STATE OF CONNECTICUT
SITING COUNCIL

CONNECTICUT LIGHT AND POWER CO.	JUNE 4, 2012 (11:10 a.m.)
APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONNECTICUT PORTION OF THE INTERSTATE RELIABILITY PROJECT THAT TRAVERSES THE MUNICIPALITIES OF LEBANON, COLUMBIA, COVENTRY, MANSFIELD, CHAPLIN, HAMPTON, BROOKLYN, POMFRET, KILLINGLY, PUTNAM, THOMPSON, AND WINDHAM, WHICH CONSISTS OF (A) NEW OVERHEAD 345-kV ELECTRIC TRANSMISSION LINES AND ASSOCIATED FACILITIES EXTENDING BETWEEN CL&P'S CARD STREET SUBSTATION IN THE TOWN OF LEBANON, LAKE ROAD SWITCHING STATION IN THE TOWN OF KILLINGLY, AND THE CONNECTICUT/RHODE ISLAND BORDER IN THE TOWN OF THOMPSON; AND (B) RELATED ADDITIONS AT CL&P'S EXISTING CARD STREET SUBSTATION, LAKE ROAD SWITCHING STATION, AND KILLINGLY SUBSTATION, REQUEST FOR PARTY/INTERVENOR STATUS. REQUEST FOR CONTINUANCE.	PETITION NO. 424

BEFORE: ROBIN STEIN, CHAIRMAN

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. . .Verbatim proceedings of a hearing before the State of Connecticut Siting Council in the matter of an Application by The Connecticut Light and Power Company for a Certificate of Environmental Compatibility and Public Need, held at the Central Connecticut State University, 185 Main Street, New Britain, Connecticut, on June 4, 2012 at 11:10 a.m., at which time the parties were represented as hereinbefore set forth . . .

CHAIRMAN ROBIN STEIN: This is a meeting of the Connecticut Siting Council, Docket 424. Today, Monday, June 4th, 2012, approximately 11:10. My name is Robin Stein, I'm the Chairman of the Connecticut Siting Council. Other members of the Council here and present, Professor Tait, Vice Chairman; Mr. Golembiewski, designee from the Department of Energy and Environmental Protection; Mr. Levesque, designee from Public Utilities Regulatory Authority; Mr. Ashton, Mr. Lynch -- Mr. Lynch is not here yet; Dr. Bell, Senator Murphy.

Members of the staff present, Linda Roberts, Executive Director; Melanie Bachman, Staff Attorney; Christina Walsh, Supervising Siting Analyst;

Gail Gregoriades, Court Reporter; Aaron DeMarest, Audio Technician. We're welcoming Elise Brysgel, who is our intern for the summer.

This hearing is held pursuant to the provisions of Title 16 of the Connecticut General Statutes and of the Uniform Administrative Procedure Act upon an application of the Connecticut Light and Power Company for a certificate of environmental compatibility and public need for the Connecticut portion of the Interstate Reliability Project that traverses the municipalities of Lebanon, Columbia, Coventry, Mansfield, Chaplain, Hampton, Brooklyn, Pomfret, Killingly, Putnam, Thompson, and Windham, which consists of a new overhead 345 volt electric transmission lines and associated facilities extending between CL&P's Card Street Substation in the town of Lebanon, Lake Road Switching Station in the town of Killingly, and the Connecticut/Rhode Island border in the town of Thompson and related additions to CL&P's existing Card Street Substation, Lake Road Switching Station and Killingly Substation. This application was received by the Council on December 23rd, 2011.

This proceeding is a contested case under the Uniform Administrative Procedure Act and will be

considered in accordance with the applicable provisions of the General Statutes of the State of Connecticut and the Regulations of Connecticut State Agencies. As a reminder to all, off the record communication with a member of the Council or a member of the Council's staff upon the merits of this application are prohibited by law.

The parties and intervenors to the proceeding are as follows. Connecticut Light and Power Company, Attorney Fitzgerald. The Parties, NRG, Victor Civie, EquiPower, UI Company -- UL Company, Richard Civie, Edward Hill Bullard, the Office of Consumer Counsel, Richard Cheney and the Highland Golf Range, LLC.

I have a request to make Mount Hope Montessori School a party to this proceeding. Is there motion to make --

MR. PHILIP ASHTON: So moved.

DR. BARBARA BELL: Second.

CHAIRMAN STEIN: -- I have a motion and a second, any further discussion? Hearing none, all those in favor signify by saying aye?

VOICES: Aye.

CHAIRMAN STEIN: Opposed? Abstention? Motion carries. We will now proceed in accordance with a

prepared agenda, copies of which are available here. A verbatim transcript will be made of each hearing session and all hearing transcripts will be deposited with the Town Clerk offices of the town's previously mentioned for the convenience of the public. At the end of each session of the hearing I will announce the date, time, and place for the next session, if necessary, and a date by which any and all parties and intervenors, including the applicant, may submit briefs, and proposed findings of fact.

Okay. We have the motion, Victor and Richard Civie submitted a motion for administrative notice dated May 21st, 2012. Attorney Bachman may wish to comment.

MS. MELANIE BACHMAN: Thank you, Mr. Chairman. On May 21st Mr. Victor Civie and Mr. Richard Civie filed a motion for administrative notice for two of the dockets previously decided by this Council. Staff recommends the motion be granted.

A MALE VOICE: So moved.

CHAIRMAN STEIN: Motion -- we have a motion and a second. All those in favor signify by saying aye?

VOICES: Aye.

CHAIRMAN STEIN: Opposed? Abstention? Motion carries. Attorney Bachman again, please?

MS. BACHMAN: Thank you, Mr. Chairman. Given that Mr. Victor Civie and Mr. Richard Civie filed joint prefiled testimony, I would recommend that the Council exercise its discretion under Connecticut General Statute 16-50(n), subsection C for grouping parties and intervenors with the same interests. All parties and intervenors should still serve documents on both Mr. Civie's and in the event they don't want to be grouped, they could certainly send a letter to the Counsel indicating that they would prefer not to be grouped.

CHAIRMAN STEIN: So could I have a motion to group them please?

MR. ASHTON: So moved.

CHAIRMAN STEIN: Second? Could I get a second?

SEN. JOHN MURPHY: Second.

CHAIRMAN STEIN: Okay. All of those in favor signify by saying I?

VOICES: Aye.

CHAIRMAN STEIN: Opposed? Abstention? Motion carries. I wish to call your attention to those items shown on the hearing program marked as Roman

numeral I D, items 1 through 65; Roman numeral -- the applicant submitted a request for the Council to take administrative notice dated May 25th, 2012. Attorney Bachman?

MS. BACHMAN: Thank you, Mr. Chairman. On May 25th the applicant filed a motion for the Council to take administrative notice of several items, including but not limited to, certain planning procedures of the ISO New England. Staff recommends approval.

MR. ASHTON: So moved.

SEN. MURPHY: Second.

CHAIRMAN STEIN: A motion and second. All those in favor signify by saying aye?

VOICES: Aye.

CHAIRMAN STEIN: Opposed? Abstention? Motion carries. Now administrative notice by the Council. I wish to call your attention to those items shown on the hearing program marked as Roman numeral I D, items one through 65; Roman numeral I E, items one and two; Roman numeral I F, items one through five. Does the applicant or any party or intervenor have any objection to the items that the Council has administratively noticed?

Hearing and seeing none accordingly, the

Council hereby administratively notices these existing documents, statements and comments. Will the applicant present its witness panel for the purposes of taking the oath? And the Council's staff attorney will administer the oath.

MR. ANTHONY FITZGERALD: Thank you, Mr. Chairman. Although at some point in the proceedings, it may become necessary to call upon others for assistance and could be sworn in at that time. For today, we would like to present as our witnesses those folks who are sitting here at the table, other than myself. Louise Mango, starting from the left, well known to the Council, she's been here before. Anthony Mele, who is the project manager of the Connecticut portion of the Interstate Reliability Project; Bob Carberry, John Case and Dr. Bailey, all of whom have testified before you before.

Their resumes have been submitted in a volume, in a resume volume, that was filed with the prefiled testimony and they will adopt them as we go along. So I think that we are ready for these witnesses to be sworn in.

CHAIRMAN STEIN: Yes. Please rise.

(Whereupon, the Applicant's witness panel was duly sworn in.)

CHAIRMAN STEIN: Would you please begin by numbering the exhibits of the filings you've made and making requests to administratively notice these exhibits and verifying all exhibits by the appropriate sworn witnesses?

MR. FITZGERALD: Yes Mr. Stein. I actually will be asking that the exhibits be received into evidence as full exhibits rather than being administratively noticed. But we'll proceed with the sponsoring testimony of the witnesses. And I'd like to start, if we go to page 11, we find that there are a large number of exhibits already marked for identification and I'll work my way through most of them now.

The first one, marked one, is the application that CL&P filed in this proceeding. And I have some questions with respect to that application. First, to be addressed to Mr. Carberry, Mr. Case and Ms. Mango.

Mr. Carberry, were you responsible for the compilation of the application designated as CL&P Exhibit 1 for identification in the hearing program?

MR. ROBERT CARBERRY: Yes.

MR. FITZGERALD: And Ms. Mango, were you

the principal author of the environmental sections of the application?

MS. LOUISE MANGO: Yes I was.

MR. FITZGERALD: Mr. Case, did you contribute to the portions of the application concerning transmission line engineering?

MR. JOHN CASE: Yes.

MR. FITZGERALD: Mr. Carberry, Mr. Case and Ms. Mango, are the statements in the exhibits in the application true and correct to the best of your knowledge and belief with the exception of the following sections, which will be sponsored later by other witnesses with personal knowledge of them, and those sections that I'm accepting from your sponsorship right now our Volume 1, Section 2, which relates to need; Volume 1A, Section 13.2, which relates to non-transmission alternatives; Volume 5, and the CEII appendix, which are planning materials, the updated solution report, and the exponent report concerning the EMF health effects research, which appears as Appendix 7D, Volume 1, which Dr. Bailey will sponsor in a few moments, so with those exceptions, do you have any corrections to any of the statements and exhibits presented in the application other than such as may have

been made in your prefiled testimony?

MR. CASE: I have one correction.

MR. FITZGERALD: And what is that Mr. Case?

MR. CASE: The application Volume 1, page 3-7 accurately describes those existing structures that received a notice of presumed hazard, as structures 9214, 9215 and 9224 through 9228 --

MR. FITZGERALD: Excuse me, Mr. Case, let me interrupt for a moment. When you say a notice of presumed hazard, you're referring to a notice from the Federal Aviation Administration?

MR. CASE: -- that is correct. Map Volume 9, page 25 of 40, erroneously shows existing structure 9222 and 9223 as receiving a notice of presumed hazard. Those structures have received a determination of no hazard. Volume 9 we'd like to make the same correction, page 91 of 134, to remove the notice of presumed hazard note on structure 9222 and 9223.

MR. FITZGERALD: As -- oh, excuse me. Mr. Carberry or Ms. Mango, I should look to you, Mr. Mele, do you have any corrections to the statements made in the application?

MR. CARBERRY: I do not.

MR. ANTHONY MELE: No.

MS. MANGO: I have no other corrections other than those presented in my prefiled testimony.

MR. FITZGERALD: Right. All right. I move that the application, Exhibit 1 in the hearing program, be admitted as a full exhibit as corrected by Mr. Case.

CHAIRMAN STEIN: It would be helpful if you would just submit those modifications or corrections so we can keep track of them. Thank you.

MR. FITZGERALD: We will do that. We'll submit revised sheet 25 of 40 from Volume 9 and sheet 90 of 134 from Volume 11, we'll submit that to Ms. Walsh and serve copies on the service list.

CHAIRMAN STEIN: Okay. Does any party or intervenor object to the submission of the Applicant's exhibits? Hearing and seeing none, the exhibits are admitted.

(Whereupon, Applicant's application Exhibit No. 1 was received into evidence as a full exhibit.)

MR. FITZGERALD: And Dr. Bailey, are you the principal author of the exponent report concerning the EMF health effects research, which appears in the

application as Volume 7D -- I'm sorry, Appendix 7D to Volume 1?

DR. WILLIAM BAILEY: Yes I am.

MR. FITZGERALD: And do you have any corrections to the matter presented in that report?

DR. BAILEY: No, I do not.

MR. FITZGERALD: And are the factual statements in that report true and correct to the best of your knowledge and are these statements of expert opinion made therein honestly held?

DR. BAILEY: Yes, sir.

MR. FITZGERALD: And do you have any corrections to make to that report?

DR. FAILEY: No, I do not.

MR. FITZGERALD: I move that Appendix 7D to the application be admitted as a full exhibit.

CHAIRMAN STEIN: Is there any objection to having those being admitted? If not, they will also be admitted as exhibits.

(Whereupon, Applicant Exhibit No. 1 was received into evidence as a full exhibit.)

MR. FITZGERALD: Thank you, Mr. Chairman. Now, moving on to the bulk file exhibits, which are also listed under item 1 as sub-items small A through sub-

items triple C. Mr. Carberry, were you responsible for compiling and filing the bulk filed regulations designated in the hearing program as Exhibits 1a through 1ccc?

MR. CARBERRY: Yes. I compiled them with the assistance of counsel.

MR. FITZGERALD: And are the representations made by CL&P concerning those documents in the transmittal letter, basically, that they are what they appear to be, true and correct to the best of your knowledge?

MR. CARBERRY: Yes.

MR. FITZGERALD: And do you have any corrections or additions to make to that submission?

MR. CARBERRY: I do not.

MR. FITZGERALD: May it please the panel, I offer Exhibits 1a through 1ccc as full exhibits.

CHAIRMAN STEIN: Is there any objection from any party or intervenor? Hearing and seeing none, these exhibits are accepted.

(Whereupon, Applicant Exhibits No. 1a through 1ccc received into evidence as full exhibits.)

MR. FITZGERALD: All right. That brings us now to Exhibit 2 and the following. And I think I can

take care of several at one time. Mr. Carberry, were you responsible for compiling and filing the proofs of service and publication designated in the hearing program as Exhibit 2 for identification, the municipal consultation process documents identified as Exhibit 3 for identification, the certificates of publication supplemental affidavit of service and additional correspondence designated as Exhibit 4 for identification, and the additional municipal recommendations and correspondence designated as Exhibits 5 and 7 for identification?

MR. CARBERRY: Yes.

MR. FITZGERALD: And do you have any corrections or additions to make to those exhibits?

MR. CARBERRY: No I do not.

MR. FITZGERALD: Are the representations made by CL&P concerning those exhibits true and correct to the best of your knowledge and belief?

MR. CARBERRY: Yes.

MR. FITZGERALD: May it please the panel Mr. Chairman that I move Exhibits 2, 3, 4, 5 and 7 to be admitted as full exhibits.

CHAIRMAN STEIN: Does any party or intervenor object to the admission of these exhibits?

Hearing and seeing none, they are admitted.

(Whereupon, Applicant Exhibits No. 2, 3, 4, 5 and 7 were received into evidence as full exhibits.)

MR. FITZGERALD: And I'll just note that I did not tender Exhibit 6 at this time, but that will be sponsored later by the need panel.

So that brings us to the interrogatories that have been marked as Exhibit 9 for identification. And Exhibit 9 is the Applicant's partial response to the Council's first set of interrogatories. I'll direct this question to the panel, other than Dr. Bailey. Mr. Carberry, Mr. Case, Mr. Mele and Ms. Mango, were one or more of you responsible for responding to the interrogatories propounded by the Siting Council Nos. 7, 9, 10, 13, 17, 20, 21 and 22?

MR. CARBERRY: Yes.

MR. CASE: Yes.

MR. MELE: Yes.

MS. MANGO: Yes.

MR. FITZGERALD: And do you have any corrections or additions to those interrogatories?

MR. CARBERRY: No.

MR. CASE: No.

MR. MELE: No.

MS. MANGO: No.

MR. FITZGERALD: Are they true and correct to the best of your knowledge and belief?

MS. MANGO: Yes.

MR. CARBERRY: Yes.

MR. CASE: Yes.

MR. MELE: Yes.

MR. FITZGERALD: All right. And moving on -- I'm not going to offer them yet, we'll do that in tandem with Exhibit 10. Exhibit 10 are additional responses to that same first set of interrogatories from the Council. And I address this to the same people. Were one or more of you responsible for responses to interrogatories 1, 4, 8, 14, 22 and 26 as propounded by the Counsel?

MS. MANGO: Yes.

MR. CARBERRY: Yes.

MR. CASE: Yes.

MR. MELE: Yes.

MR. FITZGERALD: And do any of you have any corrections or additions to any of the answers to the Counsel's first set of interrogatories that I have just identified, which are included within Exhibits 9 and 10?

MS. MANGO: No.

MR. CARBERRY: No.

MR. CASE: No.

MR. MELE: No.

MR. FITZGERALD: May it please -- yes?

A VOICE: (Indiscernible, too far from mic.).

MR. FITZGERALD: Yes, they have been. Now I'm --

A MALE VOICE: You said you were going to offer than later.

MR. FITZGERALD: -- no, no.

MR. COLIN TAIT: What did you mean by that?

MR. FITZGERALD: I wanted -- there were two -- the response to the Council's first set of interrogatories came in in two batches. I wanted to get those answers in both batches that these witnesses were responsible for and have them be adopted together.

MR. TAIT: They'll all come in as full exhibits?

MR. FITZGERALD: Yes. Except for there are some interrogatories that were said, which I will identify for you, which are need or system alternatives or vegetation management responses, which will be

sponsored by other witnesses. Mr. Johnson will be here tomorrow to take care of the vegetation management questions and then the others are for the need panel.

MR. TAIT: I guess I'm not clear yet. Are they going to verify different portions of those exhibits?

MR. FITZGERALD: Different questions, yes. Yes.

MR. TAIT: So you're not offering the whole bunch as full exhibits?

MR. FITZGERALD: I am offering -- no, that's why I've been identifying the specific questions that are being offered.

MR. TAIT: So 9 and 10 are only for those questions?

MR. FITZGERALD: 9 and 10 are being offered now as full exhibits.

MR. TAIT: Yes.

MR. FITZGERALD: Yes.

MR. ASHTON: Only the questions --

MR. TAIT: Only the questions you've identified?

MR. FITZGERALD: Yes. And I can give you a resume of them.

MR. TAIT: No, no, I just wondered what you're doing.

MR. FITZGERALD: Yes.

MR. TAIT: Accepting certain things that are not part of the full exhibit?

MR. FITZGERALD: Correct.

MR. TAIT: So those will come in as identification -- they're identification only?

MR. FITZGERALD: Yes, yes, yes.

MR. TAIT: So you'll change that at some point?

A MALE VOICE: Change from identification to full exhibits.

MR. TAIT: Change from identification to full exhibits, you don't have those answers in from sponsored witnesses?

MR. FITZGERALD: Yes. Yes. I think --

MR. TAIT: I don't want to confuse you, but --

MR. FITZGERALD: -- we're agreed?

MR. TAIT: -- I think so.

MR. FITZGERALD: Let me -- let me see if I can handle it to your satisfaction with what I'm about to say. On the basis of that foundation testimony I move

that the following portions of Exhibits 9 and 10 be made full exhibits.

MR. TAIT: Good.

MR. FITZGERALD: That is, the responses to questions one, five, seven, eight, 14, 17, 19, 20, 21, 22, 25 and 26. And just for the record, that leaves to be sponsored by other witnesses questions two, three, five, six, 11, 12, 15, 16, 23, and 24.

MR. TAIT: But they could be identified as Exhibit No. 9 for identification and Exhibit No. 10 for identification?

MR. FITZGERALD: Okay. That would be Exhibits 9 and 10 actually, for identification with the understanding that there are -- there are questions in there that have the status of being full exhibits. Okay. Good.

MR. TAIT: We await with bated breath.

MR. FITZGERALD: Yeah. I so move.

MR. FITZGERALD: Wait a minute. Did I ask if they were in?

CHAIRMAN STEIN: Yes, I believe so.

MR. FITZGERALD: Okay.

CHAIRMAN STEIN: Are there any objections from any of the parties are intervenors to the admission

of these exhibits? Hearing and seeing none, these exhibits are admitted.

(Whereupon, Applicant Exhibit Nos. 9 and 10 (with exceptions) were received into evidence as full exhibits.)

MR. FITZGERALD: So that brings us to Exhibits 11, 12 and 13 for identification, the field review handouts. Mr. Carberry, did you prepare these handouts or were they prepared under your supervision?

MR. CARBERRY: They were prepared under my supervision.

MR. FITZGERALD: And are they true and accurate to the best of your knowledge and belief?

MR. CARBERRY: Yes.

MR. FITZGERALD: Do you have any corrections or additions to them?

MR. CARBERRY: No.

MR. FITZGERALD: I move Exhibits 11, 12 and 13 be admitted as full exhibits.

CHAIRMAN STEIN: Are there any objections from any of the parties or intervenors? Hearing and seeing none, these exhibits are admitted.

(Whereupon, Applicant Exhibit Nos. 11, 12 and 13 were received into evidence as full exhibits.)

MR. FITZGERALD: Thank you, Mr. Chairman. That brings us to Exhibit 14. These are interrogatory responses to interrogatories propounded by Victor Civie. I'll ask the panel, were one or more of you responsible for the responses dated May 4th, 2011 to interrogatories of Victor Civie?

MS. MANGO: Yes.

MR. MELE: Yes.

MR. CARBERRY: Yes.

MR. CASE: Yes.

MR. FITZGERALD: And are the answers true and correct to the best of your knowledge and belief?

MS. MANGO: Yes.

MR. MELE: Yes.

MR. CARBERRY: Yes.

MR. CASE: Yes.

MR. FITZGERALD: Do you have any corrections or additions to them?

MS. MANGO: No.

MR. CARBERRY: No.

MR. CASE: No.

MR. MELE: No.

MR. FITZGERALD: I move Exhibit 14 be admitted as a full exhibit.

CHAIRMAN STEIN: Are there any objections to the admission of this exhibit? Hearing and seeing none, the exhibit is admitted.

(Whereupon, Applicant Exhibit No. 14 was received into evidence as a full exhibit.)

MR. FITZGERALD: Thank you, Mr. Chairman. That brings us to Exhibit 15, which are responses to the second set of the Council's interrogatories, the response is being dated May 18th. Ms. Mango and gentlemen of the panel, other than Dr. Bailey, were one or more of you responsible for preparing these responses, except that to questions 37 and 40?

MS. MANGO: Yes.

MR. MELE: Yes.

MR. CARBERRY: Yes.

MR. CASE: Yes.

MR. FITZGERALD: And are those responses true and correct?

MS. MANGO: Yes.

MR. MELE: Yes.

MR. CARBERRY: Yes.

MR. CASE: Yes.

MR. FITZGERALD: And do you have any additions or corrections to be made to those answers?

MS. MANGO: No.

MR. MELE: No.

MR. CARBERRY: No.

MR. CASE: No.

MR. FITZGERALD: Okay. Let's see if we can get this right now. I move that Exhibit 15 -- withdrawn. I move that the answers to the interrogatory responses contained in Exhibit 15, with the exception of questions 37 and 40, be received in evidence as full exhibits and that the questions 37 and 40 be remained and marked for identification status until they are sponsored by other witnesses.

CHAIRMAN STEIN: Is there any objection to the admission of this exhibit from any of the parties or intervenors? Hearing and seeing none, the exhibit is admitted.

(Whereupon, Applicant Exhibit No. 15, with exception of questions 37 and 40, was received into evidence as a full exhibit.)

MR. FITZGERALD: I'm going to skip Exhibit 16 and move to Exhibit 17. This is the testimony, prefiled testimony of Mr. Carberry and Mr. Case and Mr. Mele. And I'll ask you three gentlemen, did you participate in the preparation of Exhibit 17, your

prefiled testimony concerning engineering designs, siting, construction and municipal consultation outreach and EMF characteristics of the projects?

MR. CARBERRY: Yes.

MR. MELE: Yes.

MR. CASE: Yes.

MR. FITZGERALD: Do you have any corrections to that prefiled testimony?

MR. MELE: No.

MR. CASE: No.

MR. CARBERRY: I have one small correction.

MR. FITZGERALD: Please tell us what it is?

MR. CARBERRY: On page 52 of the prefiled testimony there is a table, Table CCM-5, at the bottom of the page. The top row of data in that table includes a cost figure, the cost figure reads as $310,320,459. The three is incorrectly there, that figure should be $10,320,459.

CHAIRMAN STEIN: Can you provide that in writing?

MR. ASHTON: Would you mind just repeating that? It took me a while to find it.

MR. CARBERRY: Page 52 --

MR. ASHTON: Yep.

MR. CARBERRY: -- so the table at the bottom, CCM-5, and the top row of data moving over to the right-hand side we have cost figures and the column that's called, Selection Amount, the very first cost figure reads $310,320,459, strike the three at the beginning of that. It should be just $10,320,459.

MR. FITZGERALD: Yes. And we'll submit a corrected page. Mr. Case, did you have a correction? Oh no, you already made that to the exhibits. That's right. Okay. With that correction, I move the admission of the testimony of Misters Carberry, Case and Mele, Exhibit 17 for identification to be a full exhibit.

CHAIRMAN STEIN: Is there any objection from any of the parties are intervenors? Hearing and seeing none, this exhibit is admitted.

(Whereupon, Applicant Exhibit No. 17 was received into evidence as a full exhibit.)

MR. FITZGERALD: Next exhibit is Exhibit 18, the prefiled testimony concerning the environmental issues of Louise Mango. Ms. Mango, did you prepare this testimony?

MS. MANGO: Yes I did.

MR. FITZGERALD: Do you have any corrections to it?

MS. MANGO: I do.

MR. FITZGERALD: And would you tell us the reason for the corrections?

MS. MANGO: Yes. I have two correction two tables at the end of my testimony, these are tables LFM-3 on page 53 and LFM-4 on page 56. Both tables relate to the comparison of the impact for the Mansfield Hollow alternatives. And the reason for my updated tables is to correct some numerical glitches, editorial in nature, perhaps caused by geographical information system analyses. And those -- so the new tables have that corrected information in it and it does not change the outcome of our analyses. It's mostly to acreages pertaining to vegetation impacts.

MR. FITZGERALD: We do have a number of copies of the corrected tables that we could pass out if you'd like. It's a little easier to handle the corrections then it is marking it up.

CHAIRMAN STEIN: I guess that would be fine, but could you separately at the end of this give us just a set of all of the correct -- pages with corrections? Because, as you may be able to see from

where you're sitting, we have significant volumes of paper here.

MR. FITZGERALD: Yes, we are planning to do that.

CHAIRMAN STEIN: Thank you.

MR. FITZGERALD: But as I said, in case anybody had any questions today and wanted to have the statement. And Ms. Mango, I notice that the corrected table doesn't flag the cell through which the revisions appear. Can you do that conveniently?

MS. MANGO: I can tell you generally. What appeared to have happened in the original exhibits, LFM-3 and LFM-4 is that perhaps due to a numerical transposition of numbers -- of data, we vastly overestimated the impacts to mostly shrub land resources. So for example, in the original LFM-3 we identified for the 11 acre right-of-way expansion option something like 7.6 acres of impacts to shrub land and I think it's -- I don't have my new table in front of me actually, but I think that our corrected analyses show that to be something like 2.6 acres in actuality. So I don't know how those numbers got transposed or what happened, but I suspect it happened and we just carried those numbers along. So the table is updated based on the latest

information available.

MR. FITZGERALD: All right. With that correction is your prefiled testimony true and correct to the best of your knowledge and belief?

MS. MANGO: Yes it is.

MR. FITZGERALD: I move Exhibit 18 for identification to be accepted as a full exhibit.

CHAIRMAN STEIN: Is there any objection from any of the parties are intervenors? Hearing and seeing none, I therefore admit the testimony.

(Whereupon, Applicant Exhibit No. 18 was received into evidence as a full exhibit.)

MR. FITZGERALD: Thank you, Mr. Chairman. That brings us to Exhibit 19, which is the volume of resumes of the witnesses and potential witnesses. So I'll first ask each of the panel members, including Dr. Bailey, if the statement of qualifications or resume included in that volume, with respect to you personally is true and correct?

MR. MELE: Yes.

MR. CARBERRY: Yes it is.

MR. CASE: Yes.

DR. BAILEY: Yes it is.

MR. FITZGERALD: And do any of you have

any corrections or additions to make to those exhibits?

DR. BAILEY: No I do not.

MR. CARBERRY: No.

MR. CASE: No.

MR. FITZGERALD: Mr. Carberry, did you supervise the assembly of the resumes in this volume?

MR. CARBERRY: I did.

MR. FITZGERALD: And to the best of your knowledge and belief are the resumes of other potential witnesses and witnesses that are included in this volume true and correct?

MR. CARBERRY: Yes.

MR. FITZGERALD: May it please the panel, I offer Exhibit 19 for identification as a full exhibit.

CHAIRMAN STEIN: Is there any objection from any of the parties or intervenors? If not, this is admitted.

(Whereupon, Applicant Exhibit No. 19 was received into evidence as a full exhibit.)

MR. TAIT: I hate to be a fly in the ointment again. If the potential witnesses have not verified their resumes, Mr. Carberry can't verify their resumes, he can verify that they're in that box, but the proof of the resume, but not Mr. Carberry.

MR. FITZGERALD: Well, if anybody is needed they can adopt it as they --

MR. TAIT: Okay.

MR. FITZGERALD: -- when they testify. But I just wanted to get them before --

MR. TAIT: I hesitate to raise the point.

MR. FITZGERALD: -- Exhibit 20 is a letter of agreement between CL&P and the Mount Hope Montessori School that was filed pursuant to Section 16-50(o) that requires, among other things, that any agreements between the parties to a proceeding that would be considered to relate to the project be filed with the Council. Mr. Mele, were you involved with the negotiation of the letter known as Exhibits 20 for identification?

MR. MELE: Yes I was.

MR. FITZGERALD: And is Exhibit 20 a copy of the agreement?

MR. MELE: Yes it is.

MR. FITZGERALD: I move that it be admitted --

COURT REPORTER: Attorney Fitzgerald, move your microphone closer please.

MR. FITZGERALD: -- now Mr. Tait, I'm not sure what the status of this should be. The statute

requires that a copy be filed, presumably so the Council can be aware of it. On the other hand, this is not something on which we are basing our request for approval of the project.

MR. TAIT: Why not just offer it as an exhibit and not use it?

MR. FITZGERALD: Fine.

MR. TAIT: But it'll be identified if somebody else wants refer to it.

MR. FITZGERALD: I offer Exhibit 20 for identification as a full exhibit.

CHAIRMAN STEIN: Is there any objection from any of the parties or intervenors? This exhibit will be accepted.

(Whereupon, Applicant Exhibit No. 20 was received into evidence as a full exhibit.)

MR. FITZGERALD: Exhibit 21 is an agreement between CL&P and United Illuminating Company, or it's parent. Mr. Case, have you had some involvement with the administration of this agreement?

MR. CASE: Yes I have.

MR. FITZGERALD: And could you tell us is the exhibit that's been marked for identification, is as you understand it, a true copy of the actual agreement?

MR. CASE: Yes it is.

MR. FITZGERALD: I would propose to move Exhibit 21 be admitted as a full exhibit, but with the disclosure that if you're going to want to ask, or anybody wants to ask any detailed questions about it we're going to need to bring somebody else in. With that reservation, I'd like to move it's admission as a full exhibit.

CHAIRMAN STEIN: Understood. Are there any objections from any of the parties or intervenors? If not, this will be admitted in.

(Whereupon, Applicant Exhibit 21 was received into evidence as a full exhibit.)

MR. FITZGERALD: So we're getting to the end here. Exhibit 22, these are the responses dated May 31st, 2012 to interrogatories of Victor Civie. And Mr. Carberry, were you responsible for the response to question one of this set of interrogatories?

MR. CARBERRY: Yes I was.

MR. FITZGERALD: And I'll note to the panel that questions two, three and four are need questions, so I'm not offering those answers as full exhibits at this time, but I would offer the response to question one as a full exhibit and leaving answers to

questions two, three and four for identification at this point.

CHAIRMAN STEIN: Is there any objection from any of the parties are intervenors? If not, this will be admitted.

(Whereupon, Applicant Exhibit 22 (with exceptions) was received into evidence as a full exhibit.)

MR. FITZGERALD: Thank you. And with that, I offer the panel for your questions.

CHAIRMAN STEIN: Okay. We'll start the cross-examination with the staff analysts. Ms. Walsh?

MS. CHRISTINA WALSH: Thank you, Mr. Chairman. Page 34 of the CCM testimony describes CL&P proposed redesign of the pole location at the Highland Ridge Golf Range. And my question is, if the property owner was willing to agree to that location would CL&P endorse that proposal?

MR. CARBERRY: What was the page reference again Ms. Walsh?

MS. WALSH: It was on page 34.

MR. CARBERRY: Okay.

MR. CASE: We've been working with Mr. Cheney and the Highland Ridge Golf Range on a potential

redesign in that area. As it was originally proposed in the letter from the town of Mansfield the proposed relocation was not acceptable to either of the parties. But we have been working together with them, taking his concept and proposing an alternative to that design which would eliminate the need for any additional right-of-way off of the Highland Ridge area and not cost the Connecticut consumers any additional money. So we've continued to advance that design with Mr. Cheney as well as a potential minor modification along the existing proposal. It would be the existing proposed route modifying slightly structure number 39. And either one of those options would be acceptable to CL&P.

MR. TAIT: Do you know whether they're acceptable to --

COURT REPORTER: Microphone please.

MR. TAIT: -- do you know whether either of those are acceptable to Mr. Cheney?

MR. CASE: They are in the process of evaluating those proposals. Either one of those I believe would be acceptable to them. They're trying to I think prioritize which one they feel would be the best for the golf range and we will continue to work with them on whichever one is the best for the range and for the

operation of CL&P's lines. We would go with that.

MR. TAIT: So you're hopeful of a resolution?

MR. CASE: We are very confident of a resolution.

DR. BELL: Excuse me. Mr. Case, could you just -- I find this whole matter pretty confusing because so many different things have been put forward. We have letters for Mr. Cheney, we have responses from you, there are alternatives in the application, which have plainly been superseded. So I guess I'm just asking if you could somehow name these -- I gather now what we're dealing with are too kind of final alternatives, which we don't know whether they're accepted -- acceptable to the Cheney's are not. Could we name these alternatives somehow?

MR. CASE: Yes, I'll go through them.

DR. BELL: And describe each one with a cartoon that we can grasp how they're different from each other? Thank you.

MR. CASE: I'll try.

MR. TAIT: I'm not sure that I think that's the best approach. I would be interested too, but it seems to me until you get one of them chosen, you're

going to louse up this record with things that we don't care about. So, my suggestion is wait until you have something definite, it either is down the drain or you take A or B and put that to us as soon as you have it.

DR. BELL: I'm happy to go along with whatever my colleague says. I understand his point. That's if we want to defer it until we know a little more. That's fine with me. Thank you.

MR. CASE: I will offer what we've been calling them is a shifted alternative versus the original alignment alternative. Those are the two that we're working with the Cheney's on.

MR. FITZGERALD: And, Mr. Case, is it fair to tell the Council that they can expect that by the time we get to the late June hearings you expect to have a final answer of the Highland Ridge that we could present to them?

MR. CASE: That is correct.

CHAIRMAN STEIN: Okay. Ms. Walsh?

MS. WALSH: Thank you. Also in that section, the CCM prefiled testimony section on page 67, it describes the area needed for a transition station as being one and a half to two acres and then 1.7 acres to connect the underground cables. And my question is just,

is that 1.7 acres in addition to the original two acres that's needed so that the total would be potentially 3.7 acres for a transition station?

MR. CASE: Yeah. The 1.7 is what would be required for a fenced area. Because each potential transition station has topographical features that could change the design we've tried to have a range of 1.5 to two acres. But we anticipate, based on our preliminary design, that 1.7 acres would be representative of a transition station fenced area.

MS. WALSH: So that would typically be the entire fenced area needed for the transition station?

MR. CASE: The fenced area, correct.

MS. WALSH: And do you need a buffer or anything outside of that, for any reason, safety or anything?

MR. CASE: We would require, I'm sure, additional land for grading, construction, access easements, line entries. So that's where we come up with the two to four acres that we've been talking about for an entire site.

MS. WALSH: Thank you. There has been in prefiled testimony to come that has not been brought in, or marked for identification yet, under the Civie party

there's been discussion of a variation of moving the transition station farther to the west. Have you reviewed that for feasibility or likelihood that that's even possible?

MR. CASE: I have not.

MS. WALSH: Thank you. In agricultural areas is it CL&P's methods and procedures to perform construction during non-growing and non-harvest seasons?

MR. CARBERRY: To the extent that we can work that schedule, yes.

MS. WALSH: And is that a likely occurrence on a project of this scale?

MR. CARBERRY: There could be many areas where there's agriculture and it'll probably be difficult to try to schedule it so that you avoid all of them working in a season where they're productive.

MS. WALSH: And just for information, I'm sure it's somewhere in the record, but what is the expected lowest point of the sag of the proposed conductors?

MR. CASE: Our design requirements for 345 kV line conductors to the ground is 29 feet to off-road vehicle accessible areas under high temperature operations, so that would be at 285 degrees Fahrenheit.

MR. CARBERRY: Let me just add to that. That is what you have to design to for the emergency operating temperature at the highest emergency rating of the line. On an everyday basis, a span that was designed so that it just barely made that 29 feet, it would more typically be 35, 36, 37 feet above ground at mid-span.

MR. ASHTON: (Indiscernible, too far from mic.).

COURT REPORTER: Is your microphone on?

MR. ASHTON: It's on.

MR. CASE: It's a two conductor bundle of 1590 kcmil, ACSS conductor.

MR. ASHTON: Okay. So it's ACSS conductor?

MR. CASE: Correct.

MR. ASHTON: Thank you. In the same vein, what's the clearance over distribution facilities crossing beneath the line?

MR. CASE: That's -- at road crossings we typically will design for 48 feet clearance to ground, which will accommodate the distribution line being in that area. So that's 48 feet, the lowest conductor, at road crossings where we anticipate a distribution line crossing. I could look up the actual distance to the

distribution conductor if you'd like.

MR. ASHTON: I'll come back on this point later.

MR. CASE: So we design to that whether or not there's a distribution line there now.

MR. ASHTON: I'll come back on that point.

MS. WALSH: Thank you. I have no further questions at this time.

CHAIRMAN STEIN: Okay. We'll now continue with questions from the Council members. Professor Tait?

MR. TAIT: I'll pass right now.

CHAIRMAN STEIN: Mr. Ashton?

MR. ASHTON: Okay. I have a number of questions. Just picking up where we immediately left off, how many -- are there road crossings with distribution lines which force the transmission line to a higher height in order to achieve the necessary clearance?

MR. CASE: There are distribution crossings that we do cross and we need to maintain clearance to those and it could raise the adjacent structures higher.

MR. ASHTON: I understand it could, but my question was, is it going to require additional height?

MR. CASE: Yes.

MR. ASHTON: Why would it not pay to underground the distribution at that point to pull the height down for both visual and cost reasons?

MR. CASE: We could evaluate that. Typically on a 345 kV H-frame, if you were to lower the height of that structure by, say 20 feet you would probably save in the order of magnitude of $40,000 per structure. So depending on what distribution facilities need to be relocated and the length of that. It's probably not cost-effective to underground the distribution line.

MR. ASHTON: By what percent? By a factor of three, a factor of one, or what?

MR. CASE: Yeah. As a very high level order of magnitude we estimate about $1,000,000 per mile for the underground of distribution.

MR. ASHTON: Yeah. But certainly we're not under grounding a mile of distribution to avoid a conflict with one transmission crossing?

MR. CASE: If you were to underground for say, a tenth of a mile, then you have $100,000 additional cost, so it's roughly -- it's going to be in the same ballpark.

MR. ASHTON: Now, a tenth of a mile, if my calculation is correct, is 528 feet. How much of your right-of-way exceeds 528 feet?

MR. CASE: Well, we also can't forget that there is an existing 345 kV line.

MR. ASHTON: I understand that. My question was, again, how much of your right-of-way exceeds in width of 528 feet, which is a tenth of a mile?

MR. CASE: None to my knowledge.

MR. ASHTON: So that's a high number, isn't it? Would it be possible to underground something like, let's see, the structure width for 345 is what? 56 feet?

MR. CASE: 52 feet.

MR. ASHTON: 52 feet? So you've got two structures, assuming the old line and the new line and the spacing between them is how much, 35 feet?

MR. CASE: The space in between the 345 kV conductors?

MR. ASHTON: The two circuits.

MR. CASE: Oh, we have 35 feet between outside conductors.

MR. ASHTON: 35?

MR. CASE: Between the outside conductor,

you could --

MR. ASHTON: Okay. So, it's 35, plus 52, plus 52, round number is 140 feet. Let's say 150 feet. That would allow you to get under the line and to pull your height down, would that not be correct?

MR. CASE: -- assuming that there's no other facilities in the area that would preclude us from --

MR. ASHTON: Yeah, we're talking possibilities here. So how much are you talking there? If it's 100,000 for a mile or a tenth of a mile?

MR. CASE: -- roughly say 100,000 per tenth of a mile. There are economies of scale as well. There's quite a bit of cost to get people out there to construct the riser structures associated with this. So the shorter your section goes the higher your per mile cost.

MR. ASHTON: You're not -- distribution construction is not really rocket science, is it?

MR. CASE: No, it's not.

MR. ASHTON: Okay. So would it be reasonably possible to underground especially in the eastern Connecticut, which is a multi-grounded 23 kV system, is that correct? Most of it?

MR. CASE: For the most part.

MR. ASHTON: So that's fairly easy to underground, isn't it? Most of these are single phased lines?

MR. CASE: Yes.

MR. ASHTON: Many of them are? I won't argue money, but many are.

MR. CASE: Yes.

MR. ASHTON: So, we're not talking a really difficult task, are we?

MR. CASE: No. I mean, difficult task would be -- it's certainly something we can -- we actually have done that in the past where we uncover pollutant violations.

MR. ASHTON: Right. That was my next question. So this is something you could do and the trade-off would be an increase in cost to underground distribution, a decrease in cost to build a higher transmission, and improvement in visibility, is that fair to say?

MR. CASE: You could potentially save a few feet on your structures, correct. Yes.

MR. ASHTON: And doesn't it decrease visibility?

MR. CASE: That would decrease visibility of the transmission line.

MR. ASHTON: Thank you. Mansfield Hollow is an anomaly in that the right-of-way is only I think 150 feet wide, is that correct?

MR. CARBERRY: That's correct.

MR. ASHTON: And there's another -- I'm grouping Mansfield Hollow with a small section to the east of Mansfield Hollow and calling it all Mansfield Hollow. Why is that where the right-of-way is 300 feet -- pardon me, the bulk of the right-of-way is at least 300 feet?

MR. CARBERRY: When CL&P was acquiring this right-of-way in the late 1960s for the purpose of building the first 345 kV line, the one that's there now, and these properties that you were speaking of in Mansfield Hollow are under federal control, there's not an eminent domain authority for CL&P to acquire more land than it needed for that project the first time, the very first project, and this was all we were able to negotiate with the Army Corps of Engineers at the time is 150 foot wide right-of-way.

MR. ASHTON: Have you had any luck in negotiating with them -- I assume I'm using -- this is an

assumption here, have you been negotiating with the Corps at all to increase the right-of-way so you can build a second circuit?

MR. CARBERRY: Oh, yes.

MR. ASHTON: And what is their preferred -- this came up, I know on the road trip and I apologize for getting -- did they have any comments about any increase in right-of-way? Are they opposed to it? I recognize that there might be some visibility savings there.

MR. CARBERRY: I wouldn't say that they're opposed to an expansion of right-of-way, they're evaluating the very same three alternatives that were presented to you in Section 10 of the application. They have to -- they have a real estate division and then they have a permitting people who have to do the Section 404 permit under the Clean Water Act.

MR. ASHTON: Do they have any opinion on -- I'm using a term here deliberately, accepting a concept of at least separate structures for the 345 as opposed to building double circuit 345?

MR. CARBERRY: Oh, we have not presented them any alternative that would have the two circuits sharing the same set of structures. That's not on the

table.

MR. ASHTON: Okay.

MR. CARBERRY: The question is, what type of configuration would we build for the second line? And what right-of-way expansion would be required to build that line?

MR. ASHTON: Okay. If to Delta -- you have an existing structure, if a Delta structure was added to that would that be acceptable to the Corps?

MR. CARBERRY: I believe you're referring now to the first segment of the two where the existing line is Delta and the right-of-way is 150 foot wide and that Delta is centered in that right-of-way --

MR. ASHTON: Right.

MR. CARBERRY: -- to build another Delta line alongside of it we would need to expand the right-of-way there by, I believe it's 85 feet. And that's part of what is referred to in the application as the 11 acre, 11.2 acre -- 11 acre expansion option. And right now, our understanding with the Corps is that their preference amongst those that have been presented to them is not an option, but is the option that has a narrower right-of-way expansion so that we would only be able to build a vertically configured line there and that saves that much

additional right-of-way expansion.

MR. FITZGERALD: If I could just interrupt for a moment? Exhibit 6 to the Carberry case, etcetera, testimony has a cartoon illustration of the different options that you might find helpful to refer to as you're talking.

MR. ASHTON: Thank you. Was there any consideration given to a restrained tangent structure where the tension insulators were anchored so that they couldn't swing horizontally at the pole? And, does that have any effect on the requirements of right-of-way?

MR. CARBERRY: Well, I would say that we're talking about putting two lines parallel together here. The spacing that we want to keep them apart, the nearest conductors of either line, is not just for a blowout under wind force as your referring to, but also for people to work live on either line. To be up in the air with aerial lift equipment, perhaps hot sticking one line with the other line behind them and trying to make sure that we maintain an adequate separation distance between the two circuits to make that safe.

MR. ASHTON: Well, let's go with that slowly. If the present circuit is on a Delta structure in this location, the proposed arguendo -- the proposed

structure for the second circuit would also be a Delta. If both circuits operated on a restrained -- with restrained insulators, you could not operate an aerial lift to work on those structures?

MR. CARBERRY: I'm saying that the spacing that we've designed now between the nearest conductors is as low as our people want to go in order to work aerial lift equipment in between them, when working on one circuit live with the other circuit live behind them.

MR. ASHTON: So you're saying under -- and these are words I'm putting in your mouth, tell me I'm wrong. You're saying that under no circumstances can the conductor separation be less than 35 feet, is that correct?

MR. CASE: Correct.

MR. ASHTON: I'm sorry?

MR. CASE: There are 35 feet between them and any reduction in that would limit our ability to maintain those circuits live line in the future, which would require, you know, extended outages on both circuits, which becomes much more problematic for maintenance.

MR. ASHTON: Tell me if there is any other instance on the 345 system where you have clearances

between phases of less than 35 feet or clearances to ground of less than 35 feet?

MR. CARBERRY: The typical spacing between parallel lines that are horizontally configured is 33 feet between the nearest phase conductors. Remember as well that, you know, they're horizontally configured so the conductors are all at the same level. We don't have to send an aerial lift vehicle 40 feet above a set of conductors to work on another set of conductors. So 35 is where we are with these lines that are more vertically configured or Delta configured.

MR. ASHTON: If you had a vertical configuration, double circuit, one structure, what would be the interface spacing, the horizontal facing between conductors?

MR. CARBERRY: That is typically 30 feet to be working on either circuit from the outside.

MR. ASHTON: So you're working 15 feet out of the center of the pole, is that right?

MR. CARBERRY: If you're on the pole you can be working from 15 feet away.

MR. ASHTON: And why is that --

MR. CARBERRY: In an aerial lift vehicle you'd be working perhaps outside the conductors, between

there and an adjacent line.

MR. ASHTON: -- is this a national standard?

MR. CASE: That's a CL&P maintenance standard, the 35 feet.

MR. ASHTON: I'm sorry?

MR. CASE: That is a CL&P maintenance requirement.

MR. ASHTON: There's no NERC counterpart?

MR. CASE: OSHA, correct. There is an OSHA requirement for spacing in there.

MR. ASHTON: For spacing?

MR. CASE: Between conductors of adjacent circuits.

MR. ASHTON: These are restrained or unrestrained?

MR. CARBERRY: Regardless of restrained or unrestrained, you'd still have the same requirements.

MR. ASHTON: Okay.

MR. CARBERRY: So the summation of that is if we did restrain them we don't think we'd reduce the clearances between the circuits to begin with. We'd keep the right-of-way expansion the way we proposed it.

MR. ASHTON: Okay. I'm not sure whether

this belongs in this panel or in a later panel and I want to talk a little bit about the maintenance to the right-of-way and access roads. Mr. Fitzgerald, can you give me a little guidance on that?

MR. FITZGERALD: I'd say you've got the right panel here, with the exception some of your questions may need Tony Johnson who will be here tomorrow.

MR. ASHTON: Okay.

MR. FITZGERALD: And he can clean up.

MR. ASHTON: I was a little troubled to read the letter from the town of Thompson on right-of-way access roads, washouts and so forth. What is your policy on maintaining roads to prevent washouts? Don't fight for it.

MR. CARBERRY: I think you're going to need Mr. Johnson for that question because you asked about policy and he's in the maintenance business.

MR. ASHTON: Defer Mr. Fitzgerald?

MR. FITZGERALD: Yeah. Mr. Carberry feels he doesn't know what the policy is. Can you tell us what the practice is?

MR. CARBERRY: I do not know.

MR. ASHTON: Okay. I'll hold that off.

Mr. Bailey, I want to pick on you for a second. Much has been said about EMF and people have a tremendous forgetter, and I'm not sure we've ever really gotten at the basics of it. EMF is an ionizing or a non-ionizing form of radiation?

DR. BAILEY: Non-ionizing.

MR. ASHTON: And what is non-ionizing radiation, as opposed to ionizing radiation?

DR. BAILEY: This would be all -- it's basically --

MR. ASHTON: I think we need a little chemistry and physics thrown at us here.

DR. BAILEY: -- okay. We have the electromagnetic spectrum that involves frequencies of fields going from static fields, which are non-time bearing to 60 Hz fields and then going up into higher frequency fields, the visible light and microwave regions. And then at the upper end of the visible light spectrum you have ultraviolet light and ultraviolet light at the far end has sufficient energy to break bonds of molecules and as you go up in frequency you go on to x-rays and cosmic rays. So the distinction between ionizing and non-ionizing radiation is ionizing radiation involves the capability of breaking these bonds and by

exclusion, non-ionizing radiation at lower frequencies does not.

MR. ASHTON: Is it fair to say in simplistic form, I am not a physicist, that an ionizing radiation, when a bond that you spoke of is broken, you create a particle, which has an electrical charge on it, which goes floating around in the body, or whatever it is, and that can lead to a further electrochemical reaction?

DR. BAILEY: Yes. And the nature of this interaction is so energetic that you will have damage to cell membranes, proteins, and so on.

MR. ASHTON: Right. And that was where I was going to go. So it's the ionized particle is a bullet floating around the picks a target and causes damage, one way or another, is that fair to say?

DR. BAILEY: Yes.

MR. ASHTON: And a non-ionizing radiation doesn't do that?

DR. BAILEY: That's correct, sir.

MR. ASHTON: Does non-ionized radiation cause genetic mutation for example?

DR. BAILEY: The -- as we just described it from a physics perspective, it's not clear how that

would occur. There have been, however, many biological studies done in which scientists have attempted to confirm or disconfirm that theoretical position in physics as to whether electric or magnetic fields at various frequencies would be capable of, let's say, damaging the DNA of cells. Or that would be -- or chromosomes. And the weight of the evidence is that it does not. Barring there are some reports in the literature that have not been confirmed that very high levels of magnetic fields in the, oh, 30, 40 gauss range combined with some other exposure may have an interactive effect. But by themselves, there is a very general agreement that exposure to 60 Hz electric or magnetic fields does not cause genetic damage.

MR. ASHTON: I'm getting some advice on the cheap here. We have a host of dockets that relate to cell towers, telephone cell towers. And although we have no -- by federal law, no jurisdiction over health effects, we're often bombarded with comments about the effects of radiation from these cell towers. Are we talking about the same kind of thing in that regard, non-ionizing radiation, is it essentially the same thing?

DR. BAILEY: These would be fields in the megahertz or gigahertz range and they are also non-

ionizing radiation and I would point you to a recent review that was published just in the last few months by --

MR. ASHTON: A British study?

DR. BAILEY: -- by the Health Protection Agency of Great Britain that is a very extensive, you know, two and one half-inch thick summary of the status of research on radio frequency --

MR. ASHTON: I have a copy and I've read it. My question is, are the results of that -- do the results of that study have any applicability to the issue before the Council today?

DR. BAILEY: -- I would submit that it does not --

MR. ASHTON: Okay.

DR. BAILEY: -- because of the differences in interaction of electromagnetic fields with objects, including the human body, and other organisms that you would not want to draw conclusions about health and safety issues of radio frequency fields by looking at studies of 60 Hz fields and vice versa.

MR. ASHTON: Okay. I'll move on then. I thought I might get some -- be able to wrap this up in a nice package with a ribbon on it, but I guess I can't.

It's going to be a messy arrangement. Mr. Chairman, that's all I have right now. I did not expect to get quite this deep into the issue today. All of my stuff is at home.

CHAIRMAN STEIN: Well, fortunately for you, maybe not the rest, you will have another opportunity.

MR. ASHTON: Okay. I don't want Ms. Mango to feel that I'm ignoring her, either.

CHAIRMAN STEIN: Okay. So we'll move on then. Senator Murphy?

SEN. MURPHY: I have no questions at this time, Mr. Chairman.

CHAIRMAN STEIN: Dr. Bell?

DR. BELL: Thank you, Mr. Chair. I do have some questions following up on Mr. Ashton's, beginning with the EMF. But a few of my questions start with what I think is Mr. Carberry's territory more than Dr. Bailey's territory. So, can you tell us, Mr. Carberry, whether Massachusetts, different from Connecticut, specifies a buffer for EMF for protection from the public?

MR. CARBERRY: We have some recent experience, as you know, with a case in Massachusetts.

And no, there is not such a thing.

DR. BELL: So when you're dealing with Massachusetts, people in Massachusetts, you may have technical reasons for isolating the lines on the right-of-way, construction reasons and so forth, but there are no health protection standards that say you can't construct within certain areas of certain distances of focus areas and so forth?

MR. CARBERRY: No. That's correct. I will tell you that Massachusetts in the recent proceeding that we were involved in was very much looking over the shoulder of Connecticut and trying to reevaluate their practices. So in fact, in the Greater Springfield Reliability Project in the end they ordered that we spend $7,000,000 more on that project to do the equivalent of magnetic field mitigation as the Connecticut Siting Council would do it. And that consisted of for the most part we had multiple circuits on that right-of-way, typically a 345 kV line was being added where there were two 115 kV lines, sometimes three 115 kV lines and in some cases one 115 kV line.

So they wanted us to put the 345 in the best place on the right-of-way that we could, generally, that meant more to the inside of the right away rather

than the outside. If that -- that was a no-cost option in some cases, so we offered that pretty quickly and in quite a number of locations they asked us to build that new line accommodation 345/115 kV line on a single line of steel poles 20 feet taller than we otherwise would have and I want to say Ken, somewhere between 10 and 15 areas along the project route. We had a relatively narrow right-of-way in Massachusetts. It was typically 150, 160 feet. Every line on the right-of-way had to be vertically constructed to squeeze it in, and there were over the course of 23 miles in Massachusetts, something like 600 homes within 300 feet of the right-of-way at one edge or another. So it was in the clusters where that housing density was the greatest that they asked us to build the line 20 feet taller. And that's really where the $7,000,000 is going to.

DR. BELL: Thank you. And could you give us a comparable set of comments regarding Rhode Island?

MR. CARBERRY: Well, I don't know that -- the most recent project involving a 345 kV line in Rhode Island was the Rhode Island Reliability Project. I am not familiar with every detail of that. I'm not aware that they have a standard, or that they ordered it in that particular case and any EMF mitigating actions.

They will of course in this case have an application at some point for the Rhode Island portions of the project. It's a very rural portion of Rhode Island. This project will go to the northwest corner, so it does not have great housing density to it. I wouldn't expect that they would order anything.

But each state is looking at what the other is doing. Massachusetts, for decades had a so-called 85 mG reference level based on some case back in the 1980s, and they still look at that, but it's not for anything that they say was a guideline. They kind of are interested in what the before case is and what the after case is and how can they make the after case closer to the before case for reasonable expenditures.

DR. BELL: Thank you. Do you know what -- for the focus areas that are identified in 424, and the question of what constitutes a residential area, do you happen to know what the zoning lot size required is for each of the focus areas? Anybody on this panel?

MR. CARBERRY: I know I don't know it. I don't think we have it handy.

DR. BELL: Okay.

MS. MANGO: It would be at -- the zoning designation is on our maps in Volume 9, I believe, and we

could check that because the zoning regulations are all part of the case, it was part of the bulk filing.

DR. BELL: Yes, that's a good point. So I would be interested in knowing just for the sake of the record.

MS. MANGO: For the focus areas?

DR. BELL: Yes, for each of the four focus areas --

MS. MANGO: Okay.

DR. BELL: -- what is the zoning requirement? Now, back to Mr. Carberry. In letters from the Green Dragon Day Care Center, and I believe that lady spoke at one of the hearings, and perhaps from other parents of children who went to that day care center, references were made to shocks that were felt on rainy days and I haven't seen any statement in the record that responds to that. I'm sure that you have responded to that, perhaps in personal communications, but we don't have anything in the record. Assuming that that's some kind of an electrical discharge, could you comment on the possibility on your -- how you read those statements and how you might respond for the record?

MR. CARBERRY: Sure. I will say that after Diane Dorfer (phonetic) spoke at the Council's

local public comment hearing I did call her and try to get more information from her about the experience and try to offer to come out there and see if I could help to mitigate those experiences. She felt that she had enough information and didn't invite me out, so I haven't personally been to the property to check myself.

But I assume that what she's talking about experiencing these are electric field effects. Beneath transmission lines there's an electric field in the right-of-way, it's not of a constant value, just like magnetic fields, it varies across the right-of-way and the electric field numbers before and after are in your record in our application filing.

In order for a person to experience a discharge, not unlike walking across a rug, touch a doorknob sensation that you can get, you need two objects that are in an electric field that's sufficiently high in value, and you generally need the two objects that are going to make contact with one another have different connection to earth. And that's mostly through your shoes, mostly through your footwear. So if you have someone who was wearing, you know, rubber sandals or rubber boots of some sort that have some insulating characteristics, and another person nearby does not,

maybe walking in bare feet and has better connection with the earth then the person who was more insulated from Earth has a charge induced on them just like you get on you when you walk across the rug and if you touch this other object, and it could be another person or it could be vegetation, you know, there's a tiny equalizing charge, a discharge between the two.

Generally, the electric field levels that we have under 345 kV lines, this is hard for most people to notice. She basically said that it was noticeable to her or the children that she works with on humid days, probably with back of the hand contact, light contact or ankle, something, a piece of vegetation hitting you in the ankle when you're wearing some boots of some sort. And, you know, some people are more sensitive than others so it is distinctly possible that some of her people are experiencing that when many people would not.

The National Electrical Safety Code gives us, you know, requirements in regard that limit our electric fields on a right-of-way and we're certainly within those National Electrical Safety Code requirements, but such discharges are still possible. I offered to try to give her some hints as to how to avoid them with footwear or places where you cross the right-

of-way better at lower field levels than others, or even to use some screening of some sort if she wanted to. She has not taken me up on that offer.

DR. BELL: Thank you Mr. Carberry. Dr. Bailey, could you comment on the overall levels of magnetic fields in the focus areas? In other words, how would you characterize the levels that we're looking at in terms of before and after compared with the levels of fields you've addressed in other projects, or in occupational situations, or just give us a sense of context, looking at what is going on in the focus areas?

DR. BAILEY: Well, we could --

COURT REPORTER: Microphone.

DR. BAILEY: -- we could turn and have Mr. Carberry go specifically to the focus areas and review those, but I think generally for a 345 kV line the edge of the right-of-way values that we see here throughout the project are generally quite low and, you know, on large fractions of the right-of-way the field values are at the levels that you might measure underneath the distribution line at the edge of the right-of-way. And so, I would say generally, this project would fall into the lower range of field levels that we would see at the edge of the right-of-way.

DR. BELL: Thank you.

MR. CARBERRY: Can I follow up with that Dr. Bell? Is your question about electric fields still?

DR. BELL: I actually was just asking about magnetic fields. But if you want to throw in electric fields, be my guest.

MR. CARBERRY: Okay. I assumed you meant that because of your previous line of questioning. But, you know, 345 kV lines in this country, typically the highest electric field you'll find beneath them is on the order of 5 kV per meter, sometimes 6 if you put two lines together and don't phase them in the best way. The 500 kV lines, there is many miles of that in this country, they generally run up to 8 kV per meter beneath them. 765 kV lines, quite a lot of that in this country as well, 10 to 12 kV per meter is the maximum value on the right-of-way. And the value that you achieve at the edge of the right-of-way is a function of how wide the right-of-way is, so typically, the 500 kV line or the 765 kV line does have a wider right-of-way, then 345 kV. But still, the electric fields are a little higher then a 345 at the edge of the right-of-way generally.

DR. BELL: Thank you.

MR. FITZGERALD: Can I have a moment?

DR. BELL: Sure.

MR. CARBERRY: Mr. Fitzgerald was asking if I could also amend Dr. Bailey's answer with respect to magnetic fields. And you're familiar with some other cases as well that have been brought before you of the levels at the edge of the right-of-way. Our magnetic field levels with regard to many other projects are similar to or lower than what you see in many other projects. In the Massachusetts case that I talked about before, Greater Springfield Reliability Project, many of our predictions on the edge of the right-of-way where in the 40 to 70 milligauss range at the edge of the right-of-way. And here we sometimes see a value as high as 20 or 28. But on the other side, you know, less than 10 typically. So, at least in our recent experience what we see on this project is on the low side of what we have seen.

DR. BELL: Thank you.

CHAIRMAN STEIN: Excuse me. I just want to say for the record that Mr. Wilensky, a member of the Council, has joined the meeting. Thank you.

DR. BELL: Dr. Bailey, for the sake of the record, could you describe what you think is most notable, if you see anything notable, in terms of the

advances that have happened between your earlier report on Docket 370 as to advances in scientific knowledge then and now? I'm not freezing that precisely in the matter of dates, but I think you understand what I mean.

DR. BAILEY: Yes I do. And I think everyone is aware that science is an ongoing process and research in every area and EMF research is no different. There have been, since the Middletown/Norwalk docket, a considerable amount of research that's been published. We have a review in the filing that updates the research from the previous period. And I think the main focus in this whole decade has been on the review of the scientific research by the World Health Organization that was published in 2007. Since then, and that is approximately the same timeframe as the Siting Council best management practices, since then there have been probably eight or nine different reviews of the scientific evidence.

And despite the fact that there has been a lot of additional research in the areas of epidemiology and experimental studies, the evidence still continues -- while it's closed off a number of areas of interest, so for example, in the early days, there was considerable amount of interest in the potential mechanism by which

magnetic fields might lower a neuro-hormone called, melatonin, and that would increase the potential risk of certain types of cancer, most notably, breast cancer. And because of that experimental -- some really experimental work, there was concern that there might be a risk of breast cancer from exposure to magnetic fields. Research has gone on both an experimental area and epidemiology area to the point where the World Health Organization 2007 Review says, basically, in our opinion, there is no relationship between magnetic field exposure and breast cancer.

So that is an example of where research has advanced to give a very clear conclusion. In other areas, other types of cancer, there have been questions raised and by and large continuing research has not supported the idea of there being association between magnetic field exposure and these other types of cancer. The one area that continued research has not fully resolved is the associations that have been reported in previous years between estimated long-term exposure to magnetic fields and childhood leukemia. The difficulty there is that leukemia is a very rare disease, fortunately, and also long-term exposures above, say 4 mG, are also very rare. Several percent of the

population, perhaps. And so it's been hard for investigators to identify a population of children that has -- that is large enough and has high enough exposures to resolve questions about, is there a possible association at very high levels of long-term exposure?

We have made some progress in addressing this, but there has not been a study since 2006-2007 that has evolved -- well, let's say since 2010, that has involved long-term studies of personal exposure that would've clarified this. We have some smaller studies, for instance, there was a study done in Northern California, Dr. Patricia Buffler (phonetic) did a case control study in which she compared the exposures of children with leukemia in children without leukemia and did not see an association.

So we have this growing body of evidence, but none of this evidence is -- has a sufficiently large population with sufficiently high exposures to completely rule out the possibility that there might be an association.

DR. BELL: Okay. A couple of follow-ups to what you've been saying. First of all, in this long period of what you call a decade, say we'll take a decade, but we could look longer, during that time has

there been any increase in the general incidents of childhood leukemia, or a decrease, or about the same?

DR. BAILEY: I think it's still about the same as what Dr. Cole and I reported in the Middletown/Norwalk hearings. And that there's not other indications that would suggest that continued electrification or growing use of electrical devices that produce 60 Hz fields is a relationship to health.

DR. BELL: Okay. And I'm interested in what's driving the research mainly in this area. You say in your update that, of course, there are many other types of research into not only leukemia, but breast cancer and brain cancer and other cancers that you deal with in your report. And so the studies that have to do with possible relationships with magnetic or electric fields is only a small subset of the ongoing research. But given that the ongoing -- well, that this particular subset is still being studied, what are the drivers for this body of research on the association with electromagnetic fields or electrical fields? Are we talking about funding governed by regulatory bodies within states, or what are the primary drivers?

DR. BAILEY: I think there's several drivers. One is that having identified a topic of public

health interest that is raised in many hearings on the construction of transmission lines, or other facilities, and that continuing research has not yet, you know, reduced the uncertainty to, you know, a vanishingly small level in this particular area. So research has continued from a scientific perspective and that's with regard, particularly to the epidemiology studies. The thing that -- and in 2007 The World Health Organization made recommendations and gave different priorities for research in different topics and in a number of areas scientists, funded by health agencies and other organizations, have conducted research to address those gaps in research. Despite that, the conclusions have not changed over this period of time.

The second driver for research is more social/political in nature, and that is that for a variety of reasons. Research on electromagnetic fields began in a small part in Europe and then to a much greater extent in the U.S. in the 1970s on upward. The U.S. has done its research program at the federal level. The U.S. rapid program, as you're aware, he goal was to collect $65,000,000 to answer the question that Congress asked about, is there health effects from exposures to transmission lines, distribution lines and appliances?

And the National Institute of Environmental Health Sciences, the National Academy of Sciences, and other U.S. reviews came to the conclusion that they could not find evidence that would support a causal relationship. Obviously, there are some unanswered scientific questions.

What happened though during that period there was no research at large volumes being done in Europe or in Asia and so as ideas travel around the world, there's all this research that's been going on here in the U.S., scientists and politicians read, and other countries read this and say, you know, we should look into this. There is a tremendous amount of tribal territorialism in here in that agencies are not all uncomfortable in looking across the street at what their neighbor did, and trusting that they have to go out and do their own research to satisfy themselves in their own country as to whether there is a problem or not.

And so, after a large part of the U.S. funding was completed, Europe, the European union took up the research effort and sponsored a number of very large research studies, some of which are continuing today, but most of them have wound down, and quite a number of reviews. So, for instance, the European Commission,

since about 2005, on a yearly basis has been issuing updates to its reviews of research on electric and magnetic fields at power line frequencies and also at radio frequencies.

The Health Council in Netherlands, another agency, has been not active in supporting research very much, but has on a sort of biannual basis been issuing updates and reviews by its expert panel on the status of research. And then, you know, Asia has begun to come in, so you find scientists in the Middle East and Asia were going back and doing studies that they think might contribute. Unfortunately, there is such a, sometimes a lag or a gap in terms of information and technology available, that oftentimes these studies from Asia and the Middle East contribute little or nothing to our knowledge because of problems with the instrumentation it was taken to characterize exposure or produce the exposure or other scientific issues that are not specific to EMF necessarily. And so you see this sort of wave of research sort of going around the world that was largely in the early days mostly a U.S. phenomenon, but has gone elsewhere.

DR. BELL: Thank you. Just a couple of more technical questions, perhaps. In the exponent

report it's mentioned that there's a general background level of one to two milligauss away from appliances within a home. That's in sort of the introductory educational material. And then later, when discussing specific research studies you discuss exposures for each one of X or Y milligauss, which differs between studies, but typically greater than one milligauss or greater than three to four milligauss, or something like that. My question is simply, for a given study if they're looking at the cutoff point of greater than one milligauss, or three to four milligauss, is that in addition to the background one to two milligauss or is that including the background of one to two milligauss?

DR. BAILEY: For epidemiology studies of human populations, those -- if the exposure is estimated by measurements that would include background levels from all different sources. If that exposure from a power facility was done by calculation, then that would only include the contribution of the power line to a person's exposure at a particular location. And that raises some problems because, as you're aware, the fields from different sources can interact with one another and sometimes, you have additions, and sometimes you have cancellations of the fields from different sources. And

so it's a little bit like trying to look at what's the role of salt in your sandwich and disregarding the salt in all of the other parts of our diet to be looking at just calculated values from a power line.

DR. BELL: Okay. I understand. Thank you. There's a point in your report which paragraph says, recent studies confirmed that controlled selection bias appears to be operating.

DR. BAILEY: Can you just --

DR. BELL: It's page 30 --

DR. BAILEY: -- okay.

DR. BELL: -- of the appendix, 7D, is it? I'm not looking at it myself, but my notes say page 30. Are you seeing that? It should be in the middle of the page somewhere.

DR. BAILEY: Yes. It's right in the middle of the page.

DR. BELL: Yeah. So I generally -- I understand what control selection bias means, but for the purposes of the record, and just with reference to the studies that -- you cite two studies in that paragraph. I referred to. Could you give us an example of controlled selection bias, what that might be for instance?

DR. BAILEY: Sure. Most of the studies that have been done of childhood leukemia have been of the case-control design in which you have two groups of children, a group of children with leukemia that have been assembled in a particular place over a period of time, and within a certain age range, and then those children are matched to a control group that has been selected in some way. The most common way for that group to be selected in some studies is by random digit dialing, where you take the telephone number of the case child and you scrabble the last four digits and you call that number and you ask the person that answers, do you have children? Yes. You know, how old are your children? Would you agree to participate in the study looking at this topic? And then you assemble this population of control children who are from the same area, the same age as the case children, and then you systematically compare the exposures of these two groups children.

Now, the problem comes about is that if your control selection process doesn't representatively sample or represent the population that the cases were drawn from then you can get systematic differences in their exposures that have nothing to do with the disease,

that it has to do with your not really comparing the same groups. So an example comes up of this, is it goes back to one of the very early studies by David Savitz (phonetic) where they did this random digit dialing, and it turns out that there is evidence that people who tended to say, yes, I will participate in the study and have my children participate and you can come out and take measurements at our house, or you could do calculations, were a different population of people than those who said, no thank you. And you can imagine why these differences in response rate might occur.

So, for instance, imagine someone who is out of work, has several children, busy trying to keep the family together, and somebody calls up and says, would you like to participate in this study, you know, they're going to hang up the phone. On the other hand, someone -- you call a house where, you know, it's a two parent family and one of the parents has a lot of time, they may have some kind of sort of scientific or academic interest in this topic, they'll say sure. So what has been shown in a number of studies is this kind of a systematic difference between the people who agree to be the controls and the people who just by chance their children develop cancer of one form or another. So

that's the type of problem that comes in whereby you have this systematic bias where the groups are not really comparable in some way or another.

DR. BELL: Thank you. Those are my questions, Mr. Chairman.

CHAIRMAN STEIN: I think now we'll break for lunch. So we'll come back at two o'clock.

(Whereupon, a 60 minute lunch break was taken.)

CHAIRMAN STEIN: We'll resume the hearing on 424. I just want to make it clear that this afternoon, because of the witnesses that we have, I guess a witness we don't have -- we will not be taking up the topics of need or non-transmission alternatives, that will be done at a subsequent time for those here. So we'll continue with the Council's cross-examination. Mr. Golembiewski?

MR. BRIAN GOLEMBIEWSKI: Thank you, Chairman. I just have a few questions. Ms. Mango, how are you doing? I looked at your -- are we good? Okay. I looked at your testimony and it seems to cover most of the areas I'm interested and concerned with. The one thing that you left out, which I feel strongly about, is invasive plants in right-of-ways. And so I guess my

question to you is, have you looked at the current right-of-ways and percentage of invasives there currently and what is the likelihood of these to invade the newly cleared and disturbed areas?

MS. MANGO: Well, I'm disappointed you thought that we left this out. And in actuality, invasive species is an issue that we are all concerned about. And typically what has happened is we've left the invasive species analyses to the D&M plan phase because we know that in filing our applications for DEEP 401 water quality certification, and also the Section 404 permit with the Army Corps that invasive species control is a hot topic.

And first, let me just say that we just filed, I guess end of May, I guess it would be last week, right after Memorial Day, our Section 404 permit application with the Corps and in that we have what we call a wetland invasive species control plan. And in that plan we catalog the species known to inhabit wetlands that are of concern. And we have a table that lists every wetland, as well as whether that wetland currently contains invasive species. Now, this particular plan is for the project as a whole, so it involves some national grid work and information for

Rhode Island and Massachusetts. But we do list all of the 227 wetlands along our right-of-way in Connecticut.

I did not bring that document with me, but I will say that what we did in that plan is we cataloged everything and there are large stretches of the right-of-way they do appear to have more invasive species now that are fairly characteristic. For example, up in Thompson, we have large areas where there's -- I think it's pretty much common reed, fragmities, we have some areas of buckthorn, other areas where multifloral rose or barberry is everywhere. And so, what we will do is work with Northeast Utilities right-of-way management program and they'll have a long-term plan for controlling that.

The other side of that is during construction, we will have a wetland invasive species control approach, which would involve probably washing equipment or -- I think what we're doing now in GSRP is like air blowing it, we don't wash it, that would just create more water resource impacts. So yes, we are concerned about it, and we have just not included it in this particular application because we typically leave it till a later phase.

MR. GOLEMBIEWSKI: Okay. A question with the Army Corps. I know there was some comments in here

as to mitigation, wetland mitigation plans. Is there any planned wetland compensation in the Army Corps application?

MS. MANGO: What we did for the Army Corps is because we also know that once again, Connecticut DEEP will weigh in heavily on this, and so what we -- and because we have a project in this case that involves the national grid, who has to deal with both Rhode Island and Massachusetts, where those agencies weigh in on wetland mitigation as part of their, you know, their environmental protection agencies weigh in on mitigation in the states.

So what we did in our Corps application is we have a conceptual compensatory mitigation plan, if that makes any sense. And what we do is, we say we know we need to compensate for the wetland impacts that we create. And we basically have three categories of -- it's more than wetland impacts, it's water resource related impacts. So we have permanent fill where we have a structure or an access road in a wetland, and we can't avoid that for whatever reason. Then we have temporary wetland impacts, or even to streams where we have a temporary access road, or a crane pad pulling site, which we have to put within a wetland, but that will be

removed. And then we have secondary impacts where we must cut a forested wetland, and I think we have about 50 acres of that here in Connecticut and those forested wetlands will be permanently converted to shrub scrub or emergent marsh because of the separation from the conductors that will be required.

So with that in mind, we tallied up our impacts for each state. And in Connecticut, you know, we came up with what we would have to compensate for. There is Corps of Engineer requirements for two to one, three to one, whatever the requirements are specific to permanent, temporary, or secondary impacts. And then in the Corps application, we sort of just said conceptually what we would do. For example, in Connecticut we're probably looking at some kind of restoration, wetland restoration, enhancement, probably not wetland creation. Because as I understand it, DEEP is sort of going away from that and so is the Corps, so we lay out what we were proposing to do, but we will save for the 401 application any specifics.

And I should also say that we looked at about seven possible sites for compensatory mitigation and I think right now we're pretty much down to one that's a pretty good site near the Quinebaug River. So

all of the details will be in the 401 water quality application.

MR. GOLEMBIEWSKI: Okay. I had another question in regards to the conversion of forests to say shrub/scrub or open meadow or emergent. This widening I guess of the current -- or the clear zone in the current right-of-way, did you ever look at the say, contiguous tracks of forest land on either side of the right-of-way and did you ever take -- evaluate impacts to say maybe forest interior species?

MS. MANGO: Well, we didn't do that so much on this project. We have done that on other projects where there's less forest land, but what we have here is a situation in which we haven't encountered per se in the other transmission line projects I've been involved in, where we have one -- not always, but for the most part we have a 345 kV line and we're clearing next to it. You know, the right-of-way is not occupied by any structures that we're taking down, removing, rebuilding, no lattice towers that will be rebuilt as monopoles or anything like that, and there are some exceptions to that, but for the most part everything outside of our right-of-way is largely forested. Northeastern Connecticut is forested. So we didn't look at that

because we felt that there was enough habitat elsewhere so that although we are removing trees from wetlands and uplands, we are removing, I think it's something like 268 acres of forest land, they're so much other available forest that the species we feel would just be displaced. They wouldn't be, you know, extricated from the area or anything like that.

MR. GOLEMBIEWSKI: Okay. I guess I'd like to talk to, I'm not sure, maybe it's Mr. Carberry, about the different focus areas. And maybe just a brief description on why in a lot of the cases if you went to a Delta configuration you get some type of significant improvement on one side of the right-of-way and then you get an increase on the other?

MR. CARBERRY: Sure. As you know, when we put two lines side-by-side, each producing their own magnetic field, there's an interaction between those magnetic fields such that in some places there could be a partial addition of the two components, and in other places a partial cancellation. And the phase selection that you make of each line is important to that degree of which either of those happens as well.

So under the Council's EMF best management practices, we're asked first to look at no cost measures

to reduce magnetic fields in areas such as those we've identified as the focus areas. And so we've selected a best phasing for line currents that are in the same direction, which is what we expect on this project, and in fact for a portion of the project from Card Street to Lake Road, the currents in the two adjacent lines will be very similar, okay? And that is the best situation you can have for cancellation. Two lines with fairly equal currents as close together as you can reasonably get them, and you choose the best phasing and you get results that we presented in the application.

Now, if you change one of those designs to a delta configuration, the three conductors of that line are just in a different position with respect to each other than they would be it were, say, a horizontally configured line. And toward the north right-of-way edge, which is toward the right-of-way side where we're proposing that line in some focus areas, and the benefit of that is that it issues a better cancellation. First of all, I would say the Delta line in and of itself might produce a lower field directly beneath it than a horizontal line would, and as you move further away to the point where you reach the edge of the right-of-way the Delta line is producing a somewhat lower field there

than the two H-frame line situation would.

That exists at the edge of the right-of-way, but once you get, you know, 100 feet off of the edge of the right-of-way that reverts back to where there is either not much difference, or maybe the H-frame line is now the better arrangement. So it's not just -- you look at any one spot one is better than another, but this interaction of cancellation or addition exists in every spot and it's not the same answer to every spot. So the further off you get off the right-of-way to a point of interest, the Delta has not achieved a lower field at that spot then the H-frame would when it does at the edge.

Now, when you look at the other edge of right-of-way that's closest to the existing line, so that's still the horizontally configured line, we find that choosing Delta reduces the effectiveness of their cancellation interaction and on that side of the right-of-way, which is relatively close, that side, that edge is typically 85 feet from the center of the nearest line. Whereas, the north edge is much further from the nearest line, to the proposed line. And so at that distance, it turns out that the combination of Delta and H-frame leads to higher levels than two H-frames would produce.

So it is a very spot specific thing, but that's basically because the Delta puts conductors in different positions. We have still chosen the best phasing arrangement to make sure that we've got the best combination of that. But, you get different answers. And also, if you chose a vertical line design, that's another different answer.

MR. GOLEMBIEWSKI: Okay. Because based on what I've read, one of the focus areas is the Montessori School area. You looked at the Delta versus the H-frame. The H-frame actually was the better choice based on the EMF at the right-of-way edges, is that correct?

MR. CARBERRY: That's correct. In all of these focus areas we looked at the same alternatives in the field management design plan --

MR. GOLEMBIEWSKI: Yep.

MR. CARBERRY: -- making the H-frame line taller by 20 feet, changing the new line to a Delta line, increasing its height by 20 feet, changing the new line to a vertical line, increasing its height by 20 feet or building the new line as a split phase line with the basic choices of the field management design plan. And in focus area B, where you're talking about the school, if you were looking at the edge of the right away, or

something very close to the edge of the right-of-way, a Delta would produce the best management choice. It would have had a lower field at that point than the H-frame line.

MR. GOLEMBIEWSKI: Okay.

MR. CARBERRY: The school, the nearest one to the school, however, is 137 feet beyond the edge of the right-of-way and at that point the fields have become relatively low and there's very little difference between the two. The H-frame has a marginal benefit at that distance, and so we didn't see a reason to do anything. Why spend more money on a Delta line only to make the magnetic fields go up slightly? It didn't make sense.

MR. GOLEMBIEWSKI: I think it's for Ms. Mango. I noticed in the testimony that the access roadways are now proposed to be wider, I think some of the crane pad areas, is that based on some of the experience CL&P has had in recent construction?

MS. MANGO: The short answer is, yes.

MR. GOLEMBIEWSKI: Okay.

MS. MANGO: The long answer is that what happened, especially on GSRP, and not just in Connecticut, but Massachusetts, we found that when we provided a standard typical width, say, 20-foot impact

area for access roads, we did not account for turning radius of some of the large trucks bringing in the poles. We didn't account for things like having to cut down a slope, where we had to put an access road down a slope and meet a certain grade for safety and, you know, from a constructibility point of view, if you're in an upland it probably doesn't make a huge amount of difference, but if you're in a wetland and you have to ask for 10 more feet, you know, you don't want have to go back to the DEEP or the Corps of Engineers and redo your compensatory mitigation plan. So what we did is we had some of the guys involved in GSRP walk the interstate right-of-way and sort of give us an assessment. And in fact, there are going to be some areas where the roads would have to be maybe 30 feet wide, in their opinion, this is not final design, some areas where maybe the roads will be 16 feet.

But we didn't want to go into once again our Section 404 application, which we've now filed, underestimating. And so as a result, what we did is we worked hard to minimize permanent impacts to wetlands. So if you look at the table in my testimony versus what we had in the application, we've actually reduce the impacts, permanent impacts to like 1.1 acre from 1.5.

But we've increased temporary impacts by a lot. So I feel like we're erring on the conservative side, because at the end of the day when we're constructing the project we want to be heroes and say, oh, we're only impacting 20 acres temporarily. We don't want to say, we told to 35, but it's really 50. So that's basically the answer.

And just by way of comparison, I looked back on the Middletown/Norwalk project. And for example for that project, we filled two and a half acres of wetlands permanently, 45 acres of overhead line. So here we're filling -- we're proposing 1.1 acres of fill on about 37 miles. So we feel -- and we're in a much more remote area with more wetlands. So we feel like we've done a good job on the permanent impacts. And the temporary ones, well, they're temporary.

MR. GOLEMBIEWSKI: Okay. One last question. The project is supposed to allow for greater transferability along this east/west New England delineation. And so this project in Connecticut, you have Card Street and you have the Killingly. How are those -- how are those connected and how is, I guess if you want to go from east to west, how does that work through Connecticut?

MR. CARBERRY: So how are the existing

substations connected?

MR. GOLEMBIEWSKI: Yeah. How is -- how is it going to give us a greater ability to transfer through Connecticut in to other load areas, say, southwestern Connecticut?

MR. CARBERRY: Okay. So let's start from Rhode Island and work west.

MR. GOLEMBIEWSKI: Okay.

MR. CARBERRY: The existing 345 line that comes into Connecticut from Rhode Island and begins at the Sherman Road switching station, which is the site of the Ocean State power plant, and right upstream from the Ocean State power plant are quite a number of other large generators as well in south/central Massachusetts. So we have a source of power, if those generators are on and Connecticut is importing, that can draw power through Sherman Road down into Connecticut on the existing 345 kV line, which goes as far as the Killingly substation. At the Killingly substation, think of it as an exit ramp, some power can get off and enter the 115 kV system serving the towns in northeast Connecticut, okay? So some amount of power that has come in from Rhode Island can get off there and serve the local load. The remainder continues through, the next stop is the Lake

Road switching station, which is just across Interstate 395.

But, all it does at Lake Road switching station is join with the next 345 line, which goes from there to Card Street. And the Lake Road switching station is also a place where another large generating site, three generators, three large generators plug into the system. And so power from the Lake Road generators can either go east through Killingly into Rhode Island, or can go west towards Card Street, or even split and go both ways, okay? But the power that reaches Card Street -- Card Street is a substation that is a major hub in the CL&P system. There is a step down from there to the 115 kV network, just like Killingly, so they can serve substations that are connected from Card Street by 115 kV in that portion of the state, and it also steps down to 69 kV in that same switch yard. There are two 69 kV circuits that go from Card Street to the Mansfield substation, and one of them taps to a substation in Coventry. So all of Mansfield is largely served from that 69 kV source from Card Street, as is Coventry from the 69 kV source from Card Street.

And there's also 23 kV distribution out of Card Street as well. So, the immediate load in the Card

Street vicinity is supplied that power that has come into Card Street from whichever direction, but in this case from Rhode Island. There's also two 115 kV lines right down the hill to Willimantic substation right in downtown Willimantic, so the Willimantic area is also served from the Card Street substation.

So to the extent that we've imported more power into Connecticut than needs to be absorbed right there, it can continue on this 345 kV system from Card Street. There's a circuit that goes up to Manchester substation and Manchester is another major hub that is well interconnected with other parts of the system. And there's another line that was down towards Milstone where it will join power generated by Milstone and exit on other lines through Montville, through Haddam Neck. Lots of ways to get power toward the central part of the state.

But the general expectation is when you're importing power from Rhode Island a lot of it's going to be used right there displacing power that would otherwise have to come there from other parts of the state of Connecticut. Well, that other power can now go west instead.

So the project proposes to add -- by the

way, if you're importing power from outside of Connecticut, this is just one of the main ways that power can come into Connecticut. The path from Ludlow to Manchester substation, a 345 kV line is another. The new Greater Springfield Reliability Project line connecting Ludlow to Agawam and Agawam to North Bloomfield is another. And there's also the Tide in New York State. So those are the major interconnections. When you're importing power, if somebody gives you a number and says, this much power has been imported into Connecticut, on average, or on peak, some percentage of that has come in from Rhode Island. So they're depending on what power plants are on it. There might normally be about 30 percent, okay, coming in this way.

If we add a second line we're increasing the capability of bringing in power from that direction. The second line would basically parallel the first. The only thing it would do, is also connect the Killingly substation, it would just go right through Killingly but would otherwise do all of the same things that the first line does.

CHAIRMAN STEIN: Dr. Bell has a follow-up.

DR. BELL: Thank you, Mr. Chair. Just piggybacking on this question. We haven't looked at the

Rhode Island Reliability Project at all because it's not our jurisdiction and we certainly have a grasp that it's improving the system in Rhode Island. But my question is -- my understanding is that Rhode Island is planning some significant offshore wind. Would this project, the Interstate Reliability Project, allow -- in conjunction with the Rhode Island Reliability Project allow the east/west transport of power that's produced by a hypothetical wind farm? Or when you look at just the Rhode Island part of it, are they basically disconnected from offshore wind possibilities? Am I expressing that clearly?

MR. CARBERRY: Clear enough, I guess. I'm not very much -- I don't have any real knowledge of how the offshore Rhode Island wind would connect. But I'm assuming it's a transmission connection. The 345 kV system is the main resource within New England for sharing power east to west and west to east. And so Rhode Island -- the Rhode Island Reliability Project -- there's a 345 kV line in Rhode Island that goes down the central part of the state from a substation in North Smithfield called West Farnam and it goes down into Kent County at the Kent County substation. And so, that's right down the backbone of Rhode Island, if you will, and

virtually everything that's in Rhode Island is in one way or another connected through 115 kV systems back to that 345 kV backbone.

The Rhode Island Reliability Project is adding a second 345 kV supply to give it redundancy and to back that up. So a very strong backbone spine in Rhode Island, very reliable. And the Interstate Project is making another connection to the 345 line that we would build from Lake Road, heading into Rhode Island would not go to Sherman Road like the first one does, it would go right past Sherman Road and head to West Farnam, all right? So we would have a direct connection to the West Farnam substation, which also has these two direct connections down the spine of Rhode Island.

So any generating source in Rhode Island, has capability of getting power into the 345 kV system can easily be part of the import into Connecticut, as well as the import up into Massachusetts or for use in Rhode Island. We are increasing the market reach, if you will, with the system for generators in any of the three states to be able to have their power moved to the other states.

DR. BELL: Okay. I generally understand just to ask about the spine that you expressed in Rhode

Island, but that's a north/south spine, right?

MR. CARBERRY: Yes, it is.

DR. BELL: So -- okay. I understand.

MR. CARBERRY: Do you want to know how it gets east to west?

(Laughter)

DR. BELL: No. I'm just thinking that, you know, if you're strengthening the north/south spine that would suggest that if the immediate implication is that if you're taking something that's farther east and it goes into a north/south line then that's going to shoot it to Massachusetts and not west to Connecticut. But I understand what you're saying, there is a connection, and it can go there if that's where it's needed.

MR. CARBERRY: And I think you have to remember that this area, once we get to West Farnam, you know, West Farnam is connected up into this West Millbury, Massachusetts Sherman Road area, within that loop there's a lot of large generating plants, okay? And so fundamentally you have all of this power that can come to that hub and it can go where it's demanded.

DR. BELL: Okay. I see what I left out that you're now adding. Yes, it's those -- that cluster

of generating stations. Yeah. Okay. Thank you very much. Thank you Mr. Chair.

CHAIRMAN STEIN: Mr. Golembiewski?

MR. GOLEMBIEWSKI: Just one last question. I think for Mr., maybe, Case or Carberry. What is the status of the Hawthorne Lane right-of-way shift? I know the testimony has kind of left it in their hands that they're supposed to provide appropriate leasing or land easements -- yes, good word.

MR. CARBERRY: I may -- I think I'm going to turn this over to Mr. Mele to finish up, because he's been, you know, working with them more directly. I believe they have made progress in regard to -- with the town of course getting the conservation easement set up and working with their banks and with lawyers to see if the necessary arrangements can be made. And I don't think we're in a position today to tell you that they've got it done, but they may be able to get it done soon enough that you could consider it. I'll ask Mr. Mele if he's got anything more specific?

MR. MELE: Thanks Bob. Mr. Carberry is correct. We got an update from the Hawthorne residents' attorney last week and the conservation easement that -- the amended conservation easement that Mr. Carberry

mentioned was executed by the residence, to effected residents, last week and it's ready to be executed by the town of Mansfield. I believe they're on trajectory to sign that this week. There's also an escrow agreement that will replace that agreement, replace the amended conservation easement in escrow, along with some drawings. We're trying to get those signed this week as well. This is between the town and the residents.

As far as the agreements that we are working with the residence on, they've reviewed a draft version of those agreements and they have found them unacceptable. We have not executed anything yet, but they have reviewed those documents, and they found them acceptable and we're working with them to continue progress on that. They are looking and working with their mortgage holders for subordination as well. I believe one bank has agreed to that. I think they are still working with three other banks, there are four residents remember, three other banks they're still working with those folks for the subordination. They are making progress.

MR. GOLEMBIEWSKI: Great. Thank you. That's all I have Chairman. Thank you.

CHAIRMAN STEIN: Thank you. Mr. Wilensky?

MR. EDWARD WILENSKY: Yes. I wanted to ask on that, as you were answering some of the questions on Hawthorne Lane. Is there an agreement with the landowners, is there an agreement pending with the landowners for each one -- either your proposed line or some kind of an alternate line?

MR. CARBERRY: There --

MR. WILENSKY: Are you working with the landowners of Hawthorne Lane to come up with some kind of agreement that would be acceptable to them?

MR. CARBERRY: -- well, there is not an agreement per se. Mr. Mele just referred to easements that they have found that would be acceptable. If this were to be something the Council wished to order, or leave optional, those easements would ultimately become an agreement for example. But there's not an agreement at this point in time.

MR. WILENSKY: Is there a proposal -- and looking at this, there are various proposals that you have in the Hawthorne Lane area. Is there one proposal that you feel would lessen the EMF exposure, or could be -- which would be the best area on Hawthorne Lane?

MR. CARBERRY: The --

MR. WILENSKY: Because you talk about

various alternatives and it's hard to define which is the proper one and which is the one that would be acceptable, we'll say, to you, the applicant, and possibly to the landowners.

MR. CARBERRY: -- well, this is focus area C in Section 7 of the application and like the others, we considered all the same variations that I outlined before. It tolerates frame line, a Delta line, a taller Delta line, a vertical line, a taller vertical line, or a split face line. But we also in this area considered one or two other options in which we said, well, we won't stay on the same right-of-way, we will shift it. By the way, you can --

MR. WILENSKY: Where is it, 8A and B?

MR. CARBERRY: -- 8A and B in the prefiled testimony, in the CCM prefiled testimony, there is an aerial view of this area if that will help.

MR. WILENSKY: What page is that on?

MR. CARBERRY: It's tabs 8A and B in the prefiled testimony of Case, Carberry and Mele.

MR. WILENSKY: Maybe I don't have it here, but go ahead.

MR. CARBERRY: Okay. We found when we looked at -- by the way, so this is an area where we

looked at a couple of additional alternatives in the field management design plan that involve shifting the right-of-way, which we don't normally recommend doing, okay? In this particular case, a shift in the right-of-way means not only are you going to build a new line on the shifted right-of-way, but you've got to move the existing line out of the way first. So that invariably adds costs and it involves the complications of, well, now to build that new section of the existing line, I've got to take outages that I've got to arrange that can be difficult, it's something you would try to avoid if you can, if you're looking for the lowest cost alternative. So we found in focus area C that if you -- because they're homes on Hawthorne Lane are at sufficient distance from that north edge of the right-of-way that when you look at just the normal EMF best management practices designs, the H-frame line produced low fields and they were a good deal, it wasn't worth spending extra money on a Delta design to do anything any differently for example.

If you look at the field management design plan, our recommendation for focus area C is, just build an H-frame line on the existing right-of-way, okay? Now, the landowners are the ones that brought to us the idea

of shifting the right-of-way. Their interest is in large part to get the further reduction of magnetic fields if possible, but maybe more importantly, to preserve the trees, the portion of trees that are on the right-of-way that would otherwise be removed if we had to build a second new line on the existing right-of-way. So their interest is in preserving those trees so that that's a buffer for them, a visual buffer for them from their homes to the lines.

MR. WILENSKY: So you'd have to remove the trees --

MR. CARBERRY: If we build something on the existing right-of-way, we have to remove trees and that reduces -- it opens up more of a view from their homes to the lines on the right-of-way. Whereas, if we shifted the right-of-way so that the new lines were more over the cul-de-sac instead, the Hawthorne Lane cul-de-sac, then most of their trees would be preserved. In fact, some would be allowed to grow back where the existing line can be moved from. All right?

MR. WILENSKY: -- are you looking for new easements as well in that area?

MR. CARBERRY: In order for this -- this is land that they all control, all right? So their

interested is, can we make an exchange? Can we give you an easement for shifting the lines a little further over the cul-de-sac, and including over that conservation area that Mr. Mele referred to, in exchange for releasing some section of easement, an equivalent section of easement that's closer to them and shifting the whole thing a little further.

If you -- I know you don't have this in front of you, Mr. Wilensky, but you can see that our existing right-of-way makes a hard right turn at this location. And so, one can see --

MR. WILENSKY: I actually drove through that area when we were on -- when we were on that trip, we drove -- I think we drove through that area.

MR. CARBERRY: -- we were on that cul-de-sac, which you might not have been able to see through the trees to the structures themselves. But, there's a hard right turn in the existing line. The next line would have to make a hard right turn as well, so there's some appeal to straightening this out, you know, coming right across the cul-de-sac and making the line a little bit straighter, avoids an angle structure and the actual construction would be a little bit shorter, not a lot shorter, but you know, there's some -- there's something

there that saves a little bit of money.

But the net of this is that it does cost more, 1.3 million --

MR. WILENSKY: A couple of million dollars, is that --

MR. CARBERRY: -- approximately $1.8 million.

MR. WILENSKY: -- 1.8 million, yeah.

MR. CARBERRY: So we put it in the field management design plan, because that is a place where the Council considers whether they want to spend up to four percent more, and that's the target of the project's cost, on design changes that would mitigate magnetic fields. This is arguably an area -- a residential area, as you could consider spending some of that on and if you chose to do so, you could spend some of that money and shift this right-of-way. And we would be okay if you did that. It's their interest, we've agreed that -- they did everything that was necessary to make it a viable alternative that we would present it to you.

MR. WILENSKY: If that additional money was spent, the $1.8 million, would that be at the expense of just the Connecticut taxpayers -- ratepayer, not taxpayer, ratepayers, would that be amortized by all of

the states?

MR. CARBERRY: We expect that it would be a localized cost, that's what you're referring to, as would any of the EMF best management practice expenditures that you order. If you ordered four percent more project cost on EMF mitigating actions, we'd expect all of that to be localized. So it's just a matter -- it's just a matter of where you're -- how much of it you're going to spend and where you're going to spend it.

MR. WILENSKY: Mr. Carberry, do you think there's a proposal, or one of these proposals that would be agreeable to the landowners as well is to the CL&P?

MR. CARBERRY: Well, they know that they prefer the shifted right-of-way with both lines being vertically configured. We're not adverse to it, we just can't -- because we know it adds localized cost and because we have a reasonable option on the existing right-of-way and the magnetic fields are relatively low, even with an H-frame line at their residences we don't feel like we can recommend it to you, but we're not adverse to it. And as you can see, we've helped the landowners as much as we could to bring forward their proposal to you.

MR. WILENSKY: Okay. Thank you. Thank

you, Mr. Chairman.

CHAIRMAN STEIN: Mr. Lynch?

MR. LYNCH: Thank you, Mr. Chairman. I had three questions, two of them just got answered, the Delta design pros and cons in the Hawthorne area. But, I understand this morning you also discussed the driving range. Now, I wasn't here. Would someone mind rehashing that for me so I don't have to go back and read it?

MR. CASE: We've been working with the Cheney's on the Highland Ridge Golf Range to find a solution that would serve both interests of the range and the CL&P maintenance going forward. And we've taken what the town of Mansfield had recommended as a shifted right-of-way alternative. It would have required taking an easement that was not in the control of the Highland Ridge Golf Range. We modified the design slightly so that we stayed completely within the Highland Ridge property. We do require additional easement area in there, but we were also able to modify our designed such that it did not add any additional costs to the project to do the shifted right-of-way alternative.

We have also been discussing with the Cheney's and suggested another possible variation that would maintain the existing center line, where we would

take number structure 39, which is at the heavy angle from a Delta to a vertical that would take fewer structures within the range area there. It would raise the conductors higher for several of the phases, which was of interest to them. And we have submitted that to them, those two options, and ultimately will, you know, come out to a resolution which is a preferable alternative for them and we feel that we could construct either way.

MR. LYNCH: So they're going to be given a choice, in other words?

MR. CASE: They would be given a choice. For us -- for us there is no cost to Delta, there's no maintenance to Deltas.

MR. CARBERRY: I was going to go where his question was. As long as they're choosing something that doesn't add anymore cost on the ratepayers of Connecticut, and we're happy with it because --

MR. LYNCH: It seems with the two plans that they are not increasing and costs.

MR. CARBERRY: -- the ones that Mr. Case --

MR. LYNCH: Are they asking for another design that would increase cost? I guess that would be

my question.

MR. CASE: Their original proposal would have significantly increased costs and that's why we've been working with them to find something that meets their needs that doesn't cost more.

MR. LYNCH: Thank you for doing the Yogi Berra deja vu all over again.

CHAIRMAN STEIN: Thank you. I have just a couple of questions. On the Mount Hope Montessori School there was some correspondence, I believe it was relative to finding another site to possibly relocate the school. Could you just update me on the status of that?

MR. MELE: The specific agreement that was filed or just -- generally, we talked with the school in the middle of 2008 and early 2009 and they requested that we help them relocate. They had enough issues with the project and their concerns about enrollment as a result of the second line in the right-of-way and they decided they needed to relocate and they asked for our assistance and we agreed to evaluate the costs of that relocation. We spent most of 2009 working with them, with the school, members of the school board. We did come up with a couple of cost estimates, one for the value of their existing property and one for -- a very rough estimate on

what the relocated facility may cost to build and we shared that with the board. There was quite a bit of a gap between the fair market value of their property and the cost of building a new facility, we shared that fact as well. And in late 2009, the director of the school informed us that they were not interested in being relocated, they had reconsidered, and they were going to make a go of the current location.

CHAIRMAN STEIN: And so there's been no further discussion since then? So that's the end of that?

MR. MELE: We had discussed with -- the director that used to work there that I dealt with in 2009 had left in 2011. We had another meeting with the new management of the school in 2011, or early this year, and we, again, reviewed the project because they weren't familiar with the project. We reviewed the project and went through some alternatives and discuss some of the questions they had and they again asked us to consider relocating them. And we declined, or we said that, given the fact that EMF levels, I think Mr. Carberry can help here, but given the EMF levels are actually lower post-project near the school, compared to now, we didn't think it was cost justified to relocate them.

CHAIRMAN STEIN: Let me ask you, maybe it's not for you, but isn't -- well, is the new line, the proposed new line closer to the school than the existing line?

MR. MELE: Yes.

CHAIRMAN STEIN: And somehow two and two don't equal four, I guess in this case. But you're saying that the EMF will actually be lower?

MR. CARBERRY: Yes. The right-of-way is wide enough here not only for the addition of the new line, but there's another slot still on their side of the right-of-way. So that new line is not close to the edge of the right-of-way, or as close as it could be, and there's 137-foot distance from the edge of the right-of-way to their facility. So the facility itself is relatively far enough away from the lines that the fields have fallen off the levels that are quite low, no matter what we chose for the design of the new line and the best case was to build it as an H-frame line. The view is wide open, it's just an open field from there and they have a wide open view of the facility, there's no screening at all. But the field levels turned out to be quite low.

MR. TAIT: Their objection, then, is more

visual than EMFs?

MR. CARBERRY: I went to the same 2008 meeting with them that Mr. Mele was at and I came away with the feeling that their primary concern was that they had 35 students at the time and that they were borderline making the test to keep going as an ongoing business and if they lost one or two students in the future years' enrollment it was going to be tough for them to continue. And they feared that either the construction of the new project and/or the presence of the new line would in some way afterwards help for that enrollment to decline to a level that they could --

MR. TAIT: The new lines are closer than the old lines, so visually it looks like it's nearby, even though the EMFs might be a little bit lower?

MR. CARBERRY: -- correct. If you're driving down --

MR. TAIT: There's no screening between that MF line either way?

MR. CARBERRY: -- right. And so as you drive in their driveway to their facility, you know, your view is of the line in the open field.

MR. TAIT: And screening won't help it, the poles are so high that the trees don't grow that high

that fast.

MR. CARBERRY: Well, screening, I think would help, and it did come up in some conversation later that Mr. Mele can remind us of. But the, you know, the driveway is to a parking area, which is on a different parcel of land by the way, the nearest parcel of land to the right-of-way is owned by the school as I understand it and is used for the parking lot. And then the school facilities on the next parcel of land over from there. So there seems to be ample opportunity off of the CL&P right-of-way to build a tree screen or some other kind of screen alongside the parking lot that, you know, might help with the visibility at least at walking level or driving level into the facility. So this idea --

MR. TAIT: Is that something you'd be willing to help them with?

MR. CARBERRY: -- we've been willing to discuss things like that with them, and I know the idea came up, but there was really no more substantive conversation about it.

MR. MELE: That's correct. When I talked to the director in 2009 when they said they were reconsidering being relocated she also threw out the idea of building a green screen on that adjacent parcel. And

we would consider that.

CHAIRMAN STEIN: My other question is about the Green Dragon Day Care. I guess the town proposed the possibility of a swap, which I gather is complicated by the number of agencies interstate that would have to be involved in that. But is there any reason, other than the complexity and the time that would be involved, why that's not a feasible suggestion of that spot?

MR. CARBERRY: Well, there was some -- pointing out that there's some risk to her that if someone else took the property that she was interested in she would perhaps no longer have the ability to use that property that we've now given her a license to use. Right now, she has the ability to use both, the property that we've licensed to her, and she still owns the property that goes beneath the transmission lines. So she can use both. But if we go through the process of trying to sell the property that she's interested in and she ends up not getting it because one of the agencies that has priority does that and then doesn't give her a license to do what she's doing she'd be right back to where she was before with only having the right-of-way to use it on. So we really haven't pursued it because we

think she has the best deal right now, the ability to use both with no risk, and there's a chance she would lose what she has now if we continued with that.

MR. TAIT: The day care is not a license, is it an individual's name, is it a business, is it incorporated? The school is a 501C3 I assume? The school, the Montessori School, is it a permanent instillation that's made for a school, has a got all of the licenses, it can be transferred so the next owner would have the same thing where this one is in an individual's home that they are running a day care out of and she decides not to do it. Okay. It's her choice.

MR. MELE: The Green Dragon is a licensed day care facility.

MR. TAIT: But it's probably in her name.

MR. MELE: I believe it's as an individual, yes.

MR. TAIT: Its permanency to me is a lot less than the Montessori School. And so was doing something that's going to be localized it's more for an individual as opposed to an institution, is that accurate?

MR. CARBERRY: When you said localized --

MR. TAIT: Well, that's probably localize,

but either way if it's a public benefit to the people of Connecticut, it might be different.

MR. CARBERRY: -- but she was talking here about a transfer of land where she would want to take ownership of a parcel of CL&P land in exchange for giving CL&P ownership of the parcel of land that's on the right-of-way.

MR. TAIT: She is not a 501C3 corporation, but she is an individual running a daycare business successfully and (indiscernible, background noise).

MR. CARBERRY: I didn't recognize much of what your question was about except that I am anticipating that if we were to do this it would be a no-cost exchange.

MR. TAIT: Thank you.

CHAIRMAN STEIN: I don't want to beat this to death, but is it a fact according, again, according to the I guess what the town said that because part of the license agreement with CL&P is a requirement for $2,000,000 in liability insurance, which presumably if she owned the property might not have to pay?

MR. CARBERRY: I guess that's true. CL&P when they granted the license did not charge a fee, but it was a requirement that we put -- at least from our

real estate people that we put that insurance requirement on her. She does, because she has the ability to -- and she does make money, I think from selling crops, she now has the ability to use the land that's been licensed as well as the previous land she had. So we're thinking she has an opportunity to make more than enough money to pay that.

CHAIRMAN STEIN: Mr. Ashton, do you have some additional questions?

MR. ASHTON: Mr. Fitzgerald, under Exhibit 15 there are four questions I have an interest in, but I'm not sure this panel can answer them. The questions would be 34, 36, 37, and 39. 34, 36, 37, and 39.

MR. FITZGERALD: (Indiscernible, background noise).

COURT REPORTER: Excuse me, do you have your microphone on?

MR. FITZGERALD: 34, 34 is the post news electric and magnetic field calculations?

MR. ASHTON: Just bear with me for a second. It refers -- the sentence, I was looking at references ISO New England.

MR. FITZGERALD: Yeah. Yeah. I think they could handle that. They can handle 36, not 37 --

MR. ASHTON: Not 37?

MR. FITZGERALD: -- not 37, and 39, yeah, I think they can.

MR. ASHTON: Okay. Bear with me for just a second. Am I correct then in looking at 34 that this project has not been approved by ISO? That's what (indiscernible, background noise). Is that correct?

MR. FITZGERALD: No.

MR. ASHTON: I'm sorry?

MR. FITZGERALD: No. It has been approved but they're reconsidering the approval

A MALE VOICE: He said he needed help.

MR. FITZGERALD: Yeah.

MR. CARBERRY: Are you talking about I.3.9?

MR. FITZGERALD: Well, why don't you -- I can't testify, why don't you tell them.

(Laughter)

MR. ASHTON: If you're going to testify I'll put you under oath.

MR. CARBERRY: ISO as granted I.3.9 approval of this project, and as you know, that is an approval of no adverse impact.

MR. ASHTON: Okay.

MR. CARBERRY: All right? So that's -- it's fair to say that ISO has granted that approval. And so when we choose to decide what system we're going to model in the future for magnetic field purposes we adopt that as a hurdle. You know, that if they pass that test, they're probably going to get sited and get built in this timeframe between now and the year we're trying to model.

MR. ASHTON: Does ISO get into any of the physical characteristics of the proposed transmission facility?

COURT REPORTER: Is you're mic. on?

MR. ASHTON: I'm sorry. It is on. Does ISO get involved with the physical characteristics of the proposed transmission facility?

MR. CARBERRY: Perhaps not in the way you're asking that question, but yes, in another way. They are interested in a line being built for good utility practice, both for --

MR. ASHTON: Is that getting up with wire size, for example?

MR. CARBERRY: -- it could be. So, for example, if you chose to use a conductor size that was a little larger than was actually needed to solve the immediate need, and there's an extra cost associated with

that, you're looking for their support for that, because that's a matter of longevity. How long does the solution last?

MR. ASHTON: I was going to say, they won't support that they're crazy.

MR. CARBERRY: Right. So -- or is thinking about an underground design versus an overhead line it wouldn't cost them a lot more. That's obviously a physical difference, okay? But their interest is in a project that meets the need and has longevity and is built using good utility practice for the lowest reasonable cost that we should ask the ratepayers of New England to share.

MR. ASHTON: For example, you're proposing bundle 1590. Suppose you came in with a larger conductor, would they get bent out of shape with that?

MR. CARBERRY: I can't say for sure. I don't know of an instance where that has come up to know that there's any precedent about it. Many of the projects where we have built 1590 to date it has not been an issue. But something larger, I don't know.

MR. ASHTON: Would that be a more appropriate question to ask ISO when -- if they show up?

MR. CARBERRY: You can, sure.

MR. ASHTON: I'm sorry?

MR. CARBERRY: You can, sure.

MR. ASHTON: I'm not trying to flog you over what's outside of your domain. I've got enough (indiscernible, too far from mic.). 37 was (indiscernible, too far from mic.). Going back to Mansfield Hollow, the interstate -- or the booklets that you gave out show the various configurations on that. Your testimony and Mr. Case's testimony, the both of you testified to the effect that if you brought the conductors closer together on the two circuits you'd have trouble with live line maintenance because you couldn't get above it, is that correct?

MR. CARBERRY: They would be wanting to have the capability to use an aerial basket truck, one that could reach, say, the top conductor of a vertically configured line.

MR. ASHTON: Okay. Now, the drawing that shown in the handouts showed on the new circuit two conductors in the center and one on the field side. Suppose you reverse that, put the two conductors on the field side, both circuits have a single conductor in the center, why couldn't you then squeeze it down?

MR. CASE: You'd still have the same

clearance requirement between the adjacent circuits where you'd need to maintain the 35 feet from one circuit to the next. So I'm not sure I understand -- just flipping your Delta, you would still have to maintain 35 feet between the conductors of your adjacent circuits.

MR. ASHTON: Then explain why?

MR. CASE: For maintenance reasons, OSHA requires us to maintain 20 feet of minimum approach distance from a worker to a live 345 kV line.

MR. ASHTON: Okay. 20 feet, no problem, but I've got 35. So that's 15 to work in.

MR. CASE: But he needs -- he needs 15 to work in, exactly.

MR. ASHTON: But why can't I cut that down? I don't have to go on top to get there.

MR. CASE: Again, he's going to be working with a bucket truck that's --

MR. ASHTON: I've never seen a bucket that's 15-foot wide, have you?

MR. CASE: But he needs enough workspace to safely work without violating that 20 feet.

MR. ASHTON: Why does he have to -- he doesn't have to go over the conductor, does he? He can go right alongside. Can't he go up through the center of

the structure?

MR. CASE: Depending on what work he's doing, he may need to get over that conductor. If he's changing out an insulator string, he may need to be over that conductor.

MR. ASHTON: He needs to be alongside, I agree with that. You're saying, under no circumstances ever can it be less than 35 feet, is that right? I find that hard to swallow.

MR. CASE: Without violating our maintenance requirements, that's about --

MR. ASHTON: No, without violating the 20 feet. I can do it as long as I don't violate the 20 feet.

MR. CASE: -- that's the safety code requirement, the 20 feet, correct.

MR. ASHTON: Right, right.

MR. CASE: And if there were --

MR. ASHTON: You don't put 35 feet between phases and a substation, do you?

MR. CASE: With fixed bus? No.

MR. ASHTON: I'm sorry? Right. I'm having trouble why you can't cut back that 35 feet a little bit.

MR. CARBERRY: You just mentioned substation, you know, we're not doing live line maintenance of a bus section is a substation.

MR. ASHTON: You might want to do some live bus work maintenance.

MR. CARBERRY: I mean, substations are built with breaker and a half designs for a reason, so they can take sections out to work on them, and that allows us to compact it, as you're talking about here. Here we are trying to keep the capability of not only building the new line while an existing line at 345 kV is alongside and doing it safely and also being able to maintain it later. You know, if you had one spot on a whole system where you had some reason to have sacrificed this and take away that maintenance capability and make it less because there was some overriding reason, you know, you tell the maintenance people, one structure you can't maintain live. They'd probably live with it, but as a general rule, this is not what they want us to do.

MR. ASHTON: Do you have any record of the amount of time you had to take an existing circuit out of service for maintenance?

MR. CASE: I don't have that information.

MR. ASHTON: Would you say it's routine,

commonplace, rare, or what?

MR. CARBERRY: It's far more common today to do maintenance live. When you take a line like this out of service you effect the Connecticut import capability, in this particular example, therefore, you could potentially effect the economics of what generating plants are going to be on, they can be --

MR. ASHTON: I'll save that line for a little later.

MR. CARBERRY: There can be some congestion for us --

MR. ASHTON: Right.

MR. CARBERRY: -- and so, I'd say far more than in the past the capability to do maintenance live has been used. And I'll give you a very significant example.

MR. LYNCH: Excuse me Mr. Carberry.

MR. CARBERRY: Excuse me for a second, Mr. Lynch. You know that a great deal of the original 345 kV system was built with the single 2156 conductor --

MR. ASHTON: Yeah.

MR. CARBERRY: -- it is now 40 some years that many of those lines have been in the air. They began to experience some problems with their splices,

some vulnerability in them and we -- not in the splices, but the dead end compression connectors so that the company can complete the program, not only CL&P, but Western Massachusetts Electric, several years ago, hundreds of locations changing splices and changing the dead end connectors and did a great deal of that with the lines still live. It was a very impressive task to take lines apart and do that, but they did it live for that particular reason. There's much more maintenance done live nowadays, especially on a 345 system then before.

MR. ASHTON: Okay. I'll move on.

MR. LYNCH: Mr. Carberry, I think I know what you mean, but could you define or explain the term, live?

MR. CARBERRY: Live means that the circuit that you're working on is still in service, energized, in this case, to 345 kV and carrying load while you're working on it.

MR. LYNCH: Thank you. That's what I thought, but I just wanted to make sure I was on the right path here.

MR. CARBERRY: A little bit like working under the hood of a car with the engine still running.

MR. ASHTON: Let me switch a little bit

now, since we flogged that to death, and go back to the comments from the town of Thompson. And one of them in there was a recommendation to construct -- CL&P should investigate the construction of a floating access road. Have you ever used a floating access road before? A. And B, is there any evidence need for a floating access road on this project? Is that Louise's -- okay.

MS. MANGO: Just by way of background, we had some of our people who went with Ms. Butts (phonetic) when she did her tour of the town of Thompson right-of-way and the location that she's referring to where she suggested the use of this geo-grid floating access road is in a large wetland. And the existing structures, and I think most of our proposed structures, would be or are on upland inclusions in the midst of this wetland. I think it's wetland 20-203. So, first off, our people concur with Ms. Butts' comments, but they also believe that based on the surveys that they've done that there is an existing road underneath that wetland. It was probably constructed when the original line was installed. And as you know, from your experience, in the old days, nobody ever took those roads out, you know? They just left them, you know, before National Environmental Policy Act, the state relations requiring

preservation of wetlands, so a lot of those roads for pipelines and transmission lines, they exist for service.

What's happened in this case is beavers have flooded this area, and so I think our people who were with Ms. Butts said, they didn't walk through this area, but previously some of them had and I think it was about two to three feet deep and they felt firm ground underneath. So first off, we think that there is an existing access road there that we probably -- the construction, contractor would not require 10 layers of mats to get across. I think her concern seems to be multiple layers of wooden mats or a lot of gravel.

We can look into the floating access road. I have not heard that ever used on a transmission line or a pipeline and I think the concern would be that we have to get very heavy equipment across this floating access road and I would be concerned about stability. It's not just a pickup truck or two, but it's a big crane. And the reason we would have to go across this particular wetland is there's no other way. Unless we can get some off right-of-way access roads, and it's not looking like that, we have to go down our own right-of-way and we have to cross this wetland.

Or, we hope the beaver dam gets breached

somewhere between now and then and then the wetland goes away.

(Laughter)

MS. MANGO: But in any event, so yeah, we will look at that some more and make sure we understand what it is. I have not heard about it, our construction people have not heard about it. And, you know, we just don't think it's necessary in this particular case because we do believe that there's some kind of subsurface road there.

MR. ASHTON: In the bad old days, from my experience, there were on occasion, such as perhaps this, the availability of tracked or other low pressure vehicles that could handle that kind of a situation. Is that true today of all these tracked vehicles or swamp buggies or what have you dried up so that you can't do it?

MS. MANGO: You know, I think there are -- there probably is -- there probably are pieces of equipment like that. A lot of, you know, we talked about low impact, you know, basically like any tracked piece of equipment is low impact because it distributes the load.

MR. ASHTON: Sure.

MS. MANGO: Whether there's something like

this is outfitted for a transmission line, I don't know. I suspect that someone has probably done something in Louisiana, you know, where it's all wetland. I don't know.

MR. ASHTON: I can attest there is -- there was equipment like that.

MS. MANGO: Yeah. But I think whether you would need to bring that in for this particular case would be a function of whether that access road exists in the first place.

MR. ASHTON: Yeah.

MS. MANGO: So I'm just not sure it would be cost-effective. If our entire right-of-way was 50, 60 miles of wetland and no other way in, then you might want to look at that special type of equipment.

MR. ASHTON: Yeah. Okay. I'll let that -- that's fine. Thank you. Earlier on, there was a question about scheduling construction to avoid agricultural impacts. Now agricultural impact often, my knowledge and belief, goes from spring till August, September timeframe. We have a lot of competing issues, such as turtles crossing, birds nesting, and all the rest of it. Are we heading to a situation where it's impossible to build a line just because of all of the

competing issues? Or can we buy out -- society buy out the agricultural interests and build a line in what would otherwise be a growing season? I guess I'm picking on you, Mr. Carberry. You've been down this road before, I know.

MR. CARBERRY: Of course, you're right that there are many constraints on a project of this nature of where you can work when. And the construction of a transmission line involves several different operations, so you're not doing them all one right after the other, in one particular place. You will have to get to that place multiple times for different operations, so it is very hard to deal with all of the constraints as to timing. So yes, it's something that's on the plate to try to consider for certain areas. If it makes sense and you can schedule it and avoid it, avoid an impact to the agricultural area during the growing season you would. If you are going to impact crops during an active growing season, and especially if that landowner, in his underlying easement has a right to cultivate, then you will have to compensate for the lost crops.

MR. ASHTON: You pay damages?

MR. CARBERRY: Yes.

MR. ASHTON: Okay.

MS. MANGO: Can I just say one thing? I don't think that, you know, we won't be able to avoid all impacts to agricultural lands. You know, we probably will not be able to construct at least certain areas in the growing season --

MR. ASHTON: Knowing Eastern Connecticut, I would doubt it too.

MS. MANGO: -- and the area I'm thinking of in particular is the area in Mansfield Chapel and that leads into the segment two of the wildlife management area, across Mr. Bullard's property. He asked that we use the right-of-way. There is an access road, a paper road, partial private road, Schuba (phonetic) Lane, but that's Mr. Bullard's road and he asked that we not use that as an access road, try not to go off (indiscernible, voice drops off). So we have to use the right-of-way, that's our only way in and out to the Mansfield Wildlife Management area. We won't cross the Natchaug River, so that's one area we might maintain a road across this field for a growing season or more. And a lot will depend on when you start construction and how quickly you can do that.

MR. ASHTON: Yeah. Question 31 referred to bird nesting structures and then got into specifics

about Ospreys. Is there any evidence of any Osprey nesting on the reach of this line?

MR. CARBERRY: I understand that on one of your field review days to saw one?

MS. MANGO: Yes. We think that's actually a relatively new Osprey nest because our biologist didn't noted. It's on structure, I think it's 9144 -- 9144 or 9143. And in any event, there Osprey and they are nesting on it and that's fairly common. I think it's less common on rights-of-way that CL&P as, because there's so many other nest sites available, and you see this a lot out west. Bit yes, I mean, that's --

MR. ASHTON: So we have one location that might be of concern?

MS. MANGO: -- we have one location.

MR. ASHTON: Okay.

MS. MANGO: And as I understand it CL&P has a policy for dealing with the nests. They actually have a take permit, or they can build nesting structures. And Tony Johnson can probably talk more of that tomorrow because he deals with this everyday, but they do actually have a permit probably under the Migratory Bird Treaty Act.

MR. ASHTON: You might want to talk to a

telephone company, a cell tower, because they seem -- Osprey seem to like cell towers. When you compute EMF, Mr. Carberry, what height above ground do you consider the conductor, the minimum height under normal temperature on operating conditions?

MR. CARBERRY: Yes. If it's a 345 kV line we commonly assume that the conductor is at 35 feet above ground without sag, as if it was exactly that height everywhere. And that corresponds to an everyday mid-span height over flat terrain.

MR. ASHTON: Okay. So that would tend to be a low figure, is that fair to say?

MR. CARBERRY: For the conductor height for this purpose? Yes.

MR. ASHTON: So that would give you --

MR. FITZGERALD: I hesitate to object to the judge's question, but when you say, that would be a low figure, are you talking about the height or the magnetic field?

MR. ASHTON: No, the 35-foot -- thank you. The 35-foot figure would tend to be a low clearance for much of the line, is that fair to say?

MR. CARBERRY: That's correct.

MR. ASHTON: So that means then -- does

that mean that your EMF figures tend to be pessimistically high?

MR. CARBERRY: It certainly means that they're pessimistically high directly beneath the line and to some distance to either side. After a distance of about 75 to 80 feet away from a line that difference doesn't make too much difference over the magnetic field.

MR. ASHTON: Okay. By the way, in talking EMF, if there was a screen of heavy trees between the line and the observer measuring point, wouldn't the trees tend to reduce the EMF?

MR. CARBERRY: They would screen the electric field very well, but they would do nothing to screen the magnetic field.

MR. ASHTON: Thank you. Ms. Mango, you mentioned the grade on the right-of-way access road. What's the maximum grade acceptable to the applicant? Do you know?

MS. MANGO: My understanding is for most equipment it's about 10 percent for heavy equipment.

MR. ASHTON: 10 percent?

MS. MANGO: Yeah, 10 percent. Plus or minus, depending on what type of equipment.

MR. ASHTON: Wow. Would it surprise you

to know that there are monopole's that are erected with 20 percent grades for cell towers?

MS. MANGO: I would want to know how they got their equipment there.

MR. ASHTON: Up a 20 percent grade. Well, okay. I'll let it go. Also, you mentioned that some access roads would have to be quite wide to allow for vehicle swing. Does that mean that after a line is built you can then go back and remediate some of that 30 feet and make it a narrower road?

MS. MANGO: Oh, yes. I think what we would do is none of these -- the wider roads where we need them to get the equipment in, say, for a structure or whatever, say we're building a monopole structure and we need to get pieces in, the roads would all be brought back to the nominal width, 12 to 16, as I understand it. I should qualify that. Unless there's a place where we've identified a permanent access road, but even then it would be brought back.

MR. ASHTON: Yeah.

MS. MANGO: And then if we needed to get equipment in to reconstruct something, you know, you go through your permitting process again or temporarily increase the size of the road.

MR. ASHTON: Okay. Thank you, Mr. Chairman.

CHAIRMAN STEIN: Thank you. Any Council members have anymore questions at this point? Okay. I'm just going to go through the list and see who's here since I'm not sure. And in the order we have it on our agenda, the parties, NRG Company, do we have anybody, NRG? Victor and Richard Civie, are you -- would you please come up to the roundtable here?

MR. VICTOR CIVIE: (Indiscernible, too far from mic.)

CHAIRMAN STEIN: Oh, you know, we can continue tomorrow.

MR. VICTOR CIVIE: (Indiscernible, too far from mic.)

CHAIRMAN STEIN: Well, we want to get -- you're next on the list, so we have an hour. I'm not sure how long you propose to go.

MR. VICTOR CIVIE: (Indiscernible, too far from mic.)

CHAIRMAN STEIN: I said four, depending on --

MR. VICTOR CIVIE: You discussed the topic of wave length cancellation. In regards to the topic,

what wavelength are you using?

COURT REPORTER: I'm sorry, please identify yourself.

MR. VICTOR CIVIE: Sure. Victor Civie. Let me repeat the question then. In regards to cancellation in general, what wavelength do you use?

MR. CARBERRY: The wavelength that corresponds to a frequency of 60 cycles per second.

MR. VICTOR CIVIE: Can you elaborate on the distance? That's okay. It's not --

MR. CARBERRY: We'd have to do the math. It's 1,000 miles.

MR. VICTOR CIVIE: That's fine. In regards to underground cable, there's HPFF and I guess XLPE lines. Can you mix and match the technologies, that is, use an XLPE station with a HPFF cable or vice versa?

MR. CARBERRY: Generally if you're building a line with one of the technologies you use that for the full length of the line. There are some special cases, I think where a submarine cable, for example, underwater has joined say an HPFF cable above land. And I think they have developed technologies to be able to make the transition from one to another for some particular reason. I don't think it's that common, but

it can be done.

MR. VICTOR CIVIE: But normally for the purposes of the application you would not mix the technologies? That is, would you have a station, an HPFF station and use XLPE cable?

MR. CARBERRY: When you say HPFF station --

MR. VICTOR CIVIE: Right. A station made for HPFF line.

MR. CARBERRY: -- so a station that is the terminal of an HPFF cable has all of the same aboveground equipment that it would otherwise have for a different type of cable, except that it also needs oil pressurizing equipment because the oil that's in an HPFF cable system is maintained under pressure and there needs to be a storage volume at that station as well. So it needs special oil pressurizing type of equipment. That's the real main difference between the two.

MR. VICTOR CIVIE: So --

MR. CARBERRY: And also, if you need to shut reactors, you're more likely to need those with HPFS cable systems more so than XLPE cable systems, again, depending upon the length, but because high-pressure fluid filled cable systems have much more capacity

charging requirements, much larger capacity charging requirements then the other cable system does.

MR. VICTOR CIVIE: -- so you mentioned then for HPFF stations, you need a pumping station, you need a reservoir, and could you just explain the differences -- so how does that work then? The pumping station pumps, fluid into what?

MR. CARBERRY: Into a pipe. The HPFF cable system involves three cables with a paper type of insulation around them that is saturated with oil and a pipe, which could be, you know, 10 or 12 inches in diameter for one set of cables would have an insulating oil in it that is maintained under pressure of about 200 PSI. So it's a pretty large volume of oil over a length of cable system.

MR. VICTOR CIVIE: You're starting out then with cables that are open to the air and then there's a transition somehow, they get into these pipes, how does that operate? What do you use to keep the fluid in, I suppose, at that point?

MR. CARBERRY: Above the ground at the of the pipe there's something called a trifurcater that is also oil-filled and the cable is -- the individual cables are separated so that one can come up through what's

called a bushing, an oil-filled bushing to where it can make a connection to the live bus in a station. So it's still in oil-filled cable, but you've now pulled the three cable sets apart, the three cables apart, one to go to each phase.

MR. VICTOR CIVIE: All right. So we are talking about a pumping station, a reservoir, the trifurcater, the pipes. Would it be fair then to say that there is a lot more equipment required for an HPFF station than a regular XLPE station?

MR. CARBERRY: The pumping plant is certainly something that would not exist in the other type of station, and that's an expensive component. And again, if you need shunt reactors that's also another expensive component, so with those two things in particular, yes.

MR. VICTOR CIVIE: Would you say that the Mansfield underground configurations, and I'm considering both of them now, require the least amount of resources of any possible underground configuration?

MR. CARBERRY: It's the least amount of what resources?

MR. VICTOR CIVIE: Any resources, money, construction, engineering?

MR. CASE: It is the shortest of the underground variations that we proposed, so it would be the cheapest of all the underground variations.

MR. VICTOR CIVIE: Of all the underground variations that are in existence now is what you're saying?

MR. CASE: Correct.

MR. VICTOR CIVIE: Can you think of an underground variation configuration that would be less costly?

MR. CASE: Shorten it up.

MR. VICTOR CIVIE: Shorten it up? That would be it? Okay. What is the estimated cost of both underground configurations?

MR. CASE: When you say both underground, which ones do you --

MR. VICTOR CIVIE: So it would be the Mansfield underground and Mount Hope?

MR. FITZGERALD: I'm sorry? (Indiscernible, too far from mic.).

MR. VICTOR CIVIE: Mansfield configuration and Mount Hope.

MR. FITZGERALD: Mount Hope.

MR. CASE: The Mansfield underground

variation was roughly $58.2 million. The Mount Hope underground variation was roughly $65,000,000.

MR. CARBERRY: And both of those were made with cross link polyethylene cables. We did not provide a cost estimate for high-pressure fluid filled cables.

MR. VICTOR CIVIE: So XLPE. And how did you arrive at these costs?

MR. CASE: We used -- our past experience, extensive experience with underground cable installation, using our consultant who also has a lot of experience throughout the world on underground installations, to establish the estimate that was used for both Mansfield underground and Mount Hope underground. Used past experience, reached out to several vendors to verify costs that have been established.

MR. VICTOR CIVIE: So, can you provide a breakdown of how this cost was determined?

MR. CASE: What would you like further broken out?

MR. VICTOR CIVIE: Well --

MR. CASE: We can provide breakouts in material, labor, we can provide breakouts by cable, transition stations.

MR. VICTOR CIVIE: -- so, I'd like the

works. So, for example, cable, and access rates, a breakdown on cable prices, the terminators, the arresters?

MR. CASE: I will -- this is going to be a lengthy -- depending on what level of break out that you'd like, it could be a lengthy discussion, but I will pick out some of the general highlights. Maybe we can start with material, labor, right-of-way, escalation breakout --

MR. ASHTON: Can I raise a question?

MR. CASE: -- so for the Mount Hope, underground --

MR. ASHTON: Mr. Case, can I raise a question? Are you reading from something that's already in the record as part of an exhibit submitted with the application, or what?

MR. CASE: We did not provide further detailed breakout in the record.

MR. ASHTON: Okay. So we've got to go through this. I just thought there might be an easier, less painful way.

MR. CASE: Yeah. There's going to be a lot of numbers.

MR. ASHTON: Would it be helpful to make

it a late file?

MR. CASE: We could provide a table that would --

CHAIRMAN STEIN: That would make a lot more sense.

MR. ASHTON: Is that reasonable as far as the intervenor is concerned?

MR. CASE: We can do that relatively quickly.

MR. VICTOR CIVIE: Are we going to take a recess?

MR. FITZGERALD: We can bring it with us tomorrow.

CHAIRMAN STEIN: Yeah, why don't we do that? Bring it and submit it tomorrow.

MR. CASE: By way of -- just so I have some clarification on our homework assignment, I was going to go through, for example, the Mount Hope, which does breakout costs in material, labor, right-of-way, engineering, escalation, (indiscernible, too far from mic.) contingency and if there's more detail than that that we need to get into we can talk about what the particular cable costs, what we assume for jack and bores, HDDs, there's a lot of information.

MR. VICTOR CIVIE: So basically what I'm looking for then is perhaps a section on cable and accessories, if you could break up the price of the cost of the XLPE cable separately, communication conduits, temperature monitoring system, perhaps the riser structures, duct bank and earthwork. And in the duct bank and earthwork, I'd really like the details on that. And then of course, the transition stations.

MR. CASE: Okay. We can do that.

MR. VICTOR CIVIE: All right. I appreciate that. I did ask the question, by the way, in one of my interrogatories for that information. All right. So I propose we take a recess until I have that information.

CHAIRMAN STEIN: That's your only question?

MR. VICTOR CIVIE: Well, no. Everything revolves around that.

CHAIRMAN STEIN: Well, we're not going to take a recess for you, we'll see if the others --

MR. VICTOR CIVIE: All right. That'd be fine.

CHAIRMAN STEIN: -- so those are -- all of your questions revolve around that information?

MR. VICTOR CIVIE: Around cost. Actually, well, now that I think about it, there are some questions I have about regarding the application, and we could continue there for transition stations. Items that were not in the application.

CHAIRMAN STEIN: Well, if you have questions that you can ask now so we can then --

MR. VICTOR CIVIE: Okay. Let's talk about the transition station itself. I might've missed it. Where in the application do you describe technology involved in the transition station?

MR. CARBERRY: The logical sections to look for that information on that is Section 14 and 15 of Volume 1A.

MR. VICTOR CIVIE: Okay.

MR. CARBERRY: The easiest thing to talk from might be on page 15A-21.

MR. VICTOR CIVIE: All right.

MR. CARBERRY: Are you able to read one line drawings like that?

MR. VICTOR CIVIE: Well, so why don't we go through and break down the components? And so what you're suggesting, then, is there's no text, we're going to take a look at this picture and determine what we

have?

MR. CARBERRY: I'll describe what you're looking at.

MR. VICTOR CIVIE: Okay.

MR. CARBERRY: Probably the easiest is to look at the box drawing in the lower left. So coming in from the top of that drawing is an overhead transmission line coming to a line terminal structure. And then just dropping down from that line terminal structure to tubular aluminum bus. So you basically have a section of tubular aluminum bus going left to right immediately below that. And then three individual sections of it proceeding off of that main section of tubular bus you see a disconnect switch, a circuit breaker, and another disconnect switch. Then you see surge arresters and you see the terminator connection for the underground cable, it's those curly lines leaving the bottom are the underground cables leaving the station. So overheads come in from the top, three sets of underground cables have left from the bottom, the circuit breakers enable the instantaneous interruption of any one of those sets of cables while leaving the other two sets in service.

MR. VICTOR CIVIE: So, are these remote circuit breakers?

MR. CARBERRY: Remotely operated?

MR. VICTOR CIVIE: Um-hmm.

MR. CARBERRY: They are first of all, automatic, if there is any -- there's protection in relaying control equipment in a station like this in that --

MR. VICTOR CIVIE: So it's a fault breaker?

MR. CARBERRY: -- the box up in the left-hand corner would be a control enclosure, so if there's detection of a short circuit or anything else abnormal in one of the cables the signals will be sent to the circuit breakers on either end of that set of cables to open up those circuit breakers and isolate that section of cable. So that's an automatic operation that takes place with no one there. They can also be operated on site and also remotely from the Connecticut Valley Electric Exchange Operating Center.

MR. VICTOR CIVIE: So they are remote. Okay. In case of a repair has to be done on one of the lines, what would be used to take the power off the line?

MR. CARBERRY: The circuit breakers would -- first of all, if there was a failure, the circuit breakers would have already taken the line out of

service.

MR. VICTOR CIVIE: Of course.

MR. CARBERRY: If you detected some problem, overheating or something, and wanted to take the line out of service you would cause the circuit breakers to open on either end of the three sets of cables that you want to take out of service. They operate as a system, these three sets of cables. And you could then open up the disconnects switches to isolate the set of cables from any accidental re-energization, if the circuit breaker were to accidentally reclose for example. So disconnect switches on either end would be opened up and you'd now have access to the sets of cables to go troubleshooting.

MR. VICTOR CIVIE: All right. Now, why have the circuit breakers, and it sounds like you have two sets of disconnects, what was the first one?

MR. CARBERRY: There are two sets of disconnects, which is there -- they're on either side of the circuit breaker because you also need to occasionally maintain the circuit breaker. So when you take the circuit breaker out of service for maintenance, you want to isolate yourself from sources in either direction, so you have a set of disconnects on either side of the

circuit breaker.

MR. VICTOR CIVIE: Are you familiar with the Hoyt's Hill Transition Station?

MR. CARBERRY: I am.

MR. VICTOR CIVIE: Why wouldn't that work here?

MR. CARBERRY: The Hoyt's Hill Transition Station was built on the Bethel/Norwalk line, it was a transition between a short section of -- a relatively short section of XLPE cables, that they were a smaller sized cable, 1750 kcmil was their conductor size. The cables that we're talking about on this project are 3500 kcmil. The design on the Hoyt's Hill Station was a -- not anything that our engineers really desire. There are no circuit breakers in that station and no disconnect switches. It's a very small site. And there are removable links so that if there was a failure in one set of cables and you needed to remove it from service you have, first of all, no automatic capability to simply interrupt that set of cables and leave the other set in. The whole circuit has to come out of service if that happens. And then people have to be dispatched to go to the station, Hoyt's Hill Station, to remove a set of removable links. There's no automatic circuit breakers,

there's no automatic disconnect switches, so they've got to remove a set of removable links in order to be able to re-energize the remaining portion of the circuit at half capacity.

Now, that circuit goes from Plum Street substation to Norwalk substation. It is one of two 345 kV circuits that go to Norwalk substation. It was a compromise to allow a substandard design basically to exist. If that circuit is out of service for a period of time, the Middletown/Norwalk circuit is counted on to take over. We need a higher capacity on this Interstate Project line. We need -- if one set of cables is out of service -- we plan to operate only two sets of cables at one time, I should say, first of all, so another set is active spare and if any one fails we immediately intend to take it out of service and switch and the other set of cables without having to send anyone there to do it.

MR. VICTOR CIVIE: So you only plan on operating two cables at one time? You have three cables, three circuits, only two are going to be active at one time?

MR. CARBERRY: That's right. But the emergency capability of the two cables at a time is what we need, that's a requirement from our system planners.

MR. VICTOR CIVIE: That seems like an awful overhead for a taxpayer to support that third circuit and it's not being used. Don't you have that second set of lines, I mean, this is a backup to the first set of lines to begin with. How can you justify putting in that third circuit?

MR. CARBERRY: I think I disagree with the characterization that it's a backup to the first set of lines. It's in addition to the first set of lines and it creates the capability to transport more power over this path from Rhode Island into Connecticut. And if there's a reason to be doing that and you lost one set of cables you don't want to back down on the generation to try to get back under rating, you want to get this thing back to its full capacity by getting the other set of cables into service quickly.

MR. VICTOR CIVIE: But right now everything is being generated, all of the power is coming through that set of lines that we have right now. So, the Second Circuit is just extra power going through. So why not just shut one of the circuits down and employ the other?

MR. CARBERRY: You'll talk to the planners I think about this. This is a lead case for why we need

more capability.

MR. VICTOR CIVIE: The third circuit, though, isn't giving you that more capability, all the third circuit is doing is helping repair the other two in case one goes down.

MR. CARBERRY: The third set of cables, if that's what you're referring to, is allowing you to rate this line to the full emergency capability of the other two, having two sets constantly available.

MR. VICTOR CIVIE: Where do you see in past designs three circuits on underground?

MR. CARBERRY: I don't -- we -- in the Greater Springfield Reliability Project if we had to have built an underground section of line, we would've done it the same way.

MR. VICTOR CIVIE: Of course. And that's hypothetical.

MR. CARBERRY: And in other projects before that we have not had the same need for the same capacity and so have not done that.

MR. VICTOR CIVIE: What's the likelihood of two circuits going down? If you have two circuits now, let's just take a look at two circuit configurations. What's the likelihood of one of those

circuits going down? Have you had a problem with circuits going down, with underground circuits going down?

MR. CARBERRY: Of two underground circuits at the same time?

MR. VICTOR CIVIE: So let's look at a configuration of two underground circuits. Are you having problems now? You have configurations like this already installed, are you having problems where you need a third circuit?

MR. CARBERRY: We've had -- one example on an underground cable system between Norwalk substation and the Singer substation of Bridgeport, where there are two parallel sets of underground 345 kV cables, one of them had -- experienced a failure and it was out of service for approximately -- almost five weeks until it was repaired. Fortunately, it happened at a time of year when the loads on the system are not as high as they are in summer, it happened more in the spring. Now, during that period of time the remaining set of cables between Norwalk substation and the Singer substation is all you have, and so you're operating with roughly half the capacity that you had before. And if that was a problem and system planning criteria, then we would have had to

have built another set of cables to ensure against that. It was not a problem in the planning criteria then and so a third set of cables was not built.

MR. VICTOR CIVIE: All right. So in that system then, what you're telling me then is the two circuits work? The two circuits -- we didn't need a third circuit in that particular situation.

MR. CARBERRY: In that particular part of the transmission system that the requirements could be satisfied with two sets of cables, yes. We're now in a different part of the transmission system.

MR. VICTOR CIVIE: We're on a different part of the transmission system. So what then -- you were suggesting that there's some sort of requirement that you have, or design standard that you have, to make this one, this short piece, this one mile length of cable, underground cable, three circuits instead of two. What criteria are you using?

MR. CARBERRY: What I'm saying is, the system planners tell us what capacity they need to have, including a capacity they need to have with one set of cables out of service, and we look at what cable technology can do and in this case it required three sets of cables.

MR. VICTOR CIVIE: All right. So, you don't have the ability to answer the question, it's the system planners?

MR. CARBERRY: They will have to explain to you why they needed the capacity that they sought to have, yes.

MR. VICTOR CIVIE: Okay. Back down to Hoyt's Hill. Have you had to have -- what problems have you had, major problems have you had with Hoyt's Hill?

MR. ASHTON: Mr. Carberry, while you're thinking, with regard to system planning, it's not only system planners, is it, it's ISO, and above them it gets into what we euphemistically familiarly know as NERC and FERC, at the federal level, is that true, in terms of planning reliability standards?

MR. CARBERRY: Right. The system planners are following guideline standards that have a hierarchy that you just named.

MR. ASHTON: Okay.

MR. CARBERRY: I should say, I'm reminded when you asked that question, that national grid, the Rhode Island side of this project, also has to consider underground cables in various places and their design is for three cable system. They are transition station size

of something larger than what we've shown, because they want to make sure that it has capability to add a shunt reactor on each of the set of cables if that should ever be necessary.

MR. ASHTON: And a shunt reactor does what?

MR. CARBERRY: It helps to compensate for the high charging currents on the underground cables.

MR. ASHTON: And charging currents are a characteristic that causes problems in limiting capacity of cables over long runs?

MR. CARBERRY: Limiting the capacity and also making it more difficult to control system voltages.

MR. ASHTON: Thank you.

MR. CARBERRY: And the shunt reactors help to compensate for that. We have anticipated that we're only talking relatively short sections of cable in any of our underground variations. So, we determined that we didn't think we would need to have that capability, but it's another reason why you want to buy a two to four acre site, sites over the life of these systems sometimes need other things to be added to them. And so, you might initially develop the footprint that is 1.7 acres, but you want to have that capability, should you need to add

something in the future to do so, and the most logical thing to add would-be shunt reactors.

MR. VICTOR CIVIE: Going back to then my question about Hoyt's Hill. First of all, just to backup, reading from page 46, this is the CL&P Bethel/Norwalk Project Schedule 12C application, it's January 12th, 2005, that anticipates disconnect switches to a common bus in Hoyt's Hill. There are no disconnect switches you're saying?

MR. CARBERRY: I looked at the nomenclature diagram for the station very recently and I didn't see any on it. That's what I'm relying on.

MR. CASE: Just the removable links.

MR. VICTOR CIVIE: So this information in the schedule is wrong?

MR. CARBERRY: Let me check. What page was that?

MR. VICTOR CIVIE: 46.

MR. CARBERRY: 46.

MR. VICTOR CIVIE: The top bullet.

MR. CARBERRY: Right. That text refers to them as disconnect switches, but what they are is a removable link. That's fundamentally three sets of aluminum tubes that can be unbolted so you break the

connection with the gap created in between.

MR. VICTOR CIVIE: How many -- since this has been in service. How many times have you had to exercise that? Use that removable link to disconnect the power?

MR. CARBERRY: I don't believe we've had a problem with the underground cables. That line has been in service now for six or seven years and we have not had a problem with those particular underground cables, so I don't think there's been a need to do so.

MR. VICTOR CIVIE: All right. So again, then I don't understand why not have that station here? If that works for 2.1 -- I'm sorry, what's the distance of the line?

MR. CARBERRY: That was approximately two miles of underground XLPE cables. 1750 kcmil.

MR. VICTOR CIVIE: All right. Approximately two miles of cable. Why wouldn't that work here for the one mile?

MR. CARBERRY: Because that was in the Plum Tree Norwalk line and this is now a different line and they had different requirements.

MR. VICTOR CIVIE: Can you tell me what those requirements are?

MR. CARBERRY: The system planners wanted to make sure that with the failure of one set of cables that the remaining capability of the other cables was a certain number and that required this design. That same requirement did not exist on the Plum Tree to Norwalk line.

MR. VICTOR CIVIE: I see. Are we going to be able to talk to the system planners?

MR. CARBERRY: Yes.

MR. VICTOR CIVIE: All right.

MR. CASE: You had a question on the maintenance that we've had to do at Hoyt's Hill. I don't know if that's been resolved.

MR. VICTOR CIVIE: Well, actually, it has. I mean, I have the repair records in front of me, so it's been resolved. All right. This is probably the last point I can make without that other information. In review, you're proposing XLPE cables. And if you take a look at the pictures, the pictures of 15A-22 and 15A-23, they're pictures of two stations, Archers Lane and Norwalk Junction, which are HPFF cable stations, and we know that you can't mix HPFF stations with XLPE cables, why does the application show these HPFF stations?

MR. CARBERRY: In your question you said

something about not being able to mix HPFF and XLPE. This line, the Plum Tree to Norwalk line, had two completely separate sections of underground cables. One was at the north end of the line, that was XLPE cables. This section was further south. They're not connected together other than through an overhead line, so we can have and HPFF section in one part of the line and an XLPE cables in another set of the line, no problem there. These are examples of transition stations were two sets of cables were needed, so what you're looking at when you look at figures 15A-2 and 15A-3 is an overhead line dropping down to a bus section where there are disconnect switches and circuit breakers and surge arresters and cable terminators for two sets of cables instead of three.

MR. VICTOR CIVIE: And taking a look back at how you describe your drawing, are you going to have a pumping station there?

MR. CARBERRY: In the Norwalk -- excuse me, the Norwalk Junction transition station --

MR. VICTOR CIVIE: No, no, the one we are proposing right now.

MR. CARBERRY: -- if we build -- XLPE cables do not require a pumping station. There is a

pumping station in figure 15A-2 at the Norwalk Junction transition station, because that had HPFF cables.

MR. VICTOR CIVIE: Right. So we have then a situation -- the pictures then show the pumping station, the reservoir, the extra equipment is there that is not required to support XLPE lines.

MR. CARBERRY: Figure 15A-2, you're right. Figure 15A-3 does not have any of that.

MR. VICTOR CIVIE: A-3, perhaps you could explain, doesn't Archers go into Norwalk Junction?

MR. CARBERRY: Archers Lane is the north end of -- is a transition station at the north end of a section of HPFF cables that is 9.8 miles long, is the number I remember, in Norwalk Junction --

MR. VICTOR CIVIE: About, yes.

MR. CARBERRY: -- transition station is at the south end of the same set of cables.

MR. VICTOR CIVIE: All right. So Archers Lane, there has to be something in Archers Lane to support the fluids and things of that nature?

MR. CARBERRY: Yes. So the grayish building that you see in the rear of the station on the left-hand side of figure 15A-3 is the pump house.

MR. VICTOR CIVIE: All right.

MR. CARBERRY: That would not be there if these were XLPE cables, but the rest of the station would look like that.

MR. VICTOR CIVIE: Okay. Alright. So my question stands than, why show examples of HPFF stations if you're not going to use them, if you're going to use an XLPE station?

MR. CARBERRY: We're looking for examples of transition stations that exist in our system and these are them.

MR. VICTOR CIVIE: Well, you could have used Hoyt's Hill.

MR. CARBERRY: But Hoyt's Hill is not directly relevant to the project because it does not have switching capabilities.

MR. VICTOR CIVIE: All right. And I suppose I have to take that up with the system planners?

MR. CARBERRY: You can.

MR. VICTOR CIVIE: All right. Going back then, don't you think that if somebody is looking at this extra equipment they're going to think that this is equipment you're going to use? That is, you have these pictures up here. Someone taking a look at the application is going to see these pictures and say, oh,

we're going to have all of this extra equipment. This is going to be -- they might not know the name of the station, since you didn't put it down there, but they're going to see that extra equipment and a person -- an average person would be of the opinion that these stations are being proposed.

MR. CARBERRY: No. I would say that the Archers Lane station there is smaller than what you would need for three cables, but otherwise looks a lot like what you would do if you were building a transition station on the Interstate Reliability Project, except that that grayish building in the back, that pump house wouldn't be there. So that's very good representation of what one of these things looks like. The Norwalk Junction one is an example of a more compressed site where things had to be made double-decker basically, vertical, because you didn't have enough room to do it at a lower elevation. And it also happens to show what a shunt reactor would look like. While we don't initially plan that we would use a shunt reactor on an underground cable section on the Interstate Reliability Project, there could come a time when that would be necessary. These stations have to be made capable of having that type of equipment in them.

MR. VICTOR CIVIE: So we are talking about a Norwalk Junction, a double-decker situation. I was going to get to Norwalk Junction, but you've got to it already. A double-decker situation where it's compressed, but it looks like -- I take a look at that engineering, I mean, that is a marvelous design, it's a marvelous feat of engineering. It's a double-decker, it's in a compressed section, you have the 345 kV bus, it has to accommodate the HPFF cables. It's an impressive design, but that's not what's going to be used here. We're not going to use shunt reactors here in this one mile loop, correct?

MR. CARBERRY: We're not initially thinking that they're necessary, but you'd want to make sure that if you build such a station that you have the capability to add it in the future.

MR. VICTOR CIVIE: All right. Perhaps. But then I go back to my original question. Then wouldn't the average person be of the opinion that the Norwalk station is going to be an example of what's going to be proposed here, what's going to be used here?

MR. CARBERRY: I can't speak for what the average person is thinking. We gave a layout on the previous page as to what this would look like and we gave

two pictures of existing transition stations on the system to come as close as anything we have to what we need to build.

MR. VICTOR CIVIE: Mr. Mele, do you recall the members of the town of Mansfield Zoning Board thought that Archers Lane and Norwalk Junction stations were being proposed?

MR. MELE: I'm sorry, could you please repeat the question?

MR. VICTOR CIVIE: I'm sorry, I didn't mean to switch gears on you like that. Do you recall that the members of the Mansfield Board thought that Archers Lane and Norwalk Junction stations were being proposed?

MR. MELE: I don't recall -- you mean for this project?

MR. VICTOR CIVIE: For this project.

MR. MELE: I don't recall that sir.

MR. VICTOR CIVIE: Do you recall on January 3rd, 2012 the planning and zoning meeting at 3:15 in that meeting, Linda Painter (phonetic), stating that there are, quote, "four potential locations of four transmission stations," which you did receive in your package. CL&P provided images of what those four acre

sites look like, referring to figures 15A-22, 15A-23. I think I could safely say that they are not attractive, and the majority of the board agreed. Do you remember that?

MR. MELE: Did you say 3:15 sir? Did you give a time of 3:15?

MR. VICTOR CIVIE: No, no, 3:15 into from the start. That's how they labeled it on the --

MR. MELE: I'm sorry.

MR. VICTOR CIVIE: -- so if you want to review that you go back to the tapes and look at three hours and 15 minutes. All right. So if they did think that then wouldn't you say that the town of Mansfield was misinformed?

MR. MELE: If the town of Mansfield -- I don't know whether -- what the town felt or whether they were misinformed.

MR. VICTOR CIVIE: Well, they are saying that their decision was based basically on how unattractive these stations were. So you don't think that factored into their decision?

MR. FITZGERALD: I object to that. How is he supposed to say what somebody else thought?

MR. VICTOR CIVIE: That's fine. I

withdraw the question. All right. In regards to cross than, I guess we have to wait till another time until I get those records. I'm finished for now.

CHAIRMAN STEIN: Thank you. Given the time, I think we're going to, I guess, suspend this portion of the hearing until tomorrow. Just briefly, what tomorrow -- CL&P, you're going to have your vegetation management witness?

MR. FITZGERALD: Yes. We'll have all of these -- all of these witnesses, plus the vegetation management.

CHAIRMAN STEIN: Okay. And we'll go through the adoption of the exhibits that they are presenting. We'll have whatever cross-examination from the Council on the additional information, plus one of the members who couldn't be here this afternoon. Will you be able to provide that additional cost information that was requested at the start of the meeting tomorrow?

MR. FITZGERALD: Yes.

CHAIRMAN STEIN: So if that's possible, and give the Civie's an opportunity to review that, and then they can continue their cross-examination and then I think would suggest that some of the other parties, be prepared for their cross-examination tomorrow and see how

far we get. So we'll have to see. So okay, so we'll see most of you tomorrow.

MR. FITZGERALD: Thank you.

(Whereupon, the hearing adjourned at 4:05 p.m.)

HEARING RE: CONNECTICUT LIGHT AND POWER COMPANY
JUNE 4, 2012

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