Evidentiary Hearing - 14-F-0490 - 7-17-2017

STATE OF NEW YORK
DEPARTMENT OF PUBLIC SERVICE

CASE 14-F-0490 - Application of Cassadaga Wind LLC for a Certificate of Environmental Compatibility and Public Need Pursuant to Article 10 of the New York State Public Service Law for the Cassadaga Wind Project, Towns of Charlotte, Cherry Creek, Arkwright and Stockton, Chautauqua County

EVIDENTIARY HEARING

Monday July 17, 2017
10:00 a.m.

Sinclairville Fire Department
30 Main Street,
Sinclairville, New York 14782

DAKIN P. LECAKES, DPS
Administrative Law Judge
Three Empire State Plaza
Albany, New York 12223-1350

P. NICOLAS GARLICK, DEC
Administrative Law Judge

APPEARANCES:

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FOR NYS DEPARTMENT OF PUBLIC SERVICE

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FOR NYS DEC:

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EXHIBITS

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I N D E X O F P R O C E E D I N G S

(On the record)

A.L.J. LECAKES: We're on the record now.

Good morning. I call case 14-F-0490 for the New York State Board on Electric Generation Siting and the Environment.

This is the application of Cassadaga Wind, LLC for certificate of environmental compatibility and public need pursuant to Article 10 to construct a wind energy project.

We're here pursuant to a notice of evidentiary hearing that was issued by the New York State Department of Public Service secretary on July 3rd, 2017.

My name is Dakin Lecakes and I am a judge with the -- an Administrative Law Judge with the New York State Department of Public Service. Next to me is Nick Garlick, he's an Administrative Law Judge with the New York State Department of Environmental Conservation.

Just briefly, Cassadaga Wind, LLC filed an application on June 16th, 2016 seeking authority to build and operate 126-megawatt wind

energy project, including the installation and operation of up to 62 wind turbines together with associated collection lines, low grade and overhead, access roads, meteorological towers, operation and maintenance building, collection and point of interconnect sub-stations and related facilities. Since that application as filed at -- was filed, there has been some amendments that have been made to the project as proposed.

Why don't we start by taking appearances from the parties? We'll start with the applicant.

MR. MUSCATO: Hi, good morning, Your Honor. My name is James Muscato, from the law firm of Young Sommer, and along with me from the law firm of Young Sommer this morning, I have Jeff Baker and Rob Panasci.

A.L.J. LECAKES: And from Department of Environmental Conservation.

MS. CROUNSE: Good morning. This is Sita Crounse on behalf of the New York State, Department of Environmental Conservation, and with me Steve Allinger.

A.L.J. LECAKES: And then from Department of Public Service.

MS. CERBIN: My name is Andrea Cerbin, and with me is Tony Belsi -- Anthony Belsito and Heather Behnke.

A.L.J. LECAKES: Now, Mr. Abraham.

MR. ABRAHAM: Gary Abraham for Concerned Citizens of the Cassadaga Wind Project.

A.L.J. LECAKES: Is there any other attorneys that wish to make appearances? Would you like to make an appearance?

Okay. I would like to mention a couple of things for appearances. I did receive an email from Mr. Dan Spitzer of the law firm of Hodgson Russ. He represents the combined Towns of Arkwright, Charlotte and Cherry Creek. Mr. Spitzer sent us an email on Friday, July 14th at about 10:00 a.m. telling us that the towns did not plan on appearing at the hearings. There is some work that they have been doing with the applicant and some information that may be submitted to us in which case we will assign that exhibit number.

He has been excused from appearing.

I also received an email from Mr. Richard Thomas, assistant counsel from the New York State Department of Health. Mr. Thomas will be here later in the week. I also understand that the Department of Agriculture and Markets, Tara Wells may be appearing later in the week, but she is not here today. Is there anyone else that I missed?

Before we start taking affidavits and witnesses, I have a ruling on confidentiality that I'd like to just read into the record.

"Pursuant to our direction on June 9th, 2017 the applicant submitted to us a comprehensive brief justifying its request for confidential treatment of certain information provided in its application or through discovery between the parties. And no parties submitted a brief opposing confidential treatment. In its brief, the applicant categorizes its requests under five potential categories that if we agreed with the applicant, the information has been demonstrated to belong to those categories, the applicant is entitled to confidential protection such that the material should not be disclosed

even through a freedom of information request. The five categories identified by the applicant are; endangered protected or threatened species or habitat information, critical energy infrastructure information, trade secrets, confidential commercial information or information that if disclosed would impair present or imminent contract awards."

Having reviewed the applicant's legal authority and the materials for which confidentiality has been requested, we grant the applicant's request in full, and accord full confidential protection to each of the items. On pages 13 through 22 of its June 9th, 2017 brief, the applicant provides an itemized list of the information for which it seeks confidential treatment that was provided prior to rebuttal. Also on pages 23 and 24, the applicant details the items submitted with its rebuttal for which it seeks the same confidential treatment. That list is incorporated into this oral ruling by reference and will be assigned an exhibit number for which I will maintain the responsibility for placing on DMM. Prior to the hearing, I handed

out an exhibit lists. We have reserved for pre-filed exhibits, Exhibits 1 through 95, so where Exhibit 96 for reference we will assign that as the applicant's list of confidential items.

As an aside to the ruling, I'm just noting that exhibits that are handed to me during the hearing, should they be put into the evidentiary record, will appear on DMM. Some of the information identified by the applicant belongs to only one category. For other information, the applicant claims protection under multiple categories. In our opinion, the applicant has made the showing that the information is entitled to protection in the category it is assigned to, but we also agree that for items provided an alternative basis that alternative provides ample cover as well.

Information submitted under the endangered species categories entitled to protection under New York Environmental Conservation Law Section 3-0301(2)(r), and Environmental Conservation Law Section 9-1503 pursuant to New York Public Officers Law Section 87(2)(a). Critical energy infrastructure

information is entitled to protection under New York Public Officers Law, Section 86(5). Trade secrets are entitled to protection under New York Public Officers' Law, Section 87(2)(d). And New York Public Service Law, Section 6-1.3(a). Defining a trade secret and the Public Service Commission's regulations in 16 NYCRR.

Similarly, certain commercial sensitive information even though it may not be a trade secret as that term is defined, may be entitled to confidential treatment under the standard of Verizon New York, Incorporated versus New York State Public Service Commission 137 A.D. 3rd 66 2016, where disclosure of the information could cause substantial competitive injury. The last category identified by the applicant pertains to information contained with -- within a competitive bidding application on the applicant submitted -- sorry. The last category identified by the applicant pertains to information contained within a competitive bidding application.

The applicant submitted to the New England ISO in response to a request for proposal.

The applicant states that the information in this category is confidential in as much as it was part of the competitive bid for which similar future bid opportunities may arise. And that if this particular bid information was disclosed, it could experience significant prejudice and harm.

The applicant also notes that it is contractually bound to the New England independent system operator to maintain confidentiality without the New England ISO's express permission. We find this information raises at least to the level of confidential commercial information under Verizon versus New York P.S.C. and likely trade secret, but agree with the applicant that it is likely covered by the expressed terms of New York Public Officers Law, Section 87(2)(b) protecting information that if released would impair present or imminent contract awards.

This oral ruling constitutes the full ruling of Judges Garlick and myself on the issues of confidentiality. Therefore, where testimony or cross examination involving cross -- confidential information is discussed. Two

transcripts will be made, one public redacted version and a second unredacted confidential version. To the extent, parties need to rely on confidential information, post-hearing briefs, due care should be given, however, parties are encouraged to make their points if at all possible without specifying confidential material instead opting for transcript and hearing exhibit citations so that two versions of the briefs can be avoided.

That is the full ruling on confidential material. Do we have any preliminary matters to discuss before we start taking affidavits? Yes, Mr. Baker?

MR. BAKER: Can we go off the record one moment?

A.L.J. LECAKES: Oh, absolutely. Off the record.

(Off the record)

(On the record)

A.L.J. LECAKES: Discussion off the record, we're going to start with the applicant and take a statement on the certificate conditions. Mr. Muscato?

MR. MUSCATO: Thank you, Your Honor. Subsequent to the filing of the application in response to the discussion before your honors at the January procedural conference, the applicant proposed a number of certificate conditions, for the parties' consideration and to potentially address issues in dispute in this proceeding. The parties addressed the applicant's proposed certificate conditions in their direct testimony and in some cases proposed new or revised conditions. In the applicant's rebuttal testimony, the applicant's witnesses addressed the certificate conditions contained in the parties' direct testimony. The applicant adopted many of the parties' suggested conditions and included a revised proposed certificate condition document as Exhibit 7 of the Wilmore testimony. I understand that's been marked as Hearing Exhibit 51, for the record.

Per your Honor's directive, the DEC and the applicant have discussed some further revisions to the proposed certificate conditions in order to narrow the scope and time for cross examination of witnesses at the evidentiary

hearing. Those witnesses are scheduled for today. The revisions are in the applicant's proposed certificate conditions 52, 53, 79, 90, 98, 99, 119, 126, and 139 and involve clarifications or refinements to the applicant's obligations regarding wetlands, streams and invasive species.

We provided the parties a copy of the revised certificate conditions showing redline changes that were discussed by DEC and the applicant on Friday and there is one additional change, actually two additional changes, to conditions 52 and 53 that have been written in to the redline version of this document to be introduced into the record, we can provide a final copy and copies to the parties tomorrow, this change was just made this morning. We provided the parties -- I'm sorry.

As a result of those discussions and the changes to the certificate conditions, we would like to introduce an updated Hearing Exhibit 51, Exhibit 7 of the Wilmore testimony for the record in this proceeding. DEC and the applicant understand that as a result of the

revisions to the certificate conditions, the need for cross examination for certain witnesses will be significantly narrowed, if not eliminated. And the subject matter of the revisions will not be disputed in the upcoming briefs on the facility application. At this time, we would propose introducing the revised applicant's certificate conditions into the record.

A.L.J. LECAKES: Yeah, we can do that rather than changing or -- or doing a revised Exhibit 51, why don't we assign this one a new exhibit number. We'll assign it Exhibit Number 97 and --

MS. CERBIN: And, Your Honor, I apologize for breaking in.

A.L.J. LECAKES: Okay.

MR. CERBIN: DPS objects to this.

A.L.J. LECAKES: And on what grounds?

MS. CERBIN: On the grounds of, we think it's tantamount to settlement and was not properly noticed. Article 10 envisions a full and open process for which we are about to partake in and this is basically settlement

negotiations. That was settled without DPS's knowledge, handed to us at the last minute, without the ability to cross examine the witnesses.

A.L.J. LECAKES: Mr. Muscato?

MR. MUSCATO: Your Honor, this is consistent with the discussions that we've had leading up to this evidentiary hearing, where the parties intend to narrow the scope for cross examination and the issues in dispute for this evidentiary hearing. We had hoped that DPS staff would resolve many of the issues with some of the minor modifications that have been made to the certificate conditions, but instead we're forced to cross examine their witnesses and potentially extend the hearing for a number of days.

So this is consistent with what your Honor's had directed the parties to do in advance of this and with respect to the notice, the DPS staff is fully available to cross examine the witness with respect to the conditions that have been changed and the witness will be presented at various times during the hearing. Either substantive witnesses on wetland, streams

invasives or -- or otherwise.

A.L.J. LECAKES: Ms. Cerbin, does this mean that DPS will have cross examination for some of these witnesses?

MS. CERBIN: Your Honor, considering the fact that there appears to be handwritten edits to something that happened this morning. We had -- we had no idea, DPS has no knowledge of this document and therefore, we object to it being entered into as an exhibit.

A.L.J. LECAKES: Okay. Well, we're not going to rule on admission of any exhibits until the end of the hearing. However, I do note your objection but what I would ask is that you would take the opportunity to review the document either at the end of today's proceedings or tomorrow morning, if you could let us know if you have any witnesses that you need to cross examine based on what's happened to the extent that that cross examination can't happen during this week, we can make arrangements to keep the hearing open, that assuming that we allow this into evidence noting that there is an objection now, however, I am inclined to find that it is not in

the nature of settlement negotiations so much as it is or a refinement of the testimony of positions of both DEC and the applicant.

However, again, I'll need to take some time and will make the full ruling on admissibility at the end of the hearing. Mr. Muscato, did you want to have a witness come forward to sponsor that exhibit?

MR. MUSCATO: Yes, Your Honor. I -- I would call --

A.L.J. LECAKES: All right, please call him.

MR. MUSCATO: I would call Mr. Wilmore to the stand.

A.L.J. LECAKES: Mr. Muscato, before we get to your witness, Ms. Crounse, did DEC have any position on DPS's objections?

MR. ALLINGER: Yes, Your Honor. We'd like to put on the record that the purpose of these proposed positions was to narrow the scope of cross examination as per your Honor's directive. As attorneys of DEC are directed, develop the strategy of our case and to further our department's goals. These proposed

conditions represent the narrowing of cross that it achieves our aims and avoids redundant and unnecessary testimony. The issues addressed in these conditions are still subject to litigation in this proceeding and no party is -- is precluded from raising issues in the brief.

MS. CROUNSE: I would add no party, but yeah –and DEC. So no other parties.

A.L.J. LECAKES: Right. Okay, thank you.

MR. MUSCATO: Hi, Mr. Wilmore.

MR. WILMORE: Hi.

MR. MUSCATO: Do you have a document in front of you that's entitled the applicant's proposed certificate conditions which was Exhibit 7 to your testimony in this proceeding, correct?

MR. WILMORE: Correct.

MR. MUSCATO: Do you have --

A.L.J. LECAKES: Mr. Muscato, sorry.

Mr. Wilmore, could you please stand for a moment?

MR. WILMORE: Oh, sure.

MR. MUSCATO: All Right.

A.L.J. LECAKES: Would you please raise your right hand? And do you swear or affirm that the testimony you're about to give in this proceeding is the whole truth?

MR. WILMORE: Yes.

SETH WILMORE; Sworn

A.L.J. LECAKES: You may be seated. Okay, you may proceed.

MR. MUSCATO: Thank you, Your Honor.

DIRECT EXAMINATION

BY MR. MUSCATO:

Q. So Mr. Wilmore, do you have an exhibit in front of you that was originally included in your testimony as Exhibit 7?

A. (Wilmore) Yes.

Q. Do you have any changes or corrections to make to that document?

A. Yes.

Q. As a result of those changes, did -- do you -- are you aware of the changes that were made to that document?

A. I am.

Q. And were those changes made by you or prepared for you or under your direction?

A. Yes.

MR. MUSCATO: Your Honor, can we go off the record for one second?

A.L.J. LECAKES: Yes, absolutely. Off the record.

(Off the record)

(On the record)

A.L.J. LECAKES: While we were off the record, we had a brief discussion in lieu of the witness reading in the changes of Exhibit 97 which actually is a revision to previously marked Exhibit 51. We are going to have the applicant hand out a redline change of that exhibit which will be put onto DMM and that will serve, to show the changes that were made from Exhibit 51 to Exhibit 97. Is there anything further, Mr. Muscato?

MR. MUSCATO: Not at this time, Your Honor.

A.L.J. LECAKES: Thank you. Mr. Wilmore, you are under oath, you will remain under -- I -- I understand that you will be

called later in this proceeding so you will remain under oath until your testimony is done there. All right, you are dismissed for now.

All right, let's start collecting affidavits. We'll start with the applicant's witnesses.

MR. MUSCATO: Yes, Your Honor. Your Honor, we're missing one affidavit for a witness that is not appearing at the hearings, but we'll provide the affidavit, I think, by the middle of the week.

A.L.J. LECAKES: Okay, that's fine. Yeah, we're collecting affidavits throughout the hearing, so.

MR. BAKER: Your Honor, we have the affidavit of Patrick Heaton, Daniel Troy and Todd Humphrey.

A.L.J. LECAKES: You may approach.

MR. BAKER: Thank you, Your Honor.

A.L.J. LECAKES: Thank you. Okay, we'll start with the affidavit of Patrick Heaton, H-E-A-T-O-N. This is a two-page document, swearing to the testimony and exhibits. We'll assign this Exhibit Number 98, so affidavit of

Heaton. And do we know which exhibits were sponsored by Mr. Heaton that have been pre-marked on the exhibit list?

MR. MUSCATO: I don't believe there were any, Your Honor.

A.L.J. LECAKES: Okay.

MR. MUSCATO: They were all -- he was responsible for the exhibits in the application as long as -- in addition to two of the updates.

A.L.J. LECAKES: And --

MR. MUSCATO: And I think they are listed in the -- in the affidavit.

A.L.J. LECAKES: Mr. Muscato, is the application itself on the exhibit list?

MR. MUSCATO: No.

A.L.J. LECAKES: Okay. Who's sponsoring the application?

MR. MUSCATO: So the application is sponsored by various witnesses and each of the witnesses that sponsors exhibit to the application or any of the updates have been identified in their affidavits.

A.L.J. LECAKES: Okay. We should

absolutely put the full application in as a single hearing exhibit if not separately. Why don't we do that now unless there's any objections? All right, we'll assign the application of Cassadaga Wind, LLC that was filed on June 16th, 2016 together with any amendments that have been made to that application as Exhibit 99.

MR. MUSCATO: Your Honor, can I ask you a question with respect to that?

A.L.J. LECAKES: Yes, absolutely.

MR. MUSCATO: This is somewhat off topic but would be included in the list of hearing exhibits that we will want to introduce. At this point, the IRs, the discovery that has been introduced in this proceeding is -- is -- in some of the pre -- pre-filed hearing exhibits based on whether or not it was included in the testimony, direct testimony or rebuttal testimony submitted in this proceeding, that the applicant would like to move all of the IRs in full whether they were served on the applicant or served on behalf of the applicant into the record. And I'm wondering whether or not we should do an

individual hearing exhibit for that as well?

A.L.J. LECAKES: We can do that. Do you want to do that now or do you want to do that later?

MR. MUSCATO: It's up to you, Your Honor. Just in terms of housekeeping on this list, I didn't know what was your preference.

A.L.J. LECAKES: Right. It -- it doesn't matter to me because the will -- itself will be put on to DMM at one point for reference, so it doesn't need to be in any particular order. Do you have the IR, the exhibit that you want to put into the record?

MR. MUSCATO: So because the IRs are lengthy we -- another question we had was whether or not how your Honors would like us to introduce that into the record, rather than re-produce two binders of -- of IRs. We have thumb drives that we could provide to the -- to you or to the secretary for inclusion in the record.

A.L.J. LECAKES: You can hand those to us, I'll -- I'll take that.

MR. MUSCATO: Okay.

A.L.J. LECAKES: And how many

copies of the thumb drives do you have?

MR. MUSCATO: Well, we actually don't have the thumb drives now.

A.L.J. LECAKES: Okay.

MR. MUSCATO: We -- we were planning on submitting this week.

A.L.J. LECAKES: Okay. Then why don't we not give an exhibit number now. I will take the thumb drives and -- and assign an exhibit number at the same time later this week. Make sure that you have at least a copy for both myself and Judge Garlick.

MR. MUSCATO: Right.

A.L.J. LECAKES: And what other parties would like a copy of that?

MR. MUSCATO: All the parties have copies of the interrogatories.

A.L.J. LECAKES: Right. But for completeness sake, for the purposes of this is the exhibit, whatever it is, for example, if it's Exhibit 110 or whatever, this is Exhibit 110, everyone can know that this thumb drive that they have in case of any omissions or anything like that. So I would prefer that I -- you make

available to each of the parties a thumb drive of that exhibit.

MS. CERBIN: Your Honor, with respect to the application, is it possible to have each exhibit broken out or each -- so instead of having the application as a whole, having one broken out as an exhibits, especially with respect to the supplements that were filed, like the Averill (phonetic spelling) supplement and I believe there is one other supplement.

A.L.J. LECAKES: My preference would be to have each -- if -- if we wanted to break it down further than having a single exhibit number assigned to it, break it down into the supplements and -- and the application having a separate exhibit. There were a number of exhibit numbers that were attached to the application. The concern I have is that, for example, if we're -- if we're citing to the application it's going to be, right now it's going to Exhibit 1 or Exhibit 2 of Exhibit 100. To try and keep straight, Exhibit 2 of the application is also Exhibit 99, Exhibit 3 is Exhibit -- it -- it just -- I -- I think that

would be unwieldy unless the applicant prefers having each exhibit from the application marked individually.

MR. MUSCATO: No, I -- I -- I think I could understand a basis to segregate out the filings so that the application was one and the updates were separate, but with respect to the application itself I think it makes the most sense to include the -- the entirety of the application rather than segregate it out from because there is exhibits, there's appendices, so there's also confidential material within that as well.

A.L.J. LECAKES: Right. So why don't we -- so we have the application itself that was filed on June 6th -- June --

MR. MUSCATO: May? It's actually May. May 26th.

A.L.J. LECAKES: Oh, was it May? The secretary's notice had the date of June in it, but -- so the original application we'll mark as Exhibit 99. And that was filed on --

MR. MUSCATO: May, I'm sorry. May --

A.L.J. LECAKES: That's okay.

MR. MUSCATO: -- May 26th.

A.L.J. LECAKES: Okay. May 26th. So the May 26th application filing is Exhibit 99. Then the first supplement?

MR. MUSCATO: The first supplement, Your Honor, was filed --

MR. BAKER: January 31st.

MR. MUSCATO: No, the 12th, you mean before the application was deemed complete so there was a supplement that was submitted in October that was dated October 7th, 2016 and then there was a second supplement that was submitted on October 28th, 2016. And then the application was deemed complete.

A.L.J. LECAKES: Okay. And then after that there were further supplements?

MR. MUSCATO: There was an up -- there was an update January 18th, 2017. March 31st, 2017; April 3rd, 2017; April 18th, 2017 and June 9th, 2017.

A.L.J. LECAKES: Okay, let's see if I got this right then. So we have the application that was filed May 26th, 2016 as

Exhibit 99. We will assign the first supplement to the application of October 7th, 2016, Exhibit Number 100. The second supplement to the application filed on October 28th, 2016, Exhibit Number 101. The update that was filed by the applicant to the application on January 18th, 2017 as Exhibit 102. The update that was filed on March 31st, 2017, Exhibit Number 103. The update that was filed on April 3rd, 2017 Exhibit Number 104. The update that was filed on April 18th, 2017, Exhibit 105 and the update that was filed on June 9th, 2017 Exhibit 106.

And Ms. Cerbin, does that work for DPS staff?

MS. CERBIN: Yes, Your Honor. Thank you.

A.L.J. LECAKES: All right, moving on we have the affidavit of Daniel Troy, T-R-O-Y. Oh, I -- I apologize. Before we get to the affidavit of Mr. Troy, we'll go back to the affit -- affidavit of Mr. Heaton and his testimony is accepted for the evidentiary hearing. And at this point, in the evidentiary hearing transcript, pursuant to the email that was sent

to the court reporters, the file name is the applicant-rebuttal testimony of Daniel J. Troy and then it has the case number for 14-F-0 -- I'm sorry.

I'm -- yes, thank you, Judge Garlick. I'm getting them confused. Was there rebuttal testimony from Mr. Heaton?

MR. MUSCATO: No, Your Honor.

A.L.J. LECAKES: Okay. Okay, so then at this point, we're good with Mr. Heaton. The purpose of Mr. Heaton's affidavit then is just to get in application exhibits?

MR. MUSCATO: Correct.

A.L.J. LECAKES: Okay.

MR. MUSCATO: Or updates.

A.L.J. LECAKES: Which apply to applications Exhibits 20 and 24, those are not hearing exhibits, but the application exhibits as well as updates in the March 31st, 2017 update.

MR. MUSCATO: Correct.

A.L.J. LECAKES: Oh, and I see there was direct testimony that was included in the application, that's included as an exhibit there.

MR. MUSCATO: Which was the submission of his resume and qualifications.

A.L.J. LECAKES: Right, okay. So let's now move to Mr. Troy and we will put his testimony into the record in a moment. So Mr. Troy's affidavit we'll assign Exhibit Number 107. This is also a two-page affidavit. Mr. Troy sponsors an exhibit in the application as well as his direct testimony in the application with his resume and did supply rebuttal testimony. We will accept Mr. Troy's rebuttal testimony into the evidentiary record this -- at this point. So now, in the hearing transcripts, the file that was emailed to the court reporters that says applicant-rebuttal testimony of Daniel J. Troy under case 14-F-0490 should be put into the transcript as if orally given today.

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

Application of Cassadaga Wind Project for a Certificate under Article 10 of the Public Service Law — Case No. 14-F-0490

REBUTTAL TESTIMONY OF:

DANIEL J. TROY

SENIOR PROJECT MANAGER

GZA GEOENVIRONMENTAL OF NY

535 WASHINGTON STREET, 11TH FLOOR

BUFFALO, NEW YORK 14203

Q: Please state your name and business address.

A: Daniel J. Troy, 535 Washington Street, 11th Floor, Buffalo, NY 14203

Q: Did you file pre-filed testimony in this matter, which contained your credentials?

A: Yes. Please see attached as "**DJT-1"** my pre-filed testimony and credentials.

Q: Are you a licensed professional engineer?

A: Yes, I am licensed in New York State. I am also LEED Accredited Professional (AP) as defined by the Green Building Certification Institute.

Q: Are you a member of any professional associations?

A: Yes, I am a member of the Engineering Society of Buffalo and the American Council of Engineering Companies.

Q: Please describe your purpose for this testimony.

A: My testimony is being submitted to rebut certain direct testimony prepared by Jeremy Flaum on behalf of the New York State Department of Public Service Staff ("DPS"). Specifically, my rebuttal testimony will respond to concerns raised in Mr. Flaum's testimony about the location of Facility components near private water supply wells and confirm specific geotechnical investigations that will be completed before construction of the Facility.

Q: Please briefly describe the issues raised in DPS Staff's testimony regarding the Applicant's proposed underground and overhead electric circuits and lines.

A: Generally, DPS Staff has raised concerns regarding (1) the possible contamination of private drinking water wells due to the location of Facility components resulting in an arbitrary setback requirement for *all* Facility components from wells; and (2) the locations of final geotechnical investigations that must be completed by the Applicant before construction.

Q: Please describe the general analysis used to determine whether a construction activity may impact a drinking water well.

A: There are several factors that are considered when making such a determination, including but not limited to, the type of well (e.g., spring feed, shallow dug well, drilled well), depth of the water table and subsurface geology, the construction activity type and associated depths below ground surface, whether the impacts are temporary or permanent, the distance of the well from the construction activity and/or whether the well is down gradient of the construction activity. The New York State Department of Health has promulgated regulations concerning water wells (Part 5, Subpart 5-1-Standard for Water Wells), including Table 1, entitled "Required Minimum Separation Distances to Protect Water Wells From Contamination." This table provides setback distances that wells should be from

specific contaminant sources, which generally include chemical storages sites, landfills, manure piles, wastewater treatment absorption systems, single walled petroleum storage vessels, and surface wastewater recharge absorption systems. The table also includes a setback distance of 100 feet for "all known sources of contamination otherwise not shown" in the table. The table does not list a gravel access road or collection line (underground or overhead) as a source of contamination. If the activity is not a known source of contamination, then there is no specific setback distance from a water well. Based on the table, NYSDOH does not consider construction activities (construction of houses, barns, paved roads) to be a source of contamination as evident by the number of wells located less than 100 feet from these features (including roads which periodically require sealing, patching, and/or painting).

Q: Are there Facility components that may be located within 100 feet of a drinking water well?

A: Yes, there may be three private drinking water wells that are located within 100 feet of Applicant's access road or collection line. No turbines or substations are located within 100 feet of a drinking water well and the Applicant will not be conducting any blasting activities within this area. This well location data was collected from surveys completed by the Applicant as well as reviewing New York State Department of Environmental Conservation (NYSDEC) mapping and

was completed per the stipulations the parties entered into prior to the submittal of the Application. The three landowners with private wells within 100 ft. of access roads or collection are participants which means they have agreements with the Applicant for location of facility components. Per GZA's recommendation, prior to construction, the Applicant will meet with each of the three landowners to confirm the existence of the wells, the type of wells and whether the wells are used for drinking water. The Applicant will test water samples collected from drinking water wells located within 100 feet of Facility components during both pre- and post-construction to ensure its construction activities did not have an impact on the potability of the water. In my opinion, this approach is consistent with this type of construction activity and provides adequate protection to the owners of these wells.

Q: Is the construction of a gravel access road a known source of contamination?

A: No. The only potential temporary impact from the construction of a gravel access road to a shallow water well is possible sedimentation entering the well casing if the well casing is broken. However, this potential temporary impact can be eliminated by using erosion control fencing during construction of the access road. There is an erosion and sediment control plan, as part of the required storm water pollution prevention plan (SWPPP), which will be utilized to prevent sediment impacts to wells (or other sensitive receptors). In my opinion, there are

no temporary or permanent impacts to a water well from the construction of a gravel access road when best management practices are used in accordance with the site-specific requirements of the SWPPP. Therefore, a setback would be arbitrary and unnecessary.

Q: Is the construction of a collection line a known source of contamination?

A: No. As noted above, the only potential temporary impact from the construction of an underground collection line to a shallow water well is possible sedimentation entering the well casing, which can be eliminated by the use of best management practices in accordance with the Site specific SWPPP (e.g., erosion control fencing). In my opinion, there are no temporary or permanent impacts to a drilled water well from the construction of an underground collection line when best management practices are used in accordance with the site-specific requirements of the SWPPP. In addition, in my opinion, there are no temporary or permanent impacts to water wells from the construction of an overhead collection line. Again, therefore, a setback would be arbitrary and unnecessary.

Q: Do you agree with DPS Staff's position that the construction and operation of the Facility will have a temporary negative impact on well water quality if appropriate setback distances are not implemented for ground intrusive activities?

A: No. As noted above, there are only three potential locations where a collection line or access road will be located less than 100 feet from a potential drinking water well. While in my opinion any potential sediment from the construction activities is not a source of contamination, the use of erosion control fencing in accordance with the SWPPP will address any potential temporary issue. I am not aware of any other potential temporary negative impacts.

Q: Do you agree with DPS Staff's recommendation that all Facility Components should be at least 100 feet from any public or private drinking water well?

A: No, I do not agree that all Facility components should be at least 100 feet from any public or private drinking water well. The recommended setbacks set forth in Table 1 entitled "Required Minimum Separation Distances to Protect Water Wells From Contamination" do not contain a setback distance for gravel access road or electrical lines and as noted above, the only potential temporary impact could be from sedimentation, which will be addressed by erosion control fencing in accordance with the site specific SWPPP. In my opinion, it is inappropriate to set an arbitrary setback distance for access roads or collections lines and the approach outlined in my testimony is adequate to protect the drinking water wells.

Q: Do you agree with DPS Staff's recommendation that the Applicant should, during the final design of the Facility, contact each well owner/operator within the Facility Area in order to survey the exact locations of the wells?

A: No, in my opinion the information provided in the Application contains the necessary information to complete the final design of the Facility and it is not necessary for the Applicant to contact each landowner within the Facility area to get exact locations of wells. As Mr. Flaum's testimony indicates, DPS is only concerned with water wells, which due to mapping approximation, appear to be within 100 feet of Facility components. Contacting all well owners in the Facility area is unnecessary. However, the Applicant will confirm the location of water wells within 100 feet of Facility components and meet with each landowner that has a water well within 100 feet of Facility components to ensure that the location of the respective drinking water well is in the area indicated on the Applicant's mapping. It should be also noted that the Applicant and DPS entered into stipulations regarding the identification and mapping of water wells. The Applicant and DPS agreed to use publically available water well data and a well survey to determine the locations of private water wells, which the Applicant did. Neither DPS nor the Applicant agreed that the Applicant should also contact every well owner/operator in the Facility area to confirm exact locations of wells. This recommendation is therefore outside the scope of the stipulations.

Q: Do you agree with DPS Staff's recommendations for the scope of the final geotechnical investigations?

A: Yes, I agree with the recommendations. In addition, the Applicant will provide a Final Frac-Out Risk Assessment and Contingency Plan that is consistent with industry practices.

Certificate Conditions

Q: Did you review the Certificate Conditions Proposed by the DPS Staff?

A: Yes, I reviewed the DPS Proposed Certificate Conditions Nos. 66, 67 and 70.

Q: Do you agree with the conditions imposed in Certificate Condition No. 66?

A: No, I do not agree with the 100 feet setback imposed in this Condition for the reasons set forth in my testimony. In lieu of an arbitrary setback distance, the Applicant proposes to conduct pre- and post-construction testing of any water well located within 100 feet of Facility components. The Applicant agrees that if the testing demonstrates that the Facility construction had an impact on a specific well, the Applicant shall cause a new replacement water well to be constructed.

Q: Do you agree with the conditions imposed in Certificate Condition No. 67?

A: No, I do not agree with the requirement to prepare a drinking water well impacts mitigation plan prior to construction. My testimony sets forth the coordination efforts that the Applicant will conduct with the well owners/operators. The Applicant's proposed changes in Certificate Condition 66 set forth the coordination activities that will be completed by the Applicant.

Q: Do you agree that the Final Complaint Resolution Plan included in Certificate Condition No. 70 should include water supply well impacts?

A: No because the existing complaint resolution process encompasses any complaint related to both construction and operation phases. As a result, there is no need to include a specific provision for water supply well impacts.

Q: Does this conclude your testimony?

A: Yes.

Next, I have the affidavit of Todd Humphrey, H-U-M-P-H-R-E-Y. This is also a two-page affidavit. Mr. Humphrey sponsored an exhibit in the application, in fact, on transportation as well as direct testimony that included his resume in the application.

Mr. Muscato, am I correct that there's no rebuttal testimony from Mr. Humphrey?

MR. MUSCATO: That's correct, Your Honor.

A.L.J. LECAKES: All right. We'll assign the affidavit for Mr. Humphrey, Exhibit Number 108. Is that the -- all of the applicant's affidavits at this point?

MR. BAKER: Yes, correct.

MR. MUSCATO: At this point, Your Honor, there will also be an affidavit of Kenneth Mundt that would be submitted later in the week.

A.L.J. LECAKES: Okay. Who wants to go next, DPS, DEC?

MS. CROUNSE: I will have an affidavit tomorrow.

A.L.J. LECAKES: Okay. DPS?

MS. BEHNKE: Yes, Your Honor, two affidavits, isn't it?

A.L.J. LECAKES: Thank you, Ms. Behnke, you may approach.

MS. BEHNKE: The affidavit of Ms. Gillings and the affidavit of John Cary and David Wheat.

A.L.J. LECAKES: Two copies you can pass those out. Thank you. If anybody wants them? All right, I'm going to start with the affidavit of Lorna Gillings, L-O-R-N-A G-I-L-L-I-N-G-S.

We'll assign Ms. Gillings' affidavit Exhibit Number 109 for reference. Ms. Gillings had one exhibit and prepared testimony that has been assigned Exhibit Number 56 for this proceeding, is that correct?

MS. BEHNKE: That is correct.

A.L.J. LECAKES: So at this point we will accept -- oh, I'm sorry. This is a single-page affidavit from Ms. Gillings. And we will accept Ms. Gillings' testimony into the evidentiary record and it should be put into the transcript as if orally given today and that will

appear as the file that was emailed to the court reporters as DPS- -- let's go off the record for a second?

(Off the record)

A.L.J. LECAKES: All right, let's go back on the record. Off the record we had some clarification as to Ms. Gillings' testimony and it was my quick reading of the affidavit. Ms. Gillings is supporting the Consumer Services Panel testimony, not her own individual testimony. So at this point, in the hearing transcript, we should have the testimony of the consumer pes -- services panel as if orally given and that is the file DPS-direct testimony of Consumer Services panel case 14-F-0490.

BEFORE THE
STATE OF NEW YORK
BOARD ON ELECTRIC GENERATION
SITING AND THE ENVIRONMENT

In the Matter of

Cassadaga Wind LLC

Case 14-F-0490

May 12, 2017

Prepared Testimony of:
Consumer Services Panel

Lorna Gillings
Utility Consumer Assistance
Specialist 3

Erin O'Dell-Keller
Utility Consumer Program
Specialist 5

Office of Consumer Services

State of New York
Department of Public Service
Three Empire State Plaza
Albany, New York 12223-1350

Q. Will each member of the Consumer Services Panel (the CSP or Panel) state your names and business addresses?

A. My name is Lorna Gillings and my business address is Three Empire State Plaza, Albany, New York 12223.

Q. Please describe your educational background.

A. I received a Bachelor of Science degree in Business, Management and Economics from the State University of New York Empire State College in 2009.

Q. Please describe your professional experience and responsibilities with the New York State Department of Public Service (the Department).

A. I have been employed by the Department (Staff) since 1986 and have held administrative positions in various offices. In 2001, I joined the Office of Consumer Services (OCS), Call Center Unit, as a Utility Consumer Assistance Specialist (UCAS) I. My key responsibility was to assist customers with utility-related

complaints, regarding energy, telecommunication, cable, and water services. I was promoted to UCAS II and joined the Analysis Unit within OCS. I then transferred to the Office of Consumer Policy (which is now merged with Office of Consumer Services), Consumer Outreach and Education Unit where I was promoted to UCAS III. My key responsibility in the Outreach and Education Unit is to promote consumer education regarding electric, natural gas, telecommunication and water utility services and ensure opportunities for public participation in Commission and Siting Board proceedings.

Q. Ms. O'Dell-Keller, please state your full name, employer and business address.

A. My name is Erin O'Dell-Keller. I am employed by the Department and my business address is Three Empire State Plaza, Albany, New York 12223.

Q. Ms. O'Dell-Keller, what is your position with the Department?

A. I am the manager of the Outreach and Education

section of the Office of Consumer Services.

Q. Please describe your educational background.

A. I received a Bachelor's Degree in Biology from Siena College in 1986 and Master's Degree in Environmental Studies from the State University of New York College of Environmental Science and Forestry in 1988.

Q. Please describe your professional experience.

A. From 1990 to 2001, I was employed as a Citizen Participation Specialist with the New York State Department of Environmental Conservation (DEC) where I assisted in coordinating and implementing DEC's public participation and community outreach and education efforts. I joined the Department in 2001 as a Utility Outreach and Education Specialist 2. The Department of Civil Service subsequently reclassified this title to Utility Consumer Program Specialist. Between 2001 and 2013, I was promoted twice to reach my current position. As manager of Consumer Outreach and Education, I

oversee the development and delivery of a statewide outreach and education program for Commission policies, programs and initiatives. Under my direction, the Unit promotes consumer education through development of publications and other outreach materials, management of the AskPSC.com website, oversight of utility outreach programs and administration of grass roots efforts such as participating in events and presentations and fostering relationships with consumer leaders and advocacy groups across the state. Consumer Outreach and Education also ensures consumers have opportunities to participate in Commission proceedings and comment on utility related issues.

Q. Have you ever provided testimony before the Commission or the Siting Board?

A. Yes. I provided testimony in Case 05-G-1494, Orange and Rockland Utilities, Inc., regarding service quality incentives, low income customer needs and the company's outreach and education

program. Most recently, I provided testimony in Case 16-W-0130, Suez Water New York, Inc., regarding service quality incentives, outreach and education, and the company's proposed water conservation plan. I also recently testified in Case 16-W-0259, New York American Water, Inc. in regard to implementation of a Customer Service Performance Incentive mechanism, a proposed Low Income Payment Program, the company's outreach and education plan, and a proposal to merge several tariffs into one, new tariff.

Q. Are you providing testimony elsewhere in this proceeding?

A. Yes. I am testifying as part of the Staff Policy Panel.

Q. Is the Panel sponsoring any exhibits to accompany and support your testimony?

A. Yes. We have one exhibit: Exhibit __(CSP-1).

Q. Would you briefly describe your exhibit?

A. Exhibit __(CSP-1) contains the Applicant's response to Staff information request (IR) DPS-

53, which we reference in developing our testimony. Exhibit __(CSP-1)contains samples of correspondence with stakeholders and the associated distribution lists.

Q. What is the purpose of the Panel's testimony in this proceeding?

A. We are testifying regarding the following issues: (1) public involvement, and (2) public comments received by the Department regarding the proposed Cassadaga Wind Farm (the Project or Facility) proposed by Cassadaga Wind LLC (the Applicant), a subsidiary of EverPower Wind Holdings, Inc.

Public Involvement

Q. What is the intent of Public Service Law (PSL) Article 10 as it relates to public involvement?

A. Article 10 regulations mandate that an applicant actively seek public involvement throughout the Article 10 process, including planning, pre-application, certification, compliance and implementation.

Q. For what purpose?

A. It is the policy of the Siting Board to enable the public to participate in the decisions that affect their health, safety and the environment. The goal is to facilitate communication between the applicants and interested or affected stakeholders; solicit public comments, ideas and local expertise; provide timely notice of proposed project milestones and events; and to encourage the public and interested parties to engage in the process and provide input into key decisions. A robust public involvement program will ensure that the Siting Board is aware of stakeholder concerns when making a determination regarding whether to award a Certificate of Environmental Compatibility and Public Need (Certificate).

Q. How does public involvement become part of the Article 10 process?

A. The applicants are expected to communicate with the public early in the process and establish a

community presence. Article 10 regulations require applicants to develop and implement a public involvement program (PIP) plan. The PIP must include consultation with affected agencies and other stakeholders; pre-application activities to encourage stakeholder participation at the earliest opportunity, as well as activities during certification and compliance; activities to educate the public about the proposed project and the Article 10 process; and the establishment of a project website to disseminate information to the public.

Q. When does the PIP plan have to be submitted on a proposed Article 10 project?

A. Applicants must submit a written PIP plan to the Department at least 150 days prior to submitting a Preliminary Scoping Statement (PSS).

Q. Did the Applicant for the Project develop a PIP plan?

A. Yes. The Applicant filed a PIP plan with the

Department in November 2015. Staff reviewed the plan and a revised PIP was filed on January 5, 2016.

Q. What elements were included in the Applicant's PIP plan?

A. The Applicant stated in the PIP plan that it had developed a preliminary stakeholder list by identifying parties that may be interested or affected by the Project, including affected agencies, municipalities and school districts, landowners, public interest groups and other stakeholders. The PIP plan also described how the Applicant planned to use the stakeholder list for consultation with affected agencies and stakeholders and the activities the Applicant planned to undertake to educate the public about the Project. The Applicant established a Project website, document repositories and a toll-free telephone number for public access to Project information. Throughout the process, the Applicant has completed a log recording its

consultation and outreach activities. The logs are included in the Cassadaga Wind case file (Case number 14-F-0490) on the Department's website at, www.dps.ny.gov.

Q. Throughout the pre-application, scoping and application phases, did the Applicant implement a public involvement program as described in the PIP?

A. In Staff's opinion, the Applicant was successful in implementing portions of the PIP plan, but less successful in addressing others. For example, the Applicant encouraged participation from municipal officials and affected local, state and federal agencies, and as evidenced in the meeting tracking logs, sought input from these stakeholders. In addition, the Applicant attended local town, zoning and school board meetings, communicated with certain stakeholders by letter and email, and hosted four open houses for the public between January 2015 and August 2016. The Applicant also posted notice of the

meetings and Project milestone filings in the local newspapers of record.

Q. What were the less successful aspects regarding implementation of the PIP plan?

A. The Applicant did not appear to use the stakeholder list as intended to ensure that interested and affected parties in the Project area, such as landowners, were made aware of the Project in the pre-application stages. For example, the PIP plan indicates that the Applicant would announce public meetings like the open houses through a mass mailing to a list made up of the stakeholders identified in the PIP and any additional addresses gathered through public meetings or the website. However, given that multiple landowners have commented that they did not know about the Project in the pre-application phase, it is clear the mass mailing did not include all interested parties in the Project area. As noted in Exhibit__(CSP-1), the mailing lists for

the first two open houses included municipal officials, agency representatives and community organizations, but contained a limited number of landowners near the Project.

Q. Did the Applicant notify the entire stakeholder list of major Project filings such as the PSS in September 2015?

A. Not directly. As required by the Siting Board's rules (16 NYCRR §1000.5(d)), the Applicant provided notice to "all persons residing in each municipality in which a portion of the facility is proposed to be located" by publishing a summary of the PSS in local newspapers. However, it failed to follow the PIP plan regarding direct (mail and e-mail) notification on the stakeholder list. Section 5.5 of the PIP plan indicated that the Applicant would issue notification, by letter and email list-serve, to the stakeholder list prior to each Project milestone filing. In addition, Section 3.6 of the PIP plan states that the landowner

information would be submitted with the PSS and that the Applicant would perform a "mass mailing to all landowners (and local businesses) proximate to the Project, which will provide notice to the affected landowners of the proposed Project and the Article 10 process."

Q. Did Staff provide comment on the PSS regarding the notification to the stakeholder list?

A. Yes. Staff's comment on the PSS noted that the filing did not include proof of service to the stakeholder list, including the landowners, or to "persons who filed a statement with the secretary" as per 16 NYCRR §1000.5(f). Staff recommended that the stakeholder list be updated to include all relevant stakeholders in the Project area.

Q. Did the Applicant respond to Staff's comments regarding the updated stakeholder list?

A. Yes. The Applicant stated that the locations of Project components were not identified yet and the stakeholder list would be updated with

landowner information prior to filing the Application. Following the filing of the PSS, the Applicant held a third open house in November 2015, in the Town of Charlotte. However, as noted in Exhibit__CSP-1, the mailing list did not include stakeholders as indicated in Section 3.6 of the PIP plan.

Q. Did the Applicant notify landowners of the Project before the Application was filed?

A. Yes. In December 2015, the Applicant sent a well survey to approximately 1,343 landowners within one mile of the Project.

Q. Was there adequate notification to stakeholders by the Applicant regarding the filing of the Application in May 2016?

A. No. As with the PSS, the Applicant provided notification to a select portion of stakeholders per Article 10 regulations. Staff comments regarding the Application noted that the procedures established in the PIP plan were not followed, and that the Applicant did not issue

notification to all known stakeholders by letter or email prior to filing the Application.

Q. Did the Applicant address this comment in the supplement to the Application?

A. Yes. The Applicant acknowledged that it did not notify the stakeholder list prior to the filing of the Application. The Applicant indicated that it held a public open house in the Town of Cherry Creek in August 2016 to discuss the filing of the Application. As shown in Exhibit __CSP-1, an invitation was sent to the stakeholder list which had been expanded to include statutory stakeholders, host landowners and local property owners that had expressed interest in the Project. However, the Applicant did not include all landowners within one mile of the Project as identified as part of the well survey. Approximately 60 members of the public and stakeholders attended the open house.

Q. Following the Public Statement Hearing (PSH) in January 2017, did the Applicant contact

landowners about the Project?

A. Yes. The Applicant mailed a letter updating the stakeholder list, as well as landowners within one mile of the Project, about the status of the Application.

Q. In addition to the PIP plan developed and implemented by the Applicant, did the Siting Board conduct other public involvement activities?

A. Yes. As part of the Document and Matter Management (DMM) system on the Department's website, the Department maintains a list of parties to the case, as well as individuals and organizations that request to be informed of Project filings.

Q. How does the Siting Board use the party list and service list?

A. The parties on the party and service lists are advised, by mail or email, of filings, rulings and notices of Project milestones, such as the availability of intervenor funding. The lists

are also used to inform parties of Project activities, such as comment periods, procedural conferences, technical conferences and public statement hearings.

Q. Has the Siting Board issued press releases or conducted mailings concerning the Project?

A. Yes. After the Siting Board issued a letter to the Applicant indicating that the Application was in compliance with certain regulations, the Siting Board conducted a PSH. A press release was issued by the Siting Board in advance of the PSH. In addition, a letter and factsheet describing the Project was mailed to approximately 150 municipal and elected officials, agencies, and community based organizations in the Project area.

Q. Besides the development and implementation of the PIP plan, are there other ways for the public to be involved in an Article 10 process?

A. Yes. Applicants are required at several stages in the Article 10 process to provide funds to be

used by parties that participate in the Article 10 process. The funds, known as "intervenor funds" are collected by assessing a fee on the Applicant. The fee, as set forth by PSL §163(4) and §164(6), varies depending on the stage of the project: applicants submitting a PSS are assessed a fee equal to $350 for each megawatt (MW) of generating capacity of the project with a cap of $200,000. When an application is filed, a fee of $1,000 per 1 MW generation capacity is assessed on the applicant, with a cap of $400,000. Additional fees may be assessed if the applicant makes revisions to the application requiring additional scrutiny or to ensure an adequate record for the Siting Board's review.

Q. How does the intervenor funds ensure public participation in the process?

A. The intervenor funds can be used to help defray expenses incurred by municipalities and local parties that participate in the scoping process

and in the proceeding to consider the application. The funds can be used to pay for expert witnesses, consultants and legal fees.

Q. Have intervenor funds been assessed and awarded in this proceeding?

A. Yes. Intervenors such as the Towns of Arkwright, Charlotte and Cherry Creek have been awarded pre-application and application stage funding. The group Concerned Citizens of Cassadaga Wind Project, made up of several residents within the Project area, have been granted an application stage award to encourage public participation and contribute to a complete record of review of the Project.

Public Comment

Q. Have there been public comments submitted to the Siting Board regarding the proposed Project?

A. Yes. There have been approximately 100 public comments submitted throughout the process to date, beginning in 2015, and continuing through last month (April 2017).

Q. In what format has the Siting Board received comments?

A. Some comments have been sent in by mail, some by email and some were provided during the PSH held by the Siting Board on January 9, 2017, at the Sinclairville Fire Department.

Q. Are copies of these comments kept for public review?

A. Yes, the comments can be found in the Department's DMM system, on the Department's website, under the Cassadaga Wind case file.

Q. Can you characterize the nature of the comments?

A. Approximately 30 people have submitted comments in opposition to the Project and many of them spoke at the PSH. There have been roughly 10 people who submitted comments in support of the Project. In addition, over 200 people signed a form letter stating their support of the Project and these letters were entered into the record.

Q. What type of comments did the Siting Board receive from people in support of the Project?

A. While some commenters mentioned that we need more energy and wind power is clean, the majority of comments referred to the economic benefits to the local area associated with the Project. Supporters of the Project cited the creation of hundreds of temporary jobs and six to eight permanent ones; funding for schools, townships and roads through the Payment in Lieu of Taxes (PILOT) program and host community agreements; decreased taxes; and additional income to support local farms. Many supporters pointed out that local businesses would see a boost in revenue because the Applicant will buy local goods and services during the construction phase of the Project. One commenter noted that the Project will not have a negative impact on tourism, recreation and local agricultural activities since the proposed footprint of the site includes land classified as "abandoned farmland." The Towns of Cherry Creek and Charlotte also filed Resolutions that supported

the Project and requested that the Siting Board grant a Certificate to the Applicant.

Q. Did the Applicant address these comments in its Application?

A. The statements of support were received after the Application was filed in May 2016.

Q. What type of comments did the Siting Board receive from people opposed to the Project?

A. The majority of comments in opposition to the Project fall into the following main categories: environmental concerns, health concerns, financial and community impacts, technology/need and public participation. Overall, the commenters' positions are that the negative impacts on the community far outweigh any short term financial benefits in the form of reduced taxes and a temporary boost to the local economy, noting that these are not worth the long-term impacts to human health and wildlife, disruption of the natural beauty of the area, and the loss of tourism and reduced property

values.

Environmental Concerns

Q. Can you be more specific about the public comments the Siting Board received regarding environmental impacts of this Project?

A. Residents expressed concern that the turbines will have negative impacts on wildlife, particularly bird, bat and insect populations, through fragmentation of habitats and disruption of migratory routes and nesting areas. Residents are concerned that the Project will cause the degradation of 40,000 acres of pristine recreational and agricultural land. A few commenters noted that the Applicant should be following the "Chautauqua County 20/20 Comprehensive Plan," a document developed by the County and its residents and stakeholders to help guide the community's vision for the future and how to achieve it. One commenter expressed concern about the cumulative impacts of multiple large scale wind projects in the same area. In

addition to the potential damage caused by 120-plus turbines, the commenter noted that infrastructure associated with the wind farms, such as access roads and collection lines, may fracture habitats. The public also expressed concern with the potential impacts to the Lake Erie watershed, the largest freshwater resource in the world. Commenters also noted that this area is the source of the Jamestown watershed and turbines will impact watershed that serves an entire City.

Q. Did the Applicant address concerns about potential environmental impacts associated with industrial wind turbines?

A. Exhibit 2 of the Application provided a summary discussion of the anticipated environmental impacts associated with the construction and operation of the Facility. The Application explained several potential impacts regarding the area's ecology, air, ground and surface water, and wildlife and habitat. The

Application states that if impacts cannot be avoided, or further minimized, the Applicant has identified mitigation measures that will off-set the potential impacts. In-depth discussions regarding these topics are contained within the exhibits of the Application, specifically Exhibits 16-17 and 21-23.

Health Concerns

Q. What comments did the Siting Board receive about public health concerns in regard to this Project?

A. Many comments were made regarding the impact of noise, infrasound, vibration, electromagnetic fields and shadow flicker on the health of residents and animals in proximity to the turbines. Commenters cited reports from global communities regarding health impacts of industrial wind turbines such as sleep disturbance, annoyance, high blood pressure, headaches, tinnitus and panic attacks. Commenters also stated concerns about how

ambient noise levels were evaluated and that the standards being contemplated would not establish acceptable noise and shadow-flicker levels to protect people living close to the turbines. A few people also pointed out that the Applicant will use Noise Reduction Operators on several turbines and they are concerned that these mitigation systems are untested and may be ineffective. While many commenters stated that they did not want the Project at all, they noted that health concerns may be mitigated if the proposed layout is changed so that turbines are not as close to residential dwellings. In particular, residents stated that the reports on turbine health impacts recommend a set-back from dwellings of between 1.5 and 2 miles. The commenters are of the opinion that the greater setback distances would further mitigate noise, shadow-flicker and adverse health impacts.

Q. Did the Applicant address the concerns about potential public health impacts associated with

industrial wind turbines?

A. Exhibit 2 of the Application discuss potential impacts to public health and safety and Exhibits 15, 19 and 35 provide more in-depth evaluation of health, noise, and electromagnetic field concerns. In addition, Exhibits 31 and 32 describe laws, ordinances and regulations to address setbacks, turbine heights, etc. The Application discusses potential risks specific to wind power, but indicates that in many ways wind facilities are safer and pose less health impacts than other forms of electric generation. The Application states that the proposed Project has been designed with setback from dwellings, roads and other existing facilities to minimize the potential risks.

Financial and Community Impacts

Q. What comments did the Siting Board receive about potential financial and community impacts in regards to this Project?

A. Commenters are concerned about the Project's

impact on the aesthetic beauty of the countryside and the rural, residential, bucolic nature of the area. Specifically, commenters have noted that the large wind turbines, particularly in combination with other wind projects, would cause significant visual impacts and destroy the viewshed. The consequences would include negative impacts on property values. One commenter pointed out that real property in the Project area will be listed as part of the wind farm. People wanted to know if the Applicant would buy houses if the residents cannot sell them because of the presence of turbines. In addition to diminishing property values, commenters expressed concern that the visual impacts would have a detrimental effect on recreational areas like the Eastside Overland Trail and the Boutwell Hill State Forest and effect tourism. One commenter suggested that the Applicant allocate annual funding to trail groups for trail maintenance to offset aesthetic

impacts.

Q. Were there other concerns expressed regarding community impacts?

A. Yes. Additional concerns were expressed about the impacts on communications, e.g., television, radio, emergency frequencies and weather alerts, and the risks to public health if they are disrupted. One commenter also pointed out that the turbines may disrupt the flight path for Medevac emergencies. Lastly, one commenter noted concern that the Project was dividing their community and pitting neighbor against neighbor. That commenter further noted, there is sentiment that the community is split between those who will benefit from leasing their land (the "participants") and those who will lose because of the negative impacts of the Project (the "non-participants").

Q. Did the Applicant address the concerns about potential financial and community impacts associated with industrial wind turbines?

A. The Application evaluated different aspects of community and socioeconomic impacts of the Project. Exhibit 2 summarized the review of cultural, historic and recreational resources, as well as impacts on transportation and communications. These issues were evaluated further in Exhibits 20, 24-27.

Q. Were there issues that did not get addressed in the Application?

A. The vast majority of comments were received after the Application was filed. Therefore, it is likely that all concerns were not addressed, such as the discord between neighbors caused by the proposed Project.

Technology and Need

Q. What comments did the Siting Board receive about the "need" for this Project?

A. Several commenters expressed doubts about whether the Project was needed and whether renewable energy is needed. Commenters suggested there is a difference between the need

for energy capacity and the push for siting clean energy and fulfilling the Governor's "50 by 30" mandate. One commenter stated that carbon dioxide (CO2) is not a harmful emission and others stated that New York's clean energy program will not impact the overall atmospheric levels of CO2 or global temperatures.

Q. What other concerns did the Siting Board receive about the use of wind technology?

A. Commenters noted that given the issues and concerns associated with wind technology, other forms of energy production, such as upgrading existing systems or installing solar, should be considered. Several commenters stated that the intermittent nature of wind will require the use of coal or gas generation as back-up when the wind power is off-line. Due to the cycling on and off of the back-up generation, emissions of greenhouse gases and pollutants in the area will increase rather than decrease. Additional concerns were expressed about the financial

impact of wind turbines. Commenters stated that cost of electricity is higher from wind generation and it cannot compete with pricing of fossil fuel generation. Also, wind farms are given subsidies, which residents will pay for in the form of higher taxes. Lastly, commenters noted that wind turbines are not a good investment for the community. They believe the Applicant will leave and the community will be left to deal with decommissioning and removing the turbines.

Q. Did the Applicant address concerns about the need for the Project and specifically wind turbines?

A. Yes. Exhibit 8 of the Application looked at electric modeling and estimated production, pricing and greenhouse gas emissions. Decommissioning and site restoration are examined in Exhibit 29.

Public Involvement

Q. What comments did the Siting Board receive about

public involvement for this Project?

A. There was a repeated concern about the lack of transparency and involvement regarding the Project. The Siting Board received multiple comments indicating that residents were not aware of the Project prior to the notice announcing the PSH in January 2017. The commenters noted stakeholders in the Project area should have been informed, by mail, of the proposed Project. Also, the use of legal notices or posting information in libraries is not sufficient to ensure a true dialogue with stakeholders. One commenter was concerned that he received notice of the PSH after the fact when the Applicant sent an update letter in January 2017. Another commenter noted that the Applicant did not follow the PIP plan agreement to seek public participation, which gives the appearance of an illegal permitting process.

Q. Did the Applicant address concerns about public involvement?

A. Exhibit 2 discusses the public involvement program and Appendix B and C include the master list of stakeholders and an updated meeting log. However, it should be noted that the bulk of comments received about the Project and public involvement were filed after the Application was filed.

Staff Review of Comments

Q. Did Department Staff review public comments received by the Siting Board with regard to the Cassadaga Wind Project?

A. Yes. Staff reviewed comments received through various means such as DMM filings, letters to the Siting Board and the PSH. Staff analyzed the case record as a whole, including the public comments, when developing our testimony in the case.

Q. Does this conclude your testimony at this time?

A. Yes it does.

Next, we will assign as Exhibit 110, the affidavit of John Cary, C-A-R-Y and David Wheat, W-H-E-A-T. This is a two-page affidavit and it covers several exhibits as well as testimony that was submitted. And the combined exhibits of Cary and Wheat were assigned a single exhibit number, is that correct?

MS. BEHNKE: That's correct, Exhibit 55.

A.L.J. LECAKES: Exhibit 55 for identification. Should we break those out?

MS. CERBIN: We can't.

MS. BEHNKE: They're already in exhibit list as all combined on 55 that's --

A.L.J. LECAKES: And they already have a pre-identification designation --

MS. BEHNKE: Right.

A.L.J. LECAKES: -- as C -- yes, CW-1, CW-2, CW-3. All right --

MS. BEHNKE: Correct.

A.L.J. LECAKES: -- we'll keep them as single Exhibit 55. And then for the purposes of our hearing transcript then we should have the prepared testimony of John Cary and David Wheat,

BEFORE THE
STATE OF NEW YORK
BOARD ON ELECTRIC GENERATION
SITING AND THE ENVIRONMENT

In the Matter of

Cassadaga Wind LLC

Case 14-F-0490

May 12, 2017

Prepared Testimony of:

JOHN CARY
Assistant Engineer-Electrical
Office of Electric, Gas, and Water

State of New York
Department of Public Service
Three Empire State Plaza
Albany, New York 12223-1350

DAVID V. WHEAT
Principal Economist
Office of Market and Regulatory Economics

State of New York
Department of Public Service
Three Empire State Plaza
Albany, New York 12223-1350

Witness Information

Q. Please state your names and business addresses?

A. Our names are John Cary, and David Wheat. We are employed by the New York State Department of Public Service (Department), Three Empire State Plaza, Albany, New York 12223-1350.

Q. Mr. Cary, what is your position at the Department?

A. I am employed as an Assistant Engineer in the Bulk Electric Systems Section within the Office of Electric, Gas and Water.

Q. Please provide a summary of your educational and professional experience.

A. I graduated from Western New England College with a Bachelor of Science degree in Electrical Engineering in May 1999. I worked for the USFILTER Corporation as a systems control engineer from May 1999 to April 2000; I worked for the Department of Defense (US ARMY ARDEC) as an electrical engineer in the Precision Munitions Division from May 2000 to April 2004;

and worked as a project manager for a residential homebuilder from April 2004 to March 2012. I have been employed by the Department since March 2012 in the Office of Electric, Gas, and Water, in the Bulk Electric Systems Section (Staff) and received my Intern Engineering Certificate from the State of New York in December of 2012.

Q. Please describe your current duties with the Department.

A. My current duties include the review and evaluation of electric utility Capital and Operations and Maintenance (O&M) budgets and expenditures, review and evaluation of Public Service Law (PSL) Article VII and Article 10 applications, and review and evaluation of rate case proceedings before the Commission. I have also been a General Electric production cost modeling software user since 2014, and I am responsible for the evaluation of Article 10 Exhibit 8 Production Cost Modeling requirements.

Q. Have you previously testified before the Public Service Commission (Commission) or the State of New York Board on Electric Generation Siting and the Environment (Siting Board)?

A. Yes, I have testified in the 2015 PSEG-LI rate case before the Commission.

Q. Mr. Wheat, what is your position at the Department?

A. I am employed as Principal Economist in the Market and Regulatory Economics Section of the Office of Markets and Innovation.

Q. Please describe your educational background.

A. I received a Bachelor of Science degree in economics and financial management from the State University of New York at Brockport in 1978, and a Master of Arts degree in economics from the State University of New York at Albany in 1981. In 1988, I completed the Certificate Program in Regulatory Economics at the State University of New York at Albany.

Q. Please summarize your professional experience.

A. I have been with the Department since May 1987. I have provided analyses and testimony on electric issues in Commission proceedings and have participated in analyses relating to the Regional Greenhouse Gas Initiative, the Renewable Portfolio Standard, the Energy Efficiency Portfolio Standard, and wholesale electricity markets. Before joining the Department, I was employed by the New York State Energy Office as an Energy Policy Analyst from 1979 to 1987. My responsibilities there focused on electric system modeling and forecasting and included economic, financial, and environmental analysis.

Q. Have you testified previously before the Commission or the Siting Board?

A. Yes. I have testified before the Commission in rate cases and other proceedings on issues involving marginal costs, long-run avoided costs, utility incentive fuel adjustment clause mechanisms, and independent power producer

contracts. Most recently, I testified before the Commission concerning the Article VII Champlain Hudson Power Express, Inc. transmission proposal in Case 10-T-0139. Additionally, as part of a Staff team assigned to participate as independent consultants to the Staff of the New York State Department of Environmental Conservation (DEC), I testified before the DEC concerning potential wholesale energy market impacts (air emissions, energy prices) from outage scenarios at the Indian Point nuclear facility (Case DEC #3-5522-00011/00004 et al.).

Overview

Q. What are your roles in this case?

A. We have been assigned to consider economic and environmental impacts from commercial operation of the Cassadaga Wind Facility (Cassadaga Wind or the Project) being proposed by EverPower Wind Holdings, Inc. (the Applicant), measured relative to a business as usual Base Case (with

Cassadaga Wind not in-service). These impacts are in the form of a snapshot look at potential impacts for the year 2019. We reviewed the forecast impacts that the Applicant included in Exhibit 8 - Electric System Production Cost Modeling of its Application. These include the forecast capacity factor (which measures a unit's output versus a potential maximum output) for Cassadaga Wind, wholesale energy prices, air emissions, and how Cassadaga Wind could affect generation from existing must run zero emission resources (such as renewables, large hydroelectric plants, and nuclear units).

Q. Are you sponsoring any Exhibits in support of your testimony?

A. Yes, we are sponsoring five Exhibits as described in the course of this testimony.

Q. Did you perform your own analysis of impacts?

A. Yes. We looked at various factors including wholesale energy market price impacts.

Q. Would you characterize the analysis you

conducted as a Benefit Cost Analysis?

A. No.

Q. Would the wholesale energy market price impacts you estimated be a consideration in a societal Benefit Cost Analysis?

A. No. The Commission's January 2016 "Order establishing the Benefit Cost Analysis Framework" refers to these as "price suppression"[1] As such, these would not be considered a societal "benefit." Page 24 of this Order notes that, "No efficiency gain results if, for example, generators are paid more or less while consumers experience equal and offsetting impacts. Therefore, the price suppression benefit is not properly included in the SCT [Societal Cost Test] beyond the savings reflected there." As also stated on page 24 of the Order, this recognizes that, "Wholesale

[1] Case 14-M-0101, Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision, Order Establishing the Benefit Cost Framework, (issued January 21, 2016).

markets already adjust to changes in demand and supply resources, and any resource cost savings that result are reflected in the SCT. Any price suppression over and above those market adjustments is essentially a transfer payment -- simply a shift of monetary gains and losses from one group of economic constituents to another."

Q. Please describe your findings from your review of the Application and supplements.

A. After reviewing responses to Information Requests (IRs) provided by the Applicant, and performing our own production cost simulations, we found issues concerning the reasonableness of the Applicant's simulation modeling having to do with wholesale energy market price impacts. We consider this in our recommendation to the Siting Board.

Q. Are you aware that the Applicant is considering selling Renewable Energy Credits (RECs) to New England?

A. Yes. Our understanding is this would mean that

New England would be claiming environmental attributes associated with the Project. As a result, New York would not be able to count these attributes towards its Clean Energy Standard.

Q. Please state your general recommendation.

A. We disagree with the modeling provided by the Applicant, because after running our own simulation model and comparing our forecasts to the Applicant's forecasts, we identified concerns with the Applicant's simulation modeling. We notified the Applicant of this and a follow up IR was sent to the Applicant on April 17, 2017 to allow them time to respond formally and correct the record. As such, if the record is corrected using improved simulation modeling we believe this will facilitate the Siting Board being able to determine that the Applicant's modeling is reasonable. However, if our concerns with the Applicant's simulation modeling remain, the

Siting Board should consider this fact when making its determinations with respect to the wholesale electric market.

Scenarios and Methodology Description

Q. Would you please explain the methodology used to analyze the forecast energy market impacts?

A. We performed our analysis using General Electric's Multi-Area Production Simulation (GE MAPS) computer software tool to simulate the electric system with and without the Cassadaga Wind Facility. This is the same tool that the Applicant's consultant, Electric Power Engineers, Inc. (EPE), used to perform its electric system modeling. GE MAPS is an industry recognized electric system planning/analysis tool that relies on a myriad of detailed inputs, such as forecasts of electric demand and fuel costs, generating unit characteristics (e.g., heat rates, forced outage rates, planned outages, and emission rates), and the electric transmission system topology.

Q. How was the GE MAPS data set developed?

A. The GE MAPS database we use was developed by the New York Independent System Operator (NYISO) for its Congestion Assessment and Resource Integration Studies (CARIS) economic planning process. This data set is described in a slide presentation that the NYISO presented to the Electric System Planning Working Group.[2]

Q. Did you revise the NYISO CARIS input data assumptions?

A. Yes. We assume that the Fitzpatrick and Ginna nuclear facilities remain in-service, in view of the Commission's Clean Energy Standard.[3] Also, we assume that one Indian Point (IP) nuclear unit retires in April 2020, the other IP unit

[2] "2016 CARIS 2 Preliminary Base Case Results," Timothy Duffy/NYISO, July 5, 2016, available at: http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_espwg/meeting_materials/2016-07-05/CARIS%202%20Database.pdf.

[3] Case 15-E-0302, Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and Clean Energy Standard, Order Adopting a Clean Energy Standard, (issued August 1, 2016).

retires in April 2021, and the Cricket Valley (CV) gas combined cycle generating unit begins commercial operation in March 2020. Since our forecasts are for the year 2019, the IP and CV assumptions do not affect the forecasts that we present here.

Q. How does the Applicant's data set compare with your data set?

A. The data set the Applicant's consultant, EPE, used was developed by General Electric (GE) (the proprietor of GE MAPS), and can generally be characterized as tracking the NYISO 2015 Load & Capacity Data report (2015 Gold Book). In contrast, the CARIS data we use was developed by the NYISO and is based on the 2016 Gold Book. NYISO uses New York specific data in some cases rather than more general vendor data.

Wholesale Energy Market Price Impacts

Q. What is the expected impact on energy prices in the wholesale energy market simulation modeling from Cassadaga Wind providing generation?

A. As stated earlier, although these are price suppression impacts that would not be considered in a societal benefit cost analysis, we consider energy price impacts to assess the reasonableness of simulation modeling. Given this, the addition of a zero or low cost resource, such as Cassadaga Wind, would be expected to provide wholesale energy market impacts in the form of lower energy prices in the simulation modeling. Based on having reviewed these types of impacts for larger projects (e.g., natural gas combined cycle plants, transmission facilities), we would expect to see this type of price impact even for a smaller facility such as Cassadaga Wind.

Q. Please provide an example of wholesale energy market price impacts for New York, based on your own forecasts, to illustrate the magnitude of impacts.

A. Using energy price impacts in the year 2019 as an example, and assuming Cassadaga Wind operates

at a capacity factor of [redacted]%, wholesale energy market costs go down by [redacted], reflecting a price decrease of [redacted]. These impacts are summarized in Exhibit __(CW-1).

Q. How long would these impacts be expected to last?

A. They are near-term impacts that would be expected to disappear over time, given demand and supply resource considerations.

Q. Please describe how you estimated these impacts.

A. Wholesale energy market prices, in $/MWh, are forecast using GE MAPS for each pricing zone in the energy markets administered by the NYISO, for the Base Case business as usual scenario (Without Cassadaga Wind) and the alternative scenario (With Cassadaga Wind).

Q. Please explain how you translate the $/MWh impacts into $ impacts.

A. To get $ impacts, we use a three-step process. These calculations are illustrated in Exhibit__(CW-2). First, we calculated $/MWh

price impacts for each zone, by subtracting energy prices in the With Cassadaga scenario from energy prices in the Base Case. Second, we calculated $ impacts for each zone, by multiplying the $/MWh impact times the energy requirements for that zone that are assumed as an input to GE MAPS. Third, we summed up the $ impacts for each zone to get the $ wholesale energy market impact for New York State.

Q. Did you develop corresponding impact estimates from the Applicant's zonal energy price forecasts?

A. Yes.

Q. Please provide an example of wholesale energy market price impacts for New York, based on the Applicant's forecasts, to illustrate the magnitude of impacts.

A. Using energy market impacts in the year 2019 as an example, and assuming Cassadaga Wind operates at a capacity factor of [redacted]%, wholesale energy market costs *go up* by [redacted], reflecting a

price increase of [redacted]. These impacts are summarized in Exhibit __(CW-3). These forecast results led us to undertake a detailed review of the Applicant's simulation modeling, from which we found concerns.

Q. Please explain how you estimated these impacts.

A. We started with the $/MWh zonal energy prices provided in the Application (Table 8-2, Exhibit 8). We incorporated these into the three-step process described above, along with the energy requirements that EPE used as inputs to GE MAPS. These calculations are illustrated in Exhibit__(CW-4).

Q. Did you inform the Applicant that its price forecasts raised concerns for Staff?

A. Yes. First, we cited wholesale market price impacts in Staff's Article 10 Issues filing (February 21, 2017). Second, we sought clarification through the questions asked in IR DPS-33. The Applicant's response to DPS-33 (excluding data attachments filed

confidentially) is provided on pages 1-2 of Exhibit__(CW-5). Third, based on our review of the information the Applicant provided in its response to DPS-33, we sought further clarification through the questions asked in IR DPS-44. The Applicant's response to DPS-44 (excluding data attachments filed confidentially) is provided on pages 3-4 of Exhibit__(CW-5).

Q. Please describe your reactions to the Applicant's responses to DPS-33 and DPS-44.

A. The information provided in response to DPS-33 seemed to address our concerns about wholesale energy market prices, but it raised other concerns. The Applicant's response to DPS-44 advises us to disregard its response to DPS-33, and provides information supporting the forecasts that the Applicant filed in Exhibit 8 of its Application in May 2016. These IR responses did not adequately address our concerns, and created contradictory statements

as to impacts and we informed the Applicant about this.

Q. Has the Applicant revised its GE MAPS modeling?

A. The Applicant has not formally revised its analysis, but we are advised has started the process of doing so. On April 17, 2017, the Applicant informed Staff that discussions with GE led to the determination that the database EPE had used for its original electric energy market simulations was outdated.

Q. Will the Applicant be performing a new simulation with an updated database?

A. We believe so, GE has provided an updated (more current) database which EPE is using to perform a new GE MAPS simulation.

Q. Have you addressed this formally through an IR?

A. Yes. Staff sent IR DPS-51 on April 17, 2017, seeking clarification. The Applicant's response to DPS-51 is provided on pages 5-6 of Exhibit __(CW-5). This explains that the Applicant expects it will take approximately two weeks to

run the analysis and provide an updated version of Table 8-2 (zonal energy prices for the year 2016) of the Cassadaga Production Modeling Report. Also, the Applicant intends to file its revised Exhibit 8 report during rebuttal testimony (including a qualitative discussion of the reasons for the revisions to its Exhibit 8 report).

Air Emissions Impacts

Q. Would you please describe the types of air emissions impacts that you forecast?

A. We present forecast air emissions impacts for sulfur dioxide (SO_2), oxides of nitrogen (NO_x), and carbon dioxide (CO_2). We provide these for New York State in both absolute tons per year, and in percentage change relative to the Base Case.

Q. Please describe the projected air emissions impact for New York to illustrate the magnitude of impacts.

A. Using CO_2 emissions impacts for the year 2019 as

an example, we forecast a reduction of 72,031 tons in New York, or 0.29%. This is summarized in Exhibit __(CW-1), along with SO_2 impacts and NO_x impacts.

Q. What are the corresponding impact estimates by the Applicant?

A. The CO_2 air emissions forecasts provided in the Applicant's Application (Table 8-1, Exhibit 8) show a reduction of 153,917 tons, or 0.76%. This is summarized in Exhibit __(CW-3), along with SO_2 impacts and NO_x impacts.

Q. Are there wholesale energy market price impacts and air emissions impacts in areas outside of New York State?

A. Yes. Cassadaga Wind operating commercially can affect generation dispatch and energy transactions between and among New York State and neighboring regions. As a result, there can be impacts outside of New York State as well.

Q. What regions are modeled in the GE MAPS database?

A. The generation and transmission resources of four regions, typically referred to as control areas, are modeled. In addition to New York, this includes New England, Ontario, and the Reliability First Corporation which includes what has historically been referred to as the Pennsylvania-Jersey-Maryland interconnection (PJM) and extends west into Ohio and south beyond Washington DC. Quebec is not modeled explicitly but is modeled via non-synchronous interties.

Q. Did you review forecast impacts on regions other than New York, as a result of the Project being added to the electric system?

A. Yes. First, we reviewed running cost impacts. These are the costs of producing electricity in the wholesale energy markets, sometimes referred to as production costs (primarily fuel costs, and variable Operations & Maintenance (O&M) costs). Forecasts by Staff and the Applicant show that running costs decrease both for New

York and for all regions combined, as expected. Second, we reviewed wholesale energy market price impacts. As stated earlier, we consider these to assess whether the production simulation modeling is reasonable, while recognizing that price suppression is not considered as a benefit in a societal Benefit Cost analysis. Forecasts by DPS Staff show that prices decrease for New York and for all regions combined, as expected. In contrast, the Applicant's forecasts show these costs increase, not only for New York, but also for all regions combined. Third, we reviewed air emissions forecasts. Forecasts by Staff and the Applicant show these decrease for both New York and for all regions combined.

Q. Please explain why comparing forecasts for all regions combined to forecasts for New York only is useful?

A. Analyzing forecast impacts for various regions is useful because, by identifying where impacts

are simulated to occur, the reasonableness of the modeling can be assessed. Compared with the Applicant's forecasts, for example, our CO_2 emission forecasts are lower for New York and higher for all regions combined. This implies there are probably differences in the way net imports are being simulated in the modeling.

Q. Please explain the distinction between running costs and wholesale energy prices.

A. As mentioned above, running costs are the costs (primarily fuel costs, and variable O&M costs) of producing electricity in the wholesale energy markets. In contrast, wholesale energy prices, generally referred to as Locational Based Marginal Prices (LBMPs), are what buyers pay and sellers receive in the wholesale energy markets. Running costs are only one component of LBMPs.

Q. What are the components of wholesale energy prices?

A. LBMPs have three components - energy costs, costs associated with transmission line losses,

and transmission congestion costs.[4] From this definition, it is apparent that factors other than energy costs affect wholesale energy prices.

Q. What is your opinion as to what causes price impacts in the Applicant's analysis to increase?

A. We believe there is too much transmission congestion in the Applicant's modeling, and we informed them of this. The Applicant's response to DPS-51 (provided on pages 5-6 of Exhibit __(CW-5)) acknowledges this.

Cassadaga Effect on Must Run Zero Emission Resources

Q. What is the Applicant's conclusion with respect to the effect of the Project on the annual operation of must run zero emission resources?

A. On page 5 of Exhibit 8 of its Application, the Applicant states that "the addition of the

[4] LBMPs are described in the publicly available NYISO slide presentation available at: http://www.nyiso.com/public/webdocs/markets_operations/services/market_training/workshops_courses/Training_Course_Materials/NYMOC_MT_ALL_201/Locational_Based_Marginal_Pricing.pdf.

proposed facility to the system would have an insignificant impact on the dispatch of must run generation."

Q. Does your modeling show this as well?

A. Yes, it does.

Conclusions and Recommendations

Q. Please summarize the energy market impacts from the Applicant's proposed Cassadaga Wind facility.

A. As stated earlier, the impacts we look at are in the form of a snapshot look at potential impacts for the year 2019, and recognizing that wholesale energy price impacts would not be considered in a societal Benefit Cost analysis, we use these impacts only to assess the reasonableness of simulation modeling. Using this measure, our simulation modeling is more reasonable than the Applicant's simulation modeling. Additionally, both Staff and the Applicant forecast Cassadaga Wind would provide air emissions benefits, and that Cassadaga Wind

is not expected to adversely affect generation from must run zero emission resources. If the Applicant were to sell RECs associated with Cassadaga to New England, our understanding is New England would be claiming environmental attributes from Cassadaga Wind, and as a result, New York would not be able to count these attributes towards its Clean Energy Standard.

Q. Please state your general recommendation.

A. We disagree with the modeling initially provided by the Applicant, because after running our own simulation model and comparing our forecasts to the Applicant's forecasts, we identified concerns with the Applicant's simulation modeling. We notified the Applicant of this and a follow up IR was sent to the Applicant on April 17, 2017, to allow time to respond formally and correct the record. As such, if the record is corrected using improved simulation modeling, we believe this will facilitate the Siting Board being able to

determine that the Applicant's modeling is reasonable. However, if our concerns with the Applicant's simulation modeling remain, the Siting Board should consider this fact when making its determinations with respect to the wholesale electric market.

Q. Does this conclude your testimony at this time?

A. Yes.

appear in the transcript as if orally given today and that is the file that was emailed to the court reporters DPS-direct testimony of Cary-Wheat panel case 14-F-0490.

And again, that's Exhibit 110. Are there any other affidavits? All right, we will take affidavits through the week as I've mentioned before, let's proceed with the first witness. Let's off the record.

(Off the record)

(On the record)

A.L.J. LECAKES: So how are we doing this? Are we going to -- Ms. Crounse, could you call your first witness, please?

MS. CROUNSE: Sure, the Department of Environmental Conservation calls Anne Rothrock.

A.L.J. LECAKES: Have a seat. Okay, before you sit down, Ms. Rothrock, if you could stay standing --

MS. ROTHROCK: Oh, okay.

A.L.J. LECAKES: -- and raise your right hand. Do you swear or affirm that the testimony you're about to give in this proceeding

is the whole truth?

MS. ROTHROCK: Yes.

ANNE ROTHROCK; Sworn

A.L.J. LECAKES: You may be seated. There is a microphone there, if you want to use it might be helpful just to get it in.

DIRECT EXAMINATION

BY MS. CROUNSE:

Q. Good morning. Could you please state your name for the record?

A. (Rothrock) Anne Rothrock.

Q. Ms. Rothrock, did you prepare testimony regarding this proceeding?

A. Yes.

MS. CROUNSE: Oh, actually do we have a copy of Ms. Rothrock's testimony, are there clean copies?

A.L.J. LECAKES: I have the copy electronically and I also emailed it to the court reporter so I don't need one.

MS. CROUNSE: Okay.

BY MS. CROUNSE: (Cont'g.)

Q. Have you reviewed your testimony?

A. Yes.

Q. Do you have any changes to your testimony that you make today?

A. No.

Q. Apart -- excuse me. If I were to ask you these questions today, would you give the same answers as contained in the document as pre-filed?

A. Yes.

Q. Do you adopt your testimony for the record?

A. Yes.

Q. Ms. Rothrock's available for cross should anyone have any.

A.L.J. LECAKES: Okay. We will accept DEC's motion to move the testimony into the evidentiary hearing record. At this point, the testimony file that was emailed to the court reporter is DEC-direct testimony of Anne Rothrock, case 14-F-0490 should be placed in the transcript as if orally given today.

NEW YORK STATE BOARD ON ELECTRIC GENERATION SITING AND THE ENVIRONMENT

In the Matter of the Application of

Cassadaga Wind LLC Case No.: 14-F-0490

for a Certificate of Environmental Compatibility and Public Need Pursuant to Article 10 to Construct a Wind Energy Facility.

DIRECT TESTIMONY OF ANNE ROTHROCK

Senior Wildlife Biologist
Division of Fish and Wildlife
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-1750

May 12, 2017

Q. Please state your name, employer, title and business location.

A. My name is Anne Rothrock. I am employed by the New York State Department of Environmental Conservation (NYSDEC or Department), Division of Fish and Wildlife, as a Senior Wildlife Biologist in the NYSDEC Region 9's sub-office in Allegany.

Q. What are your responsibilities in your position at the Department?

A. In my position, I am responsible for programmatic oversight for Chautauqua, Cattaraugus, Allegany, and Southern Erie Counties for the State's statutory and regulatory freshwater wetland program and Niagara, Wyoming, Erie, Chautauqua, Cattaraugus, and Allegany Counties for rare, threatened and endangered species programs, both covered by the Allegany sub-office. In this capacity I oversee the implementation of certain New York State environmental statutory programs: Article 24 of the Environmental Conservation Law (ECL) (Freshwater Wetlands Act) and associated State regulations; Article 11 of the ECL (Fish and Wildlife Act), and associated State regulations; and, as applicable, State water quality standards applicable to Section 401 of the Federal Water Pollution Control Act (Clean Water Act), and associated State regulations. Included in this oversight is my responsibility to ensure the proper delineation of State-regulated wetland boundaries.

Q. Please summarize your experience regarding wetlands, rare, threatened and endangered species, and review of proposed wind farm projects.

A. I have delineated a considerable number of wetlands and reviewed many permit applications for activities in and near wetlands. In addition, I have reviewed many project proposals with the potential to impact rare, threatened and endangered species. I have reviewed several wind farm projects that required or will require individual freshwater wetland permits or State water quality certificates in order to be constructed. These projects include those subject to

Article 10 of the Public Service Law (PSL) (such as the Lighthouse Wind Farm, currently under review) and those that are not (such as Arkwright Wind Project, currently under construction, and Ball Hill Wind Project, currently under review).

Q. Please describe your educational background and professional certifications.

A. Please see a copy of my resume, attached hereto as NYSDEC-AR-1.

Q. What is the purpose of your testimony today?

A. The purpose of my testimony is to (i) provide an overview of the Department's implementation of NYSDEC's wetlands preservation and protection program in ECL Article 24 and the associated regulations found at Title 6 of the New York Code Rules and Regulations (NYCRR) Parts 663 and 664 and (ii) identify certain threatened or endangered species, listed in accordance with ECL Article 11, and the associated regulations found at 6 NYCRR Part 182, that could be potentially impacted by the Cassadaga Wind project (Project). In that context, I will discuss: (i) the factors the Department considers in making regulatory determinations pursuant to the applicable statutes and regulations; (ii) how these factors apply to the Project; and (iii) whether the Project has met the applicable State standards. I am advised by Department Counsel that this wetlands program, with its attendant statutory and regulatory authority, applies to the Project, as proposed, and to the Siting Board's deliberations pursuant to PSL Article 10. Accordingly, my testimony discusses how the Siting Board must apply the State's statutory and regulatory (i) wetlands program and (ii) rare, threatened, and endangered species program as it relates to Bald Eagles to ensure the Project's compliance with ECL Articles 11 and 24. My testimony will also discuss how the Siting Board should apply ECL Articles 11 and 24 to its deliberations under PSL Article 10 should it decide to approve the Project.

Q. What information has provided the basis for your testimony?

A. My testimony is based on the Project application (Application) filed with the New York State Public Service Commission May 27, 2016 by Cassadaga Wind LLC (Applicant), and supplemental filings filed October 7, 2016; November 22, 2016; and January 17, 2017. I have also (i) reviewed the Applicant's responses to various information requests relating to wetlands and natural resources and (ii) conducted two site visits of the project site on December 9, 2016 and March 30, 2017. I have reviewed all of the above-referenced materials in the context of ECL Article 24 and 6 NYCRR Parts 663 (Freshwater Wetlands Permit Requirements) and 664 (Freshwater Wetlands Maps and Classification).

OVERVIEW OF HABITAT PROTECTION PROGRAMS

Q. Can you describe the Department's policy with respect to freshwater wetlands?

A. Yes. As articulated in ECL Article 24, it is the public policy of the State to preserve, protect, and conserve freshwater wetlands and the benefits that wetlands provide, to prevent the despoliation and destruction of freshwater wetlands, and to regulate use and development of such wetlands to secure the natural benefits of freshwater wetlands, consistent with the general welfare and beneficial economic, social and agricultural development of the State. The Department must consider any proposed project that may impact regulated freshwater wetlands, or the associated regulated adjacent areas (being the area within 100 feet of a State-regulated wetland), in light of this public policy. Accordingly, if the Department determines that a project with potential adverse impacts to freshwater wetlands does not satisfy an economic or social need and meet particular permit issuance standards, the Department may find that the project does not meet statutory and regulatory standards.

Q. How is ECL Article 24 implemented?

A. The Department's regulations contain the standards that implement the Freshwater Wetlands Act [*see, e.g.*, 6 NYCRR Parts 663 and 664]. Part 663 establishes procedures and standards to guide the review of permit applications for projects which propose to construct in, or adjacent to, freshwater wetlands. Part 664 contains the mapping and classification standards and procedures of all wetlands protected under ECL Article 24.

Q. Can you describe how a regulatory review of proposed activities within a State-regulated wetland, or the associated regulated adjacent area, is conducted?

A. In general, the burden is on an applicant to demonstrate that any proposed activity within a State-regulated wetland, or the associated regulated adjacent area, will comply with implementing regulations (see above), and all other applicable laws and regulations (*see e.g.* 6 NYCRR § 663.5[a]).

Q. In being consistent with the State's freshwater wetlands program, what information must an applicant provide for the Siting Board to conduct its review?

A. I have been advised by counsel that activities regulated by Articles 10 of the Public Service Law do not require an Article 24 freshwater wetlands permit. However, the standards in subdivision 663.5(e) must be applied in determining whether to issue a certificate of environmental compatibility and public need under those Articles. In order for the Department to conduct a technical review of any project that will occur, in part or in its entirety, within a State-regulated wetland, or the associated regulated adjacent area, an applicant must provide detailed project plans of sufficient scale, including, at minimum: (1) a delineated boundary for all wetlands on or near the project site; (2) the precise location of all temporary and permanent structures; and (3) the extent of all temporary and permanent disturbances, including clearing and

grading. This information is not exhaustive – on a case-by-case basis, additional information may be required for the Siting Board, as well as Department and Department of Public Service staff, to review the project and to make regulatory determinations, including whether the project has met State standards. Such additional information will be requested from the applicant. Under the Department's review process, once all the needed information has been submitted, the examination of the project continues with a consultation of the Department's mapped regulatory wetlands, as well as those unmapped wetlands that meet state criteria for jurisdiction, and geographical information systems data to determine if a protected wetland is located within 100 feet of the proposed project. If a regulated wetland is likely located on or near the project, the Department then considers the proposed activities associated with the project in relation to the delineated boundary of the wetlands, the activities listed in 6 NYCRR § 663.4(d), and the standards set forth in 6 NYCRR § 663.5(e), before making an ultimate determination whether the project meets statutory and regulatory standards.

Q. What do you mean by "delineated boundary" of a wetland?

A. A "delineated boundary" is a wetland boundary that Department staff has determined will accurately represent the actual extent of the wetlands. This should not be confused with the extent of wetlands shown on the Department's wetlands maps or on the National Wetlands Inventory Maps, a comprehensive master geodatabase of the nation's wetlands which is maintained by the U.S. Fish and Wildlife Service. The Department's wetlands maps approximate the extent of the wetlands and inform landowners, potential applicants, and the public regarding the approximate extent of wetlands regulated under ECL Article 24. The maps were developed using 1970's-era aerial photography and were not intended to depict actual wetlands boundaries to the extent provided by on-site inspection or delineation. In fact, I have

seen many situations where the actual extent of wetlands was underestimated by the maps. Field inspections are always required for projects such as this in order to refine the approximations shown on wetlands maps and to accurately determine the extent of wetlands near proposed projects. A surveyed boundary of field-delineated wetlands must be included on project plans. Without such information on the precise location of wetlands, Department staff cannot determine the full extent of proposed project impacts on identified State-regulated wetlands, or the associated regulated adjacent areas.

Q. In general, what are the Part 663 standards applicable to proposed activities within a State-regulated wetland, or the associated regulated adjacent area?

A. We must apply the standards under Part 663(e) to determine if the proposed project meets regulatory standards. The first step in determining the applicable standards is identifying which activity or activities apply to the proposed project (*see* activities list in 6 NYCRR § 663.4(d)). This step will, in turn, determine which particular standards must be considered in the review of the project. This Project involves the construction of an industrial facility and, as such, is considered incompatible with a wetland and its functions and benefits (6 NYCRR § 663.4(d)(43)). Thus, pursuant to Part 663(e), this project must be reviewed in accordance with the weighing standards contained in 6 NYCRR § 663.5(e)(2).

Q. Can you describe the weighing standards?

A. In general terms, the weighing standards require an applicant to first demonstrate that any activities in, and impacts to, a wetland and its adjacent area cannot be avoided entirely. If avoidance is impossible, impacts on the functions or benefits of a wetland must be minimized. Finally, any remaining loss of wetland acreage and/or function must be mitigated, unless it can be shown that the losses are inconsequential or that, on balance, economic or social need for the

project outweighs the loss. The degree of balancing required is commensurate with the classification of an affected wetland and the severity of the remaining impacts. The higher the class of wetland or the greater the impact to a wetland or its adjacent area, the greater the burden upon an applicant to demonstrate an over-riding need not to fully compensate for unavoidable impacts. The standards that must be demonstrated as set forth in the implementing regulations at 6 NYCRR § 663.5 are "compelling" need for Class I wetlands and "pressing" need for Class II wetlands. More specifically, the standards are organized into two tiers, varying according to the class of the wetland. The first tier requires avoidance and minimization of impacts. For wetland Classes I, II, III and IV, the proposed activity must be compatible with the public health and welfare, be the only practicable alternative that could accomplish the applicant's objectives and have no practicable alternative on a site that is not a freshwater wetland or adjacent area. For wetland Classes I, II, and III, the proposed activity must minimize degradation to, or loss of, any part of the wetlands or adjacent areas and must minimize any adverse impacts on the functions and benefits that the wetland provides. For wetland Class IV, the proposed activity must make a reasonable effort to minimize degradation to, or loss of, any part of the wetland or its adjacent area. The second tier of conditions only applies once the first tier of conditions has been satisfied.

These conditions vary with the class of wetlands as follows:

Class I Wetlands: Class I wetlands provide the State's most critical wetland benefits. Alteration of a Class I wetland is acceptable only in the most unusual circumstances – only if a determination is made that the proposed activity satisfies a compelling economic or social need that clearly and substantially outweighs the loss of or detriment to the wetland benefits. [See 6 NYCRR § 663.5(e)(2)]

Class II Wetlands: Class II Wetlands provide important benefits. An alteration of a Class II wetland is acceptable only in limited circumstances. A proposed activity meets applicable standards, and the Department would issue a permit, only if the Department determines that the proposed activity satisfies a pressing economic or social need that clearly outweighs the loss of or detriment to the wetland benefits. [See 6 NYCRR § 663.5(e)(2)]

Class III Wetlands: Class III Wetlands supply wetland benefits. An alteration of a Class III wetland is acceptable only after the exercise of caution and discernment. A proposed activity meets applicable standards, and the Department would issue a permit, only if the Department determines that the proposed activity satisfies a pressing economic or social need that outweighs the loss of or detriment to the wetland benefits. [See 6 NYCRR § 663.5(e)(2)]

Class IV Wetlands: Class IV Wetlands provide some wildlife and open space benefits and may provide other benefits cited in the Freshwater Wetlands Act. Therefore, wanton or uncontrolled degradation or loss of Class IV wetlands is unacceptable. A proposed activity meets applicable standards, and the Department would issue a permit, only if the Department determines that the activity is the only practicable alternative which could accomplish the applicant's objectives. [See 6 NYCRR § 663.5(e)(2)]

Q. Can you describe the criteria on which the Department bases its decision as to whether a project meets permitting standards?

A. The regulations [6 NYCRR Part 663] provide a step by step process that requires projects to:

1) avoid wetland impacts by keeping all regulated activities landward of the regulated adjacent area;

2) minimize impacts by maximizing setbacks within the regulated adjacent area; *and*

3) provide mitigation for all unavoidable impacts to wetlands.

Once the Department reviews its mapped regulatory wetlands, as well as those unmapped wetlands that meet State criteria for jurisdiction, and confirms the presence of a State-regulated wetland, the Department checks its classification sheet to determine if a particular wetland is a Class I, II, III, or IV. Based on the wetland class, the Department uses the appropriate weighing standards to determine whether a proposed project or activity meets applicable standards to issue a permit.

Q. Are there any other applicable standards related to wetlands that would apply to the Project?

A. Yes. The Project will require a Water Quality Certification (WQC) under Section 401 of the Federal Water Pollution Control Act (Clean Water Act).

Q. What are the standards for issuing a Section 401 WQC?

A. The Clean Water Act requires that any applicant for a federal license or permit to conduct an activity that may result in a discharge into navigable waters must obtain a water quality certification from the State where the activity occurs. The standards for issuing a water quality certification are contained in 6 NYCRR § 608.9, with the burden placed on the applicant to demonstrate compliance with the following:

1) New York State effluent limitations and standards,
2) New York State water quality standards and thermal discharge criteria,
3) New York State new source standards,
4) New York State prohibited discharges, and
5) other New York State regulations and criteria otherwise applicable.

These standards mandate that the certifying agency require compliance with the Department's water quality regulations set forth at 6 NYCRR Parts 701, 702, 703, 704 and applicable provisions of Part 750. Other State regulations and criteria applicable to this Project include ECL Article 24, Title 23 and its implementing regulation at 6 NYCRR Part 663.

ENVIRONMENTAL IMPACT

Q. Are there State-regulated wetlands within the proposed project site for the Project?

A. Yes. Based on my office review of the Application using the Department's geographic information system (GIS), and the site visits I conducted on December 9, 2016 and March 30, 2017, the following wetlands identified in the Project's wetland delineation report were determined to be State-regulated wetlands delineated for the Project (including mapped wetlands and unmapped wetlands that meet State criteria for jurisdiction):

- Wetlands **A**, **B**, and **C** are part of an unmapped wetland complex referred to as State-regulated Wetland Unmapped 1 (Code and Class not yet determined)
- Wetland **WWW** is part of a currently mapped wetland known as State-regulated Wetland CS-8 (Class 2)
- Wetland **YYY** is part of a currently mapped wetland known as State-regulated Wetland CS-9 (Class 2)
- Wetland **ZZ** and **6I** are part of an unmapped wetland complex referred to as State-regulated Wetland Unmapped 2 (Code and Class not yet determined)
- Wetland **RRRR** is part of a currently mapped wetland known as State-regulated Wetland HA-7 (Class 2)
- Wetland **BBB** is part of a currently mapped wetland known as State-regulated Wetland HA-4 (Class 2)

- Wetland **6H** is part of a currently mapped wetland known as State-regulated Wetland HA-3 (Class 3)
- Wetland **EEEE** is part of an unmapped wetland referred to as State-regulated Wetland Unmapped 3 (Code and Class not yet determined)

Q. Will the Project, as proposed, involve activities regulated by ECL Article 24?

A. Yes. The project by regulatory definition is incompatible with a wetland and its functions and benefits because the entire project is an industrial facility [6 NYCRR §§ 663.4(d)(43) and 663.2(q)] which also involves: (i) activities such as clear cutting trees in wetlands and associated adjacent areas; (ii) filling in wetlands and associated adjacent areas; and (iii) construction of roads in the wetlands or associated adjacent areas.

Q. Can you describe the Project's negative impacts on wetlands?

A. Yes, but only in general terms. I cannot describe specific impacts on wetlands because information is missing from the Application that would otherwise allow a detailed and specific description and quantification of impacts. While the current record includes a project layout and delineated wetland boundaries, critical information remains lacking that is necessary to evaluate the Project and make a determination as to whether the Project meets the regulatory standards. Specifically, necessary information that is missing from the Application includes, but is not limited to:

- A revised wetland delineation map. An adjustment to the delineation of Wetland 6H was requested during the March 30, 2017 site visit.
- Revised preliminary notes on first page of plan sheets. The notes need to be revised to include the following;

  - Note #2 under Contractor Notes should include language requiring that markers for wetland boundaries must remain in place until construction has ended, at which time they should be removed.
  - Note #5 under Contractor Notes should be revised to limit the placement of wood chips within any regulated wetland adjacent areas. Also, this list is not exhaustive: no other activity should be occurring within the regulated wetlands adjacent areas without specific authorization.
  - Note #1 under Specific Wetland Crossing Restrictions should require temporary access routes in any regulated wetland adjacent areas be removed following construction and also restored following appropriate seeding with native seed mix and mulching with straw.
  - Note #3 under Specific Wetland Crossing Restrictions should restrict temporary spoil stockpiles in State-regulated wetlands and require complete removal of leftover spoil from the State-regulated wetlands and associated adjacent areas.

- The tables that include the calculation of wetland impacts need to be revised and simplified in order to quantify temporary and permanent impacts. Impacts should be calculated and clearly itemized for each type of permanent impact, and labeled with the type of impact, for both the State-regulated wetlands and associated adjacent areas.
- The wetland impact calculation table(s) includes notations for all the consultant delineated wetlands that were determined to meet state criteria for jurisdiction. The

table must also include the NYSDEC wetland code as listed previously in my testimony.

- Impact calculations in acres should also be provided on each line, as well as totals, for State-regulated wetlands and associated regulated adjacent areas, as part of a revised application.

Q. Do you have any additional comments regarding this issue?

A. Yes. While the Applicant did provide the table entitled 2017-04-03_Cassadaga DEC Wetland-Stream Impact Summary Tables.docx to support the record, this table requires the following revisions:

- This table does not adequately describe or document each type of impact.
- This table is unclear as to the categorization of impacts. All impacts need to be clearly separated and categorized, with the following recommended headings:
    - Temporary Wetland Forest Conversion
    - Temporary Wetland Fill
    - Temporary Regulated Adjacent Area Forest Conversion
    - Temporary Regulated Adjacent Area Fill
    - Permanent Wetland Forest Conversion
    - Permanent Wetland Fill
    - Permanent Regulated Adjacent Area Forest Conversion
    - Permanent Regulated Adjacent Area Fill
    - Or other impacts, as may be applicable
    - The reason for and type of fill (access road, substation, etc.) should also be explained with an additional column or appropriate labels, etc.

Q. Do you have any comments regarding the adequacy of the plans provided by the Applicant?

A. Yes. The plans are not adequate for the purpose of completing a review consistent with the Part 663 weighing standards and, thus, must be revised to include the following:

- While the impacts are shown on the plan sheets with a calculation, it is not clear what type of impact is occurring there because the type of impact is not clearly itemized and because Project components are not all labeled.
- Sheet NW2/Wetland A and B Impacts/State-regulated Wetland Unmapped 1
    - Impacts to the regulated adjacent area of Wetland B should appear on this sheet.
- The regulated adjacent areas are depicted to surround all delineated wetlands, even when the wetland delineations are open ended because the wetland extends farther than their survey corridor. The regulated adjacent areas should only be shown where the wetland boundary is known and then also be shown to extend off the survey corridor where the wetland does so.
    - e.g., Sheet NE2/Wetland 6I/State-regulated Wetland Unmapped 2 and Sheet C17/Wetland RRRR/State-regulated Wetland HA-7 and others.
- Turbine T51 appears to be proposed approximately 100 feet from Wetland ZZ. Based on this proximity, I would expect there to at least be forest clearing impacts to the regulated adjacent areas, if not additional impacts (i.e., access roads or fill), however such impacts are not shown on the plan sheets and are likely not accounted for in the table.
- Sheet C17/Wetland RRRR/State-regulated Wetland HA-7

- The Notes are contradictory. The Applicant states that there are no impacts to Wetland RRRR, but then also say trees and vegetation will be cleared within said Wetland and its associated adjacent area. Clearing vegetation is an impact. Also, a pole will be placed in the wetland which is stated as an impact elsewhere on the sheet.

- Sheet C23/Wetland BBB/State-regulated Wetland HA-4
  - The Notes are contradictory. The Applicant states there are no wetland impacts then separately lists clearing of forested wetlands, which is a wetland impact.
- Sheet SW25/Wetland YYY/State-regulated Wetland CS-9
  - It was not intended for the portion of Wetland YYY east of Route 60 to be included in State jurisdiction, only the portion west of Route 60. The portion east of Route 60 can be omitted from impact calculations and any associated tables and plan sheets.
- Sheets SE10 and SE11/Wetland 6H/State-regulated Wetland HA-3
  - An adjustment to the delineation of Wetland 6H was requested during the site visit conducted March 30, 2017. These plans have not been updated with those changes.

Q. Will the Project, as proposed, entirely avoid State-regulated wetlands?

A. No.

Q. Has the Applicant demonstrated that unavoidable losses or impacts on the functions or benefits of the wetland have been minimized?

A. No.

- Restoration of all temporary impacts needs to be proposed and clearly explained, including re-planting trees where forest conversion will occur in areas that do not need to be maintained in a non-forested conditions as part of a right of way (ROW).
- The document entitled 2017-01-31_Cassadaga IR Attachment_Response_FINAL.xlsx discusses the avoidance and minimization efforts to that point. However, the plan sheets show further avoidance and minimization as of March 31, 2017.
- The table provided by the Applicant per the Department's request, entitled 2017-04-03_Cassadaga DEC Wetland-Stream Impact Summary Tables.docx, appears to state there will be 0.17 acres of permanent wetland impact, presumably from fill. However, the 2.38 acres of permanent wetland impact from forest clearing; 2.75 acres of permanent impact to regulated adjacent areas, presumably from fill; and 7.42 acres of impacts to regulated adjacent areas from forest clearing are much higher. Further avoidance and minimization should be explored for all impacts and the record of this proceeding supplemented accordingly identifying which methods were reviewed and, if applicable, why such method was not selected. For example:
    - Sheet NW1/Wetland B Impacts/State-regulated Wetland Unmapped 1
        - The Applicant should consider moving turbine T7 to the west to avoid regulated adjacent area impacts.
    - Sheet NW2/Wetland A and B Impacts/State-regulated Wetland Unmapped 1
        - 2017-01-31_Cassadaga IR Attachment_Response_FINAL.xlsx states that the access road was moved to minimize impacts, but the location of turbine T11 was not moved. Even a small adjustment of this turbine

further to the northeast would minimize impacts to the regulated adjacent area.

- Sheet NE1/Wetland 6I and ZZ/State-regulated Wetland Unmapped 2
  - While impacts to Wetland ZZ appear to be avoided, impacts to the associated adjacent area could be minimized further by moving the turbine T47 location to the north/northeast.
- Sheet NE2/Wetland 6I/State-regulated Wetland Unmapped 2
  - It is not clear whether the Applicant intends to cross the wetland at the narrowest point because the delineation is only for a narrow corridor and the Applicant notes that the wetland extends in both directions outside that corridor. However, it appears there may be a slightly different route that would further minimize impacts.
- Sheet C17/Wetland RRRR/State-regulated Wetland HA-7
  - Moving the proposed line to the southeast side of the road where there is less wetland and regulated adjacent area would further minimize impacts. This wetland does, in fact, extend to the southeast side of the road even though the approximate mapping does not show that, but there is less regulated area on that side of the road and, thus, less impact would result.
- Sheet C23/Wetland BBB/State-regulated Wetland HA-4
  - Moving the proposed line ROW to the west where the wetland is narrower may reduce impacts.
- Sheet SW6/Wetland EEEE/State-regulated Wetland Unmapped 3

- The location of the pole is not shown but it is stated that there will be one placed in the wetland. The Applicant should consider placing the pole in the associated adjacent area rather than in the wetland proper in order to reduce impacts.
- Moving the line northward may further minimize impacts.

- Sheet SW7/Wetland EEEE/State-regulated Wetland Unmapped 3
  - Moving the line northward may further minimize impacts.
- Sheet SW27/Wetland WWW/State-regulated Wetland CS-8
  - There is minimal regulated adjacent area that will remain between the footprint of this substation and the wetland, as currently depicted. The location of the substation should be adjusted within the agricultural field in order to increase the undisturbed area that will remain between the substation and the wetland. Moving the substation a bit eastward, more toward the center of the field, would help achieve this, as would changing the orientation 90 degrees to elongate it east/west, or other possible adjustments. I also mentioned the need to minimize impacts specifically in this area to preserve as much regulated adjacent area are as possible during my site visit with the Applicant on December 9, 2016.
- Sheets SE10 and SE11/Wetland 6H/State-regulated Wetland HA-3
  - While it is noted that the access road will be following the alignment of a currently existing access road, the already cleared area along that access road is rather wide in some areas and any opportunity to adjust the new

alignment as far away from the wetland as possible within that cleared area should be utilized.

- Additional opportunities for minimizing impacts by boring/horizontal directional drilling (HDD) under State-regulated wetlands and the associated adjacent areas, should be evaluated.
- 2017-01-31_Cassadaga IR Attachment_Response_FINAL.xlsx says "Compensatory mitigation not necessary due to impact avoidance" in situations where wetland impacts are avoided but the associated adjacent area is still impacted. This is not correct. Mitigation is required for impacts to associated adjacent areas also, not just for wetlands.

Q. Has the Applicant demonstrated that all unavoidable wetland impacts will be fully mitigated?

A. No. At this point, the Applicant has submitted the document Cassadaga_SWMP_3_31_17 Conceptual Mitigation that was prepared by RES (Resource Environmental Solutions, LLC). However, the Conceptual Mitigation does not meet the requirements of 6 NYCRR § 663.5(g) or the Department's Guidelines on Compensatory Mitigation, which provide the necessary details regarding wetlands mitigation. Specifically, the Conceptual Mitigation does not identify (i) the location of the mitigation site; (ii) the amount and type of wetlands to be created; (iii) the suitability of the mitigation to compensate for these wetlands impacts; (iv) a long term monitoring plan; (v) appropriate success criteria; and (vi) how the proposed site meets the regulatory requirements previously discussed in my testimony.

Q. Must the Applicant provide any additional information regarding wetland mitigation to demonstrate compliance with Department's requirements?

A. Yes. A plan that meets the regulatory requirements of 6 NYCRR § 663.5(g) and the Department's Guidelines on Compensatory Mitigation must include the following details;

- A detailed location relative to proposed wetland impact areas and other state-jurisdictional freshwater wetlands
- A Project construction timeline
- Documentation of ownership of the mitigation site, or a conservation easement with participating landowners unless such an agreement can be shown to not be practical, in which case, a deed restriction may be employed
- A monitoring plan including at least five years of monitoring, quarterly the first year and twice per year thereafter. The monitoring may need to be extended if problems arise.
- A commitment to maintain an 85% survival rate of tree and shrub plantings with replacements in kind when the survival rate is not met
- An invasive species management plan to include the specifications as follows: There will be 0% tolerance for Japanese knotweed (*Polygonum cuspidatum*), purple loosestrife (*Lythrum salicaria*), and common reed (*Phragmites australis*).

Q. Do you see any other potential impediments to accomplishing mitigation associated with the Conceptual Mitigation?

A. Yes. The Applicant must also consider the following issues in developing its wetland mitigation plan:

- Pursuant to the Department's Guidelines for Compensatory Mitigation and long-standing Department policy, the Applicant should be responsible for the implementation and success of the mitigation. In this case, the Certificate Holder should be ultimately responsible for mitigation. Based on my review of the plan that was submitted it is

unclear who will be responsible for mitigation and, as a result, I cannot determine if the plan meets Department standards.

- While RES references the need for mitigation to be in the immediate vicinity of the site per 6 NYCRR § 663.5, RES says the Applicant "will conduct a thorough analysis of the impact site to determine whether on-site mitigation opportunities are conducive . . . ." The Applicant has not yet provided such an analysis. Instead, the Applicant submitted the Conceptual Mitigation which only briefly and inadequately references an off-site location.
- The analysis of on-site options should include information on the acreage potential at each mitigation site compared to where Project impacts occur, with the type of mitigation or impact noted for each, and be shown on a map relative to HUC12 subwatershed boundaries.
- Part 663.5(g)(1)(ii) also states "the area affected by the proposed mitigation must be regulated by the Act and this Part after mitigative measures are completed." It is not clear whether the proposed mitigation area in the Conceptual Mitigation would meet this requirement. Again, on-site options first need to be evaluated using this criterion.
- Off-site locations will only be considered if options within the immediate vicinity are thoroughly evaluated and determined not to be possible.
- An off-site location is very generally proposed in the Conceptual Mitigation, 3.97 miles from the nearest edge of project boundary, an unknown distance from actual impacts. Significant details, as previously discussed, are lacking and this option cannot be considered until on-site options are evaluated.

- The proposed location is within the same HUC8 but not the same HUC12 sub-watersheds as the project's impacts, which is often required when considering off-site locations.
- In Table 1 of the Conceptual Mitigation, impacts to any regulated adjacent areas are reflected in a total amount. These must be listed separately, identifying each related State-regulated wetland, in order to properly consider any proposed mitigation.
- The proposal includes brief descriptions of four mitigation approaches: restoration, creation, enhancement, and preservation[1] with no mention of types of adjacent area mitigation. Mitigation must also be proposed for impacts to regulated wetland adjacent area. Such mitigation must focus primarily on: 1) buffering freshwater wetlands from project activities in 100-foot adjacent areas and 2) replacing lost buffering functions associated with project impacts to adjacent areas.

INVASIVE SPECIES CONTROL PLAN

Q. Do you have any comments regarding the implementation of an Invasive Species Control Plan (ISCP) in State-regulated wetlands and adjacent areas?

A. Yes. The following comments pertain to the implementation of an ISCP in State-regulated wetlands and the associated regulated adjacent areas:

- The baseline surveys must be done at a proper time of year (as applicable for each invasive species) to have the best chance of detecting those species.
- Once baseline surveys are conducted, further avoidance and minimization must be considered, where possible, to adjust the alignment around significant invasive species infestations, thus reducing the chance of their spread due to the project.

[1] The Department does not consider preservation, on its own, as an acceptable form of wetland mitigation. The Department will, however, accept preservation as a component of a larger mitigation plan.

- The method used to ensure that imported fill and fill leaving the site will be free of invasive species should be provided.
- Detailed cleaning procedures for removing invasive species propagules from equipment should be provided.
- Restoration of temporarily disturbed areas must include mulching with straw.
- Herbicide treatment in regulated wetlands is a regulated activity and authorization to do so must be obtained from NYSDEC.
- The Applicant must conduct post-construction monitoring of invasive species for a minimum of five years (as opposed to two years), with extensions, as applicable.
- The Applicant states their intent to discuss with NYSDEC a "reasonable definition" of no net increase of invasive species, however, the Applicant has not proposed any such definition.

RARE, THREATENED, AND ENDANGERED SPECIES PROGRAMS

Q. Do you have any concerns regarding rare, threatened, or endangered species?

A. Yes. Bald eagles (*Haliaeetus leucocephalus*), a State-listed threatened bird (6 NYCRR § 182.5(b)(6)), occur within and near the Project area. A minimum of eight pairs of bald eagles nest within 10 miles of the Project area, and adult and immature bald eagles utilize the Project area throughout the year. As a result, this Project may impact bald eagles.

PROPOSED CERTIFICATE CONDITIONS

Q. What would your recommended Proposed Certificate Conditions include with respect to State-regulated freshwater wetlands?

A. Based on the foregoing, in order to ensure compliance with the applicable State statutory and regulatory standards I previously described in my testimony, I recommend the following

proposed Certificate Conditions related to State-regulated freshwater wetlands be included in any Article 10 Certificate ultimately issued by the Siting Board:

- Within 60 days following the issuance of this certificate, the certificate holder shall submit an approvable Spill Prevention, Control, and Countermeasures Plan (SPCC). At a minimum, the SPCC must describe the storage of materials, discharge potential and containment measures for those materials, and monitoring, inspection, and reporting during operation of the facility. The plans must be approved by the Regional Spill Engineer. All measures and requirements included in the approved plans shall be enforceable conditions of this certificate. If any unforeseen changes to construction or operations occur that require alterations to the SPCC, a modified plan(s) should be submitted to, and approved by, the Regional Spill Engineer prior to proceeding with the change.
- All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.
- The certificate holder shall submit a Notice of Intent to Commence Work to the Region 9 Supervisor of Natural Resources, NYSDEC Region 9 Allegany Sub-Office, 182 East Union Street, Suite 3, Allegany, NY 14706 at least 72 hours in advance of project commencement and shall also notify him/her immediately in writing of the completion of work.
- All construction activity, including operation of machinery, excavation, filling, grading, clearing of vegetation, disposal of waste, street paving, and stockpiling of material, is to

take place within the project site as depicted on project plans. No construction activity is to take place within areas to be left in a natural condition or areas not specifically designated by this certificate. Staking and flagging construction limits (i.e., ROW, off-ROW access roads, and extra work areas) shall occur prior to any ground disturbance.

- Legible "protected area" signs, exclusionary fencing, and erosion controls pursuant to the approved Storm Water Pollution Prevention Plan (SWPPP) shall be installed along the approved work area to protect and clearly identify the boundaries of non-work areas associated with wetlands, waterbodies, and wetland/waterbody setbacks (e.g., Additional Temporary Work Space setbacks, refueling restrictions, etc.). This shall be done prior to any disturbance or vehicular traffic through such areas. Signs, fencing, and silt fence must be removed following completion of the project and after all disturbed areas are appropriately stabilized and planted as described in the SWPPP and in certificate conditions.
- During construction, erosion control devices such as straw bales or silt fence shall be used to prevent erosion of the dredged material or disturbed soil along with other measures as described in the SWPPP. The straw bales or silt fence shall be installed in accordance with construction techniques described in 2016 New York State Standards and Specifications for Erosion and Sediment Control (Blue Book), including placing the straw bales and silt fence in a shallow trench, backfilling the toe of the silt fence and securing the straw bales with stakes. All erosion and sediment control practices shall be installed prior to any grading or filling operations, or other ground disturbance. They shall remain in place until construction is completed and the area is completely stabilized.

Use of haybales is strictly prohibited to minimize the risk of introduction of invasive species.

- All equipment and machinery shall be stored and safely contained greater than 100 feet landward of the regulated wetland or water body at the end of each work day. This will serve to avoid the inadvertent leakage of deleterious substances into the regulated area.
- Fuel or other chemical storage tanks shall be contained and located at all times in an area greater than 300 feet landward of the regulated wetland or water body. If the above requirement cannot be met by the certificate holder, then the storage areas must be designed to completely contain any and all potential leakage. Such a containment system must be approved by NYSDEC staff in writing prior to equipment, machinery or tank storage.
- All mobile equipment, excluding dewatering pumps, must be fueled in a location at least 100 feet from the top of stream bank, wetland, or other waterbody. Dewatering pumps operated closer than 100 feet from the stream bank, wetland, or waterbody, must be on an impervious surface and absorbents capable of containing any leakage of petroleum products.
- Spillage of fuels, waste oils, other petroleum products or hazardous materials shall be reported to the NYSDEC's Spill Hotline (1-800-457-7362) within two hours according to the NYSDEC Spill Reporting and Initial Notification Requirements Technical Field Guidance.
- All equipment used within bed or banks of streams or in wetlands and adjacent areas must be inspected daily for leaks of petroleum, other fluids, or contaminants and may

only enter stream channel if found to be free of any leakage. A spill kit must be on site and any leaks must be stopped and cleaned up immediately.

- All fill shall consist of clean soil, sand and/or gravel that is free of the following substances: asphalt, slag, fly ash, broken concrete, demolition debris, garbage, household refuse, tires, woody materials including tree or landscape debris, metal objects, and all invasive species. The introduction of materials toxic to aquatic life is expressly prohibited.
- If the Department determines that trenchless methods are not constructible or not feasible, any wetland or stream crossing trench shall be opened for installation and backfilled in one continuous operation. Before trenching through stream banks or wetlands, upland sections of the trench shall be backfilled or plugged to prevent drainage of possible turbid trench water from entering the stream or wetland. Trench breakers/plugs shall be used at the edges of wetlands as needed to prevent draining of an entire wetland during construction. If there is an inadvertent puncturing of a hydrologic control for a wetland, then the puncture shall be immediately sealed, and no further activity shall take place until NYSDEC is notified and a remediation plan to restore the wetland and prevent future dewatering of the wetland has been approved by DEC. Only the excavated wetland topsoil and subsoil shall be utilized as backfill. In wetland areas, the topsoil shall be removed and stored separate from subsoil. When backfilling, the subsoil shall be replaced as needed, and then covered with the top soil, such that the restored top soil is the same depth as prior to disturbance.
- No turbid water resulting from dewatering operations, including water that has infiltrated the construction site, shall be discharged directly to or allowed to enter any wetland,

stream or water body within the project area. All other necessary measures shall be implemented to prevent any visible increase in turbidity or sedimentation downstream of the work site. Turbid water resulting from dewatering operation shall be discharged directly to settling basins, filter bags, or other approved device or to an upland vegetated area prior to discharge to any wetland, stream or other water body within the project area. All other necessary measures shall be implemented to prevent any visible increase in turbidity or sedimentation downstream of the work site.

- Discharges from dewatering operations shall be baffled or otherwise diffused in order to prevent erosion or turbid water from entering wetlands and waterbodies.
- Visibly turbid discharges from blasting, land clearing, grading or excavation and construction activities, or dredging operations shall not enter any surface water body. All necessary measures shall be implemented to prevent any visible increase in turbidity or sedimentation downstream of the work site, including but not limited to the use of:
    - appropriately maintained upland settling basins;
    - crushed stone, sand, straw bales, or silt screening (maximum opening size of U.S. Sieve Number 20) to filter turbid waters;
    - "silt-bags" or similar preconstructed structure designed to remove silt and sediment particles before they are discharged, or;
    - grassy upland areas at a sufficient distance from the receiving water body to prevent a visually discernible turbid discharge to the receiving water.
- The certificate holder shall notify the NYSDEC Regional Supervisor of Natural Resources via e-mail one week prior to the start of ground disturbance in each NYSDEC wetland or adjacent area.

- Markers used to delineate/define the boundary of the wetland or the extent of the structures allowed by the certificate shall be left in place and remain undisturbed until completion of construction activities and restoration of the impacted area.
- To the extent possible, work which must be in a wetland shall be scheduled to be started and completed in the dry or when the ground is frozen. Work in wetlands or adjacent area should not occur during the peak amphibian breeding season (April 1 to June 15), unless the certificate holder receives prior written approval from the appropriate NYSDEC Regional Supervisor of Natural Resources.
- All disturbed soils within regulated freshwaters wetlands and the associated adjacent areas must be seeded with a native seed mix and mulched with straw only (hay is prohibited). Mulch shall be maintained until the disturbed area is heavily revegetated. Additional seeding shall be completed as necessary to achieve an 85% vegetative cover across all disturbed areas.
- All areas of temporary disturbance to regulated Freshwater Wetlands and 100-foot adjacent areas must be returned to grade upon completion of temporary work items.
- Areas of temporary disturbance in regulated wetlands and 100-foot adjacent areas from vegetation clearing during construction must be replanted within 1 growing season with native tree and shrub species similar to what existed prior to the project and on 10 to 20 foot centers depending on what is most similar to current conditions. The certificate holder must submit an approvable “Woody Species Replanting Plan” to the Regional Supervisor or Natural Resources for approval. All measures and requirements included in the approved “Woody Species Replanting Plan” shall be enforceable conditions of the certificate.

- A minimum of 85% vegetative cover across all disturbed soil areas must be established by the end of the first full growing season following construction.
- All wetland and NYSDEC adjacent areas disturbed during installation of buried interconnects shall be restored in accordance with the following requirements:
    - Restored to pre-construction contours within 48 hours of final backfilling of the trench within the wetland and state-regulated adjacent area boundary. Immediately upon completion of grading, the area shall be replanted with native shrubs and herbs at densities as existed prior to construction. Seeding with an appropriate native wetland species mix such as an Ernst Wetland Mix (OBL-FACW Perennial Wetland Mix, OBL Wetland Mix, Specialized Wetland Mix for Shaded OBL-FACW, or equivalent) shall be completed to help stabilize the soils. Replanted areas shall be monitored for 5 years and an 85% cover of native species has been reestablished over all portions of the replanted area. At the end of the first year of monitoring, the certificate holder shall replace lost wetland and/or wetland adjacent area plantings if the survival rate of the initial plantings is less than 80%. If at the end of the second year of monitoring, the criteria for restoration plantings (85% cover, 80% survival of plantings) are not met, then the certificate holder must evaluate the reasons for these results and submit an approvable “Wetland Planting Remedial Plan” for NYSDEC approval. The “Wetland Planting Remedial Plan” must describe the reasons for poor survival, describe the actions necessary to correct the situation to ensure a successful restoration, and the schedule for conducting the remedial work. Once approved, the “Wetland Planting Remedial Plan” will be implemented according to the

approved schedule. Performance requirements contained in the approved "Invasive Species Monitoring and Control Plan" must also be achieved.

  - These replanted areas shall also be monitored for invasive species to ensure there is zero percent net increase in areal coverage of invasive species compared with pre-construction conditions. If at any time during the monitoring the invasive species criteria above are not met, the certificate holder shall take immediate action to ensure control of the invasive species. Such actions shall be part of an invasive species control plan approved by the NYSDEC.
  - If at the end of five years the restored areas do not meet the above criteria for success, then monitoring and corrective action shall continue until the criteria are met.

- Overhead transmission lines and interconnects in wetland and state-regulated adjacent areas shall be completed in accordance with the following requirements:
  - Swamp mats must be used in wetlands for installation of utility poles and overhead lines;
  - Swamp mats, tracked equipment, or low-ground-pressure vehicles must be utilized in state-regulated adjacent areas for installation of utility poles and overhead lines;
  - Prior to installation in wetlands and adjacent areas, swamp mats must be cleaned of invasive species following protocols described in the approved "Invasive Species Monitoring and Control Plan";

  - Swamp mats must be removed in reverse order of placement as soon as practicable, but no later than four months following installation of the overhead line.
  - Disturbed areas will be monitored for 5 years following the installation of overhead lines or interconnects to assure an 85% cover of native species. If after one complete growing season an 85% cover of native species is not achieved, the certificate holder must evaluate the reasons for these results and submit an approvable "Wetland Planting Remedial Plan" for NYSDEC approval. The "Wetland Planting Remedial Plan" must describe the reasons for poor survival, describe the actions necessary to correct the situation to ensure a successful restoration, and the schedule for conducting the remedial work. Once approved, the "Wetland Planting Remedial Plan" will be implemented according to the approved schedule.
- Any debris or excess material from construction of this project shall be completely removed from the wetland or adjacent area (upland) and removed to a facility duly authorized to receive such material. No debris is allowed to remain in wetlands and/or regulated adjacent areas.
- Cleared vegetation and slash from wetland and adjacent areas will not be burned or buried within the wetland or adjacent area. The vegetation must be disposed of outside of the wetland and adjacent area, but slash that is cut may be left in place (drop and lop or piled in dry or seasonally saturated portions of freshwaters wetlands and 100-foot adjacent areas to create wildlife brush piles).
- This certificate does not authorize any permanent alteration of wetland hydrology.

- Wetlands and waterbodies downstream and outside of the construction zone of the project shall always remain as clear (non-turbid) as the portions of wetland outside of the wetland construction area. Silt curtains or other means of preventing turbidity or runoff from escaping the construction zone of the project shall be used at all times to prevent such impacts to the wetland and adjacent area outside the construction zone.
- Prior to issuance of the certificate, the applicant must submit, at a minimum, a conceptual wetland mitigation plan to the NYSDEC Regional Supervisor of Natural Resources that describes general objectives and approaches designed to offset all project impacts to wetland functions and benefits. The plan must be approved by the Regional Supervisor of Natural Resources.
- Within 60 days of the issuance of the certificate, the certificate holder must submit an approvable "Wetland Mitigation Plan" to the NYSDEC Regional Supervisor of Natural Resources that provides compensatory mitigation for all impacts to wetland functions and benefits. At a minimum, the "Wetland Mitigation Plan" must include:
    - a detailed description of permanent and temporary impacts to all wetlands, including the extent of disturbance to state-regulated wetlands, state-regulated 100 foot adjacent areas, and other wetlands;
    - detailed site-specific construction and planting plans;
    - detailed descriptions of actions that will compensate for all impacts to wetland functions and benefits and how the mitigation will meet requirements contained in 6 NYCRR Part 663.5;

- detailed descriptions of performance standards to be established for each wetland community to ensure satisfactory development of hydrophytic vegetation, hydric soils, and wetland hydrology;
- annual monitoring for a period of at least 5 growing seasons, with provisions to ensure that corrective action will be taken as needed until the wetland mitigation goals are met.
- a detailed construction schedule with dates for the commencement of construction; completion of grading, seeding, and planting; and a final completion date.

No disturbance to wetlands or regulated adjacent areas is allowed until the "Wetland Mitigation Plan" has been approved in writing by DEC. All measures and requirements included in the approved "Wetland Mitigation Plan" shall be enforceable conditions of the certificate.

- Certificate holder shall submit annual monitoring reports for a minimum of five years post-construction on the success of the wetland and adjacent area restoration, and the success of the mitigation site enhancements. These reports shall describe whether all mitigation performance standards have been satisfactory met and shall detail soil conditions, hydrology (including water depths), presence of water within 12 inches of the surface, plant species occurrence and percent cover, coverage of native species by section, survival rate of plantings, percent of invasive species, native species composition (%), invasive species present, and photographs taken during the growing season.

  If, after five years post-construction, all performance standards have not been achieved, the certificate holder must evaluate the reasons for these results and submit an approvable

"Wetland Mitigation Remedial Plan" for NYSDEC approval. The "Wetland Mitigation Remedial Plan" must describe the reasons for not achieving performance standards, describe the actions necessary to correct the situation to ensure a successful mitigation, and the schedule for conducting the remedial work. Once approved, the "Wetland Mitigation Remedial Plan" will be implemented according to the approved schedule.

- Within 60 days of the issuance of the certificate, the certificate holder must submit an approvable "Invasive Species Monitoring and Control Plan" to the NYSDEC Regional Supervisor of Natural Resources that describes the activities the certificate holder will implement to prevent the introduction and spread of invasive species resulting from the project. Specifically, the plan must present an approach designed to ensure there is zero percent net increase in areal coverage of invasive species within the project footprint compared with pre-construction conditions. At a minimum, the "Invasive Species Monitoring and Control Plan" must include:
    - protocols for baseline surveys to document the presence of invasive plant communities and establish a baseline measure of infestation;
    - protocols for preventing new introductions of invasive species and preventing the spread of invasive species (e.g., equipment cleaning, fill sources free of invasive species);
    - annual monitoring protocols for a minimum of 5 years post-construction;
    - annual reporting and performance requirements; and
    - protocols for adaptive management if performance requirements are not met.

  If, after five years post-construction, all invasive species control requirements have not been achieved, the certificate holder must evaluate the reasons for these results and

submit an approvable "Invasive Species Remedial Plan" for NYSDEC approval. The "Invasive Species Remedial Plan" must describe the reasons for not achieving NYSDEC requirements, describe the actions necessary to correct the situation, and the schedule for conducting the remedial work. Once approved, the "Invasive Species Remedial Plan" will be implemented according to the approved schedule

- To control the spread of invasive insects, the certificate holder will: a) coordinate with outside logging contractors for sale and use of the merchantable timber; and provide unmerchantable timber as firewood to adjacent landowners or the general public pursuant to the NYSDEC's firewood restrictions to protect forests from invasive species found in 6 NYCRR Part 192.5; and b) make sure crews are trained to identify the Asian Longhorned Beetle and the Emerald Ash Borer and any other insects that the NYSDEC identifies as a potential problem. If these insects are found, they must be reported to the NYSDEC regional forester.

Q. What would your recommended Proposed Certificate Conditions include with respect to rare, threatened and endangered species?

A. Based on the foregoing, I recommend the following Proposed Certificate Conditions related to State rare, threatened and endangered species be included in any Article 10 Certificate ultimately issued by the Siting Board:

- Post-construction monitoring shall be conducted for a minimum period of at least two (2) years and will include direct impact fatality studies and habituation/avoidance studies. The details of the post-construction studies (i.e. the start date, number and frequency of turbine searches, search area, ground based or aerial eagle occupancy and use surveys, breeding bird surveys, further monitoring beyond the second year, etc.), will be described

in a post-construction monitoring and adaptive management plan, following NYSDEC's June 2016 *Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects,* and through consultation between the certificate holder, USFWS, and NYSDEC.

- If at any time during the life of the Project a bald eagle nest is located, the regional NYSDEC Natural Resource Supervisor will be notified within twenty four (24) hours of discovery, and prior to any disturbance of the nest or immediate area. An area six hundred sixty (660) feet in radius from the nest tree will be posted and avoided until notice to continue construction at that site is granted by the regional NYSDEC Natural Resource Supervisor. The nest tree will not be approached under any circumstances unless authorized by the regional NYSDEC Natural Resource Supervisor.
- If at any time during the life of the Project any dead, injured or damaged State-listed TE species, or their parts, eggs, or nests thereof are discovered within the Project Area (defined for the purpose of this condition as leased land or property parcels containing project components) by the certificate holder, their designated agents, or a third party that reports to the certificate holder, the certificate holder shall immediately (within twenty four (24) hours) contact the regional NYSDEC Region 9 Natural Resource Supervisor (716.372.0645) and United States Fish and Wildlife Service (607.753.9334) to arrange for recovery and transfer of the specimen(s). The following information pertaining to the find shall be recorded: species; the date the animal or nest was discovered; the GPS coordinates of the location of discovery, the name(s) and contact information of the person(s) involved with the incident(s) and find(s); and, if known, an explanation of how the mortality/injury/damage occurred. This record shall be kept with the container

holding the specimen and given to the NYSDEC at the time of transfer. If the discovery is followed by a non-business day, the certificate holder shall ensure the location of the find is marked, GPS data recorded, detailed photographs of the carcass(es) or nest(s) taken and surrounding landscape relative to the project and components, and the specimen(s) placed in a freezer until it can be retrieved by the proper authorities.

- During construction, any temporary disturbance or modification of grassland habitat will be restored to preexisting grassland habitat conditions by re-grading and reseeding with an appropriate native seed mix after construction activities are completed. These areas shall include, but are not limited to temporary roads, material and equipment staging and lay-down areas, crane and turbine pads, and electric line ROWs.

Q. Do you hold your opinions to a reasonable degree of scientific certainty?

A. Yes, I do.

Q. Does this conclude your direct testimony on these topics at this time?

A. Yes, it does.

My understanding is that there is at this time, no cross examination, is there any change to that?

All right, DPS has objected to the excusing of Ms. Rothrock on the grounds that they need to review the exhibit revised certificate conditions 97. So Ms. Rothrock, I will excuse you from the cross examination table for now. Oh, wait, are there any exhibits to go into the record?

MS. CROUNSE: Oh, yes.

A.L.J. LECAKES: All right, let's do the exhibits first.

MS. CROUNSE: Attached to Ms. Rothrock's testimony is one exhibit, identified as NYS DEC AR 1, I'm not sure what it was.

A.L.J. LECAKES: Yeah, we'll find it.

MS. CROUNSE: Okay.

A.L.J. LECAKES: And that's just her resume?

MS. CROUNSE: That's just her resume.

A.L.J. LECAKES: Okay.

MS. CROUNSE: And that's the only exhibit.

A.L.J. LECAKES: That was pre-marked as Exhibit Number 66 on hearing -- on our hearing exhibit list. All right, and so we will get that as I said before, we're not going to move that into evidence yet, we'll have objections or -- and move all the exhibits in to the hearing record at the end. So now, Ms. Rothrock, you are excused --

THE WITNESS: Uh-huh.

A.L.J. LECAKES: -- but you're still under oath to the extent that DEC may -- or, I'm sorry, DPS may need to ask you cross-examination questions, thank you. Let's go off the record.

(Off the record0

(On the record)

A.L.J. LECAKES: Mr. Baker, Mr. Muscato, could you call your first witness?

MR. BAKER: Yeah. We call Ben Brazell, Your Honor.

A.L.J. LECAKES: Please remain

standing and raise your right hand. Mr. Brazell, do you swear or affirm that the testimony you're about to give in this proceeding is the whole truth?

MR. BRAZELL: I do.

BENJAMIN BRAZELL; Sworn.

A.L.J. LECAKES: You may be seated.

DIRECT EXAMINATION

BY MR. BAKER:

Q. Good morning, Mr. Brazell, can you state your full name for the record?

A. (Brazell) Benjamin R. Brazell.

Q. And previously you provided a pre-filed testimony, a three-page document, is that correct?

A. Yes.

Q. Do you have any changes to that document?

A. No.

Q. And if you were asked the questions on that document, would your answers be as set forth therein?

A. Yes.

Q. And are -- and are you also

sponsoring any exhibits through your direct testimony?

A. Yes.

Q. And is one of those exhibits your resume?

A. Yes. That's Hearing Exhibit 1.

Q. And that's have been -- previously identified as Hearing Exhibit 1?

A. One was the pre-filed and 2 was the resume.

Q. The pre-filed testimony is Hearing Exhibit 1. The resume is Hearing Exhibit 2.

A.L.J. LECAKES: The Hearing Exhibit 1, the pre-filed testimony is the testimony that was included in the application, is that correct?

THE WITNESS: Correct.

A.L.J. LECAKES: Thank you.

BY MR. BAKER: (Cont'g.)

Q. Do you have in front of you a 90-page document entitled rebuttal testimony of Benjamin R. Brazell?

A. I do, yes.

Q. Do you have any changes or

corrections to make to that document?

A. No.

Q. And if I were to ask you the questions from that document, would your answers be as set forth therein?

A. Yes.

MR. BAKER: Okay, Your Honor, we'd like to -- we don't think we've previously entered that as an exhibit so that gets -- enter that as exhibit.

A.L.J. LECAKES: Yeah, testimony?

MR. BAKER: The testimony.

A.L.J. LECAKES: We're just going to put it into the hearing transcript as if orally given so it doesn't need an exhibit number.

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

Application of Cassadaga Wind Project for a Certificate under Article 10 of the Public Service Law — Case No. 14-F-0490

REBUTTAL TESTIMONY OF

BENJAMIN R. BRAZELL
PRINCIPAL
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LANDSCAPE, ARCHITECTURE, ENGINEERING
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Q: Please state your name, employer, and business address.

A: Benjamin R. Brazell, Environmental Design & Research, Landscape, Architecture, Engineering & Environmental Services, D.P.C. ("EDR"), 217 Montgomery Street, Suite 1000, Syracuse, NY 13202-1942.

Q: Did you file pre-filed testimony in this matter?

A: Yes. Please see attached as Exhibit BRB-1 my pre-filed testimony and credentials.

Q: What is your experience conducting environmental impact assessments for wind power projects in New York State and elsewhere?

A: I have been overseeing various studies and analyses for wind power projects since joining EDR in February 2004. I have been directly involved in the preparation of multiple Environmental Impact Statements (EISs) for wind power projects in New York, and Applications for Certificates of Environmental Compatibility and Public Need (Certificate Application) for wind power projects in Ohio, totaling over two dozen EISs/Certificate Applications. EDR was also responsible for the preparation and management of multiple stand-alone support studies and permit applications for each of these projects, such as wetland and stream delineations and state and federal wetland permitting, visual impact assessments, and cultural resources surveys. A list of all these projects and associated studies prepared by EDR is includes as Exhibit BRB-2. In addition to the Cassadaga Wind Project, I

am currently working on numerous other Public Service Law (PSL) Article 10 proceedings including: Baron Winds Project (Case No. 15-F-0122), Galloo Island Wind Energy Facility (Case No. 15-F-0327), North Ridge Wind Farm (Case No. 16-F-0268), Mad River Wind Farm (Case No. 16-F-0713), Bluestone Wind Farm (Case No. 16-F-0559), Heritage Wind Farm (Case No. 16-F-0546), Mohawk Solar Project (Case No. 17-F-0182), and the Horse Creek Wind Farm (Case No. 12-F-0575). I also served as Principal-in-Charge for the Jericho Rise Wind Farm (Franklin County), which was constructed and became operational in 2016, and the Arkwright Summit Wind Farm (Chautauqua County), which is currently under construction. Both of these projects were reviewed and approved through preparation of EISs in accordance with the State Environmental Quality Review Act (SEQRA), and the Arkwright project also received approval from the New York State Department of Environmental Conservation (NYSDEC) under Article 15 and 24 of the Environmental Conservation Law (ECL).

Q: What is the purpose and scope of your testimony in this proceeding?

A: To provide rebuttal testimony for certain environmental impacts associated with the Cassadaga Wind Project (Project or Facility), proposed by Cassadaga Wind LLC (the Applicant). Specifically, this rebuttal addresses certain portions of direct testimony provided by Anne Rothrock (New York State Department of Environmental Conservation [NYSDEC]), Christopher Legard (NYSDEC),

Jeremy Rosenthal (New York State Department of Public Service [NYSDPS]), Daniel Connor (NYSDPS), and the Staff Policy Panel (NYSDPS).

Wetlands and Streams

Q: Can you briefly describe where in the record information can be found regarding the Facility's impacts to wetlands and streams?

A: A significant amount of information is in the record regarding the identification of wetlands and streams and an evaluation of impacts on such resources. This information is briefly summarized as follows:

- Exhibit 22 of the Application identifies wetland resources and discusses wetlands impacts,
- Exhibit 23 of the Application identifies stream resources and discusses stream impacts,
- Appendix M of the Application contains detailed Preliminary Design Drawings that includes wetland and stream resources,
- Appendix RR of the Application contains the Wetland Delineation Report,
- an updated Wetland/Stream Field Delineation map was filed on November 22, 2016,
- the Applicant's response to DPS IR-1 contains a detailed table of wetland/stream avoidance, mitigation and minimization (the Applicant's

response to DPS-IR-1 is attached to Jeremy Rosenthal's testimony as Exhibit JR-1 page 1),

- the Applicant also submitted a supplement to DPS- IR-1 on March 31, 2017 with an updated drawing set specific to wetland/stream impacts which is attached hereto as Exhibit BRB-3,
- the Applicant's response to DPS IR-46 contains an updated table of wetland/stream avoidance, mitigation and minimization and is attached hereto as Exhibit BRB-4,
- the Applicant's supplement to DPS IR-1 on March 31, 2017 also contained a Conceptual Stream and Wetland Mitigation Plan, which is attached hereto as Exhibit BRB-3,
- with this testimony I am also providing updated wetland/stream impact drawings attached hereto as Exhibit BRB-5,
- and the Applicant's response to DEC IR-3 contains an updated wetland mitigation plan attached hereto as Exhibit BRB-6.

Q: Can you describe how wetland and stream resources were identified within the Facility Site?

A: Yes. Investigations were first conducted in the spring of 2015, associated with an initial Facility layout provided by the Applicant, which included a total of 75 turbines. In support of these investigations, EDR created a set of field maps

(depicting the preliminary location of project components along with mapped wetlands and streams on aerial base mapping) and conducted reconnaissance-level field investigations of the initial layout. EDR provided the results of our field investigations to the Applicant, along with specific layout/component alignment changes that were recommended to avoid/minimize impacts to resources such as wetlands and streams. Subsequently, wetland and stream delineations were conducted by EDR personnel during the fall of 2015, in accordance with the three-parameter methodology described in the U.S. Army Corps of Engineers (Corps) *Wetland Delineation Manual* (Environmental Laboratory, 1987), and further described by the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: North Central and Northeastern Region* (USACE, 2012). Wetland boundaries were defined in the field by sequentially numbered pink surveyor's flagging marked "wetland delineation", the locations of which were documented using Global Positioning System (GPS) technology with sub-meter accuracy. Wetland delineations within the Facility Site were conducted within a 200-foot wide corridor centered on linear Facility components (e.g., access roads, buried electrical interconnect, overhead transmission line), and within a 200-foot radius of turbines and other components such as permanent meteorological towers and substations. The results of the on-site wetland delineations are summarized in Exhibit 22 of the Application, the

results of the stream delineations are summarized in Exhibit 23 of the Application, and the results of the total delineation effort (both wetlands and streams) is further detailed in the stand-alone Wetland Delineation Report, which was included as Appendix RR to the Application. Additional delineations were conducted during the 2016 growing season in areas where lack of landowner access precluded delineations on specific parcels in 2015, resulting in a complete delineation of the Facility. As a result, updated delineation maps (Figure 8 of the Wetland Delineation Report) were provided to NYSDEC personnel on November 11, 2016 and subsequently filed on the DMM on November 22, 2016. Finally, the delineation report originally included in the Application as Appendix RR was updated to reflect the results of the 2016 delineations, and was sent to NYSDEC and U.S. Army Corps of Engineers (Corps) personnel on February 27, 2017.

Q: Did representatives from the NYSDEC or Corps conduct site visits of the Facility to review wetland and stream delineations?

A: Yes. Prior to conducting the wetland and stream delineations in the fall of 2015, EDR invited NYSDEC and Corps personnel to review delineation methodology in the field, and as a result one Corps representative conducted a site visit with EDR personnel and an Applicant representative in October 2015 (NYSDEC personnel declined the invitation). Following receipt of the updated delineation maps on November 11, 2016, Anne Rothrock, with NYSDEC Region 9's office, conducted

a site visit with EDR personnel and an Applicant representative on December 9, 2016. Lastly, one Corps representative and Anne Rothrock conducted a site visit with EDR personnel, RES personnel (the Applicant's wetland mitigation consultant), and an Applicant representative on March 30, 2016.

Q: Did wetland impact avoidance and minimization occur prior to defining the Facility layout set forth in the Application?

A: Yes. As indicated above, reconnaissance-level field investigations were conducted on an initial layout to identify wetland and stream resources, and the resulting data was used by the Applicant to make Facility layout adjustments and avoid and minimize impacts to such resources. The initial layout investigated in the spring of 2015 included 75 turbines, whereas the Application set forth and addressed a total of 58 turbines.

Q: Was this "pre-Application" avoidance and minimization described in the Application?

A: Briefly. Exhibit 22(n) of the Application states, "Wetland impacts have been minimized substantially due to changes in the Facility design. A 75-turbine layout, proposed early in Facility siting, was evaluated at a reconnaissance level for wetland and stream resources. This layout would have resulted in permanent impacts to 4.77 acres of wetlands. Therefore, this proposed layout represents a 68% reduction in permanent wetland impacts, with just a 23% reduction in the

number of turbines." This is also briefly described in Exhibit 9(C)(4), and the 75-turbine layout is depicted on Figure 3-1 of the Application. Please note that in accordance with the Stipulations, which were developed in consultation with multiple parties (final Stipulations were executed by the NYSDPS and NYSDEC on April 12, 2016 after approximately 5 months of negotiations), these numbers were based on a standard set of assumptions applied to Geographic Information System (GIS) calculations, and actual engineering results can result in slightly different numbers.

Q: Is there additional information that describes wetland/stream impact avoidance and minimization measures?

A: Yes. Exhibit 22(n) of the Application also discusses impact avoidance/minimization associated with the electrical collection and transmission lines, and states, "…the Applicant is anticipating installing collection line via directional drilling at forested wetlands where buried collection line is the only Facility component, which eliminates wetland impacts in those areas where it is used. In many cases, wetlands and streams will be spanned by either overhead collection line or transmission line, eliminating the need for in-stream work in these locations. The Applicant intends to span overhead those streams protected under ECL Article 15. Construction and operation of the Facility will be done in accordance with the standards established by ECL Article 15." Exhibit 22(n) also

describes specific measures to be implemented during construction to minimize impacts, including the following:

- "*No Equipment Access Areas*: Except where crossed by permitted access roads or through non-jurisdictional use of temporary matting, streams will be designated "No Equipment Access," thus prohibiting the use of motorized equipment in these areas.
- *Restricted Activities Area:* A buffer zone of 100 feet, referred to as "Restricted Activities Area", will be established where Facility construction traverses streams, wetlands and other bodies of water. Restrictions will include…
- *Sediment and Siltation Control*: A soil erosion and sedimentation control plan will be developed and implemented as part of the SPDES General Permit for the Facility. Silt fences, hay bales, and temporary siltation basins will be installed and maintained throughout Facility construction. Exposed soil will be seeded and/or mulched to assure that erosion and siltation is kept to a minimum along wetland boundaries. Specific control measures are identified in the Facility Preliminary Stormwater Pollution Prevention Plan (SWPPP), and the location of these features will be indicated on construction drawings and reviewed by the contractor and other appropriate parties prior to construction. These features will be inspected on a regular basis to assure that

they function properly throughout the period of construction, and until completion of all restoration work.

- *Work Period Restriction for Stream Crossings*: Construction in streams protected under Article 15 will comply with work period restrictions that are established to protect fish spawning and migration. The work period restriction is from October 1 to April 30 for streams with trout and from March 15 to June 15 for other protected streams (NYSDEC, 2005). However, site-specific consultation with NYSDEC stream biologists may result in less restrictive no-work periods. For example, the Final Environmental Impact Statement (FEIS) for the Arkwright Summit Wind Farm noted that NYSDEC personnel indicated that in-stream work could take place outside of the seasonal work restriction window, as determined on a case-by-case basis (EDR, 2016). Seasonal work period restrictions on in-stream work during Facility Construction will be established in consultation with NYSDEC. All of the protected streams within the Facility Site are C(T) streams, and these are anticipated to either be spanned overhead or bored locations where collection lines cross them, so as reduce impacts to streams and avoid in-stream work."

In addition, in response to Interrogatory Request (IR) No. DPS-1 the Applicant completed a detailed table, which was designed by NYSDPS personnel. This table identifies each wetland and stream crossing and describes why the resource

could not be reasonably avoided and actions taken to minimize impacts to the resource. This table includes a significant amount of information, specifically 7 columns and 161 rows of information (i.e., 161 individual wetlands/stream crossings evaluated for impact avoidance and minimization). The Applicant's response to IR DPS-1 also includes example photographs depicting locations where Facility components were sited on existing disturbances, such as existing farm roads and logging roads. Although not requested, the Applicant also committed to providing detailed wetland and stream drawings to the parties by March 31, 2017 which were submitted to the parties as a supplement to DPS-1 on March 31, 2017 (see impact testimony below for additional information on these drawings). Subsequently, in response to IR DPS-46, the Applicant provided an update to the detailed spreadsheet originally provided in response to IR DPS-1 to account for further impact avoidance, minimization, and mitigation measures as demonstrated in the March 31, 2017 updates. Please also see the Updated Layout section of my testimony below.

Q: Regarding wetland and stream impacts, what information is provided in the Application?

A: Exhibit 22(m) of the Application provides details associated with wetland impacts. Initially there is a discussion that describes the types of impacts that are anticipated due to construction of the Facility, which is followed by a discussion

that quantifies impact. Specifically, Exhibit 22(m) page 65 states, "Construction of the Facility is anticipated to result in disturbance of up to 23.11 acres of wetlands. Of this disturbance, 21.56 acres will be disturbed only temporarily, while 1.55 acres are anticipated to be permanently lost. These impacts represent a conservative estimate for several reasons. First, the Facility evaluated herein includes up to 58 wind turbines. Depending on the turbine model selected, fewer turbines may actually be built. In addition, the Applicant is currently in discussions with landowners who have temporary staging areas proposed on their properties. These discussions are likely to result in eliminating staging area related impacts to wetlands. Finally, the Applicant will install buried interconnect via directional drilling, where practicable, to eliminate impacts to forested wetlands in cases where buried collection line is the only Facility component. Implementation of these measures will reduce wetland impacts from the acreages presented in this Application." This is then followed by a detailed table (Table 22-6 Wetland Impacts) that provides the following information for each individual wetland impact:

- Wetland ID
- Wetland Type (e.g., forested, emergent)
- NYSDEC Wetland ID
- Temporary Impact (square feet)

- Permanent Impact (square feet)
- Facilities Crossing Wetland (e.g., buried interconnect, access road, wind turbine)
- Anticipated Crossing Methodology If Impact by Buried Interconnect Only (e.g., trench, horizontal directional drill [HDD])

With respect to impacts, the end of Table 22-6 provides the total cumulative impact in both square feet and acres. This information is, at the very least, consistent with, and more likely exceeds, the requirement set forth in the Stipulations, which were executed by the NYSDPS and NYSDEC on April 12, 2016. Specifically, Stipulation 22(m) requires Exhibit 22(m) of the Application to include "A quantification of temporary and permanent impacts to wetlands (and any state-regulated 100-foot adjacent areas) based on the proposed footprint of all Facility components and associated impact assumptions. Such impacts will be presented in a table that identifies the type of impact and associated crossing methodology."

A similar level of information is provided in Exhibit 23 of the Application for streams. Specifically, Exhibit 23(b)(4) discusses impacts to streams, and states, "Potential temporary and permanent impacts to streams and open waters that could result from Facility construction and operation have been calculated using disturbance assumptions presented in 1001.22(b). The Facility is anticipated to

result in up to approximately 8,845 linear feet of temporary disturbance to perennial and intermittent streams and up to approximately 341 linear feet of permanent disturbance to perennial and intermittent streams." This is then followed by a detailed table (Table 23-3 Stream Impacts) that provides the following information for each individual stream impact:

- Delineated Stream ID
- Type (e.g., intermittent, perennial)
- NYSDEC Stream Classification (e.g., C, C(t), B)
- NYSDEC Protected Stream (yes or no)
- Temporary Impact (linear feet)
- Permanent Impact (linear feet)
- Facilities Crossing Stream (e.g., buried interconnect, access road)
- Anticipated Crossing Methodology If Impacted by Only Collection Line (e.g., trench, HDD)
- Utilizes Existing Access (yes or no)

With respect to impacts, the end of Table 23-3 provides the total cumulative temporary and permanent impact in linear feet.

Q: Regarding wetland and stream impacts, is there additional information provided in the case record?

A: Yes. In response to DPS IR-1, the Applicant committed to preparing a detailed set of wetland and stream impact drawings. In accordance with this commitment, the Applicant submitted a detailed set of drawings on March 31, 2017 to the parties (Exhibit BRB-3). These drawings included the following:

- Sheet G-000: Master legend, wetland classification system, regional index depicting the organization of the detailed impact drawings (i.e., Northwest Region, Northeast Region, Central Region, Southwest Region, Southeast Region).
- Sheet G-001: General notes (Preliminary Contractor Notes, Preliminary General Environmental Restrictions, Preliminary Specific Stream Crossing Restrictions, Preliminary Specific Wetland Crossing Restrictions, Preliminary Erosion & Sediment Control Notes) and a very detailed Wetland and Stream Impacts table.
- Northwest Overview Sheet and Sheets NW1-NW16: detailed impact drawings
- Northeast Overview Sheet and Sheets NE1-NE9: detailed impact drawings
- Central Overview Sheet and Sheets C1-C23: detailed impact drawings
- Southeast Overview Sheet and Sheets SE1-SE16: detailed impact drawings

- Southwest Overview Sheet and Sheets SW1-SW33: detailed impact drawings
- Sheets C-601 through C-604: typical civil details

The Applicant also provided an updated to IR DPS-1 (updated wetland/stream impact minimization and avoidance table) in response to IR DPS-46 (see Exhibit BRB-4). This testimony also includes an updated set of detailed wetland and stream impact drawings (see Exhibit BRB-5).

Q: Will the Facility, as proposed, involve activities regulated by ECL Article 24 or 15?

A: Yes. Specific to streams, Direct Testimony was provided by Christopher Legard of the NYSDEC and this opinion is consistent with page 7, lines 5 through 9 of his testimony. Specific to wetlands, direct testimony was provided by Anne Rothrock of the NYSDEC and this opinion is consistent with page 12, lines 5 through 10 of her testimony.

Q: In your opinion, does the case record contain sufficient information to describe stream impacts?

A: Yes, based on all the information provided to date (as summarized in my testimony above), sufficient information exists to describe stream impacts.

Q: Is this opinion consistent with Christopher Legard's direct testimony?

A: Yes. This is consistent with page 7, lines 10 through 19 of his testimony.

Q: In your opinion, does the case record contain sufficient information to describe wetland impacts?

A: Yes, based on all the information provided to date (as summarized in my testimony above), sufficient information exists to describe wetland impacts.

Q: Is this opinion consistent with Ms. Rothrock's Direct Testimony?

A: No. On page 12, lines 12 through 14 of her testimony, Ms. Rothrock states, "I cannot describe specific impacts on wetlands because information is missing from the Application that would otherwise allow a detailed and specific quantification of impacts."

Q: Can you explain this statement?

A: No. As summarized above in my testimony, the Application provides specific descriptions, information, and quantification of impacts for wetlands and streams, including detailed tables that quantify each individual impact to a wetland or stream. With regard to the impact tables provided in Exhibits 22 and 23 of the Application, specifically Table 22-6 (Wetland Impacts) and Table 23-3 (Impact to Streams), each table provides specific information on each individual wetland/stream, an indication of NYSDEC classification for each individual wetland/stream, a quantified impact for each individual wetland/stream, and the type of Facility component causing each individual impact, among other information. In other words, the same type of information is provided for impacts

to wetlands and streams, and I cannot explain the inconsistency between NYSDEC testimony regarding streams and NYSDEC testimony regarding wetlands. As stated above, my opinion is consistent with Christopher Legard's opinion (i.e., we both believe the case record contains sufficient information to describe the Facility's impacts on streams).

Q: On page 12, lines 14 through 16 of her Direct Testimony, Ms. Rothrock states, "While the current record includes a project layout and delineated wetland boundaries, critical information remains lacking that is necessary to evaluate the Project and make a determination as to whether the Project meets regulatory standards." Can you respond to this statement?

A: Yes. Generally speaking, it is my opinion that this statement represents an obvious mischaracterization and underrepresentation of the information contained in the record. This statement essentially claims that the record contains only two items with respect to describing wetland resources and impacts to those resources: 1) a Facility layout and 2) delineated wetland boundaries. However, as summarized in my testimony above the record contains a significant amount of information on wetlands, including:

- Exhibit 22(i) of the Application describes the Facility-specific wetland delineations.

- Figure 22-2 of the Application provides mapping of all delineated wetlands and approximate wetlands.
- Exhibit 22(j) of the Application describes all wetland community types delineated on-site (e.g., forested wetlands, scrub-shrub wetlands, emergent wetlands).
- Exhibit 22(k) of the Application describes the functional assessment that was conducted for all wetlands delineated on-site.
- Exhibit 22(m) of the Application describes and quantifies wetland impacts, including Table 22-6 (Wetland Impacts) that quantifies impacts to each individual wetland.
- Exhibit 22(n) of the Application describes measures to avoid, minimize, and mitigate impacts to wetlands.
- Appendix M of the Application contains the Preliminary Design Drawings, which provides detailed drawings (plan and profile) associated with the Project components, along with existing and proposed contours, in relation to delineated wetlands and streams. This drawing set included a total of 115 sheets.
- Appendix RR of the Application contains the Wetland Delineation Report, which includes:

- Narrative describing the NYSDEC and Corps regulations, physical characteristics and resources (i.e., physiography and soils, hydrology, federal and state mapped wetlands and streams), and wetland and stream delineation methodology and results.
- Multiple tables with Project-specific information such as soils, state mapped wetlands and streams, and delineation results.
- Multiple figures depicting Project-specific information regarding topography, soils, mapped wetlands and streams, and delineated wetlands and streams.
- Routine Wetland Determination Forms that provide detailed data collected for each delineated feature (over 500 pages of data forms).
- Photos of representative wetland communities.
- A wetlands functions and values assessment table that includes an evaluation of vegetation conditions, hydrology conditions, size, adjacent conditions, public access, and the primary functions and values.

- Updated delineation maps (Figure 8 of the Wetland Delineation Report) were provided to NYSDEC personnel on November 11, 2016, and uploaded to the DMM on November 22, 2016.

- An updated Wetland Delineation Report was sent to NYSDEC and Corps personnel on February 27, 2017.
- The Applicant's response to IR DPS-1, which was provided on January 31, 2017 and includes a detailed spreadsheet that evaluates impact avoidance and minimization for each wetland and stream crossing.
- The Applicant's March 31, 2017 submittal, which included detailed wetland and stream impact drawings (see Exhibit BRB-3).
- The Applicant's response to IR DPS-46, which was provided on May 3, 2017 and included an update to the detailed spreadsheet originally submitted in response to IR DPS-1 in order to account for the March 31, 2017 submittal (see Exhibit BRB-4).

Q: Do you have any additional comments on Ms. Rothrock's Direct Testimony regarding wetland impacts?

A: Yes. Beginning on page 12 of her testimony, Ms. Rothrock provides a list of "…necessary information that is missing from the Application…" The following summarizes and responds to each item in her list.

- A revised wetland delineation map (Rothrock testimony page 12, lines 19-20). This indicates that an adjustment to delineated wetland 6H was requested during the March 30, 2017 site visit. ***Response:*** While conducting this site visit with NYSDEC and Corps personnel, a small

portion of the boundary of wetland 6H was adjusted (a total of seven wetland delineation flags and associated GPS points). As indicated this data was collected on March 30, and as such it was not possible to incorporate into the March 31 submittal. However, this has been incorporated into the updated wetland/stream impact drawings (see the "Updated Layout" section of my testimony below for additional detail). Please note that the seven flags/GPS points obtained on March 30 represent a fraction of the overall delineation effort, which otherwise included over 17,500 wetland delineation/investigation GPS points. To present another way, over 120 acres of wetlands were delineated within the Facility Site, and the March 30, 2017 extension totaled only 0.04 acre.

- Revised preliminary notes on the first page of plan sheets (Rothrock testimony page 12, line 21). ***Response:*** It is unclear what "plan sheets" are being referenced in this comment. For instance, the Preliminary Design Drawings (Appendix M to the Application) include plan sheets and notes, as does the detailed wetland and stream impact drawing set submitted on March 31, 2017. For the purposes of this testimony it is assumed that this comment references the March 31st drawing set. This comment goes on to indicate that the notes need to be revised to include the following:

- Note #2 under Contractor Notes should include language requiring wetland boundaries to remain in place until construction has ended (Rothrock testimony page 13, lines 1-3). ***Response:*** The lack of this specific language does not prohibit any party from describing or evaluating the Facility's impacts on wetlands. In addition, please note that this is specifically addressed in the Environmental Compliance Manual prepared prior to construction. In my experience, the compliance manuals prepared by EDR typically include a section specifically dedicated to flagging, and identifies the color of flag to be used for each respective resources (e.g., pink with "wetland delineation" in black used for wetlands, pink and lime used for state-regulated 100-foot buffers). Please also note that the Applicant's proposed Environmental Compliance and Monitoring Program is described in Exhibit 22(n) of the Application, including reference to an Environmental Compliance Manual.
- Note #5 under Contractor Notes should be revised to restrict wood chips, and is not exhaustive (Rothrock testimony page 13, lines 4-7). ***Response:*** The lack of this specific language in this specific location does not prohibit any party from describing or evaluating

the Facility's impacts on wetlands. Please also note that the Application contains information that addresses this topic, and as such this was inaccurately identified as "…necessary information that is missing from the Application…" Specifically, Exhibit 22(n) of the Application, page 70 states, "A buffer zone of 100 feet, referred to as 'Restricted Activities Area', will be established where Facility construction traverses streams, wetlands and other bodies of water. Restrictions will include:

- No deposition of slash within or adjacent to a waterbody;
- No accumulation of construction debris within the area;
- Herbicide restrictions within 100 feet of a stream or wetland (or as required per manufacturer's instructions);
- No degradation of stream banks;
- No equipment washing or refueling within the area;
- No storage of any petroleum or chemical material; and
- No disposal of excess concrete or concrete wash water."

- Note #1 under Specific Wetland Crossing Restrictions should require temporary access routes in any regulated wetland adjacent areas to be removed and restored following construction (Rothrock testimony page 13, lines 8-11). ***Response:*** The lack of this

specific language in this specific location does not prohibit any party from describing or evaluating the Facility's impacts on wetlands. Please also note that the Application contains information that addresses this topic, and as such this was inaccurately identified as "…necessary information that is missing from the Application…" Specifically, Exhibit 22(b) of the Application, page 9 states, "Although the seed mix that will be used in site restoration is not available at this time, typical upland and wetland seed mixes that could be used are summarized below (please visit http://www.ernstseed.com/seed-mixes/ for additional detail):

- Fox sedge (31%)
- Virginia wildrye (20%)
- Lurid sedge (14%)
- Green bulrush (5%)
- Blue vervain (4%)
- Wood reedgrass (3.5%)
- Soft rush (3%)
- Blunt broom sedge (3%)
- Hop sedge (3%)

- Other forbs and graminoids (each 2% or less)"

Please also note that Exhibit 22(n) of the Application, page 72 specifically discusses construction and restoration inspection in the context of the Environmental Compliance and Monitoring Program.

- Note #3 under Specific Wetland Crossing Restrictions should restrict temporary spoil stockpiles in state-regulated wetlands and require removal of spoil from state-regulated wetlands and adjacent areas (Rothrock testimony page 13, lines 12-15). ***Response:*** The lack of this specific language in this specific location does not prohibit any party from describing or evaluating the Facility's impacts on wetlands. Please also note that the Application contains information that addresses this topic, and as such this was inaccurately identified as "…necessary information that is missing from the Application…" Specifically, sheet C-604 of the Preliminary Design Drawings, included as Appendix M to the Application, includes a Stabilized Temporary Stockpile detail. Please also note that Exhibit 21 of the Application specifically deals with Geology, Seismology, and Soils as required by 1001.21 of the PSL. As such, Exhibit 21(f)(6) of the Application, page 5 states, "All stockpiled soils will be located outside of wetlands and

will be stabilized in accordance with the final SWPPP." In addition, Exhibit 21(g) of the Application, page 7 states, "Proper methods for segregating stockpiled and spoil material shall be implemented, and excavated soil will be reused to the maximum extent possible on the site that it was excavated from, as a means to limit opportunities for proliferation of non-native flora and other invasive species. Final cut and fill storage areas will be available following Certification, and included in the construction drawings."

- The tables that include the calculation of wetland impacts need to be revised and simplified in order to quantify temporary and permanent impacts (Rothrock testimony page 13, lines 16-17). This portion of the testimony further indicates that impacts should be calculated and clearly itemized for each type of permanent impact, and labeled with the type of impact, for state-regulated wetlands and adjacent areas. ***Response:*** This comment is confusing for multiple reasons: 1) it is not clear what "tables" are being referred to, and 2) it appears that all of this information was provided in the record. To the extent this comment is referencing tables in the Application, as indicated previously in my testimony detailed tables were included, including Table 22-6 (Wetland Impacts) in Exhibit 22(m).

Additionally, this information was further refined through submittal of the March 31, 2017 wetland and stream impact drawing set, which included an extremely detailed table on Sheet G-001. All of the information identified in this testimony is included on this table. To the extent this table is recommended for reorganization, the Applicant is more than willing to discuss how best to do so to meet the needs of the various agencies (including the Corps). However, given the table included on Sheet G-001 of the impact drawing set, it would appear that this was inaccurately identified as "…necessary information that is missing from the Application…"

- The wetland impact calculation table(s) includes notations for all the consultant delineated wetlands that were determined to meet state criteria for jurisdiction. The table must also include the NYSDEC Wetland code as previously listed in my testimony (Rothrock testimony page 13, lines 21-22 and page 14, lines 1-2). ***Response:*** To the extent this testimony is referencing identification of state-mapped wetlands and associated code/ID in the various tables, this is provided in the record. Specifically, Table 22-6 in Exhibit 22 of the Application includes a column titled "NYSDEC Wetland ID" that correlates each delineated wetland ID to the state-regulated wetland ID (e.g., delineated wetland BBB correlates to

state-regulated wetland HA-4; delineated wetland WWW correlates to state-regulated wetland CS-8). Therefore, the Applicant believes this was inaccurately identified as "…necessary information that is missing from the Application…" The detailed impact table on Sheet G-001 simply identifies each respective feature as a "NYSDEC Regulated Wetland". However, the updated impact drawing set (Exhibit BRB-5) contains an updated table that includes the state-regulated wetland ID, including Unmapped 1, Unmapped 2, and Unmapped 3, the names for which were first provided in testimony on May 12, 2017 (Rothrock testimony page 11 lines 13 and 19, and page 12 line 4).

- Impact calculations in acres should also be provided on each line, as well as totals, for state-regulated wetlands and associated adjacent areas, as part of a revised application (Rothrock testimony page 14, lines 3-5). ***Response:*** The lack of this information does not prohibit any party from describing or evaluating the Facility's impacts on wetlands, and the Applicant believes this was inaccurately identified as "…necessary information that is missing from the Application…"

Q: In her Direct Testimony, Ms. Rothrock makes reference to a "2017-04-03_Cassadaga DEC Wetland-Stream Impact Summary Tables" (page 14,

lines 7-8). What is the relevance of this table in relation to quantifying wetland and stream impacts?

A: This table has no relevance to detailed wetland and stream impacts, and in my opinion this table should not have been referenced in her testimony.

Q: Can you please elaborate?

A: Yes. As indicated above, Exhibit 22 contained a significant amount of detail regarding wetland impacts (e.g., Table 22-6). In addition, the March 31, 2017 wetland and stream impact drawings contained a significant amount of detailed information, including a detailed impact table. Subsequent to the March 31, 2017 filing, on April 3, 2017, NYSDEC personnel sent me two email requests, 1) asking for two separate tables, "…one which summarizes DEC stream impacts and one which summarizes all DEC wetland & AA area impacts" and 2) asking for actual size printed copies of the March 31, 2017 submittal because "The Region 9 office has difficulty printing this large enough to make them readable."

Q: Did you respond to these requests?

A: Yes. The summary tables were provided to NYSDEC on April 3, 2017. Regarding the actual size drawings, these were plotted, shipped and delivered to NYSDEC Region 9 on April 4, 2017.

Q: Did NYSDEC indicate to you that these tables were going to be used to support Direct Testimony or the record in any way?

A: No. Given the fact that a detailed impact table was included with the March 31, 2017 impact drawings, which were immediately plotted and shipped to NYSDEC's Region 9 Office, I assumed this summary table was for NYSDEC reference only and any details would be gleaned from the March 31 submittal.

Q: Did Ms. Rothrock's Direct Testimony reference the "2017-04-03_Cassadaga DEC Wetland-Stream Impact Summary Tables" file in the proper context?

A: No. On page 14, lines 7-9, her testimony states, "While the Applicant did provide the table entitled 2017-04-03_Cassadaga DEC Wetland-Stream Impact Summary Tables.docx to support the record…" This testimony is entirely inaccurate. As indicated above, the 2017-04-03_Cassadaga DEC Wetland-Stream Impact Summary Tables.docx file was provided only in response to a request from NYSDEC personnel and was never intended to support the record. I note that Ms. Rothrock's testimony indicates that this table was provided "…per the Department's request…" (Rothrock testimony page 17, lines 7-8). However, to be clear this table was never provided by the Applicant to support the record, nor was the Applicant ever lead to believe it would be referenced in testimony.

Q: Page 15 of Ms. Rothrock's testimony references the "…adequacy of plans provided by the Applicant". Do you have any comments on this portion of the testimony?

A: Yes. Page 15, lines 3-4 state, "The plans are not adequate for the purpose of completing a review consistent with the Part 663 weighing standards and, thus, must be revised to include the following:" ***Response:*** For the purposes of this rebuttal testimony, it is assumed that "the plans" she mentions are referencing the March 31, 2017 wetland and stream impact drawing set. Each of the comments in her testimony at pages 15 – 16 are responded to individually as follows:

- While the impacts are shown on the plan sheets with a calculation, it is not clear what type of impact is occurring there because the type of impact is not clearly itemized and because Project components are not labeled (Rothrock testimony page 15, lines 5-7). ***Response:*** This comment is confusing because as stated earlier the March 31, 2017 wetland and stream impact drawings not only depict each impact based on the proposed jurisdictional activity (e.g., access road crossing a wetland), but Sheet G-001 provides a table for each impact and identifies the type of impact (e.g., access road ["AR"]). In addition, Sheet G-000 includes a "Master Legend" for each line type, etc. that correlates to a Facility component.
- Impacts to the regulated adjacent area of Wetland B should appear on Sheet NW2 (Rothrock testimony page 15, lines 8-10). ***Response:*** please see the revised wetland/stream impact drawings included as Exhibit BRB-5.

- The regulated adjacent areas area depicted to surround all delineated wetlands, even when the wetland delineations are open ended because they extend farther than their survey corridor. The regulated adjacent areas should only be shown where their wetland boundary is known and then also be shown to extend off the survey corridor (Rothrock testimony page 15, lines 11-17). ***Response:*** please see the revised wetland/stream impact drawings included as Exhibit BRB-5.
- Turbine 51 appears to be proposed approximately 100 feet from Wetland ZZ. Based on this I would expect there to at least be forest clearing impacts to the regulated adjacent areas, if not additional impacts (i.e., access roads or fill), however, such impacts are not shown on the plan sheets and are likely not accounted for in the table (Rothrock testimony page 15, lines 18-22). ***Response:*** please see the revised wetland/stream impact drawings included as Exhibit BRB-5.
- The notes are contradictory on Sheet C17/Wetland RRRR/State-regulated Wetland HA-7. The Applicant states that there are no impacts to wetland RRRR, but then also states trees and vegetation will be cleared within the wetland, which is an impact. Also, a pole will be placed in the wetland which is stated as an impact elsewhere on the sheet (Rothrock testimony page 15, line 23 and page 16, lines 1-5). ***Response:*** The note mistakenly

says "no impact" because minor impacts will occur as reported in the table on Sheet G-001. Please see the revised wetland/stream impact drawings included as Exhibit BRB-5.

- The notes are contradictory on Sheet C23/Wetland BBB/State-regulated Wetland HA-4. The Applicant states there are no wetland impacts then separately lists clearing of forested wetlands, which is a wetland impact (Rothrock testimony page 16, lines 6-9). ***Response:*** This is simply a matter of different terminology. Sheet C23 clearly indicates that forest clearing will occur within this wetland, and in the context of reporting no impacts there is an associated note that states, "Crossing Method: Span, approach from either side". This is also clearly reported on the impact table on Sheet G-001. The Applicant is more than happy to work with NYSDEC personnel to make sure their desired terminology is used; however, different terminology will not change the quantification of impacts to this wetland as already reported.
- It was not intended for the portion of Wetland YYY east of Route 60 to be included in State jurisdiction on Sheet SW25/Wetland YYY/State-regulated Wetland CS-9 (Rothrock testimony page 16, lines 10-14). ***Response:*** Comment noted. Please see the revised wetland/stream impact drawings included as Exhibit BRB-5.

- An adjustment to the delineation of wetland 6H (state-regulated wetland HA-3) was requested during the March 30, 2017 site visit. Sheets SE10 and SE11 have not been updated with those changes. ***Response:*** please see the revised wetland/stream impact drawings included as Exhibit BRB-5. Please also see my testimony above, which indicates that because of the Applicant's commitment to providing the detailed impact drawing set on March 31, 2017 it was not possible to incorporate changes made in the field on March 30, 2017.

Q: Page 16 of Ms. Rothrock's testimony indicates that the Applicant has not demonstrated that unavoidable losses or impacts on the functions or benefits of the wetland have been minimized. Do you have any comments on this portion of the testimony?

A: Yes. On page 17 of her testimony there are a number of bulleted points that provide more detailed comment on this topic. Each of these points are summarized and individually addressed below.

- Restoration of all temporary impacts needs to be proposed and clearly explained, including re-planting of trees where forest conversion will occur in areas that do not need to be maintained in a non-forested conditions as part of a right-of-way (Rothrock testimony page 17, lines 1-3). ***Response:*** Restoration of temporary impacts has already been

addressed in the Application. Specifically, when discussing impacts to forest, Exhibit 22(b) states, "…temporary impacts are those where forest would be allowed to regrow following construction (e.g. along the periphery of access roads and turbine sites). Approximately 78.5 acres of forest will be disturbed in this manner, and allowed to regrow following construction. In these areas, the Applicant will only remove stumps where necessary to install underground components, will not use herbicides to prevent sprouting, and will not remove trees as part of routine vegetation management during Facility operation. Ecological succession will restore the forested condition of these areas over time." As indicated in this language from Exhibit 22, the Applicant has stated herbicide will not be used in those areas where forest will be allowed to regrow following construction. This statement is important with respect to restoring a forested community because the use of herbicides impedes forest regrowth. Therefore, a commitment to not use herbicides will in fact promote the regrowth of a forested community, and as such the Applicant should not be subject to a requirement to "re-planting of trees where forest conversion will occur in areas that do not need to be maintained in a non-forested conditions as part of a right-of-way" as suggested in Ms.

Rothrock's testimony. Restoration and regeneration can be evaluated and documented during post-construction monitoring efforts.

- The document entitled 2017-01-31 Cassadaga_IR Attachment Response FINAL.xlsx discusses the avoidance and minimization efforts to that point. However, the plan sheets show further avoidance and minimization as of March 31, 2017. ***Response:*** This comment is confusing. The January 31, 2017 spreadsheet referenced in this comment was attached to the Applicant's response to IR DPS-1, and as clearly stated in this IR response, "As indicated in the table, there are a number of locations where the Applicant continues to investigate the possibility of making layout adjustments to further minimize or avoid impacts. As such, the Applicant anticipates identifying any such adjustments by March 31, 2017 along with provided an updated drawing set specific to wetland/stream impacts…" In addition, as requested in IR DPS-46, the Applicant updated the January 31, 2017 spreadsheet. Therefore, it is unclear why this comment is referencing outdated material that was updated through subsequent interrogatory requests.
- The table provided by the Applicant per the Department's request, entitled 2017-04-03_Cassadaga DEC Wetland-Stream Impact Summary Tables.docx, appears to state… (Rothrock testimony page 17, lines 7-12).

Response: As indicated in my testimony above, this table was not prepared by the Applicant to support the record. Significant detail associated with wetland/stream impacts are set forth in the Application (i.e., Tables 22-6 and 23-3), in the March 31, 2017 wetland/stream impact drawings set (i.e., "Wetland and Stream Impacts" table on Sheet G-001), and as further refined in the updated wetland/stream impact drawings included as Exhibit BRB-5.

Q: Page 17 of Ms. Rothrock's testimony indicates further avoidance and minimization should be explored. Do you have any comments on this portion of the testimony?

A: Yes. Starting on page 17 and continuing through page 20 of her testimony, avoidance/minimization in specific locations is discussed. Each of these points are summarized and individually addressed below.

- Sheet NW1/Wetland B/State-regulated Wetland Unmapped 1: the Applicant should consider moving turbine T7 to the west to avoid regulated adjacent area impacts (Rothrock testimony page 17, lines 16-18). ***Response:*** Per discussions with the Applicant, this turbine cannot move further due to landowner restrictions. Please note that the access road between T7 and T8 has already been adjusted to minimize/eliminate previously proposed impacts, which required landowner negotiations.

Please also note that based on reconnaissance-level investigations it was determined that wetlands also exist to the west-southwest (as depicted as an approximate wetland on Figure 22-2 of the Application); however, the exact boundary has not been determined because this is outside the study corridor.

- Sheet NW2/Wetland A and B/State-regulated wetland Unmapped 1: consider moving T11to the northeast to further minimize impacts to the regulated adjacent area (Rothrock testimony page 17, lines 19-22 and page 18, lines 1-2). ***Response:*** According to the Applicant, this turbine cannot move any further in this direction due to a 1,500-foot setback from a non-participating structure.
- Sheet NE1/Wetland 6I and ZZ/State-regulated Wetland Unmapped 2: while impacts to Wetland ZZ appear to be avoided, impacts to associated adjacent area could be minimized further by moving T47 to the north/northeast (Rothrock testimony page 18, lines 3-6). ***Response:*** In addition to avoiding impacts to Wetland ZZ, T47 has also been sited to avoid impacts to an archaeological resource to the northeast (please see Sheet NE1 of Exhibit BRB-5). Therefore, further adjustment of this turbine location cannot be accommodated.

- Sheet NE2/Wetland 6I/State-regulated Wetland Unmapped 2: It is not clear if the Applicant intends to cross the wetland at the narrowest point because the wetland extends in both directions outside the corridor. It appears there may be a slightly different route that would further minimize impacts (Rothrock testimony page 18, lines 7-12). ***Response:*** As depicted on Sheet NE2, the access road clearly crosses the delineated portion of this wetland in the narrowest location. Based on our review of this location, including the site-specific delineations, we have no reason to believe that a significant difference in impact would result from a new route outside the study corridor. In addition, Ms. Rothrock's testimony indicates "…there may be a slightly different route that would further minimize impacts" (page 18, lines 11-12). Ms. Rothrock has not identified the alternate route and is only raising this issue for the first time during this testimony. Moreover, during the two site visits with Ms. Rothrock on December 9, 2016 and March 30, 2017 it was never suggested that a different route should be investigated in the field.
- Sheet C17/Wetland RRRR/State-regulated Wetland HA-7: Moving the proposed line to the southeast side of the road where there is less wetland and regulated adjacent area would further minimize impacts. This wetland does extend to the southeast side of the road even though the approximate

mapping does not show that, but there is less regulated area on that side of the road and, thus, less impact would result (Rothrock testimony page 18, lines 13-18). ***Response:*** The Applicant has sited the overhead collection line in this location as a result of state legislation passed specifically to allow a collection line on state-owned land in this corridor (the legislation is discussed on page 67, lines 10-14 of the Direct Testimony of Andrew Davis, which notes the legislation was signed into law on November 28, 2016, as Chapter 481 of the Laws of 2016). State-owned land does not extend to the southeast on the other side of Boutwell Hill Road in this particular location, and as such this would require executing an agreement with a private landowner. In fact, there are actually two parcels in this particular location on the other side of Boutwell Hill Road, and as such this would require the Applicant to enter into negotiations and execute agreements with two landowners, and no such conversations have been initiated given the legislation passed by the State of New York. With respect to the portion of the comment that indicates the "…wetland does extend to the southeast side of the road even though the approximate mapping does not show that…" it is not clear what "approximate mapping" is being referenced. However, Figure 22-2 of the Application, which was prepared in accordance with the regulations set forth at

1001.22(i) and Stipulation 22(i), does in fact depict approximate wetlands on the southeast side of Boutwell Hill Road.

- Sheet C23/Wetland BBB/State-regulated Wetland HA-4: moving the proposed line to the west where the wetland is narrow may reduce impacts (Rothrock testimony page 18, lines 19-21). ***Response:*** This suggestion has been incorporated into the Facility layout, please see the updated wetland/stream impact drawings included as Exhibit BRB-5.
- Sheet SW6/Wetland EEEE/State-regulated Wetland Unmapped 3: the location of the pole is not shown but it is stated that there will be one placed in the wetland. The Applicant should consider placing the pole in the associated adjacent area rather than the wetland proper in order to reduce impacts (Rothrock testimony page 18, line 22 and page 19, lines 1-4). ***Response:*** This suggestion has been incorporated into the Facility layout, please see the updated wetland/stream impact drawings included as Exhibit BRB-5.
- Sheet SW6/Wetland EEEE/State-regulated Wetland Unmapped 3: moving the line northward may further minimize impacts (Rothrock testimony page 18, line 22 and page 19, line 5). ***Response:*** This suggestion has been incorporated into the Facility layout, please see the updated wetland/stream impact drawings included as Exhibit BRB-5.

- Sheet SW7/Wetland EEEE/State-regulated Wetland Unmapped 3: moving the line northward may further reduce impacts (Rothrock testimony page 19, lines 6-7). ***Response:*** This suggestion has been incorporated into the Facility layout, please see the updated wetland/stream impact drawings included as Exhibit BRB-5.
- Sheet SW27/Wetland WWW/State-regulated Wetland CS-8: there is minimal regulated adjacent area that will remain between the substation and the wetland. The location of the substation should be adjusted with the agricultural field to increase the undisturbed area that will remain between the substation and the wetland. This could be achieved by moving the substation east and changing the orientation 90 degrees. I also mentioned the need to minimize impacts specifically in this area to preserve as much regulated adjacent area as possible during my site visit with the Applicant on December 9, 2016 (Rothrock testimony page 19, lines 8-18). ***Response:*** Based on conversations with the Applicant I understand that the substation orientation and size is a function of the anticipated design requirements by National Grid. Final design requirements will not be known until after the interconnection Facilities study is complete. To be conservative, the Applicant assumed that all the available space in the field outside the delineated wetland boundary would be needed. In

addition, there is a well in the field just east of the existing substation that must be avoided. The need to avoid this well was discussed during the site visit with NYSDEC on December 9, 2016.

- Sheets SE10 and SE11/Wetland 6H/State-regulated Wetland HA-3: it is noted that the access road will follow the alignment of an existing access road, the already cleared area is rather wide and any opportunity to adjust the new alignment as far away from the wetland as possible within that cleared area should be utilized (Rothrock testimony page 19, lines 19-22 and page 20, lines 1-2). ***Response:*** This suggestion has been incorporated into the Facility layout, please see the updated wetland/stream impact drawings included as Exhibit BRB-5.
- Additional opportunities for minimizing impacts by boring/horizontal directional drilling under State-regulated wetlands and adjacent areas should be evaluated (Rothrock testimony page 20, lines 3-5). ***Response:*** Given the lack of specificity in this comment, a location-specific response is not possible. However, given the existing case record I believe this topic has already been addressed. Specifically, Exhibit 22(m) of the Application states, "…the Applicant will install buried interconnect via directional drilling, where practicable, to eliminate impacts to forested wetlands in cases where buried collection line is the only Facility

component. Implementation of these measures will reduce wetland impacts from the acreages presented in this Application. Temporary and permanent impacts to wetlands for each wetland proposing to be impacted are presented below in Table 22-6. Impacts were calculated based on disturbance assumptions presented in Table 22-1 of 1001.22(b)." This language in the Application is immediately followed by Table 22-6 (Wetland Impacts), which specifically identifies those wetlands proposed to be crossed through use of a Horizontal Directional Drill. With respect to using a Horizontal Directional Drill under adjacent areas, this would significantly increase the cost of construction in these locations, as outlined in Seth Wilmore's testimony.. Please also note the Applicant has agreed to extensive post-construction monitoring of temporary impacts to state-regulated adjacent areas, as outlined in this testimony, which should ensure the long-term protection of the function of the adjacent areas and associated wetland benefits.

- 2017-01-31_Cassadaga IR Attachment_Response_FINAL.xlsx says "Compensatory mitigation is not necessary due to impact avoidance" in situations where wetland impacts are avoided but the associated adjacent area is still impacted. This is not correct. Mitigation is required for impacts associated with adjacent areas also, not just for wetlands

(Rothrock testimony page 20, lines 6-9). ***Response:*** Mitigation for impacts to adjacent areas will first be accomplished through proper restoration to allow for natural revegetation, which is consistent with commitments made by the Applicant as set forth in the Application. For instance, Exhibit 22(g) states, "Cleared forest land along Facility access roads and at the periphery of turbine sites will be allowed to grow back and reestablish forest habitat in areas where it was cleared, which over the long term will provide shrubland or forested habitat for species that require these types." Additionally, the Applicant has committed to proper monitoring during construction and restoration activities to assure compliance with permit conditions. Specifically, when discussing the "Construction and Restoration Inspect" portion of the Environmental Compliance and Monitoring Program Exhibit 22(n) states, "The monitoring program will include daily inspection of construction work sites by the environmental monitor. The environmental monitor is the primary individual(s) responsible for overseeing and documenting compliance with environmental permit conditions on the Facility. The environmental monitor will conduct inspections of all areas requiring environmental compliance during construction activities, with an emphasis on those activities that are occurring within jurisdictional/sensitive areas,

including cultural resource areas, wetland and stream crossings, and active agricultural lands. When on-site, the environmental monitor's schedule will include participation in a daily Plan of Day (POD) meeting with the contractors to obtain schedule updates, identify in-field monitoring priorities, and address any observed or anticipated compliance issues. During the course of each visit, multiple operations are likely to be occurring throughout the Facility Site, and will need to be monitored by the environmental monitor. Activities with the potential to impact jurisdictional/sensitive resources, or with greater potential for environmental impact, will receive priority attention from the environmental monitor. For instance, installation of an access road across a protected stream would likely receive greater attention than installation of buried electrical collection lines across a successional old field. However, some level of field inspection by the environmental monitor will occur at all earth-disturbing work sites during each site visit. The monitor will keep a log of daily construction activities, and will issue periodic/regular (typically weekly) reporting and compliance audits. Additionally, when construction is nearing completion in certain portions of the Facility area, the monitor will work with the contractors to create a punch list of areas in need of restoration in accordance with all issued

permits." Please also refer to the Applicant's response to DEC IR-3, which includes an updated Conceptual Mitigation Plan (Exhibit BRB-6). As indicated on Figure 4 (Preliminary Resource Development Map) of this plan, the Applicant has identified multiple opportunities for habitat conservation and enhancement (i.e., "Potential Bat Habitat Areas" and "NYSDEC Wetland Buffers and Upland Planting"), which can further serve as mitigation for impacts to adjacent areas to the extent needed.

Q: Page 17 of Ms. Rothrock's testimony also states that further avoidance and minimization should be explored "for all impacts and the record of this proceeding supplemented accordingly identifying which methods were reviewed and, if applicable, why such method was not selected." Do you have any comments on this portion of the testimony?

A: Yes. Please see the "avoidance and minimization" spreadsheet, which was created by NYSDPS personnel and originally completed by the Applicant in response to IR DPS-1, and subsequently updated by the Applicant in response to IR DPS-46 (see Exhibit BRB-4 for a copy of IR DPS-46). This spreadsheet addresses avoidance and minimization for all impacts, as requested in this portion of Ms. Rothrock's testimony (i.e., the record already contains this information).

Q: Page 20 of Ms. Rothrock's testimony references a Conceptual Mitigation Plan prepared dated March 31, 2017. Is this the most recent version of the mitigation plan?

A: No. The direct testimony states, "At this point, the Applicant has submitted the document Cassadaga_SWMP_3_31_17 Conceptual Mitigation Plan that was prepared by RES (Resource Environmental Solutions, LLC)." (Rothrock testimony page 20, lines 12-14). This statement is incorrect. In response to IR DEC-3 the Applicant prepared an updated mitigation plan titled *Cassadaga Wind Project: Conceptual Stream and Wetland Mitigation Plan (Version 2)*, which was submitted to the parties (including the NYSDEC) on May 2, 2017 (please see Exhibit BRB-6). Ms. Rothrock's testimony on page 20 goes on to list a number of items that the original March 31, 2017 plan does not include. The Applicant believes that all of these items are addressed in the *Version 2* plan submitted on May 2, 2017. Please also note that the Corps has jurisdiction over all wetland and stream impacts, and it is the Applicant's intent to implement a single plan that will mitigate for impacts at both the state and federal level. Therefore, the Applicant suggests that a meeting with Corps and NYSDEC personnel is necessary to assure that suitable mitigation is proposed for both agencies. In addition, on page 21 of Ms. Rothrock's testimony there are a number of bulleted comments regarding the requirements of the mitigation plan, and these are exactly

the same as those bullet points in question #1 of IR DEC-3. Therefore, responses to all of these requirements have already been provided by the Applicant and are in the case record (see Exhibit BRB-6 for a copy of the Applicant's response to IR DEC-3 and associated attachments).

Q: Does Ms. Rothrock's testimony provide a consistent opinion regarding the adequacy of the conceptual mitigation plan?

A: No. Page 20 of her direct testimony states, "…the Conceptual Mitigation does not meet the requirements of 6 NYCRR § 663.5(g) or the Department's Guidelines on Compensatory Mitigation…" However, page 34 of her direct testimony provides the following proposed condition: "Prior to issuance of the certificate, the applicant must submit, at a minimum, a conceptual wetland mitigation plan to the NYSDEC Regional Supervisor of Natural Resources that describes the general objectives and approaches designed to offset all project impacts to wetland functions and benefits." The Applicant has submitted a conceptual mitigation plan that satisfies these requirements (see Exhibit BRB-6 for a copy of the Applicant's response to IR DEC-3 and associated attachments), and therefore, according to the condition proposed by Ms. Rothrock on page 34 of her direct testimony, enough information regarding mitigation has been provided to allow for issuance of a certificate.

Q: Beginning on page 21 of Ms. Rothrock's testimony, there is a list of additional issues that the Applicant must consider in developing the wetland mitigation plan. Can you respond to these issues?

A: Yes. This list of issues, which begins on page 21 and continues through page 23 of Ms. Rothrock's testimony, are all essentially the same as the remaining questions/bullet points (questions #2 through #5) in IR DEC-3. Therefore, responses to all of these requirements have already been provided by the Applicant (see Exhibit BRB-6 for a copy of the Applicant's response to IR DEC-3 and associated attachments).

Q: Did the NYSDPS provide testimony regarding wetlands and stream?

A: Yes. Jeremy Rosenthal provided testimony on wetlands and streams.

Q: Do you have any comment regarding Mr. Rosenthal's testimony?

A: Yes. Mr. Rosenthal discusses the need for NYSDPS to conduct site visits. With respect to wetlands Mr. Rosenthal states, "The Applicant's late submission of detailed wetland drawing sets precluded the ability to conduct field reviews to date." (Rosenthal testimony page 13, lines 1-3) With respect to streams Mr. Rosenthal states, "The timing of the receipt of detailed stream drawing sets precluded the ability to conduct field reviews to date." (Rosenthal testimony page 14, lines 20-21 and page 15, line 1) However, I do not believe that these statements accurately represent the facts. Specifically, NYSDPS staff were

invited to participate in the December 2016 field visit with NYSDEC but declined (Mr. Rosenthal actually emailed me on December 2, 2016 and stated, "Ben, I spoke to Seth and I am going to pass on this trip, but look forward to getting out to the site on another occasion. Thanks, Jeremy"). In fact the NYSDEC and Corps conducted two site visits each, which suggests NYSDPS could also have conducted a site visit if so desired. Subsequent emails with Mr. Rosenthal in April 2017 discuss at least one additional site visit pending with Corps personnel and the Applicant's commitment to invite Mr. Rosenthal, which the Applicant remains committed to.

Q: Does Mr. Rosenthal make any recommendations regarding the next steps for wetland impacts?

A: Yes. Mr. Rosenthal states, "Final construction plans regarding routing and methods of traversing wetlands should be submitted to DEC and DPS staff for a coordinated review and further collaborative refinement. Subsequently, the construction plans should be submitted to the Siting Board as a compliance filing prior to construction." (Rosenthal testimony page 13, lines 3-10)

Q: Do you agree with this recommendation?

A: Yes. This is consistent with the Applicant's stated position in various discussions/meetings with the state agencies over the past few years. In addition, please also see the "Updated Layout" section of my testimony below, which

discusses an updated wetland and stream impact drawing set. It should also be noted that the Applicant intends on including Corps personnel on future consultations given their jurisdiction under Section 404 of the Clean Water Act.

Q: Does Mr. Rosenthal make any recommendations regarding the next steps for mitigation?

A: Yes. Mr. Rosenthal states, "…the plan is still very preliminary and, as such, the proposed mitigation is inadequate. The Applicant should submit a detailed wetland mitigation plan to New York State DEC and DPS Staff for a coordinated review and further collaborative refinement. Subsequently, the wetland mitigation plan should be submitted to the Siting Board as a compliance filing prior to construction." (Rosenthal testimony page 14, lines 5-14)

Q: Do you agree with this recommendation?

A: Yes. While we do not agree that the plan is "very preliminary" (see Exhibit BRB-6), we do agree that further coordination is needed (with state and federal agencies of jurisdiction). Please note that Exhibit 22(n) of the Application addresses mitigation and states, "Mitigation in New York State is somewhat complicated by the fact that the USACE generally prefers to use an approved 'in-lieu-fee' program when available, whereas the NYSDEC Article 24 regulations do not allow use of such a program. In addition, it is anticipated that the majority of wetland impacts will occur in wetlands regulated by the USACE only…

Therefore, the Applicant will ultimately propose compensatory mitigation that will be determined in consultation with NYSDEC and USACE." With respect to the mitigation plan submitted to the Parties by the Applicant on May 2, 2017 (see Exhibit BRB-6), the Applicant intends to work with the agencies as suggested by Mr. Rosenthal.

Q: Does Mr. Rosenthal make any recommendations regarding the next steps for stream impacts?

A: Yes. Mr. Rosenthal states, "The Applicant should submit final construction plans regarding routing and methods of traversing streams to DEC and DPS staff for a coordinated review and further collaborative refinement. Subsequently, construction plans should be submitted to the Siting Board as a compliance filing." (Rosenthal testimony page 15, lines 1-7)

Q: Do you agree with this recommendation?

A: Yes. This is consistent with the Applicant's stated position in various discussions/meetings with the state agencies over the past few years. In addition, please also see the "Updated Layout" section of my testimony below, which discusses an updated wetland and stream impact drawing set. It should also be noted that the Applicant intends on including Corps personnel on future consultations given their jurisdiction under Section 404 of the Clean Water Act.

Q: With respect to wetlands and streams, are there other aspects of NYSDPS testimony that you wish to address?

A: Yes. Testimony prepared by the Staff Policy Panel includes as Exhibit_(SPP-3) Staff's proposed Conditions for a Certificate of Environmental Compatibility and Public Need. I wish to address some of the Conditions related to wetlands and/or streams, which are summarized and addressed in the bullet points below. The Applicant is in agreement with any NYSDPS-proposed wetland/stream conditions not listed below.

- Proposed Condition 39 requires the Applicant to prepare final design drawings, site plans, and construction details that would include turbine locations adhering to specific setback requirements, including 100 feet from state-jurisdictional wetlands. ***Response:*** As depicted on the March 31, 2017 wetland and stream impact drawings and the updated wetland and stream impact drawings included in Exhibit BRB-5 (see the "Updated Layout" section of my testimony below for additional detail), there are multiple turbines located within 100 feet of the delineated boundary of state-jurisdictional wetlands. As described above in my testimony, Ms. Rothrock (NYSDEC) recommended moving some of these turbines to increase distance from the wetland; however, there are specific reasons why this cannot happen (e.g., proximity to an archaeological resource,

setback from non-participating residence). Therefore, the Applicant proposes to eliminate the requirement to setback turbines 100 feet from the delineated boundary of state-jurisdictional wetlands.

- Proposed Condition 64 requires the Applicant to create an In-stream and Wetland Construction Plan demonstrating how impacts to wetlands and streams will be avoided and minimized to the maximum extent practicable. The plan shall include a table that identifies all wetlands and streams within the Project area and provides the following for each resource: wetland delineation types and NYSDEC stream classifications, assessment of reasonable avoidance measures, identification and assessment of methods to minimize impacts, and references to the location of each resource where shown in the final design drawings, site plans, and construction details. ***Response:*** given the Applicant's response to IR DPS-1 (i.e., completion of a detailed wetlands/stream impact avoidance and minimization spreadsheet), the March 31, 2017 wetland/stream impact drawings and the updated impact drawings included in Exhibit BRB-5 (see the "Updated Layout" section of my testimony below for additional detail), and the Applicant's response to IR DPS-46 (i.e., update of the detailed wetland/stream impact avoidance and minimization spreadsheet), the Applicant believes this information substantially exists in the record.

- Proposed Condition 65 requires development of a Wetland Mitigation Plan and states, "The Plan shall be developed in coordination with NYSDEC and DPS Staff, and satisfy applicable federal and State regulations." ***Response:*** The Applicant suggests this language should be slightly adjusted, so as to assure all agencies with jurisdiction are in agreement with the plan, and read as follows: "The Plan shall be developed in coordination with NYSDEC and DPS Staff, *and Corps personnel,* and satisfy applicable federal and State regulations."
- Proposed Condition 92 discusses work period restrictions in relation to streams protected under Article 15 of the ECL and states, "Construction in streams protected under Environmental Conservation Law (ECL) Article 15 shall comply with work period restrictions that are established to protect fish spawning and migration." ***Response:*** The Applicant suggests a slight modification to this language as follows: "Construction in streams protected under Environmental Conservation Law (ECL) Article 15 shall comply with work period restrictions *established in consultation with NYSDEC* that are ~~established to~~ protect*ive of* fish spawning and migration."
- Proposed Condition 93 further discusses work period restrictions in relation to streams protected under Article 15 of the ECL and states,

"Dates for the seasonal work period restrictions…shall be included in the plan and noted on final construction detail drawings." ***Response:*** It is not clear what "plan" is being referenced; therefore, the Applicant suggests revising this language as follows: "Dates for the seasonal work period restrictions…shall be ~~included in the plan and~~ noted on final construction detail drawings."

- Proposed Condition 97 discusses marking the boundaries of delineated wetlands following stake-out of the limits of disturbance (LOD) by the BOP contractor, and specifically states, "…the boundaries of all delineated wetlands within 100 feet of the LOD shall be clearly defined by staking, fencing or flagging boundaries…" ***Response:*** The Applicant suggests this language should be slightly adjusted, so as to be more protective and clearer, and read as follows: "…the boundaries of all delineated wetlands *and streams* within ~~100 feet of~~ the LOD, *and extending 100 feet beyond the LOD assuming such an extension remains on the respective parcel,* shall be clearly defined by staking, fencing or flagging boundaries…"

Q: Does Christopher Legard's (NYSDEC) Direct Testimony include proposed Certificate conditions?

A: Yes. The Direct Testimony of Christopher Legard provides proposed Certificate Conditions for state-regulated streams (assumed to be those that are classified as C(T) and above), which are summarized and addressed in the bullet points below. The Applicant is in agreement with any NYSDEC-proposed stream conditions not listed below.

- Temporary Stream Crossings for Equipment – this proposed condition discusses the installation of pipelines through streams and the use of bridges to cross streams (Legard testimony page 13, lines 6-23 and page 14, lines 1-2). ***Response:*** The Applicant is not installing any pipelines and has not proposed the use of bridges to cross any streams. Therefore, this condition is not applicable to the proposed Facility and as such the Applicant believes this condition should be deleted.
- Permanent Stream Crossings – this proposed condition discusses the methods by which permanent road crossings through streams shall be installed, with multiple requirements including culvert pipes to be designed to "…safely pass the 2% annual chance storm event" and to have a width of "…a minimum of 1.25 times (1.25X) width of the mean high water channel…" (Legard testimony page 15, lines 2-12). ***Response:*** The Applicant notes that the NYSDPS has a similar, but technically different requirement. Specifically, NYSDPS proposed condition 96 states,

"Culvert openings shall be at least 1.25 times the active channel width of the stream. All culverts shall be designed to accommodate a 100-year flow event…" The Applicant requests that the Certificate contain a single condition related to culvert design goals, while still allowing flexibility on a case-by-case basis, and suggests the following: "*All culverts placed in regulated streams shall be designed on a case-by-case basis, and culvert opening shall, at a minimum, be at least 1.25 the active channel width and accommodate the 2% annual chance storm event).*"

- Water Quality and Habitat Impacts to Streams from Buried Interconnects – this proposed condition requires the use of HDD for crossings of buried cables under all streams (Legard testimony page 16, lines 14-23, page 17, lines 1-22, and page 18, lines 1-17). ***Response:*** this proposed condition appears to conflict, in part, with the "Trench Across Stream" proposed condition, which allows for trenching across streams if trenchless methods are determined to be not constructible or not feasible (Legard testimony page 11, lines 3-17). Therefore, the Applicant suggests this requirement should apply to state-protected streams only (i.e., those with a classification of AA, A, or B, or with a classification of C with a standard of (T) or (TS)). Please also note that any trenching through a stream with a classification of C or D would presumably still be subject to other

proposed and applicable conditions, such as "No Turbidity from Dewatering" (Legard testimony page 11, lines 18-23 and page 12, lines 1-4), "Turbid Discharges" (Legard testimony page 12, lines 8-19), "Water Clarity" (Legard testimony page 13, lines 3-5), and "In-Stream Work in the Dry" (Legard testimony page 14, lines 9-13).

- Native Woody Plants – this proposed condition discusses planting of native woody plants at stream crossings (Legard testimony page 20, lines 9-13). ***Response:*** the Applicant suggests a minor addition to this condition so as to read as follows: "To reduce thermal impacts to exposed streams, native woody plants such as shrub willows, dogwoods, appropriate native trees, or other native riparian species will be planted at all stream crossings, *which are void of any such vegetation and is to be restored following a temporary impact,* to shade the project area…"
- Provide Sufficient Cover for Buried Interconnects in Streambed – this proposed condition requires the preparation of an "Exposure of Pipe by Stream Report" by a New York State-licensed engineer that includes a Vertical Adjustment Potential (VAP) analysis and a Lateral Adjustment Potential (LAP) analysis for each stream crossing not located in bedrock (Legard testimony page 21, lines 12-23). ***Response:*** This is a very unusual condition (one that EDR has never seen before in relation to any wind

power project), and appears to have perhaps been copied from a permit issue for a pipeline facility. Regardless of its origin, the Applicant is not proposing to install any pipelines or any other conduits of potential pollutants/hazardous material. In addition, the Applicant has never conducted a VAP or LAP for any project. Therefore, this condition is not applicable to the proposed Facility and as such the Applicant believes this condition should be deleted.

Q: Does Ms. Rothrock's (NYSDEC) Direct Testimony include any additional proposed Certificate conditions?

A: Yes. The Direct Testimony of Ms. Rothrock provides proposed Certificate Conditions specific to state-regulated freshwater wetlands, which are summarized and addressed in the bullet points below. The Applicant is in agreement with any NYSDEC-proposed wetland conditions not listed below.

- Preparation of a Spill Prevention, Control, and Countermeasures (SPCC) Plan (Rothrock testimony page 25, lines 3-12). ***Response:*** the Applicant has committed to preparing a Final SPCC Plan, but believes the timing of this should be related to the start of construction, which is consistent with a NYSDPS proposed condition related to a Final SPCC. Therefore, the Applicant suggests this condition should state, "*At least 30 days prior to*

the commencement of construction, the certificate holder shall submit an approvable SPCC plan…"

- Identifying the boundaries of non-work areas through use of legible signs, exclusionary fencing, and erosion controls (Rothrock testimony page 26, lines 5-13). ***Response:*** The first sentence of this proposed condition states, "Legible 'protected area' signs, exclusionary fencing, and erosion controls…shall be installed along the approved work area to protect and clearly identify the boundaries of non-work areas…" Please note that it is typical practice to utilize colored flagging to mark the limits of clearing, sensitive resource areas, exclusion areas, etc. It is also typical that the flagging/marking protocols are set forth in the Environmental Compliance Manual. Therefore, the Applicant suggests modifying the first sentence of this proposed condition to read as follows: "Legible 'protected area' signs, exclusionary fencing, *colored flagging,* and*/or* erosion controls…shall be installed along the approved work area to protect and clearly identify the boundaries of non-work areas…" This suggested modification is consistent with a similar condition proposed by NYSDPS (see NYSDPS proposed condition 97).
- To the extent possible, work which must be in a wetland…should not occur during the peak amphibian breeding season (April 1 to June 15)…

(Rothrock testimony page 30, lines 4-8). ***Response:*** This is a very unusual condition (one that EDR has not previously seen in relation to an Article 24 permit). In addition, there is no documentation of a federal or state listed threatened or endangered amphibian species within the Facility Site, and therefore there is no reason to believe construction activities occurring from April 1 to June 15 would result in significant adverse impacts to amphibians. In addition, as described below in the "Updated Layout" section of my testimony, this Facility will result in relatively minor wetland impacts compared to the overall wetland resource (i.e., over 120 acres of wetland were delineated, whereas less than 0.8 acre of wetland will be permanently impacted and less than 2.5 acres of wetland will be temporarily impacted). Lastly, according to the Applicant, this timeframe represents a critically important construction period over the course of the construction season, which will likely begin close to April 1 for access road construction followed by turbine pad and collection line installation. According to the Applicant, road building must begin in the early spring to allow for appropriate construction sequencing, culminating in turbine erection in mid-to late summer. Therefore, the Applicant is not agreeable to this condition.

- Areas of temporary disturbance in regulated wetlands and 100-foot adjacent areas…certificate holder must submit an approvable "Woody Species Replanting Plan"… (Rothrock testimony page 30, lines 16-23).

Response: As indicated in my testimony above, Exhibit 22(b) states, "…temporary impacts are those where forest would be allowed to regrow following construction (e.g. along the periphery of access roads and turbine sites)… In these areas, the Applicant will only remove stumps where necessary to install underground components, will not use herbicides to prevent sprouting, and will not remove trees as part of routine vegetation management during Facility operation. Ecological succession will restore the forested condition of these areas over time." A commitment to not use herbicides will in fact promote the regrowth of a forested community. In those areas where the majority of the stumps will be removed, topsoil will also be segregated and then spread over a given area during restoration. This topsoil will contain an existing seedbank derived from the disturbed area, which will also allow for regeneration of the forested/woody community. In addition, restoration efforts will be evaluated and documented during post-construction monitoring efforts. Therefore, the Applicant should not be required to prepare a "woody species replanting plan" as suggested in Ms. Rothrock's testimony.

- A proposed condition associated with restoration of wetlands and regulated adjacent areas disturbed due to the installation of buried collection (Rothrock testimony page 31, lines 3-23 and page 32 lines 1-11). ***Response:*** This proposed condition states, "All wetland and NYSDEC adjacent areas disturbed during the installation of buried interconnects shall be restored in accordance with the following requirements…Replanted areas shall be monitored for 5 years and an 85% cover of native species has been reestablished over all portions of the replanted area." However, this does not take into account the existing cover of native species. The Applicant should not be responsible for native species coverage in excess of what exists prior to construction. Rather, this should be correlated to the results of the invasive species baseline survey. This proposed condition also states, "At the end of the first year of monitoring, the certificate holder shall replace lost wetland and/or wetland adjacent area plantings if the survival rate of the initial plantings is less than 80%." If one measure of restoration success is 85% vegetative coverage at the end of 5 years, it is unclear why initial plantings must achieve a survival rate of 80% by the end of the first year. The Applicant believes that success criteria should be related to absolute cover, which describes the percentage of total vegetation coverage of the ground

surface by the stems and foliage of any woody plant species, based on visual assessment within sample plots. Therefore, the Applicant proposes the following condition: Monitoring for woody vegetation establishment will take place during the growing season over a 5-year period. Random sample points will be established within temporarily disturbed wetlands and adjacent areas. At each sample point, absolute cover for each plant species present within a one by one meter plot will be visually estimated and recorded. Cover estimates for woody species will then be totaled for each sample plot. Cover data collected at these sample points will be averaged and extrapolated to the entire area of temporary disturbance within a given wetland or adjacent area. Vegetation reestablishment will be considered successful once 85% absolute cover of woody species is achieved.

- Starting on page 32 of Ms. Rothrock's testimony there is a proposed condition associated with installation of overhead transmission lines and interconnects in wetlands and state-regulated adjacent areas. This proposed condition includes a number of sub-bullets, some of which are summarized and addressed as follows:
    - Swamp mats, tracked equipment, or low-ground-pressure vehicles must be utilized in state-regulated adjacent areas for installation of

utility poles and overhead lines (Rothrock testimony page 32, lines 16-18). ***Response:*** As indicated in my testimony above, the Applicant proposes that temporarily disturbed wetlands and adjacent areas will be monitored for successful regeneration through the establishment of sample plots and documentation of absolute cover. The Applicant is therefore subject to achieving such success criteria regardless of the construction equipment used during installation, and as such there should not be a restriction on the use of construction equipment.

- Swamp mats must be removed in reverse order of placement as soon as practicable, but no later than four months following installation of the overhead line (Rothrock testimony page 33, lines 1-3). ***Response:*** This is unnecessarily restrictive, and as such the Applicant suggests the following modification (which remains protective of the resource): "*Swamp mat removal must be conducted from adjacent mats (i.e., removal equipment always stationed on a mat)* as soon as practicable…"
- Disturbed areas will be monitored for 5 years following the installation of overhead lines or interconnects to assure an 85% cover of native species. If after one complete growing season an

85% cover of native species is not achieved, the certificate holder must evaluate the reasons for these results and submit an approvable "Wetland Planting Remedial Plan" for NYSDEC approval (Rothrock testimony page 33, lines 4-8). ***Response:*** This requirement does not take into account the existing cover of native species. The Applicant should not be responsible for native species coverage in excess of what exists prior to construction. Rather, this should be correlated to the results of the invasive species baseline survey.

- Prior to issuance of the certificate, the applicant must submit, at a minimum, a conceptual wetland mitigation plan to the NYSDEC Regional Supervisor of Natural Resources that describes the general objectives and approaches designed to offset all project impacts to wetland functions and benefits (Rothrock testimony page 34, lines 6-10). ***Response:*** as indicated previously in my testimony, the Applicant has submitted a revised version of a Conceptual Mitigation Plan, along with additional information regarding analysis of suitable mitigation in response to an Interrogatory Request from the NYSDEC (see Exhibit BRB-6 of my testimony for a copy of the Applicant's response to IR DEC-3). Therefore, this condition has already been satisfied. In addition, because no objection (or response)

from any party has been received, the Applicant assumes the conceptual mitigation plan is acceptable.

- Within 60 days of issuance of certificate, the certificate holder must submit an approvable "Wetland Mitigation Plan" to the NYSDEC Regional Supervisor of Natural Resources (Rothrock testimony page 34, lines 11-21 and page 35, lines 1-13). ***Response:*** As indicated above, the Applicant has submitted a conceptual mitigation plan to the parties (see Exhibit BRB-6). The Applicant agrees to the submittal of a final Wetland Mitigation Plan. As there have been no objections to the conceptual plan the Applicant intends on proceeding to the development of a Wetland Mitigation Plan.
- Certificate holder must submit annual monitoring reports for a minimum of five years post-construction on the success of the wetland and adjacent area restoration, and the success of the mitigation site enhancements. These reports shall describe… "coverage of native species by section, survival rate of plantings, percent of invasive species, native species composition (%), invasive species present…" (Rothrock testimony page 35, lines 14-23 and page 36, lines 1-5). ***Response:*** As indicated previously in my testimony, the Applicant does not believe that "plantings" are necessary to achieve regeneration of forest in disturbed

areas. As also previously indicated, the Applicant suggests that a meeting with Corps and NYSDEC personnel is necessary to assure that suitable mitigation is proposed for both agencies. It is fully expected that the details of mitigation performance standards, along with monitoring and reporting, will be developed in consultation with the agencies of jurisdiction. Therefore, the Applicant suggests this certificate condition should state, "*The Final Wetland Mitigation Plan will address monitoring and reporting criteria for temporarily disturbed wetlands and adjacent areas and the wetland mitigation area, and will be developed in consultation with the NYSDEC, NYSDPS and the Corps.*"

Invasive Species

Q: Regarding invasive species, do you have any comment regarding the Direct Testimony of Anne Rothrock?

A: Yes. Beginning on page 23 of her testimony there are a number of bulleted points related to her review of the Facility's Invasive Species Control Plan (ISCP). Each of these points are summarized and individually addressed below.

- The baseline survey must be done at the proper time of year (as applicable for each invasive species) to have the best chance of detecting those species (Rothrock testimony page 23, lines 17-18). ***Response:*** The Applicant agrees, and in fact details associated with this are currently in

the record. Specifically, the response to IR DPS-2 states, "The Applicant will consult with DPS and/or DEC staff to determine the optimal time to conduct the baseline survey during the 2017 growing season." Subsequently, on March 20, 2017 the Applicant provided a Proposed Invasive Species Survey Methodology to all parties (including the NYSDEC). The proposed survey methodology was prepared by EDR botanists and states, "…Interrogatory Request (IR) No. DPS-2 was specifically related to invasive species. In response to this IR the Applicant indicated that a baseline invasive species survey will be completed during the growing season of 2017, and consultation with DPS and/or DEC staff would take place to determine the optimal time to conduct the baseline survey during the 2017 growing season. Therefore, the primary purpose of this memorandum is to establish consensus with DPS and DEC staff on the timing and the scope/methodology of the baseline invasive species survey… The invasive plant survey will be conducted between late May and late June of 2017 by EDR staff ecologists. This timeframe will coincide with vegetative and inflorescence phenological stages to allow for accurate identification of target species. Survey methodology will consist of walking the Survey Area and visually estimating cover of NYSDEC-listed prohibited and regulated invasive

plant species. Invasive plant occurrences will be documented with field notes and global positioning system (GPS) point data, and assigned a density code for absolute cover…" (see Exhibit BRB-7). The Applicant has not received any response to the proposed survey methodology provided on March 20, 2017. Therefore, the survey is being conducted in accordance with the methodology proposed. Please see Exhibit BRB-7 for a copy of the Applicant's response to IR DPS-2 and the subsequently provided Proposed Invasive Species Survey Methodology.

- Once baseline surveys are conducted, further avoidance and minimization must be considered, where possible, to adjust the alignment around significant invasive species infestations, thus reducing the chance of their spread due to the project (Rothrock testimony page 23, lines 19-21). ***Response:*** The Proposed Invasive Species Survey Methodology document indicates that the results of the invasive species survey will include "A complete list of all invasive plant species observed within the Survey Area, Site specific observations for each invasive plant species detected during the survey, Map of density of absolute cover of invasive plant species within Survey Area, and Map(s) of locations of populations of invasive plant species with discrete boundaries within the Survey Area. Conclusions and recommendations will be made based on the baseline

survey results. In addition, appendices containing information related to treatment and removal of specific invasive plant species, BMPs to restrict the spread of invasive plants, and a photo log of representative photos of each invasive plant species observed within the Survey Area will be included with the baseline report." An evaluation of the best management practices (BMPs) to reduce the spread of invasive species should only be done following the results of the baseline survey. The Applicant is willing to commit to BMPs to control the spread of invasive species, and in our experience component relocation is not necessary to accomplish this goal. Depending on the severity of the invasive species identified during the baseline survey, BMPs could range from construction equipment sanitation to invasive species removal and off-site disposal.

- The method to ensure that imported fill and fill leaving the site will be free of invasive species (Rothrock testimony page 24, lines 1-2). ***Response:*** The Applicant will consult with the BOP contractor, once selected, to determine such methods.
- Detailed cleaning procedures for removing invasive species propagules from equipment should be provided (Rothrock testimony page 24, lines 3-4). ***Response:*** The Applicant will consult with the BOP contractor, once selected, to determine such methods.

- Restoration of temporarily disturbed areas must include mulching with straw (Rothrock testimony page 24, line 5). ***Response:*** The Applicant agrees, and in fact has stated this in the record. Specifically, Exhibit 22(c) of the Application states, "Following construction activities, temporarily disturbed areas will be seeded (and stabilized with mulch and/or straw if necessary) to reestablish vegetative cover in these areas. Other than in active agricultural fields, native species will be allowed to revegetate these areas."
- Herbicide treatment in regulated wetlands is a regulated activity and authorization to do so must be obtained from NYSDEC (Rothrock testimony page 24, lines 6-7). ***Response:*** The Applicant agrees, and in fact has addressed the use of herbicides in the record. Specifically, the ISCP included as Appendix FF to the Application states, "Specific disposal and treatment methods for removed plant material will be determined (through consultation with the Environmental Monitor) based on the density and quantity of invasive species encountered, and may include herbicide treatment, placement in an interim designated secure container, transport in a sealed container and proper offsite disposal in a designated secure container, or leaving infested vegetative materials (including infested fill) in the area that is already infested, provided that no filling of

wetlands or adjacent areas will occur as a result. Any herbicide spot treatments would be applied by a Certified Commercial Pesticide Applicator, Commercial Pesticide Technician, or a Private Pesticide Applicator (i.e., individuals that meet the requirements set forth in 6 NYCRR Part 325, Application of Pesticides), in accordance with NYSDEC approved herbicide and treatment measures."

- The Applicant must conduct post-construction monitoring of invasive species for a minimum of five years (as opposed to two years), with extensions, as applicable (Rothrock testimony page 24, lines 8-9). ***Response:*** The Applicant does not understand why the minimum monitoring timeframe must be five years, especially if monitoring at the end of years one and two indicates there has been no spread of invasive species. In fact, the Applicant's position on this is supported by the NYSDPS. Specifically, testimony prepared by the Staff Policy Panel includes as Exhibit_(SPP-3) Staff's proposed Conditions for a Certificate of Environmental Compatibility and Public Need. Proposed Condition 62 requires preparation of a Final ISCP and conducting a two-year post-construction monitoring program.
- The Applicant states their intent to discuss with NYSDEC a "reasonable definition" of no net increase of invasive species, however, the Applicant

has not proposed any such definition (Rothrock testimony page 24, lines 10-12). ***Response:*** Following the results of the baseline survey, which are described in detail in Exhibit BRB-7, a definition will be proposed.

Q: Does the Direct Testimony of Anne Rothrock provide any proposed certificate conditions associated with invasive species?

A: Yes. There are two proposed conditions associated with invasive species in her testimony.

Q: Do you wish to comment on these proposed conditions?

A: Yes. Page 37, lines 6-13 of her testimony proposes a condition associated with invasive insects. The Applicant is agreeable to this condition. However, beginning on page 36 of her testimony, a condition associated with the preparation of an approvable invasive species monitoring and control plan is proposed, which includes a number of bulleted points. Each of these points indicate what the plan must contain, and are summarized and individually addressed below.

- Protocols for baseline surveys to document the presence of invasive plant communities and establish a baseline measure of infestation (Rothrock testimony page 36, lines 14-15). ***Response:*** As previously stated, on March 20, 2017 the Applicant provided a Proposed Invasive Species Survey Methodology to all parties (including the NYSDEC) (see Exhibit

BRB-7). The Applicant has not received any response to the proposed survey methodology provided on March 20, 2017. Therefore, the survey is being conducted in accordance with the methodology proposed, and as such this proposed language by Ms. Rothrock should not be included as a condition to the Certificate because the survey will be complete by the time a Certificate is issued.

- Protocols for preventing new introductions of invasive species and preventing the spread of invasive species (e.g., equipment cleaning, fill sources free of invasive species) (Rothrock testimony page 36, lines 16-18). ***Response:*** As previously stated, the Proposed Invasive Species Survey Methodology document indicates that the results of the invasive species survey will include "A complete list of all invasive plant species observed within the Survey Area, Site specific observations for each invasive plant species detected during the survey, Map of density of absolute cover of invasive plant species within Survey Area, and Map(s) of locations of populations of invasive plant species with discrete boundaries within the Survey Area. Conclusions and recommendations will be made based on the baseline survey results. In addition, appendices containing information related to treatment and removal of specific invasive plant species, BMPs to restrict the spread of invasive plants, and

a photo log of representative photos of each invasive plant species observed within the Survey Area will be included with the baseline report." An evaluation of the best management practices to reduce the spread of invasive species should only be done following the results of the baseline survey.

- Annual monitoring for a minimum of 5 years post-construction (Rothrock testimony page 36, line 19). ***Response:*** As previously stated, the Applicant does not understand why the minimum monitoring timeframe must be five years, especially if monitoring at the end of years one and two indicates there has been no spread of invasive species. As also previously stated, the Applicant's positon is supported by the Staff Policy Panel Proposed Condition 62. Therefore, the Applicant proposes annual monitoring for a period of 2 years post-construction.
- Protocols for adaptive management if performance requirements are not met (Rothrock testimony page 36, line 21). ***Response:*** The Applicant agrees to this condition, assuming reasonable performance standards are agreed to.

Q: Did the NYSDPS provide testimony regarding invasive species?

A: Yes. Jeremy Rosenthal provided brief testimony on this topic.

Q: Do you have any comment regarding Mr. Rosenthal's invasive species testimony?

A: Yes. Mr. Rosenthal indicates that the Applicant has not provided adequate studies and plans to address the management of invasive species. In his testimony he references the ISCP included with the Application, and the baseline survey to be conducted in 2017. He goes on to state, "The ISCP provides a basic framework for addressing invasive species within the proposed Project site. However, it does not provide customized plans for addressing specific disturbance sites if certain invasive species concentrations are discovered in the forthcoming survey. Invasive species management will only be adequately addressed when such customized plans are provided and incorporated into the ISCP." (Rosenthal testimony page 11, lines 16-21 and page 12, lines 1-7) ***Response:*** As previously stated, it is important to note that the Proposed Invasive Species Survey Methodology document states, "Conclusions and recommendations will be made based on the baseline survey results. In addition, appendices containing information related to treatment and removal of specific invasive plant species, BMPs to restrict the spread of invasive plants, and a photo log of representative photos of each invasive plant species observed within the Survey Area will be included with the baseline report." Therefore, the Applicant has previously indicated in a supplement to IR DPS-2 that customized plans will be developed.

Q: Did the NYSDPS provide additional testimony regarding invasive species?

A: Yes. Testimony prepared by the Staff Policy Panel includes as Exhibit_(SPP-3) Staff's proposed Conditions for a Certificate of Environmental Compatibility and Public Need. There are two proposed conditions associated with invasive species. Proposed Condition 62 requires preparation of a Final ISCP, conducting a two-year post-construction monitoring program, preparing a report at the end of the two-year monitoring program, which would assess if the goals of the ISCP are achieved and would be submitted to the NYSDPS, NYSDEC, and NYSDAM, and coordinating with these agencies regarding the success of the ISCP. The Applicant is fully agreeable to proposed condition 62. Staff's proposed condition 63 also addresses invasive species, and requires that site-specific plans for management of areas with high concentration of invasive species identified during the pre-construction baseline survey shall be included in the ISCP. The Applicant is fully agreeable to proposed condition 63.

Updated Layout

Q: Are you aware that the Facility has been recently reduced from 58 turbines, as presented in the Application to, 48 turbines?

A: Yes. Attached to my testimony as Exhibit BRB-8 is a map that compares the 58 turbine layout to the 48 turbine layout. As indicated in the attached map, the following 10 turbines have been eliminated from the proposed Facility: T5, T8,

T28, T39, T44, T45, T46, T54, T56, and T58. In addition, a total of approximately 12,650 linear feet (2.4 miles) of access road and approximately 20,235 linear feet (3.8 miles) of collection lines (buried and overhead) has correspondingly been removed from the Facility as a result of the removal of these 10 turbines (hereafter referred to as the "Updated Layout"). Also included in Exhibit BRB-8 is a map of the Updated Layout.

Q: In relation to the Updated Layout, is there information you wish to provide for the record?

A: Yes. In support of Exhibit 11 of the Application, EDR prepared the required Preliminary Design Drawings, which were included as Appendix M to the Application. For the convenience of the parties, the Preliminary Design Drawings have been updated to present the Updated Layout, and are included as Exhibit BRB-9 of my testimony. For the further convenience of the parties, the organization and sheet numbering of the design drawings remains the same as the original drawings included with the Application. However, due to the reduced number of turbines the following sheets no longer depict Facility components: NW-110, NE-106, NE-117, CE-102, CE-103, SW-101, SW-102, SW-103, and SW-107. In addition, a brief visual assessment memorandum has been prepared by EDR that provides updated viewshed analyses and visual simulations specific

to the Updated Layout. This memorandum, which is included in as Exhibit BRB-10, concludes that the results of the original VIA remain accurate.

Q: Have updated analyses been conducted that would allow the parties to understand that impact reductions between the 58 turbine layout and the 48 turbine layout?

A: Yes. In order to provide a direct comparison to some of the information provided in the Application, EDR has conducted updated analyses. Specifically, updated GIS calculations have been conducted in order to provide comparison impact numbers for Agricultural Districts, Land Use, Soils, and Vegetation, each of which are summarized below (detailed comparison tables are presented as Exhibit BRB-11 of my testimony).

- Agricultural Districts: As presented in Table 4-1 (Facility Impacts to Agricultural District Lands) of Exhibit 4 of the Application, portions of the Facility will be sited in three agricultural districts (District 8, District 10, District 13), which remains the case for the Updated Layout. Table 4-1 of the Application also presented impacts to soils within these agricultural districts, and as indicated in "Table 4-1. Facility Impacts to Agricultural District Lands (Comparison)" included in Exhibit BRB-11, total soil impacts have been reduced by approximately 31 acres.

- Land Use: As presented in Table 4-4 (Land Use Impacts) of Exhibit 4 of the Application, the Facility will be sited in six distinct land use types as defined by the NYS Office of Real Property Services, which remains the case for the Updated Layout. Table 4-4 of the Application also presented impacts to these land use classifications, and as indicated in "Table 4-4. Land Use Impacts (Comparison)" included in Exhibit BRB-11, total land use impacts have been reduced by approximately 84 acres.
- Soils: As presented in Table 21-4 (Anticipated Impacts to Soils) of Exhibit 21 of the Application, the Facility will be sited in numerous soil series, which remains the case for the Updated Layout. Table 21-4 of the Application also presented impacts to the individual soil series, and as indicated in "Table 21-4. Anticipated Impacts to Soils (Comparison)" included in Exhibit BRB-11, total soil impacts have been reduced by approximately 58 acres.
- Vegetation: As presented in Table 22-2 (Vegetation Impacts) of Exhibit 22 of the Application, the Facility will be sited in five distinct cover types (forest, successional shrubland, successional old field, active agriculture, and disturbed/developed), which remains the case for the Updated Layout. Table 22-2 of the Application also presented impacts to these cover types, and as indicated in "Table 22-2. Vegetation Impacts (Comparison)"

included in Exhibit BRB-11, total vegetation impacts have been reduced by approximately 84 acres.

Q: Are there other analyses that have been conducted that would allow the parties to understand that impact differences between the 58 turbine layout and the 48 turbine layout?

A: Yes. EDR also conducted updated analyses associated with shadow flicker and wetlands/stream impacts. Each of these analyses are addressed individually below.

- Shadow Flicker: As indicated in Exhibit 24 of the Application, a shadow flicker analysis was conducted for the 58-turbine layout, and a shadow flicker report was included as Appendix U to the Application. As a result of the Updated Layout, EDR conducted an updated shadow flicker analysis to determine if the reduction in the number of turbines would change the results presented in the original Shadow Flicker Report. Exhibit BRB-12 includes a memorandum that describes the results of the updated shadow flicker analysis.
- Wetland/Stream Impacts: As previously indicated, on March 31, 2017 the Applicant provided a set of detailed wetland/stream impact drawings in response to IR DPS-1. These drawings have been updated to address certain aspects of Direct Testimony from the parties (see "Wetland and

Stream" section above), and to address the Updated Layout. These updated wetland/stream impact drawings are included as Exhibit BRB-5, and indicate that impacts have been reduced. Specifically, permanent wetland impact (fill) now totals only 0.74 acre and temporary wetland impact (soil disturbance) now totals only 2.46 acres.

Specific Turbines Recommended for Removal

Q: Are you aware of Direct Testimony that recommended the removal of specific turbines due to environmental impacts?

A: Yes. The Direct Testimony of Daniel Connor recommends the removal of the following turbines: T7, T22, T36, T42, T54, and T58. As indicated above in my testimony T54 and T58 have been removed from the Facility. However, T7, T22, T36, and T42 remain in the Updated Layout.

Q: Does Mr. Connor describe why these turbines should be removed from the Facility?

A: Yes. Mr. Connor indicates that heavy farming activities in the area have created a very fragmented forest throughout the Project site. This existing fragmentation makes conservation of existing forest resources in the area imperative. (Connor testimony page 5, line 21 and page 6, lines 1-4). Mr. Connor then goes on to discuss the impact to forest as a result of the specific turbines identified above.

Q: Do you have any comment regarding this portion of Mr. Connor's testimony?

A: Yes. Mr. Connor's testimony indicates that heavy farming is the cause of forest fragmentation throughout the Facility site. However, this assumption does not appear to be supported by the record. For instance, when discussing plant communities Exhibit 22(a) of the Application indicates that active agriculture occupies approximately 28% of the Facility Site. Regardless, to address Mr. Connor's concern over fragmented forest, EDR conducted a GIS analysis to estimate the extent of interior forest within the Facility Site. A summary of this analysis is included in Exhibit BRB-13, and indicates that none of the turbines identified by Mr. Connor are located within interior forest conditions. In addition, Mr. Connor indicates that T-7, T-54, and T-58 result in impacts to a total of five wetlands and two streams. As indicated above, T54 and T58 have been removed from the Facility, and therefore T-7 remains the only turbine on this list of turbines identified for impacts to wetlands/streams. Specific to T-7, this turbine does not result in any temporary or permanent impacts to the adjacent wetland, which is clearly indicated on Sheet NW1 of both the March 31 wetland/stream impact drawings (Exhibit BRB-3) and the updated wetland/stream impact drawings (Exhibit BRB-5). In addition, as indicated in response to IR DPS-1, "The Applicant has recently confirmed with the landowner that moving the access

road to the field edge is acceptable, and therefore is in the process of adjusting this road… As a result, impacts to wetland A and tree clearing impacts will be significantly reduced." (The Applicant's response to DPS-IR-1 is attached to Jeremy Rosenthal's testimony as Exhibit JR-1 page 1.) This adjust has been made as depicted on Sheet NW1 of both the March 31 wetland/stream impact drawings (Exhibit BRB-3) and the updated wetland/stream impact drawings (Exhibit BRB-5). Therefore, it is unclear why T7 is identified by Mr. Connor as a turbine resulting in significant wetland impacts. Lastly, Mr. Connor indicates that there is a disproportionate amount of grading and earthwork associated with T22, T36, T42, T54, and T58 (as previously stated T54 and T58 have been removed from the Facility). However, as indicated in Exhibit 21(p), "Impacts to soil resources will be minimized by adherence to best management practices that are designed to avoid or control erosion and sedimentation and stabilize disturbed areas. In addition, erosion and sedimentation impacts during construction will be minimized by the implementation of an erosion and sedimentation control plan developed as part of the State Pollution Discharge Elimination System (SPDES) General Permit for the Facility. Erosion and sediment control measures shall be constructed and implemented in accordance with a SWPPP to be prepared and approved prior to construction, and at a minimum will include the measures set forth in the Preliminary SWPPP provided in Appendix GG." These turbines

(along with the rest of the Facility) will be subject to pre-approved protection measures. Therefore, from the perspective of grading and earthwork, these turbines should not result in significant adverse environmental impacts.

Q: Does this conclude your testimony?

A: Yes.

MR. BAKER: Okay.

A.L.J. LECAKES: At this point I need to pause and -- and go back to the Cary-Wheat panel. We put the testimony in the record as if orally given but I note now after looking at my records that Mr. Cary, Mr. Wheat had two versions of their testimony. There is a confidential version of their testimony so in the public transcript there should be the direct testimony of the Cary-Wheat panel. There was also a second email that was sent to the court reporters including four confidential versions of testimony. So for today's proceedings, there should be a separate confidential transcript made and in that transcript where the Cary-Wheat panel's testimony appears in the public version with the redactions in it, there should be put at the same point, the direct testimony of the Cary-Wheat panel unredacted confidential material file for that confidential hearing transcript.

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A.L.J. LECAKES: Mr. Brazell's that we're talking about right now, that does not have confidential material in it, is that correct? There is no confidential material on Mr. Brazell's testimony, is that correct, his rebuttal?

MR. BAKER: Correct. Correct.

A.L.J. LECAKES: All right. So now, in the public hearing transcripts, should appear as if orally given today, the file that was emailed applicant-rebuttal testimony of Benjamin R. Brazell case 14-F-0490. And Mr. Baker, you may proceed with the other exhibits.

MR. BAKER: Your Honor, could --

A.L.J. LECAKES: Yes.

MR. BAKER: -- could you give us a minute to go off the record with respect to Mr. Brazell testimony. I'd like to confirm that there is no confidential material on there before we move on.

A.L.J. LECAKES: Absolutely, let's go off the record.

(Off the record)

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

Application of Cassadaga Wind Project for a Certificate under Article 10 of the Public Service Law — Case No. 14-F-0490

REBUTTAL TESTIMONY OF

BENJAMIN R. BRAZELL
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Q: Please state your name, employer, and business address.

A: Benjamin R. Brazell, Environmental Design & Research, Landscape, Architecture, Engineering & Environmental Services, D.P.C. ("EDR"), 217 Montgomery Street, Suite 1000, Syracuse, NY 13202-1942.

Q: Did you file pre-filed testimony in this matter?

A: Yes. Please see attached as Exhibit BRB-1 my pre-filed testimony and credentials.

Q: What is your experience conducting environmental impact assessments for wind power projects in New York State and elsewhere?

A: I have been overseeing various studies and analyses for wind power projects since joining EDR in February 2004. I have been directly involved in the preparation of multiple Environmental Impact Statements (EISs) for wind power projects in New York, and Applications for Certificates of Environmental Compatibility and Public Need (Certificate Application) for wind power projects in Ohio, totaling over two dozen EISs/Certificate Applications. EDR was also responsible for the preparation and management of multiple stand-alone support studies and permit applications for each of these projects, such as wetland and stream delineations and state and federal wetland permitting, visual impact assessments, and cultural resources surveys. A list of all these projects and associated studies prepared by EDR is includes as Exhibit BRB-2. In addition to the Cassadaga Wind Project, I

am currently working on numerous other Public Service Law (PSL) Article 10 proceedings including: Baron Winds Project (Case No. 15-F-0122), Galloo Island Wind Energy Facility (Case No. 15-F-0327), North Ridge Wind Farm (Case No. 16-F-0268), Mad River Wind Farm (Case No. 16-F-0713), Bluestone Wind Farm (Case No. 16-F-0559), Heritage Wind Farm (Case No. 16-F-0546), Mohawk Solar Project (Case No. 17-F-0182), and the Horse Creek Wind Farm (Case No. 12-F-0575). I also served as Principal-in-Charge for the Jericho Rise Wind Farm (Franklin County), which was constructed and became operational in 2016, and the Arkwright Summit Wind Farm (Chautauqua County), which is currently under construction. Both of these projects were reviewed and approved through preparation of EISs in accordance with the State Environmental Quality Review Act (SEQRA), and the Arkwright project also received approval from the New York State Department of Environmental Conservation (NYSDEC) under Article 15 and 24 of the Environmental Conservation Law (ECL).

Q: What is the purpose and scope of your testimony in this proceeding?

A: To provide rebuttal testimony for certain environmental impacts associated with the Cassadaga Wind Project (Project or Facility), proposed by Cassadaga Wind LLC (the Applicant). Specifically, this rebuttal addresses certain portions of direct testimony provided by Anne Rothrock (New York State Department of Environmental Conservation [NYSDEC]), Christopher Legard (NYSDEC),

Jeremy Rosenthal (New York State Department of Public Service [NYSDPS]), Daniel Connor (NYSDPS), and the Staff Policy Panel (NYSDPS).

Wetlands and Streams

Q: Can you briefly describe where in the record information can be found regarding the Facility's impacts to wetlands and streams?

A: A significant amount of information is in the record regarding the identification of wetlands and streams and an evaluation of impacts on such resources. This information is briefly summarized as follows:

- Exhibit 22 of the Application identifies wetland resources and discusses wetlands impacts,
- Exhibit 23 of the Application identifies stream resources and discusses stream impacts,
- Appendix M of the Application contains detailed Preliminary Design Drawings that includes wetland and stream resources,
- Appendix RR of the Application contains the Wetland Delineation Report,
- an updated Wetland/Stream Field Delineation map was filed on November 22, 2016,
- the Applicant's response to DPS IR-1 contains a detailed table of wetland/stream avoidance, mitigation and minimization (the Applicant's

response to DPS-IR-1 is attached to Jeremy Rosenthal's testimony as Exhibit JR-1 page 1),

- the Applicant also submitted a supplement to DPS- IR-1 on March 31, 2017 with an updated drawing set specific to wetland/stream impacts which is attached hereto as Exhibit BRB-3,
- the Applicant's response to DPS IR-46 contains an updated table of wetland/stream avoidance, mitigation and minimization and is attached hereto as Exhibit BRB-4,
- the Applicant's supplement to DPS IR-1 on March 31, 2017 also contained a Conceptual Stream and Wetland Mitigation Plan, which is attached hereto as Exhibit BRB-3,
- with this testimony I am also providing updated wetland/stream impact drawings attached hereto as Exhibit BRB-5,
- and the Applicant's response to DEC IR-3 contains an updated wetland mitigation plan attached hereto as Exhibit BRB-6.

Q: Can you describe how wetland and stream resources were identified within the Facility Site?

A: Yes. Investigations were first conducted in the spring of 2015, associated with an initial Facility layout provided by the Applicant, which included a total of 75 turbines. In support of these investigations, EDR created a set of field maps

(depicting the preliminary location of project components along with mapped wetlands and streams on aerial base mapping) and conducted reconnaissance-level field investigations of the initial layout. EDR provided the results of our field investigations to the Applicant, along with specific layout/component alignment changes that were recommended to avoid/minimize impacts to resources such as wetlands and streams. Subsequently, wetland and stream delineations were conducted by EDR personnel during the fall of 2015, in accordance with the three-parameter methodology described in the U.S. Army Corps of Engineers (Corps) *Wetland Delineation Manual* (Environmental Laboratory, 1987), and further described by the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: North Central and Northeastern Region* (USACE, 2012). Wetland boundaries were defined in the field by sequentially numbered pink surveyor's flagging marked "wetland delineation", the locations of which were documented using Global Positioning System (GPS) technology with sub-meter accuracy. Wetland delineations within the Facility Site were conducted within a 200-foot wide corridor centered on linear Facility components (e.g., access roads, buried electrical interconnect, overhead transmission line), and within a 200-foot radius of turbines and other components such as permanent meteorological towers and substations. The results of the on-site wetland delineations are summarized in Exhibit 22 of the Application, the

results of the stream delineations are summarized in Exhibit 23 of the Application, and the results of the total delineation effort (both wetlands and streams) is further detailed in the stand-alone Wetland Delineation Report, which was included as Appendix RR to the Application. Additional delineations were conducted during the 2016 growing season in areas where lack of landowner access precluded delineations on specific parcels in 2015, resulting in a complete delineation of the Facility. As a result, updated delineation maps (Figure 8 of the Wetland Delineation Report) were provided to NYSDEC personnel on November 11, 2016 and subsequently filed on the DMM on November 22, 2016. Finally, the delineation report originally included in the Application as Appendix RR was updated to reflect the results of the 2016 delineations, and was sent to NYSDEC and U.S. Army Corps of Engineers (Corps) personnel on February 27, 2017.

Q: Did representatives from the NYSDEC or Corps conduct site visits of the Facility to review wetland and stream delineations?

A: Yes. Prior to conducting the wetland and stream delineations in the fall of 2015, EDR invited NYSDEC and Corps personnel to review delineation methodology in the field, and as a result one Corps representative conducted a site visit with EDR personnel and an Applicant representative in October 2015 (NYSDEC personnel declined the invitation). Following receipt of the updated delineation maps on November 11, 2016, Anne Rothrock, with NYSDEC Region 9's office, conducted

a site visit with EDR personnel and an Applicant representative on December 9, 2016. Lastly, one Corps representative and Anne Rothrock conducted a site visit with EDR personnel, RES personnel (the Applicant's wetland mitigation consultant), and an Applicant representative on March 30, 2016.

Q: Did wetland impact avoidance and minimization occur prior to defining the Facility layout set forth in the Application?

A: Yes. As indicated above, reconnaissance-level field investigations were conducted on an initial layout to identify wetland and stream resources, and the resulting data was used by the Applicant to make Facility layout adjustments and avoid and minimize impacts to such resources. The initial layout investigated in the spring of 2015 included 75 turbines, whereas the Application set forth and addressed a total of 58 turbines.

Q: Was this "pre-Application" avoidance and minimization described in the Application?

A: Briefly. Exhibit 22(n) of the Application states, "Wetland impacts have been minimized substantially due to changes in the Facility design. A 75-turbine layout, proposed early in Facility siting, was evaluated at a reconnaissance level for wetland and stream resources. This layout would have resulted in permanent impacts to 4.77 acres of wetlands. Therefore, this proposed layout represents a 68% reduction in permanent wetland impacts, with just a 23% reduction in the

number of turbines." This is also briefly described in Exhibit 9(C)(4), and the 75-turbine layout is depicted on Figure 3-1 of the Application. Please note that in accordance with the Stipulations, which were developed in consultation with multiple parties (final Stipulations were executed by the NYSDPS and NYSDEC on April 12, 2016 after approximately 5 months of negotiations), these numbers were based on a standard set of assumptions applied to Geographic Information System (GIS) calculations, and actual engineering results can result in slightly different numbers.

Q: Is there additional information that describes wetland/stream impact avoidance and minimization measures?

A: Yes. Exhibit 22(n) of the Application also discusses impact avoidance/minimization associated with the electrical collection and transmission lines, and states, "…the Applicant is anticipating installing collection line via directional drilling at forested wetlands where buried collection line is the only Facility component, which eliminates wetland impacts in those areas where it is used. In many cases, wetlands and streams will be spanned by either overhead collection line or transmission line, eliminating the need for in-stream work in these locations. The Applicant intends to span overhead those streams protected under ECL Article 15. Construction and operation of the Facility will be done in accordance with the standards established by ECL Article 15." Exhibit 22(n) also

describes specific measures to be implemented during construction to minimize impacts, including the following:

- "*No Equipment Access Areas*: Except where crossed by permitted access roads or through non-jurisdictional use of temporary matting, streams will be designated "No Equipment Access," thus prohibiting the use of motorized equipment in these areas.
- *Restricted Activities Area:* A buffer zone of 100 feet, referred to as "Restricted Activities Area", will be established where Facility construction traverses streams, wetlands and other bodies of water. Restrictions will include…
- *Sediment and Siltation Control*: A soil erosion and sedimentation control plan will be developed and implemented as part of the SPDES General Permit for the Facility. Silt fences, hay bales, and temporary siltation basins will be installed and maintained throughout Facility construction. Exposed soil will be seeded and/or mulched to assure that erosion and siltation is kept to a minimum along wetland boundaries. Specific control measures are identified in the Facility Preliminary Stormwater Pollution Prevention Plan (SWPPP), and the location of these features will be indicated on construction drawings and reviewed by the contractor and other appropriate parties prior to construction. These features will be inspected on a regular basis to assure that

they function properly throughout the period of construction, and until completion of all restoration work.

- *Work Period Restriction for Stream Crossings*: Construction in streams protected under Article 15 will comply with work period restrictions that are established to protect fish spawning and migration. The work period restriction is from October 1 to April 30 for streams with trout and from March 15 to June 15 for other protected streams (NYSDEC, 2005). However, site-specific consultation with NYSDEC stream biologists may result in less restrictive no-work periods. For example, the Final Environmental Impact Statement (FEIS) for the Arkwright Summit Wind Farm noted that NYSDEC personnel indicated that in-stream work could take place outside of the seasonal work restriction window, as determined on a case-by-case basis (EDR, 2016). Seasonal work period restrictions on in-stream work during Facility Construction will be established in consultation with NYSDEC. All of the protected streams within the Facility Site are C(T) streams, and these are anticipated to either be spanned overhead or bored locations where collection lines cross them, so as reduce impacts to streams and avoid in-stream work."

In addition, in response to Interrogatory Request (IR) No. DPS-1 the Applicant completed a detailed table, which was designed by NYSDPS personnel. This table identifies each wetland and stream crossing and describes why the resource

could not be reasonably avoided and actions taken to minimize impacts to the resource. This table includes a significant amount of information, specifically 7 columns and 161 rows of information (i.e., 161 individual wetlands/stream crossings evaluated for impact avoidance and minimization). The Applicant's response to IR DPS-1 also includes example photographs depicting locations where Facility components were sited on existing disturbances, such as existing farm roads and logging roads. Although not requested, the Applicant also committed to providing detailed wetland and stream drawings to the parties by March 31, 2017 which were submitted to the parties as a supplement to DPS-1 on March 31, 2017 (see impact testimony below for additional information on these drawings). Subsequently, in response to IR DPS-46, the Applicant provided an update to the detailed spreadsheet originally provided in response to IR DPS-1 to account for further impact avoidance, minimization, and mitigation measures as demonstrated in the March 31, 2017 updates. Please also see the Updated Layout section of my testimony below.

Q: Regarding wetland and stream impacts, what information is provided in the Application?

A: Exhibit 22(m) of the Application provides details associated with wetland impacts. Initially there is a discussion that describes the types of impacts that are anticipated due to construction of the Facility, which is followed by a discussion

that quantifies impact. Specifically, Exhibit 22(m) page 65 states, "Construction of the Facility is anticipated to result in disturbance of up to 23.11 acres of wetlands. Of this disturbance, 21.56 acres will be disturbed only temporarily, while 1.55 acres are anticipated to be permanently lost. These impacts represent a conservative estimate for several reasons. First, the Facility evaluated herein includes up to 58 wind turbines. Depending on the turbine model selected, fewer turbines may actually be built. In addition, the Applicant is currently in discussions with landowners who have temporary staging areas proposed on their properties. These discussions are likely to result in eliminating staging area related impacts to wetlands. Finally, the Applicant will install buried interconnect via directional drilling, where practicable, to eliminate impacts to forested wetlands in cases where buried collection line is the only Facility component. Implementation of these measures will reduce wetland impacts from the acreages presented in this Application." This is then followed by a detailed table (Table 22-6 Wetland Impacts) that provides the following information for each individual wetland impact:

- Wetland ID
- Wetland Type (e.g., forested, emergent)
- NYSDEC Wetland ID
- Temporary Impact (square feet)

- Permanent Impact (square feet)
- Facilities Crossing Wetland (e.g., buried interconnect, access road, wind turbine)
- Anticipated Crossing Methodology If Impact by Buried Interconnect Only (e.g., trench, horizontal directional drill [HDD])

With respect to impacts, the end of Table 22-6 provides the total cumulative impact in both square feet and acres. This information is, at the very least, consistent with, and more likely exceeds, the requirement set forth in the Stipulations, which were executed by the NYSDPS and NYSDEC on April 12, 2016. Specifically, Stipulation 22(m) requires Exhibit 22(m) of the Application to include "A quantification of temporary and permanent impacts to wetlands (and any state-regulated 100-foot adjacent areas) based on the proposed footprint of all Facility components and associated impact assumptions. Such impacts will be presented in a table that identifies the type of impact and associated crossing methodology."

A similar level of information is provided in Exhibit 23 of the Application for streams. Specifically, Exhibit 23(b)(4) discusses impacts to streams, and states, "Potential temporary and permanent impacts to streams and open waters that could result from Facility construction and operation have been calculated using disturbance assumptions presented in 1001.22(b). The Facility is anticipated to

result in up to approximately 8,845 linear feet of temporary disturbance to perennial and intermittent streams and up to approximately 341 linear feet of permanent disturbance to perennial and intermittent streams." This is then followed by a detailed table (Table 23-3 Stream Impacts) that provides the following information for each individual stream impact:

- Delineated Stream ID
- Type (e.g., intermittent, perennial)
- NYSDEC Stream Classification (e.g., C, C(t), B)
- NYSDEC Protected Stream (yes or no)
- Temporary Impact (linear feet)
- Permanent Impact (linear feet)
- Facilities Crossing Stream (e.g., buried interconnect, access road)
- Anticipated Crossing Methodology If Impacted by Only Collection Line (e.g., trench, HDD)
- Utilizes Existing Access (yes or no)

With respect to impacts, the end of Table 23-3 provides the total cumulative temporary and permanent impact in linear feet.

Q: Regarding wetland and stream impacts, is there additional information provided in the case record?

A: Yes. In response to DPS IR-1, the Applicant committed to preparing a detailed set of wetland and stream impact drawings. In accordance with this commitment, the Applicant submitted a detailed set of drawings on March 31, 2017 to the parties (Exhibit BRB-3). These drawings included the following:

- Sheet G-000: Master legend, wetland classification system, regional index depicting the organization of the detailed impact drawings (i.e., Northwest Region, Northeast Region, Central Region, Southwest Region, Southeast Region).
- Sheet G-001: General notes (Preliminary Contractor Notes, Preliminary General Environmental Restrictions, Preliminary Specific Stream Crossing Restrictions, Preliminary Specific Wetland Crossing Restrictions, Preliminary Erosion & Sediment Control Notes) and a very detailed Wetland and Stream Impacts table.
- Northwest Overview Sheet and Sheets NW1-NW16: detailed impact drawings
- Northeast Overview Sheet and Sheets NE1-NE9: detailed impact drawings
- Central Overview Sheet and Sheets C1-C23: detailed impact drawings
- Southeast Overview Sheet and Sheets SE1-SE16: detailed impact drawings

- Southwest Overview Sheet and Sheets SW1-SW33: detailed impact drawings
- Sheets C-601 through C-604: typical civil details

The Applicant also provided an updated to IR DPS-1 (updated wetland/stream impact minimization and avoidance table) in response to IR DPS-46 (see Exhibit BRB-4). This testimony also includes an updated set of detailed wetland and stream impact drawings (see Exhibit BRB-5).

Q: Will the Facility, as proposed, involve activities regulated by ECL Article 24 or 15?

A: Yes. Specific to streams, Direct Testimony was provided by Christopher Legard of the NYSDEC and this opinion is consistent with page 7, lines 5 through 9 of his testimony. Specific to wetlands, direct testimony was provided by Anne Rothrock of the NYSDEC and this opinion is consistent with page 12, lines 5 through 10 of her testimony.

Q: In your opinion, does the case record contain sufficient information to describe stream impacts?

A: Yes, based on all the information provided to date (as summarized in my testimony above), sufficient information exists to describe stream impacts.

Q: Is this opinion consistent with Christopher Legard's direct testimony?

A: Yes. This is consistent with page 7, lines 10 through 19 of his testimony.

Q: In your opinion, does the case record contain sufficient information to describe wetland impacts?

A: Yes, based on all the information provided to date (as summarized in my testimony above), sufficient information exists to describe wetland impacts.

Q: Is this opinion consistent with Ms. Rothrock's Direct Testimony?

A: No. On page 12, lines 12 through 14 of her testimony, Ms. Rothrock states, "I cannot describe specific impacts on wetlands because information is missing from the Application that would otherwise allow a detailed and specific quantification of impacts."

Q: Can you explain this statement?

A: No. As summarized above in my testimony, the Application provides specific descriptions, information, and quantification of impacts for wetlands and streams, including detailed tables that quantify each individual impact to a wetland or stream. With regard to the impact tables provided in Exhibits 22 and 23 of the Application, specifically Table 22-6 (Wetland Impacts) and Table 23-3 (Impact to Streams), each table provides specific information on each individual wetland/stream, an indication of NYSDEC classification for each individual wetland/stream, a quantified impact for each individual wetland/stream, and the type of Facility component causing each individual impact, among other information. In other words, the same type of information is provided for impacts

to wetlands and streams, and I cannot explain the inconsistency between NYSDEC testimony regarding streams and NYSDEC testimony regarding wetlands. As stated above, my opinion is consistent with Christopher Legard's opinion (i.e., we both believe the case record contains sufficient information to describe the Facility's impacts on streams).

Q: On page 12, lines 14 through 16 of her Direct Testimony, Ms. Rothrock states, "While the current record includes a project layout and delineated wetland boundaries, critical information remains lacking that is necessary to evaluate the Project and make a determination as to whether the Project meets regulatory standards." Can you respond to this statement?

A: Yes. Generally speaking, it is my opinion that this statement represents an obvious mischaracterization and underrepresentation of the information contained in the record. This statement essentially claims that the record contains only two items with respect to describing wetland resources and impacts to those resources: 1) a Facility layout and 2) delineated wetland boundaries. However, as summarized in my testimony above the record contains a significant amount of information on wetlands, including:

- Exhibit 22(i) of the Application describes the Facility-specific wetland delineations.

- Figure 22-2 of the Application provides mapping of all delineated wetlands and approximate wetlands.
- Exhibit 22(j) of the Application describes all wetland community types delineated on-site (e.g., forested wetlands, scrub-shrub wetlands, emergent wetlands).
- Exhibit 22(k) of the Application describes the functional assessment that was conducted for all wetlands delineated on-site.
- Exhibit 22(m) of the Application describes and quantifies wetland impacts, including Table 22-6 (Wetland Impacts) that quantifies impacts to each individual wetland.
- Exhibit 22(n) of the Application describes measures to avoid, minimize, and mitigate impacts to wetlands.
- Appendix M of the Application contains the Preliminary Design Drawings, which provides detailed drawings (plan and profile) associated with the Project components, along with existing and proposed contours, in relation to delineated wetlands and streams. This drawing set included a total of 115 sheets.
- Appendix RR of the Application contains the Wetland Delineation Report, which includes:

- Narrative describing the NYSDEC and Corps regulations, physical characteristics and resources (i.e., physiography and soils, hydrology, federal and state mapped wetlands and streams), and wetland and stream delineation methodology and results.
- Multiple tables with Project-specific information such as soils, state mapped wetlands and streams, and delineation results.
- Multiple figures depicting Project-specific information regarding topography, soils, mapped wetlands and streams, and delineated wetlands and streams.
- Routine Wetland Determination Forms that provide detailed data collected for each delineated feature (over 500 pages of data forms).
- Photos of representative wetland communities.
- A wetlands functions and values assessment table that includes an evaluation of vegetation conditions, hydrology conditions, size, adjacent conditions, public access, and the primary functions and values.

- Updated delineation maps (Figure 8 of the Wetland Delineation Report) were provided to NYSDEC personnel on November 11, 2016, and uploaded to the DMM on November 22, 2016.

- An updated Wetland Delineation Report was sent to NYSDEC and Corps personnel on February 27, 2017.
- The Applicant's response to IR DPS-1, which was provided on January 31, 2017 and includes a detailed spreadsheet that evaluates impact avoidance and minimization for each wetland and stream crossing.
- The Applicant's March 31, 2017 submittal, which included detailed wetland and stream impact drawings (see Exhibit BRB-3).
- The Applicant's response to IR DPS-46, which was provided on May 3, 2017 and included an update to the detailed spreadsheet originally submitted in response to IR DPS-1 in order to account for the March 31, 2017 submittal (see Exhibit BRB-4).

Q: Do you have any additional comments on Ms. Rothrock's Direct Testimony regarding wetland impacts?

A: Yes. Beginning on page 12 of her testimony, Ms. Rothrock provides a list of "…necessary information that is missing from the Application…" The following summarizes and responds to each item in her list.

- A revised wetland delineation map (Rothrock testimony page 12, lines 19-20). This indicates that an adjustment to delineated wetland 6H was requested during the March 30, 2017 site visit. ***Response:*** While conducting this site visit with NYSDEC and Corps personnel, a small

portion of the boundary of wetland 6H was adjusted (a total of seven wetland delineation flags and associated GPS points). As indicated this data was collected on March 30, and as such it was not possible to incorporate into the March 31 submittal. However, this has been incorporated into the updated wetland/stream impact drawings (see the "Updated Layout" section of my testimony below for additional detail). Please note that the seven flags/GPS points obtained on March 30 represent a fraction of the overall delineation effort, which otherwise included over 17,500 wetland delineation/investigation GPS points. To present another way, over 120 acres of wetlands were delineated within the Facility Site, and the March 30, 2017 extension totaled only 0.04 acre.

- Revised preliminary notes on the first page of plan sheets (Rothrock testimony page 12, line 21). ***Response:*** It is unclear what "plan sheets" are being referenced in this comment. For instance, the Preliminary Design Drawings (Appendix M to the Application) include plan sheets and notes, as does the detailed wetland and stream impact drawing set submitted on March 31, 2017. For the purposes of this testimony it is assumed that this comment references the March 31st drawing set. This comment goes on to indicate that the notes need to be revised to include the following:

- Note #2 under Contractor Notes should include language requiring wetland boundaries to remain in place until construction has ended (Rothrock testimony page 13, lines 1-3). ***Response:*** The lack of this specific language does not prohibit any party from describing or evaluating the Facility's impacts on wetlands. In addition, please note that this is specifically addressed in the Environmental Compliance Manual prepared prior to construction. In my experience, the compliance manuals prepared by EDR typically include a section specifically dedicated to flagging, and identifies the color of flag to be used for each respective resources (e.g., pink with "wetland delineation" in black used for wetlands, pink and lime used for state-regulated 100-foot buffers). Please also note that the Applicant's proposed Environmental Compliance and Monitoring Program is described in Exhibit 22(n) of the Application, including reference to an Environmental Compliance Manual.
- Note #5 under Contractor Notes should be revised to restrict wood chips, and is not exhaustive (Rothrock testimony page 13, lines 4-7). ***Response:*** The lack of this specific language in this specific location does not prohibit any party from describing or evaluating

the Facility's impacts on wetlands. Please also note that the Application contains information that addresses this topic, and as such this was inaccurately identified as "…necessary information that is missing from the Application…" Specifically, Exhibit 22(n) of the Application, page 70 states, "A buffer zone of 100 feet, referred to as 'Restricted Activities Area', will be established where Facility construction traverses streams, wetlands and other bodies of water. Restrictions will include:

- No deposition of slash within or adjacent to a waterbody;
- No accumulation of construction debris within the area;
- Herbicide restrictions within 100 feet of a stream or wetland (or as required per manufacturer's instructions);
- No degradation of stream banks;
- No equipment washing or refueling within the area;
- No storage of any petroleum or chemical material; and
- No disposal of excess concrete or concrete wash water."

- Note #1 under Specific Wetland Crossing Restrictions should require temporary access routes in any regulated wetland adjacent areas to be removed and restored following construction (Rothrock testimony page 13, lines 8-11). ***Response:*** The lack of this

specific language in this specific location does not prohibit any party from describing or evaluating the Facility's impacts on wetlands. Please also note that the Application contains information that addresses this topic, and as such this was inaccurately identified as "…necessary information that is missing from the Application…" Specifically, Exhibit 22(b) of the Application, page 9 states, "Although the seed mix that will be used in site restoration is not available at this time, typical upland and wetland seed mixes that could be used are summarized below (please visit http://www.ernstseed.com/seed-mixes/ for additional detail):

- Fox sedge (31%)
- Virginia wildrye (20%)
- Lurid sedge (14%)
- Green bulrush (5%)
- Blue vervain (4%)
- Wood reedgrass (3.5%)
- Soft rush (3%)
- Blunt broom sedge (3%)
- Hop sedge (3%)

- Other forbs and graminoids (each 2% or less)"

Please also note that Exhibit 22(n) of the Application, page 72 specifically discusses construction and restoration inspection in the context of the Environmental Compliance and Monitoring Program.

- Note #3 under Specific Wetland Crossing Restrictions should restrict temporary spoil stockpiles in state-regulated wetlands and require removal of spoil from state-regulated wetlands and adjacent areas (Rothrock testimony page 13, lines 12-15). ***Response:*** The lack of this specific language in this specific location does not prohibit any party from describing or evaluating the Facility's impacts on wetlands. Please also note that the Application contains information that addresses this topic, and as such this was inaccurately identified as "…necessary information that is missing from the Application…" Specifically, sheet C-604 of the Preliminary Design Drawings, included as Appendix M to the Application, includes a Stabilized Temporary Stockpile detail. Please also note that Exhibit 21 of the Application specifically deals with Geology, Seismology, and Soils as required by 1001.21 of the PSL. As such, Exhibit 21(f)(6) of the Application, page 5 states, "All stockpiled soils will be located outside of wetlands and

will be stabilized in accordance with the final SWPPP." In addition, Exhibit 21(g) of the Application, page 7 states, "Proper methods for segregating stockpiled and spoil material shall be implemented, and excavated soil will be reused to the maximum extent possible on the site that it was excavated from, as a means to limit opportunities for proliferation of non-native flora and other invasive species. Final cut and fill storage areas will be available following Certification, and included in the construction drawings."

- The tables that include the calculation of wetland impacts need to be revised and simplified in order to quantify temporary and permanent impacts (Rothrock testimony page 13, lines 16-17). This portion of the testimony further indicates that impacts should be calculated and clearly itemized for each type of permanent impact, and labeled with the type of impact, for state-regulated wetlands and adjacent areas. ***Response:*** This comment is confusing for multiple reasons: 1) it is not clear what "tables" are being referred to, and 2) it appears that all of this information was provided in the record. To the extent this comment is referencing tables in the Application, as indicated previously in my testimony detailed tables were included, including Table 22-6 (Wetland Impacts) in Exhibit 22(m).

Additionally, this information was further refined through submittal of the March 31, 2017 wetland and stream impact drawing set, which included an extremely detailed table on Sheet G-001. All of the information identified in this testimony is included on this table. To the extent this table is recommended for reorganization, the Applicant is more than willing to discuss how best to do so to meet the needs of the various agencies (including the Corps). However, given the table included on Sheet G-001 of the impact drawing set, it would appear that this was inaccurately identified as "…necessary information that is missing from the Application…"

- The wetland impact calculation table(s) includes notations for all the consultant delineated wetlands that were determined to meet state criteria for jurisdiction. The table must also include the NYSDEC Wetland code as previously listed in my testimony (Rothrock testimony page 13, lines 21-22 and page 14, lines 1-2). ***Response:*** To the extent this testimony is referencing identification of state-mapped wetlands and associated code/ID in the various tables, this is provided in the record. Specifically, Table 22-6 in Exhibit 22 of the Application includes a column titled "NYSDEC Wetland ID" that correlates each delineated wetland ID to the state-regulated wetland ID (e.g., delineated wetland BBB correlates to

state-regulated wetland HA-4; delineated wetland WWW correlates to state-regulated wetland CS-8). Therefore, the Applicant believes this was inaccurately identified as "…necessary information that is missing from the Application…" The detailed impact table on Sheet G-001 simply identifies each respective feature as a "NYSDEC Regulated Wetland". However, the updated impact drawing set (Exhibit BRB-5) contains an updated table that includes the state-regulated wetland ID, including Unmapped 1, Unmapped 2, and Unmapped 3, the names for which were first provided in testimony on May 12, 2017 (Rothrock testimony page 11 lines 13 and 19, and page 12 line 4).

- Impact calculations in acres should also be provided on each line, as well as totals, for state-regulated wetlands and associated adjacent areas, as part of a revised application (Rothrock testimony page 14, lines 3-5). ***Response:*** The lack of this information does not prohibit any party from describing or evaluating the Facility's impacts on wetlands, and the Applicant believes this was inaccurately identified as "…necessary information that is missing from the Application…"

Q: In her Direct Testimony, Ms. Rothrock makes reference to a "2017-04-03_Cassadaga DEC Wetland-Stream Impact Summary Tables" (page 14,

lines 7-8). What is the relevance of this table in relation to quantifying wetland and stream impacts?

A: This table has no relevance to detailed wetland and stream impacts, and in my opinion this table should not have been referenced in her testimony.

Q: Can you please elaborate?

A: Yes. As indicated above, Exhibit 22 contained a significant amount of detail regarding wetland impacts (e.g., Table 22-6). In addition, the March 31, 2017 wetland and stream impact drawings contained a significant amount of detailed information, including a detailed impact table. Subsequent to the March 31, 2017 filing, on April 3, 2017, NYSDEC personnel sent me two email requests, 1) asking for two separate tables, "…one which summarizes DEC stream impacts and one which summarizes all DEC wetland & AA area impacts" and 2) asking for actual size printed copies of the March 31, 2017 submittal because "The Region 9 office has difficulty printing this large enough to make them readable."

Q: Did you respond to these requests?

A: Yes. The summary tables were provided to NYSDEC on April 3, 2017. Regarding the actual size drawings, these were plotted, shipped and delivered to NYSDEC Region 9 on April 4, 2017.

Q: Did NYSDEC indicate to you that these tables were going to be used to support Direct Testimony or the record in any way?

A: No. Given the fact that a detailed impact table was included with the March 31, 2017 impact drawings, which were immediately plotted and shipped to NYSDEC's Region 9 Office, I assumed this summary table was for NYSDEC reference only and any details would be gleaned from the March 31 submittal.

Q: Did Ms. Rothrock's Direct Testimony reference the "2017-04-03_Cassadaga DEC Wetland-Stream Impact Summary Tables" file in the proper context?

A: No. On page 14, lines 7-9, her testimony states, "While the Applicant did provide the table entitled 2017-04-03_Cassadaga DEC Wetland-Stream Impact Summary Tables.docx to support the record…" This testimony is entirely inaccurate. As indicated above, the 2017-04-03_Cassadaga DEC Wetland-Stream Impact Summary Tables.docx file was provided only in response to a request from NYSDEC personnel and was never intended to support the record. I note that Ms. Rothrock's testimony indicates that this table was provided "…per the Department's request…" (Rothrock testimony page 17, lines 7-8). However, to be clear this table was never provided by the Applicant to support the record, nor was the Applicant ever lead to believe it would be referenced in testimony.

Q: Page 15 of Ms. Rothrock's testimony references the "…adequacy of plans provided by the Applicant". Do you have any comments on this portion of the testimony?

A: Yes. Page 15, lines 3-4 state, "The plans are not adequate for the purpose of completing a review consistent with the Part 663 weighing standards and, thus, must be revised to include the following:" ***Response:*** For the purposes of this rebuttal testimony, it is assumed that "the plans" she mentions are referencing the March 31, 2017 wetland and stream impact drawing set. Each of the comments in her testimony at pages 15 – 16 are responded to individually as follows:

- While the impacts are shown on the plan sheets with a calculation, it is not clear what type of impact is occurring there because the type of impact is not clearly itemized and because Project components are not labeled (Rothrock testimony page 15, lines 5-7). ***Response:*** This comment is confusing because as stated earlier the March 31, 2017 wetland and stream impact drawings not only depict each impact based on the proposed jurisdictional activity (e.g., access road crossing a wetland), but Sheet G-001 provides a table for each impact and identifies the type of impact (e.g., access road ["AR"]). In addition, Sheet G-000 includes a "Master Legend" for each line type, etc. that correlates to a Facility component.
- Impacts to the regulated adjacent area of Wetland B should appear on Sheet NW2 (Rothrock testimony page 15, lines 8-10). ***Response:*** please see the revised wetland/stream impact drawings included as Exhibit BRB-5.

- The regulated adjacent areas area depicted to surround all delineated wetlands, even when the wetland delineations are open ended because they extend farther than their survey corridor. The regulated adjacent areas should only be shown where their wetland boundary is known and then also be shown to extend off the survey corridor (Rothrock testimony page 15, lines 11-17). ***Response:*** please see the revised wetland/stream impact drawings included as Exhibit BRB-5.
- Turbine 51 appears to be proposed approximately 100 feet from Wetland ZZ. Based on this I would expect there to at least be forest clearing impacts to the regulated adjacent areas, if not additional impacts (i.e., access roads or fill), however, such impacts are not shown on the plan sheets and are likely not accounted for in the table (Rothrock testimony page 15, lines 18-22). ***Response:*** please see the revised wetland/stream impact drawings included as Exhibit BRB-5.
- The notes are contradictory on Sheet C17/Wetland RRRR/State-regulated Wetland HA-7. The Applicant states that there are no impacts to wetland RRRR, but then also states trees and vegetation will be cleared within the wetland, which is an impact. Also, a pole will be placed in the wetland which is stated as an impact elsewhere on the sheet (Rothrock testimony page 15, line 23 and page 16, lines 1-5). ***Response:*** The note mistakenly

says "no impact" because minor impacts will occur as reported in the table on Sheet G-001. Please see the revised wetland/stream impact drawings included as Exhibit BRB-5.

- The notes are contradictory on Sheet C23/Wetland BBB/State-regulated Wetland HA-4. The Applicant states there are no wetland impacts then separately lists clearing of forested wetlands, which is a wetland impact (Rothrock testimony page 16, lines 6-9). ***Response:*** This is simply a matter of different terminology. Sheet C23 clearly indicates that forest clearing will occur within this wetland, and in the context of reporting no impacts there is an associated note that states, "Crossing Method: Span, approach from either side". This is also clearly reported on the impact table on Sheet G-001. The Applicant is more than happy to work with NYSDEC personnel to make sure their desired terminology is used; however, different terminology will not change the quantification of impacts to this wetland as already reported.
- It was not intended for the portion of Wetland YYY east of Route 60 to be included in State jurisdiction on Sheet SW25/Wetland YYY/State-regulated Wetland CS-9 (Rothrock testimony page 16, lines 10-14). ***Response:*** Comment noted. Please see the revised wetland/stream impact drawings included as Exhibit BRB-5.

- An adjustment to the delineation of wetland 6H (state-regulated wetland HA-3) was requested during the March 30, 2017 site visit. Sheets SE10 and SE11 have not been updated with those changes. ***Response:*** please see the revised wetland/stream impact drawings included as Exhibit BRB-5. Please also see my testimony above, which indicates that because of the Applicant's commitment to providing the detailed impact drawing set on March 31, 2017 it was not possible to incorporate changes made in the field on March 30, 2017.

Q: Page 16 of Ms. Rothrock's testimony indicates that the Applicant has not demonstrated that unavoidable losses or impacts on the functions or benefits of the wetland have been minimized. Do you have any comments on this portion of the testimony?

A: Yes. On page 17 of her testimony there are a number of bulleted points that provide more detailed comment on this topic. Each of these points are summarized and individually addressed below.

- Restoration of all temporary impacts needs to be proposed and clearly explained, including re-planting of trees where forest conversion will occur in areas that do not need to be maintained in a non-forested conditions as part of a right-of-way (Rothrock testimony page 17, lines 1-3). ***Response:*** Restoration of temporary impacts has already been

addressed in the Application. Specifically, when discussing impacts to forest, Exhibit 22(b) states, "…temporary impacts are those where forest would be allowed to regrow following construction (e.g. along the periphery of access roads and turbine sites). Approximately 78.5 acres of forest will be disturbed in this manner, and allowed to regrow following construction. In these areas, the Applicant will only remove stumps where necessary to install underground components, will not use herbicides to prevent sprouting, and will not remove trees as part of routine vegetation management during Facility operation. Ecological succession will restore the forested condition of these areas over time." As indicated in this language from Exhibit 22, the Applicant has stated herbicide will not be used in those areas where forest will be allowed to regrow following construction. This statement is important with respect to restoring a forested community because the use of herbicides impedes forest regrowth. Therefore, a commitment to not use herbicides will in fact promote the regrowth of a forested community, and as such the Applicant should not be subject to a requirement to "re-planting of trees where forest conversion will occur in areas that do not need to be maintained in a non-forested conditions as part of a right-of-way" as suggested in Ms.

Rothrock's testimony. Restoration and regeneration can be evaluated and documented during post-construction monitoring efforts.

- The document entitled 2017-01-31 Cassadaga_IR Attachment Response FINAL.xlsx discusses the avoidance and minimization efforts to that point. However, the plan sheets show further avoidance and minimization as of March 31, 2017. ***Response:*** This comment is confusing. The January 31, 2017 spreadsheet referenced in this comment was attached to the Applicant's response to IR DPS-1, and as clearly stated in this IR response, "As indicated in the table, there are a number of locations where the Applicant continues to investigate the possibility of making layout adjustments to further minimize or avoid impacts. As such, the Applicant anticipates identifying any such adjustments by March 31, 2017 along with provided an updated drawing set specific to wetland/stream impacts…" In addition, as requested in IR DPS-46, the Applicant updated the January 31, 2017 spreadsheet. Therefore, it is unclear why this comment is referencing outdated material that was updated through subsequent interrogatory requests.
- The table provided by the Applicant per the Department's request, entitled 2017-04-03_Cassadaga DEC Wetland-Stream Impact Summary Tables.docx, appears to state… (Rothrock testimony page 17, lines 7-12).

Response: As indicated in my testimony above, this table was not prepared by the Applicant to support the record. Significant detail associated with wetland/stream impacts are set forth in the Application (i.e., Tables 22-6 and 23-3), in the March 31, 2017 wetland/stream impact drawings set (i.e., "Wetland and Stream Impacts" table on Sheet G-001), and as further refined in the updated wetland/stream impact drawings included as Exhibit BRB-5.

Q: Page 17 of Ms. Rothrock's testimony indicates further avoidance and minimization should be explored. Do you have any comments on this portion of the testimony?

A: Yes. Starting on page 17 and continuing through page 20 of her testimony, avoidance/minimization in specific locations is discussed. Each of these points are summarized and individually addressed below.

- Sheet NW1/Wetland B/State-regulated Wetland Unmapped 1: the Applicant should consider moving turbine T7 to the west to avoid regulated adjacent area impacts (Rothrock testimony page 17, lines 16-18). ***Response:*** Per discussions with the Applicant, this turbine cannot move further due to landowner restrictions. Please note that the access road between T7 and T8 has already been adjusted to minimize/eliminate previously proposed impacts, which required landowner negotiations.

Please also note that based on reconnaissance-level investigations it was determined that wetlands also exist to the west-southwest (as depicted as an approximate wetland on Figure 22-2 of the Application); however, the exact boundary has not been determined because this is outside the study corridor.

- Sheet NW2/Wetland A and B/State-regulated wetland Unmapped 1: consider moving T11to the northeast to further minimize impacts to the regulated adjacent area (Rothrock testimony page 17, lines 19-22 and page 18, lines 1-2). ***Response:*** According to the Applicant, this turbine cannot move any further in this direction due to a 1,500-foot setback from a non-participating structure.
- Sheet NE1/Wetland 6I and ZZ/State-regulated Wetland Unmapped 2: while impacts to Wetland ZZ appear to be avoided, impacts to associated adjacent area could be minimized further by moving T47 to the north/northeast (Rothrock testimony page 18, lines 3-6). ***Response:*** In addition to avoiding impacts to Wetland ZZ, T47 has also been sited to avoid impacts to an archaeological resource to the northeast (please see Sheet NE1 of Exhibit BRB-5). Therefore, further adjustment of this turbine location cannot be accommodated.

- Sheet NE2/Wetland 6I/State-regulated Wetland Unmapped 2: It is not clear if the Applicant intends to cross the wetland at the narrowest point because the wetland extends in both directions outside the corridor. It appears there may be a slightly different route that would further minimize impacts (Rothrock testimony page 18, lines 7-12). ***Response:*** As depicted on Sheet NE2, the access road clearly crosses the delineated portion of this wetland in the narrowest location. Based on our review of this location, including the site-specific delineations, we have no reason to believe that a significant difference in impact would result from a new route outside the study corridor. In addition, Ms. Rothrock's testimony indicates "…there may be a slightly different route that would further minimize impacts" (page 18, lines 11-12). Ms. Rothrock has not identified the alternate route and is only raising this issue for the first time during this testimony. Moreover, during the two site visits with Ms. Rothrock on December 9, 2016 and March 30, 2017 it was never suggested that a different route should be investigated in the field.
- Sheet C17/Wetland RRRR/State-regulated Wetland HA-7: Moving the proposed line to the southeast side of the road where there is less wetland and regulated adjacent area would further minimize impacts. This wetland does extend to the southeast side of the road even though the approximate

mapping does not show that, but there is less regulated area on that side of the road and, thus, less impact would result (Rothrock testimony page 18, lines 13-18). ***Response:*** The Applicant has sited the overhead collection line in this location as a result of state legislation passed specifically to allow a collection line on state-owned land in this corridor (the legislation is discussed on page 67, lines 10-14 of the Direct Testimony of Andrew Davis, which notes the legislation was signed into law on November 28, 2016, as Chapter 481 of the Laws of 2016). State-owned land does not extend to the southeast on the other side of Boutwell Hill Road in this particular location, and as such this would require executing an agreement with a private landowner. In fact, there are actually two parcels in this particular location on the other side of Boutwell Hill Road, and as such this would require the Applicant to enter into negotiations and execute agreements with two landowners, and no such conversations have been initiated given the legislation passed by the State of New York. With respect to the portion of the comment that indicates the "…wetland does extend to the southeast side of the road even though the approximate mapping does not show that…" it is not clear what "approximate mapping" is being referenced. However, Figure 22-2 of the Application, which was prepared in accordance with the regulations set forth at

1001.22(i) and Stipulation 22(i), does in fact depict approximate wetlands on the southeast side of Boutwell Hill Road.

- Sheet C23/Wetland BBB/State-regulated Wetland HA-4: moving the proposed line to the west where the wetland is narrow may reduce impacts (Rothrock testimony page 18, lines 19-21). ***Response:*** This suggestion has been incorporated into the Facility layout, please see the updated wetland/stream impact drawings included as Exhibit BRB-5.
- Sheet SW6/Wetland EEEE/State-regulated Wetland Unmapped 3: the location of the pole is not shown but it is stated that there will be one placed in the wetland. The Applicant should consider placing the pole in the associated adjacent area rather than the wetland proper in order to reduce impacts (Rothrock testimony page 18, line 22 and page 19, lines 1-4). ***Response:*** This suggestion has been incorporated into the Facility layout, please see the updated wetland/stream impact drawings included as Exhibit BRB-5.
- Sheet SW6/Wetland EEEE/State-regulated Wetland Unmapped 3: moving the line northward may further minimize impacts (Rothrock testimony page 18, line 22 and page 19, line 5). ***Response:*** This suggestion has been incorporated into the Facility layout, please see the updated wetland/stream impact drawings included as Exhibit BRB-5.

- Sheet SW7/Wetland EEEE/State-regulated Wetland Unmapped 3: moving the line northward may further reduce impacts (Rothrock testimony page 19, lines 6-7). ***Response:*** This suggestion has been incorporated into the Facility layout, please see the updated wetland/stream impact drawings included as Exhibit BRB-5.
- Sheet SW27/Wetland WWW/State-regulated Wetland CS-8: there is minimal regulated adjacent area that will remain between the substation and the wetland. The location of the substation should be adjusted with the agricultural field to increase the undisturbed area that will remain between the substation and the wetland. This could be achieved by moving the substation east and changing the orientation 90 degrees. I also mentioned the need to minimize impacts specifically in this area to preserve as much regulated adjacent area as possible during my site visit with the Applicant on December 9, 2016 (Rothrock testimony page 19, lines 8-18). ***Response:*** Based on conversations with the Applicant I understand that the substation orientation and size is a function of the anticipated design requirements by National Grid. Final design requirements will not be known until after the interconnection Facilities study is complete. To be conservative, the Applicant assumed that all the available space in the field outside the delineated wetland boundary would be needed. In

addition, there is a well in the field just east of the existing substation that must be avoided. The need to avoid this well was discussed during the site visit with NYSDEC on December 9, 2016.

- Sheets SE10 and SE11/Wetland 6H/State-regulated Wetland HA-3: it is noted that the access road will follow the alignment of an existing access road, the already cleared area is rather wide and any opportunity to adjust the new alignment as far away from the wetland as possible within that cleared area should be utilized (Rothrock testimony page 19, lines 19-22 and page 20, lines 1-2). ***Response:*** This suggestion has been incorporated into the Facility layout, please see the updated wetland/stream impact drawings included as Exhibit BRB-5.
- Additional opportunities for minimizing impacts by boring/horizontal directional drilling under State-regulated wetlands and adjacent areas should be evaluated (Rothrock testimony page 20, lines 3-5). ***Response:*** Given the lack of specificity in this comment, a location-specific response is not possible. However, given the existing case record I believe this topic has already been addressed. Specifically, Exhibit 22(m) of the Application states, "…the Applicant will install buried interconnect via directional drilling, where practicable, to eliminate impacts to forested wetlands in cases where buried collection line is the only Facility

component. Implementation of these measures will reduce wetland impacts from the acreages presented in this Application. Temporary and permanent impacts to wetlands for each wetland proposing to be impacted are presented below in Table 22-6. Impacts were calculated based on disturbance assumptions presented in Table 22-1 of 1001.22(b)." This language in the Application is immediately followed by Table 22-6 (Wetland Impacts), which specifically identifies those wetlands proposed to be crossed through use of a Horizontal Directional Drill. With respect to using a Horizontal Directional Drill under adjacent areas, this would significantly increase the cost of construction in these locations, as outlined in Seth Wilmore's testimony.. Please also note the Applicant has agreed to extensive post-construction monitoring of temporary impacts to state-regulated adjacent areas, as outlined in this testimony, which should ensure the long-term protection of the function of the adjacent areas and associated wetland benefits.

- 2017-01-31_Cassadaga IR Attachment_Response_FINAL.xlsx says "Compensatory mitigation is not necessary due to impact avoidance" in situations where wetland impacts are avoided but the associated adjacent area is still impacted. This is not correct. Mitigation is required for impacts associated with adjacent areas also, not just for wetlands

(Rothrock testimony page 20, lines 6-9). ***Response:*** Mitigation for impacts to adjacent areas will first be accomplished through proper restoration to allow for natural revegetation, which is consistent with commitments made by the Applicant as set forth in the Application. For instance, Exhibit 22(g) states, "Cleared forest land along Facility access roads and at the periphery of turbine sites will be allowed to grow back and reestablish forest habitat in areas where it was cleared, which over the long term will provide shrubland or forested habitat for species that require these types." Additionally, the Applicant has committed to proper monitoring during construction and restoration activities to assure compliance with permit conditions. Specifically, when discussing the "Construction and Restoration Inspect" portion of the Environmental Compliance and Monitoring Program Exhibit 22(n) states, "The monitoring program will include daily inspection of construction work sites by the environmental monitor. The environmental monitor is the primary individual(s) responsible for overseeing and documenting compliance with environmental permit conditions on the Facility. The environmental monitor will conduct inspections of all areas requiring environmental compliance during construction activities, with an emphasis on those activities that are occurring within jurisdictional/sensitive areas,

including cultural resource areas, wetland and stream crossings, and active agricultural lands. When on-site, the environmental monitor's schedule will include participation in a daily Plan of Day (POD) meeting with the contractors to obtain schedule updates, identify in-field monitoring priorities, and address any observed or anticipated compliance issues. During the course of each visit, multiple operations are likely to be occurring throughout the Facility Site, and will need to be monitored by the environmental monitor. Activities with the potential to impact jurisdictional/sensitive resources, or with greater potential for environmental impact, will receive priority attention from the environmental monitor. For instance, installation of an access road across a protected stream would likely receive greater attention than installation of buried electrical collection lines across a successional old field. However, some level of field inspection by the environmental monitor will occur at all earth-disturbing work sites during each site visit. The monitor will keep a log of daily construction activities, and will issue periodic/regular (typically weekly) reporting and compliance audits. Additionally, when construction is nearing completion in certain portions of the Facility area, the monitor will work with the contractors to create a punch list of areas in need of restoration in accordance with all issued

permits." Please also refer to the Applicant's response to DEC IR-3, which includes an updated Conceptual Mitigation Plan (Exhibit BRB-6). As indicated on Figure 4 (Preliminary Resource Development Map) of this plan, the Applicant has identified multiple opportunities for habitat conservation and enhancement (i.e., "Potential Bat Habitat Areas" and "NYSDEC Wetland Buffers and Upland Planting"), which can further serve as mitigation for impacts to adjacent areas to the extent needed.

Q: Page 17 of Ms. Rothrock's testimony also states that further avoidance and minimization should be explored "for all impacts and the record of this proceeding supplemented accordingly identifying which methods were reviewed and, if applicable, why such method was not selected." Do you have any comments on this portion of the testimony?

A: Yes. Please see the "avoidance and minimization" spreadsheet, which was created by NYSDPS personnel and originally completed by the Applicant in response to IR DPS-1, and subsequently updated by the Applicant in response to IR DPS-46 (see Exhibit BRB-4 for a copy of IR DPS-46). This spreadsheet addresses avoidance and minimization for all impacts, as requested in this portion of Ms. Rothrock's testimony (i.e., the record already contains this information).

Q: Page 20 of Ms. Rothrock's testimony references a Conceptual Mitigation Plan prepared dated March 31, 2017. Is this the most recent version of the mitigation plan?

A: No. The direct testimony states, "At this point, the Applicant has submitted the document Cassadaga_SWMP_3_31_17 Conceptual Mitigation Plan that was prepared by RES (Resource Environmental Solutions, LLC)." (Rothrock testimony page 20, lines 12-14). This statement is incorrect. In response to IR DEC-3 the Applicant prepared an updated mitigation plan titled *Cassadaga Wind Project: Conceptual Stream and Wetland Mitigation Plan (Version 2)*, which was submitted to the parties (including the NYSDEC) on May 2, 2017 (please see Exhibit BRB-6). Ms. Rothrock's testimony on page 20 goes on to list a number of items that the original March 31, 2017 plan does not include. The Applicant believes that all of these items are addressed in the *Version 2* plan submitted on May 2, 2017. Please also note that the Corps has jurisdiction over all wetland and stream impacts, and it is the Applicant's intent to implement a single plan that will mitigate for impacts at both the state and federal level. Therefore, the Applicant suggests that a meeting with Corps and NYSDEC personnel is necessary to assure that suitable mitigation is proposed for both agencies. In addition, on page 21 of Ms. Rothrock's testimony there are a number of bulleted comments regarding the requirements of the mitigation plan, and these are exactly

the same as those bullet points in question #1 of IR DEC-3. Therefore, responses to all of these requirements have already been provided by the Applicant and are in the case record (see Exhibit BRB-6 for a copy of the Applicant's response to IR DEC-3 and associated attachments).

Q: Does Ms. Rothrock's testimony provide a consistent opinion regarding the adequacy of the conceptual mitigation plan?

A: No. Page 20 of her direct testimony states, "…the Conceptual Mitigation does not meet the requirements of 6 NYCRR § 663.5(g) or the Department's Guidelines on Compensatory Mitigation…" However, page 34 of her direct testimony provides the following proposed condition: "Prior to issuance of the certificate, the applicant must submit, at a minimum, a conceptual wetland mitigation plan to the NYSDEC Regional Supervisor of Natural Resources that describes the general objectives and approaches designed to offset all project impacts to wetland functions and benefits." The Applicant has submitted a conceptual mitigation plan that satisfies these requirements (see Exhibit BRB-6 for a copy of the Applicant's response to IR DEC-3 and associated attachments), and therefore, according to the condition proposed by Ms. Rothrock on page 34 of her direct testimony, enough information regarding mitigation has been provided to allow for issuance of a certificate.

Q: Beginning on page 21 of Ms. Rothrock's testimony, there is a list of additional issues that the Applicant must consider in developing the wetland mitigation plan. Can you respond to these issues?

A: Yes. This list of issues, which begins on page 21 and continues through page 23 of Ms. Rothrock's testimony, are all essentially the same as the remaining questions/bullet points (questions #2 through #5) in IR DEC-3. Therefore, responses to all of these requirements have already been provided by the Applicant (see Exhibit BRB-6 for a copy of the Applicant's response to IR DEC-3 and associated attachments).

Q: Did the NYSDPS provide testimony regarding wetlands and stream?

A: Yes. Jeremy Rosenthal provided testimony on wetlands and streams.

Q: Do you have any comment regarding Mr. Rosenthal's testimony?

A: Yes. Mr. Rosenthal discusses the need for NYSDPS to conduct site visits. With respect to wetlands Mr. Rosenthal states, "The Applicant's late submission of detailed wetland drawing sets precluded the ability to conduct field reviews to date." (Rosenthal testimony page 13, lines 1-3) With respect to streams Mr. Rosenthal states, "The timing of the receipt of detailed stream drawing sets precluded the ability to conduct field reviews to date." (Rosenthal testimony page 14, lines 20-21 and page 15, line 1) However, I do not believe that these statements accurately represent the facts. Specifically, NYSDPS staff were

invited to participate in the December 2016 field visit with NYSDEC but declined (Mr. Rosenthal actually emailed me on December 2, 2016 and stated, "Ben, I spoke to Seth and I am going to pass on this trip, but look forward to getting out to the site on another occasion. Thanks, Jeremy"). In fact the NYSDEC and Corps conducted two site visits each, which suggests NYSDPS could also have conducted a site visit if so desired. Subsequent emails with Mr. Rosenthal in April 2017 discuss at least one additional site visit pending with Corps personnel and the Applicant's commitment to invite Mr. Rosenthal, which the Applicant remains committed to.

Q: Does Mr. Rosenthal make any recommendations regarding the next steps for wetland impacts?

A: Yes. Mr. Rosenthal states, "Final construction plans regarding routing and methods of traversing wetlands should be submitted to DEC and DPS staff for a coordinated review and further collaborative refinement. Subsequently, the construction plans should be submitted to the Siting Board as a compliance filing prior to construction." (Rosenthal testimony page 13, lines 3-10)

Q: Do you agree with this recommendation?

A: Yes. This is consistent with the Applicant's stated position in various discussions/meetings with the state agencies over the past few years. In addition, please also see the "Updated Layout" section of my testimony below, which

discusses an updated wetland and stream impact drawing set. It should also be noted that the Applicant intends on including Corps personnel on future consultations given their jurisdiction under Section 404 of the Clean Water Act.

Q: Does Mr. Rosenthal make any recommendations regarding the next steps for mitigation?

A: Yes. Mr. Rosenthal states, "…the plan is still very preliminary and, as such, the proposed mitigation is inadequate. The Applicant should submit a detailed wetland mitigation plan to New York State DEC and DPS Staff for a coordinated review and further collaborative refinement. Subsequently, the wetland mitigation plan should be submitted to the Siting Board as a compliance filing prior to construction." (Rosenthal testimony page 14, lines 5-14)

Q: Do you agree with this recommendation?

A: Yes. While we do not agree that the plan is "very preliminary" (see Exhibit BRB-6), we do agree that further coordination is needed (with state and federal agencies of jurisdiction). Please note that Exhibit 22(n) of the Application addresses mitigation and states, "Mitigation in New York State is somewhat complicated by the fact that the USACE generally prefers to use an approved 'in-lieu-fee' program when available, whereas the NYSDEC Article 24 regulations do not allow use of such a program. In addition, it is anticipated that the majority of wetland impacts will occur in wetlands regulated by the USACE only…

Therefore, the Applicant will ultimately propose compensatory mitigation that will be determined in consultation with NYSDEC and USACE." With respect to the mitigation plan submitted to the Parties by the Applicant on May 2, 2017 (see Exhibit BRB-6), the Applicant intends to work with the agencies as suggested by Mr. Rosenthal.

Q: Does Mr. Rosenthal make any recommendations regarding the next steps for stream impacts?

A: Yes. Mr. Rosenthal states, "The Applicant should submit final construction plans regarding routing and methods of traversing streams to DEC and DPS staff for a coordinated review and further collaborative refinement. Subsequently, construction plans should be submitted to the Siting Board as a compliance filing." (Rosenthal testimony page 15, lines 1-7)

Q: Do you agree with this recommendation?

A: Yes. This is consistent with the Applicant's stated position in various discussions/meetings with the state agencies over the past few years. In addition, please also see the "Updated Layout" section of my testimony below, which discusses an updated wetland and stream impact drawing set. It should also be noted that the Applicant intends on including Corps personnel on future consultations given their jurisdiction under Section 404 of the Clean Water Act.

Q: With respect to wetlands and streams, are there other aspects of NYSDPS testimony that you wish to address?

A: Yes. Testimony prepared by the Staff Policy Panel includes as Exhibit_(SPP-3) Staff's proposed Conditions for a Certificate of Environmental Compatibility and Public Need. I wish to address some of the Conditions related to wetlands and/or streams, which are summarized and addressed in the bullet points below. The Applicant is in agreement with any NYSDPS-proposed wetland/stream conditions not listed below.

- Proposed Condition 39 requires the Applicant to prepare final design drawings, site plans, and construction details that would include turbine locations adhering to specific setback requirements, including 100 feet from state-jurisdictional wetlands. ***Response:*** As depicted on the March 31, 2017 wetland and stream impact drawings and the updated wetland and stream impact drawings included in Exhibit BRB-5 (see the "Updated Layout" section of my testimony below for additional detail), there are multiple turbines located within 100 feet of the delineated boundary of state-jurisdictional wetlands. As described above in my testimony, Ms. Rothrock (NYSDEC) recommended moving some of these turbines to increase distance from the wetland; however, there are specific reasons why this cannot happen (e.g., proximity to an archaeological resource,

setback from non-participating residence). Therefore, the Applicant proposes to eliminate the requirement to setback turbines 100 feet from the delineated boundary of state-jurisdictional wetlands.

- Proposed Condition 64 requires the Applicant to create an In-stream and Wetland Construction Plan demonstrating how impacts to wetlands and streams will be avoided and minimized to the maximum extent practicable. The plan shall include a table that identifies all wetlands and streams within the Project area and provides the following for each resource: wetland delineation types and NYSDEC stream classifications, assessment of reasonable avoidance measures, identification and assessment of methods to minimize impacts, and references to the location of each resource where shown in the final design drawings, site plans, and construction details. ***Response:*** given the Applicant's response to IR DPS-1 (i.e., completion of a detailed wetlands/stream impact avoidance and minimization spreadsheet), the March 31, 2017 wetland/stream impact drawings and the updated impact drawings included in Exhibit BRB-5 (see the "Updated Layout" section of my testimony below for additional detail), and the Applicant's response to IR DPS-46 (i.e., update of the detailed wetland/stream impact avoidance and minimization spreadsheet), the Applicant believes this information substantially exists in the record.

- Proposed Condition 65 requires development of a Wetland Mitigation Plan and states, "The Plan shall be developed in coordination with NYSDEC and DPS Staff, and satisfy applicable federal and State regulations." ***Response:*** The Applicant suggests this language should be slightly adjusted, so as to assure all agencies with jurisdiction are in agreement with the plan, and read as follows: "The Plan shall be developed in coordination with NYSDEC and DPS Staff, *and Corps personnel,* and satisfy applicable federal and State regulations."
- Proposed Condition 92 discusses work period restrictions in relation to streams protected under Article 15 of the ECL and states, "Construction in streams protected under Environmental Conservation Law (ECL) Article 15 shall comply with work period restrictions that are established to protect fish spawning and migration." ***Response:*** The Applicant suggests a slight modification to this language as follows: "Construction in streams protected under Environmental Conservation Law (ECL) Article 15 shall comply with work period restrictions *established in consultation with NYSDEC* that are ~~established to~~ protect*ive of* fish spawning and migration."
- Proposed Condition 93 further discusses work period restrictions in relation to streams protected under Article 15 of the ECL and states,

"Dates for the seasonal work period restrictions…shall be included in the plan and noted on final construction detail drawings." ***Response:*** It is not clear what "plan" is being referenced; therefore, the Applicant suggests revising this language as follows: "Dates for the seasonal work period restrictions…shall be ~~included in the plan and~~ noted on final construction detail drawings."

- Proposed Condition 97 discusses marking the boundaries of delineated wetlands following stake-out of the limits of disturbance (LOD) by the BOP contractor, and specifically states, "…the boundaries of all delineated wetlands within 100 feet of the LOD shall be clearly defined by staking, fencing or flagging boundaries…" ***Response:*** The Applicant suggests this language should be slightly adjusted, so as to be more protective and clearer, and read as follows: "…the boundaries of all delineated wetlands *and streams* within ~~100 feet of~~ the LOD, *and extending 100 feet beyond the LOD assuming such an extension remains on the respective parcel,* shall be clearly defined by staking, fencing or flagging boundaries…"

Q: Does Christopher Legard's (NYSDEC) Direct Testimony include proposed Certificate conditions?

A: Yes. The Direct Testimony of Christopher Legard provides proposed Certificate Conditions for state-regulated streams (assumed to be those that are classified as C(T) and above), which are summarized and addressed in the bullet points below. The Applicant is in agreement with any NYSDEC-proposed stream conditions not listed below.

- Temporary Stream Crossings for Equipment – this proposed condition discusses the installation of pipelines through streams and the use of bridges to cross streams (Legard testimony page 13, lines 6-23 and page 14, lines 1-2). ***Response:*** The Applicant is not installing any pipelines and has not proposed the use of bridges to cross any streams. Therefore, this condition is not applicable to the proposed Facility and as such the Applicant believes this condition should be deleted.
- Permanent Stream Crossings – this proposed condition discusses the methods by which permanent road crossings through streams shall be installed, with multiple requirements including culvert pipes to be designed to "…safely pass the 2% annual chance storm event" and to have a width of "…a minimum of 1.25 times (1.25X) width of the mean high water channel…" (Legard testimony page 15, lines 2-12). ***Response:*** The Applicant notes that the NYSDPS has a similar, but technically different requirement. Specifically, NYSDPS proposed condition 96 states,

"Culvert openings shall be at least 1.25 times the active channel width of the stream. All culverts shall be designed to accommodate a 100-year flow event…" The Applicant requests that the Certificate contain a single condition related to culvert design goals, while still allowing flexibility on a case-by-case basis, and suggests the following: "*All culverts placed in regulated streams shall be designed on a case-by-case basis, and culvert opening shall, at a minimum, be at least 1.25 the active channel width and accommodate the 2% annual chance storm event).*"

- Water Quality and Habitat Impacts to Streams from Buried Interconnects – this proposed condition requires the use of HDD for crossings of buried cables under all streams (Legard testimony page 16, lines 14-23, page 17, lines 1-22, and page 18, lines 1-17). ***Response:*** this proposed condition appears to conflict, in part, with the "Trench Across Stream" proposed condition, which allows for trenching across streams if trenchless methods are determined to be not constructible or not feasible (Legard testimony page 11, lines 3-17). Therefore, the Applicant suggests this requirement should apply to state-protected streams only (i.e., those with a classification of AA, A, or B, or with a classification of C with a standard of (T) or (TS)). Please also note that any trenching through a stream with a classification of C or D would presumably still be subject to other

proposed and applicable conditions, such as "No Turbidity from Dewatering" (Legard testimony page 11, lines 18-23 and page 12, lines 1-4), "Turbid Discharges" (Legard testimony page 12, lines 8-19), "Water Clarity" (Legard testimony page 13, lines 3-5), and "In-Stream Work in the Dry" (Legard testimony page 14, lines 9-13).

- Native Woody Plants – this proposed condition discusses planting of native woody plants at stream crossings (Legard testimony page 20, lines 9-13). ***Response:*** the Applicant suggests a minor addition to this condition so as to read as follows: "To reduce thermal impacts to exposed streams, native woody plants such as shrub willows, dogwoods, appropriate native trees, or other native riparian species will be planted at all stream crossings, *which are void of any such vegetation and is to be restored following a temporary impact,* to shade the project area…"
- Provide Sufficient Cover for Buried Interconnects in Streambed – this proposed condition requires the preparation of an "Exposure of Pipe by Stream Report" by a New York State-licensed engineer that includes a Vertical Adjustment Potential (VAP) analysis and a Lateral Adjustment Potential (LAP) analysis for each stream crossing not located in bedrock (Legard testimony page 21, lines 12-23). ***Response:*** This is a very unusual condition (one that EDR has never seen before in relation to any wind

power project), and appears to have perhaps been copied from a permit issue for a pipeline facility. Regardless of its origin, the Applicant is not proposing to install any pipelines or any other conduits of potential pollutants/hazardous material. In addition, the Applicant has never conducted a VAP or LAP for any project. Therefore, this condition is not applicable to the proposed Facility and as such the Applicant believes this condition should be deleted.

Q: Does Ms. Rothrock's (NYSDEC) Direct Testimony include any additional proposed Certificate conditions?

A: Yes. The Direct Testimony of Ms. Rothrock provides proposed Certificate Conditions specific to state-regulated freshwater wetlands, which are summarized and addressed in the bullet points below. The Applicant is in agreement with any NYSDEC-proposed wetland conditions not listed below.

- Preparation of a Spill Prevention, Control, and Countermeasures (SPCC) Plan (Rothrock testimony page 25, lines 3-12). ***Response:*** the Applicant has committed to preparing a Final SPCC Plan, but believes the timing of this should be related to the start of construction, which is consistent with a NYSDPS proposed condition related to a Final SPCC. Therefore, the Applicant suggests this condition should state, "*At least 30 days prior to*

the commencement of construction, the certificate holder shall submit an approvable SPCC plan…"

- Identifying the boundaries of non-work areas through use of legible signs, exclusionary fencing, and erosion controls (Rothrock testimony page 26, lines 5-13). ***Response:*** The first sentence of this proposed condition states, "Legible 'protected area' signs, exclusionary fencing, and erosion controls…shall be installed along the approved work area to protect and clearly identify the boundaries of non-work areas…" Please note that it is typical practice to utilize colored flagging to mark the limits of clearing, sensitive resource areas, exclusion areas, etc. It is also typical that the flagging/marking protocols are set forth in the Environmental Compliance Manual. Therefore, the Applicant suggests modifying the first sentence of this proposed condition to read as follows: "Legible 'protected area' signs, exclusionary fencing, *colored flagging,* and*/or* erosion controls…shall be installed along the approved work area to protect and clearly identify the boundaries of non-work areas…" This suggested modification is consistent with a similar condition proposed by NYSDPS (see NYSDPS proposed condition 97).
- To the extent possible, work which must be in a wetland…should not occur during the peak amphibian breeding season (April 1 to June 15)…

(Rothrock testimony page 30, lines 4-8). ***Response:*** This is a very unusual condition (one that EDR has not previously seen in relation to an Article 24 permit). In addition, there is no documentation of a federal or state listed threatened or endangered amphibian species within the Facility Site, and therefore there is no reason to believe construction activities occurring from April 1 to June 15 would result in significant adverse impacts to amphibians. In addition, as described below in the "Updated Layout" section of my testimony, this Facility will result in relatively minor wetland impacts compared to the overall wetland resource (i.e., over 120 acres of wetland were delineated, whereas less than 0.8 acre of wetland will be permanently impacted and less than 2.5 acres of wetland will be temporarily impacted). Lastly, according to the Applicant, this timeframe represents a critically important construction period over the course of the construction season, which will likely begin close to April 1 for access road construction followed by turbine pad and collection line installation. According to the Applicant, road building must begin in the early spring to allow for appropriate construction sequencing, culminating in turbine erection in mid-to late summer. Therefore, the Applicant is not agreeable to this condition.

- Areas of temporary disturbance in regulated wetlands and 100-foot adjacent areas…certificate holder must submit an approvable "Woody Species Replanting Plan"… (Rothrock testimony page 30, lines 16-23).

Response: As indicated in my testimony above, Exhibit 22(b) states, "…temporary impacts are those where forest would be allowed to regrow following construction (e.g. along the periphery of access roads and turbine sites)… In these areas, the Applicant will only remove stumps where necessary to install underground components, will not use herbicides to prevent sprouting, and will not remove trees as part of routine vegetation management during Facility operation. Ecological succession will restore the forested condition of these areas over time." A commitment to not use herbicides will in fact promote the regrowth of a forested community. In those areas where the majority of the stumps will be removed, topsoil will also be segregated and then spread over a given area during restoration. This topsoil will contain an existing seedbank derived from the disturbed area, which will also allow for regeneration of the forested/woody community. In addition, restoration efforts will be evaluated and documented during post-construction monitoring efforts. Therefore, the Applicant should not be required to prepare a "woody species replanting plan" as suggested in Ms. Rothrock's testimony.

- A proposed condition associated with restoration of wetlands and regulated adjacent areas disturbed due to the installation of buried collection (Rothrock testimony page 31, lines 3-23 and page 32 lines 1-11). ***Response:*** This proposed condition states, "All wetland and NYSDEC adjacent areas disturbed during the installation of buried interconnects shall be restored in accordance with the following requirements…Replanted areas shall be monitored for 5 years and an 85% cover of native species has been reestablished over all portions of the replanted area." However, this does not take into account the existing cover of native species. The Applicant should not be responsible for native species coverage in excess of what exists prior to construction. Rather, this should be correlated to the results of the invasive species baseline survey. This proposed condition also states, "At the end of the first year of monitoring, the certificate holder shall replace lost wetland and/or wetland adjacent area plantings if the survival rate of the initial plantings is less than 80%." If one measure of restoration success is 85% vegetative coverage at the end of 5 years, it is unclear why initial plantings must achieve a survival rate of 80% by the end of the first year. The Applicant believes that success criteria should be related to absolute cover, which describes the percentage of total vegetation coverage of the ground

surface by the stems and foliage of any woody plant species, based on visual assessment within sample plots. Therefore, the Applicant proposes the following condition: Monitoring for woody vegetation establishment will take place during the growing season over a 5-year period. Random sample points will be established within temporarily disturbed wetlands and adjacent areas. At each sample point, absolute cover for each plant species present within a one by one meter plot will be visually estimated and recorded. Cover estimates for woody species will then be totaled for each sample plot. Cover data collected at these sample points will be averaged and extrapolated to the entire area of temporary disturbance within a given wetland or adjacent area. Vegetation reestablishment will be considered successful once 85% absolute cover of woody species is achieved.

- Starting on page 32 of Ms. Rothrock's testimony there is a proposed condition associated with installation of overhead transmission lines and interconnects in wetlands and state-regulated adjacent areas. This proposed condition includes a number of sub-bullets, some of which are summarized and addressed as follows:
    - Swamp mats, tracked equipment, or low-ground-pressure vehicles must be utilized in state-regulated adjacent areas for installation of

utility poles and overhead lines (Rothrock testimony page 32, lines 16-18). ***Response:*** As indicated in my testimony above, the Applicant proposes that temporarily disturbed wetlands and adjacent areas will be monitored for successful regeneration through the establishment of sample plots and documentation of absolute cover. The Applicant is therefore subject to achieving such success criteria regardless of the construction equipment used during installation, and as such there should not be a restriction on the use of construction equipment.

- Swamp mats must be removed in reverse order of placement as soon as practicable, but no later than four months following installation of the overhead line (Rothrock testimony page 33, lines 1-3). ***Response:*** This is unnecessarily restrictive, and as such the Applicant suggests the following modification (which remains protective of the resource): "*Swamp mat removal must be conducted from adjacent mats (i.e., removal equipment always stationed on a mat)* as soon as practicable…"
- Disturbed areas will be monitored for 5 years following the installation of overhead lines or interconnects to assure an 85% cover of native species. If after one complete growing season an

85% cover of native species is not achieved, the certificate holder must evaluate the reasons for these results and submit an approvable "Wetland Planting Remedial Plan" for NYSDEC approval (Rothrock testimony page 33, lines 4-8). ***Response:*** This requirement does not take into account the existing cover of native species. The Applicant should not be responsible for native species coverage in excess of what exists prior to construction. Rather, this should be correlated to the results of the invasive species baseline survey.

- Prior to issuance of the certificate, the applicant must submit, at a minimum, a conceptual wetland mitigation plan to the NYSDEC Regional Supervisor of Natural Resources that describes the general objectives and approaches designed to offset all project impacts to wetland functions and benefits (Rothrock testimony page 34, lines 6-10). ***Response:*** as indicated previously in my testimony, the Applicant has submitted a revised version of a Conceptual Mitigation Plan, along with additional information regarding analysis of suitable mitigation in response to an Interrogatory Request from the NYSDEC (see Exhibit BRB-6 of my testimony for a copy of the Applicant's response to IR DEC-3). Therefore, this condition has already been satisfied. In addition, because no objection (or response)

from any party has been received, the Applicant assumes the conceptual mitigation plan is acceptable.

- Within 60 days of issuance of certificate, the certificate holder must submit an approvable "Wetland Mitigation Plan" to the NYSDEC Regional Supervisor of Natural Resources (Rothrock testimony page 34, lines 11-21 and page 35, lines 1-13). ***Response:*** As indicated above, the Applicant has submitted a conceptual mitigation plan to the parties (see Exhibit BRB-6). The Applicant agrees to the submittal of a final Wetland Mitigation Plan. As there have been no objections to the conceptual plan the Applicant intends on proceeding to the development of a Wetland Mitigation Plan.
- Certificate holder must submit annual monitoring reports for a minimum of five years post-construction on the success of the wetland and adjacent area restoration, and the success of the mitigation site enhancements. These reports shall describe… "coverage of native species by section, survival rate of plantings, percent of invasive species, native species composition (%), invasive species present…" (Rothrock testimony page 35, lines 14-23 and page 36, lines 1-5). ***Response:*** As indicated previously in my testimony, the Applicant does not believe that "plantings" are necessary to achieve regeneration of forest in disturbed

areas. As also previously indicated, the Applicant suggests that a meeting with Corps and NYSDEC personnel is necessary to assure that suitable mitigation is proposed for both agencies. It is fully expected that the details of mitigation performance standards, along with monitoring and reporting, will be developed in consultation with the agencies of jurisdiction. Therefore, the Applicant suggests this certificate condition should state, "*The Final Wetland Mitigation Plan will address monitoring and reporting criteria for temporarily disturbed wetlands and adjacent areas and the wetland mitigation area, and will be developed in consultation with the NYSDEC, NYSDPS and the Corps.*"

Invasive Species

Q: Regarding invasive species, do you have any comment regarding the Direct Testimony of Anne Rothrock?

A: Yes. Beginning on page 23 of her testimony there are a number of bulleted points related to her review of the Facility's Invasive Species Control Plan (ISCP). Each of these points are summarized and individually addressed below.

- The baseline survey must be done at the proper time of year (as applicable for each invasive species) to have the best chance of detecting those species (Rothrock testimony page 23, lines 17-18). ***Response:*** The Applicant agrees, and in fact details associated with this are currently in

the record. Specifically, the response to IR DPS-2 states, "The Applicant will consult with DPS and/or DEC staff to determine the optimal time to conduct the baseline survey during the 2017 growing season." Subsequently, on March 20, 2017 the Applicant provided a Proposed Invasive Species Survey Methodology to all parties (including the NYSDEC). The proposed survey methodology was prepared by EDR botanists and states, "…Interrogatory Request (IR) No. DPS-2 was specifically related to invasive species. In response to this IR the Applicant indicated that a baseline invasive species survey will be completed during the growing season of 2017, and consultation with DPS and/or DEC staff would take place to determine the optimal time to conduct the baseline survey during the 2017 growing season. Therefore, the primary purpose of this memorandum is to establish consensus with DPS and DEC staff on the timing and the scope/methodology of the baseline invasive species survey… The invasive plant survey will be conducted between late May and late June of 2017 by EDR staff ecologists. This timeframe will coincide with vegetative and inflorescence phenological stages to allow for accurate identification of target species. Survey methodology will consist of walking the Survey Area and visually estimating cover of NYSDEC-listed prohibited and regulated invasive

plant species. Invasive plant occurrences will be documented with field notes and global positioning system (GPS) point data, and assigned a density code for absolute cover…" (see Exhibit BRB-7). The Applicant has not received any response to the proposed survey methodology provided on March 20, 2017. Therefore, the survey is being conducted in accordance with the methodology proposed. Please see Exhibit BRB-7 for a copy of the Applicant's response to IR DPS-2 and the subsequently provided Proposed Invasive Species Survey Methodology.

- Once baseline surveys are conducted, further avoidance and minimization must be considered, where possible, to adjust the alignment around significant invasive species infestations, thus reducing the chance of their spread due to the project (Rothrock testimony page 23, lines 19-21). ***Response:*** The Proposed Invasive Species Survey Methodology document indicates that the results of the invasive species survey will include "A complete list of all invasive plant species observed within the Survey Area, Site specific observations for each invasive plant species detected during the survey, Map of density of absolute cover of invasive plant species within Survey Area, and Map(s) of locations of populations of invasive plant species with discrete boundaries within the Survey Area. Conclusions and recommendations will be made based on the baseline

survey results. In addition, appendices containing information related to treatment and removal of specific invasive plant species, BMPs to restrict the spread of invasive plants, and a photo log of representative photos of each invasive plant species observed within the Survey Area will be included with the baseline report." An evaluation of the best management practices (BMPs) to reduce the spread of invasive species should only be done following the results of the baseline survey. The Applicant is willing to commit to BMPs to control the spread of invasive species, and in our experience component relocation is not necessary to accomplish this goal. Depending on the severity of the invasive species identified during the baseline survey, BMPs could range from construction equipment sanitation to invasive species removal and off-site disposal.

- The method to ensure that imported fill and fill leaving the site will be free of invasive species (Rothrock testimony page 24, lines 1-2). ***Response:*** The Applicant will consult with the BOP contractor, once selected, to determine such methods.
- Detailed cleaning procedures for removing invasive species propagules from equipment should be provided (Rothrock testimony page 24, lines 3-4). ***Response:*** The Applicant will consult with the BOP contractor, once selected, to determine such methods.

- Restoration of temporarily disturbed areas must include mulching with straw (Rothrock testimony page 24, line 5). ***Response:*** The Applicant agrees, and in fact has stated this in the record. Specifically, Exhibit 22(c) of the Application states, "Following construction activities, temporarily disturbed areas will be seeded (and stabilized with mulch and/or straw if necessary) to reestablish vegetative cover in these areas. Other than in active agricultural fields, native species will be allowed to revegetate these areas."
- Herbicide treatment in regulated wetlands is a regulated activity and authorization to do so must be obtained from NYSDEC (Rothrock testimony page 24, lines 6-7). ***Response:*** The Applicant agrees, and in fact has addressed the use of herbicides in the record. Specifically, the ISCP included as Appendix FF to the Application states, "Specific disposal and treatment methods for removed plant material will be determined (through consultation with the Environmental Monitor) based on the density and quantity of invasive species encountered, and may include herbicide treatment, placement in an interim designated secure container, transport in a sealed container and proper offsite disposal in a designated secure container, or leaving infested vegetative materials (including infested fill) in the area that is already infested, provided that no filling of

wetlands or adjacent areas will occur as a result. Any herbicide spot treatments would be applied by a Certified Commercial Pesticide Applicator, Commercial Pesticide Technician, or a Private Pesticide Applicator (i.e., individuals that meet the requirements set forth in 6 NYCRR Part 325, Application of Pesticides), in accordance with NYSDEC approved herbicide and treatment measures."

- The Applicant must conduct post-construction monitoring of invasive species for a minimum of five years (as opposed to two years), with extensions, as applicable (Rothrock testimony page 24, lines 8-9). ***Response:*** The Applicant does not understand why the minimum monitoring timeframe must be five years, especially if monitoring at the end of years one and two indicates there has been no spread of invasive species. In fact, the Applicant's position on this is supported by the NYSDPS. Specifically, testimony prepared by the Staff Policy Panel includes as Exhibit_(SPP-3) Staff's proposed Conditions for a Certificate of Environmental Compatibility and Public Need. Proposed Condition 62 requires preparation of a Final ISCP and conducting a two-year post-construction monitoring program.
- The Applicant states their intent to discuss with NYSDEC a "reasonable definition" of no net increase of invasive species, however, the Applicant

has not proposed any such definition (Rothrock testimony page 24, lines 10-12). ***Response:*** Following the results of the baseline survey, which are described in detail in Exhibit BRB-7, a definition will be proposed.

Q: Does the Direct Testimony of Anne Rothrock provide any proposed certificate conditions associated with invasive species?

A: Yes. There are two proposed conditions associated with invasive species in her testimony.

Q: Do you wish to comment on these proposed conditions?

A: Yes. Page 37, lines 6-13 of her testimony proposes a condition associated with invasive insects. The Applicant is agreeable to this condition. However, beginning on page 36 of her testimony, a condition associated with the preparation of an approvable invasive species monitoring and control plan is proposed, which includes a number of bulleted points. Each of these points indicate what the plan must contain, and are summarized and individually addressed below.

- Protocols for baseline surveys to document the presence of invasive plant communities and establish a baseline measure of infestation (Rothrock testimony page 36, lines 14-15). ***Response:*** As previously stated, on March 20, 2017 the Applicant provided a Proposed Invasive Species Survey Methodology to all parties (including the NYSDEC) (see Exhibit

BRB-7). The Applicant has not received any response to the proposed survey methodology provided on March 20, 2017. Therefore, the survey is being conducted in accordance with the methodology proposed, and as such this proposed language by Ms. Rothrock should not be included as a condition to the Certificate because the survey will be complete by the time a Certificate is issued.

- Protocols for preventing new introductions of invasive species and preventing the spread of invasive species (e.g., equipment cleaning, fill sources free of invasive species) (Rothrock testimony page 36, lines 16-18). ***Response:*** As previously stated, the Proposed Invasive Species Survey Methodology document indicates that the results of the invasive species survey will include "A complete list of all invasive plant species observed within the Survey Area, Site specific observations for each invasive plant species detected during the survey, Map of density of absolute cover of invasive plant species within Survey Area, and Map(s) of locations of populations of invasive plant species with discrete boundaries within the Survey Area. Conclusions and recommendations will be made based on the baseline survey results. In addition, appendices containing information related to treatment and removal of specific invasive plant species, BMPs to restrict the spread of invasive plants, and

a photo log of representative photos of each invasive plant species observed within the Survey Area will be included with the baseline report." An evaluation of the best management practices to reduce the spread of invasive species should only be done following the results of the baseline survey.

- Annual monitoring for a minimum of 5 years post-construction (Rothrock testimony page 36, line 19). ***Response:*** As previously stated, the Applicant does not understand why the minimum monitoring timeframe must be five years, especially if monitoring at the end of years one and two indicates there has been no spread of invasive species. As also previously stated, the Applicant's positon is supported by the Staff Policy Panel Proposed Condition 62. Therefore, the Applicant proposes annual monitoring for a period of 2 years post-construction.
- Protocols for adaptive management if performance requirements are not met (Rothrock testimony page 36, line 21). ***Response:*** The Applicant agrees to this condition, assuming reasonable performance standards are agreed to.

Q: Did the NYSDPS provide testimony regarding invasive species?

A: Yes. Jeremy Rosenthal provided brief testimony on this topic.

Q: Do you have any comment regarding Mr. Rosenthal's invasive species testimony?

A: Yes. Mr. Rosenthal indicates that the Applicant has not provided adequate studies and plans to address the management of invasive species. In his testimony he references the ISCP included with the Application, and the baseline survey to be conducted in 2017. He goes on to state, "The ISCP provides a basic framework for addressing invasive species within the proposed Project site. However, it does not provide customized plans for addressing specific disturbance sites if certain invasive species concentrations are discovered in the forthcoming survey. Invasive species management will only be adequately addressed when such customized plans are provided and incorporated into the ISCP." (Rosenthal testimony page 11, lines 16-21 and page 12, lines 1-7) ***Response:*** As previously stated, it is important to note that the Proposed Invasive Species Survey Methodology document states, "Conclusions and recommendations will be made based on the baseline survey results. In addition, appendices containing information related to treatment and removal of specific invasive plant species, BMPs to restrict the spread of invasive plants, and a photo log of representative photos of each invasive plant species observed within the Survey Area will be included with the baseline report." Therefore, the Applicant has previously indicated in a supplement to IR DPS-2 that customized plans will be developed.

Q: Did the NYSDPS provide additional testimony regarding invasive species?

A: Yes. Testimony prepared by the Staff Policy Panel includes as Exhibit_(SPP-3) Staff's proposed Conditions for a Certificate of Environmental Compatibility and Public Need. There are two proposed conditions associated with invasive species. Proposed Condition 62 requires preparation of a Final ISCP, conducting a two-year post-construction monitoring program, preparing a report at the end of the two-year monitoring program, which would assess if the goals of the ISCP are achieved and would be submitted to the NYSDPS, NYSDEC, and NYSDAM, and coordinating with these agencies regarding the success of the ISCP. The Applicant is fully agreeable to proposed condition 62. Staff's proposed condition 63 also addresses invasive species, and requires that site-specific plans for management of areas with high concentration of invasive species identified during the pre-construction baseline survey shall be included in the ISCP. The Applicant is fully agreeable to proposed condition 63.

<u>Updated Layout</u>

Q: Are you aware that the Facility has been recently reduced from 58 turbines, as presented in the Application to, 48 turbines?

A: Yes. Attached to my testimony as Exhibit BRB-8 is a map that compares the 58 turbine layout to the 48 turbine layout. As indicated in the attached map, the following 10 turbines have been eliminated from the proposed Facility: T5, T8,

T28, T39, T44, T45, T46, T54, T56, and T58. In addition, a total of approximately 12,650 linear feet (2.4 miles) of access road and approximately 20,235 linear feet (3.8 miles) of collection lines (buried and overhead) has correspondingly been removed from the Facility as a result of the removal of these 10 turbines (hereafter referred to as the "Updated Layout"). Also included in Exhibit BRB-8 is a map of the Updated Layout.

Q: In relation to the Updated Layout, is there information you wish to provide for the record?

A: Yes. In support of Exhibit 11 of the Application, EDR prepared the required Preliminary Design Drawings, which were included as Appendix M to the Application. For the convenience of the parties, the Preliminary Design Drawings have been updated to present the Updated Layout, and are included as Exhibit BRB-9 of my testimony. For the further convenience of the parties, the organization and sheet numbering of the design drawings remains the same as the original drawings included with the Application. However, due to the reduced number of turbines the following sheets no longer depict Facility components: NW-110, NE-106, NE-117, CE-102, CE-103, SW-101, SW-102, SW-103, and SW-107. In addition, a brief visual assessment memorandum has been prepared by EDR that provides updated viewshed analyses and visual simulations specific

to the Updated Layout. This memorandum, which is included in as Exhibit BRB-10, concludes that the results of the original VIA remain accurate.

Q: Have updated analyses been conducted that would allow the parties to understand that impact reductions between the 58 turbine layout and the 48 turbine layout?

A: Yes. In order to provide a direct comparison to some of the information provided in the Application, EDR has conducted updated analyses. Specifically, updated GIS calculations have been conducted in order to provide comparison impact numbers for Agricultural Districts, Land Use, Soils, and Vegetation, each of which are summarized below (detailed comparison tables are presented as Exhibit BRB-11 of my testimony).

- Agricultural Districts: As presented in Table 4-1 (Facility Impacts to Agricultural District Lands) of Exhibit 4 of the Application, portions of the Facility will be sited in three agricultural districts (District 8, District 10, District 13), which remains the case for the Updated Layout. Table 4-1 of the Application also presented impacts to soils within these agricultural districts, and as indicated in "Table 4-1. Facility Impacts to Agricultural District Lands (Comparison)" included in Exhibit BRB-11, total soil impacts have been reduced by approximately 31 acres.

- Land Use: As presented in Table 4-4 (Land Use Impacts) of Exhibit 4 of the Application, the Facility will be sited in six distinct land use types as defined by the NYS Office of Real Property Services, which remains the case for the Updated Layout. Table 4-4 of the Application also presented impacts to these land use classifications, and as indicated in "Table 4-4. Land Use Impacts (Comparison)" included in Exhibit BRB-11, total land use impacts have been reduced by approximately 84 acres.
- Soils: As presented in Table 21-4 (Anticipated Impacts to Soils) of Exhibit 21 of the Application, the Facility will be sited in numerous soil series, which remains the case for the Updated Layout. Table 21-4 of the Application also presented impacts to the individual soil series, and as indicated in "Table 21-4. Anticipated Impacts to Soils (Comparison)" included in Exhibit BRB-11, total soil impacts have been reduced by approximately 58 acres.
- Vegetation: As presented in Table 22-2 (Vegetation Impacts) of Exhibit 22 of the Application, the Facility will be sited in five distinct cover types (forest, successional shrubland, successional old field, active agriculture, and disturbed/developed), which remains the case for the Updated Layout. Table 22-2 of the Application also presented impacts to these cover types, and as indicated in "Table 22-2. Vegetation Impacts (Comparison)"

included in Exhibit BRB-11, total vegetation impacts have been reduced by approximately 84 acres.

Q: Are there other analyses that have been conducted that would allow the parties to understand that impact differences between the 58 turbine layout and the 48 turbine layout?

A: Yes. EDR also conducted updated analyses associated with shadow flicker and wetlands/stream impacts. Each of these analyses are addressed individually below.

- Shadow Flicker: As indicated in Exhibit 24 of the Application, a shadow flicker analysis was conducted for the 58-turbine layout, and a shadow flicker report was included as Appendix U to the Application. As a result of the Updated Layout, EDR conducted an updated shadow flicker analysis to determine if the reduction in the number of turbines would change the results presented in the original Shadow Flicker Report. Exhibit BRB-12 includes a memorandum that describes the results of the updated shadow flicker analysis.
- Wetland/Stream Impacts: As previously indicated, on March 31, 2017 the Applicant provided a set of detailed wetland/stream impact drawings in response to IR DPS-1. These drawings have been updated to address certain aspects of Direct Testimony from the parties (see "Wetland and

Stream" section above), and to address the Updated Layout. These updated wetland/stream impact drawings are included as Exhibit BRB-5, and indicate that impacts have been reduced. Specifically, permanent wetland impact (fill) now totals only 0.74 acre and temporary wetland impact (soil disturbance) now totals only 2.46 acres.

Specific Turbines Recommended for Removal

Q: Are you aware of Direct Testimony that recommended the removal of specific turbines due to environmental impacts?

A: Yes. The Direct Testimony of Daniel Connor recommends the removal of the following turbines: T7, T22, T36, T42, T54, and T58. As indicated above in my testimony T54 and T58 have been removed from the Facility. However, T7, T22, T36, and T42 remain in the Updated Layout.

Q: Does Mr. Connor describe why these turbines should be removed from the Facility?

A: Yes. Mr. Connor indicates that heavy farming activities in the area have created a very fragmented forest throughout the Project site. This existing fragmentation makes conservation of existing forest resources in the area imperative. (Connor testimony page 5, line 21 and page 6, lines 1-4). Mr. Connor then goes on to discuss the impact to forest as a result of the specific turbines identified above.

Q: Do you have any comment regarding this portion of Mr. Connor's testimony?

A: Yes. Mr. Connor's testimony indicates that heavy farming is the cause of forest fragmentation throughout the Facility site. However, this assumption does not appear to be supported by the record. For instance, when discussing plant communities Exhibit 22(a) of the Application indicates that active agriculture occupies approximately 28% of the Facility Site. Regardless, to address Mr. Connor's concern over fragmented forest, EDR conducted a GIS analysis to estimate the extent of interior forest within the Facility Site. A summary of this analysis is included in Exhibit BRB-13, and indicates that none of the turbines identified by Mr. Connor are located within interior forest conditions. In addition, Mr. Connor indicates that T-7, T-54, and T-58 result in impacts to a total of five wetlands and two streams. As indicated above, T54 and T58 have been removed from the Facility, and therefore T-7 remains the only turbine on this list of turbines identified for impacts to wetlands/streams. Specific to T-7, this turbine does not result in any temporary or permanent impacts to the adjacent wetland, which is clearly indicated on Sheet NW1 of both the March 31 wetland/stream impact drawings (Exhibit BRB-3) and the updated wetland/stream impact drawings (Exhibit BRB-5). In addition, as indicated in response to IR DPS-1, "The Applicant has recently confirmed with the landowner that moving the access

road to the field edge is acceptable, and therefore is in the process of adjusting this road… As a result, impacts to wetland A and tree clearing impacts will be significantly reduced." (The Applicant's response to DPS-IR-1 is attached to Jeremy Rosenthal's testimony as Exhibit JR-1 page 1.) This adjust has been made as depicted on Sheet NW1 of both the March 31 wetland/stream impact drawings (Exhibit BRB-3) and the updated wetland/stream impact drawings (Exhibit BRB-5). Therefore, it is unclear why T7 is identified by Mr. Connor as a turbine resulting in significant wetland impacts. Lastly, Mr. Connor indicates that there is a disproportionate amount of grading and earthwork associated with T22, T36, T42, T54, and T58 (as previously stated T54 and T58 have been removed from the Facility). However, as indicated in Exhibit 21(p), "Impacts to soil resources will be minimized by adherence to best management practices that are designed to avoid or control erosion and sedimentation and stabilize disturbed areas. In addition, erosion and sedimentation impacts during construction will be minimized by the implementation of an erosion and sedimentation control plan developed as part of the State Pollution Discharge Elimination System (SPDES) General Permit for the Facility. Erosion and sediment control measures shall be constructed and implemented in accordance with a SWPPP to be prepared and approved prior to construction, and at a minimum will include the measures set forth in the Preliminary SWPPP provided in Appendix GG." These turbines

(along with the rest of the Facility) will be subject to pre-approved protection measures. Therefore, from the perspective of grading and earthwork, these turbines should not result in significant adverse environmental impacts.

Q: Does this conclude your testimony?

A: Yes.

A.L.J. LECAKES: Off the record, we had a discussion where we confirmed that there is no confidential material in Mr. Brazell's testimony. There may be some of the exhibits but the exhibits are not put into the hearing transcript so they are dealt with separately on the Department of Public Service's DMM website. You may continue with the exhibits.

BY MR. BAKER: (Cont'g.)

Q. Mr. Brazell, as part of your rebuttal testimony, did you sponsor exhibits BRB-1 through BRB-13?

A. I did.

Q. And those are now for the record have been identified as Exhibits 3 through 13?

A.L.J. LECAKES: Okay, so Exhibit 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 and 13, they are marked on the evidentiary hearing exhibit list that will be put onto DMM where they are defined in the fourth column. And again, we will move all the exhibits in at the end. Is there anything further?

MR. BAKER: Just to wrap it up, Your Honor.

A.L.J. LECAKES: Okay.

BY MR. BAKER: (Cont'g.)

Q. And were those exhibits prepared by you or under your supervision?

A. They were.

Q. And are there any corrections to those exhibits?

A. No.

Q. And are you also sponsoring any exhibits to the application?

A. I am.

Q. And what exhibits are those? Do you have your affidavit?

A. Yeah, we have the list.

Q. Can you read the identified exhibits that you were sponsoring that were part of the application?

A. Sure. Application Exhibit 1, Exhibit 3, Exhibit 4, Exhibit 6, Exhibit 9, Exhibit 11, exhibit 15, Exhibit 17, Exhibit 21, Exhibit 22, Exhibit 23, Exhibit 27, Exhibit 28.

A.L.J. LECAKES: And for clarity of the record, those exhibit numbers that were just mentioned by the witness apply to our Hearing

Exhibit Number 99 which is the May 26th, 2016 application of Cassadaga Wind.

MR. BAKER: Correct, Your Honor. I have no further questions, Your Honor.

A.L.J. LECAKES: Were there any changes to those exhibits and subsequent up -- supplements or updates?

MR. BAKER: That's a question for you.

THE WITNESS: There was some additional information submitted in the updates that I'm also sponsoring, I -- I did not read those out yet.

A.L.J. LECAKES: Okay. Why don't you read those then?

THE WITNESS: Okay. I'm also sponsoring direct testimony exhibit, my resume. January 18th, 2017, update to the application with exhibits.

A.L.J. LECAKES: Okay. Okay, that's Exhibit 102.

THE WITNESS: April 18th 2017, update to the application with exhibits.

A.L.J. LECAKES: That's Exhibit

105.

THE WITNESS: And the June 9th, 2017, update to the application with exhibits.

A.L.J. LECAKES: And that's Exhibit 106. All right, thank you. My understanding is that DEC has waive cross examination for this witness, is that correct?

MS. CROUNSE: That's correct. That's correct, but we do reserve pending your ruling on bringing the revised proposed conditions in as exhibit.

A.L.J. LECAKES: All right, and let's turn to DPS, and -- and Ms. Cerbin.

MS. CERBIN: Yes, DPS reserves the right to recall this witness and made the objection.

A.L.J. LECAKES: Right. And you don't have any witness -- questions right now?

MS. CERBIN: No, sir, we didn't. Not with respect to wetlands and streams we do not.

A.L.J. LECAKES: All right.

MS. CERBIN: Our understanding is he's going to be called back for purposes of

preliminary design drawings tomorrow, is that correct?

MR. BAKER: Correct.

A.L.J. LECAKES: Oh, okay. Yeah, right.

MS. CERBIN: We're not -- not on this subject matter, no.

A.L.J. LECAKES: Okay, not on either of the subject areas of wetlands or streams.

MR. MUSCATO: And invasive species.

A.L.J. LECAKES: And invasive species. Okay. Mr. Brazell, you'd be -- remain under oath anyway because you are coming back as a witness but you are also subject to recall right now based on the DPS review of the certificate conditions, the revised certificate conditions for wetlands, invasive species and streams.

THE WITNESS: Understood, Your Honor.

A.L.J. LECAKES: Okay. So you are excused for now.

THE WITNESS: Thank you.

A.L.J. LECAKES: Let's go off the record.

(Off the record)

A.L.J. LECAKES: Okay, we are on the record. While we were off the record, there was some discussion as to whether the revised certificate conditions affected the issue of streams and we found out that they did. We're going to take a ten-minute break while Department of Public Service staff reviews with their witness those revised conditions. We are off the record.

(Off the record)

A.L.J. LECAKES: While off the record, a couple of things happened. I received from Ms. Tara Wells an email that she had intended to send on Friday that apparently got caught in her outbox and was never sent and she said -- and she has advised us that she will not be appearing here at the hearings until Wednesday.

Her name is Tara, T-A-R-A, Wells, W-E-L-L-S. And she is the senior attorney for the Department of Agriculture and Markets. I did

mention her before with the appearances and -- and now I do have an email from her also telling us when she will be here. I just wanted to get that in the record for appearances.

Also, there was some discussion that was held as to the revised certificate conditions as a whole, we are going to rule on the exhibits admissibility at the end, but DPS has asked that the judges make a ruling on the revised certificate conditions as to whether we'll accept that. As we understand the DPS's objection to the admission of Exhibit 97 is that it was the product of unnoticed settlement negotiations in contravention of Public Service Law and the Commission's regulations on settlement.

Judge Garlick and I had some conversation during the break and we do not agree that this was a settlement that took place between DEC and the applicant.

We understand it more as in understanding of parties' positions that have been taken. We agree with DEC that this has not resolved any issue in the sense that the issues

are still available for litigation, the revised certificate conditions are as much a part of this litigation and may be briefed by any party as the original certificate conditions. And, therefore, we do not see a reason to leave the revised certificate conditions out of the evidentiary hearing record and we will admit Exhibit 97 into evidence. And with that in mind, we understand that DPS may have some cross examination for witnesses that it did not otherwise plan to cross examine prior to this hearing.

Ms. Cerbin, could you call your witness?

MS. BEHNKE: Ms. Behnke's going to do so on behalf of DPS.

A.L.J. LECAKES: Thank you, Ms. Behnke.

DIRECT EXAMINATION

BY MS. BEHNKE:

Q. Mr. Connor, before you -- do you have a nine-page document in front of you?

A.L.J. LECAKES: Oh, I'm sorry. Mr. Connor, would you raise your right hand? Do

you swear or affirm that the testimony you're about to give is the whole truth?

MR. CONNOR: Yes.

DANIEL CONNOR; Sworn

A.L.J. LECAKES: Ms. Behnke, you may proceed.

MS. BEHNKE: Thank you, Your Honor.

DIRECT EXAMINATION

BY MS. BEHNKE:

Q. Mr. Connor, before you, do you have a 9-page document entitled, prepared testimony of Daniel R. Connor, dated May 12th, 2017?

A. (Connor) Yes.

Q. And was this document prepared by you or under your direct supervision?

A. Yes, it was.

Q. Okay. Do you have any changes or corrections to that testimony today?

A. I believe so, due to the applicant's reduction in the numbers of turbines on site that included turbines that I recommended for removal.

Q. Do you have those red lines with you today?

A. No.

Q. Okay.

A.L.J. LECAKES: Rather than submit them as red lines what we can do is we can put the testimony into the record as it was provided and if -- if DPS feels the need to get some supplemental direct testimony on, due to the changes we can do that before we proceed to the applicant for cross-examination.

However, if you need to consult with your witness why don't we do that now. Let's go off the record.

MS. BEHNKE: Okay, thank you, Your Honor.

(Off the record)

A.L.J. LECAKES: Mr. Connor, to clarify, do you have any changes to the testimony that was submitted?

THE WITNESS: No, I do not.

A.L.J. LECAKES: Okay. DPS, Ms. Behnke, do you have any need to ask questions because they may actually forego some of the questions that the applicant may have on cross examination as to whether -- for supplemental

direct testimony as to whether any of the changes that the applicant has made in its updates and supplements have changed his opinion on -- on what was in his direct testimony?

MS. BEHNKE: Yes, Your Honor.

A.L.J. LECAKES: Okay. Why don't we continue getting the testimony into the record and the exhibits and then we'll allow DPS to have supplemental direct testimony before we move to cross examination.

BY MS. BEHNKE: (Cont'g.)

Q. All right. Mr. Connor, you just testified that you do not have changes to the testimony that you submitted on May 12th, 2017 which was written at that time, correct?

A. That's correct.

Q. All right. But if you were asked the same questions today under oath you would answer them the same way knowing what you did at the time you answered them?

A. At that time, yes.

Q. Okay.

MS. BEHNKE: Your Honors, I'd like to move that the pre-filed rebuttal testimony of

Mr. Connor be entered into the record as if it was given orally during the hearing today.

A.L.J. LECAKES: That's granted. I actually have it as the direct testimony of Daniel Connor.

MS. BEHNKE: That's correct.

A.L.J. LECAKES: But we will put that into the record as if orally given today at this point. The court reporter should put into the hearing transcript the file that was titled DPS-direct testimony of Daniel Connor, case 14-F-0490 and that is just a public version, there is no confidential material on that one. You may proceed.

BEFORE THE
STATE OF NEW YORK
BOARD ON ELECTRIC GENERATION
SITING AND THE ENVIRONMENT

In the Matter of

Cassadaga Wind LLC

Case 14-F-0490

May 12, 2017

Prepared Testimony of:
Daniel R. Connor
Utility Analyst I

State of New York
Department of Public Service
Three Empire State Plaza
Albany, New York 12223-1350

Q. Please state your name and business address.
A. Daniel R. Connor, Three Empire State Plaza, Albany, New York 12223.
Q. By whom are you employed and in what capacity?
A. I am employed by the NYS Department of Public Service (DPS) as a Utility Analyst I (Environmental) in the Office of Electric, Gas, and Water in the Certification and Compliance Section.
Q. Please summarize your educational and professional background.
A. I received a Bachelor of Science in Environmental Studies from the College of Environmental Science and Forestry in Syracuse, New York in 1999. Since that time I have been employed as a consultant by three civil engineering firms. While working for these firms I held positions of Engineering Technician, Environmental Scientist, and Civil Engineer. I have 10+ years of experience in soil investigations, wetland delineations,

groundwater studies, erosion and sediment control, and stormwater management design. I was hired by the DPS in November of 2014. As a Utility Analyst I have performed impact analysis for Article VII projects for the Public Service Commission for cases such as 13-T-0585 Cricket Valley 345kV Transmission, 15-T-0305 Clay – Dewitt Line 3 & Clay – Teall Line 10 Rebuild & Reconductor Project and 13-E-0488 the AC Transmission proceeding. I have performed project analysis under the State Environmental Quality Review Act for water, telecommunications and Public Service Law (PSL) Section 68 applications.

Q. Please describe your role in this case.

A. My responsibilities entail review and analysis of the Preliminary Design Drawings and the impacts of the project on natural resources.

Q. What is the purpose of your testimony?

A. To present information regarding project impacts to environmentally sensitive areas and the

overall natural resource consumption proposed in Cassadaga Wind LLC's (Cassadaga or the Applicant) Application. I will also present avoidance measures to be considered by the Siting Board if the Project is to be certified.

Q. In your testimony, will you refer to, or otherwise rely upon, any information produced during the discovery phase of this proceeding?

A: Yes. I will refer to, and have relied upon, responses to DPS Staff Information Requests (IRs). The IRs that I relied upon are included in Exhibit__ (DRC-1).

Q: Are you sponsoring any other exhibits to accompany your testimony?

A: No.

Q: According to PSL Section 168.3(c) the Project must "avoid or minimize impacts to the greatest extent practical." Does the Project avoid or minimize environmental impacts to greatest extent practical?

A. No. In "Cassadaga Wind LLC's Response to the

Parties' Written Issues Statements" filed on March 2, 2017, in response to my suggestion that the overall number of wind turbines be reduced, Cassadaga states: "To that end, to reduce uncertainty in the Application, with respect to impacts, the Applicant presented a "worst case scenario" and committed to building no more than 58 turbines."

Q. Has the Applicant reduced the number of turbines since filing the Application?

A. Yes. Since the time of the initial Application, the Applicant has reduced the number of proposed turbines to 54.

Q. Why did the Applicant reduce the number of turbines?

A. The Applicant states in the first paragraph on page 21 of "Cassadaga Wind LLC's Response to the Parties' Written Issues Statement,": "It is this scenario that has now been minimized and mitigated to the maximum extent practical."

Q. Do you agree that the Applicant has "minimized

and mitigated to the maximum extent practical”?

A. No.

Q. Why not?

A. The Applicant states in Superscript 6 on the bottom of page 21: “the Applicant continues to refine the 54 turbine layout to further avoid and minimize impacts.” Therefore, even the Applicant acknowledges that further avoidance may be necessary and these two statements are at odds with one another. A four tower reduction, which was not based on environmental impact reduction, does not represent an avoidance or minimization to the maximum extent practicable.

Q. Are some of the turbine locations and associated access roads and collection lines more impactful than others?

A. Yes, the turbines I identify in IR-10 are some of the more environmentally impactful sites on the Project.

Q. Please explain.

A. Heavy farming activities in the area have

created a very fragmented forest throughout the Project site. This existing fragmentation makes conservation of existing forest resources in the area imperative. According to the Applicant's response to IR-10 (See Exhibit __ DRC-1), tower sites T-7, T-22, T-36, T-42, T-54, and T-58 require approximately 31.9 acres of mostly forest clearing. After DPS Staff's review of the Applicant's response, Staff had to add another 2.88 acres per turbine site for T-54 and T-58 because the rotor laydown clearing acreage was omitted by the Applicant for these two turbines. This additional clearing brings the total acreage for clearing and grading to 37.5 acres. According to Table 22-2 of the Application, the acreage of regenerating forest and permanently lost forest totals 132.4 acres for the entire Project. Both of these clearing types should be considered permanent because regeneration for either type would likely not occur during the operating life of the Project.

These six tower locations represent 11% of the turbines on the Project and the requisite 37.5 acres of clearing represents 28% of all clearing. These percentages are disproportionate and do not achieve the required avoidance, minimization or mitigation.

Q. Are there other environmental impacts besides permanent forest clearing?

A. Yes, there are a total of five wetlands and two streams impacted by turbines T-7, T-54, and T-58. For turbine sites T-22, T-36, T-42, T-54, and T-58, there is a disproportionate amount of grading and earthwork extending well beyond the standard 75-foot limit of disturbance shown on the site plan detail sheets.

Q. Do you have any recommendations on how impacts and overall natural resource consumption can be minimized or mitigated?

A. Yes, the most effective mitigation/minimization is to eliminate turbines with the greatest environmental impacts, including those

identified above.

Q. Did you consider any other mitigation measures beyond removal of the most impactful turbines?

A. Yes. However, removal of the six turbines identified above as an overall mitigation plan still allows the Applicant to achieve the goals and objectives of the Project's output, while avoiding all impacts associated with these towers. Therefore, removal of these turbines avoids or minimizes impacts to the greatest extent practicable.

Q. Does this conclude your testimony?

A. Yes.

BY MS. BEHNKE: (Cont'g.)

Q. Okay, Mr. Connor, are you sponsoring any exhibits to your testimony?

A. I am not.

Q. I believe you have pre-marked Exhibit 57 which is DRC 1, dated May 12th, is that correct?

A. Correct.

Q. Okay. Thank you.

MS. BEHNKE: I believe Ms. Cerbin has some follow-up questions.

A.L.J. LECAKES: You may proceed.

MS. CERBIN: Your Honor, DPS at this time does not have any questions for the witness and pass the witness. Thank you.

A.L.J. LECAKES: Okay. We will do that. You will have the opportunity for redirect, after cross examination.

Mr. Muscato?

MR. BAKER: Yes, Your Honor. Mr. Baker.

A.L.J. LECAKES: Mr. Baker.

MR. BAKER: Thank you, Your Honor.

CROSS EXAMINATION

BY MR. BAKER:

Q. Good morning, Mr. Connor?

A. (Connor) Good morning.

Q. Mr. Connor, have you had the opportunity to review Mr. Brazell's testimony that was submitted in response to your direct testimony?

A. I have.

Q. And as a result of Mr. Brazell's testimony and the elimination of turbines 54 and 58, do you have any changes or comment on your original testimony?

A. Yes, based on the removal of those two turbines obviously, I'm no longer considering them. They'd be removed. Yes.

Q. Are you still recommending removal of turbines 7, 22, 36 and 42?

A. I'm recommending the removal of turbines 22, 36 and 42.

Q. You are no longer recommending the removal of turbine 7?

A. I am not.

Q. Okay. And is that due to your recognition the turbine 7 is not impacting the wetland?

A. Correct.

Q. Okay. So for turbines 22, 36 and 42, what is your basis for recommending their removal?

A. Forest clearing and slopes.

A.L.J. LECAKES: I'm sorry what was that, forest clearing and?

THE WITNESS: Slopes.

BY MR. BAKER: (Cont'g.)

Q. In your testimony you provided some estimation of the amount of forest clearing associated with all six turbines that you originally identified for removal. Have you re-calculated the amount of forest clearing that would be required for the removals of turbines 22, 36 and 42?

A. I've estimated the reduction. It would -- it would reduce basically roughly half.

Q. And is it your position that those constitute clearing of forest, habitat or interior forest?

A. Forest habitat.

Q. So even though these are areas that are being cleared, they were, in general, near the existing edge of the forest habitat you find that objectionable?

A. I do, due to the existing fragmentation. It's just furthering the fragmentation that already exists.

Q. And did you review what was identified as Exhibit 13 to Mr. Brazell's testimony?

A. I did. I believe that's the GIS analysis.

Q. Yes.

A. I did.

Q. And did you review the analysis in there regarding what DEC considers interior forest area?

A. I did.

Q. And do you disagree with DEC's analysis?

A. It's not the existing forest, it's not the new fragmentation. We have a fragmented forest already and I'm looking for forest conservation as stated in my testimony.

A.L.J. LECAKES: Mr. Connor, can you make sure that you hold the mic close to your mouth when you talk. I -- I know it's -- I think it's the mic, not you.

THE WITNESS: Does this -- does this one work?

A.L.J. LECAKES: That mic is for the court reporter and it's -- it's very sensitive but it doesn't connect to the -- so it's picking you up.

THE WITNESS: Okay.

A.L.J. LECAKES: So that's hearing you but I need to make sure that the people in the back can hear you.

THE WITNESS: Okay, stop me if -- I'm pretty close right now, I don’t think it's worked.

A.L.J. LECAKES: Yeah, it's -- it's coming in and out.

THE WITNESS: What about the batteries?

MR. BAKER: It's all right.

THE WITNESS: Check.

A.L.J. LECAKES: Thank you. Go

ahead, you may proceed.

BY MR. BAKER: (Cont'g.)

Q. You testified that you believe clearing and grading for turbines 22, 36 and 42 were a disproportionate amount?

A. Correct.

Q. What do you believe is disproportionate in the clearing for those three turbines?

A. I believe the average would be around five acres for those turbines for each one of them when there were six, there was 37, so let's just say it was 15 or 20, that's on three turbines. I think there's only -- there was only 128 acres forest clearing on the site. It's hard to say now that with the reduction, but the access roads and the path themselves are cited almost completely within forest.

Q. I think you misunderstood my question. At page seven of your testimony beginning at -- look at line 11, you say for turbines 22, 36 and 42 there was a disproportionate amount of grading and earth work, extending well beyond the standard 75 foot limit of these turbines shown on the site plan detail sheets. My question is, what is

disproportionate about the grading and earth work associated with those three turbines, this is not a forest habitat issue.

A. Sorry, I thought I heard forest in there. When you look at the plans, the grading, I think for number 36 I have it open in front of me right now. We're looking at over a 100 foot wide for the permanent road, there's still a temporary road that’s 40 feet wide, that's going to be constructed down those slopes.

Q. Right.

A. Two to one slopes for roughly two to one side slopes, I'm sorry on the shoulders, got a 10% grade for roughly 800 feet, that type of construction is not seen elsewhere on the site other than these two turbines. There's -- there's minor grading of course but these three that are still left are by far more proportionate -- disproportionate for the amount of earth work.

Q. And you're aware as part of the application the applicant has submitted a preliminary storm-water, pollution-prevention plan?

A. I am aware.

Q. Have you reviewed that?

A. I have.

Q. Do you have any reason to believe that that plan is inadequate to control sediment and erosion runoff for the clearing of these areas?

A. There are many examples of slope failures and erosion with -- with SWPPP in place. With that in mind, no. The SWPPP is a mitigation measure, Public Service Law 168(3)c states to avoid minimize or mitigate. Proper planning would implement, avoidance first and then mitigation, if we want to start at mitigation.

A.L.J. LECAKES: Mr. Connor, are you using an acronym swit, S-W-I-T, is -- is that what you're --

THE WITNESS: Storm Water Pollution Prevention Plan. Through Storm Water Pollution Prevention Plan.

A.L.J. LECAKES: So SWPP?

THE WITNESS: With another P.

A.L.J. LECAKES: Okay. It's just for the sake of the person that's writing this down in the transcript.

THE WITNESS: Sure, no problem.

A.L.J. LECAKES: And for my sake as

well.

BY MR. BAKER: (Cont'g.)

Q. Mr. Connor, you agree that when you are locating wind turbines, they are normally located on the top of hills at high elevations?

A. Correct.

Q. Wouldn’t you expect in such circumstances that there would be required grading and cutting in order to get an access road up to those elevations?

A. Yes.

Q. And what is the unusual environmental impact associated with the grading and clearing for those access roads that are -- that is not covered by the SWPPP?

A. From a planning point, you can usually run an access road along the ridge line. 36 is a perfect example of -- refutes actually what you just stated. 21, turbine 21 is sited near the top of a ridge line. To get to 36 you're actually going back down off the ridge line, looks like about 100 feet of elevation you lose, so if you use the argument site, get closer to wind you actually brought that tower hundred feet below the elevation

with tower 21.

Q. Did you understand also there were other siting constraints when you're siting a turbine and the access road including the landowner access, landowner preference and minimizing the other impacts such as avoiding wetland -- wetlands?

A. I am. I'm aware it's a -- it's a complicated process. Turbines are, in wind farms in general though have an advantage in the planning process of a lot more land than most project, you're not locked in to a certain land area, there's concessions and areas that should be considered and steep slope construction shouldn't be one of them.

Q. And do you have any reason to believe that the environmental monitor will be incapable of assuring that the storm water plan would be properly implemented?

A. Again, that's a mitigation measure. We have a chance to avoid right here.

Q. And do you believe that the opportunity to avoid the impacts that you've identified associated with these turbines, these three turbines outweighs the benefits of the approximately eight megawatts of clean energy that

those turbines will produce?

MS. CERBIN: Your Honor, we object.

A.L.J. LECAKES: What's the grounds?

MR. CERBIN: It's beyond the scope of his testimony. He did not provide testimony with relation to that.

MR. BAKER: Your Honor, he's making a judgment call that it is important under conditions of 168 to avoid this and that's inherently a balancing --.

A.L.J. LECAKES: Right. Mr. Connor, did you -- when you made your judgment on the elimination or -- or the proposed elimination of these turbines, did you take into consideration the effect on the ability of the wind farm to produce the megawatts that the applicant was proposing in its application or was that a concern that you did not familiar -- familiarize yourself with?

THE WITNESS: If you turn to page eight of my testimony it actually speaks to the applicant's goals and objectives being objectively looked at.

A.L.J. LECAKES: Right. I -- I see that there on -- on lines six and seven, it mentions that the mitigation plan – well five, six and sevens. The mitigation plan still allows the applicant to achieve the goals and objectives of the project's output, is that what you're referring to?

THE WITNESS: All right. That's -- that would be -- that would be what I would have been, yes.

A.L.J. LECAKES: And so as output you're referring to the megawatts that the applicant proposes to put into the energy system?

THE WITNESS: Correct.

A.L.J. LECAKES: All right. I -- I overrule the objection. It seems to be within the applicant's -- I'm sorry, the witness'a testimony. You may proceed, Mr. Baker. And you may repeat the question if you need to.

BY MR. BAKER: (Cont'g.)

Q. I would ask somebody to read it back in?

A. I was going to say I don't remember.

A.L.J. LECAKES: We -- we can do that.

MR. BAKER: I -- I -- I'll re -- I can rephrase them.

A.L.J. LECAKES: Okay. Go ahead.

MR. BAKER: Give one minute.

BY MR. BAKER: (Cont'g.)

Q. So is it your -- is your position that the impacts from -- strike that, let me rephrase that.

Do you believe that removing these three turbines on the basis of the impacts that you've identified outweighs the benefits of providing the approximately eight megawatts clean renewable energy that would be generated by those turbines?

A. My analysis was to look at the state of available technology and I do not believe that that needs to be the case.

Q. What needs to be the case?

A. The loss of eight megawatts.

Q. I'm sorry, could you clarify that? Are you -- are you suggesting alternative locations for these eight turbines?

A. I am not.

Q. So you're saying -- I'm sorry. Would you strike that I meant three turbines.

So I don't misunderstand the answer to my question. You think that it is warranted to remove eight megawatts of clean energy because of the potential grading and site disturbance impacts that you identify?

A. These three locations are poorly sited. They need to be removed.

Q. So your answer is that the impacts from these three sites outweigh the benefits provided by eight megawatts of clean energy. You are asking that they be removed?

A. I can't speak to those benefits.

Q. You've already been instructed to answer those questions. You've made an evaluation. Every project that you're reviewing has benefits. There are some site disturbance and there was some habitat -- or excuse me, vegetation removal and there's grading and there's potential storm water impacts. On your basis, when there are any impacts on there, there should -- the project should not go forward?

MS. CERBIN: Objection, Your Honor.

I'd like to renew our objection to this line of questioning. Mr. Connor's testimony really was limited to site disturbance and -- and direct impacts. And he was not asking -- that he did not at all testified to a "quid pro quo" the site determination of each turbine and its efficacy. He's -- his testimony was directly related to these turbines, how the disproportionate impact as -- as opposed to other turbines. He wasn't trying to -- to -- to test -- he doesn't testify at all as to megawatts versus clearing. That's not what his testimony is about and I feel like this line of questioning is dangerously close to that, that -- that --.

A.L.J. LECAKES: I agree it's close to, but the concern I have is I'm not clear and it -- it's partly because of the witness's response to some of the last couple of questions. How much he did take into consideration the effect on the overall megawatts that are produced by all the turbines together.

And I do think that the applicant has the right to research at least how much he -- he knew about it and relied on it. But I do

agree that at some point it seems that it may be going beyond his knowledge based on testimony.

MS. CERBIN: I -- I -- I understand that, Your Honor. I object to the eight megawatts discussion here. I don't think Mr. Connor is aware of and does not actually testified to any kind of megawatt or megawatt implements, x amounts of site clearing for x amount of megawatts. There was no direct comparison in that -- in that respect so that's why I object to this specific line of questioning.

A.L.J. LECAKES: Right. Okay, and -- and the witness can if he doesn't know. I mean, if he's not familiar with the amount of megawatts produced by a single turbine or three turbines together, he can respond that to the applicant.

MR. ABRAHAM: Your Honor, may I join --

A.L.J. LECAKES: Mr. Abraham, go ahead.

MR. ABRAHAM: May I join the objection? I think the question is, it needs to

be clarified. You're referring to megawatts produced, that's not what the question is asking. The question is talking about megawatt capacity. ISO says 20% on an annual average of the capacity is produced. So it's not eight megawatts of capacity produced.

A.L.J. LECAKES: It -- it doesn't matter. The -- the question, I mean, the distinction that you're making doesn't matter so much as -- as the line of questioning.

It is more broad in general, it's -- it's going into, as I understand it, what kind of balancing the particular witness put into each of these turbines in terms of the environmental impact versus the -- the megawatts that might be produced. I -- I think we may be getting hung up a little bit on a very strict number of eight megawatts and maybe we could avoid the applicant, can avoid the objections by de-specifying some of the questions.

MR. ABRAHAM: Your Honor, if I may?

A.L.J. LECAKES: Yes, Mr. Abraham.

MR. ABRAHAM: You know, this characterization of the eight megawatts is clean

energy, it's also subject to questions because there's got to be backup generation and that generates emissions and it's not clean.

A.L.J. LECAKES: Right. I can appreciate the fact that the question that's being respond -- or responded to. The question was being asked and posed by the applicant has certain characterizations in it that are in the applicant's opinion and not necessarily in the witness's agreement or and in any other party's agreement. At -- at this point, the question itself is not evidence as much as the answer is, and the applicant is -- or I'm sorry, the witness if he disagrees with the characterization may call that out as -- as well as citizens, I guess, the Cassadaga Wind project may call that out in their brief, but I do understand that there are characterizations being made in this questioning that not everyone agrees with in this hearing. Mr. Baker, you may proceed.

BY MR. BAKER: (Cont'g.)

Q. If I can remember where I was. Let me rephrase the question. When you were preparing your testimony on this, did you take into any -- into

account the lost power generation that would result if these turbines were eliminated?

A. It's a planning process and I understand that there are balances between impacts and may lead to, for the lack of better terms, a judgment call that this was really not one of them. These locations someone is going to look at the plan sets, look at the -- in the applicant's benefit numerous towers are sited properly. These three are not, it's obvious, the grading, the earthwork, the cut slopes, fill slopes in particular, there are going to -- there's lots of cuts and fills here and it's unnecessary.

Q. Have you reviewed any other wind projects in New York State?

A. Yes. Yes, I have.

Q. Which ones?

A. They're – they're under scoping right now, I don't think anyone in is the applications to this stage because I think yours is the only one.

Q. So you're not -- so are you familiar with any other wind projects that have been constructed in New York State?

A. I am.

Q. And have you visited those sites?

A. Visited bunch of them.

Q. And have you reviewed any of the plans associated with the construction of those sites?

A. A few, but a few were just site visits and they do not have the grading that these do, not even close.

Q. You can say that affirmatively that this has an inconsistent level of grading from other site?

A. From what I have seen, yes. t was at Maple Ridge just a couple weeks ago.

Q. What other sites besides Maple Ridge have you seen that you believe have in proportion, less grading than these three turbines?

A. Howard.

Q. Any others?

A. I forget which one it is up on Route 11 between Malone. But quite a few and I'm confident saying so.

Q. You prepared IR DPS 10, correct?

A. Correct.

Q. Were you familiar with DPS 1 prepared by Mr. Rosenthal?

A. Vaguely but --.

Q. So you did not review that in the context of preparing your testimony or your analysis on this project?

A. I don't believe those had anything to do with forest impacts and constructions, construction slopes that we're talking about.

MS. CERBIN: Your Honor, does the applicant have a copy of that exhibit so that the witness can review it.

A.L.J. LECAKES: It depends on if he plans on any follow-up questions on that IR. I -- I think the question right now was, did he consult with it when he prepared his testimony and his position in this case and as I understood it, the witness gave his response that he didn't believe that regardless of whether he -- he reviewed it or not he didn't believe that it had anything to do with the issue of environmental impacts or -- or forest clearing. So unless Mr. Baker has follow-up questions, I'm not sure that he needs to review the response to DPS 1.

MR. BAKER: No, I don't, Your Honor.

A.L.J. LECAKES: Okay.

MR. BAKER: One moment, Your Honor.

BY MR. BAKER: (Cont'g.)

Q. Do you believe that persons living near those three turbines would be disproportionately impacted by the construction of those turbines?

A. In review of the site plans, I didn't see any homes in the setbacks that would have warranted me looking any at further residence nearby.

Q. Thank you.

MR. BAKER: No further questions, Your Honor.

A.L.J. LECAKES: Is there any other cross examination from any other parties for this witness?

Mr. Connor, in the question and answer in your testimony that was referred to before on -- on page eight, lines 2 through 11. It says, "Did you consider any other mitigation measures beyond removal of the most impactful turbines and it says yes, however, removal of the six turbines identified above as an overall

mitigation plan, still allows the application to achieve the goals and objectives of the projects output, while avoiding all impacts associated with these towers. Therefore, removal of thee turbines avoids or minimizes impacts to the greatest extent practicable."

I -- I appreciate that testimony, however, the question actually was -- you know, did you consider any other mitigation measures beyond removal and -- and the first response is yes. What other mitigation measures did you consider and why were they wholly inadequate such that removal of the turbines is your only best proposal here?

THE WITNESS: The SWPPP that the applicant was referring to earlier that is New York State's mitigation measure for anything over an acre, I believe it's an acre. So, of course, whether they could design project and have this with BMPs, best management practices. Be sufficed to manage erosion and sediment control, but again when I read 168(3)(C) I see avoid mitigate, minimize or mitigate the maximum standard practical avoidance --.

A.L.J. LECAKES: Why don't we wait until the alarm start -- the fire alarm. I think it's just, they're doing the alarm, let's go off the record.

(Off the record)

THE WITNESS: The SWPPP is really your last line of defense, avoiding as your first, if the applicant has an opportunity to do so simply recommending removal of three turbines, there's 45 still left. I think that's where I state that their -- their goals and objectives are still manageable or achievable.

A.L.J. LECAKES: But the Public Service Law and the regulations require avoidance or mitigation to the maximize extent practicable in your opinion as a Department of Public Service staff employee, you're saying now that you believe that avoidance completely is the best choice for avoiding to the maximum extent practicable.

THE WITNESS: By far, all the maximum eliminated if you avoid --

A.L.J. LECAKES: Under what conditions then would you think that mitigation

measure would be a better substitute than removal of a tower?

THE WITNESS: When there aren't really any other options to the applicant, I haven't heard that there aren't any other options that this project could not be built without those three, I haven't heard that that's the only location of the three.

I'm not suggesting a removal, I just -- I'm not suggesting a new location or re-siting of them, I simply saying these three towers are -- are poorly sited on steep slopes.

A.L.J. LECAKES: Okay. But at -- at the expense of possibly doing asked and answered to -- to what the applicant has asked you already, how much of the proposed output in terms of -- of energy production, did you consider when you prepared your testimony? Was it a consideration at all in terms of -- of making the recommendation as to whether removal was the best option or mitigation measure of some sort such as relocation was a better option?

MS. CERBIN: Your Honor, I -- I just want to object to that on -- on one point.

And I apologize for that but we do not know the output of any of these turbines. We don't have a turbine model so I -- the reason I'm objecting to this question is because it's an unknown --

A.L.J. LECAKES: No, I'll -- I'll -- I'll take -- I'll take it as a clarification of my question and I appreciate that.

MS. CERBIN: Thank you, Your Honor.

A.L.J. LECAKES: I think -- I think the question is -- the question is more of the proposed output that the applicant has -- has put forth in its application for the entire wind farm and also for the -- the proposed individual towers, the applicant did have specifications that they were looking to try and achieve. How much of -- of that, you know, whether they can make it or not, how much of -- of -- of the proposal did you take into consideration about the total output, energy output and the individual energy output of each proposed turbine that the applicant wants to put forward when you prepared your testimony?

THE WITNESS: It's a good question.

It -- it's not -- because it's only three turbines, I did put it in -- into my head, I guess, so to speak that it should be something that the applicant should consider and I don't see why not.

A.L.J. LECAKES: Okay. And -- and then when the application was put in there was a -- a -- a certain number of -- of towers that were proposed, I believe, it was 62 at the time.

Since then, the applicant has already eliminated a number of towers. Has your position changed at all as to whether removal is the best option, given the fact that the applicant has agreed to remove certain towers including two that you had already suggested be removed?

THE WITNESS: Yes, I was happy to see that they did do -- did do that. I went back and I looked, I see that they're just -- they're just difficult to -- to construct, they have one that's 100 feet below the ridge line so I think the applicant claims that, you know, wind analysis, better winds are up higher, that refutes that right there. Environmentally, these

are just the three most impacted sites that were in here and in my expertise I didn't believe that they needed to construct them.

A.L.J. LECAKES: All right. Thank you. I appreciate that.

Judge Garlick, do you have any questions? Why don't we break. Do we want to just break for lunch then while you do redirect or do you think that you'll have --

MS. CERBIN: It will just take two seconds.

A.L.J. LECAKES: All right. Why don't we go off the record while DPS staff consults with this witness?

(Off the record)

A.L.J. LECAKES: Okay, we'll go back on the record. DPS staff, do you have any redirect for this witness?

MS. CERBIN: We do, Your Honor. Just a minute, if it's all right.

A.L.J. LECAKES: Yes, absolutely.

MS. CERBIN: I got it.

REDIRECT EXAMINATION

BY MS. CERBIN:

Q. Mr. Connor, in your testimony, did you recommend how many turbines did you recommend removing?

A. (Connor) Six.

Q. And did the applicant in their rebuttal testimony, do you remove any of the ones that you recommended for removal?

A. Yes, they did.

Q. Did that validate your assumptions in your testimony?

A. Yes, it did.

Q. Mr. Connor, how many turbines has the applicant removed since filing of this case?

A. I believe 10, might be 14.

Q. And Mr. Connor, would you say that the last three for removal are the most impactful of the project?

A. Yes.

A.L.J. LECAKES: Can -- can you clarify what you mean by the last three or four removal, please?

MS. CERBIN: The last three that Mr. Connor recommended for removal because of their impacts, Your Honor.

A.L.J. LECAKES: Oh, the -- the ones that haven't been removed?

MS. CERBIN: Yes, sir.

A.L.J. LECAKES: Okay.

A.L.J. GARLICK: That's Turbines 22, 36 and 42?

MS. CERBIN: Yes, Your Honor.

A.L.J. GARLICK: Okay.

BY MS. CERBIN: (Cont'g.)

Q. That will be 22, 36 and 42.

Mr. Connor, would you agree that as compared to the rest of the facility, those turbines have a disproportionate impact?

A. Absolutely.

Q. Thank you, Mr. Connor.

A. Thank you.

A.L.J. LECAKES: Is there -- you're not yet excused.

THE WITNESS: Okay.

A.L.J. LECAKES: Is there any recross from the applicant on those redirect questions?

MR. BAKER: No, Your Honor.

A.L.J. LECAKES: All right. Mr.

Connor, this is the only testimony you had in this case?

THE WITNESS: Yes.

A.L.J. LECAKES: Okay. You are excused and you are free to -- to go. You are -- are done with cross examination. Thank you for your participation.

THE WITNESS: Thanks, Your Honor.

A.L.J. LECAKES: All right. We're going to break for lunch now. I would like that during lunch DPS staff to review the revised certificate conditions.

I understand that Ms. Rothrock has limited availability so we need to determine if you'll have any questions for her. And then when we come back, we will pick up with the bats issue unless DPS has questions on DEC witness, Anne Rothrock. Thank you, we're off the record.

(Off the record)

A.L.J. LECAKES: All right, this is Judge Lecakes. We are back on the record, coming back from lunch. Before we came on the record we have a short discussion. The first we're going to turn to Department of Public Service staff and

I will direct my question to staff counsel. Have you had a chance to review the revised certificate conditions which has now been marked as Exhibit 97?

MS. CERBIN: Yes, we have.

A.L.J. LECAKES: And have you made a determination as to whether you need to cross examine any of the witnesses that have been called so far?

MR. CERBIN: We do not, Your Honor.

A.L.J. LECAKES: Okay. With that representation from counsel that there is no cross examination for those witnesses Ms. Rothrock and who else was?

MR. MUSCATO: Mr. Brazell.

A.L.J. LECAKES: Yeah, and Mr. Brazell, you are dismissed on that issue alone on -- on the wetlands and streams issues.

THE WITNESS: An invasive -- an invasive species.

A.L.J. LECAKES: An invasive species.

MS. CROUNSE: Excuse me, Your Honor. I just wanted to ensure we have testimony

on streams from Chris LaGard who is not appearing, he’s going to be submitting an affidavit and I wanted to ensure that he would not be called for cross examination.

A.L.J. LECAKES: All right, my understanding is that DPS staff counsel's representation goes to that witness as well, is that correct?

MS. CERBIN: That's correct.

A.L.J. LECAKES: Thank you. All right. This afternoon, we are moving to the issue of bats which involves endangered, threatened species and their habitats because of that and due to the ruling that Judge Garlick and myself made this morning on the record there's confidential information that is contained in those record, under the Department of Environmental Conservation Law and, therefore, the rest of the proceedings for this afternoon are going to be treated as confidential. For record purposes, this should be contained in the hearing transcript for the confidential version only, but before that gets published, Judge Garlick and myself, as well as the parties will

have an opportunity to review the transcript to basically unredact any public information that's available. So I will have to ask everyone to leave, who is not a part of the hearing procedures at this point. Thank you.

Mr. Peterson, why don't you come forward at this point? Mr. Peterson, could you raise your right hand? Do you swear or affirm that the testimony you're about to give in this proceeding is the whole truth?

MR. PETERSON: I do.

TREVOR PETERSON; Sworn

A.L.J. LECAKES: You may be seated.

DIRECT EXAMINATION

BY MR. MUSCATO:

Q. Good afternoon, Mr. Peterson. Could you please state your full name for the record?

A. (Peterson) Trevor S. -- Trevor S. Peterson.

Q. And, Mr. Peterson, do you have in front of you a document entitled, pre-filed testimony of Trevor Peterson?

A. Yes.

Q. Do you have any changes or

corrections to make to that document?

A. No, I don't.

Q. If I were to ask you the questions in that document, would your answers be as set forth therein?

A. Yes.

Q. Are you also sponsoring exhibits to your direct testimony?

A. Yes, I am.

Q. And what is that exhibit?

A. The exhibit to my direct testimony includes the rebuttal testimony as well as the take estimate, I believe, there's six of them.

Q. Okay. So let me see if I can clarify. With respect to -- you submitted two sets of testimony in this proceeding, right? There was the direct testimony that was pre-filed with the application and then there was also a rebuttal testimony that you submitted later in this proceeding, right?

A. Correct.

Q. Okay. So just, with respect to the pre-filed direct that just included your resume, correct?

A. Oh, correct, yes.

Q. And so do you have the 72-page document that was entitled, the rebuttal testimony of Trevor Peterson?

A. I do.

Q. Do you have any changes or corrections to make to that document?

A. Not to that document.

Q. Okay. If I were to ask you the questions in that document, would your answers be as set forth therein?

A. Yes.

Q. Are you also sponsoring exhibits to the rebuttal testimony?

A. Yes, I am.

Q. Okay, and those exhibits are referred to as Peterson 1 through -- is it five?

A. All right, two through six.

Q. I'm sorry, two through six. And those are Hearing Exhibits 40 -- I'm sorry 38 -- 37, 38, 39 and 40 and 41. And were they prepared by you or under your supervision?

A. Yes, they were.

Q. Are there any corrections to these

exhibits?

A. There is an addition to one of the exhibits, our numbered Exhibit 3.

Q. Okay. Just so the record -- for the record, that's the memo regarding NLEB take estimate?

A.L.J. LECAKES: The May 2017 memo, correct?

THE WITNESS: Correct.

A.L.J. LECAKES: And that would be Exhibit 38 for identification for the hearing?

MR. MUSCATO: Your Honor, just for clarification for a moment. Yes, I just want to be clear.

A.L.J. LECAKES: Yeah, okay.

BY MR. MUSCATO: (Cont'g.)

Q. And, Mr. Peterson what -- what's the clarification or correction with respect to this exhibit?

A. This exhibit includes simulations of the power loss and avoided acoustic activity associated with five different curtailment plans, one of which is -- is, we referred to as minimization, which we were using as the -- it was referenced in

the DEC's direct testimony. We realized this morning that that scenario had two different options, one which would include curtailing up to five meters per second from April to the end of September. And one which, a reduced version which would only implement curtailment from July 1st through September 30th.

Q. And so if I could refer you to table two in Hearing Exhibit 38, what correction or clarification would you make to table two?

A. We would add a row that would be minimization for this smaller, or the shorter season of July 1 through September 30th and it would -- we would have the associated avoidance of 60% of bat activity (CONFIDENTIAL PORTION).

Q. Just for clarification, with respect to table two, you indicated that the minimization that -- where were its treatment, the table refers to treatment in the -- in the column treatment and then it refers to minimization. Can -- can you describe what minimization is meant in that table?

A. Yes, it's -- it's set forth in table one, but that includes raising the cut in speed to five meters per second from April 1 through

September 30th.

Q. And this was a recommendation from which testimony?

A. This was included as a -- as a minimization option in the -- in the DEC direct testimony.

Q. Okay.

A. I believe they stated that, ideal that the -- the wording I can -- it's on page 18 of the New York pre-filed testimony.

MR. MUSCATO: Just for clarification, Your Honor, the DEC panel testimony.

A.L.J. LECAKES: Okay.

THE WITNESS: And that reads, the second measure for minimize -- minimizing direct impact reads incorporating turbine curtailment at low wind speeds preferably greater than or equal to five meters per second at the appropriate time of the year which is April 1st to October 1st, but at least July 1 through October 1.

BY MR. MUSCATO: (Cont'g.)

Q. Okay. So let me just stop you there. So then, in essence, table two now provides a

treatment for both April 1 to October 1, which is the minimization but then also the July 1 through October 1, which is the DEC July 1 that you just testified about?

A. Correct.

Q. Do you have any other clarifications or corrections to -- to your exhibits that you're sponsoring?

A. Not that I'm aware of, no.

MR. MUSCATO: Your Honor, may we have the prepared direct and rebuttal testimony of Mr. Peterson copied into the record, with the clarifications and corrections he provided today?

A.L.J. LECAKES: Yes, at this point, the transcript should reflect the file of -- that was emailed to the court reporters, applicant-rebuttal testimony of Trevor Peterson dash-case 14-F-0490, put into the record as if orally given.

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

Application of Cassadaga Wind Project for a Certificate under Article 10 of the Public Service Law — Case No. 14-F-0490

REBUTTAL TESTIMONY OF:

TREVOR PETERSON

PROJECT MANAGER

STANTEC CONSULTING SERVICES INC.

30 PARK DRIVE

TOPSHAM, MAINE, 04086

Q: Please state your name, employer, and business address.

A: Trevor Peterson, Stantec Consulting Services Inc., 30 Park Drive, Topsham, Maine, 04086.

Q: Did you file pre-filed testimony in this matter, which contained your credentials?

A: Yes. Please see attached as "**Exhibit TSP-1"** my pre-filed testimony and credentials.

Q: What is the scope of your rebuttal testimony in this proceeding?

A: My testimony is being submitted to rebut certain direct testimony prepared by Jeremy Rosenthal on behalf of the New York State Department of Public Service Staff ("DPS"), the direct testimony of Brianna Denoncour and Carl J. Herzog prepared on behalf of the New York State Department of Environmental Conservation ("DEC") and the testimony of Jonathan Townsend prepared on behalf of Concerned Citizens of the Cassadaga Wind Project ("CCCWP"). Specifically, my rebuttal testimony will address the testimony submitted by the aforementioned parties with respect to the proposed Facility's impact on bats, analysis of potential cumulative impacts to bat populations, and evaluation of proposed measures to minimize and mitigate potential impacts to the northern long-eared bat. My testimony also addresses the proposed Certificate Conditions stated in the testimony provided from DEC and DPS.

Q: Are you sponsoring any additional evidence with your testimony?

A: Yes, the Northern Long-eared Bat Take Estimate and the Net Conservation Benefit Plan, which were both attached to the Applicant's response to DEC's interrogatory request number 1 (DEC-1) and provided to the parties on March 28, 2017 **(Exhibit TSP-2)**, Curtailment Methods Memorandum **(Exhibit TSP-3),** a revised Cumulative Effects Analysis **(Exhibit TSP-4)** a revised Northern Long-eared Bat Take Estimate **(Exhibit TSP-5)** and a revised Net Conservation Benefit Plan **(Exhibit TSP-6)** which have been revised to reflect additional minimization and mitigation measures proposed by the Applicant.

Q: Can you explain the revisions made to the Cumulative Effects Analysis and Northern Long-eared Bat Take Estimate?

A: We revised the Cumulative Effects Analysis and Northern Long-eared Bat Take Estimate to account for the reduced number of turbines in the revised project layout, incorporate a modified minimization plan proposed by the Applicant described below, and correct an error found in one of the post-construction monitoring reports used to calculate regional take. These changes are addressed specifically in subsequent responses.

Q: Can you explain the revisions made to the Net Conservation Benefit Plan?

A: We revised the Net Conservation Benefit Plan to account for the revised NLEB take estimate described above and to incorporate additional mitigation options suggested by the DEC.

Q: Were the Exhibits attached hereto related to potential impacts on bats prepared by you or under your direction and supervision.

A: Yes.

Q: Can you summarize your testimony?

A: While I have a number of concerns regarding the mischaracterizations and incorrect statements in the testimony submitted and its characterization of the Application and subsequent submissions, which I will address below, generally given the Applicant's proposed minimization measures (i.e. operational curtailment) and proposed mitigation, the adverse effects of the Facility on bat species, particularly the Northern Long-eared Bat (NLEB) have been minimized or avoided to the maximum extent practicable. In fact, given the measures being proposed by the Applicant, the Facility will have a smaller proportional impact on bats than any wind farm project currently operating in New York. The parties that have submitted testimony on bat impact issues largely agree that curtailment is an effective measure to minimize potential impacts and the only difference seems to be the specific implementation and parameters of the curtailment regime. In order to address these concerns, the Applicant has proposed the following

curtailment regime, referred to as the "modified proposal" throughout my testimony;

[redacted] As explained in the following responses and my attached Exhibit TSP-3, this curtailment regime is predicted to result in equivalent reductions in bat mortality to the proposal recommended by DEC, but with substantially less power loss.

Q: What is your opinion with respect to the curtailment regime proposed by the Applicant?

This curtailment regime effectively minimizes impacts to all bat species, including the NLEB, while maintaining the Facility's numerous economic and environmental benefits. The Applicant's proposed curtailment regime minimizes potential impacts by reducing overall bat mortality by at least 60% as compared to the Facility not operating with curtailment and reduces NLEB mortality by at least 80% as compared to the Facility not operating with curtailment. In addition to the measures to reduce potential impacts, the Applicant is proposing an NLEB Net Conservation Benefit Plan which will effectively mitigate potential impacts to

NLEB such that the operation of the Facility will result in a "net conservation benefit" to the species.

Q: How is your testimony organized?

A: I will address the issues raised by each party separately and have organized my testimony to respond directly to each Party. I will first address the testimony of Jeremy Rosenthal from DPS, next I will address the testimony of Brianna Denoncour and Carl J. Herzog from DEC, and finally I will address the testimony of Jonathan Townsend from CCCWP.

RESPONSE TO DPS TESTIMONY

Q: Can you summarize DPS's testimony on bat impacts?

A: Jeremy Rosenthal from DPS asserts that the Applicant did not (a) adequately address cumulative bat impacts (b) and that the curtailment regime proposed by the Applicant will not avoid and minimize bat impacts to the maximum extent practicable.

Q: Can you summarize your response to DPS's testimony?

A: The impact analysis conducted in support of the Application adequately assesses impacts, and the curtailment regime proposed by the Applicant will significantly reduce impacts to bats, especially the state-listed threatened (NLEB without considerably compromising the Facility's energy production. Population modeling, which DPS asserts that the Applicant should use to assess cumulative

impacts to bats based on its reading of one study (which is discussed further below), while theoretically possible, is outside the agreed upon scope of studies contained in the stipulations between DPS and the Applicant, and would not yield useful information such that it could accurately guide Facility level decisions. Such methods were not recommended in DEC's testimony, and in fact, contemplate an assessment beyond DPS Staff's own previous review of potential bat impacts in the Clean Energy Standard proceeding. Furthermore, the curtailment regimes proposed by DPS would result in significant energy loss for the Facility without a corresponding significant increase in benefit to bats. In fact, the testimony is devoid of very little scientific basis for many of the statements made, in particular the discussion regarding the potential benefits associated with higher levels of curtailment. DPS Staff appears to take a broad and unnecessarily conservative position, which has a limited capacity to further reduce impacts to bats while imposing substantially higher energy losses, as explained in subsequent responses.

a. Cumulative Impact Assessment

Q: Can you explain why assessing cumulative impacts to bats is difficult?

A: Bats are a difficult mammal to study and track. They are small, nocturnal, and certain migratory species are known to travel long distances. Therefore, basic demographic parameters and even rough empirical estimates of bat population

sizes do not exist for many species (Kunz et al. 2009). Lack of empirical demographic and population data for migratory bats in particular limits the ability to quantitatively assess the potential impact of wind energy on these species (Lentini et al., 2015, Diffendorfer et al., 2015). The challenges associated with empirical estimation will likely render any population models to be extremely coarse for migratory bats for the foreseeable future. As such, modeling the contribution of the Facility to cumulative bat mortality at wind projects, as suggested by DPS, would not yield information useful for the pre-construction permitting of any individual wind-powered electric generating facility. For similar reasons, evaluating the effect of Facility-related bat mortality on populations of any bat species is also not expected to provide useful information for management decisions during operation of the Facility.

Q: Please describe DPS's criticism of the Applicant's cumulative bat impact assessments?

A: DPS asserts that the significance of the predicted cumulative bat mortality from the Facility, and broader wind energy buildout, cannot be determined without assessing potential population-level impacts using population models, and therefore the Application insufficiently assesses the cumulative impacts to bats from the proposed Facility as the Application did not contain this analysis.

Q: What does DPS mean when they state the Applicant should use "population models" to assess impacts?

A: DPS states that the Applicant should use population models to evaluate "potential long-term cumulative impacts to bat populations from the proposed Project, projected build-out of wind facilities in New York State, and the broader region", and also "the compounding of population impacts from wind energy development to population impacts from White Nose Syndrome". This would involve modeling long-term population trends of affected bat populations with and without the contribution of mortality from the Facility. As explained in responses below, the uncertainty surrounding basic demographic parameters needed to construct population models, coupled with the challenges of defining a biologically relevant population for affected bat species, would render the output of any such models extremely coarse.

Q: Is conducting such an analysis feasible or helpful?

A: No. Currently, insufficient information exists on which to build population models that would have any useful application to decisions regarding any particular proposed facility (i.e. models that would be sensitive enough to evaluate scenarios in which the Facility is built or not built, let alone alternative curtailment scenarios). The core components of a population model include birth rates and mortality rates (which can be fixed or allowed to vary with age of

individual with the model structure), immigration and emigration rates (which are often assumed to be zero based on lack of information and to limit the number of variables), and the extent/size of the population under consideration (Kunz et al. 2009). For long-distance migratory bats, which account for 75% or more of total bat mortality at wind farms (Hein and Schirmacher 2016; Arnett and Baerwald 2013) in the northeast, there are no biologically relevant local or even statewide populations to which models can be applied. Available data suggest that hoary bats, eastern red bats, and silver-haired bats[1] each consist of a single, panmictic genetic population (Pylant et al. 2016), such that population modeling must occur at the species level. Necessarily, this means that models assessing cumulative impacts must account for mortality across the species range, and we are unaware of any reliable population estimates for any of the migratory bat species that are seasonally present in New York. If such estimates exist, DEC or DPS could presumably have provided them. There is simply not enough reliable information on bat populations in New York, or nationally for that matter, to assess the significance of Facility-related mortality on potential population-level processes using population models.

[1] The three migratory bats present in New York.

Q: What about DPS's suggestion that "if impacts from cumulative bat mortality cannot be modeled due to unknown population size, models should be made with estimated high, low and small population size."

A: The output of any modeling exercise using qualitative population sizes ranging from high to low would be similarly coarse. Predicted cumulative impacts to bats with large population sizes and lower mortality rates (e.g. eastern red bats) will be proportionally small, and predicted cumulative impacts to bats with smaller populations and higher mortality rates (e.g. hoary bats) would be proportionally greater. I maintain that such information will not help evaluate the significance of Facility-level contributions to cumulative bat mortality. The scale of Facility-level decisions and their contribution to cumulative mortality rates, even in the absence of the Applicant's proposed curtailment, are simply too small relative to the affected populations and associated uncertainty surrounding basic demographic parameters.

Q: **Are you aware of the 2017 Frick article which DPS claims modeled the demographic effects of wind turbine fatalities on migratory bat populations?**

A: Yes, I am aware of this article. Frick et al. (2017) analyzed results of an elicitation in which 9 experts were asked to estimate the continental population of hoary bats and 4 demographic parameters (adult annual survival, first-year annual survival, adult fecundity, and first-year fecundity). The authors calculated population

growth rates based on the 4 demographic parameters and determined whether the hoary bat population would be stable, increasing, or declining based on these estimates, with and without additional mortality from wind energy. Four of the estimates projected positive growth even with wind energy mortality, 4 projected declines (2 of these predicted population declines even without wind energy mortality), and the median estimate projected a 90% decline based on an assumed population size of 2.5 million hoary bats and a pre-wind population growth rate of 1.015. As an initial point, this article came out many months after the Applicant submitted its Application; therefore the information contained in this article would have been impossible for the Applicant to include in the Application. Furthermore, this article focused only on the hoary bat and does necessarily apply to all migratory bat species. Although other migratory bat species share similar overall life history in terms of long lifespan and relatively low reproductive output, the other demographic parameters mentioned above, which are not well defined for any of the migratory bat species, likely differ among species. Therefore, even if this article had been known while the Applicant was assessing impacts for the Facility, it would only provide information regarding the hoary bat and not all migratory bat populations. It should be noted that this article evaluates a species-level population model to highlight the potential population-level

impacts of the wind industry as a whole and provides no basis for evaluating Facility-specific impacts.

Ultimately, the article by Frick raises concerns of population-level impacts to hoary bats on a national level from the cumulative mortality caused by wind energy projects, and highlights the potential importance of implementing reasonable minimization measures across the industry, particularly when considering future buildout of the industry. Population models provided a useful framework to evaluate cumulative effects of the wind industry on hoary bats as a whole, but the uncertainty surrounding basic demographic parameters explored in the paper are such that Facility-level decisions, including whether the project is operated with or without any curtailment, would have almost no capacity to affect the outcome of the modeling. Such models could be useful for evaluating the significance of curtailment decisions applied to the entire wind industry, but not at the level of individual Facilities. Finally, I have been advised by counsel that DPS signed stipulations agreeing to the scope of studies to be included in the Application in this proceeding on issues such as cumulative impacts and species-level "population models" were not included as an agreed upon study to be conducted for the Facility.

Q: Do you believe the cumulative assessment in the Application satisfied the study obligations contained in the stipulations and adequately assessed the cumulative impacts to bats from the proposed Facility?

A: Yes. Since estimates of current population level data on bat species in New York do not exist, the cumulative effects analysis in the Application, as updated in the attached exhibits, focused on overall mortality rates in New York and the Facility's specific contribution to the overall cumulative mortality rate. Essentially, our method involved extrapolation of a mortality rate across the installed wind energy capacity and a calculation of the proportional contribution of the Facility to cumulative mortality over a 30-year time period. It should be noted DEC conducted a similar analysis and has not critiqued the Applicant's use of assessing cumulative impacts using mortality rates. This type of methodology is widely accepted and commonly used as the basis for take estimates and cumulative assessments for wind farm projects in New York and elsewhere, and was also used by the U.S. Fish and Wildlife Service (USFWS) in their NLEB Biological Opinion (USFWS 2016). Specific elements of the stipulations, such as evaluation of "habitat and migration corridors" are not possible given the types of site-specific data that can be generated from surveys included in the pre-construction work plan that was developed in cooperation with the NYSDEC.

Q: Do you agree with DPS's assertion that the "proposed project will significantly contribute to bat mortality"?

A: No, nor do I think DPS Staff has provided any basis or foundation for this statement. Significance in the statistical sense refers to the ability to reliably detect the effect that a certain process (in this case the cumulative bat mortality rate) has on a dependent variable (in this case the population of affected species). As outlined in the updated Cumulative Effects Analysis "cumulative mortality at the proposed Facility will account for roughly 1.6% of the cumulative mortality of bats in the assumed 30 years of operation. Bat mortality at the Facility is not expected to be a significant addition to the cumulative bat mortality at wind energy facilities in New York, particularly with implementation of operational adjustments." As such, while the Facility will result in a bat mortality on a seasonally predictable basis, at a rate we predict to be less than 60% of the rate documented at other projects in the region based on their curtailment regime, the contribution of bat mortality at the Facility to cumulative bat mortality is too small to have a measurable or estimable effect on populations given the uncertainties explained in my previous responses.

b. Curtailment

Q: Did the Applicant propose measures to minimize potential impacts to bats in the Application?

A: Yes. The Application originally proposed [redacted] would reduce potential mortality of all bats at the Facility by 30% or more as compared to implementing no turbine adjustments (AWEA 2015).

Q: What does "feathering at manufacturer's rated cut-in speed" mean?

A: Feathering means the blades are rotated so that they do not spin freely at low wind speeds. The cut-in speed is the wind speed at which the turbines will begin to spin. Typically this is 3.0 m/s for many turbine models.

Q: Has the Applicant proposed any further measures to minimize potential impacts to bat species?

A: Yes, after the Application was filed the Applicant updated the proposed minimization measures, and agreed to [redacted] would likely result in reducing mortality of all bats at the

Facility by 50% or more as compared to implementing no turbine adjustments. (Arnett et al. Baerwald et al. 2009, Arnett et al. 2010, Stantec 2013).

Q: Can you explain what this means?

A: Curtailment generally refers to feathering turbine blades beneath an increased cut-in speed, preventing turbine rotors from spinning even when winds are strong enough to allow power to be generated.

Q: Is the Applicant now proposing something additional?

A: Yes. In recognition of the issues raised by certain parties in this proceeding and in response to the direct testimony, the Applicant is now proposing the following, referred to as the "modified proposal" in my testimony;

[redacted].

Q: How does this curtailment regime further minimize potential impacts to all bats?

A: By implementing a higher cut-in speed when site-specific acoustic data and regional mortality data both suggest potential bat impacts are highest, the modified proposal provides greater protection of bats during periods of greatest risk.

Q: What impact does increasing curtailment to higher wind speeds have on the Facility?

A: Increasing cut-in speed does further reduce bat mortality up to a certain point, but presents a problem of diminishing return and increasing cost. With respect to NLEB, it is possible that the threshold cut-in speed above which further increases result in little if any added benefit is actually quite low (possibly as low as 3–4.5 m/s). In fact, my understanding is that none of the NLEB mortality reported in the U.S. occurred at turbines under any form of feathering or curtailment, supporting this possibility.

My ongoing PhD research focuses on use of acoustic bat data to characterize conditions during which bats are active in the rotor zone of wind turbines, and predict the effectiveness and cost of various curtailment strategies. I applied the method to this Facility using available pre-construction acoustic bat data and wind speed data as measured at 2 meteorological towers between April and October 2014. See exhibit TSP-3 for a full explanation of the methods and results of this analysis. As outlined below, these predictions illustrate the pattern of diminishing effectiveness and increased energy loss when cut-in wind speeds are increased across longer seasons with less bat activity and extended into daytime hours, during which very little bat activity occurs. To be efficient, curtailment programs

should concentrate curtailment on conditions with the highest levels of bat activity first, strategically expanding until mortality is sufficiently reduced.

Q: Does the Applicant's proposed curtailment avoid and minimize bat impacts to the maximum extent practicable?

A: Yes. The proposed curtailment regime will reliably reduce total bat mortality by at least 60% and will minimize potential impacts to NLEB by at least 80%. We base the anticipated overall reduction of 60% based on a combination of studies at operational wind projects that have measured effectiveness of similar curtailment regimes at reducing overall bat mortality by a similar margin, and an analysis of acoustic bat data and meteorological data collected at the Facility in 2014, as explained in greater detail in exhibit TSP-3. The anticipated 80% reduction for NLEB is based on reasonable assumptions related to the behavior of NLEB and estimates that curtailment below 4.0–4.5 m/s cut-in speeds could reduce *Myotis* fatality rates by >90%. Stantec's previous take estimated predicted a reduction in NLEB mortality of 75%, and we have increased that estimate to 80% to account for the increased curtailment during August in the Facility's modified proposal. The DEC predicted that their minimization strategy (5.0 m/s cut-in speed from April 1 through October 1) would reduce NLEB mortality by 80% as well, and our acoustic analyses suggest that the modified proposal and DEC-recommended minimization strategy will result in a similar reduction in overall mortality (see

exhibit TSP-3). Our analysis of acoustic data suggests that increasing cut-in wind speeds above those in the modified proposal would have decreasing capacity to reduce bat mortality while incurring rapidly increasing costs. Most of the benefits of curtailment are realized at the lowest wind speeds, and increasing cut-in speeds above a certain point dramatically increases the cost due to the exponential power generation curve.

Q: Is DPS's suggested curtailment regime of "6.0 m/s during June 1 to October 1, one hour before sunset to one hour after sunrise when temperatures are greater than 10 degrees Celsius" based on scientific research?

A: DPS indicates that their suggested curtailment regime is similar to those being implemented elsewhere in the region (e.g. Vermont and Maine) but does not reference any specific research supporting the details of the plan. The DPS plan would prevent turbine operation during the periods of highest risk to bats, as would the Applicant's modified proposal, but would also result in substantial curtailment and power loss during times of year and conditions where risk to bats is anticipated to be very low. As such, the plan would be substantially more costly and less efficient than the Applicant's modified proposal. Based on the analyses presented in exhibit TSP-3, the DPS plan would avoid 73% of bat activity compared to 63% of bat activity avoided by the Applicant's modified proposal, but would result in 3.8 times more energy loss. Such a plan would severely hinder

the Facility's ability to generate clean power while doing relatively little to further reduce bat mortality.

Q: In addition to the measures proposed to minimize potential impacts to bats, what else has the Applicant proposed to specifically address potential impacts to NLEB?

A: In response to DEC Interrogatory Request DEC-1 (dated 1/04/2017), the Applicant provided to DEC a memo dated February 20, 2017 that describes the proposed mitigation plan. The Applicant proposed the following possible scenarios for mitigating the impact of taking 12 female NLEB.

1) Protect >46 acres of suitable roosting and foraging habitat with a large continuous forest block

2) Protect at least 15 acres of suitable roosting and foraging habitat that either contains or is within 2 miles of a known NLEB maternity roost. The Applicant is proposing to work with DEC to identify areas with known maternity roosts based on existing maternity roost data.

Since this submission, the Applicant has modified the Facility proposal in the following elements:

1) reduced the number of turbines from 58 to 48

2) implement operational adjustments to minimize NLEB take resulting in lowering of the take estimate from 8.1 NLEB to 5.8 NLEB.

The Applicant is still considering the mitigation described above in 2) for protecting at least 15 acres as a possible option, but is no longer considering the mitigation described above in 1) for protecting >46 acres based upon review of DEC's testimony and because the estimated NLEB take is now lower. Upon reviewing the recent testimony from DEC, the Applicant is now considering the following mitigation options as recommended by DEC in their recent testimony:

1) Gating of known hibernacula based on a list of potential sites provided by DEC.

2) Protection of known roosts or hibernacula through conservation easement. The Applicant would potentially protect a site based on a site(s) as identified by DEC.

3) Implementation of WNS treatments. The Applicant would consider contributing monetarily to a reasonable approach for treating bats or hibernacula affected by WNS.

A copy of the Applicant's revised Net Conservation Benefit Plan which includes details of the proposed mitigation is attached hereto as Exhibit TSP-6. The Applicant will work collaboratively with DEC to develop and refine the mitigation plan. For example, as outlined in Section II of my testimony the Applicant is open to discussing identifying new maternity roots using acoustic survey methods. The eventual mitigation plan will identify those measures that

will compensate for taking NLEB and result in a net benefit to the species. The Applicant will file the plan with DPS staff for review and collaborative consensus. The final consensus mitigation plan will be submitted to the DPS Siting Board as a compliance filing.

Q: Does DPS adequately describe the NLEB Mitigation proposed by the Applicant?

A: No. In their provided testimony, the DPS refers to only one of two options described in the Applicant's proposed mitigation plan submitted to DEC (date 2/20/2017). The DPS refers to the option to protect at least 15 acres of suitable roosting and foraging habitat containing or is within 2 miles of a known NLEB maternity roost, but neglects to mention the option to protect >46 acres of suitable roosting and foraging habitat within a large continuous forest block.

Q: DPS requests the Applicant propose a means to verify compliance with the curtailment regime. Has the Applicant proposed any means to verify compliance?

A: Verification that a curtailment regime is being implemented properly can easily be accomplished through reporting on the operation of turbines (RPM) during conditions in which turbines are supposed to be curtailed. Analyzing the proportion of time that turbine RPM is below a certain threshold versus the total amount of time when turbines should be curtailed according to the parameters

used by the system provides a reasonable measure to document compliance with the curtailment regime.

Q: Did you review the Certificate Conditions Proposed by the DPS and do you agree with them?

A: Yes, I reviewed the DPS Certificate Conditions. My response to each condition is below.

Proposed Condition 59: "Final Bird and Bat Conservation Strategy (BBCS), describing measures to be implemented to avoid, minimize, and mitigate impacts to avian and bat species. Separate BBCS Plans shall submitted for avian species and bat species. The Certificate Holder shall consult with NYSDEC and DPS Staff to determine feathering/curtailment regimes to minimize impacts to all bat species during operation of the Facility. The Certificate Holder shall develop protocols for monitoring and reporting compliance with the curtailment regime in consultation with DPS Staff. Impacts to wildlife shall be minimized to the maximum extent practicable."

Response: The proposed condition contains multiple parts which are contained in other proposed conditions; the curtailment regime, monitoring protocols and impacts are addressed in other conditions and should not be contained within the condition related to the Bird and Bat Conservation Strategy (BBCS). The Applicant will submit a BBCS to USFWS as part of its effort to avoid and

minimize potential impacts to birds and bats, however a BBCS is not required by DEC or the Article 10 regulations. The Applicant will agree to submit a copy of the final BBCS as a compliance filing at the same time the Applicant submits the final BBCS to USFWS.

Proposed Condition 60: "A plan to evaluate bat populations, minimization efforts, and potential modifications to operations every five years, developed in consultation with and accepted by DPS Staff."

Response: It is not within the scope of this project to evaluate bat populations every five years due to the lack of available techniques and challenges in defining the appropriate population to evaluate. It is also not practical for the Applicant to agree to re-evaluate operational modifications every five years as such commitment can negatively affect the ability of the project to obtain financing given the uncertainties associated with such commitment and potential energy loss. Furthermore, this condition is inconsistent with DEC's proposed condition regarding post construction monitoring and studies. The DEC condition is more appropriate and as explained below in response to DEC conditions the Applicant agrees to the post construction monitoring conditions proposed by DEC.

Proposed Condition 61: "Net Conservation Benefit Plan, developed in consultation with and accepted by NYSDEC and DPS Staff, for offsetting potential take of Northern Long Eared Bat."

Response: The Applicant is proposing a curtailment regime which they will agree to as a certificate condition [redacted], and will agree to submit a Net Conservation Benefit Plan with mitigation consistent with this testimony 60 days prior to the start of construction.

Proposed Condition 61: "A proposed Post-Construction Monitoring Program (PCMP) Plan shall be submitted at least 60 days prior to the start of commercial operation of the Facility. The PCMP will assess the direct impacts of the Facility on bird and bat species. The plan, including specifics on study duration, search frequency, search areas, number and location of turbines to be searched, concurrent data collection and analysis, and carcass collection, shall be developed in consultation with the NYSDEC and United States Fish and Wildlife Service."

Response: Again this condition is inconsistent with DEC's proposed condition regarding post construction monitoring and studies. The DEC condition is more appropriate and as explained below in response to DEC conditions the Applicant agrees to the post construction monitoring conditions proposed by DEC.

Proposed Condition 101: "Tree and vegetation clearing shall be limited to the minimum necessary for Facility construction. Surrounding trees and vegetation will not be cut down on any property solely to reduce turbulence or increase wind flow to the Facility. To reduce mortality to nesting/roosting birds and bats, all tree clearing activities (except for hazard tree removal) shall be conducted between October 1 and May 1."

Response: Tree clearing activities should be limited to November 1 to April 1, consistent with DEC testimony but should not include trees less than or equal to 3 inches in diameter at breast height (DBH), as bats and birds will not be nesting/roosting in trees of this size.

RESPONSE TO DEC TESTIMONY

Q: Can you summarize DEC's direct testimony on bat impacts?

A: DEC asserts that wind development is causing bat mortality and that all on-shore wind facilities in New York, regardless of location or site specific data in the Project area, pose a threat to the Northern Long-eared Bat (NLEB). Therefore, DEC proposes a certificate condition to achieve full avoidance of direct impacts to NLEB and reduce direct impacts to other bat species that requires the Applicant to implement curtailment of all turbines when wind speeds at hub height are less than or equal to 6.9 m/s, every year of operation, on every night during the period from July 1 through October 1, from one-half hour after sunrise, when ambient air

temperature is equal to or greater than 50 degrees Fahrenheit. The DEC also outlined an incidental taking provision (Part 182) that can be used if full avoidance cannot be achieved. Briefly, this involves a pathway of first, minimizing potential impacts to NLEB, and secondly, applying compensatory mitigation as necessary "to achieve a net conservation benefit to the species."

Q: Does the Applicant assume its modified curtailment program will avoid impacts to NLEB?

A: No. The Applicant has agreed to implement a curtailment plan that will minimize impacts to all bats and NLEB to the extent practicable. Moreover, any remaining potential impacts to NLEB have been mitigated through the Applicant's proposed mitigation plan. Thus, the Applicant's proposal will achieve the Part 182 requirement of a "net conservation benefit" for the NLEB. The DEC's recommended Certificate Condition is an "avoidance" strategy that would presumably avoid potential take of NLEB and substantially reduce all bat mortality.

b. <u>Bat Mortality</u>

Q: DEC testimony states that annual bat mortality estimates at wind energy projects in US and Canada range from 600,000 – 2 million based on data from 2012. Is this statement accurate?

A: This is incorrect. We believe DEC was meaning to reference cumulative mortality not annual mortality. The cited reference (Arnett et al. 2016) states that cumulative mortality estimates "ranged from 0.8 to 1.7 million over a 12-year period from 2000 to 2011" for all wind energy projects in the US and Canada. Interestingly, the reference cited in Arnett et al. 2016 (Arnett and Baerwald 2013) and associated table included in the DEC testimony actually report a cumulative mortality estimate from 650,104 to 1,308,375 for 2000 – 2011, with a projected increase in 2012 of 196,190 – 395,886 for 2012, so there may have also been an error in Arnett et al. 2016's citation of Arnett and Baerwald 2013. The DEC further states "these numbers likely underestimate the current level of mortality since the wind energy industry has grown significantly since 2012" is only accurate if applied to the annual estimates in the referenced papers. I note that nationwide mortality estimates can be dramatically affected by a number of assumptions regarding accuracy of mortality estimates based on different monitoring scenarios and statistical estimators, assumptions related to geographic variation in mortality rate, and how data are grouped.

Q: DEC asserts that a recent study (Frick et al. 2017) predicts a population decline of 90% for the most commonly killed species, hoary bat, in the next 50 years even if fatality rates remained at 2014 levels, and that this level of

decline is likely applicable to the other most commonly killed bat species as well, is this accurate?

A: The paper by Frick et al. 2017 analyzes results of an elicitation in which 9 experts were asked to estimate the continental population of hoary bats and 4 demographic parameters (adult annual survival, first-year annual survival, adult fecundity, and first-year fecundity). The authors calculated population growth rates based on the 4 demographic parameters and determined whether the hoary bat population would be stable, increasing, or declining based on these estimates, with and without additional mortality from wind energy. Four of the estimates projected positive growth even with wind energy mortality, 4 projected declines (2 of these predicted population declines even without wind energy mortality), and the median estimate projected a 90% decline based on an assumed population size of 2.5 million hoary bats and a pre-wind population growth rate of 1.015. The authors stated that this was the "most likely" demographic scenario, although the paper itself did not necessarily predict a 90% population decline. The paper did not say that these same quantitative estimates are applicable to other species as DEC testimony states. Instead, the authors state "the qualitative conclusions are likely broadly informative about the relative risk to other migratory species that share similar life histories and high fatality rates at wind turbines, such as eastern red bats (*Lasiurus borealis*)…" Importantly, population estimates for eastern red

bats are substantially higher than for hoary bats (Pylant et al. 2016), suggesting, for example, that the population-level impacts for red bats could be substantially less than for hoary bats.

Q: Did the Frick study make any recommendations for reducing bat fatalities at wind development sites?

A: Yes, Frick states "the only method documented to reduce fatalities at wind turbines is limiting operation during high risk periods, such as nocturnal periods of low wind speeds during autumn migration".

Q: Has Cassadaga Wind proposed limiting operations during these high risk periods?

A: Yes. The modified curtailment proposed by the Applicant is focused in that it proposes a higher level of curtailment during times when bats are expected to be most active and at risk of turbine-related mortality.

Q: DEC states that they have been compiling data from post-construction monitoring surveys at operating wind projects in New York to determine bat mortality rates in New York, and that these results are generally comparable to those observed from wind projects across North America, do you agree?

A: DEC references results of several post-construction studies at wind projects in New York and states that the "results are generally comparable to those observed from wind projects across North America." This statement is true for several

factors (such as seasonal timing of bat mortality and species composition) but deemphasizes the substantial variability in magnitude of bat mortality among projects and regions. Arnett and Baerwald (2013) reported regional bat mortality rates ranging from 1.39 bats/MW/year in the southwest region to 41.17 bats/MW/year for projects in the southeastern U.S. Bat mortality rates are known to decrease at higher latitudes between West Virginia and Maine (Hein and Schirmacher 2016), with projects in New York appearing to have moderate bat mortality rates within the broader region. Details of turbine operation such as cut-in wind speed and RPM at low wind speeds also vary substantially among turbine types, possibly contributing to variation among projects. These variables contribute to the difficulty in large-scale extrapolation of bat mortality rates across the industry. Therefore is it hard to make state wide or regional assumptions about the magnitude of bat mortality despite consistent patterns in species composition and seasonal timing of mortality.

Q: Did you do anything different to determine the average mortality rate? Do you have a critique of their estimates?

A: The most straightforward method to estimate annual cumulative take for wind projects in New York is to multiply the mean bat mortality rate by the installed wind power capacity. Bat mortality rates are typically reported as per megawatt (MW) per year, or per turbine per year. The mean for projects in New York varies

depending on which projects are included, which of the available mortality estimates are used (multiple estimates are often reported based on different search intervals), and whether multiple years of results from individual sites are considered to be independent samples. In its testimony, DEC reported a "simple arithmetic mean" of 6.1 bats/MW/yr based on projects in New York as well as a site in Ontario, Canada. The DEC multiplied this value by the installed capacity of 1,821 MW to obtain a statewide estimate of 11,100 bats killed annually at wind projects in New York. I do not necessarily have a critique of the specific number used by DEC, but note that the statewide estimate can change substantially by applying a different set of assumptions, particularly with respect to determining the mean mortality rate. For example the mortality estimates listed in Table 2 of the DEC testimony report the higher mortality estimates available when different daily versus weekly estimates were available. Also, If DEC were to have calculated statewide mortality based on a per turbine rate using the same set of projects, the value would have been 12.38 bats/turbine/year * 1,052 turbines = 13,024 bats per year.

I note that Stantec discovered an error in one of the reports used by DEC and the Applicant to estimate NLEB take and cumulative impacts. Table 2 in the DEC testimony reports a bat mortality estimate of 17.1 bats/MW/yr for the Cohocton/Dutch Hills project in 2013. The number in the cited report was

incorrectly calculated based on a 1.5 MW turbine size instead of the 2.5 MW turbine size actually at the project. The correct value is 10.25 bats/MW/yr for that datapoint. Substituting the correct value for Cohocton/Dutch Hill site into the dataset used by DEC would result in estimates of 5.85 bats/MW/yr or 11.72 bats/turbine/yr.

a. Northern Long-eared Bat

Q: Are you familiar with Article 11 Part 182?

A: Yes. Article 11 Part 182 contains the regulations governing the incidental take of threatened or endangered species at otherwise lawful activities, such as wind farms. According to Part 182.8 "No person shall take or engage in any activity that is likely to result in a take of any species listed as endangered or threatened in this Part, except as authorized by an incidental take permit...". Take is defined as "the pursuing, shooting, hunting, killing, capturing, trapping, snaring and netting of any species listed as endangered or threatened…and all lesser acts such as disturbing, harrying or worrying."

Q: DEC testified that "any expected take of NLEB in New York would require a permit issued by NYSDEC". Is this true under Article 11 Part 182?

A: Yes, that is my understanding.

Q: DEC testified that "all on-shore wind turbine facilities in New York pose a threat to the species." Do you have a response to this statement?

A: Based on the broad range of NLEB, I concur that it is possible for any wind facility to cause direct mortality of NLEB. Whether such mortalities constitute a threat to the species is a separate question. The U.S. Fish and Wildlife Service (USFWS) concluded that incidental take from wind energy and a variety of other processes would "not lead to population-level declines in this species" (USFWS 2016a). Based on my understanding of NLEB behavior and biology coupled with the low incidence of fatalities of this species, even prior to population declines resulting from White-Nose Syndrome (WNS), and the apparent effectiveness of curtailment measures, I think that Facilities implementing any form of curtailment including feathering below manufacturer's cut-in speed have a very low potential to take individual NLEB, let alone threaten the species' viability.

Q: Will the Facility result in adverse habitat modification?

A: Constructing the facility will result in a small amount of forest clearing. As discussed in the Application, seasonal timing of the clearing will avoid the potential for direct mortality of roosting bats. Based on literature referenced in the Application and habitat fragmentation analysis, I do not think that forest clearing will have any detrimental impact on NLEB.

Q: But according to DEC, USFWS has estimated the widespread take of NLEB at wind turbine facilities within the species' range?

A: The cited biological opinion estimated that NLEB comprise 0.09% of fatalities (based on 8,934 bat carcasses collected in 71 post-construction studies) and concluded that the combined effects of wind energy and several other activities including timber harvest would not lead to population-level declines for NLEB. The Final 4(d) rule (USFWS 2016b) states "while sustained mortality at particular facilities could potentially cause declines in local populations of the northern long-eared bat, if that is in fact occurring, it does not appear to be wide-spread at least when compared to other bat species which are nearly always found in fatality monitoring at wind facilities."

Q: **But what about DEC's assertion that NLEB mortalities have been documented at wind projects in New York?**

A: DEC correctly states that NLEB mortalities have been documented at wind projects in New York, although we point out that 6 out of 7 NLEB mortalities documented in New York occurred at one project, whose mortality rate was substantially higher than most others in New York. When evaluating risk of NLEB take at wind projects, I think it is advisable to include as large a sample size of relevant projects as possible. In particular, numerous standardized post-construction surveys occurred in Pennsylvania between 2010–2013 (post-WNS) did not document any NLEB mortality.

Q: What about DEC's assertion that the species is "susceptible to be taken at wind turbine facilities"?

A: The species is not particularly susceptible to be taken at wind turbine facilities. Even before WNS, NLEB were not found in large numbers during fatality surveys at wind projects. NLEB are small, but in my opinion not significantly more difficult to find in carcass searches compared to other species such as tri-colored bats and silver-haired bats, which comprise substantially higher percentages of turbine-related fatalities. The USFWS reported that NLEB accounted for 0.09% of 8,934 carcasses collected at wind projects throughout the species' range (USFWS 2016a).

Q: What has the Applicant done then with respect to the NLEB in accordance with Part 182?

A: We have prepared a NLEB Take Estimate and Net Conservation Benefit Plan in accordance with part 182. These have now been updated to reflect additional minimization and mitigation measures proposed by the Applicant and are attached hereto as Exhibit TSP-5 and Exhibit TSP-6.

Q: How does the Applicant's take estimate differ from DEC's take estimate contained in their testimony?

A: The DEC calculated NLEB take at wind projects in New York by multiplying a per-MW bat mortality rate and the proportion of total bat mortality composed of

NLEB. Stantec followed the same method in the take estimate, based on guidance from DEC. However, DEC and Stantec used different datasets upon which to calculate the mortality rates and species composition. While the fatality rates were similar between these datasets, the proportion of mortality composed of NLEB was twice as high in the smaller dataset used by DEC, which did not include results from nearby Pennsylvania. We note that previous guidance provided by DEC **did** include the Pennsylvania dataset. This difference has a substantial effect on the resulting take estimates, because a large number of post-construction studies have occurred in Pennsylvania, resulting in discovery of a large number of bat carcasses, none of which were NLEB (Table 1; Table 2).

In the NLEB take estimate for the Applicant, Stantec chose to include data from Pennsylvania based on initial recommendations from DEC and because we consider the large number of carcasses collected in standardized post-construction studies in Pennsylvania to be representative of the relative species composition expected at the Facility site. For comparison, the USFWS calculated that NLEB comprise 0.09% of bat mortality based on an even larger dataset of 8,934 bat carcasses collected in 71 post-construction studies across the NLEB species' range (USFWS 2016). It is reasonable to assume that relative risk of turbine-related mortality of NLEB versus other bats is consistent across large areas, and therefore a larger sample size representing more studies across a wider area is

appropriate for calculating take of NLEB. Accordingly, the species proportion of 0.18% used in the application, which is roughly the midpoint between the USFWS and DEC estimate, is reasonable for calculating take and associated mitigation requirements. Using the USFWS rate of 0.09%, which may be more representative of the species risk profile, would reduce Stantec's NLEB take estimate summarized in Table 1 by half.

Also, Stantec used a per-turbine calculation method to extrapolate mortality rates to the Facility (based on 48 turbines) whereas DEC used a per-MW rate (based on 126 MW capacity). For comparison purposes, we present conversions of the DEC method of estimating NLEB take to a per-turbine basis, and conversion of Stantec's NLEB take estimate to a per megawatt basis (Table 1). I do not consider either method to be objectively better than the other, and the appropriateness of one method over the other depends on the application. In this case, the Applicant has modified its Facility layout substantially during the course of development, resulting in a reduction in the number of proposed turbines while maintaining the same total nameplate capacity of 126 megawatts. The turbines ultimately selected for construction will have a larger rotor diameter as compared to those turbines that could have been utilized with more turbine locations, but we think it is unlikely that cumulative mortality at the Facility would remain the same given a reduction in the number of turbines to be constructed (48) as compared to the

number of turbine initially proposed in the final Public Involvement Program (70). As the number of turbines was reduced incrementally during Facility design, Stantec chose to use the per-turbine method to account for the associated reduction in mortality that is anticipated to occur. Admittedly, there is uncertainty as to whether bat mortality risk will "scale up" with larger turbines. Initial studies documented an increase in bat mortality with larger turbines (Barclay et al. 2007), although the largest turbine size considered in that study was 1.8 MW, well below the sizes currently being installed at commercial wind projects. In the case of NLEB, which are thought to rarely fly above forest canopy height, increases in turbine size above 1.5 – 2 MW would be expected to have little if any effect on mortality rates. As such, I consider it appropriate in this case to base the take estimates on a per-turbine basis as it accounts for a reduction in overall bat mortality for the Facility that can be reasonably assumed to result from reducing the number of turbines.

Table 1. NLEB take estimates for the Proposed Facility based on datasets and methods used by DEC and the applicant.

Metric	DEC*		Applicant*	
	Per Megawatt (MW)	Per Turbine	Per Megawatt (MW)	Per Turbine
All Bat fatality rate	6.1 per MW	12.38 per turbine	6.0 per MW	11.09 per turbine
NLEB proportion of bat fatalities	0.004 (n = 1,736)	0.004 (n = 1,736)	0.0018 (n = 3,685)	0.0018 (n = 3,685)
Annual NLEB	0.0244 per MW	0.0495 per	0.0108 per	0.0200 per

mortality rate		turbine	MW	turbine
Annual Take without Minimization	3.07 (126 MW)	2.376 (48 turbines)	1.361 (126 MW)	0.960 (48 turbines)
Annual Take with Minimization (80%)	0.614 (126 MW)	0.476 (48 turbines)	0.272 (48 turbines)	0.192 (48 turbines)
Cumulative Take without Minimization	92 (30 years)	72 (30 years)	41 (30 years)	29 (30 years)
Cumulative Take with Minimization (80%)	19 (30 years)	15 (30 years)	9 (30 years)	6 (30 years)
*The set of projects used by DEC to calculate species composition differed. DEC used projects in New York and one site in Ontario whereas the applicant used projects in New York, Ontario, and Pennsylvania. The primary result is a substantially different sample size of bats used to calculate the percent species composition of NLEB. For comparison, USFWS used an even larger range-wide sample size and calculated the proportion of NLEB to all bat mortality of 0.0009 (USFWS 2015).				

Table 2. Bat carcasses found at projects used to inform NLEB proportion by DEC and the Applicant

Projects used to inform NLEB proportion - DEC			**Projects used to inform NLEB proportion - Applicant**		
Project	**Year**	**Total Bats**	**Project**	**Year**	**Total Bats**
Cohocton	2010	69	Cohocton	2010	69
Cohocton	2011	63	Altona	2010	31
Cohocton	2014	44	Chateaugay	2010	29
Hardscrabble	2012	11	Clinton	2009	42
Hardscrabble	2013	179	Ellenberg	2009	32
Hardscrabble	2014	36	Wethersfield	2010	75
Hardscrabble	2015	10	Wethersfield	2011	46
Howard	2013	185	Maple	2012	85
Howard	2014	32	Sheldon	2010	53

Projects used to inform NLEB proportion - DEC		
Project	**Year**	**Total Bats**
Altona	2010	31
Altona	2011	25
Bliss	2009	36
Bliss	2011	18
Chateaugay	2010	29
Clinton	2009	42
Ellenberg	2009	32
Wethersfield	2010	75
Wethersfield	2011	46
Maple	2012	85
Marble River	2014	22
Marble River	2015	38
Sheldon	2010	53
Sheldon	2011	38
Steel	2011	19
Steel	2012	34
Undisclosed	?	11
Undisclosed	?	47
Undisclosed	?	33
Wolfe	2009	189
Wolfe	2010	145
Wolfe	2011	59
Total number of carcasses		**1,736**

Projects used to inform NLEB proportion - Applicant		
Project	**Year**	**Total Bats**
Sheldon	2011	38
Wolfe	2009	189
Wolfe	2010	145
Wolfe	2011	59
PGC	2010-2013	2,972
Total number of carcasses		**3,865**

Lastly, as mentioned previously, Stantec discovered an error in the per-MW bat mortality estimate reported in the 2010 Cohocton/Dutch Hill report used by DEC and Stantec in estimating NLEB. The per-turbine mortality estimate in the cited report was accurate, but the per-MW rate was calculated using the incorrect turbine size. Table 3 recalculates all

of the NLEB estimate methods described above using the correct data point for Cohocton/Dutch Hill in 2010.

Table 3. NLEB take estimates for the Proposed Facility based on datasets and methods used by DEC and the applicant, based on the corrected underlying mortality estimates from post-construction carcass survey reports.

Metric	DEC*		Applicant*	
	Per Megawatt (MW)	Per Turbine	Per Megawatt (MW)	Per Turbine
All Bat fatality rate	5.85 per MW	11.72 per turbine	5.69 per MW	10.75 per turbine
NLEB proportion of bat fatalities	0.004 (n = 1,736)	0.004 (n = 1,736)	0.0018 (n = 3,685)	0.0018 (n = 3,685)
Annual NLEB mortality rate	0.0234 per MW	0.0469 per turbine	0.0102 per MW	0.0194 per turbine
Annual Take without Minimization	2.95 (126 MW)	2.25 (48 turbines)	1.29 (126 MW)	0.930 (48 turbines)
Annual Take with Minimization (80%)	0.590 (126 MW)	0.450 (48 turbines)	0.258 (48 turbines)	0.186 (48 turbines)
Cumulative Take without Minimization	89 (30 years)	68 (30 years)	39 (30 years)	28 (30 years)
Cumulative Take with Minimization (80%)	18 (30 years)	14 (30 years)	8 (30 years)	6 (30 years)
*The set of projects used by DEC to calculate species composition differed. DEC used projects in New York and one site in Ontario whereas the applicant used projects in New York, Ontario, and Pennsylvania. The primary result is a substantially different sample size of bats used to calculate the percent species composition of NLEB. For comparison, USFWS used an even larger range-wide sample size and calculated the proportion of NLEB to all bat mortality of 0.0009 (USFWS 2015).				

c. Avoidance and Minimization of NLEB Take

Q: DEC asserts that impacts to NLEB can be fully avoided when turbines are curtailed at wind speeds below 6.9 m/s. Do you agree?

A: We are unaware of any studies addressing the effectiveness of curtailing below 6.9 m/s for any individual bat species, let alone NLEB (which the DEC concedes on Page 16 Lines 12 – 13). Curtailing below 6.9 m/s does appear to reduce total bat mortality substantially and prevents turbine operation during most conditions when bats are active in the rotor zone. The USFWS considers 6.9 m/s to be a reliable avoidance strategy for Indiana bats and has applied the same number to NLEB, although this is a policy position rather than the result of empirical studies (and with the notable difference that USFWS does not typically accept a minimum temperature threshold). No curtailment studies I am aware of have assessed effectiveness of any curtailment strategy on any individual bat species. Further, the cut-in speed of 6.9 m/s does not have any specific basis in the biology of behavior of NLEB, but rather represents a curtailment program that the USFWS has deemed sufficiently restrictive to avoiding potential impacts to Indiana bats and have used this for stating there would be avoidance of impacts to NLEB for policy reasons without specific evidence supporting this measure versus reasonable alternatives. The demonstrated effectiveness of curtailment strategies with cut-in speeds at or above 5.0 m/s has varied substantially, with

diminishing reductions in mortality evident as wind speeds increase, as can even be seen in the small dataset shown in Figure 2 of the DEC testimony, and few if any studies have directly compared effectiveness of 6.9 m/s curtailment to lower cut-in wind speeds. All available data on effectiveness of curtailment at reducing bat mortality are based on overall bat mortality rates, which primarily represent long-distance migratory bats, which are substantially larger and stronger fliers than NLEB and are typically far more active above forest canopy height than *Myotis* species based on acoustic studies. Accordingly, any curtailment strategy that has demonstrated effectiveness at reducing overall bat mortality rates should be highly effective at reducing risk to NLEB.

We suggest that alternative methods incorporating variables such as temperature, as done by DEC, and using lower cut-in speeds at certain times of year could be equally as effective at avoiding risk of mortality for NLEB. We note the lack of any empirical evidence that NLEB are active in the rotor zone below, but not above 6.9 m/s. Of all bat species in New York, NLEB are the most maneuverable and weakest fliers, characteristically foraging below the forest canopy and gleaning insect prey off leaves. Their morphology is not conducive to flight in high winds and their foraging habitats suggest they do not typically fly as high as the rotor zone of wind turbines. This likely contributes to their apparent low rate of turbine-related mortality relative to other bat species, even before population

crashes due to WNS. Accordingly, curtailment programs using cut-in wind speeds below 6.9 may actually prove equally protective for NLEB. We acknowledge the need to manage rare species with caution, but wish to clarify that alternative curtailment strategies, such as the one proposed by the Applicant, may ultimately prove equally effective as the current avoidance strategy recommended by USFWS.

Q: **What is the impact of the DEC suggested avoidance curtailment regime of "at least 6.9m/s if the turbine curtailment regime is in place from July 1 to October 1 at times when the ambient temperature is 50 degrees 21 Fahrenheit or greater…from ½ hour before sunset to ½ hour after sunrise" to the Facility? How does this compare to the "minimization strategy" of curtailing below 5 m/s from April 1 to October 1, ½ hour before sunset to ½ hour after sunrise?**

A: As described in exhibit TSP-3, we modeled the cost and effectiveness of these strategies based on analysis of acoustic bat activity and meteorological data recorded at the Facility in 2014. I predict that the 6.9 m/s cut-in speed "avoidance" strategy would prevent turbine operation during conditions when 75% of all bat passes occurred and would result in an estimated 19,209 MW-hours of lost energy production each year. The "minimization" strategy would prevent turbine operation during conditions when 64% of bat passes occurred and

result in an estimated energy loss of 7,048 MW-hours each year. For comparison, the Applicant's modified proposal would prevent turbine operation at times when 63% of bat passes occurred and would result in an estimated 3,992 MW-hours of lost energy production each year (see exhibit TSP-3). While the avoidance strategy would presumably reduce total bat mortality somewhat more than the Applicant's modified proposal or the "minimization" proposal, it is plausible that each these strategies would be equally protective for NLEB based on factors discussed above. Of these strategies, the avoidance strategy would be prohibitively costly in terms of lost energy based on site-specific conditions. Based on available data, I predict the Applicant's modified proposal and the DEC "minimization" strategy to be equally effective at reducing overall bat mortality, but the DEC strategy results in substantially more energy loss. The reason the "minimization" strategy is projected to be substantially less efficient is based on broad application of a moderately high cut-in speed over a wide seasonal range including times of year with very little activity, and consequently lower risk of mortality. As explained elsewhere in my testimony, it is more efficient and equally protective to apply curtailment more strategically, focusing on periods with a higher concentration of bat activity.

Q: But aren't other projects in New York and nearby states implementing curtailment above what the Applicant has proposed?

A: DEC references recommended curtailment strategies of 5.5 m/s in Ontario, 6.0 m/s in Vermont, and 6.5 m/s in Maine but provides no information on projects implementing curtailment in New York. To my knowledge, none of the New York projects specifically identified in DEC's testimony are currently implementing any level of curtailment. The Maine Department of Inland Fisheries and Wildlife (MDIFW) currently recommends wind turbines operate at 6.0 m/s cut-in speed from ½ hour before sunset to ½ hour after sunrise from April 20 to October 15 (MDIFW 2015). However, most projects in Maine are operating without curtailment, some are curtailing below 5.0 m/s, and only one is curtailing below 6.0 m/s. Projects in Vermont are currently operating without restriction, or with cut-in speeds of 5.0 m/s or 6.0 m/s. The 6.5 m/s curtailment in Maine referenced by DEC referred to a project-specific recommendation letter from the MDIFW in reference to a particular site for which the application has been withdrawn. Again, as stated previously in my testimony curtailment is very project specific and depends on the wind conditions at each project and the economic viability of the project to implement certain curtailment regimes.

Q: If implementing the proposed avoidance curtailment by DEC is not possible without compromising the project what is the Applicant suggesting for curtailment?

A: As discussed above, the Applicant is proposing to feather all turbines according to the following parameters;

[redacted]

Q: And you believe this is the best minimization the Facility can propose without unduly compromising the success of the Facility?

A: Yes, the other minimization measures proposed by DPS and DEC result in a substantial energy loss for the Facility and are not correlatively protective of bat species.

II. Net Conservation Benefit Plan and Mitigation Options

Q: DEC proposes a number of mitigation options in their testimony, are these mitigation options reasonable for this Facility?

1. Gating of known hibernacula

A: The Applicant would certainly consider such a strategy if the DEC indicates that suitable hibernacula exists that is currently unprotected.

2. Identification of new maternity roosts or hibernacula near the Facility site

A: DEC recommends use of mist-netting to document NLEB roost locations, but does not mention use of acoustic detectors for this purpose. DEC pre-construction guidance allows for use of acoustic detectors to document presence of maternity colonies of NLEB. Although acoustic surveys do not allow identification of specific trees used by NLEB, the USFWS considers acoustic surveys to provide evidence that a maternity colony is within a certain surrounding area if conducted according to specified guidance. To be consistent with pre-construction methods and USFWS guidance, we suggest that acoustic surveys could be appropriate for documenting new locations for NLEB roosts if conducted according to USFWS recommendations. Because NLEB are not known to be highly dependent on individual roost trees and instead switch roosts regularly, identification of individual roost trees would not necessarily be required to establish new breeding records for the state. Acoustics could therefore be a reasonable substitute for mist-netting, which is considerably more labor intensive and costly. Acoustic surveys can also be conducted in a broader range of habitats and does not require handling of bats. The Applicant is willing to consider this option, particularly if acoustics are also included as a potentially suitable method, although would need to clarify what actions may be required beyond identification of locations with active NLEB maternity roosts.

3. Identification of new maternity roosts or hibernacula at Department-identified priority landscapes

A: Identification of NLEB maternity roosts or hibernacula outside of the project area may improve overall knowledge about the extent of the species, but provides little if any information relevant to the area in question. This is a costly proposal with no direct benefit to the project area, and the Applicant does not believe this is a reasonable mitigation option.

4. Protection of known roosts or hibernacula

A: Protecting habitats known to support reproductive populations of NLEB, or that provide suitable roosting and foraging habitats, particularly if in the proximity of hibernacula, ensure that adequate habitat remains available for the species. Although habitat is not currently thought to be a limiting factor for NLEB in the northeast, habitat near hibernacula remains a critical resource during the fall breeding period. The Applicant will consider this as a potential mitigation strategy, although the method for calculating the amount of acreage required would need to be negotiated.

5. Implementing higher cut-in speeds (curtailment) at pre-existing turbines

A: The Applicant has indicated they are unable to retroactively implement curtailment at its existing Howard Wind Project in Steuben County based on project financials and energy forecasts.

6. Implementation of WNS treatments

A: As DEC states there are no known WNS treatments besides gating of hibernacula. Without knowing what WNS treatments are and their potential costs the Applicant is not in a position to agree to implementing treatments.

III. Proposed Certificate Conditions

Q: Have you read the Certificate Conditions proposed by DEC?

A: Yes, I have reviewed the DEC conditions related to birds and bats contained in the testimony prepared by Anne Rothrock, Brianna Denoncour and Carl J. Herzong.

Q: Do you agree with DEC's recommended Certificate Condition that curtailment below 6.9 m/s is necessary "to achieve full avoidance of direct impacts to NLEB, and reduce direct impacts to other bat species"?

A: This certificate condition references a slightly modified version of a curtailment regime recommended by the U.S. Fish and Wildlife Service to avoid impacts to federally endangered Indiana bats and federally threatened NLEB. I acknowledge that the USFWS and various states have accepted this strategy (or slightly differing versions of the strategy) as an avoidance measure, but I do not agree that this is the only curtailment regime that would effectively avoid impacts to NLEB. As explained in this testimony, the avoidance strategy outlined by DEC would result in unsustainable power losses for the project and is relatively inefficient by

applying highly restrictive curtailment during conditions with low risk (such as daytime periods) as well as periods with higher risk. The Applicant is instead proposing a curtailment regime as follows:

[redacted]

Q: Do you have any other comments regarding the Certificate Conditions proposed by DEC?

A: Yes and I will address each condition below:

Proposed Condition: "To reduce mortality to nesting or roosting bats, as well as State bird species, all tree clearing activities (except for hazard tree removal) will be conducted between November 1 and April 1.

Response: This condition is acceptable, except it should not include trees less than or equal to 3 inches in diameter at breast height (DBH) as bats and birds will not be nesting/roosting in trees of this size.

Proposed Condition: "Post-construction monitoring shall be conducted for a minimum period of at least two (2) years and will include direct impact fatality studies and habituation/avoidance studies. The details of the post-construction studies (i.e., the start date, number and frequency of turbine searches, search area,

bat monitoring, further monitoring beyond the second year, etc.), will be described in a post-construction monitoring and adaptive management plan following DEC's June 2016 *Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects,* and through consultation between the certificate holder, USFWS, and DEC."

Response: This condition is acceptable; the only change I would recommend is providing a time frame for submission of 60 days prior to the start of commercial operation of the Facility.

Proposed Condition: "During construction, any temporary disturbance or modification of grassland habitat will be restored to preexisting grassland habitat conditions by re-grading and reseeding with an appropriate native seed mix after construction activities are completed. These areas shall include, but are not limited to temporary roads, material and equipment staging and lay-down areas, crane and turbine pads, and electric line right of ways."

Response: It is my understanding that all temporary disturbance or modification of habitat will be governed by the Stormwater Pollution Prevention Plan (SWPP) and therefore this condition is not necessary and could lead to compliance confusion. I would recommend removal as this will be addressed through the SWPP.

Proposed Condition: "If a TE avian species is demonstrating breeding behavior it should be reported to the Natural Resource Supervisor within twenty-four 24 hours."

Response: I recommend this condition be modified to 48 hours to allow enough time to properly comply with the provision.

Except as stated above the other conditions appear reasonable as stated.

RESPONSE TO CCCWP TESTIMONY

Q: Can you summarize CCCWP's testimony on bat impacts?

A: In some respects, CCCWP's testimony is duplicative of DPS and DEC in that Mr. Townsend testifies that wind development causes bat mortality and that the Applicant should be required to implement measures to reduce mortality.

Q: **Can you summarize your response to CCCWP's testimony?**

A: Overall, Mr. Townsend failed throughout his testimony to properly cite to articles, studies, or other reliable evidence for the statements he made, including numerous assertions of population-level effects on individual bat species. This made it difficult to appropriately respond to the blanket assertions Mr. Townsend makes. We were provided a list of specific citations on May 30, and have reviewed the cited references accordingly, although we still maintain that many of Mr. Townsend's assertions of population-level impacts remain unsupported by cited references, as discussed below. Further, Mr. Townsend has frequently cited

studies incorrectly, indicating they support a particular statement when in fact they address a different species or are otherwise less applicable then implied.

Q: Mr. Townsend asserts that the clearing of forests for turbine pads, electrical transmission lines, and access roads will detrimentally fragment previously intact forest habitats for bats, especially the NLEB. Is this an accurate characterization of fragmentation impacts?

A: Habitat removal associated with wind farm development in a forested landscape closely resembles creation of timber harvest roads and laydown areas, and a few studies have directly assessed the effects of wind farm construction on behavior and distribution of little brown bats and northern long-eared bats. Notably, the effects appear to vary among these species, with the extent of available habitat increasing for corridor and edge-foraging little brown bats and decreasing for interior-foraging northern long-eared bats (Segers and Broders 2014). However, the authors noted that northern long-eared bats utilized habitats with 0 – 25% crown cover more than those with full canopy cover (75 – 100%) and commented that the pre-construction amount of fragmentation and availability of various habitat features including streams, wetlands, roads, and other corridors determine the relative impact of additional forest removal (Segers and Broders 2014).

As noted in Stantec's fragmentation analysis included in the application, available habitats are largely fragmented as is, and project development will result in a

relatively small amount of additional forest clearing. The Facility footprint has also been reduced substantially (layout now includes 48 turbines compared to the 70 originally under consideration) during the design phase by planning to use fewer, larger turbines, such that only 281 acres of forest removal will be necessary (1.2% of forested habitat within the Facility area). Since these numbers were calculated, the Applicant has removed an additional 6 turbines that would be have been constructed in forested habitat from the layout. As such, potential habitat-related impacts, which were anticipated to be limited, have been minimized even further through recent Facility layout modifications.

Q: Mr. Townsend asserts that forest fragmentation will exacerbate the risk of local decline and eventual extirpation from New York of NLEB. Is this an accurate characterization?

A: Available evidence does not support the claim that fragmented habitat will reduce NLEB's ability to recover from the impacts of WNS or maintain their population's residency in the face of other adverse environmental impacts. While NLEB may show a behavioral avoidance of highly fragmented habitats during foraging, fragmentation on a small scale has not been linked to population-level effects and the USFWS determined that NLEB were not habitat limited in their biological opinion and 4(d) rule (USFWS 2015; USFWS 2016). Silvis et al. (2015) demonstrated that removal of confirmed primary roosts or up to 20% of

secondary roosts did not cause female NLEB to abandon areas or "substantially alter some roosting behaviors" in subsequent seasons. At some point, if fragmentation results in elimination of suitable roost trees within a habitat fragment, female NLEB, which are more constrained in roost selection than males, may abandon an area (Henderson et al. 2008), but I do not anticipate the amount of forest clearing associated with this Project to result in removal of a critically high proportion of roost trees given the small amount of clearing required. Mr. Townsend's statement that "females are particularly susceptible to disturbances like habitat fragmentation" does not seem supported by the references he provides. Henderson et al. 2008, noted changes in distribution of bats on the landscape in response to fragmentation, and Segers and Broders (2014) documented changes in acoustic activity, but neither linked observed patterns to population-level impacts. Segers and Broders (2014) state in their introduction that "little is known about how such fragmentation impacts local bat populations" and do not provide any conclusive results based on their research. While Frick et al. (2017) highlight a concern that sustained wind-energy mortality may threaten certain migratory bat species, their analysis is unrelated to fragmentation.

Q: Mr. Townsend asserts that "degraded habitat quality" will cause degraded health and reproductive success of all species in the Facility Area. Is this an accurate characterization?

A: It is unclear how the Facility will lead to "degraded habitat quality" beyond forest removal necessary to construct access roads and turbine pads, which may have positive effects for certain species including the little brown bat. What constitutes habitat degradation varies among bat species in New York, and it is doubtful that the project could simultaneously degrade habitat for all bat species to the extent that they would suffer health and reproductive consequences. Mr. Townsend accurately identifies several factors that have impacted bat populations on regional scales, including White Nose Syndrome, which has led to unprecedented declines in affected species. Other factors, such as bioaccumulation of toxins from herbicide application have undoubtedly affected the ecology of the region, but no information exists on population-level impacts to bats. Mr. Townsend implies that development and operation of the Facility will lead to increased use of chemical herbicides to control invasive species, although I am not aware of this taking place at any other wind projects in the region. The Applicant's Exhibit 22 addressing Terrestrial Ecology and Wetlands states that the Applicant "will not use herbicides to prevent [tree] sprouting", and also that no herbicide use will occur within 100 feet of a stream or wetland.

Q: Mr. Townsend asserts that "wind energy is the single largest source of mortality in bats". Is this an accurate characterization?

A: This statement is overly simplistic, and inaccurate for many species. Published estimates of annual bat mortality have varied, although some of the higher estimates (ranging from 600,000 to 888,000 per year) did not use all available data or account for regional weighting (Arnett et al. 2016). A more conservative and accurate estimate, which did account for regional differences, and which was used by Frick et al. (2017), was 196,190 – 395,886 bats per year in the U.S. for 2012 (Arnett and Baerwald 2013). It is accurate to say that available information indicates that wind energy poses risk of population-level impacts to certain species, such as the hoary bat, but impacts from WNS, decades of habitat removal and conversion, and intentional persecution at hibernacula have certainly led to greater impacts to other bat species. This does not diminish the importance of taking reasonable measures to reduce turbine-related migratory bat mortality, but the statement is misleading. Unlike impacts associated with WNS, implementing reasonable curtailment measures such as those proposed by the Applicant have the potential to reduce turbine-related mortality substantially if implemented broadly by the industry.

Q: Mr. Townsend asserts that WNS in conjunction with wind turbine mortality has the potential to impact subpopulations through interrupting genetic flow

through metapopulations, increasing the risk of local and statewide extirpation, with eventual impacts on a large scale possible. Is this an accurate characterization?

A: Available genetic studies suggest that the species most affected by wind energy (long-distance migratory hoary bats, silver-haired bats, and eastern red bats) have essentially no genetic structure (spatial variation in gene frequency across regions or other gradients), possibly related to their highly mobile life history and promiscuous breeding behavior during the fall (Pylant et al. 2016; Vonhof and Russell 2015). Even Indiana bats, which are arguably the species with the most restricted distribution prior to WNS, genetic work has identified little if any genetic structure prior to WNS (Vonhof et al. 2016). There is no evidence to suggest that wind farm development, whether considered alone or together with WNS, would interrupt gene flow for any species. WNS likely has dramatic influence on selection pressures for affected species, although such processes are unrelated to mortality from wind energy.

Q: Mr. Townsend asserts that wind turbines have killed more bats than WNS. Is this an accurate characterization?

A: Mr. Townsend's fails to use accurate mortality estimates for wind energy and does not point out the distinction that species affected by WNS are essentially a different pool from those most affected by wind energy. As stated previously, the

most plausible cumulative estimate for wind energy related mortality is ~196,000 – 396,000 bats annually. This number will obviously grow as wind energy expands, and is undeniably a cause for concern for certain bat species. However, WNS is undeniably the primary factor threatening cave-hibernating bats in North America, and the initial mortality estimate of 6 million bats was made in January 2012, relatively early in the spread of the disease (USFWS 2012).

Q: Mr. Townsend states that "Because of the poor condition of bat population health in this area, the Applicant should employ the most stringent regime possible in the operation of the Facility".

A: As discussed elsewhere in my testimony, the benefit of curtailment in terms of avoided bat activity accrues rapidly at low wind speeds but declines at higher wind speeds. Curtailment becomes more costly and has less potential to reduce bat mortality as cut-in speeds increase. I concur that the Applicant should apply minimization measures, but "the most stringent regime possible" represents an inappropriate standard.

Q: Mr. Townsend asserts that the Applicant has not assessed the combined impacts of this Facility with other local wind power projects, nor has it assessed the role of wind energy on bat populations on a state and national scale. Is this an accurate characterization?

A: Stantec conducted a cumulative estimate based on our best understanding of regional mortality rates. As discussed elsewhere in my testimony, we have not modeled potential impacts of wind energy as a whole on bat populations because it would provide no specific information on which to base Facility-level decisions.

Q: Mr. Townsend asserts that this Facility will span over 40,000 acres and therefore solar panels would produce a similar volume of electricity without the impacts to terrestrial ecosystems, wetlands, birds, or bats. Would solar energy produce the same electricity with less impacts?

A: Although the total area of land under lease associated with the Facility is 35,365 acres, of which 22,930 are forested, only 281 acres will require forest clearing for developing the Facility (based on the revised 48-turbine layout). As such, the Facility will occupy roughly half of the area required for an equivalently sized solar Facility based on Mr. Townsend's estimate based on light conditions in New York. According to the National Renewable Energy Lab, direct land-use requirements for small and large photo-voltaic installations range from 2.2 to 12.2 acres/MW, with a capacity-weighted average of 6.9 acres/MW. Direct land-use intensity for concentrating solar power installations ranges from 2.0 to 13.9 acres/MW, with a capacity-weighted average of 7.7 acres/MW (NREL 2013). Accordingly, to build a 126 MW solar farm would require roughly using 882

acres of land that would be in permanent use for only the purpose of generating power.

Q: Mr. Townsend critiques the Applicant's pre-construction surveys; can you explain what was conducted?

A: Pre-construction acoustic surveys were conducted to assess seasonal patterns in bat activity within the rotor zone of proposed turbines. Methods and level of effort were based on DEC guidance and discussed with the agency prior to conducting field surveys. Pre-construction acoustic surveys were not intended to fulfill the requirements of the USFWS to survey for the potential presence of NLEB. As described in exhibit TSP-3, results of pre-construction data are useful for predicting the cost and effectiveness of potential minimization strategies.

Q: Mr. Townsend asserts noise pollution will impact bats. Is there any evidence that noise pollution with have an impact on bat species?

A: I am aware of no studies specifically assessing the effects of noise on bat behavior, let alone bat populations. A recent analysis of the potential effects of noise on bats stated "there are no published field studies that have assessed the effect of traffic noise on bat diversity, abundance or breeding success" and concluded that "traffic noise, like light, is only likely to have a significant effect over relatively short distances (Altringham and Kerth 2016). Turbines themselves generate sound, including low-frequency infrasound. Available evidence suggests

bats are attracted to wind turbines (most related to visual cues; Cryan et al. 2014) rather than repelled by any noise generated by the turbines. Furthermore, bats will be generally protected from any noise impacts associated with construction, as construction activities will occur primarily during the winter when bats are hibernating and will not be in the Facility area.

Q: Townsend asserts climate change has the capacity to impact bats and that there is no evidence that several decades of wind energy development has reduced greenhouse gas emissions from the power sector or has otherwise reduced the risk of climate change.

A: Climate change certainly has the capacity to fundamentally change the set of ecological concerns facing bat populations. The paper by O'Shea et al. (2016) included in Townsend's list of references suggests that large mortality events resulting from intense storms, flooding, heat waves, drought, and other anomalies related to climate change are likely to be more common. The Adams (2010) paper cited by Mr. Townsend focuses on projected climatic changes for the southwest and how they may affect water availability, which is a limiting resource for many western bat species. Other studies focusing on the northeast (e.g. Rustad et al. 2012) have highlighted potential transitions from spruce/fir-dominated forests to oak-dominated forests. Long-term habitat changes, coupled with more rapid changes in temperature regime could affect the phenology as well as distribution

of bats on large scales, with affects potentially varying dramatically among species. Ultimately, climate change is a large-scale problem requiring large-scale solutions, including moving away from energy sources that further exacerbate climate change. Facility-specific decisions will not affect the degree to which climate change and regional mortality of migratory bats at wind projects interact, but failure to develop alternative energy sources in a responsible manner on a broad scale will do nothing to counteract any such effects. Importantly, no studies have even attempted to evaluate population-level effects of fossil fuel extraction or associated pollution on bats or their habitats.

According to the American Wind Energy Association (AWEA) clean wind energy avoids significant carbon dioxide (CO_2) emissions annually by displacing generation from fossil fuel power plants. In 2016, the 226 million megawatt-hours (MWh) generated by wind energy avoided an estimated 159 million metric tons of CO_2, the equivalent of reducing power sector CO_2 emissions by 9%, or the equivalent emissions of 33.7 million cars. The 10,432 MW of wind power capacity under construction at the end of 2016 is expected to reduce almost 24.2 million metric tons of additional CO_2 per year when it is operational—the equivalent of reducing power sector CO_2 emissions by another roughly 1%. (http://www.awea.org/reducing-greenhouse-gas-emissions). Wind energy, by reducing greenhouse gas emissions that are driving anthropogenic climate change,

is helping reduce the magnitude of potential climate change and its associated impacts to bats.

Q: Mr. Townsend asserts that bat mortality will in turn affect insect populations.

A: Bats are known to provide enormous ecological services in the form of agricultural pest control. Considering population declines resulting from WNS, changes are undoubtedly occurring to regional populations of insects consumed by bat species affected by WNS. Notably, big brown bats appear to be expanding their ecological niches, possibly in response to declining populations of cave-hibernating species. Because wind energy affects primarily migratory species, which appear to move relatively quickly through the northeast during their southward fall migration, the capacity for wind turbine-related mortality to affect local insect populations is limited. Big brown bats are rarely encountered in mortality surveys despite their relative abundance on the landscape, and comprised 4% of total bat mortalities in the dataset analyzed by Arnett and Baerwald (2013).

Q: Mr. Townsend states the Applicant is applying for an "Incidental Take Permit" from the United States Fish and Wildlife Service to allow for impacts to the northern long-eared bat. Is this accurate?

A: No. The Applicant is working with DEC through the Article 10 process not USFWS. The USFWS, the agency responsible for managing NLEB, concluded that wind energy mortality, along with incidental impacts associated with a wide range of other activities, would not jeopardize populations of NLEB, whose primary threat is WNS. The Facility is proposing a level of curtailment well beyond the feathering to normal cut-in speed referenced in the USFWS Biological Opinion prepared in advance of their 4(d) rule exempting impacts from wind energy. As stated throughout this testimony, the Applicant has considered a variety of curtailment measures and proposed a method that focuses curtailment on the season when risk impacts is predicted to be greatest.

Since the Applicant is working with DEC not USFWS the Applicant is relying on discussions with DEC to determine what is required for Article 10 certificate conditions. The Applicant based its NLEB take estimate on specific guidance provided by DEC. Although the Applicant based its specific calculation on a slightly different subset of projects, the overall approach remains the same. Mr. Townsend rightly identifies some sources of uncertainty in extrapolating site-specific mortality surveys to larger regions, although the method used by the Applicant and DEC represents one of the only available methods for calculating take and assessing mitigation requirements.

In addition, the acoustic survey results were not used to inform the NLEB net conservation benefit analysis. Mortality data from other wind projects represent the only source of information on which the magnitude of bat mortality can be predicted. The various issues Mr. Townsend identifies that can lead to uncertainty regarding mortality estimates for individual projects certainly confound efforts to extrapolate regional results, but the average value of mortality estimates from multiple projects in the region, all of which used similar types of mortality survey methods, represents the standard method for predicting take.

As described elsewhere, the NLEB take estimate is based on an assumed per-turbine mortality rate similar to that used by the DEC and a species composition total roughly midway between the DEC value and the value calculated by the USFWS for the entire range of the NLEB.

In response to Mr. Townsend's other criticism of the Net Conservation Benefit Plan, bats are known to utilize all habitat types present within the Facility area for foraging, and utilize a wide variety of trees (e.g. species and sizes) for day roosts and maternity colonies. Migration pathways for bats are coarsely defined on very large regional scales and not useful for basing Facility-level decisions such as turbine placement. Furthermore, turbines are not known to be a barrier to bat migration, nor are any available techniques sufficient to model migratory pathways at a scale useful for facility-specific decisions.

Q: Mr. Townsend states that existing research should be reviewed, specifically O'Shea et al. 2016, to consider including in a net conservation benefit plan examples related to the consequences of multiple mortality events and associated cumulative and synergistic effects on bat populations.

A: The wind industry is the only industry to monitor large-scale impacts on bats. Effects of habitat loss and conversion from agriculture, intentional bat eradication efforts in response to rabies, and bioaccumulation of herbicides and insecticides undoubtedly have the potential to cause population-level impacts. The focus by the wind industry to better understand bat mortality is the reason that wind energy impacts are one of the only large-scale impacts for which quantitative data exist. O'Shea et al. (2016) state that among all categories, mortality events due to viral or bacterial diseases were most rarely reported. In reviewing this paper, it is worth noting that the specific mortality estimates listed in the accompanying appendix table cite the highest available mortality estimates when multiple estimates are available. In several cases, these high estimates are based on very small subsets of survey effort following alternative methods (such as dog surveys), resulting in a high bias. I also noted a substantive error in the quoted mortality estimate of 2,055 bats for Cohocton and Dutch Hill, New York. This was the sum of 3 distinct estimates of the seasonal total based on different search intervals, the highest of which was 1,281 bats/study period.

Q: Does this conclude your testimony?

A: Yes.

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A.L.J. LECAKES: I do have a couple of questions about the exhibit that we were just discussing with the changes on it. Has a revised exhibit been submitted to the judges?

MR. MUSCATO: No, Your Honor, we just identified this area this morning and -- and we will provide a updated exhibit as soon as we can probably tomorrow.

A.L.J. LECAKES: Right. And if you could please just email that, that would be fine.

MR. MUSCATO: Yeah.

A.L.J. LECAKES: The other thing I have is, is there -- is that a confidential document -- is there confidential material in that document?

MR. MUSCATO: Yes, Your Honor. Both -- both -- two of the three columns contained confidential information.

A.L.J. LECAKES: Okay.

MR. MUSCATO: But the entire memo, the -- the entire exhibit has been -- we -- we had requested confidentiality for the entire exhibit.

A.L.J. LECAKES: Okay.

MR. MUSCATO: Yeah.

A.L.J. LECAKES: Okay. I have nothing further on the exhibit then. Is the witness available for cross examination?

THE WITNESS: Yes, Your Honor.

A.L.J. LECAKES: Okay. And Ms. Crounse?

MS. CROUNSE: Thank you, Your Honor.

CROSS EXAMINATION

BY MS. CROUNSE:

Q. Mr. Peterson, good afternoon.

A. (Peterson) Good afternoon.

Q. I just have a few questions for you. I'd like to start with 20 -- to page 37 of your testimony. Line 16 -- oh, it's actually line 13 through 16.

A. Okay.

Q. Let me know where you are there?

A. Yeah, I'm there.

Q. In this portion of your testimony, you are discussing the differences between DEC and the applicant --.

A. That one goes in and out, I think.

Q. No.

A.L.J. LECAKES: You're good. You're good?

MS. CROUNSE: Good. Okay, sorry.

BY MS. CROUNSE: (Cont'g.)

Q. You're discussing differences between DEC and the applicant's take estimate particularly the inclusion -- your inclusion of the Pennsylvania data, is that correct?

A. I believe that's correct. Although this section is referring to the amount of avoidance of acoustic activity.

Q. Are we -- are we looking at -- oh, no.

A.L.J. LECAKES: I'm on page 37.

MS. CROUNSE: Okay. 37, I wonder if I have a different.

MR. MUSCATO: No, I think you're right. I think you may have a different copy but that's -- sorry.

THE WITNESS: Okay, yes. That's -- yes, I have a different page. So I'm there now.

MS. CROUNSE: Okay, great.

BY MS. CROUNSE: (Cont'g.)

Q. In particular, we're looking at the line 16, you have a conclusion that there were no northern long-eared bats killed in -- as reflected in the Pennsylvania data, is that correct?

A. That's correct for the years that we -- that were included.

Q. And those years are 2010 to 2013 as reflected on table two, on page 41 of your testimony?

A. Yes. Yeah, that is correct.

Q. Could you tell me where you get that number from the no take or no kills?

A. I believe that comes from the -- the third summary document from the Game Commission which -- or actually, let me see. So that value, I believe that is the case.

Q. That's from third -- the third summary?

A. I think that's correct.

Q. Okay. That -- I know that was referenced in your testimony. I don't believe it has been offered as an exhibit, and DEC's offered that as an exhibit today.

MS. CROUNSE: Jim, correct me if I'm wrong.

MR. MUSCATO: That's correct, you did provide that.

MS. CROUNSE: Yeah, but you guys didn't offer that as an exhibit already, correct?

MR. MUSCATO: Oh, no.

MS. CROUNSE: Okay.

BY MS. CROUNSE: (Cont'g.)

Q. Mr. Peterson, I'm going to give you a copy, the summary info. I do have copies and excerpts if anyone wants.

Would you be able to point to me where -- I realize it's a lengthy document, where that data comes from that there were no northern, long-eared bats?

A.L.J. LECAKES: Ms. Crounse, while the witness is looking for that, would you like that document marked?

MS. CROUNSE: Yes, please.

A.L.J. LECAKES: We'll marked it as Exhibit 111 for reference purposes. I have a multi-page document consisting of 72 numbered pages with a cover sheet on which is titled Pennsylvania Game Commission, Wind Energy Voluntary Cooperation Agreement, third summary

report, dated at the bottom of that cover page December 27th, 2012.

Again, that's Exhibits 111 for identification.

MS. CROUNSE: Thank you, Your Honor.

THE WITNESS: I -- I may have to clarify my further response. The only table that I can find in this document is a composite table from 2007 through 2011 on page 40. Are you aware of it -- are you referring to a different table within this item?

BY MS. CROUNSE: (Cont'g.)

Q. No, this is the table I'm referring to.

A. All right.

Q. In fact, I don't see the support for your finding there were no --

A. Right.

Q. -- kill because this does find that there was less than 1% that indicates that at least one bat was killed?

A. Right. So I believe where the number -- because we have a specific tally of

carcasses. I believe that this number actually, the data that I was citing, I believe, was provided to me separately by the Pennsylvania Game Commission --

Q. Has that been offered as an exhibit or cited to?

A. I do not believe we have. I -- I could add that I -- I -- the only fatality that I'm aware of in New York -- in Pennsylvania, there was northern long-eared bat was found at a site that was monitored prior to white-nose syndrome so that specific carcass was not included in this, the data set that I was using.

Q. That leads me to a great questions. So your -- your data is from 2010 to 2013 which is post white-nose, correct?

A. Correct.

Q. The data that is found in here specifically table 18 that you pointed out is 2007 to 2011 that -- that's pre white-nose or includes pre-white-nose data, is that correct?

A. It includes pre-white-nose data.

Q. So where did you get the information for 2012 and 2013 if this summary stops at 2011?

A. I believe that that data were provided to us separately by the Pennsylvania Game Commission.

Q. Is this anything that the department DEC can verify?

A. With the information in front of me I cannot -- I can -- I presumably have the correspondence that I could provide.

Q. Are you able to -- looking at this table 18, tell me the amount or even in this entire summary, how many bats all bats killed, the amount?

A. Based on the summary?

Q. Yes.

A. I do not -- I do not believe that that data are included in this document.

Q. Are you familiar with the cooperative agreement that is referenced in this summary agreement for this summary?

A. I am.

Q. That the keeps the majority of the bat data confidential from -- in the PA Game Commission so that data can’t be verified --

A. Right.

Q. -- independently?

A. Right.

Q. So would you agree that this summary, it doesn't include any locations of -- of kills?

A. Correct.

Q. It doesn't include specific years so you can distinguish post white nose to pre white nose, correct?

A. That's correct.

Q. And it also doesn't actually include any numbers, it's just percentages, so it could be anywhere from the thousands to the hundreds, you have no idea, they just break it down into percentages?

A. The information in this document, that's the case.

Q. As presented?

A. Yes.

Q. So when you made your calculations and you relied on the Pennsylvania data for your take estimate, were you able to refine those using other data to actually have numbers?

A. What we were provided with, what we requested of the Game Commission was an aggregate

number of the -- the total number of bats killed in Pennsylvania after white-nose and the species composition therein. So it was an aggregate number, it wasn't project specific data. We requested that as -- like I said, it was part of a -- a different project. So I had access to the data --

Q. Okay.

A. -- separate from this document.

Q. So you had access to the confidential data that's -- was used in the summary. Is that -- is that -- because I know that the underlying, and correct me if I'm wrong, the underlying studies that this summary is capturing are confidential, they cannot be reviewed?

A. That's correct.

Q. Have you reviewed any of those?

A. I have.

Q. And how do you gain access to those?

A. In most cases we were working on behalf of the cooperators.

Q. Okay.

A. In this specific case, I don't know whether the data --

Q. Sure.

A. -- were confidential because they were an aggregate number, they didn't have -- they weren't associated with individual projects and the Game Commission wouldn't be able to provide us with that information. We -- we simply requested a species total.

Q. But ultimately some of that data that you -- you may have relied on hasn't been given to the DEC to be verified or reviewed, it sounds like there's outside of the scope of this summary, you used some other surveys, information may be directly obtained from the Game Commission?

A. I suppose that's the case. I don't -- there was a previous information provided to us or provided to Everpower (phonetic spelling) by DEC that included a similar 2010-2013 data set.

Q. Uh-huh.

A. And I don't recall if -- if corresponding information included northern long-eared bats. It's possible that through process of elimination we were able to, given the other sites from New York, which weren't necessarily confidential that we could figure out what Pennsylvania total was,

I don't honestly remember if that's the process we use or versus whether we used the data that were provided separately.

A.L.J. LECAKES: Counsel, can -- can I interrupt for a second. Mr. Peterson, I'm going back a few questions and answers because something was said that, I -- I thought I heard but then I -- I wasn't sure and I -- I believe there's a question asked about information that you relied on or that you got and there was an answer or part of an answer in which you referenced something as co -- cooperators or something like that. Can you explain what you were talking about?

THE WITNESS: Yeah, Pennsylvania has a voluntary program wherein wind companies signed an agreement in effect would become cooperators in a voluntary program in which they conduct certain wildlife studies, post-construction monitoring and in exchange -- well, not in exchange, the Game Commission grants them the data that come out of the studies as -- as confidential.

So, for example, if there's a rare

species take, as long as the wind company is in communication with the agencies, in this case, the Pennsylvania Game Commission. The Game Commission essentially grants them waive -- waivers the law enfor -- their law enforcement abilities and says we're -- we're working with this company to address the issue, for example. So the cooperators are -- are the individual wind company, have signed onto this agreement. And they're -- they are identified in -- in the summary document.

A.L.J. LECAKES: On what page? Oh, I see, page --

THE WITNESS: Page this --

A.L.J. LECAKES: -- Roman numeral III?

THE WITNESS: III, yes.

A.L.J. LECAKES: Okay.

MS. CROUNSE: Your Honor, if I may? The --

A.L.J. LECAKES: Yeah.

MS. CROUNSE: -- executive summary also includes a brief description of the cooperative agreement. And -- and the overall

kind of goal of the agreement and what cooperators do.

A.L.J. LECAKES: And, Ms. Crounse, what access does DEC or any other party to this proceeding besides the applicant have to this information that's available to the cooperators?

MS. CROUNSE: We only have the summary, we're not able to review any of the surveys. There are all held as confidential, they're not even released to others agencies.

A.L.J. LECAKES: Okay. Thank you, you may proceed.

MS. CROUNSE: Thank you. I have no further questions.

A.L.J. LECAKES: Okay. Staff, DPS staff.

MS. CERBIN: DPS does not have any questions at this time.

A.L.J. LECAKES: Mr. Abraham, do you have any questions?

MR. ABRAHAM: None at this time, no.

A.L.J. LECAKES: Okay. Mr. Muscato, is it correct then that the applicant

relied on information in its application or in the testimony of Mr. Peterson that's not available to the other parties?

MR. MUSCATO: Well, Your Honor, to be honest, this is the first that I'm hearing that some of this data is not available, but of course the -- if we look at Mr. Peterson's testimony, there's -- it's one segment of information, it’s not the entirety of the report. That's for sure so I mean I -- I haven't had an opportunity to re-direct my witness but I think there -- there's some clarifications in order here.

A.L.J. LECAKES: Right now, we'll get to redirect in a second.

MS. CROUNSE: If I may --

A.L.J. LECAKES: Well, that -- I was going to turn to you next, Ms. Crounse --

MS. CROUNSE: If -- if I --

A.L.J. LECAKES: -- I -- I don't want you to reply necessarily to -- to what Mr. Muscato said.

MS. CROUNSE: Uh-huh.

A.L.J. LECAKES: Because we can get

that -- into that in a minute but did you ask any discovery, did DEC ask any discovery on Mr. Peterson's testimony of the applicant about the basis for some of these numbers which appear to come out of information that was unavailable?

MS. CROUNSE: I know my staff independently tried to verify it. They contacted the PA Game -- Game Commission directly. It was not able to verify this information, but I don't believe we did any information requests seeking that information.

A.L.J. LECAKES: Okay. And -- and Ms. Cerbin, do you know if DPS staff had asked any of those information request?

MS. CERBIN: We did not, Your Honor.

A.L.J. LECAKES: Mr. Abraham, did concern citizens request any of the underlying data for this?

MR. ABRAHAM: We have no idea, this data was being relied on until now.

A.L.J. LECAKES: Okay. Mr. Muscato, do you know if there's any prohibition of -- of providing some of the basis information

that was used as an exhibit in this hearing if we kept it confidential?

MR. MUSCATO: Well, your -- I don't know the answer, Your Honor. I -- I think I'd like to understand from my witness what information, when we said this Ms. Crounse responded to a question before that you asked, Your Honor, and said this information. I'm not certain if she's talking about one specific number in the report, if it's an overall total mortality number. That's not available to DEC or any other party or if it's some other information about site specific mortality at Pennsylvania Wind Farms, I just don't know.

A.L.J. LECAKES: My understanding is that it was site specific, your specific information either pre or post white-nose syndrome in which there's a representation made and I remember reading the representation in Mr. Peterson's testimony that there was no -- a total of zero northern long-eared bats that were found in -- in mortality, killed by the windmills or at least they were not found. So the assumption being that there were none there. And what I'm

understanding now is the only way that that specific, your specific, site specific information could be had, was if somebody was acting as an operator, so that they weren't subject to the confidentiality with the Pennsylvania Game Commission in which case I'm wondering is that able to be put into the record here or is that information that through its confidential nature, it can't even be shared with this tribunal.

MR. MUSCATO: Yeah, Your Honor.

A.L.J. LECAKES: So if you could find out the answer to that question and then in the meantime why don't we take a break now, you can consult with your witness, see what he knows on that. We may not be able to resolve this question today, in which case, I would ask if you could get onto that at the end of today's proceedings as quickly as possible. Let us know tomorrow if at all possible.

MR. MUSCATO: Right.

A.L.J. LECAKES: But why don't we break now for chance to consult with your witness. We're off the record.

(Off the record)

A.L.J. LECAKES: All right, let's go back on the record. Mr. Peterson, before I turn it over to your attorney for any redirect, I do have some questions on -- on the narrative that I myself gave before, just to clarify something, both to myself and to the siting board.

What -- what's going on is that people are walking through wind farms looking for bat carcasses, correct?

THE WITNESS: Correct. Yes.

A.L.J. LECAKES: And just, and -- and so the testimony that you gave was essentially that, you know, we'll get to the basis of it in a moment, but that during a certain period, no northern long-eared bat carcasses were found, correct?

THE WITNESS: Correct.

A.L.J. LECAKES: Now, that it is evidence that no -- of -- of exactly that, that no northern long-eared bats carcasses were found. But it is not necessarily evidenced that no northern long-eared bat -- bats were killed.

It's just that if they were killed their carcasses were not found, is that correct?

THE WITNESS: Correct.

A.L.J. LECAKES: Okay. Do you know of any information that indicates what percentage of -- of bats or – or a particular species of bats that are killed, their carcasses are actually found. Is there any study that's been done to show whether there is a reasonable amount or percentage of, you know, if -- if you find five carcasses how many bats, for example, you can assume were killed? Is there any studies that have been done of that?

THE WITNESS: Almost every post-construction monitoring study requires search or efficiency trials to be conducted in which you -- you place carcasses, a trial coordinator would place carcass on the ground and quantify how many of those are found by the searchers. To my knowledge, nobody has -- and those are typically done separately for birds and bats.

Occasionally, they break birds into size categories. To my knowledge, nobody has attempted to quantify search efficiency

separately for individual bat species. So typically bats are -- are considered as one and -- and in often case, if there aren't sufficient number of bat carcasses they would use surrogate such as brown mice or commercially available carcasses. But I'm -- I'm not aware of any published studies that would suggest that, for example, northern long-eared bats are significantly less detectable than other species.

A.L.J. LECAKES: Okay. And then the most direct question is, just because no carcasses are found, does not mean that no bats were killed, isn't it, that's correct?

THE WITNESS: That -- that's correct.

A.L.J. LECAKES: Are there -- and actually I know there are because I -- I -- I do recall this in the testimony.

There are characteristics about the northern long-eared bat that make it different than some of the other migratory bats, is that correct?

THE WITNESS: Correct.

A.L.J. LECAKES: And do some of

those characteristics make it more likely or more believable that fewer northern long-eared bats were killed -- if any were killed?

THE WITNESS: Northern long-eared bats are -- are small relative to certain -- they are at the smaller size for bats. However, the only bat species that's, I would say, based on personal experiences easier to find would be hoary bats because they're considerably larger. Northern long-eared bats are roughly the same size from -- from this status as little brown bats and -- and also a silver-haired bats which are found quite frequently. So while they were probably slightly smaller and maybe a little bit more difficult to see than, for example, hoary bat I don't believe that there, that they would be significantly less detectable than -- than other of the small bats such as little brown bats.

A.L.J. LECAKES: Right, but my question wasn't so much. I -- I apologize if I confused it. My question wasn't so much about the finding of the bats as it was about -- I remember something in the testimony and I believe

it was your testimony about the -- the flight patterns of -- of bats.

THE WITNESS: Right, okay.

A.L.J. LECAKES: And their impact because I'm curious and I'm going to ask the DEC witnesses a similar question. I'm -- I'm curious as to what those characteristics are and how, you know, how much is just speculation or how much it -- it's based in study that those flight patterns and -- and other characteristics might make it less likely to impact on northern eared -- on northern long-eared bat population versus other bats in terms of -- of running into wind turbines that are spinning.

THE WITNESS: Right. So Northern long-eared bats are among the -- the slowest bat fliers. They typically forage in or below the forest canopy. They are, what's referred to as a gleaner, so they'll often, they -- they're able to pull insects directly off leaf matter. They're -- they're adapted for highly maneuverable flight and their echolocation is about the highest frequency of any bats in the range which make them well adapted for flying in

forest canopy clutter. Behaviorally, it's very difficult to document flight height.

But typically these are considered, you know, within canopy forest foragers, they don't. And they're just not found very typically up in the area where -- where turbines are operating. And -- and I think that's reflected in species totals when you start looking at aggregated data from -- from larger regions.

MS. CROUNSE: Okay.

A.L.J. LECAKES: Yeah, I'm -- I'm good. Mr. Muscato, redirect.

MR. MUSCATO: Yes, Your Honor. Just a couple of questions.

REDIRECT EXAMINATION

BY MR. MUSCATO:

Q. For clarification, Mr. Peterson, the information that we're referring to is in table 2 of your rebuttal testimony, correct? Table 2 is on page --

A. (Peterson) Two are table --

Q. -- Table 2 is on page 41 of your testimony, and it may also be referred to an exhibit.

A. Oh. Let me go and find it. I

believe that's the case, let me find the page though.
Q. It's on page 41.
A. Yes, that's correct.
Q. So the -- the number that we're talking about for the Pennsylvania Game Commission is the -- it's the number or it's the information in the row under the right table that says PGC.
A. Correct.
Q. That's the 2010 to 2013, right?
A. Right.
Q. So the total number of bats that are reported there is 2,972?
A. Yes.
Q. That -- that -- is that information that's publicly available to anybody that asked the -- the Pennsylvania Game Commission?
A. I believe that we -- we contact, I -- I believe that anybody that contacts the Game Commission with a reasonable justification of why they're looking for the data could be provided with -- with that information.
Q. Right -- right. So that PGC number of 2972 that, when we were talking about the confidentiality earlier on, that number itself is not

confidential. It's the reporting and the cooperative agreement and the process that PGC has in place with wind operators in Pennsylvania?

A. Yes, that's my understanding.

Q. Okay. But then with respect to the northern long-eared bat fatalities we -- we had indicated in the test -- or you had indicated in the testimony that in the Pennsylvania -- the Pennsylvania data did not report a northern, longer-eared bat fatality between 2010 and 2013, correct?

A. That's correct.

Q. Okay. And so again, that information is something that you received through personal communication?

A. That's my recollection.

Q. Okay. Have you -- do you recall conversations with the DEC with respect to the data inputs for this project on bat and -- avian and bat studies?

A. I don't recall specific conversations about that.

Q. But have you had conversations with the DEC staff with respect to the studies that were included in the application?

A. Not specific conversations that I can recall.

Q. Okay.

MR. MUSCATO: Your Honor, I have no further questions on re direct.

A.L.J. LECAKES: Thank you. Ms. Crounse, what is DEC's concern with the information? Do you agree with the witness and you may consult with your witness that -- that PGC number of 2,972 in table 2 between the years 2010 and 2013, is a number that can -- can be had publicly or -- or at least given to parties in this proceeding if they have a reason to contact the Pennsylvania Game Commission?

MS. CROUNSE: My understanding and I'm sure my panel can testify to it later is that you call and have a specific inquiry the Game Commission will give you certain numbers and results. However, what we found in attempting to verify some of the data that was used in Mr. Peterson's take calculation is that we got different numbers.

So without being able to look at the underlying studies and documentation to

support it, getting a number over the phone or by email is just doesn't rise to the level that the DEC would use to make a take calculation especially for a project of this size, but frankly for any type of take we wouldn't use it.

A.L.J. LECAKES: Does the Department of Environmental Conservation -- are you done with your cross examination questions to this witness, would you --

MS. CROUNSE: I had one additional recross if I could?

A.L.J. LECAKES: Okay, go ahead.

MS. CROUNSE: Actually, two. If that's all right.

RECROSS EXAMINATION

BY MS. CROUNSE:

Q. Mr. Peterson, line -- so page 37 of your testimony again, line 13, you have a sentence that says, the difference and we're talking about the difference of using the Pennsylvania dataset and not using the Pennsylvania dataset. The difference has a -- has a substantial effect on the resulting take estimates being a large number of post construction sites have occurred in Pennsylvania resulting in

discovery of a large number bat carcasses none of which were northern long-eared bats. Do you still agree with that statement?

A. Yes, I would agree with that statement.

Q. Okay. And then I -- I would like to just clarify one more time again, so did you ask the PA Game Commission for the information between 2010 and 2013? Is that how you got the 2012 and 2013 numbers?

A. I believe that's the case. We -- I mean, the critical thing in our minds was to clarify that we didn't want to include pre white-nose data in --

Q. Okay.

A. -- in the years provided.

MS. CROUNSE: Okay. I have nothing further.

A.L.J. LECAKES: Why is that important? Did white-nose syndrome affect the bats ability to perceive wind turbines or is it just because the population at that point became threatened and endangered from another source other than wind turbines?

THE WITNESS: The -- the primary reason is -- is white-nose syndrome disproportionately affected the Myotis species including northern, long-eared bat so the -- the availability of bats, the populations of bats in the landscape shifted dramatically before and after white-nose syndrome.

And so when you're -- when we're trying to look at the -- essentially, what we're trying to figure out is the propensity of northern, long-eared bats for turbine-related mortality. And so typically these sorts of estimates make the distinction of pre white-nose and post white-nose arrival in particular state.

A.L.J. LECAKES: Okay, that make sense. All right. Do you need this witness subject to recall because you need to follow-up on anything with the information request or are you okay, Ms. Crounse?

MS. CROUNSE: I'm all right.

A.L.J. LECAKES: All right. Mr. Peterson, you are excused. Oh, I'm sorry. Yeah, Mr. Abraham or -- or Ms. Cerbin the same question. Are you okay with releasing this

witness or do you want him subject to recall based on any information request that you want to make with regard to the underlying information from the Pennsylvania Game Commission?

MR. ABRAHAM: This is Mr. Abraham. I -- I don't think we can add to -- to the exchange that's been had here about the veracity of the information.

A.L.J. LECAKES: And, Ms. Cerbin?

MS. CERBIN: DPS does not anticipate any questions to this witness.

A.L.J. LECAKES: Okay, with that being said, Mr. Peterson, you are -- you are excused. Thank you.

THE WITNESS: Thank you, Your Honor.

A.L.J. LECAKES: Ms. Cerbin, do you want to call your witness? And give his testimony and exhibits into the record?

MS. CERBIN: Yes, Your Honor, DPS called Jeremy Rosenthal.

A.L.J. LECAKES: Mr. Rosenthal, can you raise your right hand? Do you swear or affirm that the testimony you're about to give in

this proceeding is the whole truth?

MR. ROSENTHAL: I do.

JEREMY ROSENTHAL; Sworn

A.L.J. LECAKES: You may be seated.

THE WITNESS: Thank you.

A.L.J. LECAKES: Thank you. Ms. Cerbin?

DIRECT EXAMINATION

BY MS. CERBIN:

Q. Mr. Rosenthal, before you, is there 52-page --

A. Oh, can we switch mics?

Q. I think it's the angle, we have been coping with.

Before you is a pre-filed 15-page confidential document entitled prepared testimony of Jeremy Rosenthal, consisting of a cover letter and 14 pages of questions and answers dated May 12th, 2017. Mr. Rosenthal, was this document prepared by you or under your supervision?

A. (Rosenthal) Yes.

Q. Do you have any substantive changes or corrections to make to that testimony?

A. No.

Q. If you were asked the same questions today under oath would you answer them in the same way?

A. Yes, I would.

MS. CERBIN: Your Honor, I would like to move that the pre-file testimony of Mr. Jeremy Rosenthal be entered into the record as if it was given orally during the hearing today?

A.L.J. LECAKES: Motion granted. At this point, in the hearing transcript there is the testimony labeled the DPS direct-direct testimony of Jeremy Rosenthal-case 14-F-0490. There is also a -- a unredacted confidential version of that as there was of Mr. Peterson's testimony. And then, Mr. Rosenthal, could you please use your microphone when you speak just so we can hear you, that -- is it on?

THE WITNESS: Is it on? That's a good question. Hello -- hello.

A.L.J. LECAKES: I think that's on.

THE WITNESS: Let's try another one. Hello. Test.

A.L.J. LECAKES: Okay, Ms. Cerbin.

BY MS. CERBIN: (Cont'g.)

BEFORE THE
STATE OF NEW YORK
BOARD ON ELECTRIC GENERATION
SITING AND THE ENVIRONMENT

In the Matter of

Cassadaga Wind LLC

Case 14-F-0490

May 12, 2017

Prepared Testimony of:

Jeremy Rosenthal
Utility Analyst (Environment)
Electric Gas and Water
State of New York
Department of Public Service
Three Empire State Plaza
Albany, New York 12223-1350

Q. Please state your name and business address.
A. Jeremy Rosenthal, 3 Empire State Plaza, Albany, NY 12223.
Q. By whom are you employed and in what capacity?
A. I am employed by the Department of Public Service (DPS) as a Utility Analyst (Environment) 3 in the Office of Electric Gas and Water, Environmental Certification and Compliance Section.
Q. Mr. Rosenthal, please state your educational background and professional experience.
A. I received a Master of Public Administration from the State University New York at Albany; Rockefeller College of Public Affairs and Policy in May 2005 with concentrations in Government Fiscal Management and Environmental Management and Policy. My undergraduate degree is a Bachelor in Environmental Sciences from the State University of New York, Plattsburgh received May 1993. Before joining the Department, I worked for four years as an Environmental Analyst at the New York State Department of Environmental Conservation. In 2009, I joined the DPS's Office of Energy

Efficiency and the Environment and was assigned to work on the Energy Efficiency Portfolio Standard, Environmental Disclosure Program, and related issues. In 2016, I transferred to my current position in the Office of Electric Gas and Water, Environmental Certification and Compliance section. My primary responsibilities include evaluating the environmental impacts associated with siting, construction and operation of gas and electric transmission and electric generation facilities filed under Article VII and Article 10 of the Public Service Law.

Q. Please describe your role in this case and the purpose of your testimony.

A. I am responsible for reviewing the Application and evaluating the probable environmental impacts from the construction and operation of the proposed Project to terrestrial ecology, streams and wetlands. My testimony will focus on my evaluation of the adequacy of the Applicant's proposed plans for the management and control of invasive species, the avoidance and minimization of impacts to streams and

wetlands, and proposed mitigation for impacts to wetlands. In addition, my testimony includes an evaluation of direct mortality to bats from interacting with the proposed facility; other impacts to bats from habitat alteration; and, evaluation of the Applicant's proposed plan for avoidance, minimization, and mitigation of impacts to bats.

Q. In your testimony, will you refer to, or otherwise rely upon, any information produced during the discovery phase of this proceeding?

A: Yes. I will refer to, and have relied upon, several responses to DPS and Department of Environmental Conservation (DEC) Staff Information Requests (IRs). The IRs that I rely upon are included in Exhibit__(JR-1).

Q: Are you sponsoring any other exhibits to accompany your testimony?

A: Yes. I will refer to a 2017 article in the Journal "Biological Conservation" by W.F. Frick et al., titled "Fatalities at Wind Turbines May Threaten Population Viability of a Migratory Bat. The article is included in Exhibit__(JR-2).

Q: Do you agree with the assertion on Page 55 of Exhibit 22 of the Application that the proposed Project "is not expected to be a significant addition to the cumulative bat mortality at wind facilities in New York State."

A. No. The Applicant estimates that the proposed Project would account for 2.4% - 3.4% of an estimated 416,000 cumulative bat fatalities from existing and projected wind energy facilities in New York State over an assumed 25 year period of operation. As previously identified in DPS Staff's proposed Article 10 Issues Statement, filed on February 21, 2017, the significance of cumulative bat mortality cannot be adequately evaluated without the following information:

1. Potential long-term cumulative impacts to bat populations from the proposed Project, projected build-out of wind facilities in New York State, and the broader region;

2. Investigation that models the compounding of population impacts from wind energy development to population impacts from White Nose Syndrome over the projected lifetime of the proposed

Project and the forecasted presence of terrestrial wind facilities in the region; and

3. If impacts from cumulative bat mortality cannot be modeled due to unknown population size, models should be made with estimated high, low and small population size.

Q. Are you aware of any studies that estimate the impacts of wind energy development on bat species demographics for species with poor empirical population data?

A. Yes. A 2017 article in the Journal "Biological Conservation" by W.F. Frick et al., titled "Fatalities at Wind Turbines May Threaten Population Viability of a Migratory Bat," models the demographic effects of wind turbine fatalities on migratory bat populations. Exhibit_ (JR-2).

Q. Did the journal article provide any conclusions regarding impacts resulting from the presence of wind turbines on bat species demographics?

A. Yes, the article forecasts that the current level of wind turbines in North America, in the absence of adequate mitigation measures, could

"drastically reduce population size and increase the risk of extinction" for migratory bats.

Q. Could the proposed Project significantly add to cumulative bat mortality from wind facilities in New York State?

A. Yes. I believe that without adequate avoidance or minimization measures the proposed Project will significantly contribute to bat mortality.

Q. What measures should the Project employ to minimize impacts to bats?

A. Operation of the proposed facility should employ a curtailment regime that adequately minimizes impacts to all bat species.

Q: What do you mean by a curtailment regime?

A: A curtailment regime is the management of wind turbines such that the conditions under which turbine blades are permitted to spin is constrained. Cut-in refers to the wind speed at which turbine blades are permitted to spin.

Q. Regarding impacts to bat populations resulting from the proposed Project, does the applicant offer adequate mortality avoidance and reduction measures?

A. No. The significance of cumulative mortality to all bat species in New York State from wind facilities, and the contribution from the proposed Project, is not adequately addressed by the Applicant. [redacted]. As such, the proposed cut-in-speed is below a level that will avoid and minimize bat impacts to the maximum extent practicable. A higher cut-in-speed would afford greater protection to more species of bats, particularly migratory bats that have the highest rates of wind turbine caused mortality and fly at higher wind speeds.

Q. What do you propose as an adequate curtailment regime to minimize impacts to bats?

A. I recommend a minimum curtailment regime of 6.0 m/s during June 1 to October 1, one hour before sunset to one hour after sunrise when temperatures are greater than 10 degrees Celsius.

Q. Why do you recommend this curtailment regime?

A. A cut in speed of 6.0 m/s aligns with curtailment requirements in neighboring Vermont State as presented in Vermont Agency of Natural Resources Fish and Wildlife Bat-Wind Guidelines, September 2016. This curtailment regime will not achieve complete avoidance of bat fatalities, but should provide a substantial decrease in mortality. A higher cut in speed would be more protective, but would also result in greater lost energy production. Exhibit_ (JR-1). The Applicant should consult with DEC and DPS Staff for further development of a proposed curtailment regime. Subsequently, the proposed curtailment regime should be submitted to the Siting Board as a compliance filing.

Q. Should the curtailment regime remain constant throughout the lifetime of the proposed Project?

A. Not necessarily, changes in bat populations can occur over time and the technologies to minimize impacts may develop as well. Accordingly, I recommend that a plan to evaluate bat populations, minimization efforts, and potential modifications to operations every five years should be developed by the Applicant and be

submitted for DPS Staff's acceptance as a certificate condition.

Q. Do you think that a method for verifying compliance should be part of a curtailment regime?

A. Yes. I believe that a curtailment regime should include a means to verify compliance. The Applicant should be required to develop and submit a verification method, subject to DPS Staff's acceptance, as a certificate condition.

Q. Regarding impacts to Northern Long Eared Bat (NLEB) populations resulting from the proposed Project, does the Applicant offer adequate mitigation measures to result in a net conservation benefit?

A. No. The Applicant has proposed protecting a parcel of at least 15 acres that provides suitable roosting and foraging habitat for NLEB and either contains or is within 2 miles of a known NLEB maternity roost. The concept of a proposed land purchase has merit as a potential mitigation strategy. However, at this time, the Applicant has not proposed a suitable property. The Applicant should submit a detailed

mitigation plan to DEC and DPS Staff for review and further collaborative refinement. Subsequently, the mitigation plan should be submitted to the Siting Board as a compliance filing.

Q. Regarding control of invasive species, does the Applicant provide adequate studies and plans to address the management of invasive species within the Project site?

A. No. The Applicant provided an Invasive Species Control Plan (ISCP) in Exhibit 22, and states that it will conduct a baseline invasive species survey during the 2017 growing season. The ISCP provides a basic framework for addressing invasive species within the proposed Project site. However, it does not provide customized plans for addressing specific disturbance sites if certain invasive species concentrations are discovered in the forthcoming survey. Invasive species management will only be adequately addressed when such customized plans are provided and incorporated into the ISCP. The Applicant should update the ISCP with customized plans as needed and submit to DPS and DEC Staff

for a coordinated review and further collaborative refinement. Subsequently, the updated ISCP should be submitted to the Siting Board as a compliance filing.

Q. Regarding impacts to wetlands, has the Applicant provided materials that support a determination that adverse environmental impacts would be adequately avoided and minimized to the maximum extent practicable?

A. In order to adequately review potential impacts to wetlands, DPS Staff will require field visits that are not possible until later this spring. The Applicant's late submission of detailed wetland drawing sets precluded the ability to conduct field reviews to date. Final construction plans regarding routing and methods of traversing wetlands should be submitted to DEC and DPS Staff for a coordinated review and further collaborative refinement. Subsequently, the construction plans should submitted to the Siting Board as a compliance filing prior to construction.

Q. Regarding impacts to wetlands, does the Applicant provide adequate mitigation for unavoidable impacts?

A. The Applicant submitted its conceptual stream and wetland mitigation plan on March 31, 2017. The plan states that the Applicant's consultant, Resource Environmental Solutions, LLC, has identified a mitigation site designated as the West Branch Conewango Creek Restoration Site. The plan as submitted did not provide any specifics such as parcel size, boundaries, acreage, size and types of wetlands or their associated values. On May 2, 2017, the Applicant provided some additional materials in response to Interrogatory Request DEC-3 that further develop the proposed plan. However, the plan is still very preliminary and, as such, the proposed mitigation is inadequate. The Applicant should submit a detailed wetland mitigation plan to New York State DEC and DPS Staff for a coordinated review and further collaborative refinement. Subsequently, the wetland mitigation plan should be submitted to

the Siting Board as a compliance filing prior to construction.

Q. Regarding impacts to streams, does the Applicant adequately avoid and minimize impacts?

A. In order to adequately review potential impacts to streams, DPS Staff will require field visits that are not possible until later this spring. The timing of the receipt of detailed stream drawing sets precluded the ability to conduct field reviews to date. The Applicant should submit final construction plans regarding routing and methods of traversing streams to DEC and DPS Staff for a coordinated review and further collaborative refinement. Subsequently, construction plans should be submitted to the Siting Board as a compliance filing.

Q: Does this conclude your testimony?

A: Yes.

Q. Mr. Rosenthal, are you supporting any exhibits to your testimony?

A. Yes.

Q. Okay. Are you sponsoring pre-marked Exhibit 61, which includes JR-1 and JR-2 dated May 12th, 2017?

A. Yes.

MS. CERBIN: Your Honor, I move that Exhibit 61 be moved into the record.

A.L.J. LECAKES: Yeah, we have it pre-marked as Exhibit 61 and we will wait till the end of the hearing to move it into evidence with the rest of the exhibits. Go ahead.

MS. CERBIN: Mr. Rosenthal is now available for cross examination, Your Honor.

A.L.J. LECAKES: Mr. Muscato.

MR. MUSCATO: Your Honor, can we just go off the record briefly?

A.L.J. LECAKES: Yes, absolutely. Off the record.

(Off the record)

CROSS EXAMINATION

BY MR. MUSCATO:

Q. I have a quick question before --

good afternoon, Mr. Rosenthal.

A. Good afternoon.

Q. I -- I just want to ask you a few clarification questions. I don't believe your resume was included with your testimony. So I have some questions about your qualifications and experience. And then, I have a few questions about the testimony that was submitted by Mr. Peterson and -- and whether or not you have responses and have had the opportunity to review that. So just for clarification, you're not a biologist, correct?

A. I have an undergraduate degree in environmental sciences and a graduate degree in mass -- in a public administration and concentration in environmental policy.

Q. Okay. so you -- I'm sorry, you went fast. Your master's degree was in public administration?

A. Right, with a concentration in environmental policy.

A.L.J. LECAKES: Can you use the microphone, please.

THE WITNESS: With a concentration in environmental policy.

BY MR. MUSCATO: (Cont'g.)

Q. Okay. So after the Bachelor of Science degree. Do you have any other formal training in -- in biology or ecology or -- or anything related to bats?

A. Yes. When I -- on -- are you interested only in after graduate, under-graduate school because I have training -- formal training from my undergraduate degree as well as when I worked at DEC I worked with Al Hicks, the plant biologist and helped him on projects of inventorying of bat populations. Primarily, not tree bats, cave bats.

Q. So have you conducted bat studies or have you conducted field work related to bats when -- with your work with DEC?

A. I did some field work.

Q. When -- when you say field work, I guess, what do you mean? Is there -- are they survey work or are these acoustic surveys or --

A. No, these were visual surveys of bats in caves, and counting trapped bats coming under trees.

Q. Okay. And since then, working with

-- since working with the DEC, have you published any papers or attended any seminars on bats?

A. I did not publish any papers and I've not attended any seminars.

Q. Okay. In your testimony, you refer your experience with DPS and you talk about the energy efficiency proceeding. And I'm just wondering, were you involved with the clean energy standard proceeding at all for Department of Public Service staff?

MS. CERBIN: Objection, Your Honor. This is outside the scope of his testimony.

MR. MUSCATO: Your Honor, it's -- it's relevant because the clean energy standard is the policy statement that New York has issued that's relevant to this proceeding and the reason why renewable energy projects are being promoted in this state.

MS. CERBIN: Objection, Your Honor. This has no relevance to Mr. Rosenthal's testimony.

MR. MUSCATO: So in the clean energy standard, they -- the Commission made specific findings with respect to bat impacts and

other environmental impacts when at issue a Commission order incentivizing 50% of renewables in New York. So it's -- it's particular to his experience.

MS. CERBIN: Objection, Your Honor. There's no question in there. Mr. Muscato is just making statements on the record, I ask that --

A.L.J. LECAKES: Actually, he is responding to your objection. And I actually found his -- his information and -- and the basis for his questions actually pretty convincing.

Mr. Muscato, you can ask this question. Mr. Rosenthal, were you involved in the clean energy standard at all that -- that proceeding?

THE WITNESS: I was not involved in the proceeding for a clean energy standard. My work with the clean energy standard was tracking emissions from -- from various power sources.

A.L.J. LECAKES: Right. Are you familiar with any of the -- the conclusions on -- on bat takings and/or -- or other environmental aspects of that in the clean energy standard?

THE WITNESS: Marginally.

A.L.J. LECAKES: Okay.

MR. MUSCATO: I have one follow-up question.

BY MR. MUSCATO: (Cont'g.)

Q. With respect to that clean energy standard order, when -- when preparing your testimony did you review the CES order, the finding statement or the EIS?

A. I did not.

Q. Okay. With respect to cumulative impacts you testified that cumulative bat impacts cannot be evaluated without population modelling, correct?

A. Say -- repeat the question?

Q. You testified that bat impacts cannot be eva -- cumulative bat impacts cannot be evaluative -- evaluated without population modeling, correct?

A. In my testimony, I was asserting the value of understanding population, size and health and -- in trying to determine the impacts of wind energy in this particular project.

Q. Right. So you were talking about

preparation of population modeling studies for this particular project, correct?

A. In evaluation of populations, how well that the indivi -- the affected bat populations were doing overall to provide a framework of understanding of essentially the level of protection, i.e. curtailment, that would be needed to be afforded to the species depending upon how --

Q. Right.

A. -- their level of population wellbeing.

Q. But Mr. -- But Mr. Rosenthal, I guess what I'm -- I'm just -- I know what a population model is. I'm -- I'm asking specifically with respect to your testimony was population modelling would be appropriate to evaluate the cumulative impacts of this facility.

A. No, that's a mischaracterization of what I was trying to express. What I was trying to express was, in evaluation of populations to then understand how they were doing so you can make sound decisions regarding the siting of this particular project. So I was saying to site this project, you should have an evaluation of how those populations

were doing. That was the gist of what I was getting at.

Q. Okay. So what -- what -- have -- when you review -- when you made that statement in your testimony. And I appreciate the clarifications. Had DPS counsel provided you a copy of the stipulations that were entered into between the applicant, DPS staff and other parties in this proceeding?

A. I joined this department in November just as the stipulations were being formed, I was very new to it. I did see the stipulations after they came out. And I have been involved in the formulation of stipulations for other wind projects and most certainly have said, hey, we've got to take a look here. What's happening to bat populations overall and migratory tree bats.

Q. So --

A. But in terms of this project, those stipulations were --

Q. But that's --

A.L.J. LECAKES: Mr. Muscato, let him answer -- let him answer.

THE WITNESS: Those -- those were

already out and that's why I made those comments in my testimony. So I came into the game late as the stipulations were out the door.

BY MR. MUSCATO: (Cont'g.)

Q. So -- right, so the stipulations for this proceeding did not include your comments about the need for population modelling?

A. That's right, because I came in late and the stipulations were -- were rolling already. But if I had the opportunity I would.

Q. Right. So you recognize then in this proceeding the stipulation does not require the applicant to conduct population modelling?

A. I recognize the stipulations were inadequate because I didn't get to put -- my input well enough.

A.L.J. LECAKES: I -- I understand the witness's answer.

MR. MUSCATO: Me too.

BY MR. MUSCATO: (Cont'g.)

Q. Okay, with respect to curtailment your -- in your testimony you recommended the curtailment regime which you claim is the minimum adequate curtailment to minimize impacts to bat,

correct?

A. Yes, let's turn to the curtailment page.

Q. Sure. You -- you identify a specific protocol that you would recommend as the necessary measures to minimize impacts to bats, right?

A. Yes. And you named them after me, I notice. It's the Rosenthal protocol. Thank you.

Q. Well, actually we'll get to that in a minute. The reason for that, Mr. Rosenthal, is because it's easier to see on the chart where -- where you fall with respect to meters per second and energy loss or production for the project.

A. Yes, please, let me get to the page where they are compared.

A.L.J. LECAKES: Right, and what page are we on?

THE WITNESS: We are on --

MR. MUSCATO: Page 7 but --

THE WITNESS: Well, no I'm looking TSP page 2 of 3 and there's a table comparing the various curtailment regimes.

MR. MUSCATO: Right, before we get

there --

A.L.J. LECAKES: Mr. Muscato, you're looking at testimony right now?

MR. MUSCATO: I was looking at Mr. Rosenthal's testimony.

A.L.J. LECAKES: And what page are you on?

THE WITNESS: Oh, right.

MR. MUSCATO: I was on page seven.

A.L.J. LECAKES: Oh, it's okay. And --

THE WITNESS: That's all right.

A.L.J. LECAKES: -- Mr. Rosenthal, you're looking at one of Mr. Peterson's exhibits, correct?

THE WITNESS: Correct and I'll get to my testimony, compares them all --

A.L.J. LECAKES: Okay.

THE WITNESS: -- and then I'll look at mine --.

MR. MUSCATO: We'll -- we'll get there in a minute, but --

THE WITNESS: Okay.

BY MR. MUSCATO: (Cont'g.)

Q. Just -- just generally, yeah, I know -- I know you -- you stated this in your testimony but -- but generally curtailment, you said in your testimony you used the term constraints, conditions under which the turbine blades are permitted to operate, right? That's generally what one means when they say curtailment?

A. My understanding of curtailment it's a series of protocol of which you restrict times at which the turbine blades were allowed to spin.

Q. Okay. Right, and during those times the restrictions of course then the project wouldn't be generating any -- any energy?

A. Correct.

Q. So all things being equal then, you wouldn't constrain energy production other than for a specific reason. In other words, the -- the project's going to be -- the project would not run constrained unless there was some basis to constrain operations of the project, it otherwise let to generate energy, correct?

A. The purpose of curtailment is to minimize to the maximum extent practical the impacts to bats and -- and I was the -- that is the primary

reason and that is the primary reason for curtailment, yeah.

Q. And -- and that would be -- picking up on what you just said. When there's a relatively high degree of or likelihood the bats would be present at -- at a particular time, correct?

A. The standard being minimization to maximum extent practical. You have to keep in mind here what -- what the concern is. The concern is that migratory tree bats that fly at higher wind speeds, projects such as this are slaughtering 500,000 bats a year.

MR. MUSCATO: Your Honor, this is not -- he's not answering --

THE WITNESS: Well, I'm get -- I'm get -- I'm getting to the point of why you would have curtailment so please let me finish.

A.L.J. LECAKES: I'll let him go for a minute.

THE WITNESS: The -- the -- the -- the purpose of the curtailment is the maximum extent practical to limit the killing of those bats. Those bats fly at higher speeds, so you want to minimize as much as possible and have a

viable project. And so that is the -- what -- what would be balanced in making a curtailment regime.

A.L.J. LECAKES: Mr. Muscato, what was your question again?

BY MR. MUSCATO: (Cont'g.)

Q. My -- my question was actually whether or not when you are curtailing you would be doing at the time when you have a relatively high degree of likelihood the bats would be present.

A. You would be doing it to minimize --

Q. No, not asking why you would do it. I'm saying you would do it when you have a high degree of likelihood that bats are present.

A. You would do it when bats could be flying and the more -- and -- and you a have a range of times when bats could be flying and you have to -- and you would, as much as possible, limit those blades from spinning when the bats could be getting hit by those blades or killed by those blades.

Q. Okay, so if I understand, I think what you just said is, that -- so curtailment is, in your opinion, it's managing risk of -- of turbine

operation and bat activity?

A. Curtailment is a way of killing less bats.

Q. Well okay. It -- is it -- is it always?

A. Is it always what? What's the question?

Q. Let me give you -- I'll give you an example. So -- so what you're saying is curtailment is if one bat is flying the turbine shouldn't be operating?

A. No, I said to the maximum extent practicable is the standard and there's a professional judgment involved in that, and that's how I came up with my recommendation.

Q. So -- so your -- so your judgment is about when there's a higher degree of likelihood of bats being present or flying?

A. Correct.

Q. Yeah, okay. Okay, so let's get to -- you've mentioned your specific curtailment regime. You -- you recommended a minimum curtailment of 6.0 June 1st to October 1, 1 hour before sunset to 1 hour after sunrise when the temperature are higher than 10

degrees, correct, I didn't mischaracterize that, did I?

A. 50 degrees, yeah. 50-degree Cel -- Fahrenheit, I guess.

Q. Celsius, right.

A. 10-degree Celsius.

Q. Right. What -- what's the -- what's the biological basis for the 1-hour before and after?

A. Bats fly before -- in dusk.

Q. Have you reviewed DEC's testimony with respect to their proposed curtailment regime?

A. Yes, I have. They have a slightly shorter time, a half hour versus an hour.

Q. You mean you -- and I don't want to testify for you, but you mean a half hour before sunrise and a half hour -- I'm sorry. When you said a little shorter timeline, you mean one hour before sunrise as compared to half hour before sunrise. And 1-hour after sunrise as compared with a half hour after sunrise, right? It's on both sides, sunset and sunrise?

A. In relation to dusk, is the way I think about it.

Q. Okay. In -- in your testimony did you provide any references to studies or scientific literature finding that this minimum curtailment regime minimizes impacts to bats?

A. I looked at curtailment regimes that were recommended in other -- in other states. And I looked at, and I was aware of what DEC was recommending at some point in the process too.

Q. Yes, in the -- in the state, I think, that you recommended in your testimony was the state that you reviewed in your testimony was Vermont, correct?

A. That's the one I put in the testimony as a -- as a good benchmark to go off of, yes.

Q. Are there -- were there other states that you looked at?

A. Yes.

Q. Did you identify them in your testimony?

A. No, because they're not the ones I chose. I didn't think they had to -- they had curtailment regimes that would work -- result in more death bats.

Q. What other states did you review?

A. Let's see. That was Maine and there was in the mid-west.

Q. Do you remember what states in the mid-west?

A. I'm sorry, I do not.

Q. So ultimately you said you chose the Vermont Guidelines, correct, as a recommendation?

A. Yes. I chose the Vermont guidelines, because they're an adjacent state and with the curtailment regime that seem reasonably protective.

Q. Are -- are you aware of any studies on -- on the Vermont guidelines and whether they reduced the risk of -- of reduced the risk greater than or compared to other lower curtailment regimes?

A. Have to think a second.

A.L.J. LECAKES: I'm sorry. What was that?

THE WITNESS: I said I have to think a second.

A.L.J. LECAKES: Okay.

THE WITNESS: What I saw was the applicant's testimony that provided percentages

of lowered mortality in relation to cut-in speeds which has a more restrictive speed.

BY MR. MUSCATO: (Cont'g.)

Q. No, that -- that's not what I'm asking. I guess, I'm asking specifically with respect to the Vermont guidelines that you've referenced and recommended or you used for the recommendations in your testimony, are you aware of any studies that show that the Vermont guidelines reduce the risk greater than or as compared with other lower curtailment regimes?

A. My understanding, I believe, this is --

Q. This is a question of --

A. Yeah -- yes.

Q. -- do you know of any studies?

A. Well, I -- I think I know how that evolved and -- subject to check is that I think I believe that evolved from the -- per the standards for of the Fish and Wildlife Service had for Indiana bat populations and evolve and that -- and it was somehow related to that. But I have to go back and research exactly that relation I read about I -- it wasn't in the testimony.

Q. So are you aware that DEC has found that 83% of all bats reported killed during post-construction studies were found between July 1st and October 1st?

A. I have seen ranges of when there were bats killed. There was concentrations and periods when there were more, but most certainly, they're within the range of May through September but there is a higher concentration at the months you mentioned.

Q. Would you say it's 83%?

A. I would not cite a specific number.

Q. So you're not familiar with the DEC's testimony?

A. I am familiar with that, I just --

Q. Just like that?

A. -- not -- not citing it off the top of my head.

Q. Right.

A. I have to look in the testimony which I've read many times but you have to take time going --.

Q. So let's -- let's talk about the Peterson hearing exhibit. It's -- it's Peterson 3

hearing exhibit number --.

A.L.J. LECAKES: I believe it's Exhibit 38.

MR. MUSCATO: Yes, thank you.

THE WITNESS: Hang on, I'm not sure I see it. Excuse me, what page you're on?

A.L.J. LECAKES: It's TSP-3.

THE WITNESS: All right, page?

A.L.J. LECAKES: And for our purposes for the hearing evidentiary record it's been marked as Exhibit 38.

BY MR. MUSCATO: (Cont'g.)

Q. So have you had a chance to review Hearing Exhibit 38?

A. TSP-3?

Q. Yes.

A. Yes, I have it in front of me. Yes.

MR. MUSCATO: Your Honor, would you prefer that I refer to it as Hearing Exhibit 38?

A.L.J. LECAKES: The witness seems to know it as TSP-3, we've already reflected on the record that we're talking about Exhibit 38 so I don't mind either reference.

BY MR. MUSCATO: (Cont'g.)

Q. So do you agree that the -- the curtailment proposal by the applicant will reduce potential impacts to bats as compared to what was originally proposed by the applicant?

A. Yes, but not as much as it could.

Q. Right, and that's because it's your belief that your proposed curtailment would be more effective in minimizing the risk to bat species as compared with the applicant's proposal, correct?

A. That's supported by the table on page 5 of TSP-3. It shows that there would be a greater percentage of avoided passes which doesn't directly talk mortality, be aware of that. Mortality could be a lot higher. But yes, the modified proposal is 63% passes, according to the information provided by the applicant and mine is 73.

Q. I want to go back to a statement that you just said though. When you -- when you -- we're -- when we're talking about identification of passes you understand we're not talking about the magnitude of mortality. We're just talking about risk avoidance, right?

A. Absolutely. That -- I think that

was the point of what I just said.

Q. I just wanted to make sure. So -- okay, so have you reviewed the potential energy losses then associated with the different potential curtailment regimes described in TSP-3?

A. I have using table 2 taking those on face value.

Q. What do you mean by face value?

A. I had no way of verifying these numbers so just believing that the information provided by the applicant was accurate.

Q. But have you challenged the accuracy of these numbers? And I see you're looking at your counsel, maybe you need to identify whether or not --

A. No, I was just saying taking it on face value. Have I researched, you asked me did I research it. I didn't do an independent research, I took what the applicant provided at face value to make the evaluation, which is different than an independent research.

Q. And I'm asking you now whether or not you -- you challenged the accuracy of these numbers?

A. No, I'm just saying I took it by face value. They could be right they could be wrong,

Q. Well -- well --

A. There's nothing supporting.

A.L.J. LECAKES: I understand that as far as I'm aware there's no evidence in the record right now that has challenged those numbers, is that correct, Mr. Muscato?

MR. MUSCATO: That -- that's just correct as far as I know, Your Honor, yes.

A.L.J. LECAKES: Okay. We can proceed then.

THE WITNESS: Yeah, and there's nothing supporting it.

BY MR. MUSCATO: (Cont'g.)

Q. When you say nothing supporting, the table?

A. The megawatt hours. As far as I -- I only -- information -- for me, the only information I have is the megawatt hours.

A.L.J. LECAKES: Right. And -- and I understand that there is testimony supporting those numbers that's come in from the applicant, so.

BY MR. MUSCATO: (Cont'g.)

Q. So with respect to -- with respect to the table 2. So you -- so do you recognize with respect to table 2 that your -- that your proposal increases avoidance rate by 10%, but has a power loss associated with it and I'm not great at math, but it's almost five times as much?

A. I don't think five times is quite right at all.

Q. Okay. Let's --

A. 4,000 versus 15,000 it's about an 11k difference.

Q. I said I wasn't good at math. So let's say 4.

A.L.J. LECAKES: Well, why don't we just use the actual numbers that appear on the -- on the chart instead of trying to magnify them.

MR. MUSCATO: So it's --

A.L.J. LECAKES: Or make a magnitude of them.

MR. MUSCATO: Well, I think it's -- it's particularly relevant in this regard, Your Honor, because we're going to get to this. But if it's because of table, because of figure 3.

A.L.J. LECAKES: Okay

MR. MUSCATO: So, 3.8 times, thank you.

BY MR. MUSCATO: (Cont'g.)

Q. So for 10% difference in the avoidance rate it's 3.8 times the power loss, correct?

A. To understand this table, you have to understand the total amount of generation and what would this be as a percentage. So it is three times more energy loss but is that significant. You have to protect to the maximum standard practicable, does this affect the viability of the -- of the project. No argument has been -- I don't -- I'm not aware of anybody's testimony that supports that. The difference, yes, there's an increase -- in my opinion, for the increased protection that would be afforded to bats, it is worth the reduction in energy as projected in the statement.

A.L.J. LECAKES: Mr. Muscato, if I could interrupt for a second. Mr. Rosenthal, what is your interpretation of the term maximum extent practicable? Do you look at that as a legal term or do you look at that as something

other as -- as a non -- in a non-legal way?

THE WITNESS: I look at it as both, sir. There's -- I think in Article 10 regs. It's that clause and obviously you are very familiar with, that is a matter of what is -- what is practicable. To me that is, my unders -- for me, that's -- that's a judgment call. Is this a viable project?

A.L.J. LECAKES: Right.

THE WITNESS: Could this -- could this project go forward? And I feel like the onus is on the applicant to show that if there -- that somehow would make their project not viable or not feasible or not -- not -- not a good, it would undermine the viability of the project.

A.L.J. LECAKES: Right. And -- and this is the second time we have run into this with the Department of Public staff witness. Because I'm looking at that term as a legal conclusion that the judges have to recommend to the siting board, and that the siting board ultimately has to make. But it appears to me that those -- that the professional witnesses of -- of DPS staff or -- or the -- the witness --

the engineering witnesses, if you will, are looking at it in a -- in a slightly different way as not just a legal conclusion or a legal judgment that has to be made but as some characteristic of -- of your expertise. And I'm trying to understand where that kind of line lies between the -- the legal conclusion that we and -- and the siting board are responsible for and that the attorneys will be arguing in briefs versus the judgment that's being made on a professional basis from an engineering or an environmental standpoint. And I -- I just -- I'm wondering if you have a thought on -- on that.

THE WITNESS: I want to think about that.

A.L.J. LECAKES: Yes. Please do before you answer. Because I think it's a -- it's an interesting question for -- for this case.

THE WITNESS: I -- I don't think I can speak to your role, Your Honor, --

A.L.J. LECAKES: Right.

THE WITNESS: -- as a judge and because I'm not, you know, I don't have a legal

background.

A.L.J. LECAKES: Right, and that's what I'm getting concerned about these question.

THE WITNESS: Right. And so I -- I do fundamentally understand that there is a legal standard. I can't cite to you the legal standard if that's what you're asking. Do I -- but I can, and I have my own personal professional opinion as to this trade off of impacts versus there'd be essentially lost revenue or less -- loss -- loss energy production.

A.L.J. LECAKES: Okay, that -- that's -- thank you because that clarifies. Because I -- I think that what we're looking at is the role of -- of the professional staff of DEC, DPS Department of Health to tell the judges and ultimately the siting board what the impacts are. And while I can appreciate testimony from those witnesses as to, you know, whether those impacts are -- are so detrimental that the project shouldn't be built or -- or changes should be made or turbines should -- should not be put up or -- or excluded. I -- I think whether something short of that is the maximum

extent practicable is ultimately the decision is ultimately a legal decision. But -- so it's good to know where DPS staff or -- or at least you and -- and the prior witness are coming from when you used that term in -- in a less than a legal conclusion manner.

Does that help you, Mr. Muscato?

MR. MUSCATO: Yes.

A.L.J. LECAKES: Because it really helps me.

MR. MUSCATO: Yes, absolutely. Especially with respect to some of the testimony that was in the direct testimony.

A.L.J. LECAKES: Okay. You may continue.

MR. MUSCATO: So -- and I only have a few more questions, Your Honor.

BY MR. MUSCATO: (Cont'g.)

Q. So you've recommended a -- a curtailment regime. Are you aware of any projects in New York that are operating under that curtailment regime?

A. No, my understanding is that there is -- Article 10 is the -- my answer is no. I am not

aware of acurtailment regime. I have been at other projects. I am also aware that there are new -- let me start over. There are concerns, ecological concerns that need to be met by each project being sited.

MR. MUSCATO: Your Honor, that -- that's not my question. I've asked a very specific question.

THE WITNESS: Well, I'm getting there.

A.L.J. LECAKES: Well, I think that question has been answered because your --

THE WITNESS: Okay.

A.L.J. LECAKES: -- your answer was that you're not aware of any other projects in the state that are subject to the curtailment regime that you recommend in your testimony, is that right?

THE WITNESS: Yes, that's correct.

A.L.J. LECAKES: But at the same time, your testimony or -- or your response was starting to indicate that as far as you're aware this is the first application a siting of a generation project in New York State that is

proceeding to this stage under the new Article 10, is that correct?

THE WITNESS: Correct, sir, that's what I'm saying.

A.L.J. LECAKES: Okay. Mr. Muscato?

MR. MUSCATO: Your Honor, would you just give me one minute --

A.L.J. LECAKES: Yes, absolutely.

MR. MUSCATO: -- I'm almost done with my questions.

No further questions, Your Honor.

A.L.J. LECAKES: Thank you.

Ms. Cerbin, do you want a couple of minutes or should we just take a bathroom break and come back in -- in 5 or 10 minutes.

MS. CERBIN: We can do a quick bathroom break.

A.L.J. LECAKES: Yeah, why don't we go off the record and during -- and while we're off the record DPS can consult with its witness as to redirect. Thank you.

(Off the record)

A.L.J. LECAKES: All right. Let's go back on the record. Mr. Abraham, I apologize. Did you have any cross-examination questions at this time?

MR. ABRAHAM: No, I do not. I would like to reserve the opportunity to submit interrogatories though when I have an opportunity to consult with my expert.

A.L.J. LECAKES: Yeah. And once you have the responses --

MR. ABRAHAM: Yeah.

A.L.J. LECAKES: -- if you would like to get those into the hearing records, we'd consider a motion. I -- I can't guarantee that we'd grant it, but we would consider it if it's --

MR. MUSCATO: Your Honor --

A.L.J. LECAKES: Mr. Muscato --

MR. MUSCATO: No, I was going to let Mr. Abraham finish. I didn't mean to interrupt.

MR. ABRAHAM: I just -- thank you. You're welcome.

MR. MUSCATO: With respect to that,

I guess, I'd like to clarify, it was our understanding that the evidentiary record for this proceeding is going to close at the completion of this hearings. The suggestion now may be that there is going to be additional discovery and the discovery opportunities in this proceeding have been extending for a long time. There isn't any new information that was presented here. So I guess I want to ask more about what information Mr. Abraham was seeking in an IR?

A.L.J. LECAKES: Well, the suggestion comes out of the fact that Mr. Abraham's expert was not able to be here today and it’s not that the evidentiary record won’t be closed at the end of hearing. It will be. It's that if -- if interrogatory responses come in and something new that was not able to be had because Mr. Abraham's expert wasn't available today to assist him, it needs to be put in the evidentiary record from their view point. I am -- I'm telling Mr. Abraham that he is certainly able to make a motion to reopen it for the limited purpose of putting that in. Of course, Cassadaga

Wind LLC as the Applicant and any other party will have a right to respond to that motion and in -- the Judges will make a determination as to whether to grant it or not.

MR. MUSCATO: I know this may be a bit of an extraordinary request, but given the hour is it a possibility that we could take another break, find out what those questions may be and then Mr. Abraham can pose them to the witness while we have the witness here today?

A.L.J. LECAKES: I don't know if Mr. Abraham has the ability to contact his expert at this time.

MR. ABRAHAM: He is not available today.

A.L.J. LECAKES: Okay. The problem is that as far as I understand Mr. Rosenthal is not available after today for the hearing, is that correct, Mr. Rosenthal?

MR. ROSENTHAL: Yes, Your Honor.

MR. MUSCATO: Can we do it by phone?

A.L.J. LECAKES: Yeah. The other consideration is that Mr. Garlick brings up and

that I was thinking is perhaps, will you be at Albany, Mr. Rosenthal, after today at work?

MR. ROSENTHAL: I -- I will be out of town from tomorrow and then through -- then back on Monday afterwards. So out Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, back Monday.

A.L.J. LECAKES: Okay. Mr. Abraham, your expert will be available tomorrow. Will you be able to know after consulting with him tomorrow if you will have any questions for this witness?

MR. ABRAHAM: I -- I think that's reasonable. I think, yes.

A.L.J. LECAKES: All right. Perhaps what we could do is we can work with Staff counsel to do some sort of limited telephone or teleconference for -- with Mr. Rosenthal prior to the end of the hearing to get answers to any questions. Would that work for you, Mr. Rosenthal?

MR. ROSENTHAL: I think I can do so.

A.L.J. LECAKES: Thank you very

much.

Ms. Cerbin, do you have any re-direct?

MS. CERBIN: We do not have any re-direct at this time, Your Honor.

A.L.J. LECAKES: Okay. Anyone else? All right. Mr. Rosenthal, I'm going to excuse you but not completely dismiss you in case Mr. Abraham does have any questions for you. So you are excused for today.

Thank you very much for your appearance here today.

MR. ROSENTHAL: Thank you, Your Honor.

A.L.J. LECAKES: Let's go off the record for a second.

(Off the record)

A.L.J. LECAKES: Call your witnesses please.

MS. CROUNSE: Sure. We call Brianna Denoncour and Carl Herzog.

A.L.J. LECAKES: Please do not sit down yet. Ms. Denoncour, Mr. Herzog, please raise your right hands. Do you swear or affirm

that the testimony you're about to give in these proceedings is the whole truth?

MS. DENOCOUR: Yes.

MR. HERZOG: Yes.

BRIANNA DENONCOUR;

Sworn

CARL HERZOG; Sworn

A.L.J. LECAKES: You may be seated.

Ms. Crounse?

DIRECT EXAMINATION

BY MS. CROUNSE:

Q. Good afternoon. Would you please each state your full name for the record?

A. (Herzog) Carl J. Herzog.

A. (Denoncour) Brianna Denoncour.

Q. And did you prepare panel testimony for this proceeding?

A. (Herzog) Yes.

A. (Denoncour) Yes.

Q. Is that testimony in front of you?

A. (Herzog) Yes.

Q. And have you reviewed that testimony?

A. (Denoncour) Yes.

Q. And do you have any changes?

A. Yes, I do.

Q. I point you to page 6, line 14.

A. Okay.

Q. Would you like to -- the sentence starts, "Based on the data from 2012." Do you want to change the word annual to the word cumulative?

A. Yes.

Q. Thank you. On page 7, line 17 in the middle of the sentences you have across North America, would you like to change that to throughout the Northeast?

A. Yes.

Q. And then same page 7. Might be too many microphones.

A. Mine's off.

Q. Line twenty-one, would you like to remove the phrase for the past 10 years?

A. Yes.

Q. Are there any further corrections?

MR. MUSCATO: I'm sorry, Your Honor, I didn't catch the last one. What page was that?

MS. CROUNSE: Page 7, line 21,

strike for the past 10 years.

MR. MUSCATO: Past – oh. Strike it.

A.L.J. LECAKES: Strike it, yeah.

MS. CROUNSE: Yeah. Removing it.

MR. MUSCATO: Got it. Thank you.

MS. CROUNSE: Oh! Okay.

BY MS. CROUNSE: (Cont'g.)

Q. Are there any other corrections to your testimony today?

A. (Herzog) No.

Q. So apart from the -- the changes we've just made, if I were to ask you the same questions would you give the same answers contained in your testimony?

A. Yes.

Q. And do you adopt that testimony for the record?

A. Yes.

MR. HERZOA: This is what I was asking for. Do we both answer?

MS. CROUNSE: Your Honor, just for clarification --

MS. DENOCOUR: Yeah.

MS. CROUNSE: -- do they both need to answer or would they just go on for the panel?

A.L.J. LECAKES: No, you just need one spokesperson --

MS. CROUNSE: Okay. So we'll just have one.

A.L.J. LECAKES: -- for a panel --

MS. CROUNSE: Okay.

A.L.J. LECAKES: -- although the other panelists can --

MS. CROUNSE: Okay.

A.L.J. LECAKES: -- respond if they need to.

MS. CROUNSE: Okay.

BY MS. CROUNSE: (Cont'g.)

Q. Did you sponsor any exhibits with your testimony?

A. (Herzog) Yes.

A.L.J. LECAKES: Before we get to that. Is that a motion to put the --

MS. CROUNSE: Oh. Would you like me to accept the motion? I didn't know if you wanted all together.

A.L.J. LECAKES: Well, to -- no to

NEW YORK STATE BOARD ON ELECTRIC GENERATION SITING AND THE ENVIRONMENT

In the Matter of the Application of

Cassadaga Wind LLC Case No.: 14-F-0490

for a Certificate of Environmental Compatibility and Public Need Pursuant to Article 10 to Construct a Wind Energy Facility.

DIRECT TESTIMONY OF BRIANNA DENONCOUR AND CARL J. HERZOG

Division of Fish and Wildlife
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-1750

May 12, 2017

Q. Will the first witness please state her name, employer, title and business address?

A. My name is Brianna Denoncour. I have been employed by the New York State Department of Environmental Conservation (NYSDEC or Department) in the Division of Fish and Wildlife, Bureau of Habitat as a Wildlife Biologist and Avian Ecologist for approximately 12 years. I currently work out of the NYSDEC Central Office in Albany, New York.

Q. Will the first witness please describe your educational background and professional certifications?

A. Please see a copy of my resume, attached hereto as NYSDEC-DH-1.

Q. Will the second witness please state his name, employer, title and business address?

A. My name is Carl J. Herzog. I have been employed by the Department in the Bureau of Wildlife as a Wildlife Biologist and mammal expert for approximately 7 years. I currently work out of the NYSDEC Central Office in Albany, New York.

Q. Will the second witness please describe your educational background and professional certifications?

A. Please see a copy of my resume, attached hereto as NYSDEC-DH-2.

Q. Will the panel please describe your collective responsibilities at the Department?

A. As Wildlife Biologists, we are responsible for programmatic oversight for the State's statutory and regulatory Rare, Threatened and Endangered Species programs. In this capacity, we oversee the implementation of Article 11 of the Environmental Conservation Law (ECL 11-0535) (Article 11), and its implementing regulations through 6 New York Codes, Rules and Regulations (NYCRR), Part 182 (Part 182). Included in this oversight is the review of ECL Article 11 permit applications, and the Department's assessment of potential and realized impacts to birds and bats at wind energy projects.

Q. Will the first witness please summarize her experience regarding rare, threatened and endangered species, and review of proposed wind farm projects?

A. I coordinate the Department's statewide review of potential impacts that all major wind energy development projects have on wildlife and terrestrial habitats, including State-listed birds, bats, grasslands, and forests. I have reviewed several proposed wind energy projects that included an Incidental Take Permit (ITP) application for impacts to State-listed threatened or endangered species, pursuant to ECL Article 11, Part 182. To date, one ITP has been issued by the Department for a wind energy project proposal (Hounsfield Wind Farm, 2010, not constructed). I drafted and oversaw the release and implementation of the *Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects* (2009, revised 2016).

Q. Will the second witness please summarize his experience regarding rare, threatened and endangered species, and review of proposed wind farm projects?

A. As the mammal specialist for NYSDEC's Wildlife Diversity section, I am the Department's primary staff resource for developing and conducting bat population surveys, developing and implementing management strategies and plans, reviewing all manner of development project proposals to assess potential for impacts to protected bats, and identifying and developing bat research. I participate in a number of United States Fish and Wildlife Service working groups charged with implementing the U.S. National White-nose Syndrome Response Plan.

Q. What is the purpose of your testimony?

A. The purpose of our testimony is to provide an overview of the State's Rare, Threatened and Endangered Species program, and, specifically, how State regulations and responsibilities regarding the protection of wildlife should be applied to assessing, avoiding, minimizing, and

mitigating the impacts of commercial wind energy projects on the mortality of bats. Our testimony will: 1) provide background regarding the biology and behavior of bats; 2) summarize existing literature regarding the impact of wind projects on bats; and 3) summarize the existing post-construction monitoring data that demonstrates the scale of bat mortality for New York State wind projects. In addition, our testimony will focus on the take, as defined in Part 182, of the northern long-eared bat (NLEB), a federally- and State-listed threatened species. We are advised by Department Counsel that this program, with its attendant statutory and regulatory authority, applies to the Project, as proposed, and to the Siting Board's deliberations pursuant to Public Service Law (PSL) Article 10. Accordingly, our testimony discusses how the Siting Board must apply the State's statutory and regulatory Rare, Threatened and Endangered Species program to ensure the Project's compliance with ECL Article 11 and its implementing regulations in Part 182, and how the Siting Board should apply ECL Article 11 and Part 182 to its deliberations under PSL Article 10 should it decide to approve the Project.

Q. What information has provided the basis for your testimony?

A. Our testimony is based on the Cassadaga Wind project (Project) application (Application) filed with the New York State Public Service Commission on May 27, 2016 by Cassadaga Wind LLC (Applicant), and supplemental filings filed October 7, 2016; November 22, 2016; and January 17, 2017. We also reviewed the Applicant's responses to various information requests relating to bat species, as well as documents and materials we have noted in the "References" section located at the end of our testimony. We have reviewed all of the above-referenced materials in the context of compliance with ECL Article 11 and Part 182.

OVERVIEW OF THE BIOLOGY AND BEHAVIORS OF BATS

Q. Can you identify the species of bats that are found in New York?

A. Yes. There are nine (9) species of bats widely accepted as being present in New York for at least some portion of the year. These are: 1) the hoary bat (*Lasiurus cinereus*); 2) silver-haired bat (*Lasionycteris noctivagans*); 3) eastern red bat (*Lasiurus borealis*); 4) little brown bat (*Myotis lucifugus*); 5) big brown bat (*Eptesicus fuscus*); 6) tri-colored bat (*Perimyotis subflavus*); 7) NLEB (*Myotis septentrionalis*); 8) Indiana bat (*Myotis lucifugus*); and 9) eastern small-footed bat (*Myotis leibii*).

Q. Are there certain bat species present in New York that are of particular conservation concern?

A. All New York resident bat species, except for the big brown bat, have been designated as species of conservation concern (NYSDEC 2015[1]). Of these, the Indiana bat and NLEB have also been granted protection under federal and State endangered species statutes as a result of this concern. These bat species will be discussed in more detail later in this testimony. Further, the tri-colored and little brown bats are currently under review by federal and State authorities to determine if endangered species protection is warranted.

Q. Please describe the biology and behavior of New York's bat species?

A. All New York bat species are exclusively insectivorous. The vast majority of their diets are composed of flying insects that are consumed at night. These bats exhibit one of two general strategies for dealing with those months when flying insects are not available in the State. Most hibernate throughout the cooler months. Some species fly south seeking a warmer climate.

[1] A list of references relied upon for this testimony is attached hereto as NYSDEC-DH-3.

Some individuals in the latter group are resident in lands to our north in the warm months and pass through New York as they fly south for winter.

Mating for all New York bat species is believed to take place mostly in late summer and fall, with an unknown amount occurring during hibernation. Young are born the following spring when bats return to their warm weather habitats. Once the young are capable of flight bats typically switch to their late summer/fall behavior patterns that are presumed to be largely centered on mating and preparation for winter. Bats are promiscuous breeders and they are known to travel great distances in the late summer and fall as they engage in this behavior.

BAT MORTALITY FROM WIND TURBINES

Q. Please describe the current understanding of bat mortality from the operation of wind turbines in North America?

A. Various attempts have been made to quantify the number of bats typically killed at wind turbine sites in North America (Arnett, et al. 2008; Cryan 2011; Hayes 2013; Huso and Dalthorp, 2014). Based on data from 2012, the annual number of bats estimated to be killed at wind energy projects throughout the United States and Canada ranges from 600,000 to 2 million individuals (Arnett, et al. 2016), with some species being clearly more susceptible to being killed than others (See Table 1- Estimates of cumulative fatalities of each species of bat from 2000 to 2011 for all regions combined in the USA and Canada, from Arnett and Baerwald 2013, reproduced in the attached NYSDEC-DH-3). These numbers likely underestimate the current level of mortality since the wind energy industry has grown significantly since 2012. Wind turbines are the single greatest known source of mortality for several bat species in North America (Cryan 2011; O'Shea, et al. 2016), and the impacts wind energy development is having on all species of bats have been cause for concern for the past decade (Kunz, et al. 2007).

It is unlikely that current populations of the most commonly killed species can sustain this level of mortality. A recent study predicts a population decline of 90% for the most commonly killed species, hoary bat, in the next 50 years even if fatality rates remained at 2014 levels, and that this level of decline is likely applicable to the other most commonly killed bat species as well (Frick, et al. 2017).

The impacts of wind energy development to bats are widespread, predictable, and largely preventable (Hayes 2013; Arnett, et al. 2016; O'Shea, et al. 2016). Most bats are killed on nights with low wind speeds during the late summer and fall (Arnett 2008; Arnett, et al. 2011; Cryan, et al. 2014).

Q. Is there specific information available regarding the impacts of operating wind turbines on bat mortality in New York?

A. Yes. In accordance with the DEC's *Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects* (NYSDEC 2016) some wind project developers have been conducting post-construction monitoring surveys at operating wind projects in New York. NYSDEC has been compiling the data from each of the surveys and analyzing the results to determine bat mortality rates in New York. The results are generally comparable to those observed from wind projects across North America. (See Table 2 - Recent post-construction studies used to calculate bat fatalities in New York, reproduced in the attached NYSDEC-DH-3).

Q. Please describe the results of these surveys and your conclusions?

A. Post-construction fatality studies have been conducted at most wind energy projects in New York for the past 10 years. The majority of turbine-caused fatalities are comprised of three species of bats: hoary bat, silver-haired bat, and eastern red bat (Figure 1- Percentage of wind-related bat mortality in New York by species, 2009-2016 and Table 1- Estimates of cumulative

fatalities of each species of bat from 2000 to 2011 for all regions combined in the USA and Canada).

Based on an evaluation of post-construction studies conducted in New York and southern Ontario, Canada in recent years we found that the mean bat fatality rate for all species combined is 6.1 bats per Megawatt (MW) of generating capacity per year (yr) (Table 2-Recent post-construction studies used to calculate bat fatalities in New York). This is comparable with what has been documented elsewhere in the Northeast (Hein, et al 2013).

Based on 2016 installed wind energy capacity of 1821 MW, an estimated 11,100 individual bats are killed annually at wind projects in New York (Table 3-Estimated bat fatality by species in New York, based on 2016 installed wind energy capacity). This number is expected to increase as development of the industry continues, with an estimated 24,400-36,000 bats expected to be killed by turbines in New York annually by 2030, when an estimated 4,000-5,900 MW of on-shore wind generating capacity is expected to be installed in the state (NYSDPS 2016).

INDIANA BAT AND NORTHERN LONG-EARED BAT

Q. You mentioned previously that Indiana bats and NLEBs are afforded State regulatory protections. Can you provide more detail regarding those protections?

A. The Indiana bat and NLEB are protected under ECL Article 11 and the associated implementing regulations in Part 182.

Q. Can you describe the distribution of the NLEB in New York?

A. Yes. Data collected by NYSDEC and the New York State Department of Health demonstrate that the range of the species in New York includes forested habitats in all New York counties outside of New York City and in most towns of the State. Furthermore, its presence in

known bat hibernation sites in the State is similarly widespread. The population declines for NLEB due to white-nose syndrome (WNS) have been considerable, but because the primary impact of the disease is during hibernation we believe that the overall distribution of NLEB in New York is likely not changed.

Q. Can you describe the distribution of the Indiana bat in New York?

A. Indiana bats are found in northern New York (Jefferson County), northeastern New York (Essex and Warren County areas), central New York (Onondaga County area), and eastern New York (Hudson River valley). Locations are based on known hibernacula and maternity roost trees. Indiana bats are typically found at lower elevations (less than 1000 feet) during the breeding season, though they may move across the landscape at higher elevations. NYSDEC does not have any records of Indiana bats in Chautauqua County, where the Project is proposed to be located.

Q. Will both Indiana bats and NLEBs be potentially impacted by the Project?

A. No. Due to the location of the Project, and the distributions described above, only NLEBs will be potentially impacted by the Project.

Q. Can you provide further detail regarding the protection of the NLEB?

A. Yes. NLEB was common in New York only a decade ago. The species was listed as threatened by the United States Fish and Wildlife Service (USFWS) on April 2, 2015 due to documented widespread population declines of over 90% as a result of WNS. WNS is a disease that was first recognized in 2007 and which has killed hibernating bats in eastern North America in unprecedented numbers. NLEB also became listed as a threatened species under State law as a result of this federal action under ECL Article 11 and Part 182.

The USFWS adopted a rule on January 14, 2016 under Section 4(d) of the Federal Endangered Species Act that allows for most forms of incidental take of this species (including the direct take of NLEB that would result from operation of wind turbine facilities) without the need for a federal permit (Federal Register, 2016). Note, though, that in adopting this rule USFWS is not saying that take of NLEB at wind turbine facilities is unlikely. Indeed, in the biological opinion that accompanied the rule, USFWS estimated the widespread take of NLEB at wind turbine facilities within the species' range (USFWS 2016).

New York State law has no provision similar to Section 4(d) of the federal law and, pursuant to ECL Article 11 and Part 182, any expected take of NLEB in New York would require a permit issued by NYSDEC and an associated mitigation plan to achieve a net conservation benefit for the species.

Q. What do we know about the susceptibility of NLEB to being killed at wind turbine facilities?

A. Arnett and Baerwald (2013) estimated that wind energy facilities in the United States and Canada killed between 1,175 and 2,433 NLEBs from 2000 to 2011. Post-construction studies have demonstrated that the species has been killed by wind turbines in New York as well, including studies performed after the significant population declines resulting from WNS.

Q. Does Part 182 apply to the Project?

A. Yes. As previously mentioned in this testimony, NLEB is a State-listed threatened species. Based on the widespread nature of the distribution of NLEB in New York during both winter and summer, and demonstrated susceptibility of the species to be taken at wind turbine facilities, we conclude that all on-shore wind turbine facilities in New York pose a threat to the species. Therefore, Part 182 applies to the Project.

Q. What is the estimated magnitude of the threat to NLEBs from on-shore wind turbine facilities in the State?

A. To estimate the magnitude of this threat, we followed the approach suggested by USFWS for estimating the take of NLEB at wind turbine facilities (USFWS 2016), using data specifically from studies performed at New York and nearby Canadian wind turbine facilities. To begin, we examined post-construction monitoring studies with reported species composition data in the post-WNS era (after 2008) from sites in New York and nearby Wolfe Island, Ontario to determine the percentage of bats that were identified as NLEB (Table 2 - Recent post-construction studies used to calculate bat fatalities in New York). A total of 1,736 carcasses were reported, of which 7 individuals (0.40% of the total) were identified as NLEB.

Next we estimated the all-species rate of bat fatalities. Studies from New York and Wolfe Island, Ontario that reported overall bat fatality estimates as bats per MW of generating capacity, corrected for searcher efficiency and scavenging rates, were examined to determine a statewide average, all-species estimate of expected bat fatalities. These estimates were calculated using various analytical methods (See Jain, et al. 2007; Huso 2011; and Shoenfeld 2004) and sampling schemes that were designed in consultation with state, federal and provincial environmental resource agencies, and deemed sufficiently similar for the purpose of developing an aggregate estimate. The collected fatality rates for each project were expressed as a combined total number of bats of all species per MW of nameplate capacity per year (yr). A simple arithmetic mean of these estimates was calculated without the application of any weighting scheme, resulting in an estimated statewide average of 6.1 bats/MW/yr.

Finally, an estimate of the expected fatality rate of NLEB per MW of nameplate capacity per year was generated as a simple product of the two calculated rates:

6.1 bats/MW/yr X 0.0040 NLEB/bat = .025 NLEB/MW/yr

This yields an estimate of 2.5 NLEB/100MW/yr. Until new data become available, the NYSDEC will apply this estimate of take towards each on-shore wind turbine proposal in New York State. Relevant new studies or additional data may be taken into consideration and the Department may identify a need to modify this take estimate accordingly. This calculation assumes no operational curtailment of the turbines under consideration. The annual and life-of-project NLEB take estimated by the Applicant ([redacted]) is less than it would be using the methods described above.

APPLICATION OF PART 182 TO THE PROJECT

Q. Please summarize the application of Part 182 to the Project?

A. Part 182 first requires that the Applicant avoid all impacts to NLEB. If such impacts cannot be avoided, then the Applicant is required to minimize to the extent practicable impacts to NLEBs, in conjunction with appropriate and effective mitigation, as discussed in more detail below.

Q. What is the current state of knowledge with regard to avoiding or minimizing bat mortality from wind turbines?

A. Curtailing turbine operation, most usually by "feathering" the blades to reduce rotation during the time periods when most fatalities occur, is the most effective method known to reduce bat mortality at wind energy projects. With respect to the NLEB, studies show that fatalities can be fully avoided when turbines are curtailed at wind speeds below 6.9 m/s. With respect to all bat species, collectively considered, studies show that fatalities can be reduced by (i) more than 80% when turbines are curtailed until wind speed reaches at least 6.9m/s; (ii) up to 82% when

turbines are curtailed at wind speeds below 6.5m/s (Arnett, et al. 2011) and (iii) between 50-70% when turbine blades are curtailed at wind speeds below 5.5m/s (Baerwald, et al. 2009) (Figure 2- Observed reduction in bat fatalities with curtailment at projects in North America).

Data from across North America reveal that most bats are killed on nights with low wind speed during the late summer and fall (Arnett 2008; Arnett, et al. 2011; Cryan, et al. 2014). This is true in New York as well, where 83% of all bats reported killed during post-construction studies we examined were found between July 1 and October 1 (NYSDEC 2016a). Because the time period when most bats are killed is relatively short (at night, from July to October) and when winds speeds (and thus energy production) are relatively low, implementing turbine curtailment during these periods can substantially reduce the number of bat fatalities with a relatively small impact on potential electric generation output (Baerwald, et al. 2009; Arnett, et al. 2011).

Q. Is it your professional assessment that the application of similar turbine curtailment regimes for wind projects in New York would result in the same reductions of impacts?

A. Absolutely. As discussed previously, the bat species experiencing increased mortality as a result of operating wind farms are similar across the northeast of the United States. Further, the mortality rates of these species in New York are consistent with the bat mortality rates across the Northeast. It is thus, a reasonable scientific conclusion based on the data that the implementation of a turbine curtailment regime that is within the range discussed previously at a wind project operating in New York will result in similar reduction in bat mortality as that seen at other wind turbine projects in the Northeast.

Q. To what degree has turbine curtailment been adopted in New York and the surrounding region?

A. Some states and provinces have implemented turbine curtailment requirements for wind energy projects, including 5.5m/s from July 15 to September 30 in Ontario, Canada (OMNR 2011), 6.0m/s from June 1 to September 30 in Vermont (VTANR 2016), and 6.5m/s from April 20 to October 15 in Maine (MEDIFW 2015).

Q. Is it your testimony that the Siting Board should require a turbine curtailment regime at the Cassadaga Wind Project in the certificate conditions?

A. Yes. Currently only the Indiana bat and NLEB are afforded regulatory protection in New York, but NYSDEC is charged with providing the people of New York with the opportunity to enjoy all the benefits of the State's wildlife, now and in the future. Therefore, as discussed previously in our testimony, given the significant impact that wind projects have on overall bat mortality, it is our testimony that a turbine curtailment regime protective of all bat species, and particularly the NLEB, should definitely be required for the Project.

Q. Can you describe in more detail what is required under Part 182 with regard to avoidance of take of listed species, specifically NLEB?

A. The Department's preferred outcome in all cases is avoidance of negative impacts to protected resources. Avoidance means that there are no significant impacts to listed resources and that applicants do not require permits to move forward with their projects. For the purposes of quantifying avoidance of direct impacts to NLEB at wind turbine facilities, avoidance will be considered to be applicable if, based on the best available information, the likelihood of a bat being taken by the project is less than one (1) listed bat every ten (10) years.

For wind turbine projects, there are two potential avenues for impacts to NLEB. The project may be proposed within occupied habitat (e.g. within 1.5 miles of known maternity roosts or 5 miles of hibernacula) and have the potential for indirect effects through the adverse

modification of habitat, or it may have direct effects on individual animals by killing or injuring animals during construction or through operation of the built turbines, regardless of project location in New York.

- Direct Construction Impacts: Avoidance of impacts to occupied habitat is best met by siting the project outside of these sensitive locations. Avoidance of occupied habitat may also be accomplished by careful project design that precludes the potential for any impacts to forest habitat or hibernacula. A straightforward and reliable way to avoid the potential for direct take of animals during construction is to schedule activities having a significant risk of impact (e.g. tree-cutting) during the hibernation season (November 1 until April 1).
- Direct Operational Impacts: NLEBs that fly through the project site may die or be injured as a result of colliding with or being struck by some part of the turbine structure. Examination of the number of NLEBs found dead during post-construction monitoring efforts at existing wind energy projects has allowed the Department to calculate an expected level of mortality based on the nameplate generating capacity of a proposed wind project. This calculation, reviewed in detail above, assumes no turbine curtailment of the turbines under consideration. NLEB fatalities used in that calculation were all documented outside of previously recognized occupied habitat and after the severe initial population declines associated with widespread distribution of WNS in New York by 2009. NLEBs were formerly known to be present throughout all forested areas of New York State with the exception of New York City.

  Therefore, the Department's default position is to apply this calculation to assessing impacts to NLEB at all terrestrial-based wind energy projects unless sufficient

and appropriate site specific studies are conducted to demonstrate that no NLEB fly through the project area at any time the bats may be active. Such studies must be sufficient in effort and duration to cover the project area and sample the entire time period of potential bat activity, with an emphasis on data from July 1 to October 1. The Department is not aware of any such studies that have been designed or executed to collect adequate data to satisfy a determination of NLEB absence to meet this purpose.

Avoidance of direct impacts to NLEB can best be accomplished through curtailing turbine blade rotations, or "feathering," until wind speeds are equal to or greater than 6.9 m/s (the highest cut-in speed studied to date) (Gruver and Bishop-Boros 2015; Arnett, et al. 2013). Recent studies have shown that bat mortality (all species combined) at existing turbines can be reduced by more than 80% when turbines are curtailed until wind speed reaches at least 6.9m/s. While there is no species-specific data on NLEB fatality rates that occur at curtailed turbines, it is reasonable to assume that the benefit afforded by turbine curtailment to NLEB will be at least as large as that experienced by bats of all species. Turbine curtailment would not be necessary during half of the year because NLEB hibernate and are not active on most of the New York landscape between November 1 and April 1.

For the determination of significant impacts, the Department can accept targeted seasonal turbine curtailment as full avoidance of take for NLEB when blades are curtailed until wind speed reaches at least 6.9m/s if the turbine curtailment regime is in place from July 1 to October 1 at times when the ambient temperature is 50 degrees Fahrenheit or greater. Due to the nocturnal behavior of NLEB, the turbine curtailment would only need to be in place from ½ hour before sunset to ½ hour after sunrise.

Therefore, the Department considers a proposal that curtailed all turbines until local wind speed as measured at hub height was equal to or greater than 6.9m/s as achieving complete avoidance of take for NLEB, provided the turbine curtailment protocol was in place from ½ hour before sunset to ½ hour after sunrise throughout the entire time period of July 1 through October 1. Shorter periods of duration would likely not accomplish avoidance.

The Department recognizes that turbine curtailment strategies are evolving continuously and will consider alternate avoidance and minimization strategies that might also involve the use of deterrent devices, acoustic-based sensing bat activity, or other advances not yet in common practice.

Q. Can you describe in more detail what is required under Part 182 with regards to minimization of take of listed species, specifically NLEB?

A. The Department urges the Applicant to conduct a thorough evaluation of the avoidance measures described above. If it is determined that avoidance of direct impacts to NLEBs cannot be accomplished without unduly compromising the success of the project, then compensatory mitigation is needed in order to achieve a net conservation benefit to the species. Uncertainty about the success of proposed mitigation approaches is unavoidable and, as a result, every effort should be made to minimize direct impacts to NLEB. The Department will work with all parties on their respective proposals to first minimize direct impacts to the maximum extent practicable before mitigation is adopted. However, the burden is on the project proponent to propose and accomplish effective and successful minimization.

Minimization of impacts to occupied habitat can best be accomplished by:

1) Reducing as much as possible the amount of forested habitat that needs to be taken.

2) Moving any necessary forest clearing as far away from roost sites or hibernacula as possible.

Minimization of direct impacts to bats can best be accomplished by:

1) Conducting any necessary forest clearing in occupied habitat during the NLEB hibernation period of November 1 to April 1.
2) Incorporating turbine curtailment at low wind speeds (preferably ≥ 5m/s) at the appropriate time of year (April 1 to October 1, but at least July 1 to October 1), time of day (½ hour before sunset to ½ hour after sunrise), and temperature (≥50 degrees Fahrenheit). The Department estimates that NLEB mortality would be reduced by as much as 80% at curtailment up to 5m/s under these conditions.
3) Incorporating proven technologies that deter bats from flying near the wind turbines or otherwise reducing the frequency of collisions.

Any take that is anticipated to exceed one (1) listed bat per ten (10) years after minimization measures are accounted for must be mitigated. To encourage entities to make every attempt to first avoid and minimize impacts, the Department would be willing to waive the requirement that mitigation be initiated prior to project implementation if a cut-in speed of 5m/s or greater is implemented during the appropriate time of year for the life of the project, and a commitment to an agreed upon level and method of mitigation is established.

Q. Can you describe in more detail what is required under Part 182 with regard to potential mitigation options for unavoidable take of State-listed species, specifically NLEB?

A. Mitigation is required for projects that are reasonably expected to result in the take of listed species. The Department will calculate the number of animals for which mitigation will be required by using the methodology above and reducing that number as a function of the likely

effectiveness of the minimization actions taken to reduce impacts. For the purposes of this assessment, an expected take of greater than one (1) listed animal per ten (10) years would require mitigation.

The Part 182 standard for permit issuance requires that the project in total must provide a net conservation benefit to the impacted species. This means that the expected impacts to the affected species must be completely offset by proposed mitigation such that it is reasonable to expect that the species will be at least as stable as it was before the action was taken. To meet this requirement, a mitigation measure must be reasonably expected to have a positive impact on the species and not just exceed the calculated loss of animals or habitat. Part 182 does not specifically speak to species-specific mitigation. Instead, the Department encourages a potential applicant to propose a mitigation measure that is likely to result in a net conservation benefit to the affected species. In general, a mitigation measure either reduces the impact of an existing threat to the species or proactively increases the productivity or abundance of the species or its habitat. For a mitigation measure to be accepted as meeting the definition of net conservation benefit, the implementation of the action should be reasonably expected to successfully provide the necessary benefits. Below we provide a description of mitigation actions that the Department is prepared to discuss and accept as mitigation for the take of NLEB. These descriptions do not necessarily preclude the Department from considering other, valid proposals for mitigation.

Gating of known hibernacula: The placement of well-designed, effective gates in appropriate locations that prevent human access to hibernation sites without compromising the ability of the bats to utilize these same sites is the most well-established method of mitigation. Human disturbance is a known threat at several hibernacula where NLEB overwinter. Gates can offset the impacts caused by the wind turbine project by reducing the impacts of human disturbance to

hibernating bats. Calculation of the conservation benefit conferred by gating a hibernaculum depends on the level of threat due to disturbance and the number of NLEB resident there. For sites with high threat of disturbance the Department would accept a calculated conservation benefit equal to 50% of the estimated number of resident NLEB. The Department has the ability to provide a list of potential sites to applicants interested in pursuing this mitigation option.

Identification of new maternity roosts or hibernacula near the project site: To protect NLEB from other threats such as WNS, predation, development and human disturbance, the Department needs to know where the species is located. Studies that are successful in identifying previously unknown maternity roosts and hibernacula would be viewed as conferring conservation benefit to the species and thus would be acceptable as mitigation. For the purposes of determining the degree of benefit conferred by identifying a new maternity roost, the Department considers roosts to be typically viable for 10 years. Given an average productivity of 0.5 pups per year, the identification of a new roost will allow the Department to protect the site from disturbance and can be used to offset the loss of up to 5 NLEB.

For the purposes of determining the degree of benefit conferred by identifying a new hibernaculum, the Department will base the benefit provided on the number of NLEB determined to use the hibernaculum. The Department will consider the identification of a new hibernaculum to offset the loss of up to 50% of the NLEB utilizing the hibernaculum at the time it is accepted as a mitigation measure.

It should be noted that, given the scarcity of NLEB on the landscape in many parts of the State, the Department recognizes that the ability to capture and successfully follow a female NLEB back to a roost or hibernaculum would require an uncertain amount of time and effort. Based on current data, on average it would generally take 59 mist net-nights in appropriate

habitat at the appropriate time of year to capture a NLEB. Assuming NLEB occur at an even sex ratio, this estimate doubles to 118 mist net-nights to capture a female bat. Because the Department prefers mitigation to be targeted as closely as possible to the affected population, the Department encourages any efforts to find new occupied habitat to be implemented in the vicinity of the proposed project. If an applicant attempts to utilize this mitigation method but is unsuccessful in capturing any NLEB after **118 * X mist net-nights** (where X is the minimum number of NLEB to be mitigated) distributed through the active season, and a minimum of 75% of the mist net nights occur from July 1 to October 1, the Department will accept this as successful mitigation because it effectively demonstrates the absence of NLEB in the project area to be impacted.

Identification of new maternity roosts or hibernacula at Department-identified priority landscapes: As an alternative to attempting to capture bats within the project area, the Department may accept efforts that are implemented in areas identified by the Department as priority conservation concerns. At this time, NYSDEC considers the identification of hibernacula in Suffolk County on Long Island as an area of concern. This is an area where the concentration of NLEB is higher and capture of bats is expected to be more productive than average compared to elsewhere in the state. However, unlike above, mist net efforts that exceed **118 * X mist net-nights** without the capture of a NLEB do not qualify as meeting the mitigation standard. In these landscapes, the absence of data at an offsite location does not demonstrate the absence of potential impacts from the project.

Protection of known roosts or hibernacula: The placement of permanent conservation easements on private property to protect known roosts or hibernacula on private property from development can be considered mitigation. The best form of easement would provide a ¼ mile

buffer around a roost or hibernaculum which would be consistent with the Federal 4(d) rule. However, the Department would be willing to entertain proposals that protect a lesser buffer, but projects must provide a minimum of a 330 foot buffer from the roost or hibernaculum opening to be considered effective mitigation. Successful protection will be considered to offset the loss of up to 5 NLEB per roost protected and up to 50% of the NLEB utilizing the hibernacula.

Implementing higher cut-in speeds (curtailment) at pre-existing turbines: Data collected at operational wind facilities in New York since 2008 have demonstrated the ongoing loss of bats, including NLEB, at wind turbines across the state. Since NLEB was listed in April 2015, the Department considers any facilities constructed prior to that date to be part of the baseline of existing threats to NLEB, and may accept the implementation of increased cut-in speeds at existing turbines as mitigation for impacts caused by a new facility. The offset provided by this mitigation approach is arrived at by calculating the estimated take occurring at those existing turbines to be covered (as per the methodology above) and subtracting the reduction in mortality expected based on implementing the proposed curtailment regime. As an example, consider a pre-existing 100MW facility with an estimated take of 60 NLEB over a 30 year period under its current operating regime. Assuming turbine curtailment below 6.9m/s (approaching 100% reduction in mortality) was implemented, this would reduce the estimated rate of take of NLEB by 2 animals for each year the new turbine curtailment regime was in place. If the same facility adopted curtailment at 5m/s, mortality would be reduced by 80%, allowing this hypothetical 100MW facility to offset 1.6 NLEB per year.

Implementation of WNS treatments: The greatest threat to NLEB is the continued impacts from WNS. The Department will consider implementation of treatments that reduce the impact of WNS on NLEB as potential mitigation for new turbine construction. At this time, there are no

known WNS response actions beyond gating and protection of habitat. However, when or if treatments of bats or hibernacula become available, the successful implementation of these types of actions would be considered mitigation by NYSDEC. The offset would be based upon the estimated number of NLEB that would directly benefit from the results of the proposed treatment.

PROPOSED CERTIFICATE CONDITIONS

Q. What would your recommended Proposed Certificate Conditions include with respect to impacts to NLEBs?

A. Based on our research, experience and all of the foregoing, we recommend the following Proposed Certificate Conditions related to impacts to NLEBs be included in any Article 10 Certificate ultimately issued by the Siting Board:

- To achieve full avoidance of direct impacts to NLEB, and reduce direct impacts to other bat species, the certificate holder must implement curtailment of all turbines in the Project when wind speeds at hub height are less than or equal to 6.9m/s. Turbine curtailment must be in place every year of operation on every night during the period from July 1 through October 1, from one-half hour before sunset to one-half hour after sunrise, when ambient air temperature is equal to or greater than 50 degrees Fahrenheit.
- To reduce mortality to nesting or roosting bats, as well as State bird species, all tree clearing activities (except for hazard tree removal) will be conducted between November 1 and April 1.
- Post-construction monitoring shall be conducted for a minimum period of at least two (2) years and will include direct impact fatality studies and habituation/avoidance studies. The details of the post-construction studies (i.e., the start date, number and frequency of

turbine searches, search area, bat monitoring, further monitoring beyond the second year, etc.), will be described in a post-construction monitoring and adaptive management plan following DEC's June 2016 *Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects,* and through consultation between the certificate holder, USFWS, and DEC.

Q. Based on your respective expertise, would you recommend any additional Proposed Certificate Conditions?

A. In addition to the above Proposed Certificate Conditions related to bats, we recommend the following be included in any Article 10 Certificate ultimately issued by the Siting Board:

- Excluding bald eagles (*Haliaeetus leucocephalus),* if at any time during the life of the Project an active nest of any federally- or State-listed threatened or endangered bird species is discovered within an active construction, ground clearing grading, or maintenance site, the regional NYSDEC Natural Resource Supervisor will be notified within twenty four (24) hours of discovery, and the nest site will be marked. An area five hundred (500) feet in radius around the nest will be avoided until notice to continue construction at that site is granted by the regional NYSDEC Natural Resource Supervisor.
- If at any time during the life of the Project a bald eagle nest is located, the regional NYSDEC Natural Resource Supervisor will be notified within twenty four (24) hours of discovery, and prior to any disturbance of the nest or immediate area. An area six hundred sixty (660) feet in radius from the nest tree will be posted and avoided until notice to continue construction at that site is granted by the regional NYSDEC Natural

Resource Supervisor. The nest tree will not be approached under any circumstances unless authorized by the regional NYSDEC Natural Resource Supervisor.

- During construction, maintenance, and operation of the Project and associated facilities, the certificate holder shall maintain a record of all observations of New York State threatened or endangered (TE) species as follows;
    - Construction: During construction the onsite environmental monitors and environmental compliance manager identified in the Environmental Compliance Manual shall be responsible for recording all occurrences of TE species. All occurrences shall be reported in the biweekly monitoring report submitted to the NYSDEC and shall include the information described below. If a TE avian species is demonstrating breeding behavior it should be reported to the Natural Resource Supervisor within twenty four (24) hours.
    - Post-construction: During post-construction wildlife monitoring inspections the environmental contractor shall be responsible for recording all occurrences of TE species. Occurrences of TE during wildlife surveys shall be reported as required in the construction monitoring and adaptive management plan.
    - Operation and Maintenance (O&M): During O&M the certificate holder shall be responsible for training O&M staff to focus on identifying the following bird species: bald eagle, golden eagle (*Aquila chrysaetos*), short-eared owl (*Asio flammeus*), northern harrier (*Circus cyaneus*) and upland sandpiper (*Bartramia longicauda*). The certificate holder shall report all occurrences to the Region 9 Natural Resource Supervisor within one week of the event.

- Reporting Requirements: All reports of TE species shall include the following information: species, observation date and time; GPS coordinates of each individual observed (if O&M staff do not have GPS available the report should include the nearest turbine number and cross roads location); behavior observed; identification and contact information of the observer; and the nature of and distance to any project construction or maintenance activity.

- If at any time during the life of the Project any dead, injured or damaged State-listed TE species, or their parts, eggs, or nests thereof are discovered within the Project Area (defined for the purpose of this condition as leased land or property parcels containing project components) by the certificate holder, their designated agents, or a third party that reports to the certificate holder, the certificate holder shall immediately (within twenty four (24) hours) contact the regional NYSDEC Region 9 Natural Resource Supervisor (716.372.0645) and United States Fish and Wildlife Service (607.753.9334) to arrange for recovery and transfer of the specimen(s). The following information pertaining to the find shall be recorded: species; the date the animal or nest was discovered; the GPS coordinates of the location of discovery, the name(s) and contact information of the person(s) involved with the incident(s) and find(s); and, if known, an explanation of how the mortality/injury/damage occurred. This record shall be kept with the container holding the specimen and given to the NYSDEC at the time of transfer. If the discovery is followed by a non-business day, the certificate holder shall ensure the location of the find is marked, GPS data recorded, detailed photographs of the carcass(es) or nest(s) taken and surrounding landscape relative to the project and components, and the specimen(s) placed in a freezer until it can be retrieved by the proper authorities.

- During construction, any temporary disturbance or modification of grassland habitat will be restored to preexisting grassland habitat conditions by re-grading and reseeding with an appropriate native seed mix after construction activities are completed. These areas shall include, but are not limited to temporary roads, material and equipment staging and lay-down areas, crane and turbine pads, and electric line right of ways.

Q. Do you hold your opinions to a reasonable degree of scientific certainty?

A. Yes, we do.

Q. Does this conclude your direct testimony on these topics at this time?

A. Yes, it does.

put the testimony into the record --

MS. CROUNSE: Yes.

I would make a motion request.

Thank you.

A.L.J. LECAKES: So at this point in the evidentiary transcript, the hearing transcript, the file that was emailed to the court reporters labelled DEC direct testimony of Denoncour and Herzog should be put in and also there is a confidential unredacted version that should go into the confidential transcript. You may continue Ms. Crounse.

MS. CROUNSE: Thank you.

BY MS. CROUNSE: (Cont'g.)

Q. Did you sponsor any exhibits with your testimony?

A. (Herzog) Yes.

Q. I would point to -- could you identify them? It's Exhibit DH1, DH2 and DH3, correct?

A. Correct.

Q. And I think those are identified in the record as Exhibits 63, 64, 65, I believe. Do you have any changes to these exhibits?

A. (Denoncour) No.

A. (Herzog) No.

Q. Do you have any additional exhibits that you would like to sponsor today?

A. (Denoncour) Yes. Yes, we do.

MS. CROUNSE: Your Honor, I had previously emailed this to everyone and I do have copies.

A.L.J. LECAKES: Please approach and -- and provide the Judges. We just need one copy. Thank you. Can we go off the record for a second?

(Off the record)

BY MS. CROUNSE: (Cont'g.)

Q. Were these exhibits prepared by you or under your supervision?

A. (Denoncour) We didn't prepare them, but we use them as citations and are --

Q. Okay.

A. -- providing them in support of our testimony.

Q. Okay. Great.

A.L.J. LECAKES: And this last one that was handed to me what is this document?

WITNESS DENOCOUR: The one that you're referring to is a paper that we utilize in one of our -- in our testimony and some of our citations. So we just are providing it as a separate exhibit in case we need to reference certain portions of it and we just wanted to make it available for all parties.

A.L.J. LECAKES: Okay. And your counsel when she gave us your testimony and exhibits included a list of references, was this document included on that list of references?

WITNESS DENOCOUR: Yes, it was.

A.L.J. LECAKES: Okay. We're going to mark this as Exhibit 112. And I have a document that contains -- numerical pages 1 through 21 with a cover page and the cover page says -- is titled relating preconstruction bat activity and postconstruction bat fate -- fatality to predict risk at wind energy facilities: synthesis. And it is dated March 2013 and again, that’s Exhibit 112 for identification.

MS. CROUNSE: Thank you, Your Honor.

A.L.J. LECAKES: You may proceed.

MS. CROUNSE: The witnesses are available for cross.

A.L.J. LECAKES: Okay. Mr. Muscato?

MR. MUSCATO: Yes, Your Honor.

CROSS EXAMINATION

BY MR. MUSCATO:

Q. Hi, guys. So I guess, let's start. I have a -- some questions about the per turbine versus per megawatt calculation that you guys -- that you do. So I think you guys are familiar with Peterson testimony, correct?

A. (Denoncour) Yes.

Q. And you guys are aware that there was a correction to the per megawatt number in the Peterson testimony, correct, DEC's per megawatt number?

A. A correction provided by Peterson of our number?

Q. Yes.

A. (Herzog) Yes, it was -- a -- as I understand it, Mr. Peterson had some information that corrected a -- one of the published studies that we

were using. The public study was in error and he had access to information that we did not.

Q. Okay. Just to confirm then. The corrected DEC take calculation is 5.85 bats per megawatt per year. Is that -- do you guys agree with the recalculation?

A. (Denoncour) We wouldn't agree with -- that's how we would calculate the take and what our results would be. But the numbers that Peterson provided using the numbers in that corrected report is his corrected number. So I'm -- I'm not going to dispute what his version of the numbers.

Q. Doesn't that affect the calculation though, the per megawatt per year calculation DEC does?

A. (Herzog) Yes, it has a small impact on the -- on our estimate.

Q. And I'm just trying -- so we are all working from the same numbers, isn't that correction then down to 5.85?

A. As the typical -- the new number for a typical or average number of bats that are killed per megawatt.

Q. Yes.

A. Yes, I believe that would be correct.

Q. Yeah. Okay. Again, I'm just trying to make sure -- clarifying for the record. We've used that number as a comparison to the per turbine way -- rate and I just don't want there to be any confusion in the record about DEC's -- the corrected number that was used.

A. (Denoncour) Understood. And I think for clarification purposes, the number that you were attempting to correct -- the number that Peterson's testimony was attempting to correct was from a project the -- that conducted post-construction fatality surveys, I don't recall offhand that he was trying to correct at 2010 or 2013 study report.

Q. We -- we could take a look but it likely doesn't matter if -- if --

A. But it does matter, because I believe there is an error in how he was correcting that.

Q. Okay. Then, yes, let's --

A. So --

Q. -- let's take that out of the

testimony then.

A. Yeah. It's not something that we have provided in our testimony, but I do recall when reviewing the rebuttal provided by Peterson that it did not match the values that we have.

Q. So on page --

MS. CROUNSE: 33?

BY MR. MUSCATO: (Cont'g.)

Q. Yes. On page 33 of the Peterson testimony. So table two in DEC testimony reported a mortality assessment of 17.1 bats per megawatt per year for the Cohocton Dutch Hills Project in 2013.

MS. CROUNSE: Do you have a clean copy of Mr. Peterson's testimony that you could put in front of the witnesses?

MR. MUSCATO: An electronic copy, yes.

MS. CROUNSE: That would be fine. Just so they can look along with you.

MR. MUSCATO: Do you -- you don't have a clean one either?

MS. CROUNSE: I don't.

A.L.J. LECAKES: Let's go off the record for a second.

(Off the record)

A.L.J. LECAKES: On the record.

BY MR. MUSCATO: (Cont'g.)

Q. So to the DEC panel, do you see where on page 33 of the Peterson testimony we refer to -- Mr. Peterson refers to a correction of table 2 in the DEC testimony reporting on the bat mortality estimate of 17.1 bats per megawatt per year for the Cohocton Dutch Hills Project in 2013?

A. (Denoncour) Yes, I see that.

Q. Ms. Denoncour, do you have a clarification with respect to the correction?

A. I do, but I don't have the exact numbers in front of me at this time. I went through the 2010 and 2013 and 2009 Cohocton Reports that we had available to us at the time that we prepared our testimony, and the values that we have in our table 2 are correct for those reports.

And understanding that information that Peterson may have had differs from that and introducing that here is not, you know, out of the question if it is in fact correct information that we don't have. But I just want to point out that because I don't have those numbers in front of me I

can't provide exactly what it was, but I would like to say that Peterson's testimony has on line 7 to 8, you know, bat mortality estimate of 17.1 bats per megawatt for the Cohocton Dutch Hills Project in 2013. That in fact was the -- the value reported in the Cohocton Dutch Hills 2010 report as shown in our table 2 of our testimony.

Q. And -- and for the record the term that's being used is Cohocton's. C-O-H-O-C-T-O-N and that's a town or --?

A. It is both a town and the name of a --

A. (Herzog) Wind project.

A. (Denoncour) -- wind power project.

Q. Okay.

MR. MUSCATO: Again, and, Your Honor, may we go off the record. Only -- the only reason why I want to go off the record is just because --

A.L.J. LECAKES: Let's go off the record.

MR. MUSCATO: -- I think this is just a matter of clarifying the record.

(Off the record)

A.L.J. LECAKES: You may proceed.

BY MR. MUSCATO: (Cont'g.)

Q. So for purposes of the question, I'm assuming the Peterson 5.85 per megawatt per year number was correct. Based on that -- so, okay. So -- I'm trying to draw a comparison between the per megawatt number and the per turbine number so that I can understand the differences between the two numbers. And so for purposes of this discussion I think it's worthwhile to just assume the 5.85 is correct. But you could apply it to the 6.1 as well. Just I don't have the math in front of me. So with respect to the 5.85, the applicant calculated bat mortality of per turbine per year rate to be 11.2 bats per turbine per year. So to compare the two, if an average turbine in New York is 2 megawatts the rates are approximately equivalent. However, if the turbine for a particular project is 3 megawatts, then DEC rate becomes 17.55 megawatts per year. It's just a calculation of the 5.85 --

A.L.J. GARLICK: 17 point what?

MR. MUSCATO: 17.55 per megawatts per year.

A.L.J. GARLICK: Okay. Bats per

megawatt.

MR. MUSCATO: Correct.

A.L.J. GARLICK: Okay.

BY MR. MUSCATO: (Cont'g.)

Q. It's bats --

A. (Herzog) It's bat's per megawatt per --

Q. -- bats per megawatt per year. It's just simply taking DEC's bat rate and multiplying it by 3 megawatts. Right. You -- you understand --

A. Yes.

Q. -- and agree that's how I came -- okay.

A. Yes.

Q. So supposing there is two hypothetical projects each with generating capacity of a 100 megawatts. One is 33, 3.0 megawatt turbines and the other is 67, 1.5 megawatt turbines, you agree that DEC's per megawatt approach would predict the same amount of mortality for the two projects, right?

A. I think so without actually running the numbers, yes.

Q. Okay. But -- but the per turbine

approach would predict twice as much more mortality for the project with 67 turbines, correct?

A. Yes.

Q. So in -- in your opinion do you agree it's highly likely that this two projects would result in the same amount of mortality of all other things being equal?

A. Yes, that's the basis of our testimony. We believe the per megawatt approach is the more accurate way to go.

Q. And that's regardless of the project size in terms of number of turbines or per -- the size of the machines?

A. Well, the machines are taller, make -- have a higher megawatt reading so it's not regardless of that.

Q. Well, would you then -- let's go back to the hypothetical. Are you -- are you aware that there are 2.0 megawatt turbines that may have the same -- that may be the same height -- tip height as a 3 -- I'm sorry, they may have the same rotor swept zone as a 3.0 megawatt turbine?

A. No, I was not aware of that.

Q. So, okay. Right. So the per

megawatt approach is looking at the -- no, it's not looking at the size of the rotor swept zone, it's looking at something else?

A. It's an attempt to correct the number in line with the published data that suggest that more bats are killed at taller turbines.

Q. And the --

A. And the -- we're limited in the amount of data that we have available to us. The typical calculations that are provided from post construction studies are presented in two ways, bats per turbine and bats per megawatt. And of the two we would argue that bats per megawatt approach is better because it has the ability to reflect an increase risk to bats at higher -- at taller turbines which is in keeping with the -- the published information.

Q. At the beginning of your response you referred to published information and then at the end you repeated it. Do you know what the size of the turbines were in that published information that you're talking about?

A. Not -- not completely. I believe the largest one was 1.7 megawatt turbine. But I'm not a 100% certain of that.

Q. And you know for this project that the smallest turbine that's being proposed is a 2.625 megawatt turbine, right?

A. (Denoncour) I'm not familiar with the models of turbines that are being proposed for this project.

A. (Herzog) Nor am I.

Q. Okay. With respect to -- I have a few questions with respect to the Frick paper. You referenced the Frick paper in your testimony, correct?

A. (Denoncour) Yes.

A. (Herzog) Correct.

Q. And Frick states in his paper quote, "the only --

A. It's a woman actually.

Q. I'm sorry.

A. Yes.

Q. That's reminds me of a kid's books about monsters. Frigg states in his paper --

A. (Denoncour) Her's.

Q. Her's, sorry, her, yes.

A. (Herzog) Her paper.

Q. Yes. "The only method documented

to reduce fatalities at wind turbines is limiting operation during high risk periods such as nocturnal periods of low wind speeds during autumn migration." Do you agree with the statement?

A. Not a 100%, no.

Q. What part do you disagree with?

A. There are attempts underway now to create deterrent devices that will make -- attempt to repel bats essentially from the turbine areas and -- so that's a possible approach that has not yet achieved any widespread applicability but has the potential to disagree with her statement.

Q. Right. I guess when you -- so Frick's paper was 2017, right?

A. 2016, I think.

Q. '16?

A. I don’t recall. It's quite recent.

Q. Okay. So -- so then you would agree with the portion of her statement that's -- that suggests limiting operation during high risk periods it is a mechanism, maybe not the only but it’s a mechanism, right?

A. Yes.

A. (Denoncour) Yes.

Q. And -- and you would also agree that there isn't a benefit to limiting energy production of the project like curtailing when there is a low risk to bats, correct?

A. (Herzog) Please restate your question. I didn't quite follow.

Q. Sure. Would you agree that when there is a low risk of bat activity at a project that there wouldn’t be a benefit associated with curtailing the operation of the wind project?

A. No, I wouldn't agree with that.

Q. So with respect to identifying appropriate times for curtailment what would be a metric that the DEC panel would suggest is appropriate?

A. We believe that taking into account periods when bat activity is higher is appropriate. I just wouldn't agree with your statement that you made that there is no benefit to curtailing at low activity.

Q. Okay. So --.

A. For example, if I could clarify, if -- if the turbines were not operated during the time of the year when bats are on the landscape at all,

that would be a very radical curtailment approach but it would be more protective than a curtailment regime that had a more limited timeframe. Some bats do get killed in the early part of the season. Some get killed in the very late part of the season. The majority of bats by far, as you correctly quoted from our testimony, were killed in that zone from July through September.

Q. And so, correct me if I'm wrong, but that's how D -- the DEC panel then would draw the distinction for proposing curtailment from July to October during certain temperatures and times of day, correct?

A. (Denoncour) Yes, we came up with that timeframe based on post construction fatality results that indicate the vast majority of all bat species including Northern Long-ear bats are killed during those three months primarily which as Carl mentioned is not to say they're not killed in the earlier spring and later fall period. So that July to October timeframe is based primarily on post-construction monitoring results that we have reviewed.

Q. So would you agree then -- would the DEC panel agree then that those parameters for

curtailment are chosen because they are the periods of time when DEC believes that the bats are the most active?

A. (Herzog) No, I don't think we would agree with that. We don't purport to understand what the behavior of the bats is at that point, what -- in other word, what causes the larger number of bats to be killed at that time of year. We would say that it’s very likely behavioral change something that the bats do that's different than at other times of the year. But we would -- we did not speculate as to what that behavior is or why the change took place. We only look at the data and see -- and -- and look at the results, essentially. It's a results-oriented decision.

Q. So well, then at least would you agree though that the most effective curtailment is going to be curtailment which is targeted to the periods where you're finding based on the post construction data that bat activity is the highest?

A. You'd have to define "most effective."

Q. The -- it would be the curtailment -- in this case my question was getting to curtailment which would minimize potential impacts to

bats at a time where it's more likely to happen. In other words, it -- it's limiting the periods based on recognition of -- of a risk of activity. So --

A. Well, I think we stated that in our testimony already, didn't we? Haven't we gone over that already? In other words, that most bats get killed at that time of year. I don't understand how your question is different from that.

Q. I think I guess I asked it -- let -- let me see if I can restate it. The risk to bats is highest when they're most active.

A. Again, we don't --

MS. CROUNSE: I was going to say, Your Honor, we're going to object because that's asked and answered.

A.L.J. LECAKES: Right. I think -- I think you're trying to make a point, Mr. Muscato, that they're not necessarily agreeing with, which is they don't purport to -- to look even, let alone, you know, infer, you know, what the rate of activity is. They just note that the evidence shows that at this time of year most of the bats for whatever reason seems to be killed and so therefore on that basis they made their

curtailment recommendations. And so while others may infer that that is -- is due to increased activity of bats at that time, they as the witnesses who are looking or taking a very conservative approach and not going there basically, is that correct?

MR. HERZOG: That's essentially correct, yes.

MR. MUSCATO: Can I just take a minute, Your Honor?

A.L.J. LECAKES: Yeah, absolutely.

MR. MUSCATO: We can go back.

A.L.J. LECAKES: Yeah. We're still on the record. Go ahead.

BY MR. MUSCATO:

Q. Let me see if I can restate what -- what we're just talking about.

So it sounds as if, and correct me if I'm wrong. The DEC panel's testimony is that it's -- it's not a question of for purposes of determining the parameters for when a curtailment might be appropriate. It's not a question of determining necessarily when bats are most active, is that right?

MS. CROUNSE: Objection. This has

been asked and answered a few times.

MR. MUSCATO: Oh.

A.L.J. LECAKES: I -- I think that the attorney is actually trying to get some clarification on the position or to focus the point that's being made and trying to find out where the witnesses are. I think the confusion is coming in is -- is trying to understand the basis for the recommendation that's been made in the witness's testimony and as I understand where we were at right now and this may determine whether it’s been asked or answered. As I understand where we were at right now is the witnesses for DEC are completely agnostic as to what bat activity is.

It's simply a matter at this point in 2017 as we're sitting here today, we know from the actual walking through these -- these wind facilities that exist that the most bat mortalities are -- most bat carcasses have been found through, you know, these three months, July, August, September, is that correct?

And -- and that, you know, other bats carcasses may have been found in other

months. But regardless of bat activity or any other case, you know, we found that the most carcasses exist through July, August, September. So that's what our recommendation is, whereas the applicant is trying to get at the underlying reasons for that where I think the underlying reason is the actual data of what's been found.

MR. MUSCATO: Yeah.

A.L.J. LECAKES: So Mr. Muscato is there any follow --

MR. MUSCATO: Yeah. I can move on.

A.L.J. LECAKES: -- up to that?

MR. MUSCATO: Let me see if I can move on actually.

A.L.J. LECAKES: Okay.

BY MR. MUSCATO: (Cont'g.)

Q. If that’s the case, with respect to the post-construction data that you’re referring to to make the decisions that, Your Honor, just referenced, the mortality data comes from two wind projects, correct, in New York?

A. (Herzog) No, our testimony identifies, I don't know how many are there.

A.L.J. LECAKES: Quite a few.

BY MR. MUSCATO: (Cont'g.)

Q. Is it table --

A. Quite a few projects.

A. (Denoncour) Table 2.

A. (Herzog) Table 2, yeah, I think that is --.

Q. How many projects -- I'm sorry. Right. Strike that, Your Honor. Right. I -- strike that. Okay. I was getting ahead of myself with respect to NLEB. So in the final 4D Rule, this is now with respect NLEB, the US Fish and Wildlife Service concluded that incidental take form wind energy and a variety of other processes would quote, "not lead to population level declines in the species" end quote.

A. Is that a question?

Q. Do you agree that the Fish and Wildlife Service concluded that --

A. Yes.

Q. -- in the final 4D Rule? And with respect to this species, just to clarify the record, US Fish and Wildlife was talking about Northern Long-ear bats, correct?

A. Correct.

Q. Right.

A. Which you abbreviated NLEB?

Q. NLEB.

A. For the record.

Q. And the Fish and Wildlife biological opinion that I was just referring to, Fish and Wildlife estimated that NLEB comprised 0.09% of all bat fatalities, correct?

A. Do you know that?

A. (Denoncour) I'm not familiar with the exact number that the service has estimated for Northern Long-ear bats proportions of total bat kills. So I --

A. (Herzog) Neither am I.

Q. Has the DEC panel reviewed page 37 and 38 of the Peterson testimony?

A. Yes.

Q. It's actually, I guess, it's at the top of page 38, lines 1 and 2. It states for comparison the US Fish and Wildlife Service calculated NLEB comprise 0.09% of bat mortality and then it cites to the biological opinion.

A. We did read that in Mr. Peterson's testimony, yes.

Q. Does the DEC have a basis to disagree with the 0.09%?

A. I do not. I'm not familiar enough with their -- their -- the calculation, how they come up with that to comment.

A.L.J. LECAKES: Mr. Muscato, do you know if the US Fish and Wildlife Service reports that are referenced in Mr. Peterson's testimony are publicly-available documents?

MR. MUSCATO: Yes, they are.

A.L.J. LECAKES: Okay.

MR. MUSCATO: They are not submitted as part of the record in this proceeding but, Your Honor, they -- we could submit those.

A.L.J. LECAKES: Or at least -- I'm trying to figure out if it’s better to have the whole report in or if citation to a publicly-available docket would be good enough. If you would like to submit that as an exhibit we can reserve an exhibit number for that?

MR. MUSCATO: Yes, we would.

A.L.J. LECAKES: Okay. Why don't we put that down as Exhibit 113 and we'll reserve

that for the 2016 A -- what is the significance of the A after the -- the date or year?

MR. MUSCATO: I think there were multiple -- multiple references to the same document. I'm sorry, different documents in the same year.

A.L.J. LECAKES: Okay. So why don't we put that down Exhibit 113, the United States Fish and Wildlife Service 2016 A Report. And if you could submit that as soon as you're able to and understanding that your time is constrained because we are in the middle of hearing. And that should go to all parties. Thank you.

BY MR. MUSCATO: (Cont'g.)

Q. In order to estimate NLEB mortality the D -- does DEC follow the approach that was suggested by Fish and Wildlife Service for estimating take?

A. (Herzog) The general approach, yes. Although we -- we used more local data than the number that you referred to on that -- the list, including things far from the State of New York in the 0.09% estimate that you -- that you referred to.

So we follow the procedure, the -- the general methodology but we -- we used local data.

Q. Does -- strike that. Does DEC expect species specific vulnerability of NLEB to vary substantially between states?

MS. CROUNSE: I would just object. My witnesses are -- are not familiar with biology in other states outside of New York. So I don't believe that they're competent to answer that question. They are experts in the State of New York.

A.L.J. LECAKES: Right, but the question actually was kind of going at -- at their knowledge base and it was asking what the expectation would be. So it's -- it's kind of an exploratory question. At this point it's okay.

A. (Denoncour) I can say that I am not that familiar with species specific or Myotis specific mortality from areas outside of New York and the Northeast most -- I am most familiar with the New York data and some of the Ontario data.

A. (Herzog) My answer is almost the same.

BY MR. MUSCATO: (Cont'g)

Q. Would there be a difference between New York and Pennsylvania?

A. (Denoncour) We haven't seen the Pennsylvania data in full detail to know that.

Q. But with respect to species composition?

A. (Herzog) Well, again your -- you're asking us to infer things about the animal's behavior from this very limited snapshot kind of set of data that we have on the bats.

Q. I guess --

A. If you’re not then please clarify.

Q. But -- but that you -- the Department has been looking at Northern Long-ear bat's behavior and -- and effects of white nose and has also looked regionally across the Northeast. So my -- my question was just whether or not the Department is aware of or is making any distinctions between species composition in New York versus species composition in Pennsylvania?

A. Species composition?

Q. I'm sorry. Specific species vulnerability?

A. We have made no assertion on that

question one way or the other.

Q. Even with respect then within New York, would there be any reason to see differences between, say, Chautauqua county and Clinton county New York? Is there enough variability across the state?

A. We have -- so -- sorry to be difficult, but I have to ask you to clarify again.

Q. Sure.

A. You are talking about the likelihood of -- of animal being killed or you -- you're talking about a specie specific susceptibility to being killed. Those seem to be two different things and I'm not sure which one you're asking about.

Q. I guess, what -- why is the species ratio, the NLEB species ratio two times higher than the Fish and Wildlife Service rate and -- and potentially higher than other nearby states? Is it something specific about the ratio of NLEB to other bats in New York or is it potentially how the calculation is done?

A. You lost me right at the start I'm not sure what number you are referring to --

Q. So --

A. -- is it in our testimony someplace?

Q. Yes. So DEC calculates the species ratio of NLEB of overall bats species to be 0.18%, correct?

A. No, it's 0.018%, I believe. Wait a minute.

A. (Denoncour) No, it's not a percent.

A. (Herzog) Oh. I'm sorry, yes. No, that was -- you're correct. It's point --

A. (Denoncour) Well, that's the percentage.

MS. CROUNSE: What page are we on the testimony?

A. (Herzog) I think the number that you are looking for is the number of Northern Long-ear bats that are killed in relation to other bats that are killed.

BY MR. MUSCATO: (Cont'g.)

Q. And where can that number be found, is that in your testimony?

A. On page 12 of our testimony.

Q. Okay.

A. Right at the top.

Q. Thank you. All right. So DEC's calculation was 0.4%, correct?

A. Yes.

Q. And we were talking before about the US Fish and Wildlife Service percentage which was 0.09%, correct?

A. Well, according to Trevor's testimony, yes.

Q. So I -- what I was asking was whether or not there is a reason why the New York ratio is so much higher than what Mr. Peterson testified is the Fish and Wildlife Service number?

MR. ALLINGER: I'm going to object to speculation here. This is asking the witnesses to speculate as to how a different agency and a Federal agency is calculating something --.

A.L.J. LECAKES: I actually tend to agree. Is there another way you can phrase the question? I think that -- that's a pretty accurate characterization of your question.

MR. MUSCATO: Your Honor, the -- I will rephrase it.

A.L.J. LECAKES: Okay.

BY MR. MUSCATO: (Cont'g)

Q. How did DEC derive at the 0.4% --

A. We --

Q. -- number?

A. -- counted the number of bats for a week that were reported being killed. So it's a ratio. So we counted the number of Northern Long-ear bats that were killed and we took a simple ratio to the number of other bats that were killed at the same projects. Actually, that's not true. No, no, that is -- that's exactly correct, yes.

Q. Okay. So have -- has the DEC panel had the opportunity to review hearing Exhibit 38 which was identified as Peterson's Exhibit 3?

A. (Denoncour) We have looked at it, yes.

Q. With respect to hearing Exhibit 38, Mr. Peterson provided an update to that Exhibit. Did you hear the testimony by Mr. Peterson updating the Exhibit?

A. From earlier this morning, yes.

Q. So in -- in table 2 in hearing Exhibit 38, do you see the avoidance numbers in the

modified proposal? The avoidance percentages?

A. Sorry, are we on table 1 or table 2?

Q. Table 2.

A. Table 2

A. (Herzog) Our -- our copy, it -- ist modified to the testimony from this morning.

Q. Correct.

A. Yeah.

Q. It was -- it was indicated in the testimony but it was not provided in the updated Exhibit but --

A. (Denoncour) So I don't -- we don't have the numbers right in front of us right now.

A. (Herzog) We did -- we did listen to it earlier today, yes.

A. (Denoncour) Yeah.

A.L.J. LECAKES: Lets go off the record.

(Off the record)

A.L.J. LECAKES: All right. Let's go back on the record, Mr. Muscato.

MR. MUSCATO: Thank you, Your Honor.

BY MR. MUSCATO: (Cont'g.)

Q. So I -- I want to direct your attention to table 2, that's -- that's where we left off. Am I correct you now have that added information to table 2 that was discussed in the testimony this morning?

A. (Denoncour) Yes, it was written in.

Q. Okay. And -- and you understand that the reason for the added row was because it segregates DEC's treatment of July 1 through October 1 from the minimization row which is defined as it -- it was -- it was defined as April 1st through October 1st in the testimony.

A. (Herzog) The only thing I would disagree with this characterizing is as our action.

Q. So --

A. DEC’s. You said DEC’s something, I forgot the exact phrase you used.

Q. Just -- just to clarify so --

A. Yeah.

Q. The information that's derived in table 2 comes from DEC's testimony where DEC testifies that minimization of direct impacts to bats can be -- best be accomplished by. And then in

number 2, it gives, in essence, two options in coordinate -- incorporating turbine curtailment at low wind speeds preferably greater than five meters per second, at the appropriate time of year, April 1 to October 1, but at least July 1 to October 1. And that has the time and day and temperature parameters. That's at page 18 --

A. Right.

Q. -- in the DEC testimony?

A. Yeah. We -- we stand by that testimony.

Q. And -- and just -- do you -- do you agree that -- that the minimization row in table 2 is the DEC curtailment of April 1st to October 1st.

A. Again, I'm -- I'm going to object to you calling it the DEC curtailment. I don't -- I'm not sure what your implication is.

Q. So the -- the curtailment that was in DEC's testimony for April 1st through October 1st at five meters per second.

A. (Denoncour) The table 2 does not describe specifically what a potential minimization regime recommended by the department might be. It shows calculations of potential power loss and

avoided bat passage based on acoustical monitoring that was done at the project area, utilizing the timeframe that the department recommends as a minimization time period.

A. (Herzog) Right. And virtually, the only thing in that table that we agree with is the timeframes.

Q. So what -- what is the department's disagreement with the avoidance of percentages?

A. We do not accept the notion that acoustic preconstruction data can be reliably used to predict fatalities.

Q. But with respect to that acoustic data, is the acoustic data that's used in this memo predicting mortality or is it predicting activity?

A. Good question. That's a question for your consultant.

Q. No, the questions to the -- to the DEC panel. I'm asking whether or not in your review of -- of the exhibit whether or not in -- in your opinion this is predicting activity or whether it's predicting mortality.

A. I -- I hate to play the semantic games, but I'm not sure that the table 2 is

predicting. Well, the table 2 is predicting the amount of power loss experienced at a handful of different curtailment regimes. That's the only prediction I can see.

Q. So -- so you would agree that the memo looks at pre-construction acoustic data for -- for the site, correct?

A. Yes.

Q. And that acoustic data obviously collects passage rates for -- at those locations, right?

A. That's the way it's stated, yes.

Q. So based on -- based on that data, that in -- in table 2, it states that the avoidance percentage is a percentage of passes. So in other words, would you agree that the memo took the acoustic data that was collected at the locations and identified bat passage rate based on that acoustic information?

A. We didn't -- well, did you run the numbers?

A. (Denoncour) No, I didn't.

A. We agree with that's what the -- that's what the memos describes yes.

A.L.J. LECAKES: The -- the way I understand what's going on right now is that the witness agrees that that's the way the calculation was made. But in -- in -- as I understand, their opinion -- it's not in -- as far as they're concerned it's not indicative of anything, they're just -- they disagree with -- with the usefulness of -- of that data. Is that correct?

THE WITNESS: (Herzog) That is correct.

THE WITNESS: (Denoncour) Correct.

A.L.J. LECAKES: Okay.

MR. MUSCATO: For -- but, can I ask a clarification?

A.L.J. LECAKES: Yeah, absolutely.

BY MR. MUSCATO: (Cont'g.)

Q. With respect to mortality, correct?

A. (Herzog) Yes.

A. (Denoncour) Yes.

Q. Not activity?

A. (Herzog) No, I --

A. (Denoncour) Right.

A. (Herzog) We would -- we would agree

that acoustic detections are a valid way to gain some insight into that activity, yes.

Q. Okay.

A. We do it all the time.

Q. Yeah. Yeah. So would -- would you agree then that table 2, where it's looking at a percentage of passes is providing results of the activity that was collected based on the acoustic data?

A. The pre-construction data, yes.

Q. Yes. And so if -- if we have a prediction of activity based on the acoustic data and we have a curtailment regime that we're applying which is five meters per -- well, it varies obviously depending on which row we're talking about.

A. Uh-huh.

Q. That you can calculate a percentage of avoidance based on the predictions of activity at a particular time of year.

A. You're restating what the exhibit says, I think. And -- and what --.

Q. I'm asking if you agree with that.

A.L.J. LECAKES: I -- I think the witnesses have said that they don't agree with

the exhibit. I -- I -- I think that the difference -- I understand the applicant's point and I understand that you're saying that there's some evidence here based on -- on a predictive behavior and activity. However, I think it goes to the disagreement that you're running into with the DEC witnesses goes deeper than that. They're saying that they're not sure that activity itself is -- is a good predictor for mortality or is a way to -- to determine mortality. So I -- I --

THE WITNESS: (Herzog) Yes. At -- at least that and then also that the relationship between pre-construction data and its predictive value. In other words, if -- if I may? It's certainly possible that the bats level of activity at the site would be different after the turbines are built than the -- than in the preconstruction stage.

BY MR. MUSCATO: (Cont'g.)

Q. Right. Does the relationship between activity -- yeah, but -- well, strike that. I -- I just have a couple of other questions. We're going to -- we're going to move on.

A. Okay.

Q. Just going back to NLEB for a moment, so that I can understands the species composition and -- and the data that DEC relies on for the NLEB take estimate. I had asked the question before about the projects where there had been bat fatalities and I was correctly -- incorrectly thinking about all bats when, in fact, I was thinking about NLEB. With respect to NLEB, how many projects has there been recorded fatalities in New York of NLEB?

A. I think you are -- yeah, the number you used earlier. I think might -- she has a much better idea. You -- you said it was two projects.

Q. Yeah, I think that's --

A. And -- and as I recall, correct me if I'm wrong. It is two projects although one of the projects had fatalities that occurred in two years.

Q. Right. And -- and it's -- and the total number of NLEB fatalities we're talking about is seven, correct?

A. Yeah.

A. (Denoncour) Post white-nose, which is based on the data we used 2009 to 2015, that is correct. And it is three -- three different years at

two sites where Northerns were found as a fatality. And -- so, yes, that's -- that's right.

Q. And it was -- I asked a question while you were looking for that. It was seven fatalities total, correct?

A. I believe so. Seven fatalities after white-nose. We had an additional, I think, several bats prior to white-nose which did not factor into our calculations.

Q. Right. And -- and six of those were all at one project, correct?

A. (Herzog) Correct.

A. (Denoncour) Over two years, yes.

Q. Okay.

MR. MUSCATO: Your Honor, I -- I think I don't have any further questions. So can I just confer with my witness for one second?

A.L.J. LECAKES: Yeah, absolutely. Let's go off the record.

(Off the record)

A.L.J. LECAKES: Mr. Muscato, do you have any more cross examination questions?

MR. MUSCATO: No, Your Honor. Thank you very much to the DEC panel.

THE WITNESS: (Denoncour) Thank you.

A.L.J. LECAKES: Mr. Abraham, do you have any questions?

MR. ABRAHAM: No, Your Honor.

A.L.J. LECAKES: D -- DPS, Ms. Cerbin?

MS. CERBIN: No. No, Your Honor.

A.L.J. LECAKES: I do have a couple of questions. First, when I was talking with Mr. Peterson there was a discussion that we had which basically involved going, walking through wind farms afterwards and looking for bat carcasses and there was some discussion about the fact that sometimes you find no carcasses for a particular species like the northern long-eared bat. In -- in your opinion, what is that evidence of?

THE WITNESS: (Herzog) Well, the -- if the studies were well-designed, the ratio of -- - of -- say northern long-eared bats to all other bats, that could be a -- a useful indication of that fact. And, in fact, we did base some of our testimony on that. However, Your Honor, if I may?

A.L.J. LECAKES: Please, do.

THE WITNESS: You -- you seemed to be operating under the assumption that these searches are thorough and that all dead bats are found. And that is far from the truth. Most -- post-construction studies only find a very small percentage of the number of bats that are killed at that project at the time when studies are done. For example, generally speaking, and Brianna is more conversant than this, but I'm talking so I'll just say it. Generally speaking, they don't search under every single turbine and they don't search each turbine with the same amount of effort. And the time limits of the studies might be limited. There are -- there are a number of reasons why this is the case. And -- and it's very obvious if you look at the data, if you take the predicted losses that each of these studies generates and virtually every one – every one does. That's the purpose of doing the study, it's to -- it's mainly to predict how many bats are being killed at this particular wind turbine site. If you multiply that out times the number of -- well, however, it's written whether it's

bats per megawatt or bats per turbine, it's essentially giving an annual estimate of how many bats are killed or actually, I mean, may not be an annual estimates it's -- it's an estimate of how many bats are being killed during the timeframe when the study is run, which could be a really long, like, the whole season or it might just be this -- this time period when most of the bats get killed depending on the study.

A.L.J. LECAKES: Right. It -- does that --

THE WITNESS: But if --

A.L.J. LECAKES: Go ahead.

THE WITNESS: Please, sorry.

A.L.J. LECAKES: No, go ahead.

THE WITNESS: They -- so if you -- if you took that estimate and compared that to the number of actual bats that were found, you would see a very large discrepancy.

A.L.J. LECAKES: Right. But there is some evidentiary value to it though because you yourself included that.

THE WITNESS: Yes. Yes.

MR. MUSCATO: And there's post-

construction monitoring guidelines that DEC has that projects do post-construction monitoring on the basis of those guidelines -- guidelines in consultation with DEC staff and so that's -- it's --

A.L.J. LECAKES: Right. They are -- there are part of the stipulations.

MR. MUSCATO: No, not even stipulations.

A.L.J. LECAKES: Okay.

MR. MUSCATO: This -- since this is the first Article 10 process.

A.L.J. LECAKES: Okay.

MR. MUSCATO: The --

A.L.J. LECAKES: Right.

MR. MUSCATO: You know, the process before now was through SEQRA and local zoning, but the DEC permits that would be issued would have and the -- and the developers would agree to post construction monitoring and DEC has guidelines that detail what's required through those guidelines.

THE WITNESS: (Herzog) We -- we do. Although, it's rare that the companies actually

follow our guidelines, usually they do less than what we ask them to do.

MR. MUSCATO: Well, and -- and that may be whether it's enforcement issue or whether it's something else. I -- I don't know. I'm just trying --

A.L.J. LECAKES: No. I -- I understand. The -- the point that I -- I want to make, though, is -- is it has some evidentiary value --

THE WITNESS: Yes.

A.L.J. LECAKES: -- in terms of proportionality. Is that correct?

THE WITNESS: That's correct.

A.L.J. LECAKES: But multiplying zero times zero is going to give you zero. That doesn't necessarily mean no bats were killed because no carcasses were found, is that your point?

THE WITNESS: Exactly.

A.L.J. LECAKES: Okay. There was another discussion I have with Mr. Peterson regarding the northern long-eared bat in which I talked about in his testimony. He gives his

opinion as to characteristics of -- of their flight habits and things like that. I -- I'm curious as to DEC's opinion on -- on that testimony.

THE WITNESS: Sure. So I -- I think we disagree. I mean, I think we agree with all of the things that he said along those lines Mr. Peterson as to the -- the nature of the bats' behavior as it's generally understood. So this is the information that comes from published studies and things like that. So he characterized their forging as -- as occurring primarily beneath the canopy level, tree canopy level that -- that means. And his implication is that that should mean that fewer -- well, I'm not exactly sure what he's implying.

A.L.J. LECAKES: Well, I'll tell you what I've read it as. As -- as the judge, my understanding of the testimony and -- and the inference that I thought it was driving me toward is, since they weren't as active in that higher zone where the turbine blades were expected to be rotating and spinning, that you would naturally expect there to be less risk to them or -- or

less fatalities to northern long-eared bats and you might, for example, to migratory bats which fly at higher rates. I -- and I think that's a fair characterization of the point they were trying to make.

THE WITNESS: I think that's the point that he wanted you to -- to take from what he said, yes. However, I would not agree that we know that the behavior that bats are engaged in when they get killed at wind turbines, including northern long-eared bats is feeding behaviour. And, in fact, there's reason to doubt that that's even the case. And if you will give me a little bit of leeway to, I can explain my rationale quickly.

A.L.J. LECAKES: Yeah, please do.

THE WITNESS: So bats need to eat throughout the entire active season from somewhere around, you know, the end of April through to the time when they go into hibernation. So we're talking specifically about hibernating bats here. They feed the entire time, but the great majority of them are killed in this period of three months that we were

talking about. That to me suggests that those bats have -- are engaging in a -- in a behavioral change at that time of year. And so the information that we know about what bats are doing when they're feeding tells us just that, what they're doing when they're feeding and not necessarily what they might be doing at the time of year when they get killed at wind turbines.

A.L.J. LECAKES: Okay. Mr. Muscato, I went a little bit off.

MR. MUSCATO: Yeah.

A.L.J. LECAKES: Did you have any follow-up questions for the panel based on my questions?

MR. MUSCATO: Not -- no. No, Your Honor, not based on your questions although I was wondering whether or not Mr. Peterson would -- could respond to that just for -- just for informational purposes.

A.L.J. LECAKES: Yeah. I -- I would be happy to fill out --

MR. MUSCATO: Just to round this out.

A.L.J. LECAKES: -- the -- the

record.

MR. MUSCATO: Because I think there's some distinctions. But -- go ahead.

THE WITNESS: (Peterson) Yeah. I -- I would agree that bats aren't unnecessarily foraging when they're -- when they're killed. But -- and that most mortality of all bats species occur, seems to occur during migration. I guess, the point I'm making is that -- well, certain times of year that coincide with migratory period, I guess, I'll state it that way. But it's very consistent --

MS. CROUNSE: Your -- Your Honor. Excuse me, I'm sorry. Mr. Peterson isn't testifying right now, right?

A.L.J. LECAKES: Yeah. Actually, he is.

MS. CROUNSE: Okay.

A.L.J. LECAKES: He's still at -- he was never excused because he was left open for --

MS. CROUNSE: Okay.

A.L.J. LECAKES: -- for potential cross.

MS. CROUNSE: All right. Then it's fine. Thank you.

THE WITNESS: Okay. So what I'm just saying is morphologic -- on the one side, morphologically, they have -- they're not adapt -- adapted for slow maneuverable flight, not necessarily flying at high wind speeds relative to a bat, like a hoary bat, it's built for high speeds. That's based on just my understanding morphology.

A.L.J. LECAKES: I -- I -- I appreciate that.

THE WITNESS: And -- but the one other follow-up those --

A.L.J. LECAKES: Go ahead.

THE WITNESS: -- empirically acoustic data consistently shows pretty low levels of -- of Myotis activity and that's the genus that includes northern long-eared bats and three other myotis species at high up, you know, in the closing -- closest to the rotor zone. There's -- there's not a lot of my myotis activity up there relative to what you get closer to the ground. And that's true. That was true

before, white nose it's true post white nose. So I'm just saying those two things combined lead me to the conclusion that these species are not as prone turbine-related mortality as other species like hoary bats.

A.L.J. LECAKES: Okay. I appreciate that conclusion. I'm going to let DEC respond to that because it is a very kind of unusual way to have a -- a discussion, although it's been very helpful on this issue.

THE WITNESS: (Herzog) Yes, I think we're saving some time. Again, we don't substantially disagree with anything that he said. But you have to keep in mind the species, some of these bats, and also other myotis bats of which the information that he just described applies to four different species, essentially. You have three or four, you can -- you would agree three at least, right?

THE WITNESS: (Peterson) Yeah.

THE WITNESS: (Herzog) Okay. Three other species that are at the same wing shape and they're -- they're adapted to foraging in relatively cluttered environments and that sort

of thing. All of those species do nonetheless get killed at wind turbines that are positioned well above the canopy.

A.L.J. LECAKES: Okay.

THE WITNESS: So it does happen.

A.L.J. LECAKES: Right.

THE WITNESS: We're not disputing that. We're not saying anything about the relative risk. Again, we're -- we have a data driven approach to our testimony. We look at the results and use that as predicted -- prediction for what will happen in the future.

A.L.J. LECAKES: Right. And -- and what I understand here, I -- I understand that in terms of the observations of the characteristics of -- of these bats and -- and similar bats that there is an agreement between DEC and the applicant as to what those behaviors are. I think what the difference is and what I expect to see in briefs potentially is that how valuable that is and how instructive that is to a curtailment recommendation or -- or anything else or -- or an expectation at least of mortality at the very basic level is -- is what the question

is. So I think that's where the fundamental disagreement is.

MR. MUSCATO: Can I ask one follow-up question? And --

A.L.J. LECAKES: To these witnesses?

MR. MUSCATO: Yes, to these witnesses.

A.L.J. LECAKES: Yes, absolutely.

MR. MUSCATO: Are you aware of any mortality of NLEB in New York with a project operating under curtailment regime?

THE WITNESS: (Denoncour) No, but we do not have any projects that are operating under a curtailment regime.

MR. MUSCATO: Do you know nationwide whether or not there's any data which would show NLEB mortalities at a project operating -- well, under a curtailment regime?

THE WITNESS: (Herzog) I believe the reference that Mr. Peterson cited does include northern long-eared bats that have -- I'd have to look again. I'm talking about Gruver and Bishop-Boros.

A.L.J. LECAKES: What are -- what are those two?

THE WITNESS: Gruver, G-R-U-V-E-R and Bishop-Boros two authors of a document that both DEC and Mr. Peterson had cited.

A.L.J. LECAKES: Is that document an exhibit in the record?

MR. MUSCATO: No, Your Honor, I don't think so.

THE WITNESS: No, I don't believe it is.

A.L.J. LECAKES: Is there a way you could get that into the record?

MR. MUSCATO: Yes, Your Honor. We could submit that into the record, yeah.

A.L.J. LECAKES: Why don't we give that name again was Gruver, G-R-U-V-E-R?

THE WITNESS: Correct.

A.L.J. LECAKES: And the second name was?

THE WITNESS: It's Bishop hyphen Boros. I believe it's -- well, Bishop, just like it sounds and B-O-R-O-S, I think.

A.L.J. LECAKES: Good enough. We

will put that as Exhibit 114 for identification. And, Mr. Muscato, you said you would take responsibility for getting that in the record?

MR. MUSCATO: Yes, Your Honor.

A.L.J. LECAKES: Thank you. Or, I mean, for circulating that to the parties. Ms. Crounse, if you would like to approach the witnesses to discuss redirect unless you have something before we get to the redirect?

MS. CROUNSE: No, we'll take a minute.

A.L.J. LECAKES: All right. Let's go off the record while DEC consult.

(Off the record)

THE REPORTER: We're on the record.

A.L.J. LECAKES: Ms. Crounse, redirect for your witnesses?

MS. CROUNSE: Yes, Your Honor.

REDIRECT EXAMINATION

BY MS. CROUNSE:

Q. We talked about why the majority of bats are killed in July, August and September. And I was wondering what were some of the other hypothesis as to why other than foraging, as to why those – that

was the highest amount of kills?

A. (Herzog) Yeah, there -- there have -- there have been a number of other hypothesis that have been put forward to explain this. One of them, at least, is that bats are actually attracted to the turbines from a long distance away. And that they -- which helps to explain why also it's -- but consistent with the notion that taller turbines would kill more bats because they are attractive from a -- a longer distance potentially. But one of the -- one of the posited explanations for -- for why that might happen is that that these bats are -- well, the time of year when most bats are killed corresponds with many of these species as -- as the presumed mating season, the mating time of year. And so it's been suggested that perhaps the bats would have prior to, you know, human development would have been attracted to tall trees and that wind turbines simply look like the tallest tree on the landscape to the bats.

Q. Okay.

A. And that -- and that those locations are their intent if -- if we can infer, would be to, you know, as a way to -- to encounter other bats of the same species to allow for mating

opportunities, things like that. So that's -- that's at least one --

Q. Okay.

A. -- alternative explanation.

Q. Okay. Nothing further.

A.L.J. LECAKES: Okay. Thank you. I -- I just want to note that I'm going to --

MS. CROUNSE: Oh, actually, I'm sorry.

A.L.J. LECAKES: Oh, go ahead.

MS. CROUNSE: I forgot.

BY MS. CROUNSE: (Cont'g.)

Q. Earlier I had -- in my cross of Mr. Peterson, I had mischaracterized communications DEC stuff made with the Pennsylvania Game Commission. And -- but I believe that the -- our staff had actually reached out to PA Gaming Commission prior to Mr. Peterson's rebuttal. It just happened to coincidentally be around that same time. And it was not, in fact, in response to the numbers to verify them. That's correct?

A. (Herzog) Yes. You -- you -- I don't remember if you said it explicitly, but you at least implied that my contacting the Game Commission

was as a result of the testimony from this proceeding. And actually I -- I approached them long before I ever started working on this, the Cassadaga project.

Q. Great.

A. I did ask them the exact same question, however, so it's -- it's still relevant. But --

Q. Okay. Thank you.

A.L.J. LECAKES: Well, given that question, I'm -- I'm curious, why there wasn't another attempt made when -- when Mr. Peterson's testimony came in or -- or at least why there wasn't discovery requests sent to the applicant, to find out the basis for some of Mr. Peterson's conclusions or numbers. Was it just a timing issue or was there something else there?

MS. CROUNSE: Your Honor, respectfully that discovery request would come out of counsel's office.

A.L.J. LECAKES: Right.

MS. CROUNSE: And it was a timing issue. I mean, I had -- I had let the applicant know that we took concern with the use of the PA

data and I had mentioned the -- the confidentiality of them probably a week or two in advance of the hearing that that was an issue we had. But we -- we felt it best to address it here, at hearing rather than through a discovery request because that was the best way to answer some of these questions.

MR. MUSCATO: But -- but I -- I guess I'm confused by that response because the discussions about this data and these reports have been in the record since May of 2016 and I --

MS. CROUNSE: But we introduced the -- the summary today as an exhibit.

MR. MUSCATO: But -- but I don't think -- I mean, this is a worthwhile discussion and that I don't think this was the first that the Pennsylvania Gaming Commission data was discussed between department staff and the technical consultants or the company with respect to this -- this project.

A.L.J. LECAKES: All right. I -- I think that this is a discussion that we can have off the record. Why don't we just finish up with

these witnesses and excuse them because I think there's an important discussion but I don't think it's important for the evidentiary transcript. So is there any recross examination based on the redirect?

MR. MUSCATO: No, Your Honor.

A.L.J. LECAKES: Okay. And, Mr. Abraham, you indicated that you didn't expect any questions for this panel, correct?

MR. ABRAHAM: Correct.

A.L.J. LECAKES: All right. So you are excused. And thank you very much for your appearance today.

THE WITNESS: (Denoncour) Thank you.

A.L.J. LECAKES: All right. In closing the -- the transcript for today, I'm just going to mention that we had a discussion about procedure off the record earlier and we are going to start at 9:30 a.m. tomorrow. And we are off the record.

(Off the record)

STATE OF NEW YORK

I, HOWARD HUBBARD, do hereby certify that the foregoing was reported by me, in the cause, at the time and place, as stated in the caption hereto, at Page 1 hereof; that the foregoing typewritten transcription consisting of pages 1 through 666, is a true record of all proceedings had at the hearing.

IN WITNESS WHEREOF, I have hereunto subscribed my name, this the 24th day of July, 2017.

HOWARD HUBBARD, Reporter