STATE OF NEW HAMPSHIRE

SITE EVALUATION COMMITTEE

May 31, 2017 - 1:50 p.m.
49 Donovan Street
Concord, New Hampshire

DAY 10
Afternoon Session ONLY

{Electronically filed with SEC 06-09-17}

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

PRESENT FOR SUBCOMMITTEE/SITE EVALUATION COMMITTEE:

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

ALSO PRESENT FOR THE SEC:

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

Pamela G. Monroe, SEC Administrator

(No Appearances Taken)

COURT REPORTER: Cynthia Foster, LCR No. 14

I N D E X

WITNESS PANEL **NATHAN SCOTT**
LYNN FARRINGTON
SAMUEL JOHNSON
KENNETH BOWES
DERRICK BRADSTREET
JOHN KAYSER

(Resumed)

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P R O C E E D I N G S

(Hearing resumed at 1:50 p.m.)

PRESIDING OFFICER HONIGBERG: All right. Sorry for the delay. I understand there's been a request filed by Susan Schibanoff to change groups because she sold a piece of property and is now some place else, and so she would be moved from the Bethlehem to Plymouth Abutters to the Bethlehem to Plymouth Non-Abutters, and I understand there's no objection to that so we'll grant that motion for Ms. Schibanoff to be placed in a different group.

All right. Mr. Lakes. You may continue.

CROSS-EXAMINATION CONTINUED

BY MR. CARL LAKES:

Q Okay. I'll try to get through this as quickly as possible. As per the Harvard University Arboretum author Thomas Perry, roots spread out 2 to 3 times the crown or drip line of the tree. Small tree with ten foot or ten-inch diameter at the crown, I should say a ten-foot diameter at the crown, can have roots that go out 20 to 30 feet or more. Trees out to 20 feet or more from road edge can have roots destroyed by trenching.

Depending on where the trench is and if the roots are encountered, will these trees be cut? Will they be left to slowly die off and become a safety hazard up the road? Anybody can answer that.

A (Bowes) So as I've said before in previous testimony, we plan to do videotaping of the trench and duct bank installations. So as part of that, we'll identify any roots that are in the trench, and if we have to manage those roots in a way that either cuts them or damages them, we'll have a permanent record of that and that record will be available to the tree owner.

Q So based on what you're saying, is the homeowner now responsible for a tree that you just damaged or that Eversource damaged in its construction?

A (Bowes) If it were to be damaged, that is correct. If they would like us to remove the tree, we'll do that as well, provided it has roots within the trench.

Q So earlier you had stated that you didn't really plan on removing any trees. So in light of what you just said, it seems to me that, you know, if you have trees and there are trees near us that

are two foot off the road, five foot off the road, ten feet off the road, you're definitely going to hit some roots. So isn't it quite true that you're going to have to remove trees?

A (Bowes) It is possible we'll have to remove trees if the roots are going to be damaged by the trenching.

Q So if you're going to do trenching off the road which you're going to be doing in some places in the trenches 5 to 8 feet wide, whatever you need to do what you need to do, there are trees literally that would be sitting in the middle of that trench. Are you going to remove that tree?

A (Bowes) The trench alignment I have seen does not actually conflict with a tree. It is clearly possible as we go through the variance process with the DOT if those variances are not granted, then we may have to remove trees.

Q Then I invite you to come out to Easton so we can walk along the route and look at every tree and maybe with a spray can mark those trees because there's just no way that Eversource is going to be able to do this project without taking down a significant number of trees.

In light also as well I want to just get back to the business with people planting trees in their yards. So I want to really find out how is this going to be policed? Residents, new people who move into the neighborhood, so forth and so on, they plant a tree in their yard, maple tree, oak tree, whatever it is, and it happens to be within that distance that could affect the efficiency of the cable because of the roots getting into the cable or the surrounding area of the cable. Who is going to police that?

A (Bowes) So Northern Pass Transmission would be responsible for maintaining that portion of the road right-of-way and policing the plantings and as trees mature, we'll be responsible for working with the home owner to remove them.

Q So I guess you're saying that if somebody mistakenly plants a tree within the boundary of how close it's supposed to be to that trench, that at some point along the way, they're going to get a knock on the door from Northern Pass that that tree that you planted 20 years ago that's cost them maybe hundreds of dollars to

put into the ground now has to be cut down. Is that true?
A (Bowes) In that hypothetical example, it is possible that could happen.
Q Thank you. I'm going to talk about tourism for a few minutes. Tourism is a big business in the summer and fall months in Franconia, Sugar Hill and Easton. House rentals, inns, hotels depend on these tourist dollars as do restaurants, scenic attractions, bike rentals, et cetera. Would you agree that it takes years to build up a loyal clientele, a good reputation?
A (Bowes) I think in general I would agree with that statement that business has to develop and protect their reputation.
Q In this age of internet, cell phones, texting Facebook and hotel ratings, information is immediate, isn't it?
A (Bowes) In general, again, I would say it's much more immediate now than it has been in the past.
Q The one-star rating can wipe out businesses in short order. People who stay at local inns on Route 116, people in their cars, visitors, home renters, will instantly be texting the

disruptive construction activities on the underground route. There will be death by a thousand cuts each and every day of the project. What will Eversource do about that?

MR. NEEDLEMAN: I'm going to object to that line of question. That was much more testimony.

PRESIDING OFFICER HONIGBERG: Mr. Lakes?

MR. LAKES: I think it is very relevant. This is one of the more relevant economic issues associated with construction.

PRESIDING OFFICER HONIGBERG: Yes, but your question contained lots of testimony. I'm going to sustain the objection. So if you can get him to agree with some of your premises, and then ask him a question.

BY MR. LAKES:

Q Do you think there may be people that will be sitting in long lines in traffic waiting to go around a HDD site that could be on their cell phone texting friends and family, you may not want to come up here or come this way. Is that a possibility?

A (Bowes) So I'll have Lynn talk about the length of the lines, but I would say that it's a

possibility that people would get, could be using their phones while in the car and while they're at a stop. Lynn can probably add how long the stops would be.

Q Go ahead, Lynn.

A (Farrington) So we did a comparison analysis, and the volumes on these local roads do not exceed capacity of a one-lane alternating operation, either with a flagger or a single person misplacing operations. So unless you quantify long, in my opinion, no, there will not be long lines.

Q Well, I guess maybe I shouldn't have said long. Maybe I just should have said when people drive through the area, do you think that there will be people that will be dismayed at what they see and from there exponentially send out those messages to people that will negatively affect the tourism along that road?

A (Bowes) So, again, that's probably back to me. That's not talking about the length of the delay. Again, I'm not sure I can characterize people being dismayed by what they'll see. I don't think that's -- they'll see a construction

site, much like other construction sites along a highway so -- and there may be some periodic delays along that route.

Q With all of these traffic and noise issues, can you guess how many people will be coming up during construction? And I'll just continue with that.

A (Bowes) So I know that --

Q I was just going to say. Can you guess how many people will be renting bikes in Franconia to ride up and down the scenic highway?

MR. NEEDLEMAN: I'm going to object. It calls for speculation.

PRESIDING OFFICER HONIGBERG: Agreed. Sustained.

BY MR. LAKES:

Q Well, let me ask it this way. What will Eversource do to encourage people to rent bikes and go up and down Route 116? What is the plan for that?

A (Bowes) So I don't think we have a specific plan for bike rentals. We would offer to work with the towns with an MOU. I know we talked about that several times this morning if there were

periods of time where we could accommodate that. If there are local businesses we could promote, we would offer again our consultant Louis Karno to work with that business, and we would make every effort to ensure that business still had a healthy income coming in.

If for some reason that did not occur, we have indicated we do have a claims process. It's not our first priority to go through a claims process. It's our last priority. We want to make sure the businesses continue to be successful during construction and after construction.

Q I do remember hearing something about a claims process. What is the percentage of loss that Eversource gives to the business after presented with factual information about business loss? What is your policy?

A I don't know if I understand the question.

Q In other words, if somebody loses 50 percent -- say they lose $100,000 worth of business. What is the amount of monies that Eversource pays the business as a percentage of that or does it just say oh, you're putting in a claim for $100,000,

and we're going to give you the whole amount? What is the process involved, and what is the payout?

A (Bowes) So we would go through a process with the business owner. We would verify the amounts, and provided we came to an agreement on what the amounts were historically and the lost business, we would make the customer whole.

Q Lastly, I want to ask, you know, losing tourists for two seasons is bad enough, but how many of them will go elsewhere never to return? Can you answer that question? And how will Eversource be able to make good on the losses that will happen further up the road because of this project?

MR. NEEDLEMAN: Objection. Calls for speculation in the first part.

PRESIDING OFFICER HONIGBERG: Mr. Lakes, the first part of the question does call for speculation. Do you want to try a different way of getting that?

MR. LAKES: Yes.

BY MR. LAKES:

Q The second part will be how will Eversource make

whole companies that continue to lose business after this construction project is completed?

MR. NEEDLEMAN: I'm going to object to that as well. It also calls for speculation. There's no evidence that that will occur.

PRESIDING OFFICER HONIGBERG: Gentlemen, assume that a business could prove to you that some part of the construction had affected their business in a long-term manner. What would your response be to that?

A (Bowes) So it would be very similar to what I said before. We'd want to work with that business owner, confirm the numbers, and then work out some sort of settlement agreement with that business.

Q Is there a limitation time-wise?

A (Bowes) I'm not able to answer that in any specifics. I would certainly consult with Mr. Quinlan for that type of answer. I don't know what our past practice has been because it has not come up before.

Q I was going to ask that question. It has never happened before?

A (Bowes) I'm not aware of it so that's why I have

limited knowledge in saying something, a business ultimately fails because of a construction project.

Q Who would know this?

A (Bowes) Like I say, I would consult with Mr. Quinlan and provide a response back.

Q Can you provide a response back that's in writing with firm commitment to back up businesses that either lose money or fail, and will you make this policy public?

A (Bowes) So I think we can respond in writing. Whether it will satisfy all of those requirements, I would doubt it.

Q A big business in our town and surrounding towns is home rentals. The losses could be exponential as two people rent a house and often have family and friends visit. So one house rental can bring thousands of dollars a week to the area. When people stay away, how will Eversource fix that?

MR. NEEDLEMAN: Same objection.

PRESIDING OFFICER HONIGBERG: I actually think this is just a subset of what you just asked him about.

MR. LAKES: It is. It is.

BY MR. LAKES:

Q I'm just trying to expand upon what will Eversource do? It says it has public outreach, and it has this and that. What will it do to fix issues like that that are immediate?

PRESIDING OFFICER HONIGBERG: Mr. Bowes, do you have anything you want to add anything to the answers you've already given in response to this line of questions?

A (Bowes) I don't believe so. No.

Q Okay. This is my last question/statement.

Do you know that Profile High School has its interscholastic bike races on Route 116?

A I didn't specifically know that, but I will accept that.

Q Do you know that there are multiple bike clubs that use Route 116 and 112 for cycling?

A (Bowes) I'm not aware of the number, but I knew that there is cycling along that route.

Q Do you think they're be using these routes during construction? Will it be safe to use these routes during construction is probably the better question.

A (Farrington) Yes.
Q It will be safe.
A (Farrington) Yes. We will have all the proper mitigation in place for traffic control to also deal with bicyclists.
Q So you do realize that when you go biking, you actually want to bike and not stop every third of a mile or every half mile and wait in traffic and continue on. Do you realize that?
A (Farrington) I was answering in relevance to safety.

MR. LAKES: I'm done with my questioning. Thank you.

PRESIDING OFFICER HONIGBERG: All right. Dr. McLaren, I think you're up next.

CROSS-EXAMINATION

BY DR. CAMPBELL MCLAREN:

Q I should have bifocals. Good afternoon to the Committee, Panel. My name is Campbell McLaren. I'm going to address this afternoon the health and welfare of the community to which this line is running, and I'm going to start off first with fluidization, addressing the Panel, understanding that Mr. Bowes is leading but will

presumably delegate.

So my first question is as regards fluidization, could you please describe what that is as regards the duct bank, what purpose it serves?

A (Bowes) Are you referring to fluidized thermal backfill?

Q Yes, I am.

A (Bowes) Okay. So it provides a consistent thermal characteristic that surrounds the cable conduits and is used to dissipate heat evenly and effectively along the cable route.

Q And how does it do it? What properties does it have that allows this to happen, the dissipation of heat?

A (Bowes) So it is a dense material, denser than the normal native materials in the ground, and it holds moisture and allows heat to be, a cross-section of the duct banks or the cable conduits to effectively expand to the cross-section of the entire solid fluid-backfilled area.

Q So what are the constituents of this compound?

A (Bowes) Maybe I'll have Mr. Nathan Scott talk

about that in some detail.
A (Scott) Sure. Typically it's a mixture of concrete, aggregates, and fly ash in varying capacities and quantities.
Q Could you repeat that last bit, please?
A Fly ash.
Q Fly ash, and did you say additives?
A (Scott) Aggregates.
Q Oh, aggregates.
A (Scott) Gravel. Smaller rock.
Q Have you arranged a supplier for this?
A (Scott) I do not believe a supplier has been selected at this time.
A (Johnson) That is correct. A supplier has not yet been selected.
A (Bowes) He asked how would it be though. So we would arrange through either our construction contractor or through competitive bid process with Redimix or concrete manufacturers provide us cost estimates, and based upon their availability as well as their location, we would award a contract. The construction contractor would award a subcontract for the material.
Q So you haven't involved, Interra is not

involved.
A (Bowes) I'm sorry?
Q Interra? I N T E R R A.
A (Johnson) So Interra is a potential supplier of material and has provided some basic information on FTB that has been passed around through the normal discovery process.
Q Are there any toxins in this compound? Has there been any studies as regards toxins, fly ash, that you're aware of?
A (Bowes) Not that I'm aware of, no.
Q Could you describe, please, one of you, what fly ash is?
A (Bowes) So my understanding, it's the material left over from burning of coal product or fossil fuel product.
Q That appears to be correct. Do you know what happens to the product after combustion of coal, what concentrates in the fly ash and what you will use in mixing this aggregate?
A (Bowes) I do not.
A (Scott) I do not.
Q If I could tell you that -- in fact, he'll place an exhibit.

I think if you could see that at the top left-hand corner of this coal ash. Pollutant. Pollutant, a pollutant, and these are the compounds. First, in coal ash. They're highly concentrated, and firstly, it's arsenic. I think we all know of arsenic and how toxic it is, and if you look at this exhibit, it affects your nervous system, cardiovascular system and urinary tract, if ingested, and this compound you're using around, presumably, your duct bank, is, would you not say highly permeable?

A (Bowes) I'm not sure what highly means, but it's certainly permeable.

Q So it's permeable. Would you say that it's easily broken up?

A (Scott) It's digable. It has a 300 psi strength. Compaction strength.

PRESIDING OFFICER HONIGBERG: Off the record for just a second?

(Discussion off the record)

PRESIDING OFFICER HONIGBERG: I apologize for interrupting, Dr. McLaren.

A (Scott) So the general strength of that material is about 300 psi. It's designated as a digable

material. So I wouldn't say it's easily broken up, but you can certainly break it up.

Q So with the passage of time, it could conceivably break up and its constituents get released?

A (Scott) I'd say that's applicable to everything. But yes.

Q But maybe more so to this more friable permeable compound?

A (Scott) Compared to what?

Q Compared to concrete without fly ash.

A (Scott) Yes.

Q If you look at the exhibit again, if you go down to mercury, I think we all know from the damming up in Hydro-Quebec and the increase in methylated mercury and toxin and how it affects the nervous system, that is also a byproduct or constituent of fly ash.

Going down to the third column, lead, plumbum, lead, children particularly, neurological deficits. There are kidney problems with it, but particularly neurological problems are associated with lead. And we go on to chromium which causes, as written there, some

stomach problems, but we have toxins, heavy metal toxins in fly ash.

Do you know, with fly ash, have there been any longitudinal studies looking at endeavors of two, one, two, three decades ago what happened to the fly ash and to those that have surrounded those lines which have been strengthened with this compound? Duct banks?

A (Bowes) I don't know of any studies.

Q Are there any studies?

A (Scott) I'm not aware of any.

Q Are you aware that tobacco and its carcinogens took many, many years to discover problems, and Agent Orange, DDT, many compounds that took many years to discover were dangerous, and that you're passing through with this fluidized cement through our communities and towns a toxin-containing compound that could leach into our groundwater, our water systems, our aquifers and our wells?

MR. NEEDLEMAN: I'm going to object to the question. It assumes that there are various substances in this material which hasn't been demonstrated to be the case. These are simply

generic statements.

PRESIDING OFFICER HONIGBERG: Dr. McLaren, how would you respond to that?

DR. MCLAREN: I would have to say that I don't absolutely understand what Attorney Needleman is saying.

PRESIDING OFFICER HONIGBERG: I think he's saying that your question assumes some things that may or may not be true, and so I think he's suggesting that if you assume, if you ask them to assume things that aren't true, you might not get the answers you expect. So do you want to refine the assumptions in the question a little bit? It might help both you and the witnesses.

BY DR. MCLAREN:

Q Do you think it's probable or possible that toxins could leach into the soils, aquifers, et cetera, with this compound?

A (Bowes) I don't have any knowledge that they can, no.

Q Does anybody on the Committee have any idea?

A (Scott) I have not seen that, no.

Q Are you aware of this Saint-Gobain plant in the Portsmouth area and PFOAs last year with

perfluoroflorate (sic) compounds leached into the soil, and they had to extend the area of evaluation one and a half miles around the property?

MR. NEEDLEMAN: Objection. Relevance.

PRESIDING OFFICER HONIGBERG: I think he asked if you're familiar with the situation. I'll overrule that objection.

A (Johnson) I am not, no.

A (Bowes) So I know there are some contaminants in the ground water around Pease Air Force Base; is what you're referring to?

Q That's the area, yes. In which case, do you think our communities, the communities along this line, should be, for want of a better word, experiments? We just wait and see what happens? We know that it could take many years before we know exactly how toxic and the quantities required for fly ash, but with this question mark, serious question mark, and these serious complications should we be experimented on?

MR. NEEDLEMAN: Objection. Assumes facts not in evidence.

PRESIDING OFFICER HONIGBERG: I don't

understand what you just said.

MR. NEEDLEMAN: I said it assumes facts that are not in evidence.

PRESIDING OFFICER HONIGBERG: I think Mr. Needleman is probably correct that the question assumes some things, again, that may or may not be true. I think if you had stopped after the first part of your question, you were probably okay, which was something like do you think it would be okay for the people living near the construction areas to serve as -- I don't remember if you used guinea pigs, but that was the concept you were conjuring up.

DR. MCLAREN: Experiments.

PRESIDING OFFICER HONIGBERG: Experiments. That's what it was. You can certainly, that's an okay question, not objectionable. It's the rest of it that Mr. Needleman is objecting to, the assumptions about what will happen with these chemicals. So I'm not sure how much further you want to go with this, but why don't you see if you can get at it a different way.

BY DR. MCLAREN:

Q Do you think we should be experiments? Do you

think our children should be put at risk?
A (Bowes) So I don't think this is an experiment. I think it's been used for decades as a fluidized backfill so I don't think it's experimental. I think it's a well-developed product.
Q In the alternative, there's been a lot of controversy about fly ash, a lot of coming and going over the years, would you agree?
A (Bowes) Again, I don't know how much about the health impacts or the contaminants inside fly ash.
Q As you were not aware about the additives in slurry?
A (Bowes) Not the health impacts or the negative impacts or consequences from them, no, I don't have that knowledge.
Q I'll move on from there.
MR. PAPPAS: Excuse me, Mr. Chairman. So the record is clear, is what's on the screen an exhibit? And if not, can we mark it as an exhibit?
DR. MCLAREN: It is Exhibit APOBP 23.
MR. PAPPAS: Thank you. I couldn't see

that part.

PRESIDING OFFICER HONIGBERG: Thank you for clarifying that.

BY DR. MCLAREN:

Q Do you think the SEC might want to know the constituents and their effects?

A (Bowes) I don't plan to speak for the SEC. They're here and can do that very nicely.

Q The town of Easton in which I live has ordinances that forbid the use of drilling fluid additives other than bentonite, forbids the use of thermal backfill containing coal ash or fly ash within the Groundwater Protection District, and that's the district we have an aquifer.

So this is, if you look at this exhibit, slightly skewed at the moment, well, yes. Good.

Centrally, there is a dark green polymorphic area with a yellow center which is our aquifer, and you can see the red line going from north to south. In fact, I represent that to you is 116.

So our aquifer is lying underneath the road and will be rapidly and seriously affected by these compounds leaching, and the ordinances are

there to protect this Groundwater Protection District, to protect our communities as well as our animals, our natural communities.

Another ordinance prohibits horizontal drilling within 500 feet of this area. We have another ordinance prohibiting discharge of drilling fluid to surface or groundwaters in this area and blasting within 500 feet of the Groundwater Protection District. Attorney Cunningham, I believe, talked about nitrates and blue babies and how they can be compromised. We have these heavy metals.

MR. NEEDLEMAN: Mr. Chair, I'm going to object. This is testimony.

PRESIDING OFFICER HONIGBERG: Yes. Dr. McLaren, is there a question that you're going to be asking about this?

DR. MCLAREN: Yes, there is.

PRESIDING OFFICER HONIGBERG: Are you asking if they're aware of the Town's ordinances?

DR. MCLAREN: I could go to a question about them.

PRESIDING OFFICER HONIGBERG: I think you

should ask them if they're aware of the ordinances.

DR. MCLAREN: Okay.

PRESIDING OFFICER HONIGBERG: Because you're testifying about what they say, and, in one instance, what their purpose is beyond what they say so --

BY DR. MCLAREN:

Q Are you aware of these ordinances?

A (Bowes) I was not aware of them, no.

Q Have you been to our town and talked to our Town Selectboard?

A (Bowes) I have been to the town. I personally have not talked to the Selectboard. I know the Project has had outreach with the town.

PRESIDING OFFICER HONIGBERG: Dr. McLaren, why don't you ask them to assume the existence of ordinances in the town that say what you just said, and if you can do that without adding purposes that probably aren't written in the ordinances, that will probably help them understand what you're talking about.

BY DR. MCLAREN:

Q Will you assume that these ordinances exist in

our town?
A (Bowes) I'm sorry. Could you repeat that?
Q Do you or will you assume that these ordinances exist in our town?
A (Bowes) I will assume that for the sake of questioning, sure.
Q Will preemption be utilized or will you come and discuss with our Town ways of working with these ordinances?
A (Bowes) So I would say we're always willing to talk with the Town about local conditions. When the Project was introduced, I was not aware of these ordinances. Maybe they've been adopted recently. We could certainly talk through the rationale for the ordinances and if accommodations can be made to live within them. I'm not sure the way you've talked about them if that's possible or not, but, clearly, if there's certain additives that we could work through of not using in certain conditions and certain areas, I think we're certainly willing to discuss that.
Q You're willing to discuss, but if you don't come to an agreement with us, how will you then

proceed in the face of these ordinances?
A (Bowes) Based on the SEC's jurisdiction and the New Hampshire DOT's permit approvals.
Q So are you implying that the SEC will formally preempt our local ordinances and use that power?
A (Bowes) Again, there's probably a better question for the lawyers to talk about, but that's my understanding, yes.
Q Are you aware of Senator Shaheen's Safe Drinking Water Assistance Act that she's mooting that she is preparing for passage in New Hampshire to make sure that we are not exposed to toxins in New Hampshire?
A (Bowes) I was not aware of it. I thought she was a US Senator as well.
Q I'm sorry. Didn't I say that? She is a US Senator. Yes.
A (Bowes) Okay.
Q Thank you. I'll move on to another subject.

I'd like to direct most of these questions to Mr. Bowes.

Mr. Bowes, referencing Attachment A of your Prefiled Testimony, and also including some parts of your Supplemental Testimony. First,

I'd like to go to, it's NPT DIS 010386. "Size and placement of splice enclosures pose unique and significant challenges."

Could you please describe these challenges?

A (Bowes) I don't recall that as part of my Prefiled Testimony. However, I'll certainly describe what I know about it.

So the splice enclosures require what we talked about this morning, a fairly sizable space within the road or adjacent to the roadway. They're comprised of concrete material, either in one or two segments or in multiple segments so there's some complexity of where they can be sited within the road or adjacent to the roadway. There's significant excavation that takes place, approximately a week in duration, and, ultimately, there has to be some consideration for what is adjacent to those splice enclosures as well.

We talked about some of the plantings that would be limited once the construction is complete.

We also spoke of infrequently but potentially having to go into those splice

enclosures, remove the fluidized or the thermal backfill, the sand material that's in them, and do splicing operations if a cable failure or splice were to occur at some point in the future.

We also spoke of decommissioning requirements around those splice vaults this morning so that's -- does that summarize what you were looking for?

Q Well, I would ask, are you up to those challenges with the right-of-way that can go from 40 feet to 66?

A (Bowes) So clearly, with the narrow rights of way, we're going to be into the roadway or the adjacent, right to the roadway and there are some challenges along this route, especially Route 116, to locate these splice enclosures.

Are we up to it? Yes, I believe we are. I think that was the essence of your question.

Q Do you anticipate any temporary easements?

A We have not sought any temporary easements. Would they ease construction? Certainly they would. Certainly a temporary easement for construction purposes or to locate materials or

equipment along the route.
Q So by that, locate equipment, you're talking about laydown areas, work lanes, construction lanes?
A (Bowes) Yes. Or storage of materials, I think we talked about.
Q Or storage. So you do not anticipate any temporary easements?
A (Bowes) I think that's correct. Yes. That's, we don't anticipate any.
Q Emphatically? No temporary easements.
A (Bowes) Well, if there's a possibility to obtain one, we would certainly look to do that. So it's not, I'm not trying to exclude the use of them, but today we think we can build the Project without a temporary easement.
Q If you required a temporary easement, how would you go about obtaining that from a business or a landowner?
A (Bowes) So we would approach them with an offer for use of a portion of their property for a period of time. It would probably come with some requirements that they would place upon the Project, and then there'll probably be some

compensation for that easement.
Q And is the mechanism for compensation publicly known? Or just a private deal?
A (Bowes) Most cases, those are private deals, private arrangements. With the Town, for example, they may have Freedom of Information requirements that could make it public. That's a very realistic case where we do execute easements with a Town.
Q Some sections of 116, and I believe from Brad Thompson's testimony, that north, very narrow roads with choke points. You still don't envisage requiring easements along certain of those roads? Some lengths, stretches of those roads?
A (Bowes) Not requiring them, but it could be useful in certain cases.
Q If you required one, and it was refused, what would you do?
A (Bowes) We would have to live within the existing boundaries that we have. It might entail redesign. It might entail some other methodology to construct the Project.
Q You then, on the further Discovery document,

010386, mention that the underground construction process would also entail significant permanent impacts on vegetation. What did you mean by that?

A (Bowes) Is there a reference for this?

Q Well, it's Attachment A, your Prefiled Testimony, and it's under, you'd adopted Burns and McDonnell.

PRESIDING OFFICER HONIGBERG: Let's go off the record for a second.

(Discussion off the record)

PRESIDING OFFICER HONIGBERG: Back on the record. Mr. Bowes, you found what you think Dr. McLaren is referring to?

A (Bowes) Yes, it's the Underground Analysis that was performed by Burns & McDonnell to develop a cost estimate for an all-underground route.

Q Which I believe you adopted.

A (Bowes) Yes, I did.

Q So going back to 010386, the process would also entail significant permanent impacts on vegetation which I believe has been addressed by Mr. Lakes to the point of the trees, but could you perhaps expand on it if you can.

A (Bowes) So first of all, this Underground Assessment was for an all-underground Project that went along in the first two cases along I-93.

Q Yes.

A And in the last case along State roads from the Canadian border down to Deerfield. So it's not the Project that we have put in front of the Site Evaluation Committee. It is looking at the alternatives.

Clearly, the vegetation impacts along I-93 would be fairly significant. My understanding based upon conversations with the DOT is that we would be outside of the travel lane, outside of the breakdown lane, to the far right of the right-of-way which would require us to, in essence, develop a 15- to 20-feet access road along the interstate corridor. So all of that vegetation would need to be removed. I believe that's what this is referencing to is the significant vegetation rules. It's not necessarily the same for the hypothetical Project that we proposed within State roads for this analysis.

Q But, essentially, the Project is the same. Laying of an underground line? The vegetation does not look any different, the ledge is probably granite and a wetlands are wetlands.
A (Bowes) It's a very different Project because it's through undisturbed areas and undisturbed soil. The Project within State roads is entirely within disturbed soils. So it's a very different Project, and this Project, again, assumed that we would be within the roadway for the third alternative, I will say, of entirely within state roads. Not adjacent to the roadway but within the roadway.
Q So just moving further on with the same document, you stated or agreed that the statement from the Draft EIS, a Burns & McDonnell document, that approximately 30 feet would have to be cleared of vegetation either side of the transmission line. Would that not apply, generally speaking? Why would it only be I-93 and not a small State road?
A (Bowes) Because within the State road you already have 30 feet or so of cleared area for vehicles to move along the access to those

locations. Even if it were towards the curb or towards the side of the road, you still have vehicle access to it with a State road or in this case an already disturbed area.

Q When you say a State road, are you talking about something like I-93 or just the State roads that are generally being followed?

A (Bowes) So, again, this alternatives analysis looks at a couple alternatives. One is a brand-new right-of-way adjacent to I-93 through undisturbed areas that would require about a 30-foot, 25- to 30-foot roadway, in essence, to be developed, and then trenching would occur within that.

The other alternative that we looked at was an entire underground project, much like what we've talked about previously on Route 116, Route 112, Route 3, for example. In the latter example, we already have an established road right-of-way. We don't need the entire 30 feet. We may only need a few feet if you're off the roadway because you have the ability to transport materials and equipment on the existing roadways.

You don't have that same option with a limited access highway. You can't come off of the interstate and go adjacent to the highway. You have to service everything you need on that new roadway that you would develop.

Q Is not one of the reasons for the 30 feet or 15 feet each side to prevent roots of trees actually interfering with the duct bank?

A (Bowes) It would certainly have that impact, but that wasn't the initial thought we had when we did this. It was really to transport the materials and equipment along this route without access from the limited access highway.

Q So this was not overemphasizing the need for this 30 feet for I-93 to be a reason against it as opposed to coming down the small State roads that you are coming down. This was not a reason that you created not to go down the State I-93?

A (Bowes) So it was a condition that we used in the assumptions for this report that we thought was valid and defendable of why we needed that space, and we don't need the same space if there's already an existing roadway that's 20 to 30 feet wide or wider.

Q Perhaps if I could ask you again. Did you have a concern about roots interfering with your Project?
A (Bowes) Unfortunately, this study didn't consider roots in either example. Either the State roads that are existing or root systems from the alternative along I-93. It just wasn't part of our analysis process.
Q You then talk about legal, environmental and constructability issues that would further increase costs of projects. What are the legal and environmental issues that could increase the costs of burial?
A (Bowes) So there was a couple examples for the environmental. We thought there would be a pretty significant wetland impact just based on our tabletop exercise of looking at I-93 and then to the far right of the number of wetlands that would be impacted. We also had to cross several exit and on ramps, and those would probably not be open-cut trench. We didn't think we would get permission from New Hampshire DOT to cut through those lines. We'd probably have to go under them. So that was part of the

legal requirements. And there was also a discussion about use of Franconia Notch in this report; that we didn't think that we could secure the necessary legal rights to go through that Franconia Notch area.

Q But you were concerned about wetlands.

A (Bowes) Yes.

Q And you're aware, of course, that down the route as suggested and proposed, there are many wetlands, great areas of wetlands.

A (Bowes) Again, we're talking about the underground or the overhead portion?

Q Underground.

A (Bowes) So there's certainly wetlands adjacent to the roadways.

Q Yes.

A (Bowes) Yes.

Q You have then made an estimate of the wetlands impacts on all buried route and nondisturbed areas. You're talking about interstate highways as approximately 10 to $20,000,000, the impact financially. How did you come to that figure?

A (Bowes) So those are the estimate for the mitigation impacts. We would have to secure

additional land or property for mitigation.
Q And you've already admitted, I believe, Mr. Bowes, that we have wetlands in the underground portion of the line as proposed?
A (Bowes) I said there's wetlands adjacent to the highway. Yes.
Q The roads. The State roads.
A (Bowes) Yes.
Q How are you going to mitigate with our local community? Financially, I'm talking about.
A (Bowes) We don't plan to. The areas that we're going through are already disturbed and within the road right-of-way so we don't think additional mitigation is warranted.
Q What if I was to tell you that Lydar shows that there are many areas of undisturbed wetlands?
A (Bowes) Within the roadway?
Q Within the right-of-way.
A (Bowes) That's possible. Yes.
Q And in that case, you would mitigate?
A (Bowes) Probably not with the local community. We might include it as our overall mitigation. Again, that's a discussion we're having right now with the variances we have applied for with

the New Hampshire DOT. Once we have a ruling on what those variances will be, we'll have ongoing discussions with New Hampshire DES about if we're going to impact more wetlands because of moving off of the roadway.

Q So your intention is not to mitigate with the local community.

A (Bowes) That is correct.

Q Townships. Attorney Saffo was here the fourth day, I believe, of discussions, and as she stated, everything is changing all the time. And the communities, we would like to see the latest documents shared in our case, documents. Through Mr. Wagner at the back of the hall here, I was able to arrange a site visit. Very pleasant young man. And an outreach specialist came with SHEB documents after having been requested that they were the most up-to-date ones. If I put to you that those SHEB documents were the 8th of December, what would your response be as regards the timeliness and accuracy of those documents?

A (Johnson) So the December 8th documents were not the ones that were filed with the DOT. Those

were the December 13th documents. However, the alignments and the layout of the line did not significantly change between those two versions. The DOT has been and is in receipt of the 13th of December documents.

Q So the DOT get the 13th, the communities get the 8th which are not relevant. The differences?

A (Johnson) I would correct you and say that they are relevant. The changes that were made between those revisions were extremely minor, mostly to do with naming conventions and title blocks. Again, as I asserted a few minutes or just a second ago, the alignment and the locations of the splice vaults or splice pits did not significantly change.

Q What you say was echoed by Attorney Getz in an email this morning?

A (Johnson) That's correct.

Q But I have 710 feet of road which has changed significantly between the 8th and the 12th.

A (Johnson) It's possible.

Q An extra roadway, you've just said, or I believe that there were minimal changes.

A (Johnson) That's correct.

Q That is a minimal change?
A (Johnson) In the context of 60 and a half miles of underground, I would say several hundred feet is minimal, yes.
Q I'm only looking at my local ones. I don't know the rest. We as a community, we have not had the opportunity in a widespread general way to see the 12, 13 SHEBs. I would ask why.
A (Johnson) Again, I believe there was an error in what documents were uploaded to the ShareFile site which has since been corrected as you noted as of this morning.
Q So you understand how extremely difficult it is to objectively analyze what's happening in our areas that these people that visited us two days ago were dealing with old information which was not relevant. The visit was pleasant but useless.
A (Johnson) That's your opinion, yes.
Q When is the next edition of SHEB coming up?
A (Johnson) Right now the DOT is accepting our variance requests for the entire 60 and a half miles. Once they have ruled on those requests, we will then redo the design, if you will, and

produce a new set of documents.
Q When do you, what date, when do you anticipate that?
A The DOT has not ruled on any of our variance requests yet. I believe the first ones are due today, but I have no knowledge as to whether they've replied to those or not.
Q Could you repeat when the first one is due?
A (Johnson) The first ones are due today. The first variance requests they were going to analyze, those are due back to us today. I have no knowledge as to whether we have received these or not.
Q Thank you, sir, and I'll move on.
I will be touching on something mentioned by Mr. Carl Lakes, but I want to talk about embankments and traveled way, the viatic way, the sum of these roads, and you're bringing this line down very narrow roads. Very narrow roads. The right-of-way may be 40 feet, maybe 3 rods, 49.5, maybe four rods. But on these roads there are outcroppings and embankments which come and approximate to the edge of the traveled way. There may be streams on the other sides so you

just have essentially the traveled way which is 25 feet. Do you anticipate removing these steep embankments? They may still be part of the right-of-way, but are you intending to remove them?

A (Johnson) It is my understanding that we are not intending to remove rock outcroppings.

Q I said embankments, you said rock outcroppings.

A (Johnson) Embankments.

Q Beg your pardon?

A Yes, we are not planning on removing embankments.

Q You state that categorically?

A (Johnson) To my knowledge.

Q Is there anybody who has more knowledge than you on this subject?

A (Scott) Do you have a specific location you'd like to talk to?

Q I could. Yes.

A (Scott) Okay.

Q Route 116. SHEB 156, 157.

A (Scott) Okay.

Q Just south of the Easton Town Hall.

A (Scott) Are you around 632 plus 50 stationing,

the splice pit there? Is that where you're talking about?

Q I don't have the SHEB, but it's Gibson, G I B S O N, Road.

A (Scott) Okay. I believe I'm there.

Q What is your decision as regards the embankment there?

A (Scott) It looks like there are some grade sloping up in a fairly steep manner near that supply pit installation so I would assume that they would have to cut into that grade, put in a temporary retaining wall to do the installation.

Q So if we could detail that a little bit more? You think they would cut in with what kind of a machine?

A (Scott) An excavator.

Q And you're aware that at the top of the bank are mature trees at breast height often measuring more than 12, 14 inches or significantly mature trees growing out of the top of these embankments?

A (Scott) I don't believe they'd cut up all the embankment, but, again, that's a means and methods that the contractor would select.

Q Would you admit that inevitably they could remove part of the root or root system?
A (Scott) Inevitably, no. It's possible though.
Q If they came on roots, what would they do?
A (Scott) I suppose it depends upon the condition and the location of those roots. If it was in the way of the splice pit or the shoring, they would likely have to be removed or pushed to the side, if possible.
Q I would ask you to repeat that, please. That last sentence?
A (Scott) If it was possible, say the root was in the way but could be pushed to the side, it would be. Otherwise, it would likely be cut.
Q And then you place or build a retaining wall possibly?
A (Scott) Possibly. Depends on the means and methods.
Q That would have a footing?
A (Scott) I could not say what would be required at that specific location. That would be determined by the contractor.
Q Will you have certified arborists there?
A (Scott) Mr. Bowes has previously testified to

that, but yes.
Q How many arborists do you have on your team?
A (Bowes) Not exactly sure of the number. I know we have probably a half a dozen in New Hampshire. I'm not sure if they're all certified or not.
Q So you would subcontract?
A (Bowes) If we needed to for the Project, and we might need to do that because they still have their full complement of work to do.
Q After the process has gone through, would you recreate that embankment?
A (Scott) Most likely. In most cases, grade would be restored to preconstruction condition.
Q If I understand you, you said it would be returned to preconstruction condition? Is that correct?
A (Scott) In most cases, yes.
Q In most cases. Are you aware that damaging the root system of a tree compromises its integrity, its ability to stand up?
A (Scott) Potentially, but I believe we were discussing grade. Grade would be restored to preconstruction condition is what I said.

Q But the roots have already been loosened, they're going to have to reestablish themselves and they may and probably very likely have been damaged.
A (Scott) If that's your opinion.
Q The reason I mention that is that if one of those trees was to fall on to the viatic, the road bed, and cause an accident, as the physician here, I'm speaking to the health and welfare and safety of people. The landowner, the landowner, if that tree was on the abutter's side of, say, the retaining wall weakened is responsible for all injuries, damages that occur. Is that something you're aware of?
A (Bowes) Probably a better question for the attorneys, but I know there are state laws that govern responsibility for landowners and their trees.
Q Have you heard of Bernie Waugh and A Hard Road Traveled (sic)?
A (Bowes) Yes, I have.
Q With municipal roads, the abutter is responsible, and, by extension, I would believe that it's also with the State roads.

A (Bowes) Again, it's probably a better question for our attorneys.
Q Thank you. Also aggravating this is the fact that we have in Easton Valley a wind called the Bungay Jar which is like a Santa Ana wind. It's a fierce wind that takes roofs off. We have to have our roofs well stabilized. It will bring these trees down. So this is a concern. If something like that happened, if it did exist, would you be prepared to indemnify the landowner?
A (Bowes) Probably not. We can look at the specifics of it, but I would say as a general statement, we're not looking to indemnify tree owners.
A (Scott) At the specific splice creation we're discussing, I believe the edge of excavation for this splice pit would be approximately 30 feet from the edge of the trees as they currently exist which is likely out of the root impact zone. Just as a side note.
Q Thank you. Thank you. Just moving on to the last questions. I'm going to direct this initially at Ms. Farrington, understanding that

others in the panel may also answer for her.

Very extensively, Brad Thompson and Attorney Pappas and maybe others talked about road closures. Discussed was closing for splice boxes, et cetera. How many road closures do you anticipate on Route 116? Ms. Farrington?

A (Farrington) I don't anticipate any road closures with the detour that we're planning for. The only situation where the road may temporarily be blocked is at splice pits during offloading of the splice box by a crane, but I believe there are methods that we can use to offload in a linear fashion so that that can be avoided.

Q You probably remember Mr. Rumsfeld? There are known knowns, none unknowns and unknown unknowns. Is it not a reasonable supposition to assume that with the complexity and narrowness of these roads that there will be, in fact, road closures down 116? Apart from the site you already mentioned.

A (Farrington) I don't anticipate any long-term closures requiring a detour on 116.

Q So you said long-term closures. What do you

mean by that?
A (Farrington) More than 15 minutes because of some sort of unexpected situation. Maybe something rolled into the open lane of traffic.
Q So that's something you emphatically believe as you sit there now that you will not have closures down 116.
A (Farrington) Yes. I mean, I rely on the construction experts to give me the dimensions of the construction zone they need, but, yes, I do believe that.
Q So Mr. Bowes and the rest of the panel, can you support what she's saying? Knowing there are unknown unknowns?
A (Bowes) So I would frame it very similar to the way she did. There could be an occurrence where an unexpected situation occurred where we would have to, for example, move a plate to access a driveway or a business or we might have to do a temporary road closure, but there's no scheduled or no planned-for road closures along Route 116.
Q In Mr. Thompson's territory up north in Coos, I think described were detours of 2.7 miles and maybe 4.1. I'm perhaps not totally accurate

there.
A (Farrington) Exactly accurate.
Q But there is a matrix of roads up there so it's, those delays are significant, but 116 north to south is a straight road with essentially significant detours. As you go down a road and I could go through all the possible situations, we could have in the town from a 7-mile to 28-mile detour, depending upon where the closure occurs.

So Ms. Farrington, knowing that road, could you conceive that that is possible?
A (Farrington) Absolutely. For example, the Bishop Brook detour for the bridge on Route 145, I believe that detour in place now is around 25 miles. So yes. That is exactly why we are doing our best in choosing not to have to detour Route 116.
Q You're doing your best. And where Route 18 intersects with Route 116 at the bridge as mentioned previously frequently, there's going to be a large trench, isn't there, for the microtunnel?
A (Bowes) So there's going to be a deep trench

that connects into the base of that tunnel, yes.
Q Do you believe that a ladder truck during that process could cross the bridge whilst you're doing work? I mean, have you anticipated that, Ms. Farrington, that, in fact, the ladder truck, which is the largest vehicle in the fire service there in Franconia, might not be able to get onto that bridge?
A (Farrington) Is your concern a weight limit capacity?
Q I'm sorry? I'm finding it difficult to understand you.
A (Farrington) Is your concern like a weight limit or weight capacity loading?
Q Weight comes into it but length also does. A truck, a fire truck, a large truck requires a sweeping entry into roadways. It's not highly maneuverable.
A (Farrington) So I haven't, I don't believe we finished the truck turning movement for that exact location, but it was in the DOT list of comments that if a large truck is currently able to make the turn, then we need to assure that they will be able to make the turn during

construction conditions.
Q So I'm sorry. I am having trouble understanding you. But did you say then that the truck would be able to make a turn onto the bridge from 18 to go down 116 to a fire?
A (Farrington) If they are currently able to make the turn, we will make sure to ensure that they are able to make the turn during construction conditions.
Q Is that 100 percent guaranteed?
A (Scott) So the civil contractor would be required to stage the construction so that they are maintaining a path to maintain that traffic flow. So if you look at the area there, you know, there's a right turn lane coming from the highway so that is a path that could be maintained while they're doing the trenching activities to the west of that intersection, and as they're going deeper, the right-hand turn lane onto the bridge would be maintained.
Q I think we need to talk now about time-critical events. You would agree, I would think, that a burning house, a child with Asperger's continuous seizures, a tourist with a bee sting

shock result need to be rapidly got to in order to provide the best care? You would agree with that, I would think?

A (Farrington) Yes.

Q Do you have in your mind at all the thought that perhaps this could be compromised if you have a closure of 116 north of the north end of Paine Road, and someone is acutely critically ill, do you feel that you have not compromised their quality of survival? Not survival. But quality of survival?

A (Farrington) Again, we are not planning the road closure of 116.

Q I'm sorry. Could you repeat that?

A We're not planning to close 116.

Q But I think you've already admitted that it's possible.

A (Farrington) I think in that situation, we would have direct access between the firemen and the emergency responders so that we would know that they're coming and which direction they're coming from so that the situation could be rectified in a timely manner to allow that passage of the emergency vehicles.

Q Have you talked to anybody about this? The Fire Chief? The Ambulance Chief?
A (Farrington) I have talked to some fire and ambulance chiefs. Not specifically the town of Franconia.
Q You've talked to the Fire Chief?
A (Farrington) No. Not in this town.
Q Ambulance Chief?
A (Farrington) No.
Q Police Chief?
A (Farrington) No.
Q Do you intend to?
A (Farrington) Yes.
A (Bowes) So this is the Town of Franconia, correct?
Q Yes.
A (Bowes) I think I spoke of that this morning, but in essence, they've broken off communication with us. Approximately 18 months ago was our last meeting with the town. We have extended with them the opportunity to talk about a Memorandum of Understanding. That was done in March. We have not got a response from the Town of Franconia. So it takes two to make this

partnership work.
Q It does, but if you're going to proceed with this, if you are going to proceed with this, you have to engage in discussion. I talked to the Police Chief yesterday. He's very frustrated that you have not contacted him. The Ambulance Chief is also very frustrated. They see compromise everywhere they look. The firemen and policemen and ambulance personnel, EMS, are volunteer, by and large, generally volunteer, and they actually have to come into the station in Franconia. So they have to traverse --
MR. NEEDLEMAN: Objection.
PRESIDING OFFICER HONIGBERG: Dr. McLaren, it sounds like you're testifying here. Do you have a question for the Panel regarding their attempts to contact the Fire Chief or the ambulance people?
DR. MCLAREN: Thank you.
BY DR. MCLAREN:
Q Have you attempted to contact them?
A (Bowes) We have attempted to contact the town leaders, and we certainly are willing to talk with all three of those people you just

identified, but, normally, that's done through the proper channels of the town leadership, and we're willing to do that outside of that process if that is needed.

A (Farrington) We have begun that process in other towns and had exactly those sorts of meetings where we sit down and understand how we can best work with those exact Fire Chiefs, ambulance services, and police.

Q So you are agreed that there are a lot of time-critical events; illness, fire. This is extremely important that you get engaged in discussion. I remember, too, that we have school buses that could be delayed significantly, children that are in the 112 Route area that with certain closures would do the 28-mile trip.

So just, I think what concerns me as an emergency physician, this is my last statement, sir, this is a merchant-funded endeavor, not a Reliability Project, and I really believe that, I mean, your leader, Quinlan, likes to use military words and deploy his men, but there's very strong possibility of human collateral

damage. So thank you.

PRESIDING OFFICER HONIGBERG: All right. Thank you, Dr. McLaren. We were going to try and finish this group, but we need to get to Mr. Oldenburg from the Department of Transportation because he won't be here for the next two days. So we're going to suspend the Ashland to Plymouth Group's questioning at this time. We're going to take a ten-minute break and when we return, Mr. Oldenburg will be up.

(Recess taken)

PRESIDING OFFICER HONIGBERG: We're going to resume with questions from Mr. Oldenburg.

INTERROGATORIES BY MR. OLDENBURG

Q Good afternoon, and thank you for accommodating my schedule. Good afternoon. Ms. Farrington, gentlemen. What I did, what I've done over the past few months of listening to this is I've created questions and to keep the squirrels in my brain at bay, I sort of compiled them into sections.

So one section I have is on qualifications, and then the overhead transmission, the underground transmission, traffic control, and

something that I call miscellaneous that don't fit into those four. So a lot of the questions I have are more clarifying questions. I might have heard something and I got what I thought was a partial answer so some of these may sound familiar so I apologize, but I swear, I am not repeating questions that other people have asked.

One of the things I'm going to be doing is I'm sort of a dinosaur and old-fashioned. I could have done this in Power Point, but I'm going to use the ELMO, and one thing that I will say, I don't know what you did on your three weeks off, but I had surgery, and I'm just getting back to work, and I cannot stand for long. So I'm going to actually sit down. So I apologize to everybody in the room that I'm going to sit most of the time because I can't stand for that long.

So let me begin. The first thing I'd like to do is talk about the structure of who's doing what. Now, I think since the Application was submitted, things have changed a little bit. And this is Prefiled Testimony from

Mr. Fortier's Attachment B. ***(Committee 1)***
Correct, Mr. Bowes?
A (Bowes) Yes.
Q So if I could start at Eversource. So I'm assuming, Mr. Bowes, you're, from the Project level, you're the guy in charge. Is that correct?
A (Bowes) So I would characterize it a little bit differently. Mr. Quinlan is the Senior Executive in charge of the Project. I work for him on this Project as a Technical Expert. Directly under Mr. Quinlan is Jerry Fortier whose this testimony originally was. He is the Project Director. So he's responsible for all aspects of the Project, reporting to Mr. Quinlan, and I report directly to Mr. Quinlan for this Project as well.
Q Okay. And as the legend states, the boxes in blue here are basically the Owner's Engineer which is for the most part Burns & McDonnell?
A (Bowes) For the most part it's Burns & McDonnell. There's a couple of exceptions to that. The underground engineering is being done by a Quanta or a PAR subcontractor, and the HDD

design is being done by a Quanta company, I believe, right? It's a sub. I'm sorry.

Q So that's some of the things. So the red is actually the contractor.

A (Bowes) The red is PAR, correct, or its affiliates.

Q So Eversource, on the Eversource side who is the day-to-day point of contact or the decision maker is?

A (Bowes) Jerry Fortier.

Q So one of the things that we heard repeatedly during the testimony in some of the public hearings, this is the largest underground project in North America if I remember right.

A (Bowes) Largest DC underground.

Q Okay. So, but you've said that you've, Eversource itself has done underground transmission lines all the time, every day, type of?

A (Bowes) So we have lines that date back to the 1950s for underground transmission. Most of those are a different technology of pipe-type cable. They're still in use. So 75, 65, 75 years later, they're still in use.

Most recently, we've done a series of projects in southwest Connecticut. So that's the Middletown-Norwalk Project we talked a little bit about today, the Bethel-Norwalk Project, the Glenbrook Cables Project, and then the fourth project in that family was actually a replacement of a submarine cable between Connecticut and Long Island. So a lot of underground experience in the last 15 years with the same type of cable technology we're talking about for this Project.

Q So if you did a ten-mile project, this is just five times that. The complexity isn't different. The technology isn't different. So whether you're building ten miles or 15 miles, it's the same thing?

A (Bowes) So the two key differences I would say are we're used to doing underground typically in urban or heavily congested areas. We're also used to doing multiple cables. So most of our projects are 6 cables, not two cables, which means the underground excavation has to be wider and deeper. Because it's an urban environment, we're also used to dealing with many more

utility obstructions. We could have 100 obstructions per mile. It's not uncommon. And that's gas mains, water mains, electric distribution circuits, sewer, culverts, all of those type of activities. So we're used to dealing in very congested areas doing construction of much larger facilities than this Project as proposed.

The difference with this is it's longer. The linear length is 60. Typically the lines, I think the largest or the longest line we've done to date is around 24 miles in one continuous segment.

Q All right. Thank you. So in the blue, the portion that's done by Burns & McDonnell, I believe, and Mr. Fortier's Prefiled Testimony, they're listed down here as the, it's a little out of focus. So the Owner's Engineer will be Northern Pass's representative for engineering, full service engineering company. So this is sort of the job specs that Burns & McDonnnell was hired under, correct?

A (Bowes) Yes, and to be more specific, Mr. Bradstreet did the overhead design.

Mr. Scott is responsible for reviewing and approving or reviewing and accepting, probably a better way to say it, the underground design. Mr. Johnson is responsible for those project control services and other things the project needs.

Q And from the four and a half days' worth of testimony, I get the impression they know what they're doing. But one of the things that I found interesting was when you talked about hiring contractors, each contractor chosen will work on a Project, will be evaluated and selected based upon their experience and previous performance on Projects of similar size and scope. ***(Committee 2)***

No where are those requirements, experience or similar size and scope, included within the Owner's Engineer. Is that, I'm assuming that's one of the reasons why Burns & McDonnell was chosen, because of their past experience on similar projects; is that correct?

A (Bowes) It is. So they have done, they were our Program Manager for the Middletown-Norwalk Project and the Glenbrook Cables Project. They

were our Program Manager for the Greater Springfield Reliability Project, the Interstate Reliability Project. Obviously, they've been on Northern Pass for now a number of years, and they've also done projects in the Boston area for the company.

As the Owner's Engineer or as actually the program manager is more the expanded role of beyond just engineering but would bring in all of the community relations aspects as well as all of the subcontractors for licensing and permitting, for real estate acquisition, all of those type of services. We've used that as a program manager model for several projects. They've also done projects around North America and now branching out to the world. They're the largest engineering firm in the business.

Q Great. Thank you. Owner's Engineer, Senior Project Manager, is that?

A (Bowes) Mr. Johnson.

Q And the design engineering folks? So they're Burns & McDonnell. It's Mr. Bradstreet, Mr. Scott?

A (Bowes) Yes.

Q Designers?
A (Bowes) So designer (indicating Mr. Bradstreet). (Indicating Mr. Kayser) Reviewer of the design based from SGC Engineering, which is a subcontractor under Quanta. But Nathan Scott is responsible for reviewing and accepting the work done by that design firm.
Q So Mr. Bradstreet's still designing.
MR. PAPPAS: Excuse me a moment. Mr. Bowes, when you point to somebody, you may want to say who you're pointing to because no one reading this record will know who you're pointing to.
A (Bowes) Very good. I will.
Q So on the contractor side, the contractor of the overhead transmission line, that is, who is that?
A (Johnson) So PAR Electric which is a subsidiary of Quanta.
Q And then if I remember right, the HVAC, that was the specialty, is that ABB?
A (Bowes) Yes.
Q And then the substation?
A (Johnson) That is PAR as well.

Q And then converter stations?
A (Johnson) The converter are ABB and the box to the top is the civil aspects of the underground which would be PAR.
Q Okay. So these all look like, with all the lines, trying to figure out sort of the chain of command. Is there one person at Quanta or PAR who's their Mr. Johnson?
A (Johnson) So they have a gentleman by the name of Lance Clute who is their Senior Officer or Vice President, and he's been seconded to this project from their perspective.
Q So he's the point of contact for all these folks in the room?
A (Johnson) So the ABB portion of this Project which is the bottom right set of boxes.
Q Yes.
A (Johnson) So they have their own Senior Project Manager, independent from the PAR.
Q But they would report to?
A (Johnson) They would report to Lance who reports to us. That's correct.
Q So Ms. Farrington. Louis Berger. In your Prefiled Testimony it says that you are hired by

PAR Electric so you actually work for the contractor, correct?

A (Farrington) That's correct. I originally became involved as I guess it would have fallen under the design engineering working directly for Eversource but have since been retained by PAR to develop the traffic control plans.

Q Okay. Reading your resumes is a lot of electrical engineers and mechanical engineers. My roommate in college was an electrical engineer, and as we say, he was "wicked smaaht," but there's 50 miles of the Project are under roads and bridges. Who is the civil engineer? The highway and bridge person that is reviewing this Project from Burns & McDonnell?

A (Scott) So from Burns & McDonnell's standpoint, I would be the lead point for underground review, and specifically for bridge crossings, we would engage our transportation group. I would have someone from that group review.

Q So another group in Burns & McDonnell, kind of a whole full service engineering firm, they would answer the highway and bridge questions if you have any?

A (Scott) Yes.
Q Okay. Has everybody in the blue from the design end, have they been hired? And do you have any more consultants that you need to hire?
A (Johnson) Yes. So we have a somewhat limited staff at this stage of the permitting stage. As we go through and lead up towards construction, both sides of the fence, if you will, both the Quanta and PAR family as well as Burns & McDonnell and Eversource will be beefing up their staff in order to get ready for construction.

So, for instance, a field quality manager, safety manager, outreach coordinator from Burns & McDonnell has not been brought on board yet. Those are all activities that would happen post-receipt of the SEC permit, should we get it, and then leading up to the construction phase.
Q So let me understand the timeline a little bit. Because when I read the Prefiled Testimony, I understood it one way, and then I got thrown for a loop when I read the Supplemental because names and faces have changed. So back prior, so

before the permit was submitted, Burns & McDonnell was hired by Northern Pass to actually do the preliminary design, correct?

A (Johnson) Correct.

Q And then some time in 2015/16, if I remember hearing it right, the Project was bid and Quanta was selected to be the contractor, correct?

A (Bowes) A general contractor that had expanded scope.

Q And did they do the final design of like the underground?

A (Bowes) So they're responsible for the final design of the underground and the Owner's Engineer, Mr. Scott, is responsible for reviewing and accepting that.

Q Exactly.

A (Bowes) On the overhead, it's a little bit different. Mr. Bradstreet is still responsible for the overhead design, and he will submit that to Quanta for their execution in the field.

Q Okay. And PAR is a subsidiary of Quanta, and they're doing the final design of like the underground so the plans that were submitted back in November/December, PAR Electric's name

on them, they're doing the final design and you're, Mr. Scott is reviewing that?
A (Scott) Correct.
Q So in my world, that sounds a lot like a design/build contract where you bid a project, it's not quite, the design isn't complete, and that contractor hires designers like PAR Electric as subsidiaries of their own company to do the design, and they finish the design and build it. And then you've hired folks, Burns & McDonnell, to oversee that design. Is that, in your industry, do you call it a design/build contract?
A (Bowes) Or engineer/procure/construct. But design/build is probably a better way to frame it for this Project.
Q Okay. So with that type of contract, I mean, it's great because the contractor has input in the design. So instead of just having somebody design it and be stuck with it to build it, they have input, and say no, this is, it would be easier if you moved it two feet this way or you moved this box, this splice vault this way because I can build it a lot easier so there's

that input. Correct? Is that a good assumption?

A (Johnson) Correct.

A (Bowes) I would agree with that, and there's also the contractual seam of an engineering company and a constructor. Here it's one company so that seam does not exist.

Q But one of the down sides of that type of contract is Quanta's bid on a Project, right? So what did they bid on? What specifications, what plans did they bid on? Did they bid on the permit plans?

A (Johnson) So they bid on the permit plans. That's correct.

Q So when you change those plans or have them change those plans, it costs, it's a change order, right? So it costs you money to do that?

A (Johnson) So there's a true-up clause in their contract that says once the design has been completed, they have a final opportunity to provide a fixed price. Once that opportunity is completed, then they go build it.

Q Okay. Now, in my world, which might be a little bit different than yours, one of the other down

sides is the owner, Eversource, loses a little control because the contractor can say I'm going to do it this way, and there's nothing in the specifications or anything that says I can't do it that way. So you lose a little of that, that control, the ability to say no, I think you need to do it this way unless you want to pay them, correct?

A (Bowes) So I would say partly true, yes. The way we try to mitigate that risk is to have PAR develop a Project Execution Plan which they're in the process of doing. A detailed schedule and a Project execution plan which highlights their method and manner of doing construction, the time sequence of when they're going to do certain things and the owner, Eversource, Northern Pass, also retains the right for key personnel on the Project, and, obviously, the acceptance of any subcontractors on the Project. So we retain some control, but we do have to give up some of that control for them to be able to execute the Project most effectively.

A (Johnson) I will add that we also have what we're calling independent oversight. So the

owner will have its own environmental team and quality and assurance team that's going to be out in the field ensuring that the Project is being built to the specifications that we originally had put together.

Q So from Burns & McDonnell's side, Mr. Johnson, your home office is Manchester? Is that correct?

A (Johnson) That's correct. Yes.

Q Mr. Kayser, you're out of Portland, Maine?

A (Kayser) Yes. That's correct.

Q Mr. Bradstreet and Scott, you're out of Kansas City, right?

A (Bradstreet) Yes.

A (Scott) Yes.

Q So how do you coordinate, is it simply just teleconferencing, do you, I mean, Mr. Scott receives plans, do you, Mr. Johnson, review those plans before he sends them off to PAR to say no, this doesn't work or how does the coordination effort between a nationwide review happen on your side?

A (Johnson) Sure. So we actually are integrated with Eversource as well so it's more of a

cohesive team from the owner side. Effectively, Mr. Fortier and I will get information, we will disseminate it out to our folks. We will then go through our review processes and then provide comments back.

I will say that on the actual engineering level, both Mr. Scott and Mr. Bradstreet have conversations with PAR directly at the design level, and I can tell you right now there happens to be a bunch of Quanta engineers in our office working on some of the DOT requests that we're putting in now.

So it does tend to be an integrative team. We do hold weekly team meetings and then monthly Burns & McDonnell meetings where we all sort of regather either by teleconference or by Skype and then make sure that we're all rowing the boat, if you will, in the same direction.

Q For construction oversight, is it, and I think Mr. Kayser touched on it, is it 100 percent oversight? Do you have somebody watching each site, you know, as long as they're working or is it you check in on different sites, spend an hour or something?

A (Kayser) We'll have inspectors out there, but there may not be one inspector for each crew that's there. So as Quanta develops their schedule, determine how many crews they're going to have, then we'll adjust our field resources as necessary so we can cover the areas, similar to what we've done on other large projects in New England for Eversource and other companies. You have people that will go between, a few crews.

A (Bowes) I'd say there's probably two slices of that as well. There's one slice that's geographic because of the nature of this Project so there will be teams in the north, probably central and south part of New Hampshire. And also be specialties. We'll want to have specialty people looking at the underground construction that will be different from the substation construction, for example. And the substation construction, especially Deerfield, and probably Franklin converter station, they may have a dedicated person there that that's the majority of their time. They probably won't be going between locations. Deerfield might

pick up the Scobie Pond work as well, but, in essence, they're going to be dedicated at that site because of the scope and scale of that work.

Q Okay. It was in Mr. Bowes' testimony, Prefiled Testimony, ABB will supply the HVDC converter terminal in Franklin and the HVDC cable and Deerfield SVC. Will they also construct it? Will they oversee it? Will they do everything? By supply, I'm assuming you mean they're going to either build or compile the components and --

A (Bowes) For the substation portions, it's what I call is a turnkey project. They're responsible for the entirety of it, except for maybe site development. I think we give them a level, constructible location to build their equipment on for the converter station and for the SVC at Deerfield. In addition, they provide the cable, but the cable is installed within trenches and duct banks that have been constructed by PAR. So there is a seam there as well where ABB has to accept the work of the civil contractor.

Q So do they design as well as, do they design --

A (Johnson) Yes. ABB is involved in the

underground design, specifically for the thermal characteristics to ensure that their cable can operate at the thousand megawatt or 1090 megawatt.

Q Okay. I think most of these have been answered. One of the things that I noticed, Mr. Johnson, in your testimony was this Project database on the public outreach?

A (Johnson) Um-hum.

Q Could you explain how that works? So an issue comes in or communications say someone would like their tower painted lavender, and you receive that, and you say, your decision is, that makes sense. We're going to paint this tower lavender. Sorry if anybody requested that. I apologize.

So what happens with the project database from you get the request to resolution?

A (Johnson) Sure. So depending on the type of request, there may be different people that are contacted. In this particular case, that would have to go through our Engineering Group. So if it's an overhead structure, we bring it over to Mr. Bradstreet who would then decide if that

changes the design in any way. It would have to be vetted through the Community Relations Team, also our Visual Expert Team as it has an impact on visual. And, ultimately, a lavender structure, being unique as it is, would most likely go back up through some level of management on the Eversource side to ensure that they were willing to commit to something like that. Obviously, it's not just this Project. There are longer term --

Q Right. You don't want to set a precedent.

A (Johnson) -- precedents that are being set. So if it was merely a request on can we have a vegetative screen, well, that would be a different sets of folks that would be communicated, and then ultimately, whatever the decision is made, the communication would go back to the individual who requested that information with whatever, however it was disseminated.

Typically, we try to get back in touch with people within 24 to 48 hours just to let them know that we've received their request and that we're working on it, and then we'll get back to

them whatever answer. Whatever solution is then done is entered into our data base so that we have a long-term record of not only the soliciting comment that came in or phone call but also the response that went back out.

Q And then you also, so that outcome, the resolution of that is then passed on to Quanta, right?

A (Johnson) That's correct.

Q Because they're going to build this lavender thing, right?

A (Johnson) Absolutely. If design changes or material changes are made or an agreement on screening is agreed to, then that would then either be put into their contract or they're then informed of that decision, and they're part of that solution.

A (Bradstreet) The only thing I was going to add to what Sam said is everything is tied back to what we call a line list number. So every property has a unique number identifier so that we can say okay, on Property 7470, we got this request on April 15th, it went through engineering review, and the response was

provided on May 5th or whatever so it all ties back to a sort of index.

Q So I can imagine this database is huge.

A (Johnson) Yes.

Q As you're been working on this thing for years more than we've been working on it. So I have to believe that the commitments that have been made, not only here but in private or through letters or through communication, that is one massive thing to keep track of.

A (Johnson) Sure. So we have over 5,000 entries right now that are in there. A little over a thousand of them are from abutters themselves. The other 4000 are from either interested parties within the member towns or from random people asking questions around the state or even some places from around the world.

Of those thousand contacts that are specific to line list people, we have an ability to sort those, as Derrick just said, and the contractor, we have something, what's called a followup required or an FUR designation, and basically what that is is it's a notification that whatever is contained within that record

has not been completely closed.

So if information has been disseminated out to a landowner to their satisfaction, we will close the record and it will become permanently closed. If there is a thing that I want the firewood chopped up in 18-inch lengths, put at the edge of my right-of-way, well, that's a construction type of activity that will have a followup required.

That list is maintained and updated every week and given to the contractor once we get to construction, specifically in the areas that they're working in, to make sure that all of those things are being adhered to.

Q All right. You mentioned, I'm going to use term the "ball in court" person?

A (Johnson) Yes.

Q Who is assigned to sort of run the issue to the ground and come up with a resolution. Are they ultimately the decision maker?

A (Johnson) Not necessarily. No. So a ball in court when it first comes in is going to be the Community Relations Specialist that fielded that call. If it goes to Mr. Bradstreet, for

example, he would then become the ball in court while it's going through its engineering review. It would then be transferred back to whomever at the change that needed to. Ultimately, that ball in court would circle back to this Communications Specialist who would then effect the communication back.

As I mentioned earlier, any significant decisions that have to be made that are unique or lavender, if you will, would probably have to go through a different vigor as far as approval and ball in court.

Q Thank you. So the overhead transmission line portion. So this is part of the Application, page 24. ***(Committee 3)***

It explains sort of the sequencing of the overhead line transmission, and this, while it seems, when I read it, seemed pretty simplistic, a lot of these happen concurrently and at the same time and various places. Correct? But the sequencing is pretty much the same as you've got to build the access roads, you've got to build the pads, build the towers, you string the lines. No matter how many places you're working

on it, this seems to be consistent.
A (Kayser) That's correct. That's the sequence if you were to just to take a snapshot of one location. As you said, there will be, a lot of these activities will be done concurrently. There will be access roads being done while there's clearing in other areas and setting of structures while they're stringing to construct the Project.
Q And if I can just clarify one thing, if I understood it correctly, that while you're building the 345 line in the areas where you have to relocate the 115 line, they're both done concurrently?
A (Kayser) Typically, they'll need to relocate the existing line first. So they would build the new 115 kV line, take a short outage to cut that in on either end, demo out the existing line, and then you'd be able to build the new line, either the HVDC or the 345 kV line.
Q So will the 115 line be down until the entire 345 line is built? Or will it be relocated and brought back up?
A (Kayser) It's a short duration outage. So a

number of days, you know, a few days as they cut in on other end.
Q So you basically build the new 115 line?
A Correct.
Q Transfer the line over?
A (Kayser) Yes.
Q Cut down the old towers' lines and then --
A (Kayser) Then construct the new line beside it.
Q The laydown and marshalling areas. Now, it was stated that only three areas have been identified currently?
A (Johnson) That is correct. Yes.
Q But you need about 25 areas? That's your estimate, something like that, ballpark?
A (Bowes) Probably about that. Between the overhead and underground.
Q And you stated that it's Quanta's responsibility to find and acquire the property rights for the marshalling areas and the laydown areas; is that correct?
A (Johnson) That's correct.
Q So we've heard of property acquisitions by, I think I got it right. Renewable Properties?
A (Johnson) Yes.

Q Which was discovered to be a subsidiary of Quanta where they're purchasing properties along the corridor but outside of the construction area? And I think when asked by the Panel, no one knew why. Is that correct?
A (Bowes) So Renewable Properties, Inc., is actually an Eversource company. It's not a Quanta company.
Q All right.
A (Bowes) There was discussion around, I think, six properties at the last two sessions, last two days. Four of those properties were acquired for potential sites for transition stations. There was a discussion around at certain points in time whether the underground portion through the White Mountain National Forest would be 16 miles or 52 miles. So we actually acquired four of those properties for potential transition sites. Two of those properties are actually transition sites.
There was one property acquired in the North Country in Dalton, I believe, because we uncovered during the process that PSNH did not have permanent easement rights for the existing

line that they had. So as part of our research we uncovered that.

The last property purchased, I believe, was in the Deerfield area, and it was to deal with a concerned customer at the time that thought that the Project would impact their home.

So those were the six properties. They weren't acquired through Quanta. But the contact that initiated that, we had a conversation with Quanta, and they said we can help you. There's this person that we have used in the past to acquire properties, and Renewable Properties ultimately purchased those properties from, I think it was five or six LLCs that were created to anon -- I was going to say anonymously, but to mask who the real property owner would ultimately be, and that was Renewable Properties, Inc.

Q Okay. So Quanta is still looking for 22 laydown areas and marshalling areas. So were any restrictions passed upon them or do you get to say, do you have a say in where they can be? I mean, they can buy property next to a campground or a bed and breakfast or something like that

and say I'm going to put a marshalling area here. Can you say no, I don't think so? It's sort of the control again. So they bid it and they're responsible for finding these areas. They find an area that you don't like or that people don't like. Do you have the ability to say no?

A (Bowes) Yes, we do. So that's the simple answer to the question. We've given them the general requirements, and they know the general requirements of what they need, and I've kind of gone through that in the past. Probably 5 to 25 to 50 acres in the largest case. It has to be a disturbed area. It has to be of suitable size and access requirements, location to the work site. And in general, it's going to be an existing commercial or industrial piece of property.

What we've done in previous Projects is, for example, Merrimack Valley Reliability Project, is we have used a delegation from the SEC to New Hampshire DES to control that piece of property that we ultimately want to use for this Project. It worked successfully in that

Project, and that's the process we're proposing for this Project as well.

Q All right. Let me move on to -- one of the things that I was looking at when we started, I started looking at the plans, we talked about this a little bit. This is just, I just pulled this one out. This is an example. It's in Appendix 47. ***(Committee 4)***

We started talking about the access roads that need to be built from tower pad to tower pad to tower pad to tower pad, and you've got this nice line that goes straight through here. But we also have this existing access road out through here, and it looks like just because of the way you're tying into the existing that you're going to use the existing, but you're also going to build a new access road.

It's my understanding, if I heard correctly, that when -- I just question why you'd have two access roads to the same site, and this wasn't just the only place I saw this. This seemed to be a couple of places where there was an existing access to a pad, and then you built another access to the same pad. I just

didn't understand. Seems like you're just, it seems like overkill. And I don't know if there was, if these were actually designed, the new access roads.

A (Johnson) So the roads that, and I don't know the specifics of this. I know this is in the Wagner Forest area because that's up in Dixville. So a lot of the roads, especially up in here, are existing logging roads.

Q Existing logging roads, correct.

A (Johnson) So the greatest extent possible, we're trying to use existing roads so that we're providing the least amount of impact. Part of what we've done as we explained earlier is we're sort of overpermitting it, if you will, to give a contractor options.

Q Yes.

A (Johnson) This may have been done this way to provide a turning radius for a vehicle to get in. It may also have been an area where a contractor could come in one way and then exit out another way by providing a continual loop in this particular area.

Q One of the things I noticed is that if you come

up the existing logging road, you can access this pad and this pad, and you can use the existing and get to this pad, and you can eliminate the impacts to this wetland and vernal pool.

A (Johnson) And the contractor might look at that and say, you know what? It's better for us to not impact this and we'll do it exactly as you have stated.

Q So it goes into, my other question was, are these designed? Because I'm just looking at the topography and these slopes look pretty steep, and that red line looks, that's not like, you're going to dozer these in, you're going to have earth work on each side of these. You're going to have cuts and fills just to get that in. And is that accounted for in this width? Or is this just a, I think I'm going this way, and it really hasn't been designed yet. And I guess my real ultimate question is if it hasn't been designed yet, you truly don't know what the environmental impacts are of these access roads. Is that --

A (Kayser) The roads have not been designed per se

as like you would say the normal --
Q No alignment grade to it, but somebody's looked at it and said, yes, that existing 30 percent grade, I'm just going to put a dozer road in there, and I'm going to have a 20-foot cut and a 20-foot fill.
A (Kayser) Yes. And we did have people walking all the corridors to give us an idea of where each of the access roads were going to be. So what will happen is the contractor gets out there, they will determine the best way to build that based on the time of year they're doing the construction, what equipment they need to get in there, on how, what level of design and what level of road they need, whether that's able just to grade it and drive their equipment on there or if they're going to have to bring gravel in. And, obviously, in the wetland areas they'll have to mat and use the BMPs to make sure that they're meeting all the requirements of the permit.
Q So you've talked about having the access accessible for the construction equipment. I get that. So what's your design vehicle really?

Is it the crane? That's got the, it's heaviest, it's got the hardest ability to turn? Is that your design vehicle or is it a fully loaded concrete truck?

A (Kayser) I would say most of the time it's going to be the crane. That the crane would probably be the vehicle that they're going to have to design the roads for.

Q You talked about the BMPs for protection of like the wetlands and the vernal pools during construction. I didn't notice that, especially in the sequencing, if we go back you talk about removing the right-of-way vegetation, mowing in advance of construction, then installing erosion control and sedimentation. So the clearing operation, do you do erosion control and BMPs during the clearing?

A (Kayser) It depends on the level of clearing. You know, whether, if there's extensive clearing, then all the BMPs will need to be put in ahead of time and depending what equipment they have out there, but it goes concurrently. The clearing contractor will be required to meet all of the permit requirements also. So if we

need the BMPs in ahead of them, those will be installed before they begin their clearing operations.

Q So this might go to the Environmental Panel, but since it's a construction-related activity, I'll ask it. So your protection, your BMPs, typically do you fence to keep a contractor out of an area? Like orange fencing or flagging or how do you say you don't want to go in here?

A (Kayser) There will be flagging and some fencing. There are some sensitive areas the contractor is not allowed to go into so those would be fenced, but then there's also flagging to show where the limits of the wetland areas are. Vernal pools and different resources will have flagging so the contractors will know what resource is there.

Q So depending on the classification or the --

A (Kayser) Exactly.

Q I'm not an environmental person but sorry. Depending on the hierarchy of what resource is there might get a different type of protection, correct?

A (Kayser) Yes.

A (Bowes) They would be marked separately, too. If it's a cultural or historic resource, endangered species would be marked differently than a wetland. They would also have access to the realtime information that Mr. Trunce(?) will talk about, a visual indicator of what's out there, and they can turn on various layers so they can see it all. All of the impacts that are on that or all of the aspects that are on that right-of-way that they could impact.
Q So, if I remember correctly, once everything is built and these access roads are no longer needed, they're removed and returned to their original condition as much as you can?
A (Kayser) Yes.
Q Is any of that marking, any of that flagging left in place to highlight where those vernal pools are or those high order resources so that maintenance operations in the future don't disturb them?
A (Bowes) So one of the benefits this Project will create for I guess it's about 100 miles of right-of-way that they're leasing from Public Service of New Hampshire, Public Service New

Hampshire will now have access to all of these records. So in the future when they do maintenance or when Northern Pass does maintenance, they will have access to this new electronic database and all of the mapping of significant resources along the right-of-way so it will be available for both companies to use in the future.

A (Johnson) Just to respond to would any of the flagging or fencing be left out there, the answer would be most likely no. One of the things we don't want to do is highlight endangered species or archeological places just in case somebody came along and decided to dig them up.

Q Moving on to the foundations. So three types of foundations. Drilled shafts, I get those. We use those on bridges a lot so I understand that.

Grillage. I understand that, right? You dig a hole, you put basically a steel anchor in the hole, backfill it and then tie the tower to that. Okay.

Direct embedment. Is that for like poles? You drill a hole and put the pole in?

A (Kayser) Yes.
Q Is that also used for like you drill a hole and drop a precast foundation in or is that just strictly for poles?
A (Kayser) That is for the poles, for the steel poles.
Q Okay. So in our previous site visit down to Deerfield, I believe, I pulled this out as sort of my horrific question, and I think I got an answer for this. This is, again, in Appendix 47. **(Committee 5 and Committee 6)**

So you previously testified you've submitted the worst case scenario so when I saw this in the field, these towers that are in the middle of open water, I said how are you going to do that. So what you show is building an access road through open water and building this tower mat, but I also think I heard someone mention that probably you would do this in winter?
A (Johnson) That's correct.
Q When the ground is frozen so you can drive out onto the ice, and then all you have to do is deal with how do you get the foundations for the

towers in. Is that correct?
A (Kayser) Yes. Ideally, we'll wait until frozen ground conditions where you can get the vehicles out there.
Q So how would you build this tower foundation structure? It's in open water. Would you use sheeting and dewater? How typically would you build that in open water?
A (Johnson) So sheeting is certainly one technique that could be used. If the marsh there is frozen enough that it would support the weight of the drilling rig, then you just drive it out and do the drilling. You wouldn't even need to create a crane pad. These are proposed to be lattice structures. You can tell by the four dots. So the depth and diameter of these are not as big as if it was a monopole type so you need a much smaller crane run by a smaller drill rig to get in there.

If the pond doesn't freeze to strong enough or significant enough, there is a potential to use a barge type of or a boat, if you will, barge to float out there and then drill off the side. Again, those are means and methods that

will be refined with the contractor as they get closer to the actual construction here, but as you noted, from a Permit Application, from a wetlands impact perspective, put the worse case scenario in here.

Q All right. I'm going to try to pick this up so we can leave before morning.

One of the things we heard was there's a lot of foundations, lot of concrete that's needed. You mentioned portable concrete batch plants might be needed. Does Eversource have a say of where they go? Making concrete is not a silent job. I mean, that's a very, batch plant is pretty noisy. So like the marshalling areas, you have a say of you don't want to put this here?

A (Bowes) Yes, we do, and we've also already recommended some sites that are existing gravel pits. That's probably one of the most ideal sites to use. It's already got heavy equipment, maybe even rock crushing equipment there. So it already is a site that is disturbed and has some impacts already that go beyond just the physical impacts, but there's also some existing noise

sources there.
Q Okay. So there was a number for the number of structures, the towers, that was thrown out at ballpark, if I wrote them down, I might have gotten them wrong, but ballpark, lattice towers about 686, monopole structures 247, H-Frame structures 186. Is that still about right?
A (Johnson) They sound about right, yes.
Q So this number also includes the towers needed to do the 115 line as well?
A (Bradstreet) What was the total on monopoles?
Q 247?
A (Bradstreet) No. That's just for the Northern Pass line.
Q That's just Northern Pass. All right. So this is going to be a little bit different. Do you know how many towers you need to do the 115 line?
A (Bradstreet) Off the top of my head, I do not, but it's probably in the 600 range if I was to --
A (Bowes) Good way to estimate that is probably ten per mile, plus or minus, and there's 51 miles so the 600 number is very reasonable.

Maybe a little overstated.
Q Okay.
A (Bradstreet) John actually has it written down. Looks like 635 based on something else we were looking at previously.
Q So I'm going to show you some numbers that are wrong now, but I tried to do a little math, and you can check me on this. ***(Committee 7)***
So the overhead line is about 130 miles of access road you have to build. There's this many lattice towers, monopoles, H-Frames so we know there's a little difference there. So you've got 1100 towers, you've got 1100 pads, you've got foundations. The lattice towers are four each and the rest are one so you've got like 3100 foundations. I guess the H-Frames aren't really foundations. They're just really drilling a hole.
A (Bradstreet) Two holes.
Q And that's just drilling a hole so you don't need concrete to do that because you're just drilling a hole. So you're going to build this in two years which is 24 months. I'm assuming you're going to work year-round building the

towers; that there's no shutdown for winter. So you have 624 days, assuming you'd give no one holidays, you're working 6 days a week, no one rain days, no nothing. So that means if you do the math, about 1100 feet of access road per day you have to build, five foundations per day, two crane pads per day, and two towers per day to get all this done.

Does that, am I in the ballpark? Actually, I'm probably a little low because you just added 600 foundations to it, but that's a lot of activity, but it's 130 miles, right? So that's spread out but that, does that sound reasonable?

A (Bradstreet) Depending on the number of crews, I think it's seems very reasonable. Yes.

MR. PAPPAS: Could we, could you just mark that somehow because everybody didn't write that fast.

MR. OLDENBURG: We talked about this. I think we're going to enter it as an exhibit.

ADMINISTRATOR MONROE: We'll mark them and scan them, and we'll load them up to the ShareFile site as the previous -- I committed to do that for the previous group, too.

MR. IACOPINO: Just for your reference, it will probably be marked Committee 1 through whatever number we end up.

BY MR. OLDENBURG:

Q So the structures themselves, so Mr. Bradstreet is actually going to design the structures. Correct?

A (Bradstreet) So the structures themselves have been bid as well as -- so the bid packages went out for all the structures when we bid PAR also. So the company has contracts in place for those structures so almost all of the design itself has been completed. It will just have to be carried to the final IFC package.

Q So who calculates the loading on the structures?

A (Bradstreet) So it was calculated as part of the bid structures so we did.

Q And the overhead transmission line contractor installs them?

A (Bradstreet) Yes.

Q With regards to the inspection criteria, which was Mr. Fortier's Prefiled, 13 of 16, talks about how the transmission line is inspected and there's this whole bulleted list of what the

inspection criteria is. I don't see any physical inspection of the towers. Is that done? ***(Committee 8)***

A (Bradstreet) For corrosion or something?

Q For corrosion, cracking, loose bolts? Do you ever do that?

A (Bowes) Yes, we do.

Q How often?

A (Bowes) I would say we don't have a set schedule at this point. We've been investigating unmanned vehicles to do a portion of this. And we do, sometimes the area inspections are high definition videography of the structures, and most of the items are found at that location.

We rarely do climbing inspections now which really check, you put the wrench on the bolt. Most of it is done visually just because of the employee exposure to the climbing as well as the speed at which you can do that. We can do it much faster with high definition video. That's something I would say we're evolving into.

Historically, though, we probably did climbing inspections on a cycle of about once every 20 years.

Q Okay. In my world with truss bridges, we do something called an infrastructure critical design or infrastructure critical inspection, where we determine which components in the truss are in the most compression or tension. Those are the points where if you're going to have a problem, you're going to have a problem. That tends to be the weak link. And so we figure out where those are and inspect them. Most bridges every two years. Realizing that the public isn't driving over your towers, do you have any, obviously, I think you just testified, you don't have any criteria like that.

A (Bowes) I'd say the criticality is different for bridges, and in our case, it's the hardware that controls the conductors. The conductors see the movement, they see the ice and wind loading, so those are the critical components on an electric transmission line. The connections of the insulators to the conductor, and on the very top of the structures there is either one or two overhead ground wires that protect it from lightning. Those tend to be, the lightning strikes tend to cause the most maintenance

required for components on a transmission line. So it's really the electrical conductors and the overhead ground wires see most of the duty as you would say on a bridge.

Q But don't, I mean, if you have ice loading on the conductor and you have high winds, that's going to flex and change the dynamics and the loading on the truss. So I have to believe that, I mean, these things don't just stand there. They flex and they move.

A (Bowes) That is true.

Q So I'm going to steal on Counsel for the Public Exhibit 12, ***(Committee 9)*** and I think when this was shown, Mr. Bowes, I don't think it was a solicited statement, but if I heard correctly, you had said that lines A and C were circa 1930?

A (Bowes) Correct.

Q And B was circa 1980?

A Little bit later for B. I think it's '85 time frame. But that's the HVDC line Phrase 2 from Hydro-Quebec. It goes down into Massachusetts. And A and C are the existing 230 kV lines that have been in operation since the 1930s.

Q So you don't replace towers simply because of

age.
A (Bowes) So it's a criteria we use to assess the condition of assets. So it's not the sole determinant.
Q Is there any standard that you, like the National Electric Code, is there any standard for inspecting towers?
A (Bowes) Yes, there is, and it goes back to, you know, you have to have a maintenance program, you have to follow the maintenance program, and if you find exceptions to what you find or corrective actions, you have to track those until they're completed. So it's really a performance-based code versus a prescriptive code of you shall do it every X number of days.
Q And your inspection criteria meets that National Electric Code?
A (Bowes) Oh, yes. National Electric Safety Code, yes.
Q And do you use anything or is there a standard for like tower failure safety zones where I know in like the cell tower industry, a lot of the wind farm, windmills, private, there's, our community has a setback requirement where you

can't have a structure within a certain distance from the tower in case of failure. Is there anything like that where you would say there should be no building, no structure, no people that congregate within a certain diameter of that tower?

A (Bowes) There really isn't, to my knowledge. And I think it's partly because of industry experience. In this case, you can see the conductors in place. They tend to limit the structures, their fall zone, and they also tend to fall or create the ability or require the structures to fall in a certain way. In this case, along with the conductors.

Probably the most stressful condition, and Derrick can correct me here, in this case these lines are all in suspension so they're just hanging off, but if they were dead-ended and actually terminated on one of these structures, and they were terminated both sides, the structures are designed, the worst case is one of the conductors breaks and you get the twisting action as well as the loss of the line, loss of loading on one side and extreme loading

potentially on the other side, and that tends to collapse the structure in parallel with the conductors. So that's really, I think, why is there hasn't been a lot of structure failures, and when they do occur or fairly rare occurrence, they occur within the right-of-way.

Q Okay. It just struck me as there's no physical inspection of a tower, and there's a lot of buildings which are almost directly underneath these towers, and in such a regulated industry as you have, it just struck me as, strikes me as funny that there's no requirement to do that when you have structures that are out there that are almost 100 years old still out there. So do you, and I'm assuming Eversource has no different inspection criteria for structures that are close proximity to buildings.

A (Bowes) We do not.

Q No different criteria?

A (Bowes) We do not. In this case, these lines are not Eversource lines. Just to make your --

Q Right. Right.

A (Bowes) These happen to be maintained by National Grid in the US.

Q But we've seen numerous exhibits where there were houses that are underneath, in the easement underneath the lines, and I'm just, it just struck me as funny. Not funny. But just raised a red flag to me that it seems like that would be something that would be out there.

A (Bowes) There are actually a lot of commercial uses underneath transmission lines, whether it's concrete manufacture that we've talked about, I think, in the Concord area. In other words, tree farms that grow Christmas trees underneath this area. Whether it's ATV use, either permitted or illegal ATV use. Lot of people use these right-of-ways for appropriate activities and some inappropriate activities.

Q I was just more concerned with people that live underneath them are there more than passing by on an ATV.

One of the questions I'm not going to belabor was about the Portland Gas Pipeline and everything else and what happens if a tower fell, and then if there's any offset criteria, and the answer was no. And I think it was Mr. Bradstreet who said well, they're not very

pointy, and I couldn't, they're not very pointy when they fall, and I couldn't help but say the Deerfield Abutters like two days earlier had submitted this picture. ***(Committee 10)*** I don't even know where it is. I think it's in Australia or something like that, but the pointy end seems to be in the ground pretty far. So it raised, sort of that was one of the --

A (Bradstreet) Or smashed. You can't really tell.

Q But the thing's only 24 inches deep, and it's, the metal is pretty sharp, and I won't belabor that, but --

A (Bowes) So a couple things is the pipeline is actually buried deeper. That was the diameter of the pipeline. So the pipeline depth is more than 24 inches. I think it's 6 feet or deeper. We have the three major gas pipelines that come into the northeast. There's the Tennessee Gas Pipeline. There's the Algonquin Gas transmission line and Iroquois which are much longer pipelines and co-locate on both Eversource as well as National Grid rights-of-way so people have already used utility corridors for decades to co-locate gas

transmission and electric transmission so it's not a new thing.

In this case there's a few miles in the North Country. We have a lot more of that with much more critical gas pipelines co-located together for hundreds of miles across New England.

Q I would just say that I've run into the Tennessee Gas pipeline because in some locations they're under our roadways, and I wish they were six feet down.

A (Bowes) Okay.

Q Mr. Bradstreet, in your Prefiled Testimony you mentioned that there were 187 aerial crossings of roadways. Is that the total? Is that 187 conductors or is that 187 locations where you cross the road?

A (Bradstreet) I would believe it would be 187 circuit crossings. So if a 115 kV line was being rebuilt and the DC line was being placed next to it, that would count as two crossings.

Q But there might be four --

A (Bradstreet) So for that case, there would be three AC conductors and two DC conductors for a

total of five conductors that cross the road. If that's your question.

Q Yes. Yes. The transition stations. Who designs the transition stations? The transition stations? Who designs the transition stations?

A (Johnson) That is also done by a combination of ABB and Quanta.

Q Do they also build them or --

A (Johnson) Yes, they do. It's a split thing so because of the cable terminators, ABB will have that portion of it, and then PAR will build the structures that convert it to overhead.

Q Thank you. Moving to the underground. I'll tell you, one of the things that, I'll be point blank, I've never been on a Project where the DOT is mentioned more times on a non-DOT project. DOT doesn't get mentioned on DOT projects as much as this one, and I sort of feel like a sequestered juror because we can't talk amongst ourselves, I can't talk to the people at work, I can't talk, so everything I get is from what you say and what I read. So it's sort of frustrating to some degree.

But have you ever heard of the term Unbuilt

Road? It's a highway term. I'm not sure outside of New Hampshire you would hear it, but it's called Unbuilt Road. It's basically a term we use where there's no design plans for a road. This is literally the cow path that was paved. You'll find that a lot of the roads, especially in the North Country, are unbuilt. You go to the DOT, you will not find a set of design plans. It started out as a path, sort of the Indians might have created the path, the farmer getting his crops to the field might have created this path, and at some point somebody said we're going to put some gravel on it to make it more stable so in mud season we can get our carriages through, and eventually it became paved. This is a 300-year process.

Some of those roads have never been built. And I apologize for this, but this is Route 116. ***(Committee 21)*** Easton Road. Telltale signs it's unbuilt is there's no shoulders. There's no ditch lines. This is, a lot of these projects or a lot of these sections of road, you're going to go and there's no design plans. There's no select materials. It just happens to be that it

was built on gravel, glacial till, because that was what was on the ground. So this is a 22, 24-foot wide road at its best.

One of the things that has been mentioned is these are DOT roads. And they're not. No where does it say that the property is owned by the DOT. It's owned by the State of New Hampshire. In fact, it's owned by basically everybody this room, even if you don't live in New Hampshire. You pay gas taxes in your state. Federal government gives us Connecticut's, Kansas's, everybody pays gas tax, we get that.

So I'm going to stop testifying and start asking a question. ***(Committee 11)***

In my hand I hold a demon, but I am a professional. This is the dreaded Utility Accommodation Manual. Correct?

A (Johnson) Correct.

Q Everybody's just testified, I think, a few minutes ago that you've all read it and understood it before the permit plans were put in place. So basically on the Preface which was signed by our Commissioner at the time, Mr. Campbell, "The Department is responsible for

constructing maintaining and operating state highways and railroad corridors safely and efficiently for the benefit of the public. Use of the state highway and railroad right-of-ways by public and private utilities is a privilege extended to the utility companies and municipalities by the State."

Because it's recognized that it's in the public interest. People need electricity, people need sewer, people need water. One of the things that has been stated with this manual is that the line needs to be outside of the pavement and as close to the right-of-way as possible. Correct? That's the DOT responses that I've seen repeatedly is you need to move this thing outside the pavement. We don't want it under the pavement.

A (Johnson) Correct.

Q So why is that? Because this section of road, the material that's under it, is very sensitive to cutting, patching. I think Mr. Bowes testified that when there's a utility trench that's placed in the pavement, it degrades the quality of that roadway. And at first I felt a

little, oh, DOT, bad name, but then I realized, we're the ones that are sort of the keepers of the gate.

So the requirement being as far outside the pavement as possible, I didn't see that in the October 2015 plan, and I didn't understand why. But I noticed that in most of the Prefiled Testimony, the Utility Accommodation Manual was mentioned. So I thought maybe this is something that is unique. And it's not.

So I noticed that, Mr. Bowes, you did a lot of work in Connecticut. ***(Committee 12)*** This is Connecticut DOT, Utility Accommodation Manual. I'm sure you're familiar with it?

A (Bowes) Somewhat, yes.

Q Mr. Kayser, you're from Maine. This is, let me go down here. ***(Committee 13)*** Maine DOT's Utility Accommodation Manual. Might be called a little bit different. Content is the same.

The folks from Kansas, Utility Accommodation Manual from Kansas. ***(Committee 14)***.

Our neighbors from Vermont incorporated their Utility Accommodation Manual in their

Highway Design Manual. ***(Committee 15)*** Some states do that so it's part of their design manual process.

Utility Accommodation Manuals are not unique to New Hampshire. Correct?

A (Bowes) That is correct.

Q I'm going to make an assumption, because I don't know this for a fact, but all 50 states have some sort of Utility Accommodation Manual. The reason why we have one is the federal government who gives us money makes us have one, and they say if you're going to allow utilities in the right-of-way you have to have a way to manage that, a process, a procedure for the utility companies to follow.

So in the UAM where it states, "Underground facilities shall be located outside the pavement areas and as close to the right-of-way as practical," and the same paragraph, it goes on that utilities located and operated in the right-of-way must accept responsibility to protect the public investment in the right-of-way, the road bed and the structures.

That is not hidden. That's actually on the

fourth paragraph of the first page. Because the road is a public investment. Unbuilt, that road in Easton has probably been there for hundreds of years. Yet we've never rebuilt it. But everybody pays gas tax to maintain this and operate it so it's sort of, DOT's a little sensitive to when somebody wants to cut it up, dig it up. So --

MR. IACOPINO: Mr. Oldenburg, I'm going to remind you to ask questions, please.

BY MR. OLDENBURG:

Q Mr. Scott, in your Prefiled Testimony you discuss the design factors of the underground construction. You discuss the trenches technologies and you discuss other factors you took into consideration and the underground design which were trees, wetlands, et cetera. But not once did you come out and say that you used the roads and bridges as a constraint or restriction as part of your design controls. Did you?

A (Scott) Certainly. Yes. I didn't specifically list them there though, no.

Q But under the Project detail section on page 6

of 10, you state, "Major design considerations were taken into account during the preliminary design to find an optimum location in the road for the proposed underground installation."

So it sounds to me that the plan all along was to go down the center of the road. So I guess I'm just asking, were you directed to ignore the Utility Accommodation Manual or did you do that on your own?

A (Scott) No. The original design which is being updated and has been updated since this Prefiled Testimony was made, the original design's intent was to stay as close to the edge of the paved roadway as possible within one lane of traffic. Within one traveled lane, I should say.

Q So those updated plans that were produced in December of '16 by PAR Electric --

A (Scott) Are still within that general criteria. The design as its progressing with the exceptions that the Project is seeking will be shifting that alignment outside of the paved where we don't get those exceptions.

Q But the PAR Electric plans are still in the road. They're at the edge of pavement, but you

are going to cut the road up to put most of those in.

A (Scott) The permit drawings, yes, agreed.

Q So did PAR Electric, do they know that they, when they do the final design that the requirement is to be outside of the pavement?

A (Johnson) Yes. So the DOT has made comment as well as in some of the comments we've received from the preliminary packages as well as the conditions letter that we received on April 3rd that details out exactly that. So part of our exception requests are where there are areas that we can no longer or we're looking from a design perspective to move everything off the road, there are certain restrictions that will, we're asking forgiveness for, if you will, to put us underneath the road where there are encumbrances on either side of the road that will prevent us from being outside.

Q I guess I would have thought that you would have designed it first outside of the pavement and said I can't do this. This doesn't work for us. Can we now move it into the pavement because of these reasons. And it seems to me you did the

exact opposite. You put it in the middle of the pavement. And now we're saying, now I've got to get outside the pavement. You did the exact opposite of what the UAM has asked for.

So if I also understand correctly, and I think it was reiterated, that there's another set of plans coming that show even less of the splice vaults in the pavement.

A (Johnson) That is correct.

Q So one of the exhibits which came in the Application was the trench. ***(Committee 17)***

Two foot 9 inches is the trench. The DOT requirements in their notes was on a Tier 2 road which is basically US Route 3, might be some others, is that the, basically, the concrete cap, the top of your installation with the beginning of your installation has to be 59 inches deep and on a Tier 3 road which is 116, 18, 112, if I remember right, that's 46 inches. So the bottom of the trench varies between 7 feet deep and almost 6 feet deep, depending on what road you're on. At what depth does OSHA require a trench box to be used?

A (Scott) I believe there's no requirement for a

trench box. But shoring, is that generally your question?

Q Yes.

A (Scott) I believe that's at four feet.

Q So basically the entire trenching is going to require some sort of shoring. Most likely a trench box?

A (Scott) Correct.

Q So where, the trench box is going to be wider than 2 feet 9. So the trench is not going to be 2 feet 9. It's going to be probably closer to 4 feet by the time you get everything in, and the question I have is you're doing 50 miles of putting conduits in a 6-foot trench and the trench is only 2 feet 9. I don't know how you're going to find people, construction workers, I guess the question is how do you expect a construction worker to work in a two-foot trench trying to put together 8-inch conduits with no place for his feet. I just question the accuracy of that 2 foot 9 trench. It just doesn't seem, from a construction standpoint, realistic.

A (Scott) So that trench cross-section is

specifically what's required for the end condition for the cables to meet their ratings. So it's not necessarily defining to the contractor that they can't do any excavation outside of that 2 feet 9 inches. It's merely defining what is required for that trench cross-section.

Q So that's the minimum requirement necessary to meet the code requirements, whatever you need for them to build it, but that's not actually what they're going to build. They're going to build something --

A (Johnson) For the most part, they are. I think the plans that I've seen or conversations with the contractor to date, they're planning on using a prefabricated spacer, if you will, which will allow them to assemble these conduits on the side and then sort of drop them into the trench with a spacer every, I don't know, 25 or 50 feet that would maintain this 2 foot 9 inches' width of the cable, and as long as the cable conduits are that far apart, from a heat perspective that's acceptable.

A (Scott) I would like to correct one thing Sam

said. Specs say five feet for spacers.
Q So basically you put the conduit together and just roll it into the trench?
A (Bowes) Yes.
A (Johnson) Yes. Just one other comment on the trench boxes. That is one method. They can also use like a plywood sheeting with spacers that would then come up which is a much more narrower type of installation. They wouldn't have to trench as thick as a trench box might necessarily be.
Q Repeatedly throughout the Application, and I believe I've heard it mentioned and it's in some of the DOT requirements that you're going to saw-cut the trench.
A (Johnson) Correct.
Q So when you cut the pavement you're going to saw-cut. Do you know what a wheel-cut is? Have you ever heard that term?
A (Johnson) I have not. No.
Q No highway engineers. That's where they basically take a giant pizza cutter, and they put it on a grader, and they run it down the road and it destroys the road. So you're

going to saw-cut using -- I would invest in saw-cut blades, by the way -- basically 100 miles, 50 miles one way and 50 miles on the other side, this whole length, and I just want to verify that.

A (Johnson) That is the plan, yes.

Q Bridge structures. How many bridges do you go over, under, around on the Project?

A (Johnson) I don't know off the top of my head.

A (Bowes) Over, you mean the overhead line?

Q No. Under.

A (Bowes) Technically, it's all under.

Q I didn't see anything where you attach to any bridges.

A (Bowes) That is correct.

Q In New Hampshire, a bridge actually could be a culvert that's ten feet or larger.

A (Scott) Yes. I don't know off the top of my head either, but I'd assume it's somewhere in the mid teens.

Q Are any of those Red-Listed bridges?

A (Scott) I'm not sure.

Q Have you located any of the Red-Listed bridges along the route, the delivery route, where your

equipment isn't going to be allowed because of weight restrictions or the structural deficiencies of bridges?

A (Johnson) We did.

A (Bowes) We clearly know of two of them, yes, for the overhead portion. And one for the underground portion.

Q I have an exhibit which I think now is wrong after what I heard today. I was looking for this mysterious detail for the HDD casing, and in the original Permit Application, that was what was shown. ***(Committee 16)*** Based upon what I heard today, that really isn't what's being built, correct?

A (Scott) Correct.

Q It's now two 18-inch, separate 18-inch conduits that's being --

A (Scott) Two 18-inch bore holes. Correct. So there would be no casing for those. The only location where we're proposing something similar to this is the microtunnel crossing in Franconia. All the others are two separate bores where the diameter of the bore hole would be 18 inches and there would be no casing. It

would simply be the pipe pulled into that bore hole for the power conduit.

Q So you're not direct burying the power conduit. So there's still an 8-inch or something?

A (Scott) The power conduit is that 8-inch conduit. There's no separate casing.

Q Okay.

A (Scott) And if you're looking for where that detail is, if you look on the updated design drawings on any of the detailed design through the HDDs, there are section views that will give you that.

Q Okay. So I can skip that.

So one of the questions, I think it was Counsel for the Public had asked about the concrete pavement, and I just want to clarify the answer that I heard. It was in relation to the statement that the DOT had made that there's areas where the Project may impact concrete roads. ***(Committee 18)*** And I think Mr. Johnson answered that like in downtown Plymouth if it's 40-feet wide, there would be four 10-foot slabs, and that if you impacted the concrete, that you would build, that you rebuild that concrete road

and restore it?
A (Johnson) That's for a trench. Yes.
Q I would ask, I would ask the DOT about this because just -- I won't belabor this. I've never seen, because I've worked in concrete roads. Concrete roads were built in the depression as a Make-Work Project. There's two 10-foot slabs. Anything outside of that doesn't exist. They never built more than that. You can always tell where a concrete road is by the thump, the thump, the thump, the thump, and I do not believe, this says if you're going a longitudinal down this concrete slab, it does not mean rebuild the concrete slab. This means that the longitudinal impacts, the entire concrete slab, are generally removed and replaced with appropriate subbase and base materials, which means take the concrete slab out, go full depth reconstruction with sand gravel and crushed gravel and repave with five and a half inches of pavement. So if you hit that concrete slab, you're what we're calling full-depth reconstruction of that road. You're replacing the subbase. Your excavation is four

feet deep for at least ten feet wide. So I would, I would clarify that.

A (Johnson) That last sentence there is working with the DOT on a case by case basis, that's exactly what we're doing right now.

Q Okay. So with the splice vault details, if I remember right, the telecommunication cables are now on the outside of the vaults, correct? Is that what those are? Those are like --

A (Scott) Correct.

Q So we've heard, do you use a trench box to put these in? You excavate down?

A (Johnson) Yes.

Q So there would be a trench box on each side?

A (Johnson) Yes.

Q And I think one of Counsel for the Public's exhibits was to show an example of what the trench box looks like. ***(Committee 19)***

Is this sort of a reasonable assumption of what you'd have to do for a trench box to encapsulate the whole splice vault?

A (Scott) The general concept, yes.

Q So when this is built, I guess this is partly traffic control. So there's going to be a

trench box somewhere like here. I'm not sure if you do the communication cable separately after you've built it.

A (Scott) You would be putting them in as you're putting in your backfill around the splice pit.

Q Okay. ***(Committee 20)*** So in this case, the trench box would be closer to the vault. So this 7 feet 10 inches, so what width do you think that is going to be?

A (Scott) I believe we talked about this a significant amount with Mr. Pappas where we said generally it would be, I would assume, about two feet on each side of the vault.

Q So that's 12 feet wide.

A (Scott) Correct.

Q So if the road continued over here, just to use this example, according to the Traffic Control Plans, there's going to be an offset, cone or something like that here, and then the edge of the pavement on the other side is here, and to keep this lane open because we're not going to close the road, that lane is, if I remember right, 11 feet wide. That's what --

A (Farrington) That's the minimum we used. Yes.

Q So that width from barrel to edge of pavement is 11 feet. So from this edge of pavement, 11 feet, two feet for the barrel, there's probably like a one-foot offset. So is there any place in the design where you don't have 14 feet from the edge of pavement to where that splice box is?

A (Farrington) So only in the North Country on the dirt roads on the closing. We actually went through and checked every splice pit location, and some were adjusted exactly because of this dimension.

Q So your recommendation to Quanta, whoever is building this, whoever is designing this, you don't want to be closer than that because then you're going to have to close the road if you want to build this.

A (Farrington) Exactly.

Q That was my long-winded example of, I don't have a plan, to point out something. So my example is sort of reverse engineering.

A (Scott) You could be an artist.

Q No. One of the other things that came up in other testimony was about the thermally

fluidized backfill, and one of the things that I think was tried to be conveyed, but I don't think the answer was, I don't think you understood the question enough to answer it, was the effect of heating up the ground around the cable. ***(Committee 22)***

So in New Hampshire, in this bathtub, which I'll call it, water doesn't leave this. There's no ditches. There's water underneath. When the water freezes in winter, frost heaves, right? The road heaves up. Doesn't heave down. It's the basic when you were a kid you froze ice cubes, water expands. So typically, in New Hampshire, I don't know about this road or any of the roads on the Project, you can see this pavement heave four inches in winter, frost line somewhere between 4 or 5 feet, so this purple line is four feet. If you're down here just a little bit below, I think there was testimony was that, no, you're not going to heat up the roads so the ice is going to melt but you'll heat up the surrounding material.

I think the concern is that if this side has a four-foot frost line, it's going to heave,

we'll say, four inches, but if this side because it's warmer only has a two or a three-foot frost depth, it's only going to heave two inches. So somewhere in here there's going to be a crack, and you're going to have differential frost heaving.

One of the things that keeps this Unbuilt Road in one piece is it's all uniform. It heaves together and heaves down so that was one of the questions. I know that there's a report out there. Did they specifically talk about this?

A (Bowes) So first, I think the dimensions have changed from this drawing as well. I think now we're a little bit deeper. So that will mitigate some of this issue or just move everything lower.

Q So if you're down the five feet?

A (Bowes) Or six feet in some cases, depending on where. So that will mitigate how far the frost line is impacted. But the study that ABB did indicated that once you got to the surface, there would be negligible impact. I understand what you're saying now in pictorially displaying

this is there still could be minor impacts where the frost heaving is not the same across, parallel across the entire road. I understand that.

Again, we've seen this in other locations where it has not been a problem, and the cables have operated at a much higher temperature than these will.

Q And I know, I think one of the, I think it might have been Mr. Scott had mentioned that the concern was compaction. That's one of the concerns. I think this is the other part of that concern, and I know that there's a test sample out there because I read it.

A (Bowes) Um-hum.

Q But there's no heat in that test sample, right? It's just a trench with a compacted material.

A (Bowes) That is correct.

Q So I think this is the other part of the question.

MR. PAPPAS: Just so we can follow the record, the drawing you were just showing has in purple "frost line."

Q Correct.

MR. PAPPAS: Thank you.

Q And it will be part of the exhibit.

So there was a lot of discussion about the work in Plymouth, and I know one of the concerns was the roundabout and the construction around the roundabout. **(Committee 23)**

And one thing that I don't think was mentioned or specified strongly, I think, is I was involved in this design and this construction. These grassed areas around the roundabout are not a typical roundabout design. Usually the sidewalk follows the edge of pavement. These are specifically planted areas with a fence because we're herding cats. There's 3000 students that go from this side of the road across that bridge, and we didn't want them to cross the center of the roundabout. We wanted them to go follow the sidewalk. So we sort of herded them so that they would go through the roundabout correctly.

I guess one of my questions is I know there's limited time when the school is out, but the campus being over here, there's a draw to downtown to the restaurants, the ice cream

shops, the sandwich shops, the pizza shops, and this bridge, are you taking any extra measures so the kids on their skateboard or the kids paying attention to their phone don't fall in your trench?

A (Bowes) So yes. This is one of the areas where we intend to have specialized work crews and go through, and at some point we hope to work with the town of Plymouth and various stakeholders in Plymouth, including Plymouth State University, to come up with a season that we can do this work, and this is probably the critical location down to a few feet on my side to the left, a few hundred feet to the left here until we get down to the Town Green, is complete this construction at the right time of year using the right work hours and the right crews that will minimize these impacts.

We think we can get through this section very quickly if we can have the right coordination with the various entities in town to minimize the impact and replace the pavement here. Open trenches will be very closely monitored and potentially even continuous

construction through this 300, 400-foot section. It could be done potentially even in a weekend if we worked 'round the clock to do it at the right time to get through this area and alleviate the traffic congestion and the pedestrian congestion this could create.

A (Johnson) I will also add that the trench itself when the work zone is not being used at night or whichever activity will be covered in some means, whether it's fully filled in or whether there's plating that would be used. So no matter what, the construction zone will be marked and will be, during the active times or when it's inactive, it will be covered to exactly minimize that kind of somebody accidentally falling.

Q Because I think, because there's a splice box not far down the road in front of, I think near the Lucky Dog Restaurant, so there's a, all of this, so you're going to have splice vault crews, you're going to have multiple crews. So potentially there's going to be multiple crews working on this road at once to get it done faster.

A (Johnson) Again, that's another thing that we would coordinate with the Town to minimize that where we may do the installation of the splice pit first and then at a secondary time come back and do the trenching leading up to that so that there isn't a continuous impact. Unless that was something that we all agreed to get in and get out of here as fast as you can.

Q ***(Committee 24)*** One of the things I noticed and I sort of highlighted here is this was the December or November set of plans for down through there was that when this was constructed, there's a sewer line, the pink line represents the sewer connections. Through the roundabout construction, there's a 15-inch PVC sewer line and it transitions at the sewer manhole which is about station -- I can't read it. That's too bad. To a 12-inch clay, and then you're right next to that, close proximity, and then you actually go over these two feed lines, 6-inch clay and the 8-inch clay.

I can tell you why this is PVC. Because it's broke. When the roundabout was built, that clay had to be replaced because clay sewer lines

haven't been in use in 40, 50 years. This is, if this sewer is whole today, you're lucky. I would be very concerned with the proximity of this and crossing over these clay lines. So I don't know if you've thought about that or investigated how you're going to build your conduit so close to those sewer lines.

A (Johnson) Sure. So the Plymouth Village Water & Sewer Department has a plan to actually replace some of this infrastructure along the streets. We've begun preliminary conversations with them as far as coordinating our plans both from a construction impact as well as the design to mitigate exactly that is to prevent some sort of collapse, if you will, of a clay line pipe.

Q Makes sense. So one of the Counsel for the Public's Exhibits, 130, showed this as is a interpretation of the construction, and you folks didn't like this example. ***(Committee 25)***

I didn't either when I saw it, mainly because there's no dirt in this picture. Construction is dirty. I don't know if you've got guys with white gloves picking it all up, but there should be dirt everywhere, and if

that's, this trench which we've already said is now not probably going to be 2 foot 9 inches because you're going to weave up and around water lines, drainage lines, sewer lines, everything else, is probably going to need a trench box so this is going to be deeper. If there's concrete pavement under here, if you get an exemption, you're lucky, but if you have to remove this whole concrete slab which is basically the centerline up ten feet, I would imagine, this then becomes a full-depth reconstruction, and then somewhere about that centerline is that clay sewer line, your construction width has become more than half the road. Am I in the ballpark? ***(Committee 26)***

A (Johnson) From a trenching installation perspective, it would be limited to the width plus a trench box. The restoration where we'd have to remove the concrete would be done during a final road restoration, if you will, so that would be a full season later when we'd come in and mill the road, dig up that concrete, put down new road base and build it back as one. So it would not be an all-in-one, if you will. We

would finish the trenching activity, put a temporary patch down, let it settle, come back the next season or the end of that season and do a full road restoration.

Q So your "get it done fast before the students come back" is get it done fast over two years.

A (Johnson) Potentially, yes, if that's what it was.

Q Traffic control. So we sort of said that Ms. Farrington actually works for the contractor so who at Burns & McDonnell oversees or reviews the traffic control?

A (Johnson) So at this time, no one from Burns & McDonnell is reviewing the traffic control. Lynn is the expert for the State in the rules that the State has regarding traffic control.

Q Okay. So, Ms. Farrington, in your Prefiled Testimony, you described where it said, please describe other similar Projects that you've worked on, could you explain how the Veterans Memorial Parkway in Providence, Rhode Island, and your downtown Newport, Rhode Island, projects are similar to this?

A (Farrington) So those are just some of the

recent ones that I had worked on. I would say Veterans Memorial Parkway, the only similarity there was that we had to take into account pedestrians as well as access routes and ADA compliance into our detour routes as well as vehicles, which is going to be a consideration in the downtown areas.

The Newport, I think, was much more applicable in that it was staged in a couple different phases. There were some, it was very similar to downtown Plymouth. So a number of detour routes and alternating one-way traffic to accomplish very small construction areas and very spaced-out phasing, especially of the crosswalks.

Q Also in your Prefiled Testimony you talked about, and I will say, it's real easy to pick on the traffic engineer because you use a lot of statistics and probability, and there's nothing solid. Been there, done that. So I apologize for poking at you because it's a lot of speculation. But there is a lot of theory and a lot of history that goes into what you do, and I also understand that.

In the Prefiled Testimony you discuss various Levels of Service. Levels of Service, that's a nationwide definition, right? The Level of Service, it's a uniform constant throughout the country when we talk about traffic, right?

A (Farrington) Yes. So it's from the Highway Capacity Manual.

Q Right. So when we talk about Level of Service in the North Country, Level of Service C in the North Country, Level of Service C in Salem or Nashua, it's the same thing, correct?

A (Farrington) Yes, except that it differs for signalized areas versus an unsignalized like a stop control.

Q But would you agree that when it comes to discussion of Level of Service, perception also comes into account?

A (Farrington) Absolutely. I don't know how I would -- I think Level of Service on a dirt road is a little harder to quantify.

Q So if you had a Level of Service, and this is, I mean no disrespect for people in the North Country, but if you have a Level of Service C in

Salem or Nashua, they build a statute in your honor. If you have a Level of Service C in the North Country, they're calling the Governor. That's my experience. Because that's too much delay. So saying adequate Level of Service or not a very long backup, but when you're used to no backup, some backup is a problem. And we see that a lot is where you go north of the Notch, and people will complain about the congestion, and it's all your perspective.

So in one of your Prefiled Statements you talk about the Traffic Management Plan, including traffic analysis and recommendations for mitigation for areas where failing Level of Service due to construction is expected. Traffic Management Plan is actually a document to help so you don't get the failing Levels of Service, correct? It's that mitigation of what you do to ease the impact of traffic, correct?

A (Farrington) Absolutely. There's many more pieces to it, including coordination with the public outreach and interacting directly with the emergency responders so it's much more than just focusing on areas where we create a failing

Level of Service.
Q So the Mitigation Recommendations. Your Prefiled Testimony on page 5 of 8, mitigation recommendations may include, and you listed three things which are multiple detour routes. On State roads we use State roads so I don't know and I think people have testified there's not really multiple detour routes.
Signal timing and phasing adjustments. How many signals -- are you talking about during the splice vaults where you have alternating one-way traffic controlled by signals?
A (Farrington) That is definitely something we'll want to modify depending on location by location. However, I was thinking specifically of in Franconia just before the Gale River crossing.
Q So during the construction, there's a typical that you use. ***(Committee 27)***
I'll say that this one represents where you put in a splice vault more mimics the road width. In some cases, there's no shoulder. You show using cones where this hole that you're digging with the splice vault is how many feet

deep?
A (Scott) I believe we've discussed it's approximately 10 to 12 feet deep typically.
Q So the separation of traffic to a 12-foot hole is going to be a plastic barrel?
A (Farrington) We would definitely need to either bury it or to cover or protect the hole with fencing. Yes.
Q But when you're digging it, when you're out there actively constructing it, you're going to have this open 12-foot hole so you're going to use barrier to separate that, not cones?
A (Farrington) Yes.
Q So that goes into, and I think we just talked about the road closures. You're not going to close the road, but when you deliver material, when you put in the Jersey barrier, when the cranes come in, when the splice vault comes in, when the trench box comes in, when the material comes in, you're going to have limited road closures while you offload material, while you set up the traffic control and everything else, correct?
A (Farrington) Most likely. Yes.

Q So this is going to be another one that has no numbers, but we'll get numbers on them.

(Committee 28)

So what I tried to do was say if you're in the underground route from Bethlehem to Bridgewater, it's about 52 and a half miles. Right? We'd eliminate the north section. I don't want to talk about the north section right now. So we'll start, if you took that route, starting at the transition station in Bethlehem on Route 302, you travel about a mile, and then you turn left on to Route 18, you'd have to yield to traffic before you made your left turn, but then you'd travel four and a half miles and then you'd take a right turn on to Route 116 at the signal. Franconia. Then you travel another 11 miles and turn left onto 112 at the stop sign. Then you travel another 11 miles, and you turn right on to US 3 at the signal in Woodstock. And travel another 20 miles. You'd go straight through the roundabout so I included roundabout as a travel control device, and then 3 miles or so to the end in Bridgewater.

So you travel 52 miles, you hit two

signals, a stop sign and a roundabout. So that means in that 52 miles, you have one traffic control device every ten miles that you have to deal with. That's pretty smooth flowing. There's not a lot of stopping and starting in that 52 miles. Is that correct? Did I miss anything?

A (Farrington) No, that's correct.

Q ***(Committee 29)*** In the Application we talked about time frames. I know the dates are a little bit wrong. But the idea is you're going to build this, the underground section is going to be two seasons. Is that still correct? That's what I've heard.

A (Johnson) Yes.

Q So follow my math a little bit. And I know Attorney Saffo is not here. This will look very familiar. I thought she stole my best question. I did these questions before I saw her testimony. I told Mr. Wright, she's stealing my best question, but she really didn't. So I'm going to take this a little bit further than what she did. ***(Committee 30)***

So the construction season for the

underground section is April 15th to November 15th. That's 8 months. That was a requirement of the DOT. You're not applying for an exemption of that, correct?

A (Johnson) Absolutely not.

Q Because we don't want to be plowing snow in your trench.

A (Johnson) Absolutely.

Q That's 8 months, 4 weeks per month, 32 weeks per year. Assume two years. So you have 32 weeks times two years, that's 64 weeks. So 64 weeks to build.

So let's talk about the splicing vaults. ***(Committee 31)*** So it's 52 miles. If I remember right, there's about, ballpark number, 138 splice pits. You said it will take one week per pit to get them installed. That's 138 weeks of work. 138 weeks, but you only have 64 weeks to do it. That's your total construction time frame so you need at least 3 crews.

For the HDD drilling, you have 45 locations in this section, you said 3 weeks per site, 135 weeks total work divided by 64 weeks of time so you need at least three crews to do that.

A (Johnson) Correct.
Q I'm doing good so far?
A (Johnson) Yes.
Q So the trenching. ***(Committee 32)*** You have 52 and a half miles which is some ungodly amount of feet so 276,000 feet. You said you could do 20 to 100 feet per day. I gave you the 100. Which is almost 2300 days of work. You said you're working 6 days a week. So that's 460 weeks. Again, I gave you no rain days, no holidays, you're working these guys to the bone. So 460 weeks, 64 weeks, that's 8 crews. Right?
A (Johnson) Yes.
Q Cable installation, you have 138 splice pits, you said two weeks per pit to put in the cable. That's 276 weeks of work divided by 64, you need five crews to do that.

(Committee 33) So if I total that up, you need three splice pit crews, three crews doing HDD, eight crews doing the trenching, five crews doing the cable installation. You end up with 19 crews. You had estimated something in the range of 20 to 25 crews total. So I'm assuming I'm in the ballpark with the number of crews.

And this is working April to November to get the work done. I realize that they're going to be hopscotching their way down the road to do this. They won't be doing them all at once. But 19 crews at once along that section of road. So 19 crews equals 19 work zones. Correct?

A (Johnson) So the only modification I'd make to this is the cable installation happens once all of the splice pits, HDD and trenching are completed for that area.

Q Right. So my assumption was that you'd have to do the -- so that means you have to finish the splice pits faster because then you have to give the cabling guys time to do their work. So you'd need more crews to do the splice pits.

A (Johnson) Agreed.

Q And so I sort of thought about that and said this is probably a minimum. So you now have 19 work zones over the 52 miles. So you have a work zone every two and a half miles, and that's assuming they're on point, and they don't have like in the HDD sites where we saw some of these layout areas, work zones, are going to be up to a quarter mile long?

A (Johnson) During the pull-back phase, yes.
Q So by the time you add up and put all these work zones together, folks traveling down this road are going to hit a work zone potentially every two miles, whereas today they can go 52 miles and hit four traffic control devices which is almost no delay whatsoever.

And I know what Ms. Farrington has said about there'll be minimum delays, but if it's minute, if it's 30 seconds delay at each one, then you've just increased the travel time along that route by 20 minutes, 15 minutes. So I'm just wondering how, like other people have said, the impact to the businesses, the homes, the schools, and everything else. And I just wanted to verify that I'm thinking of this right with the number of work zones.

A (Johnson) Yes.
Q So one of the things that was mentioned in the DOT letter was a requirement that the Project be brought to the Traffic Control Committee at the DOT. Full disclosure: One of the duties that I have at the DOT is I chair the Traffic Control Committee. I will not be in attendance at any

of the meetings where this is discussed. I'll have no input. I won't say anything.

But just knowing what they're looking at, and some of these things were mentioned, because every one of our Projects is brought before the Traffic Control Committee, and we have projects not as long as this, not even close to as long as this, but paving projects that are 15 miles long, 20 miles long. So we talk about impacts a lot. So emergency vehicles and the access, I've heard that.

One of the things that concerns me is the Mutual Aid. One of the things that we're done in the past, and I will mention this because, just so you're aware in the Committee, is that Mutual Aid have the ability or the dispatcher will have the ability to talk or relay messages to all your work zones so that they can clear traffic, set the signals on green. So you might see something like that. Does that make sense as a mitigation?

A (Farrington) Absolutely. Yes.

Q The school and school bus routes, big topic that we get into. I know especially up there with

the limited routes, that will, I know that will come up, and I know you're going to have discussions so I would be aware. I'd make you aware of that.

The sidewalks. You talked about the ADA requirements. That is one of our hot topics, and I mention this with the caveat of I would get to the DOT and Traffic Control Committee soon because I think -- and one of the things I think you talked about was the Traffic Control Committee setting the Traffic Management Plan. And we don't, the DOT doesn't do that. You as the Project Designer need to develop the Traffic Management Plan. That has to be approved by the DOT.

So this is like a two-step process where you have to come to the DOT, submit a plan or talk about what you're doing, verify what you're going to do in the plan, write the plan and come back for approval. So I would urge you not to wait. Sorry for the testimony. But that's just sort of a heads-up because I saw this repeatedly, and it seemed to be a disconnect with what was stated and what reality is at the

DOT, and I just want to mention that.

I'm on to miscellaneous stuff. We're nearing the end. I apologize.

One of the things that was in Mr. Fortier's Prefiled Testimony was environmental violations. ***(Committee 34)***

Any potential violations, environmental issues, will be identified and reported to the appropriate reporting agencies. That seemed to be talking about if you go out there during construction and find some sort of environmental violation that exists. Do you have any idea what that means?

A (Bowes) That is correct. So if we come upon something, probably the most common one we come across is materials of unknown origin we find on a right-of-way. So a barrel, for example, of unknown liquid, and we would have to deal with that and report it to the various permitting agency; in this case, the New Hampshire DES. That's a pretty typical one we come across where people either abandon things on a right-of-way or purposely dispose of things on a right-of-way.

Q But typically you find that in your annual review of the right-of-way?
A (Bowes) Correct. So in this case we're going to be out there initially to do, I guess the first step would be doing the delineation of wetland and the beginning of vegetation management, but we may find, come across something. There's been some pictures shown of various, I would say, maybe not violations but certainly not Best Management Practices of rutting within the right-of-way. So if someone was out there on the right-of-way and made some ruts, we'll document that and report it prior to our engagement with the right-of-way.
Q One of the other things, and I'm not sure if this really applies, it appeared to be one of your Best Management Practices was this sort of settling tank structure that was used for dewatering of the trench, splice pit vaults, everything else. ***(Committee 35)***

It appears you take the water out and put it into one tank, settles, take that water out and clean it again in another tank and then you outlet it. I mean, is this, this seems to be a

very uniform, one-size-fits-all application for dewatering or dewatering a trench. Do you typically use this? Or are there different sizes of this configuration or is this just meant to be an example of what you typically do? And are these approved by DES?

A (Bowes) So it is a typical example. It's not necessarily what we would do. We might use two tank vehicles actually rather than stationary tanks.

Q So you use a truck --

A (Bowes) Absolutely.

Q -- to pump it into?

A (Bowes) Exactly.

Q So that's one more thing that has to fit in the construction zone.

A (Bowes) That is true. So it might be, you know, tanks on the back of a flatbed truck that both of them were on the same flatbed, for example. So it's meant to be illustrative, not specific for the Application.

Q But is that basically a DES-approved practice that you've used before?

A (Bowes) It would have to be a DES-approved

practice. Yes.
Q The municipal agreement ***(Committee 36)*** that is sort of put out there, talked about considerably, a lot of this covered traffic control, personnel doing traffic control, the work hours, no night work, blasting, construction vehicle sign up, so the hours, what's listed in here, this is what Northern Pass, the Project intends to do. So if a town doesn't do this, are you going to do anything different than what's listed in here like for hours? Or traffic control?
A (Bowes) If a town doesn't go forward with an MOU?
Q Correct.
A (Bowes) So we would go with what we filed with the SEC then if we don't execute an agreement with the town.
Q So if a Town wants to adjust work hours or have a say in traffic control or something like that, this is their avenue to change that. You're not going to say, well, in this town the ordinance is 8 to 5 for noise. So I'm only going to work 8 to 5. You're going to work 7 to 7?

A (Bowes) So the answer to the last question is yes. I think you had a first question there, too, is if we don't execute this with the Town, does that mean we still won't consider their requests? We will still consider their requests. It just hasn't been agreed to up front, and it wouldn't necessarily be a condition of the SEC Certificate.

Q When Mr. Bell was up and testified, Mr. Bell works for Cavanagh & Tocci, I think it is. The sound expert? This is Mr. Bell's Prefiled Testimony, page 7 of 8, ***(Committee 37)*** and talked about noise abatement of the Project. And he basically said in his report the construction noise abatement, as a starting point, the following noise abatement measures would apply. Federal regulations, truck noise. So I qualify this as don't take the truck out of spec. Don't do anything that's going to make it noisier than the way it was constructed.

Construction equipment shall have mufflers on it so don't take the mufflers off, keep the mufflers working.

Construction work hours, set work hours and

then communicate with the communities.

To me, noise abatement is ways of reducing noise. These seem to be like mitigation efforts. I don't know what a public outreach effort is going to do to lessen noise. I don't know what limiting hours is going to do to lessen noise.

My point is that this was a starting point. So I asked Mr. Bell, this is a starting point so are you coming up with more mitigation efforts, and his statement was they will be developed by the construction team. So do you have anything? Additional noise mitigation efforts?

A (Bowes) So we talked a little bit today about noise curtains. If we're going to be in a location for a prolonged activity period, and this would include the substations as well, we can use the positioning of various devices inside the substation, for example, to mitigate noise impacts.

Containers we're going to use for storage of materials can be placed around the areas where we're doing construction.

The use of the vehicles and where they're

located within the work zone can be located in such a way to minimize the impact. Use the shielding of the actual vehicle in the direction where the customer is.

Now, those don't always work and they're not necessarily the best way or the most foolproof way to do that. Specifying the equipment up front to be low noise, and we talked a little bit about the generators for HDD, they do have some much stricter requirements than normal, say, air compressor generators. So they've already developed those into the HDD rigs and we're going to take advantage of that. So, potentially, 15 dB lower than you would normally get for traditional piece of HDD equipment.

So those are three ways right there. Location of the work zone and what's in it for a stationary project, use the material trailers themselves to block noise, and in specifying low-noise equipment for certain areas.

Q So one of the other noise abatement design things, if I remember right, is in the Deerfield substation you're putting in sound walls,

correct?
A (Bowes) Yes, but those will probably come at the end, after construction. So certainly for operation, we've specified a 30 dBA noise level at the property line. That's considerably below the town ordinance, and we believe that will be in keeping with what the existing site has.
Q So one of the things that we heard today was the backup alarms. Backup beepers on the trucks. Any thought of using static alarms?
A (Bowes) So, yes, we've had some discussion around either an alternate alarm or some other method. We obviously have to comply with the safety regulations, but that tends to be the highest and I would say most piercing sound that comes from a construction site and, obviously, where we'll get the majority of our complaints will be from that. So, yes, we are looking at that particular item as well.
Q This is my last question. ***(Committee 38)***
Back when Mr. Quinlan was testifying, one of the questions I asked him was he sets, as President of the company, he sort of sets the tone, and, as you said, he as the Project leader

sort of sets the tone of how the Project is managed. A lot of the stuff in the Forward NH Plan, there weren't a lot of details. So the expectation is that those details will come later. I don't know if it will be during this process or not, but a lot of it is we're taking his word that he's going to fulfill these commitments. One of the things I asked him if he's passed down that sort of tone of delivering this Project with offering commitments and working with the communities down to the Project team which is you folks.

And one of the things that I thought was interesting, and I didn't ask the question. It was when someone else was asking the question. He testified that, and it dealt with the trench depth and water and putting the trench in the aquifer, and we saw the pictures of the aquifer and everything else, contaminating the aquifer, and it was a discussion about are you meeting the requirements of the DOT, meeting the requirements of DES.

And his basic statement was yes, engineers and designers are looking at the conditions of

the Department of Transportation and also Department of Environmental Services have specified, we're assessing what impacts those will have and going through it condition by condition to verify the impacts.

And when he was pushed a little bit further on the very next page about those impacts, and about those requirements, he basically said, the question was, given the DOT condition that they need to be 7 feet and also about the aquifer impacts, his answer was DES has looked into the proposed Project, and they have identified specific conditions, and it's our intention to comply with both DOT and DES's conditions.

And when I see the comment letters, 32 pages of DES and 12 pages of DOT comments, and I hear about all of the requests for exemptions and things that mean you're not going to comply with the conditions. You're asking for waivers of those conditions. I guess I'm wondering how much of those conditions do you really plan on meeting, and, you know, is this statement that you plan on complying not wholly truthful to what the intent is?

A (Bowes) So, yes, let me take that to start with. So I've known Mr. Quinlan for a number of years. Worked with him and now for him for the last nine years. He does set a tone at the top that means it's not just about compliance, it's about stewardship. And stewardship in this case goes beyond just the Project construction. It also goes to clean air and using clean energy in our future. So it's a little broader discussion.

Specifically for your questions around this, the example you gave is actually a very good one to talk about. How do we strike the balance between DOT's requirements to move off the road and DES requirements to keep us within the road, specifically through this aquifer. That is one of the exceptions we have asked for is to stay within the road there. We realize that that limits DOT's ability in the future, but it also maintains the environment through that aquifer.

There's a third very important stakeholder in this as well. It's the customers that live along this route. The more we go off the road, the more impact they are going to have, and

we've tried to mitigate those impacts with our initial design. Why did the Project team put it in the road? Was to mitigate the impacts to customers along the route.

So it is a balance, and like I say, I think these discussions will continue. Ultimately, the DOT will give us a set of conditions that we'll go back to the DES with and say, maybe this is a three-way meeting that we should have with other interested stakeholders, potentially the SEC, and decide what is the best thing overall here.

And it may mean that we have to go back in the road and the location. It may mean there's a way to go off the road and still protect the environment in this case. That's what we have to find. But it is a balance, and when there are conflicting permit requirements which is exactly what this example that I'm talking about is, it's how do we reconcile that and satisfy all of the stakeholders. It's not an easy thing to do, but it ultimately leads us to a better product at the end.

Q So if you move the line, the underground

portion, outside the pavement, and you impact more wetlands, are you going to have to -- I'm assuming you're going to have to revise your permit plans to DES, modify those?

A (Bowes) We may have to, yes.

Q May have to depending on if you impact more wetlands.

A (Bowes) We're certainly going to go back and discuss with them what does this mean now.

Q That's my last question.

PRESIDING OFFICER HONIGBERG: All right. I think that brings us to the end of this day. When we resume tomorrow morning, we'll pick back up with Mr. Palmer's group and continue from there on the memo that Ms. Monroe sent out last night.

Is there anything else people need us to address before we break for the day? All right. With that, we'll adjourn.

(Discussion off the record)

PRESIDING OFFICER HONIGBERG: We're adjourned for the day. Thank you.

(Whereupon Day 10 Afternoon Session adjourned at 5:50 p.m.)

C E R T I F I C A T E

I, Cynthia Foster, Registered Professional Reporter and Licensed Court Reporter, duly authorized to practice Shorthand Court Reporting in the State of New Hampshire, hereby certify that the foregoing pages are a true and accurate transcription of my stenographic notes of the hearing for use in the matter indicated on the title sheet, as to which a transcript was duly ordered;

I further certify that I am neither attorney nor counsel for, nor related to or employed by any of the parties to the action in which this transcript was produced, and further that I am not a relative or employee of any attorney or counsel employed in this case, nor am I financially interested in this action.

Dated at West Lebanon, New Hampshire, this 3rd day of June, 2017.

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Cynthia Foster, LCR