><b>2011 (20)</b><br>17:10,13,18;18:1;<br>19:12,16,21;20:3,6;<br>21:8,12;23:23;24:1,<br>4;27:2;42:1;78:11;<br>83:24;84:9;89:24<br><b>2012 (9)</b><br>8:4;13:9;25:15;<br>36:21;40:11;54:16,<br>21;106:1;142:6<br><b>2015 (1)</b><br>34:8<br><b>2018 (1)</b><br>34:15<br><b>2030 (2)</b><br>9:21;12:21<br><b>21 (1)</b><br>101:21<br><b>223 (1)</b><br>84:3<br><b>229 (1)</b><br>148:2<br><b>24 (1)</b><br>169:24<br><b>245 (1)</b><br>84:7<br><b>25- (1)</b><br>167:9<br><b>26th (1)</b><br>106:1<br><b>27 (1)</b><br>170:1<br><b>2700 (1)</b><br>178:4<br><b>28 (1)</b><br>12:20 |
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**DAY 6 - AFTERNOON SESSION ONLY - November 27, 2012**  
**SEC 2012-01 ANTRIM WIND ENERGY HEARING ON THE MERITS**

|                        |                       |                    |                       |  |
|------------------------|-----------------------|--------------------|-----------------------|--|
|                        | 84:1                  | 147:3              |                       |  |
| <b>3</b>               | <b>49 (1)</b>         | <b>60,000 (1)</b>  |                       |  |
|                        | 89:12                 | 15:13              |                       |  |
| <b>3 (14)</b>          | <b>492 (1)</b>        | <b>69 (1)</b>      |                       |  |
| 8:7;12:17;13:5;        | 175:19                | 99:9               |                       |  |
| 14:21;15:20;17:9;      | <b>495 (1)</b>        |                    | <b>7</b>              |  |
| 53:3,5,18;55:19;       | 175:18                |                    |                       |  |
| 56:4;73:22;103:16,     | <b>4-percent (2)</b>  |                    | <b>7 (1)</b>          |  |
| 22                     | 14:16;15:4            |                    | 183:16                |  |
| <b>3.5 (1)</b>         | <b>5</b>              |                    | <b>70 (2)</b>         |  |
| 127:11                 |                       |                    | 86:24;87:11           |  |
| <b>3:24 (1)</b>        | <b>5 (23)</b>         |                    | <b>70-plus (1)</b>    |  |
| 72:23                  | 14:22;15:18,20;       |                    | 90:5                  |  |
| <b>3:30 (1)</b>        | 20:11,13;24:23;31:3,  | <b>71 (1)</b>      | 28:24                 |  |
| 72:20                  | 6;89:3,4;90:17;91:2;  | <b>75 (1)</b>      | 87:11                 |  |
| <b>3:37 (1)</b>        | 99:15;127:8,12;       | <b>760 (1)</b>     | 24:6                  |  |
| 72:24                  | 138:8,10;157:9,11,    | <b>760,000 (1)</b> | 24:5                  |  |
| <b>30 (3)</b>          | 12;159:9,11;160:7     |                    |                       |  |
| 86:7;95:22;165:18      | <b>5- (3)</b>         |                    |                       |  |
| <b>30,000 (1)</b>      | 160:17;161:14;        |                    |                       |  |
| 167:10                 | 163:23                |                    |                       |  |
| <b>30-megawatt (1)</b> | <b>5.9 (4)</b>        |                    | <b>8</b>              |  |
| 86:2                   | 17:16,17;18:1,20      |                    |                       |  |
| <b>30th (2)</b>        | <b>5:15 (1)</b>       |                    | <b>8 (1)</b>          |  |
| 89:10;91:13            | 152:4                 |                    | 172:19                |  |
| <b>31 (2)</b>          | <b>5:56 (1)</b>       |                    | <b>8- (1)</b>         |  |
| 95:18,18               | 147:2                 |                    | 46:11                 |  |
| <b>31st (1)</b>        | <b>50 (3)</b>         |                    | <b>8.2 (1)</b>        |  |
| 103:10                 | 96:16;178:13,14       |                    | 115:7                 |  |
| <b>35,450 (1)</b>      | <b>50-percent (1)</b> |                    | <b>8:30 (1)</b>       |  |
| 78:14                  | 19:14                 |                    | 187:7                 |  |
| <b>360 (1)</b>         | <b>51.3 (3)</b>       |                    |                       |  |
| 171:23                 | 18:18;19:5,12         |                    | <b>9</b>              |  |
| <b>396 (2)</b>         | <b>52.4 (1)</b>       |                    |                       |  |
| 24:2,13                | 78:15                 |                    | <b>9 (11)</b>         |  |
| <b>39-percent (1)</b>  | <b>53 (1)</b>         |                    | 7:5,7,18,20;12:16;    |  |
| 21:15                  | 115:6                 |                    | 13:5;17:9,11;24:23;   |  |
| <b>4</b>               | <b>541-A33 (1)</b>    |                    | 31:8;38:22            |  |
|                        | 133:7                 |                    | <b>900 (1)</b>        |  |
| <b>4 (8)</b>           | <b>55 (1)</b>         |                    | 46:11                 |  |
| 15:10,20;16:10,14;     | 5:16                  |                    | <b>93-percent (1)</b> |  |
| 43:16;105:17;          | <b>56 (2)</b>         |                    | 77:8                  |  |
| 156:22;169:20          | 116:11;136:24         |                    |                       |  |
| <b>4.9 (1)</b>         | <b>59,573 (1)</b>     |                    |                       |  |
| 78:12                  | 15:13                 |                    |                       |  |
| <b>40 (1)</b>          | <b>5-mile (1)</b>     |                    |                       |  |
| 86:8                   | 161:4                 |                    |                       |  |
| <b>400-foot (1)</b>    | <b>6</b>              |                    |                       |  |
| 175:17                 |                       |                    |                       |  |
| <b>40-megawatt (1)</b> | <b>6 (19)</b>         |                    |                       |  |
| 85:24                  | 6:24;14:21,21;        |                    |                       |  |
| <b>40-plus (1)</b>     | 15:16,19;18:8,19;     |                    |                       |  |
| 74:6                   | 19:1,8;20:12;24:7;    |                    |                       |  |
| <b>42 (1)</b>          | 33:5;73:22;88:15;     |                    |                       |  |
| 19:10                  | 89:12,17;91:3;        |                    |                       |  |
| <b>43 (1)</b>          | 104:22;138:9          |                    |                       |  |
| 106:11                 | <b>6.8 (3)</b>        |                    |                       |  |
| <b>44-percent (1)</b>  | 18:12,20,22           |                    |                       |  |
| 77:6                   | <b>6:00 (2)</b>       |                    |                       |  |
| <b>45 (1)</b>          | 187:8,13              |                    |                       |  |
| 135:22                 | <b>6:11 (1)</b>       |                    |                       |  |
| <b>462 (1)</b>         |                       |                    |                       |  |