STATE OF CONNECTICUT
SITING COUNCIL

CONNECTICUT LIGHT AND POWER CO.	JUNE 5, 2012 (11:00 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

BOARD MEMBERS: Larry P. Levesque, DPUC Designee
Edward S. Wilensky
James J. Murphy, Jr.
Dr. Barbara Currier Bell
Colin C. Tait
Philip Ashton
Daniel Lynch, Jr.

STAFF MEMBERS: Linda Roberts, Executive Director
Christina Walsh, Siting Analyst
Melanie Bachman, Staff Attorney
Elise Brysgel, Intern

APPEARANCES:

FOR THE APPLICANT CONNECTICUT LIGHT AND POWER CO.:

NEEWS SITING AND PERMITTING
NORTHEAST UTILITIES SERVICE COMPANY
P.O. BOX 270
HARTFORD, CONNECTICUT 06141-0270
BY: ROBERT E. CARBERRY, PROJECT MANAGER

NORTHEAST UTILITIES SERVICE COMPANY
P.O. BOX 270
HARTFORD, CONNECTICUT 06141-0270
BY: JANE P. SEIDL, SENIOR COUNSEL

CARMODY AND TORRANCE LLP
195 CHURCH STREET
P.O. BOX 1950
NEW HAVEN, CONNECTICUT 06509-1950
BY: ANTHONY M. FITZGERALD, ESQUIRE

FOR THE PARTY NRG ENERGY, INCORPORATED, NRG POWER MARKETING, INCORPORATED, CONNECTICUT JET POWER LLC, DEVON POWER LLC, MIDDLETOWN POWER LLC, MONTVILLE POWER LLC, NORWALK POWER LLC, AND MERIDEN GAS TURBINES, LLC (COLLECTIVE, NRG):

MURTHA CULLINA LLP
CITYPLACE 1, 29th FLOOR
185 ASYLUM STREET
HARTFORD, CONNECTICUT 06103-3469
BY: ANDREW W. LORD, ESQUIRE

ELIZABETH QUIRK-HENDRY
GENERAL COUNSEL, NORTHEAST REGION
NRG ENERGY, INC.
211 CARNEGIE CENTER
PRINCETON, NEW JERSEY 08540-6213

JUDITH E. LAGANO
NRG ENERGY, INC.
MANRESA ISLAND AVENUE
SOUTH NORWALK, CONNECTICUT 06854

RAYMOND G. LONG
NRG ENERGY, INC.
P.O. BOX 1001
1866 RIVER ROAD
MIDDLETOWN, CONNECTICUT 06457

JONATHAN GORDON
NRG ENERGY, INC.
P.O. BOX 1001
1866 RIVER ROAD
MIDDLETOWN, CONNECTICUT 06457

PETER FULLER
NRG ENERGY, INC.
270 CHERRY STREET
BRIDGEWATER, MASSACHUSETTS 02324

FOR THE PARTY VICTOR CIVIE:

VICTOR CIVIE
160 BEECH MOUNTAIN ROAD
MANSFIELD, CONNECTICUT 06250

FOR THE PARTY EQUIPOWER RESOURCES CORP.,
LAKE ROAD GENERATING COMPANY LP, AND
MILFORD POWER COMPANY, LLP
(COLLECTIVELY, EQUIPOWER):

DONNA PORESKY
SENIOR VICE PRESENT AND GENERAL COUNSEL
EQUIPOWER RESOURCES CORP.
100 CONSTITUTION PLAZA, 10th FLOOR
HARTFORD, CONNECTICUT 06103

JIM GINNETTI
EQUIPOWER RESOURCES CORP.
100 CONSTITUTION PLAZA, 10th FLOOR
HARTFORD, CONNECTICUT 06103

ROBINSON AND COLE LLP
280 TRUMBULL STREET
HARTFORD, CONNECTICUT 06103
BY: DAVID W. BROGAN, ESQUIRE
KENNETH C. BALDWIN, ESQUIRE

FOR THE PARTY THE UNITED ILLUMINATING COMPANY (UI):

BRUCE L. MCDERMOTT, ESQUIRE
UIL HOLDINGS CORPORATION
157 CHURCH STREET
P.O. BOX 1564
NEW HAVEN, CONNECTICUT 06506-0901

JOHN J. PRETE
THE UNITED ILLUMINATING COMPANY
157 CHURCH STREET
NEW HAVEN, CONNECTICUT 06506-0901

FOR THE PARTY RICHARD CIVIE:

RICHARD CIVIE
43 MAIN STREET
EAST HAVEN, CONNECTICUT 06512

FOR THE PARTY EDWARD HILL BULLARD:

EDWARD HILL BULLARD
42 SHUBA LANE
CHAPLIN, CONNECTICUT 06235

FOR THE PARTY THE OFFICE OF CONSUMER COUNSEL (IF GRANTED):

ELIN SWANSON KATZ
CONSUMER COUNSEL
TEN FRANKLIN SQUARE
NEW BRITAIN, CONNECTICUT 06051

VICTORIA HACKETT
STAFF ATTORNEY III
OFFICE OF CONSUMER COUNSEL
TEN FRANKLIN SQUARE
NEW BRITAIN, CONNECTICUT 06051

FOR THE PARTY RICHARD CHENEY AND THE HIGHLAND RIDGE GOLF RANGE, LLC (HIGHLAND RIDGE)

BRANSE, WILLIS AND KNAPP, LLC
148 EASTERN BOULEVARD, SUITE 301
GLASTONBURY, CONNECTICUT 06033
BY: ERIC KNAPP, ESQUIRE

FOR THE PARTY MOUNT HOPE MONTESSORI SCHOOL, INCORPORATED

EVANS FELDMAN AND AINSWORTH, L.L.C.
261 BRADLEY STREET
P.O. BOX 1694
NEW HAVEN, CT 06507-1694
BY: KEITH R. AINSWORTH, ESQUIRE

ADAM N. RABINOWITZ, BOARD CHAIR
MOUNT HOPE MONTESSORI SCHOOL
P.O. BOX 267
MANSFIELD CENTER, CONNECTICUT 06250

. . .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 5, 2012 at 11:00 a.m., at which time the parties were represented as hereinbefore set forth . . .

CHAIRMAN ROBIN STEIN: Good morning again. Good morning America. We're here in a continuation of an evidentiary portion of the hearing that began yesterday on Docket 424. I can't even get my own Council members -- today, Tuesday, June 5th, 11:00 a.m. my name is Robin Stein, Chairman of the Siting Council. We'll proceed with the applicant. I believe you have additional experts to be sworn in?

MR. ANTHONY FITZGERALD: Thank you, Mr. Chairman. We have brought with us today, Mr. Tony Johnson, as advertised, who is prepared to speak to vegetation management issues, particularly policy issues. And we also have with us, Roger Zaklukiewicz, who we has

to be here today because he is able to shed some light on this question of two cable sets versus three cable sets for the underground variations that we had to take a pass on yesterday with these other witnesses. So I'd ask if they could be sworn and then I'll just ask them to adopt -- to verify their resumes that have already been submitted in the resume volume are accurate.

CHAIRMAN STEIN: Okay. Can we swear in with Attorney Bachman? If you two gentlemen would please rise?

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

MR. FITZGERALD: Gentlemen, Mr. Zaklukiewicz and Mr. Johnson, we have previously submitted as part of the testimony, the pre-filed testimony in this case, a volume of resumes, which include resumes that we obtained from each of you. And can you swear that the information in each of your resumes concerning yourselves is true and accurate to the best of your knowledge and belief?

MR. ANTHONY JOHNSON: It is.

MR. ROGER ZAKLUKIEWICZ: The resume is accurately to the best of my knowledge.

MR. FITZGERALD: Thank you, Mr. Chairman.

CHAIRMAN STEIN: Okay. We'll now resume cross-examination from staff. Christine?

MS. CHRISTINE WALSH: No questions at this time. Thank you.

CHAIRMAN STEIN: Cross-examination by -- Professor Tait, do you have any questions?

MR. COLIN TAIT: Not at this time.

CHAIRMAN STEIN: Not at this time? Mr. Ashton?

MR. PHILIP ASHTON: I'll pass at this time. Thank you.

CHAIRMAN STEIN: Dr. Bell?

DR. BARBARA BELL: I have some questions, Mr. Chair.

CHAIRMAN STEIN: I assume that was an affirmative chuckle.

DR. BELL: All right. Today I wanted to ask some questions through Ms. Mango. Ms. Mango is there somewhere behind the machinery. This is a question about vernal pools. There are numerous places in all of this record where you talk about vernal pools or the application mentions vernal pools and so forth. And I don't want to go through all of the places, but I just generally want to ask a couple of questions. We have --

we're dealing with regular vernal pools, if we can call them that, in cryptic vernal pools, and we're dealing with a set of categories given to us by Dr. Klemens in reference that's common, in which he talks about protecting vernal pools. And he describes, A, the vernal pool itself, and then, B, the envelope for the vernal pool and then, C, the larger -- I think it's called a terrain maintenance area, or something like that, goes out to 250 feet.

So my first question is, when we're dealing with a cryptic vernal pool, which is part of a larger wetland system, we can't apply the doctor Klemen's schema, is that correct?

MS. LOUISE MANGO: I think that's basically correct. And for the record, essentially, a vernal pool is -- very briefly, it's a depression that holds water, usually less than two feet, only in the spring, it allows certain amphibians to breed there and then, later in the year they dispersed to adjacent uplands. There are other areas, amphibian breeding habitats, which don't have those characteristics, but amphibians such as toads and frogs, I guess it would be frogs, some salamanders, fairy shrimp, things like that, they can still breed in those areas and those may not be

just there in the spring, they may be there year round, and provide a breeding habitat. So we have tried to make a distinction between amphibian breeding habitat and vernal pool, or I should say our consultants, ECON Environmental did that. There is a fine line, it's not always clear. ECON further defined what they called a cryptic vernal pool, which may be where there is a large wetland and within that wetland a small portion was found to have amphibian breeding habitat or a vernal pool.

Now, maybe that's not a vernal pool every year. Maybe it was a dry year. The whole area was classified as a wetland, but there was a depression that had water at the time that ECON came through. So they classified that as a cryptic vernal pool. It was part of a larger system, it wasn't alone by itself in the woods somewhere. Maybe the next year, that wasn't a vernal pool. And to make things more complicated for this particular project, because we had quite a bit of time to study this, ECON went out on two separate occasions, they went out in 2008 and they identified vernal pools, and then we sent them back out last year in 2011 and instead of just saying, all right, what you found in 2011 is what we will submit as vernal pools, we said, look, amphibians move around. You can't just draw a box around say, you

know, your table up there and say, well, that's the amphibian breeding area and vernal pool for 2011 and they're never going to move out of that. Because maybe in 2008 we found that they were over there at that table, right? So we allow -- we said, all right ECON, we'll put everything that you identified in two years into our report is vernal pools. And that gives us a pretty good indication of where these critters may be.

So yes, I'm not sure that, you know, because we have something like 88 vernal pools, we can't just necessarily apply -- I think it's Dr. Calhoun's analyses. So what we've tried to do is to say, we'll try to protect these pools the best we can by not putting structures in vernal pools, but we recognize that we will be cutting vegetation near them. And we know that we will impact them to some degree. And I think the good news is that of the 88 vernal pools something like 59 are on the part of the right-of-way that CL&P already manages. So from that point of view CL&P is doing something right. And, you know, the species continue to exist in these areas and successfully breed there.

DR. BELL: So wherever you can apply this larger schema, which talks about various types of impacts to vernal pools, depending on whether you're within the

pool itself, the envelope or the terrain around -- farther out around the pool, wherever you can apply that schema, which probably can't be applied in all cases, but where you can apply it, then you are applying it, is that correct?

MS. MANGO: I think that is largely correct, although I think some of these things -- I think what he has, as I recall, he said like, don't cut trees within a certain distance of a vernal pool, if you could avoid that. I think it was maybe 100 feet, don't disturb the envelope.

DR. BELL: That's the 100 feet envelope recommendation.

MS. MANGO: Yeah. We can't do that because there are certain vernal pools, and I think I did account for these in my testimony, I think 23 of the 88, they're in forested areas for the most part, that are on unmanaged portions of CL&P's rights-of-way. So we will have to cut the trees in the vicinity of those vernal pools. Now, that being said, as we thought about this in the months since we filed our Siting Council application, we worked with our biologist to try to come up with ideas to minimize impacts to vernal pools. In our application to the Army Corps of Engineers, we just filed, as I said

yesterday, in late May, we actually have a whole vernal pool minimization avoidance protocol that we've developed for the project with the National Grid and goes through the types of things that we'll do to try to minimize impacts. Understanding that we will have to cut the vegetation in the forested areas, but we might lead slash to allow egg masses to attach. We might minimize cutting of shrub land, that's adjacent to the pools where we can, for example, we have poles that span vernal pools, you know, we'll try to leave as much shrub land as Mr. Johnson will allow us, which will still provide cover for the amphibians.

As we have done on Greater Springfield there might be areas where we would construct amphibian ramps to get up and over silt fences. I think the more logical thing is to make sure that we silt fence off our construction area so that we don't have a problem with amphibians getting into that area when they're trying to disperse from the breeding pools. So there's a number of things that we can do and we have done them effectively on GSRP.

The bottom line is while we can't adhere to all of Dr. Calhoun's recommendations, we are trying to modify them for our project so that we are minimizing

impacts where we can to the vernal pools.

DR. BELL: Okay. Good. I know a lot of these details will be in the D&M and so forth. So, I didn't mean to get into any depth here, I just want to make sure we're in the same -- we're all on the same page and we're trying to apply the schema goes beyond the vernal pool itself wherever possible.

MS. MANGO: Yes. I agree.

DR. BELL: So I am hearing that that's what you're trying to achieve.

MS. MANGO: That's exactly what we're trying to do and I think one final thing is that what we find on these rights-of-way is because CL&P preserves the rights-of-way from development, such as subdivision, shopping malls, we have a lot higher percentage of success with our vernal pools remaining in some manner, shape, or form some kind of amphibian breeding habitat. And in fact, you know, I was just talking to Mr. Johnson, and we find some of these things where there's a rut in the road and ECON was finding amphibians breeding in a tire rut in an access road. So we know they exist and we are providing habitat for them, you know, not just the pool itself, but the whole right-of-way which is preserved.

DR. BELL: Okay. Moving to another area, birds on the right-of-way. In your testimony, I believe, you talk about something like 26 species of birds on the right-of-way. Well, it doesn't matter, the exact number, but in general the Audubon Society is talking about the fact that the right-of-way is now providing refuges for endangered species in many places, because they have grassland habitats, right-of-ways are maintain and so forth. And I'm sort of -- that makes the problem of wildlife and birds in the right of ways, I mean, on the one hand it's good because you can argue that you're not destroying bird habitat and so forth. On the other hand, it makes you then custodians of the endangered species in Connecticut, which is worse from the point of view of having to maintain these areas. So I'm kind of wondering how you feel that you're coping with the situation where you're in a sense running a zoo, a bird and avian zoo on your right-of-way?

MS. MANGO: Well, first, I think that's probably a question for Mr. Johnson, who actually has to maintain the rights-of-way. But you are correct, I mean, the Audubon Society, Connecticut Audubon, did come out in favor of the project because what we're finding in Connecticut is that because of this vast conversion of

farmland to forest, or conversion to development of some sort, whether it's residential, commercial, power line rights-of-way and pipeline rights-of-way are some of the last bastions of shrub land habitat. So, they do provide birds that favor those habitats with necessary food, forage and cover.

And I believe that in our application. We identified something like 26 species overall, not just 26 birds, but those were the state-listed species that we looked at and there was a subcategory of birds. And we did find some of those birds on the rights-of-way. And I would imagine that the expansion of the rights-of-way, as the Audubon Society says, by virtue of this project would promote additional habitat for those species that they want to see promoted. And I don't know, I don't know if Mr. Johnson, I don't know how he feels about being the custodian of endangered birds, you can address that.

MR. JOHNSON: It's actually a reward to be able to have an area and manage an area that is, what do you say, a preserve almost for a lot of endangered species. Not just the birds, but the insects, as well as a lot of plants, which once you revert back to that forest canopy, you've lost this open area. And a lot of species need these special niches to survive and they

interact with each other. Certain species that don't grow in forest that grow in the right of ways, the open areas, are host plants to certain insects. So there's interrelationships that also bring in the shrub land birds too. So it's a great thing to be a steward of. And every year we learn more and more. It's not just vegetation anymore, it's the whole ecosystem that we have to become aware of what's taking place around us and within these corridors that we work with.

DR. BELL: But you still feel that given this situation that you're describing that you can maintain your basic maintenance practice and meet the NERC and the FERC standards and so forth even though you may have special challenges given that, you know more and more about the various wildlife that you're custodian of?

MR. JOHNSON: There's always the ability to do some type of management to obtain our safe and reliable operation requirements and comply with the FERC and NERC standards and still not cause any problems or adverse impacts to some of the biota that live in these right-of-ways or exist in these areas. Again, our focus is on vegetation that could contact the lines, which would be tall growing trees, which is the climax forest. So if we eliminate those and control those, we have a

stable shrub land community out there, so there's no -- they don't conflict, they actually work very closely together, they actually complement each other.

DR. BELL: Okay. Just continuing with you. We've had the two storm situation in Connecticut that we're all familiar with and we now have several reports, the Two Storm Panel, and most lately the FERC report, which talks about vegetation management along the right-of-ways. Is there anything that you anticipate will be a difficulty with this Docket, this transmission line, that would be a challenge in meeting the various emergency requirements?

MR. JOHNSON: It's difficult to say if there's going to be a conflict. I don't believe so, it's just going to require a more intensive inspection and management of the areas outside the cleared limits of the right-of-way, not within this cleared limits, or the maintained limits. The issue with the Two Storm Panel, and specifically with the FERC report, their concern is with off right-of-way or outside the maintained limit danger trees and hazard trees. Since we will have some existing right-of-way that will be unmanaged or uncleared, that requires a more intensive inspection to make sure we do address certain trees, but could be a

problem to the lines, hopefully getting to them before they become a hazard, or as soon as they become a hazard before they fail. It's not clear how we're going to address just danger trees yet, we're still looking into what is our exposure on our system right now. We're actually surveying our lines to determine whether or not we have the ability to go after trees that are outside of our maintained limits, either within our right-of-way, or outside our right-of-way limits.

DR. BELL: Is there any opportunity you might have on this project to do a pilot study of how you might work with trees outside of the right-of-way? For instance, you're going through Mansfield Hollow where you have a lot of land owned by the Army Corps of Engineers, or the Feds., whoever -- whatever the proper chain of ownership is. I'm just wondering to myself and thinking about the difficulty for you in managing places that are actually off your right-of-way, which you seem to be ordered to do by these various panels whether you can experiment with newer projects in some way? I don't know what those -- what ideas you might have, but if you have any you might -- I'm giving you this opportunity.

MR. JOHNSON: We could include it as part of our study. We have selected a couple of lines to do a

pilot on this year where we're going to more or less just survey the hazard and danger tree issues. We could include any part of this project also, however, it would be limited to only those sides that would not be cleared. I don't know to what extent we're going to be clearing the uncleared line yet, or the unmaintained area. So until that edge is established I can't say what our exposure is.

MS. MANGO: And if I could just do something? This was an issue that came up a little bit on GSRP, because obviously GSRP is being constructed in the midst of the two storms that you spoke of, and there were locations where after we cleared for GSRP our foresters determined that there were some danger trees, which couldn't be established until after we had established a new clearing edge. And yet, when we went off to get those trees from an environmental inspection perspective, specifically in Massachusetts, I believe it was, some of our state inspector oversight people thought we were going off right-of-way, although it was within the purview of the company to take those trees down.

So in this application we have explained right in Section 4 of Volume 1, that we may, you know, we would be looking to do danger tree clearing when they are

identified after your new right-of-way edge is established. It doesn't answer your question exactly because it's not a study per se, but we try to make sure that in the record, and we told the Corps of Engineers the same thing, that when danger trees are identified if there's a clearing crew out there, and Mr. Johnson agrees, the foresters have identified the danger tree, we need to go get it, not wait.

DR. BELL: Do your easement agreements allow for you to go outside the right-of-way and get danger trees right now?

MR. JOHNSON: Some of them allow danger tree rights outside of the easement limit, yes, some.

DR. BELL: And are you reviewing those to see if you can get clauses in that would allow you to do that for all of your easements?

MR. JOHNSON: I am not aware of any effort. I don't know if I can answer that. I don't think we're trying to go out and reestablish new easement rights. I think we're just working with the rights that we have at this time.

DR. BELL: And you just try to go case by case wherever you found a danger tree?

MR. JOHNSON: Case-by-case, property by

property, location by location, yes.

DR. BELL: Okay. Ms. Mango, in part of your testimony you referred to -- it's on page 28, but I don't know that you need to actually look it up, because you use the words, never managed portions of the right-of-way. And I was just curious about that and wanted to ask Mr. Johnson about that. Are there any portions of the right-of-way that are not managed? Aren't you required to manage all along the right-of-way?

MR. JOHNSON: Until recently off right-of-way, or outside the maintained edges of the right-of-way, were never really inspected or examined as intensively as they will be now, a lot due to the impacts of the storm. The occasional off right-of-way tree that would fail we would try to identify hazard trees, not just try to identify danger trees, because as years pass we have more and more danger trees along the outside of our clear limits. We do manage on a case-by-case basis, a hazard tree within those easemented areas, but we would not manage all of the vegetation or all the rights or properties that would be within an easement.

We have some easements that may be 600 feet wide with only 100-foot cleared for one line there's really no reason to manage the rest of that area. If we

owned it as a property, we may manage it for some other activity, some recreation or foresting, but not for line maintenance.

MS. MANGO: And I think on page 28 of my testimony, when I refer to that, it's part of a discussion of the environmental effects, setting up why we have identified the environmental effects the way we have identified them for this particular project, because we're proposing to install the new 345 kV line in areas where it's north of the existing 345 kV line in areas that are currently forested. We don't have any access roads there, unlike some of the other projects we've done where we're maybe replacing structures that did have access to them. For this particular project we are in areas that there are no access roads, no one's had to get in there to do anything substantial to maintain an existing line. So what I think I'm trying to explain is that, you know, we can't just say that we're going to use an existing access road on the 70 to 90 feet we're going to have to clear because we've never been there before for construction purposes.

DR. BELL: I see. I guess we're encountering, at least I'm encountering a type of line that I -- that's a lot wilder, I'll call it, then I've

seen in the previous dockets in more populated maintained areas. So it's an interesting facet.

MS. MANGO: It's much more remote.

DR. BELL: Yeah. I have just one more question. In the response to the Council in the second set of responses, question 29, I believe it is, there's a reference to flood storage areas, or flood storage volumes, and it indicates that you're still studying that for certain portions of the project. And I wondered if what you'd found out further about whether you're going to have to set aside flood storage areas to supplement criteria for the water quality and floodplain maintenance and all that kind of thing?

MS. MANGO: I am not sure that these studies are complete yet, because that would be something that would be part of our 401 Water Quality certification application, which is still pending. But to my knowledge, we have some new structures in floodplains, and those are identified in the application. We are not proposing any new permanent access roads in 100 year floodplains and we are not in any flood ways, such as we had to construct within for the Manchester to Meekville circuit separation project. So I do not anticipate that we have to get into a compensatory flood storage program

at this point in time. Now that could change, but I don't think that that's the case.

We also are still studying where we might need culverts, permanent culverts, and is part of that, that involves special studies of sizing the culverts correctly, if you have more known a 100-acre watershed that flows into them and things of that sort. I don't think those studies are completely finished yet, either. But right now, I don't think we're in a situation like we have for MMP or I think Middletown/Norwalk where the Norwalk substation requires some kind of special Federal Emergency Management Association analysis.

DR. BELL: Okay. Thank you. Those are my questions Mr. Chair.

MR. FITZGERALD: Mr. Chairman? Mr. Chairman?

CHAIRMAN STEIN: Yes?

MR. FITZGERALD: While Dr. Bell has the floor, I wanted to report that we were able to get some additional information about how Rhode Island handled EMF mitigation and what their approach was and so forth in the Rhode Island Reliability Project. So if anybody wants to follow up on that we can do that.

DR. BELL: Let's follow up. That's great.

MR. ROBERT CARBERRY: We obtained the relevant pages from the decision and order in Rhode Island on the Rhode Island Reliability Project, the pages on EMF. And we were aware that the National Grid had proposed in their project to do two things in regard to EMF. One was to cite the 345 kV line toward the center of the right-of-way. This was a right-of-way that had some existing lines at 115 kV that needed to be reconstructed and they were to be reconstructed in a vertical configuration. So the one thing they did is position the 345 kV line in the right-of-way so that it was further for both edges. And then they also used a best phasing between the new 345 line and the reconfigured 115 kV lines.

And in the decision they basically just acknowledged that Rhode Island had not established standards regarding maximum levels at the edge of the right-of-way. They noted that the projected magnetic fields intensities at the edge of the right-of-way for the Rhode Island Reliability Project all appear to be well within any enforceable standard that would be applicable in either Florida or New York, as well as the current European Union International Commission on non-ionizing radiation protection guideline. So we have not

spoken live on any of those guidelines in this proceeding as yet, but I think you're familiar with them from previous proceedings.

So there is nothing similar to Connecticut's EMF best management practices. Basically, what National Grid did was probably no cost or at best very low cost obvious ways to reduce magnetic fields. No additional line height or anything else in Rhode Island. So that appears to be their policy.

DR. BELL: Thank you Mr. Carberry.

CHAIRMAN STEIN: Professor Tait has a question.

MR. TAIT: I was looking at the --

COURT REPORTER: Microphone please.

MR. TAIT: -- oh, sorry. I was looking at the Green Dragon Day Care area. Do I understand that one of the proposals is a straight land swap? You give to -- the Green Dragon would give you, CL&P, the rear acreage of her lot and you would give her some like acreage along the highway?

MR. CARBERRY: Correct. She was interested in the property to the east.

MR. TAIT: Was it sort of an acre for acre?

MR. CARBERRY: If we had such a transaction we try to make it close in size, yes.

MR. TAIT: Or would it be fair market value presuming the lot in the front would be much more valuable than the lot behind there.

MR. CARBERRY: That kind of a transaction would normally have to be approved by the Public Utilities Regulatory Authority. I think valuation would be --

MR. TAIT: Valuation would get into that. To avoid getting permission from them and provide first refusal has CL&P thought about giving her a license to the right of her property in lieu of the use behind her property?

MR. CARBERRY: -- we have given her a license to use the parcel of property she's interested in.

MR. TAIT: Oh, you have?

MR. CARBERRY: Oh, yes. Her issue is that paying the insurance fee for the use of that. But she has the use of that property now.

MR. TAIT: Okay. Is licensed by -- it's just a license?

MR. CARBERRY: It's just a license.

MR. TAIT: Thank you.

MR. CARBERRY: It's for two years. There's no particular reason not to continue it.

MR. TAIT: Yeah.

CHAIRMAN STEIN: Mr. Levesque, do you have any questions?

MR. LARRY LEVESQUE: Sure. Just a commentary on the land swap for pure approval, I mean, check with Council, it may be based on the minimum value of the land. But I had a question for Mr. Johnson. When you have a danger tree off of your easement where you don't have any property rights on the location of that tree, what do you do? Ask the property owner for permission to cut it?

MR. JOHNSON: It depends on the easement. If we have -- if we have danger tree rights outside of our easement limits we would notify the property owner, if there's a property owner in close proximity that we feel we would have to notify. If it's an absentee owner in a very forested area we probably wouldn't notify them if we had what we consider a danger tree that posed a hazard. If we do not have off right-of-way danger tree rights we would ask permission for that tree to be removed, yes.

MR. LEVESQUE: And what if they denied permission?

MR. JOHNSON: Pardon me? I'm sorry.

MR. LEVESQUE: If they denied permission what would be your next step?

MR. JOHNSON: We would have to leave it. We have no legal right to remove it.

MR. LEVESQUE: And have you ever dealt with this particular situation in light of the storm?

MR. JOHNSON: What's good -- what is good to point out is that it's not every danger tree that we are trying to remove. Understand, a danger tree is by our definition is a tree that could contact the lines if it were to fail because of its location and height in relation to the lines. But a hazard tree is a danger tree that shows some kind of defect or damage that would raise its risk of failure and therefore falling sooner and contacting the system.

When we can point out these hazards to a property owner they're very amenable to understanding why they need to come down. We have never had a property owner say, you cannot take a tree down, that we classified or considered a hazard. A danger tree may be another issue. But since we're only talking about a

small subset of the overall danger tree population, we're not talking tens of thousands of trees.

MR. LEVESQUE: That's why I gave the hypothetical. If they, you know, absolutely denied -- did you ever like consult with the local tree warden or bring up the issue of public nuisance if there was a denial?

MR. JOHNSON: Yeah. Unlike a distribution system, which may have a public issue with it, because it's usually roadside or where the public may be compromised if the tree were to fail or fall or have some impact if it were to drop over, we're on rights-of-way and we're kind of more or less off-road, so there really isn't a lot of public exposure out there. We haven't had the situation --

MR. LEVESQUE: Maybe I used the word, public, and I should have used the word, private, nuisance.

MR. JOHNSON: -- you know, it's kind of hard to say what we would do next. We haven't had the situation develop. We'll find out when we get there.

MR. LEVESQUE: Thank you.

MR. FITZGERALD: Mr. Levesque? You'd be interested, there was a bill in the last legislature that

would have given utilities the right to take off right-of-way danger trees and similar things for distribution lines with some kind of notification and compensation arrangements. But it went through many iterations in the past. But that was an attempt to deal with the potential problem that you just identified.

MR. LEVESQUE: Thank you.

CHAIRMAN STEIN: Mr. Lynch?

MR. DANIEL LYNCH: Mr. Levesque just asked a follow-up question that I had of Mr. Johnson and I'm sure the bill will be back again. Ms. Mango, you mentioned an amphibian ramp. Is there some type of -- I haven't run across it yet in the testimony, if I missed it, could you pointed out to me? I'm looking for the Golden Gate for the amphibians.

MS. MANGO: Yeah. I don't think that we -- that the amphibian ramp was -- it was a wood chip ramp, literally like a little ramp made of wood chips that went up and over a silt fence that you put up adjacent to your access roads or work paths. And we used it -- we are using it on the Greater Springfield Reliability Project. It it's something that we would typically negotiate with DEEP when we're finalizing our mitigation requirements for the various species of concern to DEEP. And we

actually have not met with DEEP to finalize the yet, so I think that in our application we've provided a range of potential mitigation options. I'd have to look to see if I mentioned that in Section 6 of Volume 1. But we didn't include a picture of the ramp. It is something that we might do, and it would be -- if the DEEP believes that that's something they want to see on this project, it would be in our 401 Water Quality certificate, and probably transferred as well to the D&M if that's appropriate.

MR. LYNCH: I guess my follow-up question would be, how effective are they?

MS. MANGO: Well, I sort of wondered about this myself because that assumes that the amphibians find them and want to crawl up them. I'm not sure. I don't know. You know, I think it's more effective to try to fence them out of your work area and where you have an endangered species have monitors there for them like we do on GSRP. On this project we don't have any endangered species of amphibians or state listed species of any sort. So in this case, we might just do training for workers and say, look, don't run over amphibians, you know, get them out of the way. And that might be just as effective. Put them on the other side of the silt fence.

MR. LYNCH: Thank you.

CHAIRMAN STEIN: Professor Tait?

MR. TAIT: One last little question on the day care center. One of the problems with this solution is that the insurance, the cost of the insurance. Does she have to have insurance on her back property under your line that she's using now? I'm just wondering, do you need insurance on both places?

MR. CARBERRY: The back property is her property over which the company simply has an easement.

MR. TAIT: Even though she'll going underneath your -- okay.

MR. CARBERRY: She can use our property consistent with CL&P's easement rights and her land rights.

MR. TAIT: And your permission to let her use that --

MR. CARBERRY: She didn't have to ask our permission to make that use of the right-of-way as long as it's not interfering with CL&P's rights, it's not endangering the safe operation of the line she can make whatever use she'd like of the land.

MR. TAIT: -- okay.

MR. FITZGERALD: One might -- I note Mr.

Tait that one might think that somebody who was running the day care would have liability insurance, whether required to do so by the utility or not.

CHAIRMAN STEIN: Are there any other questions at this point from either the Council or staff? Okay. Dr. Bell?

DR. BELL: Thank you, Mr. Chair. I have one very quick question, no relation to the other questions. Maybe Mr. Carberry can answer, maybe not. There's a gentleman in Mansfield, whose name is Donald Hoyo (phonetic), who wrote you/us a letter regarding an underground alternative in Mansfield that was not like the underground alternatives that you all had proposed and in the course of mentioning this, of describing this alternative and talking about his general concerns he said something about possible hydroelectric power at Kimberly -- Kerby Mills. Do you know anything about what that is, what he was referring to? It was -- it just came out of nowhere and I was wondering if that's some kind of potential generating place? Is Kirby Mills a place or is it a commercial company?

MR. CARBERRY: I don't know very much about this. He has had the same conversation with me and mentioned that. I believe it's a facility that's nearby

the Mansfield Hollow Lake and dam and if they are proposing some sort of a generating facility, a hydroelectric generating facility it would be something of a small capacity that could be connected to a distribution system. So I think he was thinking that it was a more substantial facility that it is in terms of whether it needs to connect to a transmission system or not. So that's about all I know about it.

DR. BELL: Is it something that the town of Mansfield is sponsoring in any way do you know?

MR. CARBERRY: I don't -- I don't know. I did, after having a conversation with him, I asked the people in our company who deal with interconnections of small generating facilities if there was anything active with it, and they had not heard of it. So if this is something that's happening I don't know how far along it is.

DR. BELL: Okay. It was just a curiosity to me. Thank you for providing that information. Thank you Mr. Chair, that's it.

CHAIRMAN STEIN: Okay. We'll now continue with cross-examination. Victor and Richard Civie, are you prepared now to continue your cross from yesterday?

MR. VICTOR CIVIE: Thank you, Mr.

Chairman. Mr. Zaklukiewicz, for a specific set of specifications there could be designs that are perhaps more complex than others. There's a range of designs that would meet the same specifications. Would you say that this design for the underground project would be more complex at the higher side of that range?

MR. FITZGERALD: Could you please specify what underground project that you're talking about?

MR. VICTOR CIVIE: Mansfield underground projects, either one of them.

MR. FITZGERALD: You mean the so-called Mansfield alternative -- underground alternative or underground affiliation?

MR. VICTOR CIVIE: Either the Mount Hope variation or the Mansfield area.

MR. FITZGERALD: Thank you.

MR. ROGER ZAKLUKIEWICZ: If you'll please repeat the question?

MR. VICTOR CIVIE: Certainly. For a specific design specification there's a range of designs that could meet that particular specification. Some designs might require more complexity than other designs, some designs might require more resources than other designs. Would you say that the underground variations

are on the high side of these specifications?

MR. ZAKLUKIEWICZ: No, I would not.

MR. VICTOR CIVIE: All right. What more can be added to make these on the high side?

MR. ZAKLUKIEWICZ: When you refer to the comment, on the high side, are you meaning these are ultraconservative design specifications? I'm not quite certain when you asked the second question what specifically you were asking now for in the first question?

MR. VICTOR CIVIE: To satisfy the specification that was presented what more complexity, or what more equipment, or what more resources can be added to what you already have designed and still be within that specification?

MR. ZAKLUKIEWICZ: Let me -- I think the best way to answer your question as to discuss with you what is required of an interconnection between Connecticut and the rest of New England or New York.

MR. VICTOR CIVIE: Let me leave that for the last question. I leave an alternating question for that. All right. I'll move on. All right. Are you familiar at all with EMF cancellation?

MR. ZAKLUKIEWICZ: Yes, but I am not the

expert in it.

MR. VICTOR CIVIE: Okay. Should I defer any questions to an expert?

MR. ZAKLUKIEWICZ: You should ask Dr. Bailey of the EMF issues.

MR. VICTOR CIVIE: Oh, really?

MR. ZAKLUKIEWICZ: Yes.

MR. VICTOR CIVIE: All right. Dr. Bailey, can you explain the principle behind EMF cancellation?

DR. WILLIAM BAILEY: Based upon the physical principle that magnetic fields are vectors, which means they have an intensity as well as a direction, and that when these vectors from different sources oppose each other, there can be cancellation of the resulting measurement of magnetic field.

MR. VICTOR CIVIE: So can you explain that in terms of wavelengths then and peaks of a wave, things of that nature? I'm assuming we're dealing with sinusoidal waves, is that correct?

DR. BAILEY: That's correct.

MR. VICTOR CIVIE: All right. So if we're taking a look sinusoidal waves how would they cancel?

DR. BAILEY: The vector at any point in time from one source would be in opposing direction to

that of another source, so this is based upon both the physical location and the timing of the current flow during the sinusoidal cycle.

MR. VICTOR CIVIE: So is it correct to say then the peak of one wave must -- a complete cancellation of the peak of one wave must equal the trough of another in a generating system?

DR. BAILEY: That would be the ideal cancellation system.

MR. VICTOR CIVIE: Can you tell me what wavelength we're working at here?

DR. BAILEY: The wavelength of a 60 Hz field is approximately 5000 kilometers.

MR. VICTOR CIVIE: All right. Now, can you explain then how two lines would cancel each other out? That is, two separate lines coming from two separate stations?

DR. BAILEY: The magnetic field from the current on each of the circuits would be arranged such that the magnetic field vectors from one circuit would tend to cancel that from the adjacent circuit.

MR. VICTOR CIVIE: So if we are talking about wavelengths than, what we're looking at then is the peak of one has to try to cancel the trough of another or

come close to that?

DR. BAILEY: Yes.

MR. VICTOR CIVIE: And the wavelengths are how big again? What's the difference between the two peaks?

DR. BAILEY: Well, the difference between the two peaks is, you know, 1/60th of a second --

MR. VICTOR CIVIE: Right.

DR. BAILEY: -- but in terms of the wavelengths we're talking about 5000 kilometers.

MR. VICTOR CIVIE: So if we're talking about 5000 kilometers and we have the two units faced 75 feet apart perhaps?

DR. BAILEY: I'm not sure what --

MR. VICTOR CIVIE: Let's say we have two H-frames spaced 75, 100 feet apart, how would those wavelengths cancel each other?

DR. BAILEY: This -- the magnetic field produced by each of those circuits at any -- let's put it this way, at any position between those two circuits if you took a magnetic field meter, the magnetic field that you would measure would be the result of the combined influence of the magnetic field vectors from each of those two circuits and that would reflect and directly

characterize the interaction of the magnetic fields, and that could, depending upon the location, include cancellation, or that is a reduced magnetic field from what would be observed in the absence of a second circuit, or it could reflect an addition of the magnetic fields from one circuit and the other.

MR. VICTOR CIVIE: Aside from a peak and trough explanation, do you have any other explanation you can offer as far as cancellation of waves?

DR. BAILEY: I just gave you the simplest example.

MR. VICTOR CIVIE: All right. So in regards to peak and trough then, since you have a 5000 K wavelength, how can a peak or trough combine if the two are only 75 feet or 100 feet apart?

DR. BAILEY: I just gave you the explanation. The wavelength does not necessarily mean that there's nothing occurring between .0 and some point that's 5000 kilometers away. It has to do with the characteristic that there is a fixed relationship between wavelengths and frequencies, but the pursuit of explanations based upon a wavelength is not helpful in terms of understanding the interactions between the fields from two adjacent circuits.

MR. VICTOR CIVIE: Okay. So pursuant to either antenna theory, or transmission theory, or a physical theory then what other theories can you offer as far as the cancellation of these waves?

MR. CARBERRY: Let me jump in here because this is not radiation theory, this is not antenna theory, these are neo-fields. I have two parallel lines, they both have sinusoidal waves, they might be carrying the same currents or different magnitude of currents, in this case they're pretty close to the same, when I'm standing at a given spot along that line and I am at the peak of the sinusoidal wave on one line I'll be at the peak of the sinusoidal wave on the other line right next door. If I am at the trough of that adjacent line, I'll be at the trough of this one. Okay? Each is producing a magnetic field that at any given point in space has a magnitude and the direction. And when you put two lines -- if you want to get perfect cancellation by the way, you need to take all three wires of one circuit and put them in the same physical space. If you can possibly do that each producing magnetic field is a little different from each other, but it would add up and cancel perfectly. As soon as you pull the wires apart you cannot have perfect cancellation anymore. So the

objective when I put two lines side-by-side is to be paying attention to the direction of the magnetic field so that when one is producing a magnetic field it's up at a different point that I have the other one be down as much as possible, at least not adding to it very much. So basically, when you're putting two line side-by-side you're controlling the selection of which is the A phase, the B phase and the C phase. It's like the engine of the car. Give me four cylinders, they're not all going up at the same time and they're not all going down at the same time, they have a relationship to one another. The currents on the three phases of a transmission line are synchronized and timed the same way and we basically try to achieve cancellation by controlling which phases are where and how close they are together.

MR. VICTOR CIVIE: So if you're talking about then a single three-phase circuit, let's say, it was just a two-phase circuit without that middle wire, it's possible to be someplace in there where they completely cancel, is that true?

MR. CARBERRY: No. In fact, I use a light board to demonstrate this to a lot of people and I use exactly that type of a system where I have a lamp cord that goes to a light bulb, okay? And current -- whatever

current is going down one wire to the light bulb is going through the light bulb and returning in the other wire, okay? Because that distance is so short when the peak of the wave is on this wire, it's basically on the peak of the wave right next door to it, the other wire. This one carrying current towards you, from me towards you, right-hand rule causes the magnetic field to go up in the space between the two wires. The return wire is carrying current in the opposite direction, the same right-hand rule also causes current to be going up in between the wires, right? That's an area where there's an addition because I pulled these wires apart. If I'm looking outside of either wire the field from this wire is up, the field from the other wire is down, all right? They're not equal because I'm not the same distance away, but I have a partial cancellation occurring because of that.

If I take two more wires and another light bulb exactly the same, put them right on top of this one, my choice of wires can cause the fields to double or I can switch them and go this way and make the fields dropped like a rock. That's what cancellation is.

MR. VICTOR CIVIE: And so what you do is you make the fields drop like a rock --

MR. CARBERRY: I try to position the wires as close as we can, we have high voltages, we have to keep them apart, and I choose the phasing, which way to put which wire where, so that particularly at points off to the side of the right-of-way and off the right-of-way that we're achieving reduced levels of fields as opposed to another selection of wires of phasing that would cause higher fields.

MR. VICTOR CIVIE: So, for those particular wires then what you're assuming that is the peaks are at about the same place, at a certain point in the wire the peaks are about the same?

MR. CARBERRY: Absolutely. These two circuits as they would go through Mansfield would both start at the Lake Road switching station and then both and at the Card Street substation. Two places that are the same at each end of the line, so their currents and waves will be practically identical to one another.

MR. VICTOR CIVIE: All right. Now when you add a second set of lines you're going to have the same configuration or the same considerations, I'm assuming?

MR. CARBERRY: I am adding a second set of lines, that's what we've been talking about.

MR. VICTOR CIVIE: Well, how are you going to make sure that the peak of one set of lines is the same as the peak of another set of lines?

MR. CARBERRY: I'm connecting them to the same two stations, Lake Road and Card Street.

MR. VICTOR CIVIE: I thought you testified earlier that the other set of lines go further down?

MR. CARBERRY: From Lake Road into Rhode Island they don't go to the same place.

MR. VICTOR CIVIE: All right. So you know that there's going to be some -- there's going to be an EMF pattern from the first set of lines, there's going to be an EMF pattern from the second set of lines, how do these two lines cancel?

MR. CARBERRY: If I'm talking Lake Road to Rhode Island?

MR. VICTOR CIVIE: Um-hmm.

MR. CARBERRY: First of all, they won't carry equal currents, because they don't have the same starting points in Rhode Island, okay? In theory, because one is a longer distance than another, the waves are slightly -- when one is at a peak maybe the other one is not exactly at peek at the same time, we account for that in our analysis by accounting for the angular

difference between when the peak of one wave is here and the peak of the other one on the adjacent line is there. We can account for both the magnitude and this difference and it's very, very tiny.

MR. VICTOR CIVIE: Are both of these lines produced by the same generators?

MR. CARBERRY: Are both of these lines?

MR. VICTOR CIVIE: The currents going through both --

MR. CARBERRY: The currents on the transmission lines are produced by whatever generators are connected to the transmission system.

MR. VICTOR CIVIE: -- and you can -- to make sure that the phases are all the same, that is, you could make sure that the peaks are all the same for these generators?

MR. CARBERRY: We make sure that the A phase of any line is the same in time as the A phase of the other line. A's are A's, B's are B's, and C's are C's.

MR. VICTOR CIVIE: All right. So then, how does the second line -- can you ensure the cancellation in the first line to the second line in a particular spot?

MR. CARBERRY: I can tell you that the cancellation, and if you look at our evidence from Lake Road to Rhode Island, is not as good as it is from Lake Road and Card Street, primarily because the currents in the two sets of lines will not be equal. One is more directly connected to a line of generators in northern Rhode Island and in south-central Massachusetts, than the other would be. So for those two circuits, they carry different currents and therefore when I do this phasing combination that tries to achieve the best cancellation one is producing a stronger field than the other. Even if I have the best correction I can't -- they are not equal, so I can't cancel as well. So this is very much -- it depends on the two lines and what they're doing and the most effective cancellation we can get is when the two lines are connected from the same endpoint. So whatever one-line is carrying, the other is basically carrying the same thing.

MR. VICTOR CIVIE: I guess I'm still confused though as far as EMF. Your theory behind cancellation is that for a particular circuit or a particular line that the peaks are the same?

MR. CARBERRY: Yes.

MR. VICTOR CIVIE: And then for the second

circuit -- and because of the close proximity, I'm assuming that there's going to be some cancellation depending on where the peaks hit and things of that nature. And you're phasing that second set, doing the same thing, except the distance between the two lines are further apart, correct?

MR. CARBERRY: The distance between the two lines is further apart? I don't --

MR. VICTOR CIVIE: All right. What I'm calling circuits, are you calling lines? What's up there now, how are you defining it? Are you defining it as a line or circuit?

MR. CARBERRY: It is -- well, it's both actually. A single set of structures that supports a set of conductors is a line, all right? If that line is connected to two stations it becomes a circuit and you get a circuit number.

MR. VICTOR CIVIE: All right. So let's talk about circuits then. We're going to have two circuits up there, two overhead circuits are being proposed. I don't see in your theory -- I can see how you could cancel the lines of one circuit and I could see how you could cancel, or try to use some mitigating factors as far as the lines of the second circuit, how

could the second circuit though cancel out the first circuit?

MR. CARBERRY: Let's look at one circuit at a time. There's three sets of wires, an A phase, a B phase, and a C phase, okay? The peak on the A wire is not occurring at a particular point in time as the peaks on the other two wires. By definition, they're one third cycle off from one another, just like the engine in a car, when one's going down the other one's got to be going up, all right? So there's a balance here where they have -- they are each one third of a cycle behind one another, all right? And this is one of the reasons why the two sets of wires of one circuit don't cause cancellation, okay? If you brought the wires closer together you could improve their cancellation, but they've got to be kept a certain distance apart, okay? So you have a net result from that circuit. Another circuit I have another net result. So at any given point in space around them, I have the field that that was producing, that circuit is producing, I have the field that the other circuit is producing, and I look at choosing the phase combination that will produce the lowest fields, so the best cancellation influence between them at particular points. So I might be interested in

points outside of the right-of-way or toward the edge of the right-of-way where I want to lower field and if I choose a phase and do that, it might actually cause the fields closer in between the lines to (indiscernible, too far from mic.). So you can't get perfect -- what you want everywhere. Our focus is towards the edge of the right-of-way the best phasing that achieves reductions there.

MR. VICTOR CIVIE: All right. Thank you. Back to Mr. Zaklukiewicz. Are there any restrictions, such as regulations, laws, and I'm not talking about Kirchoff's law, but just general restrictions, which will impact -- which impacted on the underground design?

MR. ZAKLUKIEWICZ: Not that I'm aware of.

MR. VICTOR CIVIE: All right. I promised you an open-ended question. Do you have anything to add from the responses to your panel in regards to the questions regarding underground lines?

MR. ZAKLUKIEWICZ: I was not here yesterday, so I'm just going by hearsay of what was testified to or discussed. I believe the issue is, was, why do you need three transmission -- why do you need three cables in the underground section of one of the proposed alternatives? Is that a correct assumption of

what you wanted to get to?

MR. VICTOR CIVIE: That's one of the questions that was presented.

MR. ZAKLUKIEWICZ: All right. Picture Connecticut, we have basically four 345,000 volt transmission lines which interconnect to the outside world. The Card Street/Lake Road/Sherman Road transmission line connects eastern Connecticut with Rhode Island. We have the North Bloomfield/Agawam line, which is presently being built. We have the Barber Hill to Ludlow line being built through Massachusetts. We have the 345,000 volt line from the western end of our state at a station called Long Mountain, which goes to the transmission system in New York, which is Pleasant Valley. And we have a high-voltage DC connection in the New Haven area, which goes to Long Island. We have an underground -- undersea submarine cables that go from Norwalk Harbor at 138,000 volts to Northport on Long Island. We have a 115,000 volt line which goes from the Mystic/Shunock River area to the Rhode Island line in the southeastern part of our state. And we have basically a 69,000 volt line, which goes in the northwest corner of Connecticut to New York, which is basically operated normally in the open position.

The interconnections from Connecticut to the outside world are very, very important, as opposed to their ability now to move power from generators anyplace in New England or New York or in today's world from New Brunswick, Nova Scotia or Quebec or Ontario or New York to the load centers and we normally think of Connecticut as a pretty populated place. Typically in the last number of years requiring power to be moved into the state from the outside world. They differ appreciatively from the transmission lines that are internal to the state of Connecticut.

And I think during the discussion yesterday there was discussion of, well, what about the underground cables that were placed in service on the Bethel/Norwalk project? You have those at Plum Tree substation and they go to Hoyt's Hill substation. And at that location Hoyt's Hill basically has no circuit breakers, is a very small interconnecting location. And, as a matter of fact, the cables there are only 1750 kcmil, if my recollection is correct. And they are solid-state, cross-linked polyethylene.

The requirements of the transmission line from Frost Bridge, down to Norwalk, is a much smaller, lower capacity requirement than what we are typically

talking about on any of the high-voltage interconnections with the rest of New England and with New York. At that time we selected 1750 kcmil because that was the largest cross-linked polyethylene cables designed in the world that was operating, or had some small number of years of operation, that was sufficiently proven that we were willing to place it on our system. There was discussion at that time that the manufacturers could make -- manufacture a cable with a cross polyethylene insulation system of 2000 and 2500 kcmil, but those cables were -- at that time they were either in design, the beginning of manufacturing, but it had not been placed in service and had any proven reliability.

As part of the decision by the Connecticut Siting Council we experimented by placing two of the cables a short distance from Plum Tree down to Hoyt's Hill transition station and those were manufactured at 1750 kcmil, okay? And they are presently operated, both in service at this time, and the design at that time was based on the fact that if one of the cables were to fail, we would turn around, open the circuit up between Plum Tree and Norwalk substation. We would isolate the cables by removing the links that we had installed in the bus work such that work could be performed on the cable

systems. We selected the links because disconnect switches require maintenance and the links are basically bolted on, they're aluminum connections that are a section of the bus bolted right in requiring very little maintenance, such that the design at the time the thinking was, this would be the minimal amount of interference, if you will, or requirement for maintenance to be performed on say, a disconnect switch, such that it would ensure the integrity of the line from Plum Tree down to Norwalk to be at its maximum.

Recall now, this is internal to Connecticut, has nothing to do with the movement of power, basically the movement of power from any place in New England to any other location in New England except in the southwest portion of the state of Connecticut. The M/N project, Middletown to Norwalk project, in that location also is not an interconnection with the outside world. And I believe we testified to that during the Middletown to Norwalk hearings where we required at that time, and projected into the future, that we would require two sets of three-phase cables and at that time we were sufficiently comfortable that we were in a position to recommend cross-linked polyethylene cables as opposed to high-pressure fluid filled cables.

The requirements for the transmission connections between Devon substation, or East Devon substation to the Norwalk substation was such that the two, 3000 kcmil cables would sufficiently carry the needs both to the loads in that area and allow for the generators that are connected to that system to operate even when one of the transmission circuits is out of service. A couple of years ago one of the 345 kV cables did fail between Singer substation in Norwalk and the repair time was approximately five weeks. That is -- that was that short a period of time because we were able to locate exactly where the fault had occurred, such that we could get into the manholes and verify where the problems were, such that we then later on, could replace those sections of cable.

The submarine cable now, the 138 kV cable that failed between Norwalk Harbor and Northport took us over a year to repair and replace. Understandably, that was a requirement to pull up the cable, which is submerged in about 150 feet of water, do this splices and required special boats to be brought over from Europe to lift the cable and make the repairs. And I realize I'm getting long-winded here.

The connections to the outside world have

to always have the capability of moving power into the state of Connecticut, which is critical upon the transfer limit remaining high at all times. So if you were only to install two cables where a underground alternative is required, any time one of the cables systems fail to transfer the capacity of the remaining underground system is approximately 600 MVA, okay? Compare that to the overhead transmission line now, which has a normal continuous rating of somewhere, say, 2200 MVA -- I mean, 2000 MVA, in general terms. The two cables together have a continuous rating of 1200 MVA. However, when one fails, we are not talking about being able to restore that underground cable system back in service in a matter of minutes, or hours, or on average we have always been able to -- basically always been able to put an overhead circuit back in service in 24 hours or less. There's been a couple of exceptions to that, but on the whole, very few.

Now, when you've got the overhead cable system operating between Cobb Street to Lakes Road to Sherman Road, and the rest of the world, and now you have a second circuit with an underground link in it, which is now only has a rating of 600 MVA, the Independent System Operator, this is ISO, their operation center, has to now

account for what could possibly happen in the rest of the world such that they will now severely limit the transfer into Connecticut. Even though you have the line from New York to Connecticut, you have two lines coming down from Massachusetts, the Springfield area, into the Manchester/North Bloomfield area, and you have two circuits now going east to Rhode Island. One of them has the capability of 2000 megawatts, the other one has a capacity of 600 megawatts. We have one cable fail now. You're going to be in this situation for anywhere between four weeks to eight weeks plus, depending on where the problems are and how quickly you can isolate the system, find where the location is, install new cables, cable within that second circuit of three conductors and the operations now center in Holyoke has to say, hmm, how can I operate the system? I must account for failures because I can't operate the system such that my next contingency will cause me to have overloads. That's a federal requirement. So they have to now look at what happens with the second -- what happens now if I was to lose the overhead line that goes from Cobb Street, the present line from Cobb Street to Lake Road to Rhode Island?

They have to now account for the fact that

when I lose that overhead line my transfer from Rhode Island back into Connecticut now is not 2000 megawatts, it's only 600 megawatts. So my total transfer into the state of Connecticut decreases significantly when that is the case. Okay? Because they can't operate the system now at the high level they were before, because when I lose that overhead line I am going to overload my underground cable section, which only has one third the capacity of my overhead line. Okay? So for the next number of weeks, while the transfer into the state of Connecticut is significantly less than what it normally is, we are having to run all sorts of generation in the state of Connecticut out of merit.

Out of merit means the generation that is normally being bid in at 40 or 50 or $60 a megawatt hour is now being bid in at $400 a megawatt hour, and that's the generation that ISO New England has to schedule online every hour, especially during high load periods, because the transfer into the state of Connecticut has been decreased as a result of this transmission circuit now having this one two-mile section of cable, which only has the capacity now 600 megawatts. This is not a good situation to be in for an interconnection. So you always want to maintain the interconnection such that the loss

of it, of one of the underground cables, does not severely limit you on what can be brought into the state of Connecticut.

Therefore, what we have -- what we recommend is for there to be three three-phase underground cable systems, such that if you were to lose one of the three for a five-week, eight week period, you would still have two cable systems remaining in service. The capacity then of the two remaining circuits, underground circuits, would limit that line now to 1200 megawatts, however, we think we can live with the 1200 megawatts, because the cables have a fairly high long-term and short-term emergency rating associated with them.

Placing only two of the cables in service to begin with when designing a system with only two cable systems would, number one, probably not be acceptable to the independent system operator, ISO. And secondly, it would severely limit all of the other assets in the money the state of Connecticut has spent to increase the transfers into the state of Connecticut and would jeopardize all of those dollars that have been spent over the years, to ensure reliable power into the state of Connecticut.

MR. VICTOR CIVIE: All right. Thank you Mr. Zaklukiewicz. I guess we're up against a technical matter. These proceedings are right now, at least from the standpoint restricted in regards to everything but need and unfortunately, we're into the need area right now with this explanation. So I will try to ask questions that are not relevant to the need, but again, this explanation required, comments from ISO, some data from ISO, so we'll have to reserve those questions for a later time. With that in mind, I'll proceed.

The underground cable that's being produced, can you tell me what it is specifically? The underground cable that we're proposing right here for the variations?

MR. JOHN CASE: The cable proposed in these variations is a cross-linked polyethylene cable.

A MALE VOICE: Mr. case, could you speak up?

MR. CASE: Sure. You're talking about the conductor diameter?

MR. VICTOR CIVIE: Yeah.

MR. CASE: 3500 kcmil is what's been used in our estimates.

MR. VICTOR CIVIE: All right. What's the

underground rating MVA on that cable?

MR. PHILIP ASHTON: Can I interrupt one second? We've used the term here, kcmil, a great deal. I'm not sure everybody is conversant with the idea of what a mil or a kcmil is. So maybe you can preface your answer with a good explanation of that. Thank you.

MR. CASE: Kcmil is the acronym for 1000 circular mils.

MR. ASHTON: And what does that mean?

MR. CASE: Well, a circular mil is an area. You're going to ask me to remember what it is.

MR. ASHTON: If I have a bar that's one inch in diameter, what does that mean in kcmils?

MR. CASE: It's not a direct proportion. Basically, the manufacturers just have a standard as to what circular distance to take and it depends on -- mostly it depends on the type of wire that you're using and the type of -- I'm sorry. Is it all right if I --

MR. VICTOR CIVIE: Absolutely.

MR. ASHTON: This is an in-house joke. A few of you will get it.

MR. CASE: -- and I should -- what point they measure it from, that is, what way this will be measured from.

MR. ASHTON: Okay. So 1000 circular mil cable would be one kcmil cable?

MR. CASE: Basically.

MR. ASHTON: And a 1000 circular mils is a cable that what kind of diameter, what are we talking about here?

MR. CASE: Roughly --

MR. ASHTON: An eighth of an inch, four inches or what?

MR. CASE: -- well, if you take a look -- I don't know, probably around this big.

MR. ASHTON: I'm sorry. I couldn't see it.

MR. CASE: Somewhere around here.

MR. ASHTON: That looks like it might be two inches, is that what you're saying?

MR. CASE: No, more than that.

MR. ASHTON: Okay. This is really quite remarkable when the engineer asks from the lawyer and getting answers from the lawyer, but that's another story.

MR. CASE: We almost brought over a sample of the Bethel to Norwalk cable, the 1750 kcmil cable and if we had we could hold it up and show it to you.

MR. ASHTON: I just want to make sure people understand what we're talking about.

MR. CASE: Yeah.

MR. ASHTON: Thank you.

MR. VICTOR CIVIE: All right. So, just going back then, just to review then, so what are we proposing then for the underground cable again?

MR. CASE: It is a 3500 kcmil is the conductor size, that's roughly two inches in diameter is the inter-conductor size.

MR. VICTOR CIVIE: All right. And we're still -- all right. So to the question, then, that I had was, the rating for that 3500 kcmil?

MR. ZAKLUKIEWICZ: The rating of the 3500 will be somewhat greater than 600 MVA and the specifics on that will depend on the manufacturer. And until we select a manufacturer and then until the cable is manufactured by that manufacturer and the heat tests are run we will not exactly know that limit number, but it should be somewhere 600 to 640 to 650 MVA, in that range. And that may decrease also when you have three of the cables energized in-service, basically a derate, which occurs as a result of each of the circuits, the three cable systems carrying current heat the soil around the

cable systems, such that you now have to derate each of the cables from what they normally would be if they were operated totally isolated from one another. And this we all know occurs on the distribution system in particular where the cables are fairly close to one another and you try to prevent that by putting thermal sands around the cable systems, such that they will kind of dissipate the heat quicker than what you would have if you had a plain soil, which tends to also hold in the heat and it decreases then the rating of the cable system.

MR. VICTOR CIVIE: So what would you say would be the peak? That is, the most that particular cable can handle?

MR. ZAKLUKIEWICZ: We're saying that --

MR. VICTOR CIVIE: For a short period of time.

MR. ZAKLUKIEWICZ: -- the three cable system? What system are we talking about here?

MR. VICTOR CIVIE: The 3500.

MR. ZAKLUKIEWICZ: A single three-phase circuit?

MR. VICTOR CIVIE: Yes.

MR. ZAKLUKIEWICZ: Would have somewheres -- a continuous rating somewheres around 600 MVA and it

would probably have a four hour, six hour emergency rating somewheres around 1,100 MVA, in that ball park.

MR. VICTOR CIVIE: All right. The currents that are currently now going through Card Street or the power, let's say, let's put it this way, this transfers power. The power that's currently going through there, do you know what the average power is right now?

MR. ZAKLUKIEWICZ: I think we answered one of your interrogatories, Civie 01, question 01 -- 001?

MR. VICTOR CIVIE: Yes.

MR. ZAKLUKIEWICZ: I think we gave you the power that was flowing on the line -- on the line in 2011 from April 9th to March 31, 2012, and it looks like on 32 of the 52 weeks the peak loads on those lines exceeded 600 MVA. And we also provided you during the peak days of July of 2009 and of the 31 days in the month of July 2009 we exceeded the 600 MVA rating 30 of the 31 days.

MR. VICTOR CIVIE: All right. So if we take a look then at -- let's go back to page two of four. I see perhaps one day where it exceeded 1200 -- two days, June 11th and June 19th, the rest of the days were less than that. There are some days where the current was reversed, it went in the other direction, is that

correct?

MR. ZAKLUKIEWICZ: Correct.

MR. VICTOR CIVIE: All right. So if you have two lines now, you have the two circuits, which are producing 1200 at a regular rate, and then perhaps for emergency times they can go up to 1000 apiece, two of those circuits would be able to hold these loads, correct?

MR. ZAKLUKIEWICZ: That is correct, if you have the assumption that at all times you're going to have two other cable systems.

MR. VICTOR CIVIE: All right. So --

MR. ZAKLUKIEWICZ: If you don't have that assumption, then we're looking at a transfer of 600. And as I've said earlier, on 30 of the -- on 30 of the weeks, 32, of the 52 weeks, you would have been overloading the circuit and the system would have been operating totally different than the way it was operating for those weeks of 2011.

MR. VICTOR CIVIE: -- so your assumption is based on then two circuits going down, not one circuit going down?

MR. ZAKLUKIEWICZ: No. It's based on -- my assumptions are based on having two of the cable

systems installed to begin with and having one of the cable systems fail.

MR. VICTOR CIVIE: Okay.

MR. ZAKLUKIEWICZ: If you have three of the cable systems in service, installed in a design and we failed one we would have two in service and you are correct, the week of November 19th we would have exceeded the 1200 MVA capability of those cables. And I think there was -- that looks like the only week.

MR. VICTOR CIVIE: All right.

MR. ZAKLUKIEWICZ: You said --

MR. VICTOR CIVIE: That's okay.

MR. ZAKLUKIEWICZ: -- all right.

MR. VICTOR CIVIE: So what you're saying is one cable is not going to be able to do the job, one of the underground cables is not going to be able to do the job?

MR. ZAKLUKIEWICZ: Correct.

MR. VICTOR CIVIE: But we also have the overhead that's there. So one cable and the overhead far exceed these?

MR. ZAKLUKIEWICZ: No.

MR. VICTOR CIVIE: Well, you have the overhead and the overhead is doing this right now.

MR. ZAKLUKIEWICZ: Let me go back. The system operator always has to operate the system for the next contingency and at the same time not allow the rating of the remaining system after that one contingency to overload. Not our rules, but federal law requires that. This is an N -1 situation.

MR. VICTOR CIVIE: Actually Mr. Zaklukiewicz --

MR. ZAKLUKIEWICZ: So at any given time the system cannot be operated such that if you installed two cables to begin with in the project and we failed one of the cables, the system can never be operated such that the power flowing between Card Street and Rhode Island exceeds 600 megawatts. That means the generation in Connecticut would have to be increased significantly from what it normally is for all of those hours that that one cable system is out of service and for the given loss of the overhead line from Card Street to Rhode Island, the existing line. If it were to fail, the remaining power flow over that interconnection between Rhode Island and Card Street substation will not exceed 600 megawatts.

MR. VICTOR CIVIE: All right. We're getting into N-1 and N-111, which is ISO again.

MR. ZAKLUKIEWICZ: No. We're getting into

N -1, which is a requirement. ISO has no N -1 --

MR. FITZGERALD: Excuse me, Mr. Zaklukiewicz. There's actually no question pending.

MR. VICTOR CIVIE: You're right, there isn't.

MR. FITZGERALD: Why don't you wait for question.

MR. VICTOR CIVIE: There isn't. I think we need to reserve this one we're talking about the need, N-1 and about the N-111 situation. Let me just ask you one final question, then. So if it wasn't for those requirements, let's say that no extra line would be put in at all, that is, we're not going to do anything, we're just going to keep this line where it is, that would violate any situation, correct?

MR. ZAKLUKIEWICZ: Just leaving the existing line where it is?

MR. VICTOR CIVIE: Just leaving the existing line and don't have any upgrades?

MR. ZAKLUKIEWICZ: No.

MR. FITZGERALD: Well, I think you --

MR. VICTOR CIVIE: All right. Why don't we reserve the rest of the questions then until when we discuss that.

MR. FITZGERALD: -- I think that's right.

MR. VICTOR CIVIE: That's fine. With that, then I believe I'm finished except for what we have, so I'm not closing. I am though finished for the day. I would ask two things, number one, yesterday I requested some details in regards to the lines, and I appreciate Mr. Case what you have given me so far, but what I'd like is more detail, not just a general description. That is, what I'd like as far as the costs go -- well, which is cut to the chase, just give me whatever detail you have in regards to the cost.

MR. FITZGERALD: Well, we actually would object to that. Because what he's asking is at this point you get any deeper than what we've already given, we're getting into bid level details. Were we ever to build a piece of underground line in this project, it would have to -- it would have to go out to bid. And this is -- the level of detail that he's asking for is a map to bidders on how they can best calculate their bid and make sure that they are not underbidding -- no one is going to put together a bid that will have any component that is less than the price at which that component has been estimated in this estimate. So, you haven't seen what was given, but what we've given is quite detailed.

MR. CASE: What we've provided is actually more detailed than what is required from the ISO PP4 estimating procedures. That's the way all of our estimates are built and we report on costs according to ISO PP4. We provided you that, plus some additional breakout that we felt would be helpful, but beyond that, it gets into competitive issues and we're concerned about maintaining our integrity of the bid process.

MR. VICTOR CIVIE: The problem that we have now is the following. I've already speced out this project and I want to make sure -- unfortunately, when I did spec it out, I speced it out maybe a year ago my figures might not be up to date so I'll double check those to make sure that they are. However, the crux of this is the high rate -- or the crux of my position is the high rate and their high estimation of underground variations. Never has that been underground variations this costly.

Now, since the state statute passed with the financial part, we're talking about 1650(p), we have this. I need to see those basics and compare them to what I have.

CHAIRMAN STEIN: Let me just ask. Attorney Fitzgerald, if this additional information was

provided under protective order that would limit -- would that be acceptable?

MR. FITZGERALD: I'm just trying to imagine the protective order. Because we would have to bear it in mind in subsequent examinations and it does -- yes, it does take some of the sting out of it, if Mr. Civie is bound not to disclose it further. Obviously, not to become involved in any enterprise that is bidding itself. And if that were to be the case and there wasn't a transcript that was made of it, it would solve our problems.

CHAIRMAN STEIN: I'm going to ask Attorney Bachman to comment on that. My other solution was, which as usual, is to punt and have you guys discuss it over lunch and report back. Let me ask Attorney Bachman --

MR. VICTOR CIVIE: Will Mr. Fitzgerald by the lunch?

(Laughter)

CHAIRMAN STEIN: -- we have nothing to do with that part of it. Let me ask Attorney Bachman to comment?

MS. MALANIE BACHMAN: Thank you, Mr. Chairman. Attorney Fitzgerald, in the event that the information was submitted under protective order to Mr.

Civie he could then have the opportunity to submit interrogatory questions to you and your panel that would also be subject to the protective order. So he would get the answers that he wants and the information that he wants and it would be available to all the participants in the proceeding, but there would be no public disclosure by cross-examination if he has further questions on that information. Would that be acceptable to you?

MR. FITZGERALD: Why does it have to go to all of the other participants to the proceeding?

MS. BACHMAN: Well it's like the --

MR. FITZGERALD: They have to -- well, they would have to subscribe to the protective order.

MS. BACHMAN: -- nondisclosure agreement, just like the protective order for CEII. Is that acceptable to you Mr. Civie?

MR. VICTOR CIVIE: Yes.

MS. BACHMAN: Okay.

MR. FITZGERALD: It seems like a long road to a small house.

MR. CASE: If I can suggest something, we have just filed our final cost for the Middletown/Norwalk project, which is -- it's less cables, it's only six

cables versus the nine we're proposing here, but it's relatively recent information. It is the basis for much of our estimates. The rough cost of that is around 24 and a half million dollars per mile. It might be used as a proxy, and since that is file information we could provide that as --

MR. VICTOR CIVIE: It is old information. I mean, mine is more current than that. However, we could make that a start. I'm not sure that's going to do it, but they're saying that the preponderance -- so if I can use that and work off what their totals are --

MR. FITZGERALD: Well, why don't we do -- why don't we make that a start? How about this? Why don't we give you that mass of information and then you can see what additional information beyond that you think you need --

MR. VICTOR CIVIE: -- that would be good.

MR. FITZGERALD: -- and then we'll pick that up.

CHAIRMAN STEIN: Okay. That will be fine. I'll just say at some point Counsel is going to have to decide when enough is enough. So, I mean, let's hope we make progress there, but this you know, can't go back and forth forever.

MR. FITZGERALD: Well, we have some time before we come back, and we'll be in direct communication.

CHAIRMAN STEIN: Okay.

MR. VICTOR CIVIE: All right. So I'm finished. Actually, Mr. Richard Civie now has one or two questions.

CHAIRMAN STEIN: You've been sitting quietly at the table, so it's your turn.

COURT REPORTER: Please state your name.

MR. RICHARD CIVIE: Richard Civie. The Mount Hope section of this project the FAA issued a non -- a notice of presumed path of the seven proposed structures, is that correct?

MR. CASE: On the seven proposed structures in the area of the Windham airport.

MR. RICHARD CIVIE: Yes.

MR. CASE: Yep. Okay.

MR. RICHARD CIVIE: And that's in the Mount Hope section, it's called, if you go to -- if you're going to look at the map, it's Volume 9, Exhibit 2, Map 8 of 40.

MR. CASE: Yes.

MR. RICHARD CIVIE: And this is because

the structures are located upon a mountain overlooking the airport and interfere with flight safety?

MR. CASE: The FAA has done an initial evaluation on those and it has violated some of their air surfaces. They would like further analysis on that.

MR. RICHARD CIVIE: In the table of specifications, Section 3, page three and six, June 7th, it says that you're required do mitigation?

MR. CASE: That's correct.

MR. RICHARD CIVIE: Okay. So they've made the determination and you are required to do the mitigation?

MR. CASE: They have made a determination and based on the initial design, you'll notice in there that there is opportunity to negotiate with possibly lower structures. One of the considerations that they have asked for is improving the level of survey that's been done. We're at a 70 percent design here, so there's still more work to come. So they understand that. We have actually refiled just recently with a more refined design, those initial determinations were back in 2008, 2009. We've refiled just recently and we do anticipate the FAA is going to come back and take a look at these structures one more time and we should have some more

information to provide whether or not they continue to be a presumed hazard.

MR. RICHARD CIVIE: When will that be?

MR. CASE: We expect about three weeks.

MR. RICHARD CIVIE: So in the meantime, worst-case scenario, what could happen if a plane crashed into one of these structures?

MR. CASE: Probably somebody would get hurt very badly.

MR. RICHARD CIVIE: Okay. The surrounding area, is there a possibility of fire?

MR. CASE: If a plane crashed?

MR. RICHARD CIVIE: Yes.

MR. CASE: I would assume so.

MR. RICHARD CIVIE: Anything more than the usual, if you're hitting a power line? More possibility of sparks arcing?

MR. CASE: I would have to assume when the breakers would trip instantaneously once there is a fault on that there may be some slight delay, if the recall --

MR. RICHARD CIVIE: Right.

MR. CASE: I would expect that they would trip, hopefully quickly.

MR. RICHARD CIVIE: Before it can arc?

Before it can arc?

MR. CASE: That there might be -- I'm sure there would be an electrical arc once that -- if a plane contacted it.

MR. RICHARD CIVIE: I want to direct you to that same Volume 9, Exhibit 2, eight of 40. So these same hazardous structures also run through a residential area? Do you see the houses depicted on the drawing? The lots?

MR. CASE: I see where there's houses a within a few hundred feet of the right-of-way.

MR. RICHARD CIVIE: So we're looking at not a small section, we are talking about structures 67 through 71, contiguously, right?

MR. CASE: Correct.

MR. RICHARD CIVIE: About a half a mile?

MR. CASE: Roughly.

MR. RICHARD CIVIE: So you have to answer my next one, you're only a few hundred feet from the site, if a plane crash did occur, the housing is only a few hundred feet from the area that's marked as hazardous?

MR. CASE: It seems more of a hazard between the plane and the houses having -- I'm not sure

what the --

MR. RICHARD CIVIE: Well, I'm saying there's -- a plane, if it does hit that, certainly at the speed that a plane is going, it can also careen into the houses. But also, I am talking about the fire aspect. If a fire occurs, your only 300 -- 200 feet away, correct?

MR. CASE: From the proposed line?

MR. RICHARD CIVIE: From where the plane crash would occur, would be on the power lines, the hazardous power lines --

MR. CASE: Where are you assuming the plane is going to crash?

MR. RICHARD CIVIE: -- anywhere between 67 and 71.

MR. CASE: Anywhere in there? It could be several thousand feet from a home.

MR. RICHARD CIVIE: And some could be as little as a couple hundred feet?

MR. CASE: Potentially. Yes.

MR. RICHARD CIVIE: Okay. That's all I wanted to know. So basically, so not only is it a danger to the pilot and passengers, but to the adjacent homes as well?

MR. CASE: What's a danger?

MR. RICHARD CIVIE: A plane crashing into --

MR. CASE: A plane crash is a danger to anyone, yeah.

MR. RICHARD CIVIE: -- okay. Now, the FAA is going to require you to mitigate those structures, you said they're reevaluating it. But my question is -- well, I guess I don't have to ask this question because you basically don't know what it's going to look like now, right? You don't know what they're going to do? It could be --

MR. CASE: The chances are that mitigation that they recommended in their earlier determination was a low intensity red light and they would also like to have marker balls installed. But their initial determination was marked and lighted, so we have a roughly 60 watt red -- the equivalent of a 60 watt incandescent house bulb.

MR. RICHARD CIVIE: Strobe?

MR. CASE: No. No it isn't.

MR. RICHARD CIVIE: You mentioned lowering? You don't know the height they might have you lower that?

MR. CASE: What they would like -- right now the initial determinations have been there's -- you'll notice on the application, presumed hazards on the existing structures as well as the proposed, they want one set of those structures lit and marked. As long as they're adjacent to each other they don't need both sets.

MR. RICHARD CIVIE: You haven't made a determination yet, though?

MR. CASE: Correct.

MR. RICHARD CIVIE: Of anything?

MR. CASE: Correct.

MR. RICHARD CIVIE: So basically you're assuming what they're going to do. They might actually -- you're saying they might -- you mentioned just a few minutes ago that they're thinking about lowering some of the cables, is that correct? Did I misunderstand you?

MR. CASE: I think you misunderstood me. What we're looking to do is refine our design, provide the most recent information to the FAA on what our design requires.

MR. RICHARD CIVIE: It wouldn't be the 80-foot pole? Right now they're 80-foot poles?

MR. CASE: Are you talking the H-frame design?

MR. RICHARD CIVIE: Yes.

MR. CASE: We have applied for an 85-foot pole.

MR. RICHARD CIVIE: 85-foot?

MR. CASE: Correct.

MR. RICHARD CIVIE: And you're saying that the FAA -- you didn't propose to the FAA, you were going to lower those poles? I just want to make sure I understand what you're saying.

MR. CASE: No, we did not propose to the FAA that we would lower the structures.

MR. RICHARD CIVIE: But right now, you don't know what the configuration is?

MR. CASE: We know the configuration is proposed as an H-frame.

MR. RICHARD CIVIE: It just says H-frame, but not after the FAA is done with it?

MR. CASE: They won't change the configuration.

MR. RICHARD CIVIE: Not the configuration, but the actual look of the pole?

MR. CASE: They may require us to put the low intensity steady-state red light on there, according to their initial determinations.

MR. RICHARD CIVIE: Yeah, I know. I understand that. So you're basing it on what they said before, not on --

MR. CASE: We don't expect it to get any worse.

MR. RICHARD CIVIE: -- you're not sure though?

MR. CASE: No.

MR. RICHARD CIVIE: Okay. Excuse me for asking this, it's a pretty simple question, but the way legal things happen. If these new transmission lines in the same area are put underground would there being no longer a flight safety hazard?

MR. CASE: Well, again, when you say the existing structures have also served notice of presumed hazard, so they --

MR. RICHARD CIVIE: I'm talking about the new structures you're putting up, instead of putting them above ground, you put them underground would they no longer be a flight safety hazard?

MR. CASE: -- they would not be a flight safety hazard provided those ones are lowered. You'll also note that no matter -- assuming you're going underground within that area to have a transition

station, that would probably require lighting.

MR. RICHARD CIVIE: Yeah. In a smaller section though, it wouldn't be the half-mile wide section.

MR. CASE: Right.

MR. RICHARD CIVIE: All right. Changing gears. If you look at Volume 9, Exhibit 3, map one of two?

MR. CASE: On the Mount Hope underground variation?

MR. RICHARD CIVIE: Yeah. Mount Hope underground variation, I'm sorry, yes.

MR. CASE: Okay. I have it.

MR. RICHARD CIVIE: It is depicted that the underground variation, which is the red dashed line, correct?

MR. CASE: Correct.

MR. RICHARD CIVIE: Runs up from the Storrs Road, 195 to the west and connects with the transit station dotted square?

MR. CASE: Correct.

MR. RICHARD CIVIE: All right. And that connects with the existing structures red square?

MR. CASE: Correct.

MR. RICHARD CIVIE: And it continues west?

MR. CASE: I'm sorry. I think there's a mislabeling on that. Those would be the proposed structures, the red squares, 67 and 68 on north --

MR. RICHARD CIVIE: It says they're the existing structures.

MR. CASE: -- yeah, I think there's -- we need to correct the legend on that.

MR. RICHARD CIVIE: Okay. And the yellow squares, what are those now?

MR. CASE: The yellow squares are the existing line right now.

MR. RICHARD CIVIE: Okay. I think that's all I have.

CHAIRMAN STEIN: Thank you. I was about to say we're going to break for lunch in any case. Thank you very much for doing that. Let me just -- before we do break, let me just see who is here that -- who may want to cross-examine, I guess, after lunch. And you're Mr. Bullard, right?

MR. EDWARD HILL BULLARD: Yes I am.

CHAIRMAN STEIN: Okay. Thank you. And you, sir?

MR. ADAM N. RABINOWITZ: Adam Rabinowitz.

CHAIRMAN STEIN: I can't --

MR. RABINOWITZ: Adam Rabinowitz.

CHAIRMAN STEIN: Okay. All right. So we'll see you after lunch. So we'll break for an hour and we'll be back here at two clock. Thank you.

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

CHAIRMAN STEIN: Good afternoon, everybody. I'd like to get started this afternoon. We'll now go to the cross-examination by Mr. Bullard. Sir, just the green button and you're up.

MR. BULLARD: Thank you Chairman Stein, Council. My name is Hill Bullard and I have a farm that is bisected in part by the right-of-way in the town of Chaplin and it can be seen on the maps, it's map number 10, map sheet 10 or 40. And CL&P has nicely identified my agricultural land by the words, A.G., for agriculture. And it's by new pole 93 and a partially restored field is by pole -- around pole 94.

I'd like to start by examining Tony Johnson. Tony, you're the vegetation guy and that's what -- that's what this is about. Let me know if I'm asking you questions that should be best answered by someone else. You authored, or at least your name's on it, a

pamphlet, it says, Transmission Right-of-way Activities in Agricultural Lands, which was not part of the filing, but I introduced it by way of an attachment to my prefiled witnesses statement. So this is on the record.

Does -- I guess I got to ask the question, will CL&P be bound by the policies on this flyer for this project? Because they are more farm friendly than the Volume 1 filings pertaining to construction over land.

MR. JOHNSON: Yeah. Just a correction, I didn't author this, however, I am named on here as a point of contact. I did have some responsibility in editing it for correctness. My understanding is that these are general practices which we would employ during a construction project in active agricultural areas, correct.

MR. BULLARD: So they would pertain to this project?

MR. JOHNSON: Is my assumption that these would pertain to this project, correct.

MR. BULLARD: Okay. Good. Well, that's what I needed to have on the record. Let me just ask a few more questions and then I'm done. Concerning agricultural lands, and mine in particular, Volume 1 of the filing mentions permanent access gravel roads in

several places. Are agricultural lands slated for gravel roads, and again, mine in particular?

MR. JOHNSON: I'm not familiar with the planned access through your property Mr. Bullard. Whether it's permanent or --

MR. BULLARD: It refers to a D&M plan, which I don't have.

MS. MANGO: Yeah. I mean, to our knowledge Mr. Bullard, there is no permanent access road planned on your agricultural property.

MR. BULLARD: Okay.

CHAIRMAN STEIN: And just for the record, if this were to be approved, as a subsequent step, which is the D&M, which is the detailed plans of construction. That's why the details are not shown right now. Feel free to continue to ask your questions.

MR. BULLARD: Okay. Thank you. That clarifies that point. Crane pads, the poles are heavier than the last build out back in the late 60s and large cranes will be used and they require crane pads, which is addressed in -- again in your filing for Volume 1, paragraph 4.1.2.3. Essentially, a hole is going to be dug 100' x 100', almost a quarter of an acre, filled with gravel, leveled and stabilized. And then the wording,

unfortunately in the filing is that these typically will be removed. But I would hope on agricultural lands. They absolutely would be removed. Can you address that point?

MS. MANGO: I can address that. In agricultural lands the crane paths would be removed. Exactly what's needed for a crane pad would depend on the type of condition at each pole site. The box around the structures that are shown on our Volume 11 maps in our Siting Council application, that's just what we call a structure location envelope. The structure location may shift a little, but the crane pad itself is smaller, 100 x 100 or 100 x 120, and in an agricultural field what we would typically do is work with the landowner and assess what needs to be done to preserve the agricultural soils.

So for example, in your agricultural field, an active agricultural field, the contractor may be told to strip the topsoil off first, stockpile it temporarily off to the side away from the construction work room, so that when they travel they'd be traveling just on subsoil. And they would also do that at the crane pad site because you don't want to compact your topsoil and potentially mix it with your subsoil.

MR. BULLARD: No.

MS. MANGO: And then after they're done, okay? After they're done with construction, they would remove the crane pad, they would remove the access road, probably decompact depending on what was required, using a kind of a paraplow or some kind of subsoiler, or and then re-spread the topsoil back over the portion of the areas that have been disturbed in your farm fields.

MR. BULLARD: I'd just like to confirm that the subsoil that is unused for filling would be removed from the site?

MS. MANGO: Yes. And if they brought -- say, for example, they're digging a foundation, you know, or digging a hole to put their poles in anything that comes up in excess would be removed.

MR. BULLARD: Yes, but you know, nothing overall on the subsoil?

MS. MANGO: We wouldn't put anything on the topsoil next to it. And then just to further clarify this, what typically happens, we see this on the GSRP project and we have pictures of it in general, we typically line our access roads with silt fence or hay bales, something, straw bales, so the contractor has to stay within that area. They're not just going to be allowed to drive willy-nilly across your field. They

must stay on the access field, they use the crane pad, and they go in and out that way.

MR. BULLARD: But access roads didn't need to be built in '69, why now? They probably were in other locations, but they weren't over our land or even our neighbors' lands.

MS. MANGO: It probably was a function of the equipment being used. And also, I mean like and '69 old contractors that I deal with, they say they used to change oil on people's land on the right-of-way, you know? I mean, lots of things have changed. So I mean, I think that the access roads are actually a way to try to disperse the load a little bit, make sure the equipment has a safe platform for constructing the line. But also, in some respects it preserves soils and things like that because you're distributing the load in some respects.

MR. CARBERRY: Can I add to that response please?

MR. BULLARD: Sure.

MR. CARBERRY: Not only do we have to gain access down the right-of-way to this new structure that would be on your property, but in order to reach the next structure to the east we would have to do so as well, and that's in the segment two of the Army Corps of Engineers

controlled land, and right now the design preference that they have would be for us to use a steel pole structure that's for a different configuration. That would require foundations. So it's not just merely digging a hole and directly embedding poles in them, foundations, larger equipment, so that did not occur in the construction of the original line at this location.

MR. BULLARD: That's mostly a wetlands and on the Army Corps land abutting mine. That was bridged last time with wooden mats. And that's going to be my next question. I've posed this one to Tony Mele on and off for the last four years. But can the crane pads on agricultural lands, instead of digging and backfilling and disturbing actually be wooden mats? The same mats that you use for wetlands crossings, could those be used in lieu of a trench type crane pad?

MS. MANGO: It is possible. I think they would want to still remove the topsoil layer. And we don't bring in gravel in all cases. If the contractor doesn't need it, my understanding is they won't just bring in gravel just to do that, you know, the soils may be such that they are perfectly fine and stable and they just put their equipment on that. It is possible they could put down some mats, but they probably want to

assess what's really needed.

I mean, you could use maps, but I'm not sure that it would be necessarily better than gravel or nothing if they felt that they didn't need anything in that particular location.

MR. BULLARD: I felt it would be less disruption. I didn't think you'd need to peel back the topsoil because you can level with jacks.

MS. MANGO: I would -- I've done a lot of pipeline construction work and typically, you know, what we find is we get a lot of compaction and then it's hard to deal with the compaction if you have the potential for the topsoil layer to have been compacted into the subsoil layer. You know, now, this may be a question for, you know, a soil specialist or somebody like that to look at in an individual property such as yours and determine the best course of action for the contractor to use. But we find that if we don't strip the topsoil a lot of times it's a lot harder to restore the agricultural land at the end of the day.

(Interference on recording.)

MR. BULLARD: Okay. I guess we're back live? Will reseeding on agricultural lands be a part of the project? Your transmission right-of-way pamphlet

says reseeding in pasture lands, but what about active agricultural lands, not just pasture? In other words, when you reseed in active agricultural lands I have to tell you what to reseed with, Timothy, Orchard grass, or a mix.

MR. JOHNSON: That's correct. That's why that's not addressed in here as to what would be done in active agricultural lands, because that's something that would have to be negotiated with the property owner as to what would be a proper replacement planting.

MR. BULLARD: But it will happen?

MR. JOHNSON: It will happen, yes, sir.

MR. BULLARD: Okay. It mentions also in here, in the last paragraph, reimbursement for other losses. Now, other losses would be lost crops while during the construction period I can't harvest crops and we're not talking about a lot of money here. Is that a possible -- is that a possibility?

MR. CARBERRY: It's a certainty.

MR. BULLARD: You'll be occupying 40 percent of my prime hayfield. Okay. That's fine. Now, can these policies be discussed concerning access roads, crane pads, reseeding, de-compaction and so on, also pertain to the seven acre former agricultural field that

I'm restoring just to the east of my active agricultural field. And if you look at your maps it's the big green area around new pole 94. And Tony, you've been out there -- both Tony's, you've been out there. I've cleared about an acre and a quarter out of seven acres now and I'm continuing, but what I don't want to happen is anything that's destructive to normal agricultural land, I feel should be -- this land should be treated the same way because it's going to be in agricultural as soon as you guys are out there. Now, is it possible in your D&M plan to note that that second lot, which is now basically scrub except for an acre and a quarter, be treated the same way as agricultural land? In other words, stockpile the soil, topsoil, put it back, get rid of the subsoil, don't back blade it on the property?

MR. JOHNSON: I think that could be a condition of the D&M plan if it's identified and can be marked out on the field. It shows here is being upland forest and scrub. Is that forest being cleared?

MR. BULLARD: The forest are cherry tree is 25 feet high, it's not much of a forest.

MR. JOHNSON: Alright.

MR. BULLARD: It's what grew back after it was -- after it was a field growing rye back in the 60s.

MR. JOHNSON: From what I can see from this plan, Mr. Bullard, is that that probably is going to be cleared as part of the construction process.

MR. BULLARD: Okay.

MR. JOHNSON: So you're clearing won't need to be done if that clearing will take place.

MR. BULLARD: All right. But I'm concerned about, again, the crane pads, the access road, if there is one, put the topsoil back and just don't treat it as back land, treat it as -- I'm asking that it be treated as agricultural land?

MR. JOHNSON: I'm sure that could be incorporated into the plan.

MR. BULLARD: All right. Lastly, and I think this is your jurisdiction, Tony, the nearest public road access is South Bedlam Road, and you've been very kind to let the Autumn Olive and other growth grow up there to keep the ATVs off my fields. Because what happens is when you put these roads through and you don't fence off at the public road, your right-of-way becomes an attractive nuisance, that's the legal term, and I get unwanted traffic through there. Did you plan at the close of construction to chain-link it or Jersey barrier it or plant some Autumn Olive?

MR. JOHNSON: As much as it pains me to see Autumn Olive stay out there, if it is removed and the access --

MR. BULLARD: That's why I laughed.

(Laughter)

MR. JOHNSON: -- if it is removed as part of construction and we have to put some kind of barricade up, we will do that as part of the project and it will stay there after the project is completed.

MR. BULLARD: Okay. That includes the build out portions?

MR. JOHNSON: Correct. That is correct. And if it requires some replanting or just let the Olive grow back, we can let that happen also.

MR. BULLARD: What happens during construction? Are you going to tape it off or something?

MR. JOHNSON: It will be -- we have put barricades up, but we do need to have the access in there, which may be a little bit wider than what our normal access would be. I'm sure we could put some kind of temporary barriers up, and we've done this and other areas.

MS. MANGO: We've used locking gates during construction where the contractors and the people

involved in construction have a combination code. That's what we've been doing on the projects that are ongoing now.

MR. BULLARD: Okay. That terminates my questioning. Thank you very much. Thank you, Council.

CHAIRMAN STEIN: Well, first, I'm going to thank you very much, and then we do have a follow-up question from Dr. Bell.

DR. BELL: Thank you, Mr. Chair. I just wanted to ask in connection with Mr. Bullard's questions about agricultural lands. Do you regularly confer with the Department of Agriculture in cases where there's some doubt about how soil should be treated or about reimbursement for crops or matters of that sort? I've seen a couple of letters regarding farming matters on this project that suggests consultation with the Department of Agriculture and I just wondered what your procedures were on that.

MS. MANGO: Well, we have not conferred with what the, you know, the County Soil Survey personnel or the Farm Bureau per se at this point. We could. And on other projects that I've been involved in mostly like I said, pipelines where there is a lot more soil damage, we have employed soil experts and consulted with the Farm

Bureau and the Soil Conservation Service regarding particular soils. So that is something that could be done. It would be done typically in the D&M plan phase when CL&P confers with landowners such as Mr. Bullard and figures out what they might want to be planted, what their concerns are, and then we might get a soil expert or a Farm Bureau person out there to confirm, yes, you should strip the topsoil here, you know, this is a good thing to replant for reseeding, it conforms to the landowner's wishes. But there are certain things you can plant to help restore the soil, you know, nitrogen fixers, things like that. Sometimes landowners want that. So yes, we could do that, but we haven't done it at this point on this project.

DR. BELL: Okay. Thank you.

MR. MELE: Excuse me. We also met with the Agricultural Commissioner as well to brief him on the project and we did note that after the hearing phase, the siting phase, we would be preparing D&M plans and they would be shared with -- they would be issued for review for the public and we would include that department as far as the review process. So we are trying to get feedback from the Department of Agriculture as well.

DR. BELL: Okay, good. I mean, we, as you

know, send out all of these materials to the departments and sometimes we get comments and sometimes we don't. I don't believe we've had a comment on this from the Department of Agriculture, which wouldn't be unusual, so I was just trying to inform myself a little more. And clearly Mr. Bullard knows what he's doing and knows what he wants and is experienced, but there often are property owners who may be farming it who aren't as confident as Mr. Bullard is in all these areas and they don't know all of the possibilities and they don't confer with you very efficiently. And in those cases it might be helpful to have somebody who would seem to be more -- the property owner might say, trust more, just as an ally. But that's just a comment, and I thank you for the information you've provided.

CHAIRMAN STEIN: Thank you again. Next in my understanding is we have the attorney from the Montessori School. Oh, I'm sorry, a representative, I apologize. Okay. And would you please give us your name and spell it also for the stenographer? Thank you.

MR. RABINOWITZ: My name is Adam Rabinowitz, R-A-B-I-N-O-W-I-T-Z. And I am the Board Chair of the Mount Hope Montessori School.

So, there was an agreement that was

discussed yesterday with the Mount Hope School, dated May 5th, 2009, regarding consideration to relocate the school. What was the basis for entering into this agreement with Mount Hope for which you paid money?

MR. MELE: I think the agreement in question was an agreement for CL&P, or one of its affiliates, to evaluate the purchase of a parcel of land located in Mansfield that the school had identified as -- that the school had identified as a possible relocation candidate. There was no compensation considered in the letter, if I understood your question correctly.

MR. RABINOWITZ: Well, you did. In the letter, it actually does state that we agreed that we will pay for the cost of such studies upon presentation of copies of the final reports to us no later than May 22nd, 2009, together with invoices for the studies but such payment will not exceed the amount of $5000.

MR. MELE: Reimbursement for engineering studies.

MR. RABINOWITZ: So you did pay money from that agreement as a result of that?

MR. MELE: We reimbursed documented expenses for engineering studies.

A MALE VOICE: Mr. Mele, could you keep

your voice up?

MR. MELE: Sure.

MR. RABINOWITZ: Why did you consider relocation of the Mount Hope Montessori School?

MR. CARBERRY: Okay. I'll take that question. I think the idea of possible relocation was raised first by the teacher, Ms. Crider (phonetic), was her name at the time?

MR. RABINOWITZ: Kathleen Crider, the former Director.

MR. CARBERRY: Kathleen Crider? When we first met with them, met with her in August 2008, I think at the end of our conversation she was -- she said something like, maybe the school is the problem. And sometime thereafter she came up, or at least I think probably talked to the Board, and the idea of, is it realistic to look at relocating the school, is that something we should be talking about? Okay? So this was late 2008 and entering into the beginning of 2009. We know at this point time that the Mount Hope Montessori School could be considered by the Connecticut Siting Council to be an adjacent statuary facility under the law. Okay? It is the only school along the whole project route that's anywhere near the right-of-way.

While it's not on and immediately adjacent parcel, it is abutting an immediately adjacent parcel that is also owned by the school and use for its parking lot. So the Council could, and we couldn't be sure that it wouldn't, consider this to be an adjacent statutory facility.

That put us in the position of considering that the underground presumption could apply, it's a rebuttable underground presumption, so we first of all needed to make sure that we designed an underground line in this area to show what it would cost and how it would be built in order to be able to compare it to what it would be like otherwise if we built it overhead. And we know, having done this before, that that was going to be a high-cost proposition. We knew that we would probably be advancing a case to the Siting Council as to the unreasonable cost burden on consumers of building an underground line.

Now, the Council also has, as it's considering the subject matter, something called EMF best management practices, that they also would like us to apply whenever we're building overhead lines that are near facilities like this. So we had not completed the study of that work when we first met with Kathleen Crider, so we really didn't know what the alternatives

would be. But if there were alternatives they would be -- take the form, generally of building a more expensive overhead line in a different design on the right-of-way. Or in the worst case, even considering a shift of the right-of-way further away from the school in a way that's been talked about in other areas like the Hawthorne Lane shift.

So we had in our minds, certainly, that there are possible additional cost of this project at this location, if the Council considers this to be an adjacent statutory facility. And so in the context of maybe we should move the school, you know, right away it appeals to us as, oh, it might be something that actually costs less, maybe a lot less. And if that costs a lot less, and that means there's a lower cost burden on consumers, maybe we should listen a little bit more and find out what's going on here.

So I think what we had in our mind as we entered into this agreement in May of 2009 was, well, maybe we could find a need for this school property. Maybe our contractors could use it for a lay down area, could use it for a construction office. Maybe there's a need -- there's some value of this property to us. And the trade-off would be that we'd have to pay the Mount

Hope Montessori School for that facility and that money would be available to, you know, fund a new site or the relocation of a school in some way. We had no idea at that time what it would actually cost to relocate a school and it was sometime after this I believe that -- after it came to our attention of an appraised value of the school property of something like $650,000 and a cost to build a new school of more like $2,000,000. So we saw that there was this considerable gap, all right? And we weren't sure that -- we didn't think that the school was going to consider that they would pay that gap to have themselves relocated. We didn't think it was something our ratepayers should be paying either, so our interest in this kind of waned after that point. But, this agreement had occurred before we learned those numbers.

MR. RABINOWITZ: Would you consider moving to school without proof that magnetic fields would be unacceptably high?

MR. CARBERRY: I don't know what an unacceptably high magnetic field number is after listening to Dr. Bailey's testimony. The magnetic field levels here are in the normal range that you find in most homes or businesses, whether or not there are lines nearby or not.

MR. RABINOWITZ: What would you consider to be a normal range?

MR. CARBERRY: A nationwide survey was conducted some years ago and generally found that in most homes background levels, you know, I'm talking your appliances, just the centers of rooms generally ranged from a fraction of a milligauss up to as much as four milligauss. The most common range being two or less.

MR. RABINOWITZ: Okay. So if it was greater than four?

MR. CARBERRY: I still wouldn't have a cause to consider extra expenditures. We would be looking at the Councils EMF best management practices to see what we could do if this was an adjacent statutory fertility to make the fields be as low as we reasonably could for a reasonable amount of money. But as you know, from their best management practices they don't specify a particular level to get down to.

MR. RABINOWITZ: Were there any studies at all that you had at the time of the relocation agreement, studies on the area at Mount Hope School?

MR. CARBERRY: Studies of anything in particular?

MR. RABINOWITZ: Regarding either magnetic

fields -- well, that particular.

MR. CARBERRY: We had -- we had completed all of our calculations of magnetic fields of the proposed lines. What we were doing in the late summer and fall of 2008 was working on the field management design plan, which ultimately was provided -- it was not provided in the original municipal consultation filing in 2008 because it wasn't done. It was available by the time we repeated the municipal consultation filing in 2011 and it's in the application as Appendix 7B. But at the time that we first met with Ms. Crider we did not have that completed.

MR. RABINOWITZ: So the agreement had mandated Kenneth Dorson, D-O-R-O-S-O-N, Architects be employed to do the feasibility study, what was the basis for CL&P dictating that this firm perform that study?

MR. MELE: That was actually dictated by the school. The way the letter was written, it is called out in a letter, but the school had chosen -- that was the school's contractor or engineering consultant. Yes.

MR. RABINOWITZ: Were there any additional monies beyond the $5,000 that we discussed that exchanged hands for this South Eagle Hill Road land purchase?

MR. MELE: I don't believe so.

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

MR. MELE: I'm sorry? That was not to the school. I'm sorry, are you talking about the school?

MR. RABINOWITZ: Related to that South Eagle Hill Road lot?

MR. MELE: We did make a deposit to the landowner of that parcel.

MR. RABINOWITZ: Okay. And how much was that?

MR. MELE: I believe somewhere around between 15 and $20,000, I think it was 10 percent of the purchase price. $10,000.

MR. RABINOWITZ: Was there any other money that was paid as part of this agreement?

MR. MELE: We retained a firm to do environmental testing of the site, of the parcel, and paid them as well.

MR. RABINOWITZ: Thank you. What about to the seller of the land?

MR. MELE: Just the escrow deposit.

MR. RABINOWITZ: Okay. There was not a $500 payment for legal expenses to the seller that was also made?

MR. MELE: I don't recall. I don't think so.

MR. RABINOWITZ: So had the testing for the South Eagle Hill Road lot come back satisfactory, was it the intent of CL&P to purchase this land?

MR. MELE: The intent was to have CL&P or an affiliate purchase the land under two conditions. One was, the environmental testing, and one was the engineering review. And the engineering review showed that the school would not -- or the property would not have accommodated a school or a building the size that the school had to be.

MR. RABINOWITZ: Okay. But had the engineering review and the site testing come back satisfactory then the land would have been purchased?

MR. MELE: The intent was for CL&P or an affiliate to purchase the land, but the letter also called out that if that purchase was made, it would not provide any obligation on the part of CL&P or its affiliate to transfer that land to the school or to obligate the company to enter into any future transactions with the school.

MR. RABINOWITZ: What purpose would that land serve CL&P, other than to relocate the Mount Hope

School?

MR. MELE: If --

MR. CARBERRY: It would have been acquired to be available for that option. As you can tell from looking through to the maps in our application, CL&P owns property all over the place on right-of-ways and elsewhere and CL&P disposes of property from time to time that it no longer needs for some purpose. And so would have held it for this purpose and if the idea didn't pan out because the economics didn't make sense, CL&P at some point would simply dispose of the property.

MR. RABINOWITZ: Yesterday you testified in response -- excuse me, to Chairman Stein that relocation of the school is not cost justified. Can you explain the process CL&P takes to determine cost justification?

MR. CARBERRY: We had in mind here that if there was an exchange of parcels, or a payment for the school's parcel that would be enough for the school to relocate elsewhere, and it was an even Steven deal, so a no-brainer for the customer, they don't bare any additional cost, but that would have been something to consider. We would've had a hard time saying no to that type of deal. As soon as it costs more, though, the

question becomes, is the Mount Hope Montessori School going to pay that difference, or are they going to expect the ratepayers of CL&P to pay that difference? And as you can see from the testimony that we have, for example, Mr. Cheney, who's had other ideas as to how we could build a line, our interest has been if we can do it in a different way, and it doesn't cost any more for customers, we're happy to try to do that. As soon as it does cost more for customers, then it's not really cost justified. We can invite it to be presented to the Siting Council and if they see there is value in it and they tell us to do it, then that's their call. But if it's going to cost more than our lowest reasonable cost to consumers, we have to let it be heard here.

MR. RABINOWITZ: So can you explain how that cost is determined? So how the comparison would be done between the acquisition and building of a new facility and the existing facility?

MR. CARBERRY: My understanding is that an estimate was obtained, and it was probably after the date of this agreement, of something like $2,000,000 to build a new facility on another parcel of land, whether it was the parcel that's the subject of this agreement are not, and that the appraised value of the existing school

property was $650,000. So those are the numbers that we had to work with.

MR. RABINOWITZ: Okay. So your estimate for relocation was based on appraisal value of the existing school?

MR. CARBERRY: I think so. I can't think of a different basis that we would've used and we would have sought to try to make -- rather, you know, we could have done this and then taken that parcel of the existing school property and just try to sell it, but I think we saw that we might have a use for during the construction of the project. We certainly asked our contractor if he was interested in that.

MR. RABINOWITZ: And so that would certainly have a value as well?

MR. CARBERRY: It could, but the value might have been $650,000, because he could've found someplace else to do the same thing, perhaps, for less.

MR. RABINOWITZ: Do you recall the school's position that CL&P would need to, and I quote, "make us whole"? Do you recall the school's position that CL&P would need to make us whole?

MR. MELE: During our discussions with the school on the relocation, the Director, or former

Director, commented a few times that the school lacked funds or didn't have the financial wherewithal to relocate the school. And it was, as Bob mentioned, there was a so-called gap in the difference between the value of the property and the cost to build a new facility was a constant point of conversation with us. The fact that the company would be hard-pressed to find that gap. And the school, or the Director, would reiterate that the school would lack the wherewithal as well to fund the gap.

MR. RABINOWITZ: Under what conditions would relocation costs --

MR. CARBERRY: I just wanted to supplement, because I maybe not have completely answered your question before either. Remember that I said before that if we thought that there was a requirement to build a more expensive line design here, either for EMF best management purposes, or for underground cables, and that money could be saved for ratepayers by spending a lesser amount to help relocate the school, that would have been something that we factored into our valuation to. But I think by the time we got to the point of knowing the cost estimates of 2,000,000 and $650,000, we also knew at that point time that our EMF best management practice

alternative was to build the line that we had started with, the H-frame line that was going to be no additional cost to build such a line. We didn't think there was a justification with the EMF BMP or the field management design plan to do anything different than we had started with. So there was again, no additional cost to consider for, quote, "making the school whole."

MR. RABINOWITZ: -- under what conditions would relocation costs not exceed fair market value as you defined it with what the assessed value would be? I mean, the idea of moving a school to a new location that has to be built, versus an existing school, that you would consider that relocation. What conditions would exist where it would not be expected that the relocation costs would be higher?

MR. CARBERRY: I think it was fair to expect that they probably would be higher. We didn't know how much higher. And if it was very small, we'd be bringing it to the Council, and also again, we did not know at that point in time if in fact there might be a Delta line design that was going to be proposed here that might have cost a million dollars more and if that million dollars more could be avoided, we might have talked to you some more about that.

MR. RABINOWITZ: Mr. Mele, yesterday you testified that further discussions about relocation did not occur because the school was no longer interested in relocating. At any time during the period of June to November of 2009 did you indicate to the Director and/or Board members that the project was placed on hold and you did not know what you could do at that time?

MR. MELE: I did note to the Director, and probably the Board in meetings that the ISO New England was reassessing the need for the project and there was a time when we suspended working on our Siting application in preparation of filing of our Siting application.

MR. RABINOWITZ: Okay. Is it possible that the reason Mount Hope did not further pursue relocation with CL&P was a result of this uncertain future of the entire project?

MR. MELE: When I talked to the Director in November of 2009, when Ms. Crider indicated that the school had decided to remain at their current location, she also mentioned that -- I think she put it, when the project got back on the Siting track, and if the project goes through Siting, it would be a good gesture on the company's part if they would build a green screen between the school property and the new transmission line or the

right-of-way. So that would indicate to me that the school may not have had the thought that the project was not going away. Because there was talk of what kind of mitigation could be done once the project moved forward.

MR. RABINOWITZ: Can you identify what exists at 48 Bassetts Bridge Road in Mansfield?

MR. MELE: I believe that's the location of the Mount Hope Montessori School.

MR. RABINOWITZ: And so at this location, that was only identified with the address, there are readings of 6.6 mG on July 7th and 8th, 2011 at that address, can you explain those readings?

MR. CARBERRY: Can you point me to the source that you are looking at for that data?

MR. RABINOWITZ: Yes. Page 44, Table CCM-1. And this is from the testimony.

MR. CARBERRY: Thanks you. These are measurement results that were taken at the edge of the right-of-way at several locations that were close to these addresses. So it was not taken at the building at 48 Bassetts Bridge Road, nor even on the property at 48 Bassetts Bridge Road. It was taken at the edge of the right-of-way, west, northwest edge in this case, west north edge of the right-of-way in the vicinity of that

location. So that edge of right-of-way is 137 feet still, from the building at 48 Bassetts Bridge Road.

MR. RABINOWITZ: Okay. So the readings that you're talking about here, I'm sorry, were at the edge of the right-of-way, which borders -- abuts the Mount Hope property?

MR. CARBERRY: The property on which the parking lot is located, yes.

MR. RABINOWITZ: Okay. Can you explain so the 2.2 reading on December 16th, in the same location, can you just explain a little bit more about what these readings represent?

MR. CARBERRY: These readings are called spot measurements. That means that they're in a specific spot, a physical spot. I just explained that as the edge of the right-of-way, it was probably taken fairly close to the road, Bassetts Bridge Road, and it's a spot in time. The currents that are flowing over the existing power line isn't constant, it's a function of the demand in the state at the time and what generating plants are on in the system and so that current varies over quite a wide range. Magnetic fields are directly proportionate to current and so they vary in direct proportion. The July 7th and 8th date was a fairly hot period. The

higher magnetic field levels are attributed to more Connecticut import power occurring on those days, so higher use of the lines. The other measurements later in the same year, in December, were occurring at a time when the loads were not high and were not drawing power from out-of-state to the same degree. So you can see, there was quite a drop in magnetic field. There is an additional drop in magnetic field levels as you move further away from these lines as well.

MR. LYNCH: Mr. Carberry or Dr. Bailey, you anticipated my question. As you move off the right-of-way is there any way to calculate how the magnetic field will dissipate?

MR. CARBERRY: There are in the application curves -- there's two sources of information in the application. The graphic presentation of the data and in the appendices, I think it's 7D, if I've got that right, 7C I think, we've given you the data that were calculated for the proposed configuration. So let's go to 7B, if you have your application in front of you and you would like to go to Appendix 7B, and I'm specifically on page 7B-17. Let me know when you're there, Mr. Lynch.

MR. LYNCH: 7B-?

MR. CARBERRY: 7B-17 is the page number.

MR. LYNCH: I have it Mr. Carberry.

MR. CARBERRY: Okay. And there is a Figure 6 on that page, the title of this figure is Magnetic Field Profiles for the Focus Areas A, B, C and D Sections of the Project Right-of-way and the Mount Hope Montessori School is in focus area B so this graph is relevant to that location. And this is a view looking to the north and east, so the Mount Hope Montessori School, as you look at this diagram is to your left. You'll see that there's a dashed line in two places on this graph marking the right-of-way edges. And the line on the left looks to be at a distance of about -150 feet on this scale, so the Mount Hope Montessori School building is 137 feet from there, or at a distance of -287 feet. All right. So that's almost -- the very last point in this curve is -300 feet, so the Mount Hope Montessori School is close to the very left edge of this graph.

What you can see here, this by the way, showing quite a few curves of magnetic field calculations. One is the 2015 representation of the existing line only under average annual load conditions models for 2015. All of the other curves are modeled for five years later and they all assume the new line has been built and that loads have increased and that imports

have increased. In fact, there is evidence in one of the data responses that shows that the average Connecticut import in the last four or five years has been approximately one third of the peak Connecticut import. For purposes of making these calculations we assume that that average would be 60 percent of the peak.

Okay. So we were erring on the high side to be conservative. No one can really predict the future. Will Connecticut become much more dependent on imports? Or stay the same? Or a little less? We can't be sure, so we erred on the high side and assumed much higher, a much higher use of the import capabilities. All right. So there are a number of colored lines on here and the names on each of them are Base Case, BMP Alt. 1, Alt. 2, Alt. 3, all the way up to Alt. 7, and the field management design plan explains which one is which. But the Base Case is build the new line as a an H-frame line. And so, that's your dashed black line and that is in fact what the proposal is that CL&P is making to the Council.

Okay. The redline is a building line is a Delta line. The next color down, which is kind of like a lavender color, is build the Delta line, but make it 20 feet taller. The next line down is a little yellowish,

BMP Alt. 4 is build the new line as a vertically configured line. The next one down is kind of a light blue, BMP Alt. 5 is build as a vertical line, but make it 20 feet taller. The next one, BMP Alt. 6, looks like a purple line to me, is build the new line as a split phase line. It looks like a double circuit line, two sets of conductors reverse phased. And Alt. 7 is actually something that we did specifically for focus area C, not for B, that's the one that involves shifting the right-of-way and rebuilding both the existing and the new line in a vertical configuration. So it's not applicable to this particular spot.

But you can see that while the Base Case line, the dashed line yields increases in magnetic field levels on the right-of-way as compared to some of these other designs that by the time you get to the westerly right-of-way edge they're starting to come pretty close together. And the scale of this is not such that you can really make that out very well. You can look at the data in the appendix, but the Base Case line at this location crosses at about seven milligauss, a crosses the west right-of-way edge at about seven milligauss, it might be 7.2 is the number I'm recalling.

All right. And all of the other designs

would produce slightly less at the edge of the right-of-way. However, as you move only 50 feet away from there, so that you're at the point -200, you know, the slope on that Base Case line is decreasing, it's coming down faster than some of the other ones are. The other ones are leveling out more as a crossover point. So pretty soon the Base Case nine begins to be the one that produces the lower magnetic field as you get further and further off the west edge of the right-of-way. And so it's kind of all blended in right there and it's very hard for you to see, but by the time we get, you know, to the distance of the Mount Hope Montessori School facility, there's a table in here somewhere that tells us what the predicted level would be.

MR. LYNCH: I get the idea Mr. Carberry.

MR. CARBERRY: Thank you. So on page 7B-20, a few pages later, you can see that our before line, the 2015 interstate is not built yet, so I only have one line there. We predicted 1.7 milligauss under the average annual load condition at that location. If you built the new line and it's H-frame design it would be 1.2, so it's going down by half a milligauss. And if you build it with the next best design that was available, the Delta line design, it would be 1.4. So adding --

making it a Delta line or any other type of line than H-frame line wasn't reducing the magnetic fields at all at this distance from the edge of the runway. And in any event, those numbers were lower than the pre-existing condition, so in our judgment it didn't warrant any spending on something that wouldn't reduce the magnetic fields.

MR. LYNCH: Thank you for going over that Mr. Carberry.

MR. RABINOWITZ: The spot measurement readings in this Table CCM-1, so those are actual readings?

MR. CARBERRY: At a point in time, yes.

MR. RABINOWITZ: So going onto Table CCM-7, that you just referenced, this 1.7 milligauss in pre-existing, how were these numbers determined?

MR. CARBERRY: What table did you refer me to again?

MR. RABINOWITZ: CCM-7 on page 54 of your testimony.

MR. CARBERRY: So the numbers on that table, CCM-7, by the same numbers that I just read from in the Field Management Design Plan, and they were calculated for the average annual load condition which

represented Connecticut importing power at 60 percent of its new peak capacity to do so after the new line is built, as an average annual load condition.

MR. RABINOWITZ: So were these calculated based on some theory? Are these numbers calculated based on some theory, they're not actual readings taken in the field?

MR. CARBERRY: There are calculation programs that are quite accurate that have existed in the industry for quite a long time for calculating magnetic fields. It's not something that you could do on the back of an envelope very easily, it needs a computer, but it's well-founded and the Council has regularly asked us after projects to take measurements after the fact, and to give them a report. And we're usually able to look at the actual current that existed in the line after we've made a set of measurements and the height of the line at that location and to show that the calculation yields a result that matches very closely with the measurement in those circumstances.

MR. RABINOWITZ: So you could provide them some range of these estimates, so minimum or maximum that would be occurring at the Mount Hope School?

MR. CARBERRY: Well, the minimum would be

something less than even these numbers. I don't want to say zero, because it's not likely that both lines would be out of service at the same time. And in the filing, in one of the appendices, it's in 7C, we have modeled the magnetic fields under three loading conditions. The average annual load condition is the one we use for all of the figures in the application itself in those tables, because we are trying to represent an average condition. Mr. Bailey can explain why if you want to ask him that question. But we've also made a similar table for a set of assumptions that models the annual peak load condition and also the average hour on the peak day. So on the one day a year, for the peak hour of the year of that day, or what's the average on that day, there are two additional tables. They are Tables 2 and 3 of Appendix 7C that provide the comparable data.

Noting that the school is very close to the -300 foot point, you merely need to go to cross-section two and look at the predictions at a distance of about -300 feet and you'll find the comparable numbers under the peak load conditions.

MR. RABINOWITZ: And what are those?

MR. CARBERRY: In Table 2, which is modeling the peak load hour I have a number of 1.9

milligauss post-project and 3.3 milligauss before the project in 2015. And under the average annual load condition it was 1.4 milligauss. So they're all in the same general range. There's not a lot of variability at this location.

MR. RABINOWITZ: Okay. Have you ever considered a variation adjacent to the Mount Hope Montessori School that would be on the opposite side of the existing line, that is to the east of the existing line away from the school?

MR. CARBERRY: I think we were asked that question at a meeting that we had, if not with you, it was with a group earlier about CL&P's right-of-way of 300-foot wide here, has this existing line on the right-of-way is as far to the east edge as it can be as it should be. There's no additional CL&P right-of-way space available to building new 345 kV line on that side. One would have to acquire additional right-of-way to do so. The available space, unused spaces on the west side of the existing line. Hypothetically, if you said that CL&P went and acquired an additional right-of-way of sufficient width on the other side to be able to build the new line there then you would have to find two places not too far away where the new line coming down to the

west or north of the existing line has to jump over to get the other side for this short stretch of right away and then to jump back. Generally much taller structures to do so and you now create two crossings of lines that were not -- we try not to do that too often. We're creating cases where failure of a lightning shear wire on one line could come down and take two lines out of service in one event. So we don't like doing that.

MR. ASHTON: Mr. Carberry, in an event like that you don't necessarily have to have a line crossing. If you purchase right-of-way on the, I'll call it the south side of the right-of-way cannot both circuits be swung over away from the school and then eventually back on without a line crossing?

MR. CARBERRY: It's where I was heading next. Because the Hawthorne Lane shift at Alternative 7 is something like that where if you wanted the new line to be further away then the existing line had to move with it so that you avoided a crossing.

MR. ASHTON: Right. It is possible, that's my point.

MR. CARBERRY: It's possible. The existing line would have to move as well. So in this Field Management Design Plan one of the topics that, you

know, the Council routinely asks us to address is right of ways shifts --

MR. ASHTON: Sure.

MR. CARBERRY: -- and we basically have, you know, a paragraph or two in there about right-of-way shifts. They invariably add to the cost. You've got to acquire some additional right-of-way and you got to modify the existing --

MR. ASHTON: I understand. But I'm just saying, physically --

MR. CARBERRY: -- it's doable.

MR. ASHTON: -- in the realm of the reasonable --

MR. CARBERRY: It's doable as long as there wasn't some facility on the other side that was making that expansion on that side difficult.

MR. RABINOWITZ: Okay. So in discussions of Mount Hope it's been said that considerations be given regarding security, noise, and other impacts as a result of construction. Can you elaborate on what considerations could be given to guarantee the safety of students at the school?

MR. CARBERRY: Could you repeat the question for Mr. Mele?

MR. RABINOWITZ: Yes. In discussions with Mt. Hope it has been said that considerations be given regarding the security, noise, and other impacts as a result of construction. Can you elaborate on what considerations could be given to guarantee the safety of students at the school?

MR. MELE: Yeah. This was discussed I think 2008 at our first meeting. We talked about erecting a construction fence between the school property and the construction site or a tree line that would, I guess block the construction activity. I think Ms. Crider was concerned about just the distraction, a level of distraction with the students, the kids, with the big construction equipment out on the right-of-way. We also talked about looking at the flexibility of building during the summer when the school -- even though the daycare was still in operation, because I know the school acts as a daycare as well during the summer, we would try to shift construction to the summertime, so there would be less activity at the school.

MR. RABINOWITZ: Just about done. So I'm going to read you just a bit of the statement that Kathleen Tonry (phonetic) had given at one of the public hearings. She is a current parent, and in a quote from

her, hopefully, a future parent as well. And she discusses risk of choice and goes on to say, quote, "CL&P unfortunately simply cannot assert that there is no risk to our most vulnerable population." End quote. And then she further adds, quote, "it will be difficult to imagine choosing to place my child in a situation where there is a risk however slight, that risk may be." End quote. How would you respond to this statement?

MR. CARBERRY: I'm going to ask Dr. Bailey to first of all address the assertion of risk as we have to rely on the scientific community to tell us what they believe is the risk of these very low exposures.

DR. BAILEY: I think in this circumstance, it's important to recognize it's not a question of the degree of risk, the question is much larger than that. And the question is, whether there's any risk at all? The only evidence that we have that there's even a possible risk is some statistical associations in some epidemiology studies about long-term average exposure. It's not at all clear that the fields at the school would extend to a range where this statistical association has been observed.

As Mr. Carberry mentioned, the values with this project are going to be lower, not higher, as a

result of the construction. And that the -- looking at the values with the baseline design in Table 11, on page 7B-20, 1.2 milligauss, that is certainly a value that can be measured in many houses. The average in a national survey in the U.S. the average magnetic field was about .9 milligauss. And as Mr. Carberry testified, finding fields of certainly up to 2 milligauss and even 4 milligauss would not at all be uncommon. It's also not clear that the magnetic field from the line might actually cancel -- you heard the discussion this morning about field cancellation, it's a possibility. And we've seen this in the school in Connecticut where the field from an outside transmission line actually canceled some of the magnetic field source coming from sources within the school.

So the principal from Public Health has said that if there is not an exposure at a level that is deemed to be of a demonstrated health effect then you wouldn't presume that there is a risk. And even at these higher exposure levels that have been the subject of intense study over the last 30 years, we don't know that in fact that these statistical associations do represent a causal relationship and therefore a real risk. And so the policy that the World Health Organization and the

Council and other agencies have taken is, it would be prudent to take low or no cost efforts to minimize magnetic fields given that we don't know that there is a relationship. And that is the extent of response that has been warranted.

MR. RABINOWITZ: So you addressed the issue that there is no real risk, but I think the issue at hand here is more of a perceived risk from that public perception that becomes an issue.

DR. BAILEY: It possibly made. But you have to remember that the perception of risk is something that's very much in the eye of the beholder, and is something that cannot be predicted or taken into account in any direct way in such a proceeding.

MR. RABINOWITZ: But I think it's been established that perception of risk is real and that moving the lines closer to the school could potentially increase that perception.

DR. BAILEY: I don't know that you could support that opinion by evidence. I would not deny that there could be a parent who might decide that the presence of a power line near the school, irrespective of whether it's a new line or an old line might be something that they might want to take into account in selecting a

school. That doesn't necessarily mean that that would be, even though they had that opinion, that would be a determinant of whether or not they would determine to send their child to that school. Parents make all kinds of decisions about the school, proximity to the school, reputation of the school for academic excellence and so on and so on. So I would expect that that would be just one of many factors that parents might weigh. And I don't think that you could make a general statement that would apply to a majority of the population about what weighting they might place on that in consideration with all of the other factors.

MR. RABINOWITZ: And what would you say the reputation is of the Mount Hope School?

DR. BAILEY: I have no personal knowledge of that.

MR. LYNCH: Dr. Bailey?

DR. BAILEY: Yes?

MR. LYNCH: You hit on something that's been bothering me for years. You mentioned that the school itself could actually have or a household with all their electrical appliances and electrical apparatus, televisions, computers, could actually have a higher milligauss reading or an electromagnetic field reading

than what's been put forth by the power lines?

DR. BAILEY: That's correct. In fact, there's a study that was done a number of years ago in the state of California, where they went out and did an evaluation of the magnetic field in public schools. And at the conclusion of that measurement exercise they ranked the contribution of all the sources to the magnetic fields present in California schools. And as I recall, magnetic fields from transmission lines ranked about ninth as to their contribution to the magnetic fields in schools and that there were many factors within schools that produced greater contributions to magnetic fields at the school than did transmission lines. So just because we are here in a transmission line hearing we shouldn't forget that there are many other sources of magnetic fields in our homes and residences and that outside power lines may be just one of those sources. And in the California study transmission lines were certainly not a dominant source as a whole.

MR. LYNCH: Thank you. That's something that has gotten overlooked over the years and I still -- I believe it has to get factored in, you know, as well as the power line sources. Thank you.

MR. RABINOWITZ: Just going back to where

we had left off. You know, would you say that the fact that this is the oldest Montessori in the state of Connecticut and it's been in existence for 50 years and has received --

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

MR. RABINOWITZ: -- sure. I was just saying the fact that this is the oldest Montessori in the state of Connecticut and has been in existence for over 50 years, you know, and a staple in the Mansfield community and has been recognized as such in proclamations from both the state and the town, would you say that that qualifies as, you know, a good reputation and a strong reputation in the town?

DR. BAILEY: That certainly sounds like a recommendation to me. But apart from that I -- I'm not sure that that would be -- that reputation would be effected by this particular project.

MR. RABINOWITZ: Okay. Thank you. I don't have anything further.

DR. BELL: Thank you Mr. Chair. I just wanted to make a follow-up to a question that Mr. Rabinowitz asked to Dr. Bailey. When we're considering a docket as we are, we have one set of rules and procedures

and things to consider and we're doing that properly. Mr. Rabinowitz is naturally concerned about perceptions, which are something we can't directly address.

But my question simply is, since we all know that public perceptions can be divergent from the actual facts, and can get extreme, and so forth, often because the public doesn't have as much information as the people on the table before us have, do you know of any good educational efforts that might be on the web or might be in a curriculum somewhere that people have tried to educate the public about these matters, and not in a brainwashing way, but really to share information so that the public can get better at making informed decisions on whether to send their child to a given school that might be near power lines? I know that you have been interested in educating people and so I'm wondering if you've picked up any good examples of public education on this front?

DR. BAILEY: I can't say that there are many people and many groups or organizations that have attempted to produce the kind of document that you're looking for. I would say the World Health Organization has probably done the most in this regard. They have a variety of fact sheets that are present on their website

that can be reviewed and downloaded.

Not to be self-serving, I helped a number of years ago, the World Health Organization develop a brochure. They had been asked by member states for assistance in providing information to member nations about electric and magnetic fields. And so the World Health Organization assembled a team of people with a variety of expertise and we worked on putting a brochure together. I don't remember the exact title, but it's been cited in previous proceedings and I could, you know, it's five minutes on the web, I could get you the exact citation. And that is probably one of the simplest and most helpful brochures.

There are other brochures that are produced by, for instance, the National Institute of Environmental Health Sciences in 2002 issued a brochure, but it's like 50 pages long, and it requires, as you might expect for a 50 some page document, there is a lot of technical information in there and it's not the kind of thing that a parent could sit down and look through in less than a few hours come away with enough information to help them understand these issues.

MR. CARBERRY: Can I take a whack at that too, Dr. Bell?

DR. BELL: Yes please.

MR. CARBERRY: I was glad that he finally mentioned the NIEHS brochure, because it is a staple of our communications with customers who inquire. On our website we certainly have an issue statement, a policy statement, and it has several links to documents that you can obtain over the Internet, including the World Health Organization documents that Dr. Bailey referred to.

We also have an effort underway in the Electric Power Research Institute to try to come up with a replacement document for the NIEHS brochure, one that would be much shorter, but also one that would say 2012 on it instead of 2002. No one has stepped forth to do something like that in quite a long time. While that 2002 document is still very good, the federal government is showing no interest in spending our taxpayer money to do it again. But I'd bring that and hand that out to anybody who's asking. And I think a lot of people do get a lot out of it.

I was also impressed in listening to the comments at the Council's public hearing in Mansfield. I saw evidence in what I was listening to that people knew what they were talking about. Not one of them asserted that the magnetic fields of this project were getting

higher, or they were into some very large range compared to something else. They were speaking about perception, all right? And to me that was evidence that we're dealing with, and possibly because the proximity of UConn, a pretty educated group of people that have been doing some of their homework. And so I think that if you do spend some time with people who are interested in the subject they do get it. We certainly are more than willing to try to help the school to share the information that we've presented to any prospective -- to parents of any prospective students anyway we can to help them understand these issues and help them to know what's out there if they want to do their own research. We do that on a regular basis for other customers and I hope and expect that they will want us to do that here.

CHAIRMAN STEIN: I think Senator Murphy had a comment or question.

SEN. MURPHY: I really have two questions that are fairly different. The first is on the deposit made on the so-called potential relocation lot. Was it returned? I assume it was.

MR. MELE: I can just say yes, it was.

SEN. MURPHY: The second -- my second question really deals with the green screen, which

apparently came up in discussion with the former teacher or director, whatever it was. And it was also mentioned in response to the question about what security, a fence for the children during construction, and some plantings of trees, and what have you. And Mr. Carberry mentioned plantings along that line yesterday with screening along the parking lot and the right-of-way to block the view from the school of the power lines. Is something along the lines for green screen something we might find in the D&M plan if we get to that point?

MR. MELE: Yes.

SEN. MURPHY: It is?

MR. MELE: Yes.

SEN. MURPHY: Okay. Thank you very much. That's my question, Mr. Chairman.

CHAIRMAN STEIN: Let me start with Mr. Wilensky.

MR. EDWARD WILENSKY: Mr. Carberry, just a question out of curiosity. Which came first with the Montessori School, was the Montessori School built and then the power line put in at a later date, or the power lines came first and the Montessori School came next? Is there an answer to that question?

MR. CARBERRY: Well, we heard Mr.

Rabinowitz say that the school has been there for something like 50 years.

MR. MELE: Can I jump in please? The school has been in existence for -- I think since 1961.

MR. CARBERRY: At this location?

MR. MELE: No. In the state. But it's been at the current location since 1974.

MR. WILENSKY: And the power lines have been what, 1974?

MR. MELE: 1970.

MR. WILENSKY: And the school was there prior to the power lines?

MR. MELE: The school was there after the power lines.

MR. WILENSKY: The school was there after the power lines?

MR. MELE: Yes, sir.

MR. WILENSKY: In other words, the power lines were there and then the school was built on that property that they're at today?

MR. MELE: That's correct.

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

CHAIRMAN STEIN: Mr. Levesque?

MR. LEVESQUE: One or two questions for Dr. Bailey. Dr. Bailey, you referred to a study of California schools?

DR. BAILEY: Yes.

MR. LEVESQUE: You didn't provide a citation of it?

DR. BAILEY: No. I can do that as a record request.

MR. LEVESQUE: I don't want to yet. What kind of schools did they study?

DR. BAILEY: These were public schools in the state of California and the study was sponsored by the California Department of Health Services.

MR. LEVESQUE: Were they all schools adjacent to power lines?

DR. BAILEY: No. This was designed to be a study of schools in California and then from that sample of schools to then determine what were the sources within those schools. It was not -- it was not targeted at schools only near particular sources.

MR. LEVESQUE: So it's not comparable to the Montessori School?

DR. BAILEY: It's -- it's a useful piece of information because I think it illustrates that there

are multiple sources that can contribute to the magnetic fields in a school and in this survey in California, they found that there were other sources, which were much more common contributors to magnetic field exposures than transmission lines. However, I think your question is anticipating, isn't it possible that a transmission line could be a contributor to the magnetic fields at a school? And certainly that's the case, and certainly in those cases where transmission lines were identified near schools in some cases there were, in some cases there were not contributors to magnetic fields. The particular example though I think we have here is that the proposed project would in fact lower the magnetic field over the current conditions. And so that may be more relevant than the California study in dealing with generalities.

MR. LEVESQUE: Many of the schools could have been some distance from power lines.

DR. BAILEY: I would assume that they would be at varying distances from power lines, as well as the other sources.

MR. LEVESQUE: Okay. Thank you.

CHAIRMAN STEIN: Dr. Bell?

DR. BELL: Coming back to my set of questions. Mr. Carberry, could you put the brochure into

the record for this report? I guess I'm forwarding this from Mr. Ashton, so I think he meant the brochure that you have on your website, or did you mean the NIEH brochure?

MR. FITZGERALD: Are you referring to the NIEHS brochure?

MR. ASHTON: I'm not sure. It's the 2002 brochure, I believe. Is that an already?

MR. FITZGERALD: That's already under the administrative notices.

MR. ASHTON: Okay. Since it was being discussed I wanted to make sure it got in. Thank you.

DR. BELL: My only further comment is, there are so many possibilities today for education, science education that this fits into so, you know, museum exhibits. I've never been to the Hartford Museum. It strikes me that that would be a terrific exhibit on this kind of thing to teach kids about electricity. And there are so many wonderful websites, interactive science teaching websites, so any time CL&P gets an opportunity, a request from an academic to, you know, develop or give them information on a project for science students, anything like that, we've been talking about parents, that's where we started, and that's what you have been

very usefully referring to. But also the students themselves, this is such a great opportunity for all kinds of educational exercises. And thank you for your answers. Thank you, Mr. Chair.

MR. CARBERRY: It might not surprise you to hear that one of my children for a science project did something on magnetic fields at one time. And he's not the only one that we've helped over the years.

(Laughter)

CHAIRMAN STEIN: At this point, I believe Mr. Ashton?

MR. ASHTON: I have nothing for --

CHAIRMAN STEIN: Do you have other --

MR. ASHTON: -- I have a couple and maybe it would be appropriate right here to find out. Okay. Mr. Carberry, you mentioned -- you mentioned in earlier testimony, the Florida, New York and European EMF standards for edge of right-of-way measurements. Could you introduce those into the record? If you don't have them at your fingertips, late file is fine.

MR. CARBERRY: They probably also are on the administrative notice list.

MR. FITZGERALD: They -- I don't think they are there independently, however, the Council's best

management practices are in the administrative notice list, and those standards are identified --

MR. CARBERRY: And they're --

MR. FITZGERALD: -- in the BMP and the Council's --

MR. ASHTON: Okay. I knew we had talked about them. I wanted to make sure they get into the record.

MR. CARBERRY: -- on that subject, and maybe Dr. Bailey can help with this too. Your previous case records would have said that there general public limit, this is a so-called ICNIRP guideline was 833 milligrams and in 2010 I believe, they updated that guideline and that general public limit is now at 2000 milligauss.

MR. ASHTON: Mr. Carberry, what type of grounding is going to be on these -- this proposal, is it going to be crows feet, or continuous counterpoise, or what?

MR. CARBERRY: We -- well, first of all, the lightening shield wires are grounded by metallic contact to the structures and if they are metallic, then they are connected to earth. If they happen to be wood there'd be a metallic down lead down the poles to connect

them to grounding. Typically, we have a coil of wire attached to the pole that's buried with the pole, we put a ring of grounding wire around the pole as well, and then we measure the so-called footing resistance of the structure to earth. And if the number is higher than we'd like it to be, and it can be if the soil characteristics are not very conductive, then we will supplement that grounding with something called counterpoise, you just refer to it as crows feet or continuous. We will design lengths of wire that will have to be buried in the ground a short distance under the ground. We probably wouldn't do this and an agricultural field for example, we often don't have to because the soil is of a better quality there, or better conduct committee. But we do at grounding. It's all about trying to reduce the potential for lightning strikes to cause a flash over from the structure to the conductor actually after lightning hits the structure. So we will do some of that. We don't at this point know how much we will need to do.

MR. ASHTON: Okay. The metallic poles, are these all constructed on foundation or are they directly embedded?

MR. CARBERRY: These structures --

MR. ASHTON: Or is it a mix?

MR. CARBERRY: -- the structures would be directly embedded unless at an angle location where we did not want to guy them, we could use concrete foundation at an angle location or dead end structure location. But the typical tangent structure of this line would have direct embedment foundations.

MR. ASHTON: Mr. Fitzgerald, is Mr. Johnson going to be available at subsequent sessions? I mean, I can ask him now or later.

MR. FITZGERALD: As you wish. I mean, we could make them available.

MR. ASHTON: All right. Let's be humane here.

MR. FITZGERALD: On the other hand, I'm sure he'd prefer to answer the questions now then come back, if that's possible.

MR. ASHTON: He missed the fun yesterday, I don't want to deprive him of -- there were questions yesterday Mr. Johnson that were prompted by the report from the Thompson Wetlands Commission, I believe it was, which showed the existing access roads as being washed out. And the question I asked was, what is the policy and practice as to inspecting for this type of

unfortunate result on existing rights-of-way, what do we do?

MR. JOHNSON: Generally nothing. Once access roads are constructed, primarily for the construction of a line, they're left to their own demise. There's no additional --

MR. ASHTON: Well, if you get a bad washout, do you take any remedial action at all?

MR. JOHNSON: -- we have not. All we do is manage for vegetation encroachment. But until there's actual need to get access in there with the equipment again the road would be remediated, or built up again. There's no intent and there's no program at this time to maintain existing access roads to an accessible condition.

MR. ASHTON: Can I be so bold as to suggest that you think about that over the intervening week? We take -- the State takes requires conformance to -- I can't really -- DEP soil guidelines for many projects and they look dimly on projects that get out of hand in this strikes me as one that maybe is out of hand.

MR. JOHNSON: As someone that's continuously on rights-of-way, I would have to agree with you.

MR. ASHTON: Well, I would hope before we wrap this up that you might have a few thoughts from you as to what we ought to do. I can think of a number of places where this has arisen before and I have to admit I was a little bit -- with having a fingerprint on some of this I'm a little troubled by it.

MR. JOHNSON: Yeah. Certain things are manageable after the lines are constructed. There's some input by the maintenance group when roads are designed or placed within rights-of-way and which ones remain permanent and which ones are removed is temporary. So once a project is completed, if there's good access, which is in a non-erodible area or non-sloped area, they tend to stay pretty good. But we do have some serious issues with some locations where lines were constructed, primarily in the past, where they were built not considering the erosion and we've tended to lose roads and maybe cause some runoff. Again, this is lessons learned, but there is no actual program for managing these access roads at this time.

MR. ASHTON: I think that's something worthy of consideration.

MS. MANGO: One other thing we should consider too though is that a lot of times you don't want

these access roads to be visible because in an area like Thompson where you have ATV and quad traffic, like some of these areas they're, you know, pretty good species habitats, so it's a double-edged sword --

MR. ASHTON: I couldn't agree with you more.

MS. MANGO: -- you know, a double-edged sword.

MR. ASHTON: I couldn't agree with you more.

MS. MANGO: And I think on this project, like we are -- you know, we are proposing to take most of the access roads out.

MR. ASHTON: I'm well aware that ATV intrusion on rights-of-way is a first class headache. I've seen eight inch pipe bent over that was embedded to try and prevent it. So it ain't easy, I know that. But nonetheless, I would still suggest that there be some considerable thought given to checking some of the worst spots anyway and making sure that they get under control. I think some of my other questions have been -- Ms. Mango, I have one or two for you that would be appropriate here.

We've talked about access and construction

roads. Is my assumption correct that where existing longitudinal or transfers access roads are suitable for the new lines they would be used?

MS. MANGO: Yes. They would be --

MR. ASHTON: You're not going to go reinvent the wheel and build another --

MS. MANGO: -- no, no, they would be improved, but there are some cases where based on initial constructibility reviews the contractor does not propose to use the existing road. Perhaps because of vernal pool has, you know, encroached upon it or something.

MR. ASHTON: I understand. Life moves on.

MS. MANGO: Yes.

MR. ASHTON: But nonetheless, the basic premise is correct?

MS. MANGO: Yes.

MR. ASHTON: Well, two more questions. Do you recall, yesterday we got into a little discussion about distribution lines crossing beneath the transmission lines and whether or not if that forced increased height on the transmission line whether it would be reasonable to suggest that the distribution line dive underneath. Where that occurs, where the distribution line has been buried underneath the

transmission line, doesn't that tend to allow for greater screening of a road crossing that would prevent the visibility going longitudinally up the right-of-way?

MS. MANGO: I think that's a Mr. Johnson question. Because you're suggesting that vegetation could grow taller beneath the transmission line.

MR. ASHTON: Well, not necessarily taller, but you get a lot more clearance with the transmission line then you do with distribution. A cedar for example, that's 12 feet high, might present a problem -- well, 18 feet might present a problem for the distribution line, that it would not cause a problem for a transmission line.

MR. JOHNSON: You make the assumption that the cedar will stay 18 feet.

MR. ASHTON: Well, it has happened according to my knowledge and belief that cedars got topped rather than cut.

MR. JOHNSON: In some areas where cedars were -- yes, you're correct, it was a low cost way of maintaining them. The problem occurred where we've had too many cedars and just topping then became difficult.

MR. ASHTON: Oh, yeah, I understand that. But, you know, with rational control doesn't the fact

that there is no overhead distribution give you the opportunity to develop a little better screening at road crossings?

MR. JOHNSTON: Yes.

MR. ASHTON: That's fine.

MR. JOHNSON: If I could use something other than cedars.

(Laughter)

MR. ASHTON: I'm not trying to dictate it at all, I just get by if I can.

MR. JOHNSON: Thank you.

MR. ASHTON: In -- I can't remember what the exhibit number is, but the exhibit where Denise Waseka (phonetic), of the DEP, gave her opinion on the environmental effects of the Mansfield crossing. It's I think question 38 of Exhibit 15. As I read that I was struck by one thing, I didn't see the word visibility mentioned at all. Did any of the discussions with the DEEP and/or the Corps of Engineers use the word visibility in examining the various alternatives?

MS. MANGO: Yes. In fact --

MR. ASHTON: And did they blow it off or what?

MS. MANGO: -- well, as you might recall

from the MCF we did visual simulations of each of the potential options. What we call the minimal right-of-way expansion --

MR. ASHTON: Yep.

MS. MANGO: -- which is the option that the DEEP and the Corps now prefer. The 11 acre right-of-way expansion, which was CL&P's, you know, matching structure least cost option, and then the no right-of-way expansion, which had, you know, the taller vertical sections. So we did straight comparisons of these, showed them the visual simulations of each one, put that information in the MCF, we had Section 10 of Volume 1 of our MCF in our filing, saying, looking for an opinion guys, and actually I was surprised that nobody spoke about the visual resources. The Corps was mostly concerned about the wetlands and the tree cutting. The Friends of Mansfield Hollow seem to be concerned about tree clearing as well, but not visual. And, you know, we have more visual simulations then I believe we've ever done on a project for Mansfield Hollow alone, and that's what happened.

MR. ASHTON: That's what I was afraid of. Mr. Carberry, you have a thought, so unburden yourself.

MR. CARBERRY: My supplement. This is not

about the Army Corps of Engineers, this is about the DEEP, and I recognize that Mr. Golembiewski isn't here, but the one agency that does typically respond when the Siting Council makes an invitation to comment on its applications is the DEEP. And I did have occasion to speak recently with the person who's usually involved with that at DEEP to ask him what's up, are you doing that? And he is. And I expect that they're going to produce some comments for you, obviously, not by the start of hearings, but at some point during this proceeding. I'm hoping to see what they have to say about places that you've been talking about like Mansfield Hollow and also in Thompson.

MR. ASHTON: Yeah. Well, I have to admit though, I was disappointed to see no discussion at all of visibility. And to me, that's -- they're environmental issues aside from planting a pole in the goldfish pond in front of the White House. That's one of the biggest ones.

MR. CARBERRY: And as you can see, our initial preference, not only because it was the least costly, but it was also matching structures was because we thought two lines look like one another and are parallel to another is more visually -- and they didn't

agree.

MR. ASHTON: I think the minimal one is the worst of both worlds in some respects. But anyway, that's another opinion. Thank you very much. Do you want to testify to Mr. Fitzgerald?

MR. FITZGERALD: Yeah, I did want to mention something that I was just reminded of when Mr. Golembiewski was mentioned. You remember yesterday that Ms. Mango described a document that had just been filed with the Army Corps that contained the detail on all the wetlands?

MR. ASHTON: Yeah.

MR. FITZGERALD: And so we -- we brought a couple of copies with us today in case Mr. Golembiewski wanted to pursue that. And I'm really just looking for some guidance here, is that something that we should maybe file as an additional exhibit during the recess?

CHAIRMAN STEIN: The answer I'm getting is yes.

MR. FITZGERALD: Yeah. Okay.

CHAIRMAN STEIN: Okay?

MR. ASHTON: Good weekend reading for insomniacs.

CHAIRMAN STEIN: All right. I'm going to

conclude today's evidentiary hearing.

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

CHAIRMAN STEIN: I was going to conclude it, I guess not.

(Laughter)

CHAIRMAN STEIN: I did look that way and I didn't see any signs. Go ahead.

MR. LYNCH: Just one follow-up question to Dr. Bailey. Mr. Levesque adequately pointed out that the California study may not be the same situation as we have here. But my point was, that when you perceive risk from EMFs more people look outside their home than inside their home. And there could be just as many risks -- the EMFs or magnetic fields within the home then there are outside.

DR. BAILEY: If there is a risk, that would be correct.

MR. LYNCH: Maybe risk isn't the right word. But we talked about perception, I think they perceive EMF magnetic fields to be a risk. Thank you very much.

CHAIRMAN STEIN: There might even be more in some of our pockets, but we won't get into that. The

evidentiary hearing, which I will again attempt to conclude for today, will continue on Tuesday, June 26th, 2012, 11:00 a.m. right here. So with that, those of you that have short and long distances to travel drive home safely.

(Whereupon, the hearing adjourned at 3:49 p.m.)

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John Case
Robert Carberry
Anthony Mele
Louise Mango
William Bailey
Anthony Johnson
Roger Zaklukiewicz