ONTARIO ENERGY BOARD

FILE NO.:	**EB-2017-0049**	**Hydro One Networks Inc.**

VOLUME:	**Volume 8**	
DATE:	**June 22, 2018**	
BEFORE:	**Ken Quesnelle**	**Presiding Member and Vice-Chair**
	Lynne Anderson	**Member**
	Emad Elsayed	**Member**

EB-2017-0049

THE ONTARIO ENERGY BOARD

Hydro One Networks Inc.

Application for electricity distribution rates beginning January 1, 2018 until December 31, 2022

Hearing held at 2300 Yonge Street,
25th Floor, Toronto, Ontario,
on Friday, June 22, 2018,
commencing at 9:33 a.m.

VOLUME 8

BEFORE:

KEN QUESNELLE	Presiding Member and Vice-Chair
LYNNE ANDERSON	Member
EMAD ELSAYED	Member

A P P E A R A N C E S

JAMES SIDLOFSKY	Board Counsel
MARTIN DAVIES KEITH RITCHIE	Board Staff
GORDON NETTLETON GEORGE VEGH SAM ROGERS	Hydro One Networks Inc. (HONI)
LISA (ELISABETH) DeMARCO JONATHAN McGILLIVRAY	Anwaatin Inc., Energy Storage Canada (ESC)
SHELLEY GRICE	Association of Major Power Consumers in Ontario (AMPCO)
MICHAEL BUONAGURO	Balsam Lake Coalition (BLC) Arbourbrook Estates
TOM BRETT	Building Owners and Managers Association, Toronto (BOMA)
EMMA BLANCHARD ERIN DURANT SCOTT POLLOCK	Canadian Manufacturers & Exporters (CME)
JULIE GIRVAN	Consumers' Council of Canada (CCC)
BRADY YAUCH TOM LADANYI	Energy Probe Research Foundation
ROBERT WOON	Ontario Sustainable Energy Association (OSEA)
RICHARD STEPHENSON BODHAN DUMKA	Society of United Professionals
MICHAEL McLEOD	Quinte Manufacturers' Association (QMA)
JAY SHEPHERD MARK RUBENSTEIN	School Energy Coalition (SEC)
RICHARD STEPHENSON	Power Workers' Union (PWU)

A P P E A R A N C E S

BOHDAN DUMKA	Society of United Professionals (SUP)
MARK GARNER BEN SEGEL-BROWN	Vulnerable Energy Consumers' Coalition (VECC)

ALSO PRESENT:

JODY McEACHRAN	Hydro One Networks Inc.

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

E X H I B I T S

U N D E R T A K I N G S

Friday, June 22, 2018

--- On commencing at 9:33 a.m.

MR. QUESNELLE: Good morning, everyone. Please be seated.

Mr. Nettleton, any preliminary matters from you?

PRELIMINARY MATTERS:

MR. NETTLETON: I do, sir. It concerns the undertaking that was provided under -- and given the exhibit number J7.3.

You will recall, sir, that this is the undertaking that concerned the age of poles, the discussion of pole ages, among other topics. What we have done, after reviewing the transcript, sir, is we've prepared an undertaking.

It is in the process of being filed, but I think, based on the interest and the level of discussion that took place, I would ask if Ms. Garzouzi could walk us through the undertaking so that if there are questions about it that come up it would probably be best to have that dialogue.

MR. QUESNELLE: Um-hmm.

MR. NETTLETON: And so as I say, we are in the process of filing the complete undertaking. I have copies of, in substance, the part. The one thing that we are tracking down, sir, is the evidence on the hazard curves that came up, and what we found is that the hazard curves actually have been filed with the Board. They were filed in the 2016-0160 proceeding, and we found the exhibit number, and

we don't want to put the whole of that exhibit on just because of the size of the Foster report that it's contained in --

MR. QUESNELLE: Right.

MR. NETTLETON: -- but there are specific curves that I think would be of interest and we are appending to the electronic filing when it's made.

If there are questions around that, I think that Mr. Jesus would be prepared to address those concerns, but without further ado, if I could pass up --

MR. QUESNELLE: Well, here's another option, Mr. Nettleton. Why don't we wait until you've got the complete undertaking completed --

MR. NETTLETON: Yes.

MR. QUESNELLE: -- and then distribute it, let us take a look at it and formulate our thoughts around it, and then we'll have the conversations.

MR. NETTLETON: Yes.

MR. QUESNELLE: And that way we are not trying to do it on the fly here, and so give us -- it's a -- you would think it wouldn't be a complex subject after replacing poles for a hundred years, but here we are.

MR. NETTLETON: Were you listening in on us last night? Because that was very much the conversation that we were having. But sometimes even the simplest things can take on a life of their own.

MR. QUESNELLE: Yes, we'll wait for the undertaking, we'll take a look at it ourselves, and maybe the Panel will

have a little discussion so we're prepared to engage in a conversation. Okay?

MR. NETTLETON: And I think that this panel will be up, probably until Monday.

MR. QUESNELLE: Yes.

MR. NETTLETON: So it may be best to -- in terms of timing if you need to take some additional time.

MR. QUESNELLE: Yep, so we'll take stock of where we are on the schedule this afternoon. And that's a good segue into something I wanted to mention on scheduling.

We've had -- this panel has been up for a full day already. There's been some detailed cross-examination. We've had lengthy discussion on the main topics, so I would just ask people today to be really mindful of what ground we've covered and try to tailor your cross-examination accordingly.

We're -- it is going to be tight to get it -- everyone in for the next four days, today and four more that we've got scheduled for next week, so we'd also -- well, just ask the question now: Any difficulty with starting at nine o'clock next week on the four days that we have scheduled? I think we'll have to do that, and that will provide us with a little bit more leeway, so let's plan on doing that, starting at nine o'clock, starting on Monday, and again, I'd ask people to be mindful of what ground we have covered and to try to keep your cross-examination on new areas and not replough the same fields.

Oh, and one other. If we can just take a look at the

J7.1, the undertaking that we had a discussion on yesterday. And it's to provide the document prepared for the board of directors, and I don't know that that's a proper capture of that undertaking. The undertaking, as you will recall, Mr. Nettleton, we had a lengthy debate on it, and this was the -- we were looking for the documents that was the culmination of the individual work streams that informed the document that went to the board, and I think the transcript, while it's a pretty good description of what we were after, there was reference to actual PowerPoint presentations, that the senior management would have had, working with the Boston Consulting Group, and I think we arrived at a conclusion that it would be helpful to have those documents filed. So I think this is a bit of a -- this doesn't capture that very well.

MR. NETTLETON: And, sir, just an update on that. We are going back and have gone back since that discussion to see what we can find.

MR. QUESNELLE: Sure.

MR. NETTLETON: And as Mr. Bowness said, the organization that took place with the good to great program was with a steer code, which was -- a steering committee, sorry, and the steering committee was the recipient of information that came in and that was then -- that was the gate that then informed the --

MR. QUESNELLE: Document.

MR. NETTLETON: -- the board of director presentation that actually was presented by the steering committee to

the board.

MS. LONG: Right.

MR. NETTLETON: So what we're trying to do is find what was received by the steering committee.

MR. QUESNELLE: Excellent.

MR. NETTLETON: And I think that's what -- but my concern is, this was an ongoing exercise, and if we start going back and looking into even more presentations and more information that went -- that got formulated by individual task force or individual members that fed into the steerco, I'm concerned that this is going to take on a life of its own, and I'm not sure that's what you had anticipated, so I'm glad that you raised this, because we do need clarity on whether you are looking for something more than the steerco presentation, and I'm -- because I think that would be easier to find.

MR. QUESNELLE: Well, Dr. Elsayed and Mr. Bowness had, I think, the final discussion of that, so Mr. Elsayed?

DR. ELSAYED: Well, just to be -- I thought that, Mr. Bowness, your response was, on the issue of streams -- I think there was six or seven of them -- there was a -- I hate to use the word "final", but there was a PowerPoint presentation made to your senior executives on each of those, and your answer was yes; is that correct?

MR. BOWNESS: Yes, the steering committee was chaired by our CEO, and that's the steering committee materials that Mr. Nettleton is speaking to that we are looking to --

DR. ELSAYED: The steering committee material are

those PowerPoint presentations that were made to the steering committee in each of those --

MR. BOWNESS: By the stream leads, correct.

DR. ELSAYED: So these are the documents that we're looking for.

MR. BOWNESS: Yes.

MR. QUESNELLE: I'm glad you raised it then. Yes, that's -- as you described it, Mr. Nettleton, that is exactly what we're after. If there's anything else at this time?

Okay. Mr. Pollock, resume your cross-examination.

HYDRO ONE NETWORKS INC. - PANEL 5: ASSET MANAGEMENT PLANNING & WORK EXECUTION, RESUMED

Darlene Bradley,

Bruno Jesus,

Lyla Garzouzi,

Brad Bowness; Previously Affirmed

CROSS-EXAMINATION BY MR. POLLOCK: (CONT'D)

MR. POLLOCK: Thank you very much, Mr. Chair, and good morning to the witnesses.

I was hoping that we could start on page 16 of my compendium. Let me know when you've turned that up. Does everybody have that? All right.

So this is, I take it, a table that summarizes the distribution capital and OM&A expenditures, both historically and forecast; is that correct?

MS. BRADLEY: That's correct.

MR. POLLOCK: And this table, in particular, was part

of the updated Exhibit A from June of 2017, correct?

MS. BRADLEY: Correct.

MR. POLLOCK: And it's got on the rows, it's broken down into "system access, system renewal, system service, and general plant", and those are the RRF categories, correct?

MS. BRADLEY: Correct.

MR. POLLOCK: So if we could flip over to page 18 of the compendium. Sorry, one more page. So you will see that there is an equivalent table from Exhibit Q which was from December of 2017; is that correct?

MS. BRADLEY: That's correct.

MR. POLLOCK: So I don't intend to take you through all of the fields, but I am interested in the forecast periods, so the 2018 to 2022 columns, and you would agree with me, I think, that all of the values in the cells are the same with the exception of the general plant category; is that correct? Between the two tables?

MS. BRADLEY: The general plant and the OM&A lines are different.

MR. POLLOCK: Sorry, I should have been more precise. I'm just looking at the capital spend, so don't worry about the OM&A for a second.

So in terms of the capital, the only difference is the general plant line, correct?

MS. BRADLEY: Correct.

MR. POLLOCK: And as I understood it, that was sort of the point of Exhibit Q; it was to inform everyone that the

general plant spending had changed. Is that fair?

MS. BRADLEY: That was one of the factors that it highlighted in the change, yes.

MR. POLLOCK: Great. If we could flip to page 10 of the compendium, we are back to the distribution business plan. And to situate ourselves, this is from December 8th, 2017, correct?

MS. BRADLEY: Correct.

MR. POLLOCK: So just shy of two weeks short of the Exhibit Q update, which was December 21st, 2017, right?

MS. BRADLEY: Correct.

MR. POLLOCK: So I'm interested in zeroing in on -- if we scroll down the page a little bit. So this second table splits it out into the RRF categories just the same way, right, in terms of system access, system renewal and system service, and general plant in general plant, correct?

MS. BRADLEY: Right.

MR. POLLOCK: So I want to focus in on 2021 and 2022 general plant spending. So this lists the general plant spending forecast for those two years as 112 million and 116 million, correct?

MS. BRADLEY: Yes, that's correct.

MR. POLLOCK: And if we flip to page 16 of the compendium, you the will see that general plant spending for 2021 is 133.4 and for 2022, 136.6, correct?

MS. BRADLEY: Sorry, can you repeat which lines you're looking at?

MR. POLLOCK: Yes So general plant, and then for

2021, we have 133.4, correct?

MS. BRADLEY: Are you on the distribution system plan?

MR. POLLOCK: No, on page 16 of the compendium, sorry.

MS. BRADLEY: Get the pages straight.

MR. POLLOCK: It might help if you rip them out and just have them side by side.

MS. BRADLEY: Yes, that's correct.

MR. POLLOCK: And for 2022, we have 136.6, correct?

MS. BRADLEY: Yes, that's correct.

MR. POLLOCK: All right. And if we flip two more pages to page 18 of the compendium, so this is again in the December Exhibit Q, general plant spending for 2021 is 103.7, correct?

MS. BRADLEY: Yes, that's correct.

MR. POLLOCK: And 2022 is 105.9, correct?

MS. BRADLEY: That's correct.

MR. POLLOCK: So why is it that the distribution's business plan on page 10 has spending for general plant in 2021 and 2022 that is reflective of neither the June Exhibit A updated, or the Exhibit Q in December of 2017?

MR. NETTLETON: Mr. Chairman, the general plant is, I believe, an area of the shared services, the common costs, and that's the next panel that is coming up.

I don't know if these witnesses can answer that question, but if not, it may be best saved for panel 6.

MR. QUESNELLE: Okay, thank you for that. I'll let this panel do what it can and defer it, if that's appropriate.

[Witness panel confers]

MS. BRADLEY: So if you look at the distribution system plan, which is your page 10.

MR. POLLOCK: Yes.

MS. BRADLEY: And then so that -- and then you go to Exhibit Q, which is page 18.

MR. POLLOCK: Um-hmm.

MS. BRADLEY: The bottom line for the total capital spend remains the same. So it was an update in the categorization between the general plant and the system renewal envelopes.

MR. POLLOCK: So is it the case that you have the same sort of productivity -- let's actually take a step back. On page 19 of the compendium, if you could flip to that, this was what I understood to be the areas that you found savings in general plant. Is that right?

MS. BRADLEY: The issue we just talked about --

MR. POLLOCK: Yes.

MS. BRADLEY: -- was mis-categorization, when we went from our sustaining, developing -- like our categorization into the system access, system renewal, system service, general plant.

MR. POLLOCK: Right. So I guess my question is you had the same productivities that were listed here, you just put them in the wrong box?

MS. BRADLEY: I don't know that it was the productivity that was put in the wrong box. It was an allocation issue between the spend, between the two lines.

MR. POLLOCK: Okay. So was this a top-down approach? Like did you say you we want to get to 711 million in terms of the total spend, and how are we going to get there changed between the different sub-categories?

MS. BRADLEY: No, no. The productivity savings that you see on page 19 were a bottom-up approach.

MR. POLLOCK: Okay.

MS. GARZOUZI: And I think you've been walked through the governance process that we've implemented for productivity. So they were developed that way and applied to the work programs.

The difference between the system planning document and the Exhibit Q was general work, like a work program was mapped incorrectly between the two drivers. So it wasn't a change in what work is being done; it was just how it was mapped to those categories.

MR. POLLOCK: Okay. So when you re-mapped that, did somebody go to your board of directors -- because as we discussed yesterday, the business plan, the distribution business plan is what goes to the board of directors. So when you re-mapped that, did somebody go it the board, your board, and say look, we made a mistake, we need to alter some of these numbers?

MS. BRADLEY: No. That wouldn't have made a material difference. It made no difference in the work that we were going to do, or the outcomes we were going to achieve. So no, we wouldn't have had to take that to our board of directors.

MR. POLLOCK: Okay, thank you. If we could turn to page 20 of the compendium, I wanted to switch gears a little bit.

So this is the description of the smart meter refresh, correct?

MS. GARZOUZI: That's correct.

MR. POLLOCK: And as I understand it, the total spend is about $80 million, right?

MS. GARZOUZI: That's correct.

MR. POLLOCK: And it really ramps up in 2021 and 2022, is that right?

MS. GARZOUZI: That's correct.

MR. POLLOCK: And the driver of that increase is the final bullet on this page -- so if we just scroll down a little bit. "Hydro One distribution will require to replace smart meters once these meters reach the end of expected service life." Is that right?

MS. GARZOUZI: That's correct.

MR. POLLOCK: All right. So there's a couple of other ones here that are -- I would describe it, and please correct me if I'm wrong, but more characterized by either safety or regulatory requirements.

So in terms of safety, the third bullet you have replacing the 600-volt ones to the safer 120-volt ones, is that correct?

MS. GARZOUZI: That's correct.

MR. POLLOCK: And in terms of the sort of regulatory stuff on the fourth bullet you have you are required by the

distribution system code to upgrade existing customers' demand meters to interval meters when the average annual monthly peak demand is equal to or greater than 50 kilowatts."

So that is more regulatory driven, right?

MS. GARZOUZI: That's correct.

MR. POLLOCK: Am I right in thinking that this final one isn't driven by a regulatory requirement; it is in fact driven by the sort of manufacturer's expected service life date?

[Witness panel confers]

MS. GARZOUZI: I would say it's both. We're required to have working meters, which is an obligation. At the same time, that last bullet describes the expected service life of the meters, being 15 years. So I would say both.

MR. POLLOCK: So in terms of the first component, you have to have working meters. Am I correct that all of the smart meters that you have right now are currently working, if only because you have a separate program to remove the defective meters fairly promptly, correct?

MS. GARZOUZI: Correct.

MR. POLLOCK: So all the ones that are still there that aren't replaced are at least currently right now working just fine?

MS. GARZOUZI: That's correct.

MR. POLLOCK: And if we turn to page 24 of my compendium, please. This is an interrogatory from BOMA, and they asked you a number of things about smart meters,

and I just want to take you to response B in the third paragraph down, second paragraph, just one line, but it says:

> "The expected is service life is 15 years. Smart meters are a new technology and there is insufficient data to determine if the expected service life can be exceeded or to allow comparison with other distributors."

Do you see that?

MS. GARZOUZI: I do.

MR. POLLOCK: So for all that Hydro One knows, these meters could work just fine throughout the planning period; is that right?

MS. GARZOUZI: With our most recent discussions with the vendor, the vendor's expected service life is 15 years. We were the first to deploy smart-meter infrastructure probably within the industry. With that, it means we will be the first to refresh our population, so we don't have experience in this space and we are relying on the vendor's advice and expertise for this.

MR. POLLOCK: I think you'd agree with me by definition the vendor is the party that is selling you these, correct? So they may have a vested interest in wanting you to buy more.

[Witness panel confers]

MS. BRADLEY: Not necessarily. We will be going through a competitive process to determine what technology, which vendor, we use for that refresh. These meters have

had, you know, a higher than expected failure rate. We thought they were going to fail about half a percent per year, and they are failing at 2 percent, and with a new technology, I mean, not totally unexpected, but I wouldn't say that they would be led to believe that we are using a like-for-like replacement when we refresh the network.

MR. POLLOCK: Okay, so I guess to circle back you've been told by the vendor that the expected service life is 15 years, but given your answer at BOMA B, you don't know, and I guess my follow-up is, are you doing any independent analysis during this period to determine whether or not they can last longer than that?

MS. BRADLEY: At this time we are not aware of any leading indicators of health or condition on meters. Like most electronic digital technology, you don't get the warning signs of, say, a hammer test on a pole to help you know that it's going to stop working.

In our experience, they have just stopped communicating, and we haven't been able to get reads on consumption from those meters when they fail.

MR. POLLOCK: So I guess are you undertaking any studies or are you saying that a study is not possible because you have no idea how to do it?

MS. BRADLEY: I'm not aware of studies that are underway at this time.

MR. POLLOCK: Thank you very much.

So if we could turn to page 25 of my compendium. This is an interrogatory that I asked you in terms of smart

meters. And in part B I asked you whether you are planning on replacing smart meters in areas where they are unable to consistently send a signal, and you answered yes, correct?

[Witness panel confers]

MS. GARZOUZI: Are you on page 25?

MR. POLLOCK: So 25 is the question, and then the answer would be on page 26.

MS. BRADLEY: That's correct.

MR. POLLOCK: And in part C I said:

"Are the replacement meters expected to be able to send a signal consistently?"

And as I read your answer in part C, so page 26, there may be some gains, because the technology has evolved, but to a large degree they still will be unable to reliably communicate with the network; is that a fair characterization of your answer?

MS. BRADLEY: I think you can make anything communicate with enough money. Our approach has been, you know, if the solution to make all meters communicate would mean spending an amount of money that you could go and read the meter manually for five or ten years before you would have come close to paying for that communication solution, we have applied to the Board for exemption for those meters due to the last of cost-effectiveness of the solution to reach those.

So we continually work with communication providers and look at alternative technologies to get to 100 percent of our service territory and our customers, but we are very

aware of the cost and ensuring that we are only doing so when it's cost-effective.

MR. POLLOCK: Understood. I think my question was a little bit different, though. It was not, is there a hypothetical amount of money that you could spend in order to get them to communicate. It is, when you are replacing these and you've swapped out an old one for a new one, in a lot of cases, the new ones, given what you actually plan on doing, are still not going to be able to communicate reliably; is that fair?

MS. BRADLEY: There is a few factors that are within our control. So the meter, a like-for-like replacement today is going to have the same ability to communicate. We could go with a solution when we do the replacement of technology, we could have a solution that does have a different bandwidth of communication.

The other factor, though, is what are the communication service providers doing. So as Bell or Rogers change their service territory and increase their territory, we may be able to pick up meters that we couldn't pick up today, so not a simple yes or no, because it is not totally within our control.

However, we do have regular dialogue with our communications providers such as Rogers and Bell, where we work with them on their expansion plans and areas where we are unable to communicate today with meters in hopes that they will consider that in their future plans.

MR. POLLOCK: Okay, so just to recap, there are

factors outside of your control but, yes, some of them won't be able to communicate when you replace them?

MS. BRADLEY: Correct.

MR. POLLOCK: Okay. So I guess I will ask you directly, why do you think it's appropriate to spend $80 million to replace meters that today work properly and which, for all that anybody knows, may work properly for the planning period, save and except for the fact that some of them can't communicate with the network, to replace them with meters that may or may not work throughout the planning period and still can't reliably communicate with the network?

MS. BRADLEY: Are you talking about now the refresh of the technology at the end of the five years? Or are you talking about the replacements that we make every day?

MR. POLLOCK: I'm talking about when we started this discussion, the $80 million for the refresh.

MS. BRADLEY: So with the refresh, we would be going through a competitive process to pick a vendor that meets our needs for the future. So I would not assume that that technology will be exactly what it is today, and that we will have better performance.

Vendors tell you it will pick up 100 percent of the meters. Before we would embark on a renewal project, we would ensure that we have them demonstrate they can communicate with our toughest.

MR. POLLOCK: Okay. So you would only go ahead with it if they were able to say every single one of them, it's

going to be able to do it --

MS. BRADLEY: No, that's not the case.

MR. POLLOCK: Sorry, I misunderstood.

MS. BRADLEY: I'm saying that's going to be for sure a factor in the technology we go with.

I am not going to say I would only go ahead with it if they can demonstrate that, because the number of meters that would fail and that we would not be able to bill our customers as a result, would far outweigh the number that we currently have to do manual reads for.

MR. QUESNELLE: May I just interject here for a second? Ms. Bradley, Mr. Pollock seems to be centred in on the inability to communicate.

In the spectrum of the drivers for the refresh, where does the inability to communicate fit in? Is it the main driver, or is it one of the drivers for the refresh? What other elements are you thinking of that you may have to refresh besides communications?

MS. BRADLEY: We actually have a small portion of our population that we don't communicate with today. I believe it's less than 100,000 -- is that right? -- less than 100,000 that we can't communicate out of 1.6 million meters. So it's not the driving factor.

The driving factor is the risk if meters start failing, and if they fail at the rate that we installed them, we would not be able to replace fast enough to keep up with that. And we want it to be a managed process to ensure that we don't interrupt the billing for our

customers.

MR. QUESNELLE: And so failure rate today, as you said, suggested 2 percent per year?

MS. BRADLEY: Today it is 2 percent per year. The manufacturer's expected life is 15 years, so that's -- you know, so we figure it will take three to four years to replace a hundred percent of our population. You have to do it in a very staged manner, because as you start to -- the meters form a mesh and as you start to replace meters, you could -- you have to do it in a very planned way so that you don't interrupt other reads that we get.

So it will take time and be very structured, as far as an approach.

MR. QUESNELLE: Understood. Thank you.

MR. POLLOCK: I think I will move on to page 31 of my compendium, please.

This is just a brief page from the IPSOS survey. I appreciate that you didn't do the IPSOS survey, but I wanted to ask you specifically, the fine print at the bottom -- so if we could scroll down, and maybe zoom in a little bit for people's eyes.

So it says Q17:

> "Hydro One has determined that in order to at least maintain the level of reliability and customer service it currently provides, a typical (residential or seasonal/small business) customer's total monthly little will need to increase by..."

And it goes on to describe what it will need to increase by.

Do you see that, first of all?

MS. BRADLEY: I do.

MR. POLLOCK: So my question first is who at Hydro One, or what group at Hydro One determined what amount of money would be required in order to at least maintain the level of reliability?

[Witness panel confers]

MR. NETTLETON: Mr. Chairman, I believe my friend's page 31 of the -- of his compendium comes from the materials that were discussed with the customer panel.

I believe this is part of the IPSOS work and as was discussed in that panel, the materials that were used for that IPSOS study were three illustrative cases. So if he's asking questions about the scenarios, I'm not sure this panel can help with respect to the IPSOS findings.

But I'm just -- I'm struggling to see how this question is relevant to this panel.

MR. QUESNELLE: Mr. Pollock?

MR. POLLOCK: I would suggest that because -- I mean, it is obviously not done by IPSOS. So Hydro One had to determine a level of spending that related to asset condition and asset management, such that the reliability would be maintained. So I understood that that would be their area.

MR. NETTLETON: Yes. So I want to clarify that you are asking questions about what the -- from these witnesses

about how and what Hydro One did to prepare these illustrative cases.

MR. POLLOCK: Yes, that's correct.

MR. NETTLETON: Okay. Thank you.

MR. BOWNESS: So I don't think anybody within this panel was directly involved in developing this particular slide, but maybe what I can speak to is the process of how we determined rate impacts, right.

So what would have been considered would have been the most recent investment plan and the cost expenditures. As you know, we roll the plan every five years, so we would have taken the cost expenditures based on the strategy at the time, which was to maintain reliability.

So that would have been the feed-in to determine what is the rate impact by the different classes of that expenditure. That's how I would assume that the team would have developed this number. I wasn't personally involved, so I can't concretely say that's how they came up with these numbers.

But that's the process that we use every year to determine rate impacts: We look at the investment plan, we layer on all of the common corporate charges; that rolls into the load forecasting group and the financial group, to develop the rate impact and the customer impact.

MR. QUESNELLE: I think Mr. Pollock's question actually goes to how did you determine that that amount of spend was going to maintain the existing reliability.

I believe Mr. Pollock -- it's not so much the rate

impact; it's the spend connection with the maintenance of the existing service.

MS. BRADLEY: I would have to -- this is speculation. As Mr. Bowness said, we weren't involved. But the illustrative examples would have been informed by the previous year's plan.

MR. QUESNELLE: The previous year would have had a spending level which would have informed the person who put the slide together, and that amount of spend maintains the existing service level from a previous plan.

MR. BOWNESS: And we've had a strategy for the last number of cycles about maintaining reliability, so that's where the numbers would have come from.

MR. POLLOCK: Okay, thank you. I have a similar question on page 33 of my compendium.

So this is another page from IPSOS and as I understood it, there were three scenarios that you put to large customers. It had a rate increase amount and it had a reliability; so it had declining reliability, a maintaining reliability and an improving performance -- I guess performance more broadly, rather than reliability.

And so understanding the answer that you just gave regarding your experience with the maintenance level, could you help me, if you could, understand what the process was to determine the rate impact and the level of declining or improving service that you gave to IPSOS for this survey to ask people?

MS. BRADLEY: This is getting into more detail than

I'm going to speculate around what the conversations were. I'm sure the IPSOS people or the customer people could have told you what conversations they had.

You know, I'm speculating as to what I would do today which, you know, may or my not have been the process used. So I get that they would have got the information from somebody, but they would have been a part of those conversations and could much better inform you on what those were.

MR. QUESNELLE: Ms. Bradley, would that be somebody that was in your position previously? Is that the case here that the individuals that we're talking to today, the witness panel, weren't in these positions?

MS. BRADLEY: I know when we did for transmission for the customer engagement we did last year around this time, I was involved, as was Mr. Jesus, in discussions around what kinds of questions would help inform us in our planning, and answering questions around information that could help in this type of preparation.

I just -- I wasn't a part of this specific package, so I'd hate to speculate, when we get into this level of detail, at what those conversations were.

MR. NETTLETON: Mr. Chairman, maybe the best thing to do -- the observation that I think you've made is that there have been some significant changes in personnel in the Hydro One organization, and I think that's what the witnesses are struggling with.

It may be best for an undertaking to be given and so

that Ms. Bradley could consult with her colleagues and provide some -- some better information about the steps taken to prepare these illustrative examples and that we could set that out in an undertaking response.

MR. QUESNELLE: Mr. Pollock?

MR. POLLOCK: I would be amenable to that.

MR. QUESNELLE: Thank you.

MR. SIDLOFSKY: J8.1.

UNDERTAKING NO. J8.1: MS. BRADLEY TO CONSULT WITH HER COLLEAGUES AND PROVIDE BETTER INFORMATION ABOUT THE STEPS TAKEN TO PREPARE THE ILLUSTRATIVE EXAMPLES AT PAGE 33 OF THE CME COMPENDIUM FOR PANEL 5

MR. POLLOCK: And I guess I had one more thing that I wanted to go over. And let's go back to page 8 of the compendium, if we could, please. And it just struck me as I was going through your distribution business plan, so right at the bottom, if we can scroll down, right here we have all large customer segments; do you see the bullet starting "all large customer segments"?

MS. BRADLEY: Yes.

MR. POLLOCK: It says:

> "All large customer segments prioritize the renewal program that focuses on replacing equipment that affects reliability ahead of other options for improving reliability."

So as part of the distribution system plan you guys -- or, sorry, distribution business plan, you guys took information from the IPSOS report; is that correct? To

help guide your investment decisions?

MS. BRADLEY: To help inform it, correct.

MR. POLLOCK: So if we go to page 34 of the compendium.

MS. BRADLEY: Sorry, which page?

MR. POLLOCK: 34. So as I understand it, this is where that bullet point in the distribution business plan comes from. And maybe you'll be able to help me with this, but in terms of determining what people prefer more or what customers prefer more, we just look at the bars and see which one is higher, right?

MS. BRADLEY: Correct.

MR. POLLOCK: So you will note that on the far right-hand one, CNI, they actually preferred grid strengthening, so 46 per cent to a renewal prior program and 42 per cent, correct?

MS. BRADLEY: Yes.

MR. POLLOCK: So is it true that the distribution system plan or the business plan, when it says that -- at page 8, "all large customer segments prioritize their renewal program over other possibilities", that's not correct, is it? Because some of them prefer grid strengthening.

MS. BRADLEY: I guess I'd have to look at how they categorize large customers amongst these -- like, we've -- we're using a different terminology now.

MR. POLLOCK: Okay.

MR. BOWNESS: But I think in general if you look at

the definition of what grid strengthening is, it is about enabling the grid to better withstand -- I assume that's what the "with S" is -- and severe weather. And the impacts of weather are reliability, are outages, so if you look at the renewal program, which is replacing equipment that affects reliability, and if you look at grid strengthening, which helps strengthen the grid to minimize the impacts of weather, which is unreliability, I think it's fair to say that the overall focus of our large customers was around reliability.

MR. POLLOCK: Okay. Thank you, I think I'll stop there. Those are my questions. Thank you.

MR. QUESNELLE: Thank you, Mr. Pollock. Mr. Segel-Brown.

CROSS-EXAMINATION BY MR. SEGEL-BROWN:

MR. SEGEL-BROWN: I have some questions regarding pole replacement. I've received and reviewed the oral undertaking, which has been distributed now. I don't know if the panel wanted to give their presentation on that or you wanted to have a chance for us to review it over the break before I ask questions.

MR. QUESNELLE: We would like to take a look at it before we enter into that conversation, so--

MR. SEGEL-BROWN: So perhaps I should split and leave all questions relating to pole replacement until after you've had a chance for review and for them to present?

MR. QUESNELLE: Are you going to be referring to the undertaking?

MR. SEGEL-BROWN: I will not be referring to the undertaking. I'll be referring to Shelley's materials filed last night, which is referring to the same report.

MR. QUESNELLE: That's going to drive a need to explain the undertaking. Let's hold off on that, Mr. Segel-Brown, for now.

MR. SEGEL-BROWN: Okay.

MR. SEGEL-BROWN: So first question is: Will Hydro One be implementing pole refurbishment?

MS. GARZOUZI: We are currently exploring pole refurbishment in two ways, chemical refurbishment and mechanical refurbishment.

MR. SEGEL-BROWN: What portion of the poor-quality poles scheduled to be replaced in this application are suitable for refurbishment?

[Witness panel confers]

MS. GARZOUZI: From the 106,000 poles that we discussed, we think that there's a 10,000 population that would be candidates, but through conversations with vendors and as we familiarize ourselves more with the refurbishment methods, we will refine our assumptions. I can tell you that we are prioritizing for replacements the ones that are less suitable for refurbishment.

MR. SEGEL-BROWN: How did you determine that 10 per cent -- that 10,000-pole figure?

MS. GARZOUZI: We removed the red pine population from the 106,000. We removed the poles that had woodpecker damage, removed the ones that were off-road, and the reason

we removed those is because of climbing access and so on.

We removed incompatible soil, and the reason for that, we mean in rock or in swamp. That was from a mechanical perspective and also a chemical perspective. And we removed the poles that were 50 years or older, based on Mr. Buckstaff's comments. We also removed the ones with the joint-use attachments, and the reason for that is we cannot alter strain on poles that have been mechanically braced. And that's how we got to 10,000.

MR. SEGEL-BROWN: Okay, thank you.

So your capital planning is informed by your customer engagement, right?

MS. GARZOUZI: Correct.

MR. SEGEL-BROWN: And your customer engagement concluded that keeping costs as low as possible is residential customers' top priority?

MS. GARZOUZI: Correct.

MR. SEGEL-BROWN: And by my reading of the IPSOS report, there's really only one question which asked customers to trade off a specific change in reliability against a specific change in price. I'm referring to question 20A, which asked whether customers were willing to pay an additional 30 cents or 60 cents increase over the five -- annually over the five years for a 10 per cent increase in reliability. Are you familiar with that question?

[Witness panel confers]

MS. BRADLEY: Yes.

MR. SEGEL-BROWN: And were customers willing to pay an additional 30 cents for a 10 per cent improvement in reliability?

MR. BOWNESS: Could you just provide the reference page you're speaking to so we can make sure that we're --

MR. SEGEL-BROWN: Okay.

MR. BOWNESS: -- speaking to the right details.

MR. SEGEL-BROWN: I believe it's page 54 of the report, which is Exhibit B1-1-1, distribution plan, section 1.3, attachment 1.

MS. BRADLEY: I have that so --

MR. QUESNELLE: If we could just get it up on the screen first, Ms. Bradley, to follow along.

MS. BRADLEY: I mean, I can see that it says 6 percent, so they definitely would prefer to pay 230 more instead of $2. Eighteen percent they probably would, and 2 percent said they definitely would prefer to pay $2.60 more instead of $2. Seventeen percent said they probably would.

MR. SEGEL-BROWN: Are you looking at the 60 cent question there, yes.

So it's safe to say that a large majority of -- well, about 80 percent of customers were not willing to pay even 30 cents more for a 10 percent improvement in reliability?

Actually, that doesn't quite work out. Let's say 75 percent were not willing to pay 30 cents for a 10 percent improvement in reliability?

MS. BRADLEY: Generally, when we were planning, we

went with, you know, your first statement that says residential customers were generally more concerned with cost than reliability.

MR. SEGEL-BROWN: Yes. So the question I'm -- I understand that that is the planning assumption that went into particularly the board's choice between the plans that were presented to it.

But my question is: Did you consider whether your investments were cost-effective relative to what consumers were willing to pay, as indicated by this question?

MS. BRADLEY: We do consider the cost of the programs. We also consider the sustainability of the system, and the full range of customer needs and preferences. So the residential customers, the majority felt that they did not want to pay more for more reliable power.

We have a number that are on our worst performer feeders and in very poor-serve areas that we talked to that do want improved reliability.

So we were aware of cost, full customer needs and preferences, and sustaining the system.

MR. SEGEL-BROWN: So the plan B modified entails a rate increase which is substantially greater than the 1.1 percent increase in nominal terms over the five years, correct?

MS. BRADLEY: It is greater, yes.

MR. SEGEL-BROWN: And it also entails a significant improvement in reliability, as Mr. Rubenstein showed yesterday, over the five-year period?

MS. BRADLEY: Yes.

MR. SEGEL-BROWN: Okay.

MR. BOWNESS: I think one thing that is important with that is a significant portion of that improved reliability is based on a new vegetation management strategy, which is spending the same amount of money differently to achieve a better outcome.

So it is not actually increasing cost with the change in our vegetation management strategy. It's maintaining the cost as submitted in the pre-filed evidence with the updated vegetation management strategy to drive an improved outcome.

MR. SEGEL-BROWN: Yes, so the increase in reliability is not a direct result of the capital expenditures which are planned, but you are planning more of an increase in capital expenditures and more of an increase in reliability, which you are able to do because of that better vegetation management.

Okay, never mind. You've already answered that.

MR. NETTLETON: Mr. Chairman, just to make sure my friend is understanding it, the vegetation management program is not a capital program. It is an OM&A program.

MR. SEGEL-BROWN: It's OM&A.

MR. QUESNELLE: Mr. Segel-Brown was going to the total spend.

MR. SEGEL-BROWN: Yes, I'm referring to the total spend. I'm sorry, if I misspoke.

Could we turn to page 3 of my compendium? This is the

Fenwick total factor productivity study done for Hydro One and at table 13, he shows the interruption related costs by rate class.

Now, I assume that you are not familiar with these specific figures, but do those figures match -- well, do you have any reason to doubt that these figures reflect the approximate magnitude of the costs of interruptions by rate class?

MR. JESUS: No, I would agree.

MR. SEGEL-BROWN: So you would agree that these reflect the approximate cost of interruptions by rate class?

MR. JESUS: Based on Mr. Fenwick's study, if that's what he said.

MR. QUESNELLE: Mr. Segel-Brown, you've mentioned a compendium. I don't know if we've had it marked yet.

MR. SIDLOFSKY: We'll mark that as Exhibit K8.1.

EXHIBIT NO. K8.1: VECC CROSS-EXAMINATION COMPENDIUM FOR HONI PANEL 5

MR. QUESNELLE: I don't think we have it, but we'll follow along electronically. But I don't know if we have hard copies, but that's fine.

Carry on. We'll just are just follow the monitor, Mr. Segel-Brown.

MR. SEGEL-BROWN: Apologies, I'll print a copy next time.

Could we turn to page 4 of my compendium? So this refers to the installation of remote disconnection meters.

Who will be receiving remote disconnect meters?

MS. BRADLEY: That would be a question for panel 6. It's a customer program.

MR. SEGEL-BROWN: I'm happy to redirect the question to panel 6, if you think that's more appropriate.

MS. BRADLEY: Yes, that would be -- they can speak much better to this program.

MR. SEGEL-BROWN: Could we turn to page 9 of my compendium? This is one of the business cases prepared for the worst performing feeders program.

So in scrolling through them, this one caught my eye because it is much less cost-effective. I think I calculated it was 32 times less cost-effective than some of the other programs and in the analysis, it doesn't seem like any alternative is considered.

Can you -- can you summarize for me, when you go into the worst performing feeders, whether you consider whether or not to address those worst performing feeders, because it appears from the other alternatives considered here that the option of doing nothing is not an option.

MS. GARZOUZI: In Staff 85, we summarize the 43 feeders that we've analyzed as being part of the worst performing feeder program.

The way we went about that is we took the three-year average, and we looked at the average SAIDI and SAIFI for those circuits, and then we analyzed them. An analysis does not necessarily trigger action. What we want to understand is what's happening to that circuit, and what

those customers are experiencing and why.

We have found that there is a significant opportunity to improve reliability to the worst served customers, especially because of our distribution system configuration.

Hydro One has a two tier distribution system configuration. What I mean by that is we have 44 kV circuits and then we have 27 6 kV circuits, and then lower voltage.

Many large Canadian utilities have an integrated standardized voltage, let's say 25 kV across the board. They might have other voltages as well. But what that provides you is a benefit to standardize your switching on your system and your ability to tie your system together to provide loops, a grid or redundancy.

So what we found is that there was a tremendous opportunity on the 44 kV circuits, because they were largely unsegmented. So imagine long stretches, 60 kilometres, with maybe one switch, one device, but not much segmentation along the way.

And so when we did our analysis we targeted by -- by opportunity, essentially, on 44kV and on 27 6 kV circuits emanating from transmission stations. We had an opportunity to automate those switches and have them work together to provide reliability improvement for those circuits.

On circuits that emanate from distribution stations, less automation opportunities, because that would require

us to also upgrade the infrastructure at the distribution system, at the distribution station, and that's probably why you are seeing a difference in, you know, CMI per dollar, essentially, depending on, you know, where this circuit is and what the performance has been.

[Witness panel confers]

MR. SEGEL-BROWN: So my concern was that for these worst-performing feeders, it didn't seem that in the business case there was a consideration of whether to act or whether not to act.

So you have described for me why there was an opportunity to act to improve reliability, but is it part of the process that you assess all of these projects relative to a cost-effectiveness standard?

MS. GARZOUZI: Yes, so Staff 85 lists them. You will see in there some of them no action was taken, and when no action was taken, for example, there is one case where vegetation management was the largest contributor, and we knew that we were going to complete that circuit this year, and so we were going to expect that improvement, so no capital investment was required on that circuit.

In this case, the customer minutes of interruption are 1.61 million, and installing seven switches at 840k we believe is providing tremendous value, so from a risk to dollar spend, we find this quite cost-effective.

In the other cases you will find that some of them are not triggering action from a worst-performing feeder perspective; it's either because the equipment that was

failing was already replaced through renewal or vegetation management was the main contributor and that is being actioned or there's other drivers or loss of supply was the main reason, and that is being either addressed or in conversation with transmission, so there is various programs that can help improve reliability.

This program is specifically around capital investment to improve reliability.

MR. SEGEL-BROWN: So what I gather from that is that Hydro One is committed to addressing all the worst-performing feeders and it's considering the most cost-effective option to do so, but it is committed to addressing all of them.

[Witness panel confers]

MS. GARZOUZI: To answer your question, the business case actually come out from this IR, so I'm sure you've read it, so we are not committing to do something for every single worst-performing feeder, and I think that the table in Staff 85 actually shows that. We are committing to analyzing them.

MR. SEGEL-BROWN: Okay.

MR. QUESNELLE: Ms. Garzouzi, though, if I could just interject, the ones that you said where there was no action taken, it sounds like your response was that because there were -- from a capital spend perspective, there was no action taken, but it was either equipment had recently been renewed and therefore you are waiting for perhaps a better health report in the future, or there was a planned

vegetation management, so were any of them -- I think Mr. Segel-Brown's questions were: Are you applying a business case analysis to determine if any action is required or that there is a fix on the way or is it to determine whether or not the spend is warranted? Because I didn't hear of any examples where there was just, do nothing because it's not worth the trouble.

[Witness panel confers]

MS. BRADLEY: Can you bring up tab 23, Staff 85. And if you can just scroll down to the table. When I look through where we're at with this program -- and this is our first year with the worst-performing feeder program -- on this very first part of the table you see some feeders at which -- for which we have a 5 percent improvement forecast. The highest one here shows 35 percent. In some areas it is up over 60 percent.

The scope that we propose is based on what we believe is cost-effective, so in some cases it's a very small investment to put fault indicators to enable a timely dispatch, which is a lower cost option, but for the cost of doing more we believe that that's the most prudent thing to do.

In other cases, like the example that -- of the business case for Owen Sound, there is switches that need to be, you know, purchased and communicating to our control centre.

It is a more expensive solution, but based on the number of minutes that it's going to save those customers,

it was approved as a prudent investment.

I haven't seen any that have been determined not to have any investment, but that could be because they don't come to me if the decision was, no, we're not doing anything; I think with our new vegetation management program and with the renewal program that we have, it is unlikely that we would say we have no anticipation of getting better. Across the province we have the anticipation for these worst-performing circuits to get better.

MS. GARZOUZI: Maybe looking at it also is that the worst ones are disproportionally worse, and so I think that the risk to dollar, the CMI to dollar, the curve will be from a -- it will be like diminishing returns over time, and so the first ones that we're analyzing we are quickly able to find low-hanging fruit, so to say, whereas I think that over time it will be less the case.

MR. QUESNELLE: So I think to hone in on Mr. Segel-Brown's question, so it isn't a commitment, necessarily, there is still an analysis, but at this stage of the program they are all passing. Basically, there is a solution somewhere.

MS. GARZOUZI: They are passing, and it's probably -- in BOMA 31C we see the CEMI and the CELID charts. It is because there are so many customers in those categories now.

MR. QUESNELLE: Thank you.

MR. SEGEL-BROWN: So it seems to me that this business

case facilitates the comparison with what consumers are willing to pay, because we can see that the capital cost comes out to about 3 to 4 dollars per minute of interruption avoided per year.

Have you thought about comparing your cost-effectiveness relative to what consumers are willing to pay?

[Witness panel confers]

MS. GARZOUZI: We have thought about it. And my colleague Imran might speak to some stories. There is a true story. There's a few circuits here where we had multiple customers have called in for multiple outages, so 20, 25 outages in a year. And when my colleague Imran, who, you can ask him the same question when he's up on panel 6, you know, talked to me, it happened that we were assessing those circuits.

So in the customer segment, while it is residential customers, the ones that are experiencing disproportional poor reliability may have a different answer than the average.

Again, I'm not the expert on the customer surveying and how that goes, so maybe it's a better question for Imran Merali.

MR. SEGEL-BROWN: Okay. So Hydro One is proposing substantial expenditures associated with retiring PCB-contaminated assets, is that correct?

MS. GARZOUZI: Can you please repeat your question?

MR. SEGEL-BROWN: Hydro One is proposing substantial

expenditures associated with retiring PCB-contaminated assets?

MS. GARZOUZI: There are expenditures for PCB -- yes, it's in the plan. Substantial as a measure relative to that.

MR. SEGEL-BROWN: Can we turn to page 31 of my compendium? So this shows the number of PCB-contaminated line equipment which Hydro One had proposed and forecasted to address in the last rate application, compared to what it actually replaced.

Can you see that -- I don't have the total for what you committed to address, but it's several thousand and of those, you only actually replaced 381?

MS. GARZOUZI: Yes.

MR. SEGEL-BROWN: So the reason for that is that -- well, the primarily reason for that is a large portion of funding was reallocated away from this program towards other priorities, is that right?

MS. GARZOUZI: That's correct.

MR. SEGEL-BROWN: So Hydro One is now requesting funding to retire assets which was already granted funding to retire in the last rate period?

MS. GARZOUZI: We redirected those funds to other investments.

MR. SEGEL-BROWN: Okay. So regarding defective equipment, could we turn to page 12 of my compendium, the next page?

In this interrogatory response, Hydro One state it has

a goal to improve outages due to defective equipment by 20 percent, is that correct?

I'm not sure we're looking at the right -- oh, yes, there it is.

MR. JESUS: Yes, that's correct. I would also add that 20 percent is tied to the grid modernization, so it is part of the system renewal as well as the modernization of the grid that we're looking to achieve about 20 percent and adding -- in combination with a worst performing feeders. So worst performing feeders, grid modernization, system renewal.

MR. SEGEL-BROWN: It could we turn to page 213, which is the OEB distribution scorecard, is there a date by which you intend to achieve that 20 percent reduction in outages due to defective equipment? I'm not sure if I missed that.

MR. JESUS: That's a really good -- sorry, that's a really good opportunity. Let's go to J1.11.

As one of the undertakings that we filed our improvement in reliability going forward, that also appears in the electricity distribution scorecard. And if you scroll down to the bottom of the graphs, so there's the scorecard which defines our targets for rural and SAIDI.

But let's continue on, illustrating the graphics there. If we could expand that slightly, those are all our go-forward targets with respect to veg, planned outages, equipment reliability. So the veg is obviously in the green, and you can see where we were and where we're going to get to.

But overall, we're looking at taking the performance this year -- sorry, last year we had effectively eight hours of SAIDI and we're looking at taking that to approximately a 30 percent improvement over the next five years to roughly 5.8.

So in terms of the -- the 20 percent appears in the -- not only in the red bars, which defines the effective equipment, but in the over-arching system reliability improvement.

MR. SEGEL-BROWN: Sorry, there's -- I think there are two different measures. There is the number of line equipment-caused interruptions, and then there is the contribution of defective equipment to SAIDI. Which one is the target for?

MR. JESUS: So the red bars are all defective equipment, so that would include all system renewal investments that we have planned in the -- over the five years.

MR. SEGEL-BROWN: But if we could go back to the OEB scorecard, there's a separate indicator called "number of line equipment-caused interruptions" and "number of substation-caused interruptions." You would agree that those that those also reflect outages due to defective equipment, right?

MR. JESUS: That's right.

MR. SEGEL-BROWN: So we would also be expecting to see improvement in those indicators.

MR. JESUS: That's correct. So if you scroll up to

the J1.1, we've provided the targets for each one of those as shown there in the scorecard.

So for defective equipment, in the line-caused interruptions, we're looking at going from 8800 in 2017 to roughly 8200 and beyond.

So these are have all -- these tables have all been updated.

MR. SEGEL-BROWN: Okay.

MR. QUESNELLE: Excuse me, Mr. Jesus, are the categorizations different? It's just that I don't have them both up at the same time here, but we are looking at the number of line equipment-caused interruptions, and at 17 and 18, we've got 8,200, 8,200, and then it goes flat at 8,000 across for the remaining years.

Is that's what's represented in the red bars that we just saw in the graph of defective equipment?

MR. SEGEL-BROWN: My understanding is that the red bars on the graph are something different. They are the contribution of defective equipment to SAIDI, which is the average duration of outages.

MR. QUESNELLE: There isn't any.

MR. JESUS: So the red bars represent the two combined lines of the line equipment-caused interruptions, as well as a substation-caused interruptions that formulate our equipment -- or effectively our defective equipment outages.

MR. QUESNELLE: Thank you. So it's the latter which is contributing the majority of the reduction. Thank you.

MR. SEGEL-BROWN: So when you talk about a 20 percent reduction, what is the baseline for that? Is that relative to interruptions for 2017, or interruptions for the five-year average?

MR. JESUS: So if we scroll back down to the figure, in terms of the baseline for the defective equipment, the red bars, it was based on the five-year average, and we are taking is down over the five-year period by effectively 20 percent.

MR. SEGEL-BROWN: Could we go back to the OEB scorecard? Sorry.

So if we look at the average for the last five years, that -- no, never mind. Maybe you're right; maybe that does come out to 82,000 -- 8,200, okay.

MR. BOWNESS: I think one point of clarification that's important is that these are unit cost on the OEB scorecard, and the red bars are percentage contribution to SAIDI. So it is a little bit of apples to oranges when you try to compare the math percentages on unit counts as compared to SAIDI contributions.

MR. JESUS: Correct. Yes, that's correct.

MR. QUESNELLE: Thank you.

MR. SEGEL-BROWN: So my analyst wanted some clarification regarding what types of -- what types of occurrences are captured under defective equipment? Like, we heard yesterday that spontaneous failures, at least for poles, are extremely rare. What -- so, like, if there's a wind storm and it knocks down a pole, it's going to be --

where would that be classified? Like, what's going under "defective equipment" is the question.

MR. JESUS: So defective equipment captures all equipment failure, so if it occurred during a wind storm and the outage was caused by -- well, we all know it was caused by wind, but it's categorized as defective equipment, so Hydro One does not use the storm category for categorizing outages, and it's more -- and the reason why we do that is to provide granularity as to what the actual cause of the outage was from a system point of view.

MR. SEGEL-BROWN: But --

MR. JESUS: Go ahead.

MR. SEGEL-BROWN: -- in some those circumstances, even if the pole had -- the pole may have been in perfect condition, so the equipment may not have been defective, but that would still be captured under defective equipment, because the equipment broke in the circumstances of the incident.

MR. JESUS: That's correct. And if there was a motor-vehicle accident that damaged one of the poles, it would be categorized as a motor-vehicle accident; in other words, categorized as foreign interference. So there are various categories that would capture those types of events.

MR. SEGEL-BROWN: If we were to use some set of indicators in order to evaluate Hydro One's performance, which set of indicators would you recommend that we use? You can just refer me to one of the scorecards, if you think that's appropriate.

MR. JESUS: Can you repeat the question again?

MR. SEGEL-BROWN: If we were to evaluate the effectiveness of Hydro One's -- of Hydro One over the next -- over the rate term, which metric should we be using? If you can just refer me to a scorecard if that's appropriate?

MR. JESUS: So the scorecard is presented there in table 8, as well as the electricity distribution scorecard, which is presented in SEC 29. They are all the outcome measures that we are committing to over this plan period.

MR. SEGEL-BROWN: So in listening to Mr. Rubenstein's cross it sounded like there were a lot of explanations for -- for why these figures might not accurately reflect Hydro One's performance. For example, if we focus too much on pole replacement cost, then that would ignore whether the poles actually needed to be replaced or whether Hydro One is focusing on poles which are easy to replace, so despite that you are confident that these indicators are the best indicators we could use to evaluate Hydro One's performance?

MR. BOWNESS: So I think what's important to look at is that we look at our overall enterprise from multiple dimensions, and the dimensions that are reflected in the scorecard, if we -- if we could just scroll up to the -- sorry, go back to the JT exhibit we had up, or SEC 29 -- there is a number of places where we have the updated scorecard. Issue -- Exhibit I. Yeah.

So if we scroll up a little bit if we could. Yeah, if we could bring up Exhibit I, tab 18, SEC 29. So you'll see

that we look at our business overall from the electricity distribution scorecard from a customer focus perspective, from an operational excellence, from a public policy and responsiveness, and financial performance. We don't look at any one of these metrics as being weighted more heavily than the other from our scorecard perspective. This is the health of our overall business.

When we talk about what we're seeking to achieve with your comment around pole costs as compared to outcomes, on the second page of this you see our pole costs, our unit costs, that we have, and we're projecting to achieve a certain level of unit costs, but if we're replacing the wrong poles we won't achieve the system reliability from an outcome perspective that we seek to improve upon over the five-year period.

So it's incumbent on us to make sure that we are making the right informed planning decisions, we are executing work costs effectively, and we're achieving the best outcome possible across all the different dimensions of our business.

MR. SEGEL-BROWN: Returning to a point you just made about all outages -- about what's being included in defective equipment, is there a need for more granular data in order to understand why a failure due to defective equipment occurred, whether it was due to a deterioration of the quality of the pole or it was unavoidable or...

MR. JESUS: Right now we are not collecting that data, but with the new move to mobile platform we are exploring

being able to collect that level of granularity to be able to definitively capture what was the root cause of the failure, so getting to a lower level of granularity is definitely desirable.

MR. SEGEL-BROWN: Okay, do you have -- do you have data which associates the particular failure with the impact on consumers? Actually, you do. Never mind, it's in the SAIDI. Okay. Those are all my questions except for the ones relating to pole replacement.

MR. QUESNELLE: Very good. Thank you.

Mr. Ladanyi, do you have any questions on pole replacement?

MR. LADANYI: None.

MR. QUESNELLE: Okay. Excellent.

MR. LADANYI: I made a promise to the Panel before we started this morning that I will not mention the word "pole" at all.

MR. QUESNELLE: We will make up for that later.

Okay. Would you like to start, and we'll have a break at about a quarter after.

MR. LADANYI: Thank you, sir.

So again, as I said, I will not cover any of the material that other parties have covered already. I've eliminated some of the questions I've had earlier as I listened as this proceeding goes on.

MR. QUESNELLE: I appreciate that. Thank you, Mr. Ladanyi.

CROSS-EXAMINATION BY MR. LADANYI:

MR. LADANYI: So to understand really what your roles are, as I see it, the three of you are planners who plan work and get the work approved, and Mr. Bowness is the one who carries out the work; is that right?

MR. BOWNESS: Yes.

MR. LADANYI: Very good. So can we turn to School Energy Coalition number 1, which is tab 3, SEC 1.

By the way, I do not have a compendium, because I'll only be referring to interrogatories already in evidence, and I wanted to limit the amount of loose paper around. Hopefully this helps, or maybe it doesn't work. I'm not sure. We'll see how it goes.

So you've turned to that first page. I understand that here School Energy Coalition asked for budget guidance documents.

Can you tell me who these were intended for? Who was the intended audience for these documents?

MR. JESUS: The planers.

MR. LADANYI: The planners. Okay, and actually, I've heard this word "planners" throughout this proceeding so far. Who are the planners? Who do they work for, actually?

MR. JESUS: They all work for Darlene, and for Ms. Garzouzi. Ultimately for Darlene, but Ms. Garzouzi.

MR. LADANYI: So are the planners located downtown here in Toronto or Trinity Square, or are they in regions across the system?

MS. GARZOUZI: I have a mix of centralized and

decentralized. Most staff are in Toronto. We have some staff in regions.

MR. LADANYI: Okay. Thank you. So can you turn to attachment 1, and this will be page 3. Yes, that's the right page.

I'm particularly interested here in financial constraints. It says "asset need, 4.2 percent rate base growth, productivity and inflation".

What is 4.2 percent rate base growth? Is that an upper limit or a lower limit or some kind of a target you are trying to hit?

[Witness panel confers]

MR. JESUS: So the 4.2 percent, if I can direct you to -- the 4 percent -- the 4.2 percent is a combined -- compound annual growth rate across the entire enterprise, so it includes distribution, transmission, the acquired utilities, as well as everything under Hydro One Networks, and it was effectively a constraint because there is a lot more asset needs that we have on the system.

MR. LADANYI: So that's an upper ceiling. Would that be meaningful to the planners? Would they know what to do with this guidance?

MR. JESUS: No, they would not. So the 4.2 percent have actually no bearing whatsoever on the planned investments that the planners are making. The planners themselves are doing a bottom-up approach entering investments, based on the needs and the customer needs and preferences on the system.

MR. BOWNESS: I think one piece, just from a context perspective. The context of where we are from a company is important to everyone within the company, and understanding that our customers have concerns around cost, we have concerns around cost in the industry and making sure that our planners understand that there is a cost constraint and that when we're developing asset plans, we need to be developing prudent strong asset plans, recognizing that some plans wouldn't be able to move forward.

MR. LADANYI: Thank you. For a moment, just on that basis, can you turn to tab 24, Staff 89, page 2? Keep going down further.

There is a table there, table 1, "Financial parameters." So as I understand this response, these are parameters that you are evaluating to see if you are meeting or exceeding your financial targets, is that right?

MR. JESUS: So these parameters would have been informed by the previous business plan, so the 2015 business plan that we would have largely used at that point in time.

MR. LADANYI: Would this have been again an upper limit on what you intend to spend on this, let's say, first round of review?

MR. JESUS: So this is the first iteration that we would have entered, that's correct, based on the asset needs and the customer needs and preferences.

MR. LADANYI: Just for interest, how would these numbers have been developed? Just give me a rough idea; I

don't need the background.

MR. JESUS: They would have been informed by the previous business plan that we had. As you know, we develop business plans at 5 years long, so it would have been effectively the next -- the next four years out from the previous budget.

MR. LADANYI: So it's based on your previous experience. You cull the data, how much you spent and then what you need to do, and you come up with these numbers?

MR. JESUS: Correct.

MR. LADANYI: Thank you. Can we go back to the first -- to where we were looking at, which is SEC 1? Very good, thank you.

So if you go to page 5, I think it's all in the first -- okay, there it is. It says living within our means, staying within the capital envelope. So would the planners have been told what this capital envelope was at this point?

MR. JESUS: We may have provided it for context. But again, they're not dealing with the capital envelope; they are dealing with their own specific investments.

MR. LADANYI: So it's a grass roots budget and then you add it up and you decide if it's too much or not enough. Is that what it is?

MR. JESUS: Again, the budget lines are informed, as I indicated, by the customer needs and preferences, the engagement work we carried out. It would have been informed by the previous business plan. It would have been

informed by the OEB decisions, previous OEB decisions and that's how -- and ultimately customer rates, which is best exemplified by the plan that is currently before you as we have plan A, B and C and plan B modified, which clearly spells out that all those elements were in play in arriving at the plan that we've presented here.

MR. BOWNESS: And I think something that's important here about context around this line item is -- as you know, historically on the transmission side of our business five, seven years ago, we were under-delivering our work program.

As you saw within this filing in the 2015, we over-spent within that capital year. So there's been an increased focus over the last few years around focusing in on what we have said we will accomplish and how much money it will cost to do that, and then focusing in on managing within those means.

And that's the primary driver for the increased focus on our redirection process, so that when we have other pressing needs in the business, we are redirecting but managing within the overall envelope.

MR. LADANYI: Thank you. So if you could turn to attachment 3 and specifically page -- well, actually it is an unnumbered page. So go to the next page and keep going and -- yes, this one.

The number 1 item on this page says "lack of clarity of financial boundary conditions". So are you at that point in time -- like this looks like PowerPoint presentation. Were you giving people clarity with this, or

are you going it to give them at some future date to give them clarity?

MR. JESUS: So this slide was intended to demonstrate that these were the criticisms of previous internal audits, as well as criticisms from the Ontario Energy Board that we captured and addressed via the improvements, continuous improvements in the business planning process.

So providing the budget constraints early on to provide some context was effectively addressing what that was. But from a planning point of view, again they're developing the candidate plans from the bottom-up approach, so that the boundaries and the conditions have no bearing.

The only thing I will say is that when it comes time to draw the line in terms of where that boundary is, planners need to recognize, and the businesses need to recognize, that we're not going to be exceeding those boundaries, and that the plans effectively on the margin, if you will, will need to be discussed and the risks assessed appropriately, and ultimately a decision made on whether that plan goes forward or not.

MS. BRADLEY: Can I just -- I'd like to correct one thing. This list is a list of the pain points that were identified. Every year during our planning process, we do have a lessons learned with the staff within the company that are a part of this process.

This list comes from staff within planning and within Mr. Bowness' organization. When we get them together to say how did this process this year and what could we do

better, this is the results of that lessons learned. It's not related to audits.

The other thing with respect to the specifics on lack of clarity around financial boundary conditions, we want planners to input the needs that they have to address and we want planners to put in alternatives to satisfy those needs.

I believe in that bottom-up approach to say what do we need to do, and then look at different scenarios as we did in this case, I don't think the planners need to know what that financial condition is or the financial envelope is going in.

But often we do get people saying, well, what do we want, and what do we want the financial limit to be. And really we need to know up front what's the risk associated with different limits before we actually say this is the overall envelope.

So it is a piece of feedback we get that in the end, to build the bottom-up plan, you didn't need that going in. We might need it to do our analysis, but the planners really don't need it. But it was a complaint of theirs.

MR. LADANYI: Okay. And now we can go to page 7 on the same deck. It mentions productivity studies, outcome to be determined in summer with efficiencies to be included as deemed appropriate.

So the way I read this is that planners will input these projects into the system, and then layered on efficiencies -- efficiencies will be essentially layered on

later in the process, is that right? Or de-layered.

MR. BOWNESS: It really depends on the nature of the efficiency. So if we look at productivity efficiencies where we've been able to drive improved unit costs, so right now, we're going through a planning process, a refresh of things with respect to cable locates, as an example. Our cable locate costs are half what they used to be historically. The planners are now using those updated unit costs with respect to forecasting that work program going forward.

So productivity items that are known and are in execution would be incorporated into this sort of bottom-up cost estimates, and some of the more macro productivity goals and objectives, some of those are top-down items.

MR. LADANYI: Thank you. Could you turn to page 9 Now? The first one on pricing says:

> "Agreement on costing between planning and operations. Unit prices will need to be updated with any G-2-G," good to great, is it, "productivity savings."

So the way I understand this, there is some kind of debate that goes on, a discussion between operations and planning about the costing, is that right? Or is that the intention of this?

[Witness panel confers]

MR. BOWNESS: So as part of the development of the plans, the planners refer to the unit cost catalogue that we have around the cost per unit. Those prices are updated

on an annual basis in order to make sure that the most current information is available to the planners to feed in.

Good to great savings in the example where it's something that is in implementation, those costs are being reflected in actuals, and it's very easy to draw upon.

For items that we have that are in the future plan, that's where there is a discussion that occurs between planning and execution as to where different productivity benefits are coming from, and that we're incorporating those into the go-forward look.

So an example of that is, you know, as we've developed our new vegetation management strategy we've identified $20 million in reductions for the 2023 year, and that's something that's in flight, that as we're developing the next cycle of the plan that $20 million will be reflected in the unit costs going forward.

MR. LADANYI: Just below pricing it says:

> "Investment categorization, identification of the investments as foundational versus enhancements."

What is that? What is the difference between foundational and enhancement?

MS. BRADLEY: I don't believe that this has taken place. I mean, for me, a foundational investment is our core renewal projects. I know in the current system, in the views of the plan that we have, we don't have this categorization.

MR. LADANYI: Thank you.

Could you turn to attachment 4? Page 27.

MR. QUESNELLE: Mr. Ladanyi, just on your last question there, the witnesses seem to be conferring. Is there something you want to add to that --

MR. BOWNESS: Yes, one thing I wanted to bring forward is I think what you are seeing here is a point-in-time definition of foundational versus enhancement. If you were viewing the BCG materials that was put forward in the undertaking yesterday, there is this differentiation between foundational and enhancements, but it is a bit of a legacy point in time.

The description of things at the time were, you know, foundational items were things like wood-pole replacements, new load connections, and things that were enhancement were grid modernization and worst-performing feeder, so it is sort of the steady-as-she-goes type work versus innovative approaches, but that's not the current methodology that is used in the planning cycle.

MR. QUESNELLE: Thank you, that's helpful.

MR. LADANYI: Thank you.

So to page 27, "project alternatives". It says:

> "Project alternatives are determined by the ability to shift an investment."

What does that mean?

MR. JESUS: So projects that have the flexibility to shift in time in terms of from when they actually get executed, the planners would actually indicate that, so the plans -- typically we have a five-year business plan, and

if they're -- if they're identifying that there's flexibility, such as from a -- doing a new line construction because a customer is going to be in by 2022 and that work needs to be carried out before then, they are indicating that there is some flexibility but you need to meet the 2022 date.

MR. LADANYI: So having flexibility would then give them a higher, let's say, score or rating, more likely they would have the project approved because this is considered to be advantageous to you; is that right?

MS. BRADLEY: I would almost think it is the opposite.

MR. LADANYI: Oh, the opposite. All right.

MS. BRADLEY: You know, if there is flexibility when we optimize the plan it could say this thing is more critical to do first, but if we have a set date where we've committed to a customer that, yes, we'll be ready for you on this date, you know, it is pretty firm that you have to meet that date. You can't shift it off a little bit because of this other higher-priority item.

MR. LADANYI: Thank you, and could you turn to page 36. And as I see this, it looks -- this looks like a simplified work-flow chart. Would that be right?

MR. JESUS: Yes, it is.

MR. LADANYI: And your name is on it, Mr. Jesus; is that right?

MR. JESUS: Yeah, at that time I was in a different role, so --

MR. LADANYI: Oh, okay. But somebody else is

performing this function?

MR. JESUS: That's the role of the manager.

MR. LADANYI: That's the role of the manager.

MR. JESUS: Or the director at that time, yes.

MR. LADANYI: So investment owner, that wouldn't be the planner, would it? Or who is the investment owner?

MR. JESUS: It is the planner.

MR. LADANYI: The planner. So that's the planner, so planner would be -- and the planner would be somebody working in the office here, not somebody in the region who is operating the asset?

MR. JESUS: Yes, that's correct.

MR. LADANYI: All right. And then there is a reviewer, some interim reviewer that is optional.

MR. JESUS: Supervisor, or the team lead.

MR. LADANYI: Team lead, oh, all right. And then the manager is the manager of the planning department? Would that be right?

MR. JESUS: That's correct.

MR. LADANYI: Then there is some other reviewer; who would that be, "interim reviewer"? Not names, I just want to understand what the function is.

MR. JESUS: That would be the vice-president at that time, yes.

MR. LADANYI: And finally --

MR. BOWNESS: I think that optional 1 would be an option to be able to do a peer-review type thing within the manager levels before it gets to the director level, which

would be orange box.

MR. JESUS: That's right, that's right. They're the same, so ultimately if the director doesn't have the approval it would go to the vice-president, but in here, anything greater than $15 million is approved by the director, sorry.

MR. LADANYI: And who is the "portfolio owner"? Who would that be?

MR. JESUS: The director.

MR. LADANYI: The director.

MR. JESUS: Yes.

MR. LADANYI: And the portfolio owner is -- I'm trying to understand, is the portfolio owner in the planning department or is the portfolio owner out in the regions operating his assets?

MR. JESUS: It depends on where the -- who owns that investment, so there may be supply chain owning the real-estate investments, but ultimately it is the director associated with those investments. So they're accountable --

MR. BOWNESS: For the investments we're speaking to here, it is the director within the planning department, the director of -- I think Ms. Garzouzi in our investments that we're talking about today.

MR. LADANYI: For example, this morning we talked about just a few minutes ago about the worst-performing feeders, so lets say worst-performing feeder, who would actually own that asset?

MR. JESUS: That would be Lyla.

MS. GARZOUZI: That would be myself, yes.

MR. LADANYI: All right. Thank you.

Since I mentioned -- that was a good segue to worst-performing feeders. Can we turn to Staff 85, which is tab 23, Staff 85.

MR. QUESNELLE: Is this the start of a new area, Mr. --

MR. LADANYI: Yes, it is.

MR. QUESNELLE: -- Ladanyi? Why don't we take a break then, and we'll break for 20 minutes. We'll review the undertaking response that we are talking about and we'll circle back to that after the break. Not immediately, but after the break sometime.

MR. NETTLETON: Mr. Chairman, I will say this: It appears that the hazard-curve excerpt did not get originally -- did not get filed as part of the original undertaking, so we are scrambling around to find that excerpt, and --

MR. QUESNELLE: All right.

MR. NETTLETON: -- I would expect it will be filed on the break.

MR. QUESNELLE: Okay.

--- Recess taken at 11:21 a.m.

--- On resuming at 11:53 a.m.

MR. QUESNELLE: Mr. Ladanyi, why don't you conclude your cross-examination and then we'll move to the undertaking response.

MR. LADANYI: Thank you. Before the break, I mentioned that the next place we are going to is tab 23, Staff 85, and I think these questions are probably for Ms. Garzouzi; you are the owner of these business cases.

So the first business case that's attached, if we go to it, is Wallace. I looked at these business cases in general terms. I'm not going to address the need or anything else. I am just interested in the process, how they're prepared and how they're reviewed. That's what we're going to be discussing only.

So the person whose name is in the bottom right-hand corner -- if you can scroll down, you can see the person's name -- and I will mention the person. That will be the planner, is that right?

MS. GARZOUZI: So the approved --

MR. LADANYI: Not approved, but the author. The author is the planner you referred to?

MS. GARZOUZI: That is correct.

MR. LADANYI: And that would be, I assume, some young engineers. Do I have that right?

MR. NETTLETON: I'm not sure. Young engineers?

MR. LADANYI: Okay, maybe not. Relatively speaking, I think I'm the second oldest person in this room, so...

MR. QUESNELLE: Could you accept a range, Mr. Ladanyi?

MR. LADANYI: Okay, like the wood poles. I wasn't going to say poles.

MR. NETTLETON: You broke your promise again, Mr. Ladanyi.

[Witness panel confers]

MS. GARZOUZI: So business cases in general, the signature block follows our organizational approval registry. These are investments that are less than a million dollars.

So they are authored by the planner, who could be young or could be a seasoned planner. They are technically a person with a lot of experience that is knowledgeable on the distribution system.

They would conduct the assessment, prepare the business case. You don't see their name in the signature block just because these are investments that are less than a million.

The two names that you see, the first name is our decisions support team, which is a financial review essentially in the company. And the last name at the bottom is the manager of the department.

MR. LADANYI: Of the planning department?

MS. GARZOUZI: Correct. I have four managers, so that's why you might see different names. For development plans or electrical plans, we are set up geographically, so we have a southern zone and a northern zone. And for other assets, we have different managers that are set up in different ways.

MR. LADANYI: Would a planner go to the site to check this location, or is the planner relying essentially on what's in your database when comparing this business case?

MS. GARZOUZI: It really depends on the business case.

Oftentimes, the initial assessment is done with information from our enterprise systems. If further alternatives are being explored and considered, there would be a visit.

Generally, the planners engage within their areas. So they are set up geographically, so some are located within their geographical area. Some are located in Toronto, but they would have experience and knowledge of that area and would be in contact with that area frequently.

They also engage with staff within Brad's organization that are working in the area.

MR. LADANYI: So if they are lacking some information, they would contact them and ask for more information. That would be right?

MS. GARZOUZI: That's correct. They also are familiar with the area, and so they visit the area frequently. They engage with the needs of the area, so the workers that are based out at the field business centres, they would be hearing from them.

So they have multiple inputs. One is the enterprise system data. They have people and they have what they see.

MR. BOWNESS: And my group is involved in this process because ultimately, my team is accountable to deliver to the scope schedule and cost. So we are very much involved in that process, with a commitment to be able to deliver on the outcomes.

MR. LADANYI: If you can scroll up to the top of the page? So the planner is using as I see -- as you see in the first text block a standard unit cost per switch of

120,000 and recloser of 30,000, and cross arm replacement of 4,000.

So these are basically standard unit costs that all the planners use, irrespective of what the actual location parameters are. Would that be right?

MS. GARZOUZI: That is correct. These are standard and they were agreed upon with Brad's organization.

MR. LADANYI: So this is the discussion of unit cost that we talked about before the break with those budget materials?

MS. GARZOUZI: That's correct.

MR. LADANYI: Now, I've looked at some of these, and we not going to go through all of them -- definitely not, we don't have enough time -- and I see the standard costs are applied in the logical fashion. The numbers seem to work out, so I can't complain about that. I was looking for some problem.

In this particular case, it is a little bit more expensive, but I see you are also replacing a 6 kilometre stretch of the feeder, is that correct? It's right in the second paragraph.

MS. GARZOUZI: Yes, that's correct. So the 100 cross arms needing replacement on the off-road section for a 6 kilometre stretch, that's correct.

MR. LADANYI: That's why this project seems a lot more expensive per switch than the other ones. That would be because this additional work in there.

MS. GARZOUZI: Yes, that's correct.

MR. LADANYI: Okay. Now, if you go back down to the signature block on that page, I notice that both signatures, both reviewers approved it on the same date, which is January 29th, 2018.

And I looked and I looked through the rest of them in this deck and in most cases, both reviewers would approve the business cases on the same day. So there was no -- I was just wondering. How long, how much time does a reviewer take per business case, and what would the reviewer look at on each page if they are approving so many, and really both reviewers on the same day.

MS. GARZOUZI: The business case creation is actually iterative, so the person signing on the signature block will have the opportunity to comment electronically. That is why you'll see often that the dates are close together to -- once it's been printed and signed, it is that people have inputted their comments and it's gone through the iterative process of review.

Smaller business cases tend to be approved more quickly; larger amounts can take a longer time and can go through multiple iterations.

[Witness panel confers]

MS. BRADLEY: Just to add with the approvals process, this was approved by a manager. If approvals come to myself as a VP to approve, I have a meeting with finance present.

The planner or the manager will come and present their case. If I have comments, we'll send it back and it will

come back to the next meeting. And then typically at that meeting, once everybody is good with the final product -- which we do get a couple of days to review in advance, when you talk about time -- then we would sign-off in that meeting.

If it goes above my authority, with our COO, we have a similar process that all VPs within operations are present, as well as finance for that meeting, so that there is the ability to get input from across the organization on the details of the project.

MR. LADANYI: So you're saying that what we're seeing here is sort of an end-of-process formality and there's been all kinds of review that occurred previously, but we are not seeing in this these documents.

MS. BRADLEY: That's correct.

MR. LADANYI: So we should not be concerned at all that these appear to show that it was a fairly cursory review. You're saying that there's actually a much more detailed review that we are not seeing here from these documents.

MR. BOWNESS: And I think what's important to understand is these are two different roles within our company that are approving this. One is from our finance decision support team, and one is as the manager of the asset planning group.

They are working very much in collaboration to make sure that things from an asset need and a solution are meeting the objectives, as well as there is integrity from

a financial commitment perspective, funding within budget envelopes and the quality and content of the materials are up to our standard for a business case.

So it is a slightly different lens that each of these two roles are playing on these business cases.

MR. LADANYI: Thank you for that answer.

DR. ELSAYED: Sorry to interrupt you, I just -- as the excavation group, do you provide input to those business cases?

MR. BOWNESS: Yes, so my group is involved -- for smaller investments, my group is more involved on making sure that our unit price catalogues are up to date. When we get into bigger investments we have a more robust estimating process that comes into my group to help generate those estimates around scope, schedule, timeline, et cetera, which then feeds up into the business case to confirm value for money, and then planning continues on to seek the approval through the organizational --

DR. ELSAYED: How about the larger ones? Because you're held to the estimates that are in this business case, right?

MR. BOWNESS: Yes, so I'm held to it, so we are held to unit costs, and this is why we do see some variability on our smaller investments. Some are over by 20 percent, some are under by 20 percent, some are over by 10, because we use a unit cost methodology on the smaller investments. On the bigger, more robust investments we take a specific estimating approach like the Leamington project, which is

similar to what we do on all of our TX projects, which has a very robust process on budgetary estimates, detailed estimates, et cetera.

DR. ELSAYED: One more quick question. What is the highest level in your OAR and how much is it?

MR. BOWNESS: So the highest level would to go our board of directors for approval, and the threshold on that is currently 50 million, subject to check.

DR. ELSAYED: Thank you.

MR. LADANYI: Mr. Bowness, so once a project is approved and it's readied for, let's say, construction, it's handed over to your department?

MR. BOWNESS: Yes, we call that, the work is released for execution.

MR. LADANYI: Released? And then you have a project manager who is managing a project like this?

MR. BOWNESS: Depending on the size and the scope we would either have a program manager who is managing a series of programs or a project manager who would be managing a series of projects.

MR. LADANYI: In other proceedings and not in this one, there was a lot of discussion about project management training and project managers either being -- not being properly trained or being trained very well and so on, so do you provide specialized training for project managers?

MR. BOWNESS: So we take the approach with project management training on -- from an initial hiring of individuals that will come into the group, we want people

that have a breadth of understanding of projects, of assets, of field conditions, engineering principles and the such. So the initial entry point is to make sure that there is a right skill set to be able to be effective in a project manager.

A number of our project managers will have a variety of PMP type certifications, but we don't consider it a mandatory item. Then what we do with our project managers is where they have gaps or areas of improvement is we will do some targeted training and development, so maybe they need some help on facilitating workshops, or maybe they need some help on financial management, whichever is sort of specific to the individual, and then we would engage with some internal training that we have, coaching, mentoring, as well as some external training on filling in those gaps.

MR. LADANYI: So when the project is underway, these project managers would send you progress reports and you would evaluate the progress reports, how things are going and the corrective action; I'm assuming you're doing that?

MR. BOWNESS: So me personally, I'm not overseeing each project that is at a million-dollar investment. I'm managing the overall portfolio. We have a month-end process where I am reviewing the health of the portfolio, leveraging more portfolio-level reports, KPI's metrics, percentages that are in red, yellow, green, and how we are accomplishing units and production rates and such, but leading up to that, there is the project managers that are

producing status reports that's being reviewed by their supervisor, being reviewed by the manager, which is culminating in the review that comes to me on a monthly basis and ultimately flows above me to our executive leadership team meeting on a monthly basis.

MR. LADANYI: So if project is going, let's say the scope is changing or if it's going significantly over budget, is there a change control process?

MR. BOWNESS: Yes, so we have -- within the organizational approval registry we have certain thresholds that we allow for projects to be within, within the approved budget. The dollar value of that is currently set at -- it's changed a little bit over time, but the idea on the transmission side was that we had a -- anything over $500,000 would trigger a variance, and then we would go through an update back to the business case when it was over that threshold, so within these -- sorry, just one second.

[Witness panel confers]

MR. BOWNESS: Sorry, I've just been corrected here. It's $500,000 and greater than 10 percent, so if you have a smaller investment, right, that you have some different variabilities based on that percentage factor, so -- but we do have a robust change control process when we get to a point of exceeding what we would consider within a managed tolerance for project manager, it would go back to the planning group to seek approval to release additional funds, and at that point they would validate the value for

money and whether the items should go through the approval process for further release of funds.

MR. LADANYI: If the overall budget is -- as a result of these changes goes, let's say, over budget, that would be fairly significant, would you then stop a project or do something to take corrective actions to stay within budget limits?

MR. BOWNESS: So what we do throughout the life of the project is each month we are forecasting updates on expenditure, so we have a number of early warning indicators that we would have that a project is trending in a poor way, and ultimately we flag those from a health perspective as red and yellow.

When things are in those statuses we have go-to-green plans, and so the go-to-green plan might be with respect to scheduling, it might be with respect to cost, it might be with respect to scope, and we go through a variety of assessments as to, how do we get this project back to green.

If we ultimately decide that this project is still required to deliver the full scope and it's going to cost more, that's when we go through the variance approval process to recognize that the project is over budget, and we will use that project as a lesson learned going forward, but we do continue with projects as long as the value is still being achieved.

MR. LADANYI: Okay. This is a good segue to my last line of questions, which is in relation to tab 25, School

Energy -- sorry, I see it over here, okay -- as tab 25, Energy Probe 51. And these are -- this is -- a number of business cases are attached to it. If we can go to the first business case, which is Manitou Lake, which is attachment 1, page 1 of 4. There it is. And we go to the next page on Manitou Lake.

So if you can see here, the total cost estimate is 4.85 million. And the paragraph before that it says: "The investment has an approved budget in 2016", and so on, and it says:

> "...and it was approved by the Board in November with a total funding of 3.8 million."

So it appears to be, to me anyway, it is about $1 million over?

[Witness panel confers]

MS. GARZOUZI: The financial section of the business case tries to -- identifies the spend in the categories that you see, if it was sought in a previous rate application and the in-service additions.

In this case we are identifying that the estimate was based on a planner's estimate and so the business case now is ready for release after detailed engineering has been complete, and therefore you see the 4.850 million -- $4.9 million figure that's being sought for approval. So it's a staged approach from a, you know, assessment, planning, engineering, and then detailed engineering perspective.

MR. LADANYI: So when I look at these cases, that kind

of progression doesn't seem unusual. For example, if you go further in the deck to Allanburg transformer station, which is attachment 7, in Allanburg -- and if you look at page 2 of Allanburg, we have the original investment of 3.678 million, and the new re-estimate is 4.7 million, 4.77, which is about a million over.

So the progression that I see in these cases -- and maybe you can correct me -- is that once detailed engineering is done, the costs seem to increase; is that right?

MS. GARZOUZI: In the two examples you've provided, yes. Not always. What happens with a detailed engineering, additional needs may be identified. There could be scope changes. There could be grouping from another plant for work efficiencies, so it is not always apples to apples and it's not always higher.

MR. LADANYI: But the issue that I see is that you've got a problem with, lets say, initial estimates that are done, the quality of those estimates.

If you had better information or better quality estimates, we would not see these variances.

MR. BOWNESS: Yes, I wouldn't classify these as variances from an execution perspective.

This is -- you know, if we're sitting here right now, we'll have items that are in the current filing that are in the plan for 2020, '21 and '22's delivery that are in a planner's estimate level of quality.

As we move towards the business cases, we finalize

scope, we finalize solution, we finalize cost, and that's where we refine the estimate which culminates in this business case.

And this business case is the test of value. So is there value for this expenditure to achieve the desired outcome from an asset need perspective, and that's what formulates the approval or not of the business case.

At that point, we would then come into execution and I would be held accountable to manage the scope schedule and budget within that -- within the parameters of the business case.

MR. LADANYI: So you would not be held accountable at all to the initial numbers produced by the planners?

MR. BOWNESS: No.

DR. ELSAYED: Could I seek a clarification on that? Would you not typically in the planning stage -- based on the fact that your estimate is based on preliminary numbers and the risk associated with that, wouldn't you normally have a larger contingency than you would with release quality estimates to avoid this situation?

MR. BOWNESS: So the way we do the planners' estimates is based on example projects, on historical actuals. So some will be up, some will be down. It's an average unit type cost approach with it.

We know that there is a level of accuracy in that planners' estimate of approximately plus or minus 50 percent. So we don't assign contingency at that point, but we know that there is a plus or minus element to it. But

what our expectation is across the overall portfolio, some will be up, some will be down and on average, we'll come in close to the average unit cost.

DR. ELSAYED: That's my point, really. To answer Mr. Ladanyi's concern about, it just happens that the two projects that you pointed out, that the actual costs -- or the release quality estimate happened to be higher than the planning estimate.

But you're saying that you do it in such a way that the whole portfolio, hopefully would balance somehow, that some would be over and some would be under?

MR. BOWNESS: That's correct.

MR. LADANYI: Since release quality estimate is mentioned, release quality estimate is something that is addressed by the Project Management Institute, PMI, in their body of knowledge. You didn't use any of that terminology or standards that PMI would have for release quality estimates, and probabilities for estimates?

MR. BOWNESS: So what we have to make sure we're differentiating is the type of estimating we would do within our transmission business, where our capital projects are 5, 10, 15, $100 million expenditures and we take a very structured open approach and we follow the AACE framework from an estimating perspective on that for construction projects.

When you look at the distribution portfolio, as I mentioned a couple of days ago, currently we have one project that's greater than 5 million. The majority of our

projects are less than a million dollars.

So the approach we take that we think is prudent, based on the volume of hundreds of projects, is to use a unit cost-based methodology to put forward the work forward and the estimates associated with that type of work.

MR. QUESNELLE: Those unit costs are on historic actuals, based on?

MR. BOWNESS: Yes.

MR. LADANYI: These are all my questions.

MR. QUESNELLE: Thank you, Mr. Ladanyi. Maybe at this time, Mr. Nettleton, we will have the discussion you flagged for us first thing this morning, and we have the response with the hazard curves, I see, to the undertakings J.3, J.4 and J7.3, 7.4 and J7.5.

I think you mentioned earlier that Mr. Garzouzi would lead the discussion on this.

MR. NETTLETON: I think that would probably be the easiest, and that way there can be a dialogue with you, sir, and your colleagues regarding the content. And I suspect then others will want to potentially address further questions that may arise.

MR. QUESNELLE: Okay. We'll have the conversation and then we'll circle back to you, Mr. Segel-Brown, for the remainder of your questions and we'll go from there. Thank you.

MS. GARZOUZI: Have you had a chance to read it?

MR. QUESNELLE: Yes, we have.

MS. GARZOUZI: I am just going to take you through the

highlights.

MR. QUESNELLE: Okay.

PRESENTATION BY MS. GARZOUZI:

MS. GARZOUZI: In the background section, we have about 1.6 million poles. The average age of our wood poles is 38 years. Based on the figure that is shown, 280,000 poles are beyond their expected service life, which is defined as 62 years. An additional 120,000 will be beyond their expected service life over the next five years.

Condition of our population; we inspect our poles on a six-year cycle for rural feeders and on a three-year cycle for urban feeders. Based on I24, AMPCO 23, 4 percent of our wood pole population are in poor condition.

Poor condition means poles within this category have failed wood pole inspection and testing criteria, and therefore require replacement.

I said it many times yesterday, but I want to say it one more time. We don't replace poles based on expected service life; we only replace poles based on end of life.

The demographics of wood poles in poor condition is shown in figure 2.

DR. ELSAYED: You said end of life. You are talking about condition, correct? Poor condition?

MS. GARZOUZI: We only replace poles in poor condition, so they are at end of life. We do not replace poles that are at the end of expected service life. Did I say it wrong?

DR. ELSAYED: Yes.

MS. GARZOUZI: Okay.

MR. NETTLETON: Dr. Elsayed, I believe the nuance there is if they have failed the testing criteria, they are -- and correct me if I'm wrong, Ms. Garzouzi. But if they have failed the testing criteria, are they at end of life or not?

MS. GARZOUZI: If they fail the testing criteria, we categorize them at end of life, and those are the only poles we he would replace. Hence, if you are old and you're in good shape, we leave you in the system and that's the way we like it. We want to extend the life of our poles as much as possible.

DR. ELSAYED: Thank you.

MS. GARZOUZI: May I continue?

MR. QUESNELLE: Yes.

MS. GARZOUZI: The demographics in figure 2 show you the age of the poles that have failed tests. Based on the last five years of annual inspection testing, Hydro One forecasted approximately 13,400 additional poles will be assessed to be in poor condition each subsequent year. Therefore, it is expected that over the period 2018 to 2022, approximately 67,000 additional poles will need to be replaced.

In addition to these poor condition wood poles, there is a subset of red pine poles, approximately 39,000, that do not meet CSA standard for penetration and retention of treatment.

QUESTIONS BY THE BOARD:

MR. QUESNELLE: Ms. Garzouzi, I don't want to interrupt. Maybe as we're going through, there is just one point here, just your comment or the statement here that there's a forecast for approximately 13,400 additional poles will be assessed to be in poor condition.

So a poor condition pole is one that is required to be replaced within the next five years?

MS. GARZOUZI: That's correct.

MR. QUESNELLE: Okay. So when you say the 13,400 will be -- just the straight math on that, there will be an additional 67,000 will be found over the next five years, right?

MS. GARZOUZI: That's correct.

MR. QUESNELLE: But it's not necessarily the case that they will be replaced with in that same five years.

MS. GARZOUZI: That's correct.

MR. QUESNELLE: Okay. So it's important because I think it says "will need to be replaced."

MS. GARZOUZI: Will be found.

MR. QUESNELLE: Will be found.

MS. GARZOUZI: Yes.

MR. BOWNESS: And I think the nuance there is that they need to be replaced –

MR. QUESNELLE: But not within the five years?

MR. BOWNESS: Just not within this five-year period.

MR. QUESNELLE: And that's -- I just wanted to --

MS. ANDERSON: And just so I'm clear on the red pine, is the 39,000 the subset, or the total population? The

subset that's poor, or the total population of red pine?

MS. GARZOUZI: It's the population that did not meet CSA treatment for retention, because we have a lot of red pines so...

MS. ANDERSON: Right. Okay. So the 39,000 is the subset of your red pine poles that don't meet the standard?

MS. GARZOUZI: That's correct. We have a lot of red pine poles that do meet the standard.

Pole replacement program on the next -- so:

> "Hydro One follows industry best practice, proactively replacing end-of-life poles, and we've never run our poles to failure. This is because poles in poor condition pose a high probability of failure, with the consequence of such failures impacting public safety, reliability of the system, long-duration customer interruptions, and higher cost to replace. The proposed replacement program in this application will replace a total of about 72,000 poor-condition wood poles over the five-year plan. Taking a run-to-failure approach would result in all the poor-condition poles having a high probability of failure within five years, requiring reactive replacement, impacting public safely, reliability of the system, long-duration customer interruptions, and a higher cost to replace."

Hazard curves:

"Statistical analysis of the wood-pole population has indicated that expected service life of Hydro One's population of wood poles is approximately 62 years. This is shown in the 2014 asset failure analysis report prepared by Foster & Associates and filed as Exhibit I-1-20, attachment 1 in EB-2016-0160 proceeding. It is common for utilities to use this type of analysis to assess probabilities of failure and inform the pacing of required replacements. Hydro One does not use hazard rates or curves to justify making specific asset replacements. All planned wood-pole replacements are made strictly based on asset condition assessment results. Assets that are in poor condition are the candidates for replacements and are prioritized based on the risk posed to the system and paced to manage customer rates."

Any questions?

MR. QUESNELLE: Yeah, I'd like to understand a little more about the creation of the hazard curve, and I recognize that it's not -- I'm taking your point that it is not the driver, but it's more of a planning tool. It would be something to anticipate where you are headed directionally and what-have-you, but it is not the determinative factor for the population that's being changed.

But what goes into the creation of this? What are we

seeing here?

MR. JESUS: So the creation of the hazard curves, what we've provided Dr. White and associates was all the poles that had been removed from the system, so we have the existing population of poles, so we provide him with the existing demographics for the existing population, and we provided him with a list of all the poles that have been removed from the system, and based on that analysis he derives the survival rate, which is provided in the attachment, as well as the hazard rate for wood poles.

MR. QUESNELLE: Okay, that being the case, so the hazard curve in the 62 years is a fallout of your replacement activities, which is based on the analysis of the condition of the pole.

MR. JESUS: That's correct. It would include all removals.

MR. QUESNELLE: All removals, so they are being removed based on condition.

MR. JESUS: Correct.

MR. QUESNELLE: So it is an empirical study. You go back and say, okay, what ages were those poles, so what I'm finding a little difficult to make the connection then is, it seems a rather drastic difference between that 62 years that you have determined statistically and empirically, what the average age of the poles that are in poor condition now at 45 years.

MR. JESUS: So the best way to describe these statistical analysis is that they are probabilistic in

nature. Given the fact that we don't have any 100-year-old poles on the system, over time we would expect this trend to show that on average 50 percent of the poles last to be 62 years, and on average 50 percent would last beyond 62 years.

But right now, from the poles that are -- that have been assessed to be in poor condition, probabilistically, any pole can fail. And that's what you are seeing based on the poles that have actually been assessed and with the inspection criteria.

MR. QUESNELLE: So it isn't -- okay, I didn't understand the -- I thought this was going to be a pure, raw, data analysis that here are the ages of the poles that we took out of service and 50 percent of them were over 62 years and 50 percent were under 62, but that's not the case.

MR. JESUS: That is not the case, so we provide them the full set of data, which include poles that are currently in the system and the dates at which those poles were removed from the system for him to be able to carry this analysis.

MR. QUESNELLE: So that 62 is a projection of what may happen at a point of time --

MR. JESUS: Exactly, exactly.

MR. QUESNELLE: Okay. All right.

DR. ELSAYED: I have a question. I tried to do some math during the break based on your numbers. So correct me if I'm wrong. This -- some of your actual and some of your

projections are forecast, so you have 67,000 poles today that you think are in poor condition; is that correct?

MS. GARZOUZI: That's correct. So the 67 number, unfortunately, is there twice, so one of them is they fail the test and one of them is a projection forward.

DR. ELSAYED: Yes. And a projection forward is over the five-year period?

MS. GARZOUZI: That's correct.

DR. ELSAYED: So if you take the 67,000 you have today, in year one, if you add one-fifth of the 67,000, which is roughly about 13,400, that is how much the number would increase by, the ones in poor condition; and you subtract from that the number that you are going -- you are proposing to replace every year, which happens to be over 14,000 as well, which is the 72,000 divided by five; is that correct?

MS. GARZOUZI: That's correct. The only thing is that the units in the wood-pole program ramp up over the planning period, so they are not equal in every year.

DR. ELSAYED: No, no, I am just saying things on average --

MS. GARZOUZI: Yes, yes.

DR. ELSAYED: -- in a five-year period.

MS. GARZOUZI: That's correct.

DR. ELSAYED: All I'm saying is if you assume that you are doing in equal increments every year for the five-year period, and if you do the math, you start with 67,000, you add 13,400, and you subtract 14, roughly, you still end up

with 65-, 66,000 at the end of year one that are in poor condition. And if you repeat that exercise for each of the five years, my conclusion is -- correct me if I'm wrong -- that you are in no worse condition at the end of five years than you are today?

MS. GARZOUZI: That's correct. We --

MR. JESUS: That's correct.

DR. ELSAYED: I just wanted to confirm that.

MS. GARZOUZI: Yeah. Sorry. So I just want to just layer -- I agree with what you said, and we believe that this plan helps maintain the population. The added element is the pressure caused by the 39,000 poles, so that subset, which is also a younger population.

DR. ELSAYED: Okay.

MS. ANDERSON: So I just wanted to confirm whether there is a number on the record of your forecast for the number of poles in poor condition at the end of the five-year plan?

MR. NETTLETON: Ms. Anderson, is your question also as it concerns red pine poles in poor condition? Because again, that's being treated as a separate subset.

MS. ANDERSON: Let's see what's in evidence. I wasn't clear from the answer I got on the red pine whether there was that classification of poor. I understood that it was a question of meeting a standard. Is that equal to being poor? There was a standard that was quoted.

MR. NETTLETON: That had been failed, that had not met the -- the 39,000 of the identified red pine category that

makes up the 39,000 have all failed that standard. They don't meet CSA.

MS. ANDERSON: Right, so it was a CSA standard. I just wasn't clear if that equals poor or -- because the answer was specifically --

MR. NETTLETON: I believe it does, but we can check with the witness.

MS. ANDERSON: Yeah. The answer was specifically, it doesn't meet the standard. We'll catch you up.

MS. GARZOUZI: Was there a question?

MS. ANDERSON: Yes, I guess it was on the 39,000 poles, when you replied you said that they don't meet the CSA standard. So is that equal to a poor classification or is that a different category?

[Witness panel confers]

MR. QUESNELLE: I'm into the into the sure what the witnesses are looking for. But in our conversation yesterday, we had an asset condition report which I believe had the red pine as a line item in it, and it went through the categorization of the --

MS. GARZOUZI: That's correct. So for the red pine, what we found is that typically when we categorize as poor, it's failed a test. The red pines, because they are untreated, they don't meet a standard. And so they have been determined that they will be exposed to premature rot and decay.

It is difficult to identify if they have been exposed to premature rot and decay, because below the ground and

attachment is where that would occur. So from the ground level, whether you do a sound or a bore test, you might not identify it.

How are we prioritizing? We're prioritizing those based on the ones that are exhibiting decay via our tests.

MS. ANDERSON: So I guess repeating my question then would be: At the end of the five-year term, how many -- what's your estimate of how many poles will be in poor condition plus how many red pine poles would not meet the specification?

[Witness panel confers]

MR. QUESNELLE: Could we scroll the exhibit on the screen down, or scroll up a little bit so we can see the headers?

MR. BOWNESS: If you look at AMPCO 23, if we just scroll down a little bit, you will see the line item there that is the red pine wood, and you will see that in 2000 -- the third last column, you will see the 23 per cent of those ones are in poor condition.

So if we round that off at 20 per cent at the population of 38,000, it is about 8,000 poles that are the red pine that are in poor condition.

So in aggregate, if you think on our regular work we have 67,000, we're adding 67,000, and we're replacing 72,000, we would, in theory, get 5,000 ahead on that population. But there is this 7,000 to do.

So in aggregate, we'll be, I would say, a few thousand poles worse off in the number of poles that we have in this

demographic. So ultimately, it would be somewhere around 72,000, but it's against a population of 1.6 million.

MS. ANDERSON: Sorry, the 72,000 includes the red pine?

MR. BOWNESS: Yes. So we're prioritizing some of the red pine poles plus some of the poor condition non red pine issue poles.

MS. ANDERSON: Sorry, one more time. The 72,000 is the number of poles in poor condition plus the number of red pine that don't meet the CSA standard?

MR. BOWNESS: No.

MS. ANDERSON: No?

MR. BOWNESS: Let me take one more crack at it. So we have 67,000 poles that are currently in the backlog of poor condition poles. So we have a starting point of 67,000, correct?

MS. ANDERSON: Yes.

MR. BOWNESS: We then also have 20 per cent of the red pine poles that are in poor condition. So that's additional. So that's adding 7,000 total poles in poor condition, either due to the premature aging red pine issue or the asset condition assessing testing.

MS. ANDERSON: Yes, I'm just trying to...

MR. BOWNESS: So that gives you 74,000 poles in poor condition and over the planning period, we are replacing 72,000 poles. So we'll fall about 2,000 poles behind.

MS. ANDERSON: Okay. I was just trying to reconcile that with the number I thought I'd received, which was

there were 106,000 poles needing action which was this -- the added the 39,000. So now you're not adding 39,000, you're adding 7,000?

MR. BOWNESS: I think the confusion is that the red pine poles that aren't passing the CSA standard have to be replaced over the next -- would you say five to ten years. So when you look at the number of poles that have to be replaced, we know that it's the ones that in poor condition and we know that it's all of those red pine poles that aren't meeting the CASA standard.

Not all of the poles that are not meeting the CSA standard will be replaced in the next five years.

MS. ANDERSON: And you're saying about 7,000 are planned to be replaced in the next five years? That's your estimate?

MR. BOWNESS: Yes, based on the AMPCO 23 materials that we see in front of us as the ones in poor condition immediately.

MR. QUESNELLE: Okay, could I ask one more -- you've given us your expectation that the 13,400 will be found through testing.

If we're treating the red pine population separately, do you anticipate that you will find a subset of red pines next year to be in poor condition?

That are there are 7,000 identified now. How many do you expect in that population to fall into poor condition over the next five years?

MS. GARZOUZI: We expect the entire batch to be

putting pressure on us over the period. So we expect -- in AMPCO 23, we show that some are high, medium, and low, and that is based on their age; so it's based on their installation date. So as they approach the 25 years expected service life that was given to us by the third-party that we retained, we expect them to be shifting and putting pressure against us.

MR. QUESNELLE: I guess that's the only number that we don't have in our equation here. Maybe you do have it, but we haven't discussed it here in this conversation.

MR. BOWNESS: Why don't we take that as an undertaking, to provide the age demographic of the red pine poles that aren't meeting the CSA standard.

DR. ELSAYED: Just to follow-up on --

MR. SIDLOFSKY: Sorry, I'll just give it an undertaking number, J8.2.

UNDERTAKING NO. J8.2: TO PROVIDE THE AGE DEMOGRAPHIC OF THE RED PINE POLES THAT AREN'T MEETING THE CSA STANDARD

DR. ELSAYED: I'm not sure this is going to be part of this undertaking, but just expanding on what I said earlier, is there in your evidence somewhere a number, at the five-year period based on what you know today, and all the assumptions that you have made, and your forecast as to what the number will be at the end of the period up to --

MS. BRADLEY: It is in here. Can I give you the reference after lunch?

DR. ELSAYED: Yes, but I'm looking for both, the

number of the poles and the subset of -- at the end of that period.

MS. GARZOUZI: Okay.

DR. ELSAYED: My question is: Is it higher or lower than the number we have today. That's my question.

MS. BRADLEY: We'll give you the reference in the evidence when we come back from our lunch.

MR. QUESNELLE: Okay. Mr. Segel-Brown, I'm sure we've answered all of your questions now.

CROSS-EXAMINATION BY MR. SEGEL-BROWN (CONT'D):

MR. SEGEL-BROWN: I'm afraid you may have raised more than you've answered.

Just to clarify one point before I start, from your testimony earlier, Hydro One is forecasting a 20 per cent reduction in SAIDI due to defective equipment under the current Plan B modified?

MR. JESUS: That's correct. As part of the worst-performing feeders, the grid modernization, and the system renewal, they will all contribute to a 20 per cent reduction in SAIDI, and we're attributing that to the red, to the contribution from defective equipment. That's where it's being shown.

MR. SEGEL-BROWN: I put it to you that that is inconsistent with the table comparing the plans that was put to the board of directors, and I'm not going to put you on the spot to explain that, but if you want to take an undertaking to try and reconcile that -- no?

MR. JESUS: It is not consistent with the material

that went to the board of directors, because we've subsequently looked at the various programs, including the worst-performing feeders, the grid mod (sic), the vegetation management, as well as our process improvements associated with the operating centre, so we subsequently reviewed what we can do, and that's where those materials are coming from, and we've identified right from the get-go in the response to the interrogatories that the performance improvement is going to improve by approximately 27 per cent over the next five years overall.

MS. ANDERSON: Sorry, could I just clarify the beginning of your response? In the transcript it's saying that it is not consistent with the material that went to the board of directors. So you're saying it's not consistent because of these changes?

MR. JESUS: Correct, because we subsequently made additional improvements or we're planning on making additional improvement in reliability that are going to drive those performance improvements.

MS. BRADLEY: The original application was based on a 2016 plan that we took to our board of directors. We've been highly focused on productivity improvements, reliability improvements, continuous improvement across our business, and as we continue to make those changes we've updated the evidence, we've updated our board of directors, you know, our journey is very much driven by the expectations of our board and our senior leadership team, and in the opening statement we made, we talked about the

fact that we have continued to update the evidence to the board. We haven't just been sitting, waiting, you know, and not doing anything. We continue to look every day for what we can do better.

The updated scorecard is with our board of directors for this year, so they have the numbers that you are referring to.

MR. SEGEL-BROWN: But it wasn't in the comparison of -- it wasn't -- that was not the figures that -- you already told me that. Never find. Full replacement.

So my questions go to the idea that the aging pole -- how much of an issue the aging pole population is, because I think some of Mr. Stephenson's questions may have given the impression that we need to achieve an asset life which matches the expected service life or we need to align the average age of your population with other utilities, so that's kind of where all these questions are going.

So Hydro One has expanded its distribution network in the last 80 years?

MS. GARZOUZI: Can you repeat your question?

MR. SEGEL-BROWN: Hydro One has expanded its distribution network in the last 80 years.

MS. GARZOUZI: Yes.

MR. SEGEL-BROWN: And other utilities likely would have done the same.

MS. GARZOUZI: Yes.

MR. SEGEL-BROWN: And adding new poles will decrease the average age of the pole population.

MS. GARZOUZI: Not necessarily. It depends at what rate.

MR. SEGEL-BROWN: But relative to not adding new poles and aging one year per year.

MS. GARZOUZI: Sure, it helps.

MR. SEGEL-BROWN: And poles which are replaced due to external factors like road-widenings and car collisions would also decrease the average age of the pole population.

MS. GARZOUZI: Yes.

MR. SEGEL-BROWN: So when we look at the difference in average age -- pole age between Hydro One and comparator utilities, some of which have much more urban areas, the difference may be entirely attributable to faster growth, more road-widenings -- man, that's hard to say -- more car collisions, or other factors that lead to a higher replacement of -- addition of poles replacement for reasons other than failing an inspection.

MS. GARZOUZI: It could be.

MR. SEGEL-BROWN: Okay, do you have data on the wood-pole replacement rates of other utilities?

MS. GARZOUZI: No.

MR. NETTLETON: Mr. --

MS. GARZOUZI: I'm part of CEA, Canadian Electricity Association, and I have peers, Canadian peers, that are part of this committee. We are the distribution council, and we discuss this topic quite frequently, but I don't have their replacement rate, and after this I certainly might ask them, but I don't have the information.

MR. SEGEL-BROWN: And I'd asked Navigant whether they had done a literature review regarding replacement rates. Have you done a literature review regarding replacement rates and replacements costs?

MS. GARZOUZI: I have not.

MR. SEGEL-BROWN: Okay. You mentioned that the expected service life is calculated based on the average age which poles have failed, of poles which have failed; is that right?

MR. JESUS: That's correct, as well as all the other poles that have been removed from the system.

MR. SEGEL-BROWN: Right, so if it's hit by a car it's failed, if the road was widened it's also included in that number.

MR. JESUS: That's correct.

MR. SEGEL-BROWN: So I'd like to discuss this at the theoretical level first. So if all the poles in your population were less than 20 years old, all the poles which would fail would also be less than 20 years old, right?

MR. JESUS: That's correct.

MR. SEGEL-BROWN: So that would give you an expected service life of less than 20 years, according to your methodology.

MR. NETTLETON: Sorry, whose methodology?

MR. SEGEL-BROWN: According to the calculating expected service life based on the average age of poles which have failed.

MR. JESUS: Yeah, so it all -- I guess this is an

expert study, so this study was carried out by Dr. White, who is very, very well-versed in this topic, and we've provided him with all of failure rate -- the failure data, the actual raw data, of the in-service date of our poles, as well as when they were removed from the system, and he's the one who arrived at those calculations --

MR. SEGEL-BROWN: Right, so I'll get to some of the figures in his study, but I'm just talking about using your -- what the expected service life means, so just because it's the average age at which poles had failed does not mean it's a reasonable estimate of how long your poles will last.

MR. JESUS: That's fair.

MR. SEGEL-BROWN: Okay.

MR. JESUS: I mean, right now we are saying that the average age represents that 50 per cent of the poles will fail before that year and then 50 per cent will last beyond that.

MR. SEGEL-BROWN: I'm afraid -- like, if we take my theoretical example where all of your poles are less -- currently less than 20 years old, that highlights the issue, because your expected service life would be something less than 20 years old even though all those poles are going to last much longer.

MR. JESUS: Let's be clear in terms of the analysis that is done, is a statistical analysis. If, in your example, they all fail before 20 years old and all of them fail, then, yes, it's definitely going to be less than 20

years.

MR. SEGEL-BROWN: I think those will clarify when I get to the charts.

So to take another theoretical possibility, if every pole had an equal 1 per cent chance of failing each year, that would give an expected service life of about 50 years, right?

MR. NETTLETON: Sorry, how did you derive that?

MR. JESUS: How are you deriving that?

MR. SEGEL-BROWN: If 1 per cent of your pole population is failing each year then you are going to -- it doesn't come out to exactly 50 years, but you are going to expect about 50 per cent of your population to be gone by year 50.

MR. NETTLETON: Is that a question or is that your evidence?

MR. SEGEL-BROWN: So the point here is that you're not basing the expected service life based on a date at which there's an uptick in failed inspections or anything; you are basing it on the average age of poles which have failed.

MR. JESUS: I think it is irrelevant, as was demonstrated by Lyla. This is a statistical analysis that is useful to inform planning. All the poles that we're planning on replacing have failed a condition test. That is a given. That is what's on the record. We are not replacing poles based on expected. We are not replacing poles based on hypotheticals. They have failed a test.

MR. SEGEL-BROWN: Right. And I have no issue with replacing poles which have failed the test. What I'm trying to dissuade the Board of is the idea that we need to replace all of our poles every 62 years, which is what your expected service life might be seen to apply, so could we pull up from the document that was submitted by Shelley last night, which is referenced in the interrogatory response, the expert report?

MR. NETTLETON: Sorry, is this part of a compendium?

MR. SEGEL-BROWN: It was part of the -- Shelley sent -- it's referenced in your interrogatory response and Shelley sent it out for convenience --

MR. NETTLETON: Well, I would prefer --

MR. SEGEL-BROWN: -- last night --

MR. NETTLETON: I would prefer if we could focus on the undertaking and the material in the undertaking, because that's what my witnesses are familiar with.

MR. SEGEL-BROWN: Well, your undertaking doesn't include the right failure curve, so I have to go back to the original source. That's why I'm asking to go back to the original.

MR. NETTLETON: Before you conclude that it's the wrong failure curve, perhaps you could explain why that -- why you've reached that conclusion by discussing failure curve that has been attached, which my witnesses do believe is irrelevant, and explain first and demonstrate why it's the wrong curve.

MR. SEGEL-BROWN: So the hazard curve which they have

provided includes all failures. So if your pole gets hit by a car, its captured. But the purpose of this pole replacement program is only to replace poles which have been found to be in poor condition.

So in the original study, we have a curve which reflects the number of -- the portion of poles which have failed an inspection by age, rather than the number -- the portion of poles which had been taken down for other reasons by age, which is more directly relevant to this pole replacement program which targets poles which have failed inspections.

MR. NETTLETON: Sorry, Mr. Chairman, I think it's been established with the witnesses that the only poles that are going to be replaced over the next five years as part of this pole replacement program are not based on hazard curves, but they're based on a failure of a test.

So I'm really struggling to see why we're getting down, or going down the path of even discussing hazard curves other than for what the witnesses have said they're there for, and that is for a planning purpose of statistically assessing the expected service life of a wood pole.

But when it comes to replacement, and when it comes to the forecasting of cost and the amount of funds that have been included in this application for pole replacement, it is very much driven off of an asset condition requirement.

MR. QUESNELLE: And we recognize that, and we recognize that that's what came into the application, and

the determinative factor as to what's in there.

But the hazard curves are informative for the longer term. We're talking about assets that, by their very nature, are long-term replacement assets.

I think the Board is interested in the longer-term ramifications. I think all or questions have been where are we at the end of the five-year period directionally, and recognizing that the hazard curves inform the longer term theoretical.

And I think Mr. Segel-Brown is making the point that there are different hazard curves for different reasons if it was in the expert's report. I think to the extent that it informs the longer term and whether or not directionally -- I think we heard PWU's cross-examination, very interested in the longer-term effect, and I think the Board is interested in how it would view the hazard curves in that context.

MR. NETTLETON: All right. I do point out that the hazard curves are not the product of Hydro One's work efforts. This is a work product of an expert of Foster & Associates, who have not been identified. This evidence has come in on the record in this -- at this time, and I am struggling. If my friend is going to give a dissertation on which is the right hazard curve, I'm concerned that those questions are being posed to Mr. Jesus, as opposed to the expert that produced the hazard curve in the first place.

MR. QUESNELLE: I think what we'll be interested in --

and we'll see how Mr. Segel-Brown intends to use it, but what we'd be interested in is how the planning panel uses those curves in their work.

MR. NETTLETON: Fair.

MR. QUESNELLE: Mr. Segel-Brown, now do we have the -- and this is something, Ms. Grice, that you had provided and this is from an expert. And you were planning on putting it to the witnesses, were you? Is that why it was filed?

MS. GRICE: I thought I might like to put it to the witnesses, but I am personally not going to be. But I circulated it in case myself or any other parties wanted to.

MR. SEGEL-BROWN: It's also the study which is referred to in the undertaking response we received, as the hazard curve that we should be looking at.

MR. QUESNELLE: If that's available, could we have it brought up and see if -- Mr. Jesus, if this is something that would inform you, or how you would interpret this. You may have questions, Mr. Segel-Brown, but we'd be interested in how the hazard curve that you're going to put up differs from this one, and what -- well, pose your question, but recognizing that we are not asking the expert who created this. It's how Mr. Jesus would have used this in his work.

MR. SEGEL-BROWN: Do you need an additional reference for it?

MR. NETTLETON: It has been filed; it was circulated by email.

MR. SEGEL-BROWN: It's reference that's included in the information -- this undertaking?

MR. NETTLETON: Mr. Chairman, like maybe we could do this after the lunch break because I know that my witnesses have not seen this email.

MR. QUESNELLE: Mr. Segel-Brown, before you carry on, let's have the witnesses have it available to them so they can look at it, and we'll question them again after lunch.

MR. SEGEL-BROWN: Okay.

MR. QUESNELLE: Okay. And I think with that, why don't we break for lunch until 1:55.

--- Lunch recess taken at 12:59 p.m.

--- On resuming at 2:08 p.m.

MR. QUESNELLE: Good afternoon. Please be seated.

Okay, so just before the lunch break, Mr. Segel-Brown, you were asking the witnesses to reference something that had been distributed to some parties last night and I -- Mr. Nettleton, does your witness panel have it now and are they prepared to respond?

MR. NETTLETON: I believe they have the Fosters report. I'm not sure -- the document that was sent around last night was a 19 megabyte attachment, and some of our computer systems, particularly Hydro One's, have governors on their e-mail, and so the document was not circulated widely. The system prevented the e-mail from being received because of the size of the attachment.

Having said that, the Fosters report is what Mr. Jesus included or parts of the Fosters report was what Mr. Jesus

had included in the undertaking that was filed this morning.

I think we've gone back to that report, and over the lunch break they have -- I believe they have reviewed that report, and so I think that they may be able to have a discussion with my friend, but again, I think it will depend on where he is going with that.

MR. QUESNELLE: No, understood, and I think we established before lunch that would be how they used it or how did it inform them in the creation of this application or how we should view it, if they have any views on that, recognizing it's not their report.

MR. NETTLETON: Mr. Chairman, I have one preliminary matter --

MR. QUESNELLE: Certainly.

MR. NETTLETON: -- and it really relates to the undertaking that was given yesterday regarding the Boston Consulting Group. Again, that activity is in process. I think what I'd like to do, if I could, is have Mr. Bowness speak further about what effort is being undertaken and what the challenges are with respect to the outstanding nature of that undertaking so that we all have an understanding of what's going on.

So with -- if Mr. Bowness could just give that update, that would be helpful.

MR. QUESNELLE: Certainly. Yes, please go ahead.

MR. BOWNESS: Yes, so one item that I'd just like to bring up on the screen just for context around how the

steering committee worked. It's just an agenda from one of the steering committees.

For context, the approach that each one of us as Hydro One leads on work streams, we work towards, was a series of steering committee meetings providing status updates and content to our senior leaders on each of our work streams, so through the series of steering-committee meetings, as an example for myself, you will see in the agenda a capital delivery strategy.

I on this meeting had 20 minutes of agenda time to present an update on the capital delivery strategy. There is a subsequent meeting where I had additional time and a subsequent meeting where I had additional time, so I just want to make sure that the Board isn't expecting that there is a final summary, one single deck on capital delivery strategy. It was a building document that ultimately formulated the Board materials on May 6th that was included in the undertaking the other day.

So each meeting we went through, each Hydro One lead, and that's the names that are under "lead", would have followed a similar process, so just for context as to what is being pulled together is the building materials, but it's not going to be this really pristine, clean, final document by each work stream.

MR. QUESNELLE: I think that's understood, and I think, Mr. Rubenstein, I think that was in the spirit of what we were -- I think landed on as far as informing you on the underpinning culmination of the documents

underpinning that.

I know you had put it into -- and maybe went a little, you know, beyond the scope that you were looking for, but it was, you had originally asked for things that were akin to the vegetation management report.

This is something different. We recognize that. But as the Board recognized that it was a letter down from the aggregated report that -- of that Boston Consulting Group had assisted in the creation of, I think that lies in the spirit of what we were looking for. Mr. Elsayed, you had commented on it as well.

So we understand the effort you are going through, appreciate that, and, yeah, I think that's managing our expectations. Thank you very much.

MR. NETTLETON: The one other expectation that I want to share with you is that the topics that were discussed at these -- at the steering-committee meetings included -- they were strategy meetings, and so there were topics that contained very confidential information, and so the materials that we will be providing will have redactions to them, and we can have a discussion once you see what it is, but again, I want to manage that expectation that we are very mindful that there was forward-looking interim financial information, for example, there was strategic information about negotiation strategies that were underway, and so those are things that we are very cautious and mindful of.

MR. QUESNELLE: Understood. And, you know, in -- you

know, the Board obviously has its usual process and protocols around confidentiality, but we also recognize the nature of this undertaking and its intent to inform this -- the request in this application, so I think we'll have a view for the confidentiality and the redactions in that context.

MR. RUBENSTEIN: If I could just comment on the question of confidentiality. And I don't know what the documents are going to look like, I don't know how the redactions are going to -- I would ask that my friend, if he is going to redact information that -- separate -- two separate things. One is issues that are clearly not relevant to the matters that are at issue, so unregulated issues, potentially transmission issues that don't -- that I don't take an issue with. It is where we get into redacting issues that are within the scope of the distribution issues, and so I would just ask my friend to make it clear to us that what is, in some sense, what is being redacted, is it being redacted because it is forward-looking information, it being redacted because it is sensitive labour negotiation information? If it's just sort of pages blacked out we never really know what's going on.

MR. QUESNELLE: So a narrative around that, Mr. Nettleton, would be required.

MR. NETTLETON: I think my only observation is if we pursue that line or follow that approach it's going to take more time, because we will now have to qualify what is and

what isn't and provide that level of detail.

MR. QUESNELLE: I guess the purpose of my comments, typically the applicant would issue a letter requesting confidential -- I'm saying let's waive that and just have a conversation about it and get to this, because otherwise it is going to be useless to us.

I think, Mr. Rubenstein, you would appreciate that.

MR. RUBENSTEIN: Yeah, just to be clear, you keep the heading of the slide so that we know what's redacted is an easy way to do it as well.

MR. NETTLETON: I mean, these are very much working papers that informed the presentation that has already been filed, so --

MR. QUESNELLE: Understood.

MR. NETTLETON: -- it's in that light that we are going to redact.

MR. QUESNELLE: You know, just doubling back on comments when we had the original conversation on this, and I suppose providing some rationale, you had mentioned, Mr. Nettleton, that the Board is focused on outcomes, and we recognize that, and that's where we'd like to go, but we're not there yet.

And to the extent that the rationale for getting into this level of granularity with all its, you know, the troubles that it causes is the -- Hydro One has provided an application with a promise to the future, and it is very much that, and so the -- going at this level of granularity is about the hope of a better outcome, and once we have

those outcomes, then this type of, you know, depth and granularity will not be required.

But I think that's -- just to get back to the RFE, and I think the applicants have referenced that initiative, the policy initiative, you know, that we're -- they're operating under, and I think -- I just want to make that connection, that the outcomes are good outcomes for consumers and for all the things that are on the scorecard, and if we're not there yet, it still requires us a good understanding of how we're going to get there. Thank you.

MR. NETTLETON: Understood.

DR. ELSAYED: Just before we resume, I just wanted to follow up on the issue that you said you would look at on the break about the number of poles that would likely be still in poor condition at the end of the five-year period.

MR. NETTLETON: Sorry, Dr. Elsayed, we are having difficulty hearing you.

DR. ELSAYED: Before we left for the break I asked the question about, based on your forecasts and actuals as of today, what would be the number of poles that would be in poor condition at the end of the five-year period. And I believe you mentioned that you have this information and you will give it to us at the end of the break.

MS. BRADLEY: Yeah, if we could go to ISDSR09, on page 3. This is the ISD for the wood-pole program, so it has a lot of the details about the program, but you'll notice here that it has that the poles that are at high risk of failure, and it is forecast that this number will be

slightly reduced to 99,000 poles, including the red pine pole subset over the plan.

And then it explains the poles are prioritized for replacement based on their impact on reliability and potential safety risks, and the table below shows the number of poles that are planned for replacement in this application.

MR. QUESNELLE: Ms. Bradley, does the previous page show what the current -- like there are currently a large number.

MS. BRADLEY: Yes.

MR. QUESNELLE: Okay.

MS. BRADLEY: It does on -- if you go to page 1, it does walk through that...

MR. QUESNELLE: Math?

MS. BRADLEY: If you look on line 14, there are currently approximately 60,000 poles in poor condition -- sorry, 67,000 poles in poor condition.

By the end of 2022, it is forecast that and additional 77,000 poles will be added to this high-risk category.

MR. QUESNELLE: Okay. What I'm looking for is -- so we reduce slightly to 99, what math should I use to see where we're starting from?

MS. BRADLEY: So we've got the 67,000 poles that are in poor condition, and the 77,000 poles that are to be added to this high-risk category due to deteriorating condition.

The one thing that you do need to do is on line 24, it

talks about that the Hydro One pole replacement rate is about -- is approximately 10,700 poles per year. So this was written in the middle of 2016, so we took off that 10,700 assuming that year's program was completed, which it was.

MR. QUESNELLE: Okay.

MS. BRADLEY: And that gets you to that number.

MR. BOWNESS: Of 67,000 plus 77,000, plus 39,000.

DR. ELSAYED: What's the 39?

MR. BOWNESS: Is the red poles.

MS. BRADLEY: On line 19, you can se it talks about "in addition to concerns with condition, there are still a subset of 39,000 red pine poles."

MR. BOWNESS: Minus the 10,700 that we did that year, minus the 72,000 that we have planned during this planning period, equals the 99,000.

DR. ELSAYED: So that whole calculation results in 99,000, you said?

MS. BRADLEY: Correct.

DR. ELSAYED: And that includes how many -- what is happening with the red pine poles during that period?

MS. BRADLEY: They're added to the poles that are in poor condition.

DR. ELSAYED: Okay, right.

MS. BRADLEY: So that's where we had the 67,000 poles that were in poor condition, and we added the 77,000 new poles that would be added based on testing, and we also added the 39,000 red pine poles.

So they would be addressed in the 72,000 poles that we would be replacing during the period. It might not be a hundred percent of them, and they're being replaced based on the parameters given to us by the manufacturer.

DR. ELSAYED: So the 99 that you will end with up at the end of the five-year period --

MS. BRADLEY: Correct.

DR. ELSAYED: -- how many of those are red pine poles?

MS. BRADLEY: I don't have that information right now. It will depend year to year, as we prioritize based on --

MS. BRADLEY: Mr. Bowness is reminding me a we have an undertaking from this morning to provide the demographics of the red pine poles, and their replacement is based on demographics.

DR. ELSAYED: I guess my question here is very simple.

I want to know what position you would be in based on your plan and forecast in 2022 compared to today. That's what I need to know.

MS. BRADLEY: Can we go back to down to slide 3? Is what you're asking for in here? On slide 2, we see that the number of end of life poles will be slightly reduced to 99,000 poles at the end of the plan. And you want that broken down by which ones...

DR. ELSAYED: No, no, it is to 99 from what?

MS. BRADLEY: From the 106,000 that we have today.

DR. ELSAYED: That's all I need. So the 106,000 today will be reduced...

MS. BRADLEY: To 99,000.

DR. ELSAYED: Thank you. Again, the statement that I made earlier then is that you will not be in a worse position in 2022 than you are today.

MS. BRADLEY: Not as far as the...

DR. ELSAYED: You will be in a slightly better position?

MS. BRADLEY: No, we will be slightly better.

DR. ELSAYED: That's what I wanted to know. Thank you.

MR. QUESNELLE: Thank you. Mr. Segel-Brown?

MR. SEGEL-BROWN: To recap one point, the asset life for wood poles is currently 72 years, correct? No? That's the expected service life. The asset life...

MR. JESUS: Is currently set at 62 years. The 72 that appears in BOMA 31C is if we were to adopt the plan C and the associated rate.

So basically, the 72 is based on if we were to move to plan B modified, we would end up with effectively a 72 year life because of the replacement rate.

So one divided by the replacement rate ends up at 72,000 poles.

MR. SEGEL-BROWN: So you would be setting a level of replacement that means you replace all of your poles every 72 years.

MR. JESUS: Effectively, that's what that means. But at the end of the day, once again, we are replacing only the poles based on poor condition.

MR. BOWNESS: I think what's really important that we

need to differentiate is how we actually plan our work and how we've submitted what we are applying for here, which is all based on condition, from some of these statistical and theoretical models that we have that help guide a long-term asset strategy.

MR. SEGEL-BROWN: I have no objection to Hydro One to maintain the number of pole which are in poor condition. I am more concerned about Mr. Stephenson's suggestion that we need to take action to address the increasing average age of the poles. So that's where these questions are going.

MR. NETTLETON: Mr. Chairman, I mean my friends -- I have no issue with my friend in the final argument making submissions that challenge Mr. Stephenson's views. But I am struggling as to the need for this discussion in his arguments to be founded based on the questions that he's now asking, because again, the witnesses are -- keep coming back to the point that the replacement program is based on asset condition.

MR. QUESNELLE: Yes, I recognize that, Mr. Nettleton. I think Mr. Segel-Brown is making a point as to how the 62 years in the hazard curves influence planning, and I think that's what that was put on the record to suggest how they do that, and I think that's -- and it's very clear that it's a condition of the asset that makes the determination as to whether a pole is identified.

But the hazard curves are brought on for a reason, so I think that that's what Mr. Segel-Brown is examining on and I think that's fair.

MR. SEGEL-BROWN: Can we turn to page...

MS. BRADLEY: Can I just add to that? In BOMA 31C, could you bring that up? It's tab 35, BOMA 31, and I'm going to be looking at page 3 of 7.

I don't know if this will help instead of getting into a bunch of curves, but we'll try.

So this is an example of how we use that information and in this example, we were explaining the condition of our assets and how we assess different alternative plans based on that long-term view.

What we were saying is if we went to plan B modified, where going to plan B modified provides that expected service life of 72 years. So it increases from where we are today.

If we were to go to plan C, you would have to believe that your poles are going to be able to have an expected service life of 107 years.

We think that that is too extreme a change. We don't have poles that are 100 years old. So our initial plan was to maintain the number of poles in poor condition, or slightly improve it to not let the fleet deteriorate.

This is just sort of a tool used to say, you know, if you were to let that fleet deteriorate, do you expect -- because it could be that it's going to catch up and this line is going to go down at the end.

This was just confirming that you would have to believe your poles with were going to live this long, which we do to the believe that they will.

MR. SEGEL-BROWN: Could you pull up the oral interrogatory, the interrogatory responses provided by Hydro One this morning?

Could we go to page -- well, it's labelled page 25.

I'm not sure what page it is of the document. The physically removed one, this one. So this table shows -- this graph shows the number of poles which are remaining by the number of years since the pole was installed, which is projected using a statistical model. Have I got that right?

MR. JESUS: Yes, that's correct.

MR. SEGEL-BROWN: And according to this model, at what age will you have replaced all of your poles?

MR. JESUS: So I guess the issue is replace all of your poles. This is a statistical analysis that shows the survival rate of our poles. So what this curve is attempting to do is identify what percentage of the population on a population basis, what is their life expectancy, what is survival rate, so the way we arrive at 62 years is generally we take the mean --

MR. SEGEL-BROWN: I'm going to cut you off there. I'm not interested in the 62 years. So looking as this chart, the intersect with the X axis is the point at which all of the poles will be replaced, and that's relevant because the discussion that I was just led to here is that plan C was not reasonable because it would result in all of your poles being replaced every 106 years.

Would you agree with me that this chart projects that

you will not -- you will need to replace your poles every -- more than 106 years?

MR. JESUS: I disagree with you. This is a probabilistic analysis. The poles will die when they die. So what this is showing is that at 106 years all poles will have died. That's what that's saying. Just like I will not survive to be 100 --

MR. QUESNELLE: I think that was Mr. Segel-Brown's point.

MR. SEGEL-BROWN: It is slightly beyond 106. Yeah.

So the idea that replacing all of our poles every 106 years as would occur under Plan C is unreasonable, that would actually be consistent with the projections which you have for the timeline in which you will need to replace all of the poles.

MR. JESUS: So this curve again, the way we use the statistical analysis is to look at the average, again, which, if you look on the vertical axis at 50 percent, you draw your line until it hits the curve, so if you go across horizontally from 50 percent and you hit the curve and you drop down, that age on the X axis is the average age of which we expect the assets to survive, so it's 50 percent of the assets will survive to 62 years, 50 percent of the assets will be beyond 50 years. I won't be around here to see them all die; let's put it that way.

MR. SEGEL-BROWN: The consequence of that, though, is that we don't need to replace our assets every 62 years, we need to replace them every 62 times two years.

MR. JESUS: We will replace the assets when they actually die. This is a statistical analysis. I can't -- it is probabilities.

MR. QUESNELLE: I think you've heard the answers and how this information is used by Hydro One, and I think if you have anything other to say, Mr. --

MR. SEGEL-BROWN: Okay, can we turn to the full report, page 18. That's the pages on the document, not pages of the PDF.

So the difference between this projected life curve and the one we were just looking at is that this projected life curve is only looking at inspection failures, whereas the previous curve include all pole removals; is that right?

MR. JESUS: That's correct.

MR. SEGEL-BROWN: So this --

MR. JESUS: Just so we caveat, if you look at the inspection period, it was only over the period 2005 to 2013, just so we're clear. It is not all inspections. It was just -- the observation period was over strictly that period of time.

MR. SEGEL-BROWN: Right. So you don't have data going back to 1929, obviously.

MR. JESUS: We don't have data going backwards and we don't have really good data going forwards. As you can see, it ends at 75 poles -- 75 years. We don't have any poles that are 100 years old. We have no experience with those kinds of assets.

MR. SEGEL-BROWN: So would you agree that the purpose of the pole replacement program is to replace the poles which need to be replaced because they are failing inspections?

MR. JESUS: Yes, that's correct, when they are determined to be about in poor condition, when they fail the test criteria; that is correct.

MR. SEGEL-BROWN: So at age a hundred years, let's say, this model expects that 50 percent of your poles will have failed inspections, approximately?

MR. JESUS: So based on the model that you've shown and the extrapolation that's carried out, it says that based on the inspections we expect poles to last 100 years. I want our poles to last 100 years. The longer they last, the better it is for our ratepayers. The reality is we don't have any poles. We have a sample of poles that right now is limited to, based on the demographics you saw, approximately 70-years-old poles.

We don't know what's going to happen over the next 40 years, and no utility will ever say that we're planning on replacing -- we expect poles to live to be 100 years old.

MR. SEGEL-BROWN: So when you say that there's an expected life of 62 years, at that point only 80 percent -- well, I can't -- we can go back to the data if we need, but it's roughly 20 to 30 percent will have failed inspections by that age; that's the expected service life you're talking about.

MR. JESUS: Can you repeat where you're at, sorry?

MR. SEGEL-BROWN: At age 62, approximately 20 to 30 percent of poles will have failed inspections, so that's what you mean when you talk about the expected service life.

MR. JESUS: I would suggest to you that there is not enough data from an inspection point of view. We don't have enough inspection point of view to fulfil this particular graph.

You can see that the points are extremely limited and the extrapolation going beyond 75 years is an extrapolation. There is not enough data points beyond 75.

MR. QUESNELLE: And I think the Board will recognize that now I think we're getting into areas of interpreting the -- what we can and cannot rely on. You would rely on this report, but I'm being mindful that this was the expert's report.

A lot of this, Mr. Segel-Brown, is going to have to go to the weight that we can place on this. This is something that Hydro One has provided us with their understanding of the report, how they've relied on it, and I think if you take issue with that I think we'll have to rely on your arguments on that.

MR. SEGEL-BROWN: Okay, to loop back to one point that was mentioned, you stated that the 106-year placement cycle was -- under Plan C would not be adequate. Based on this chart would a 106-year replacement cycle be adequate?

MS. BRADLEY: I'm not sure based on this chart. I've based my analysis on our experience at Hydro One and the

benchmarking studies that we have done which are filed.

MR. SEGEL-BROWN: So at 106 years it looks like about 50 percent of the poles, you're saying, but you're saying that you're not sure whether you would need to replace 100 percent of poles by that time when only 50 percent have failed. Is that what I'm hearing?

MR. QUESNELLE: What I heard, Mr. Segel-Brown, is that Mr. Jesus said that he didn't feel there were enough data points to draw any kind of conclusions from that graph.

MR. SEGEL-BROWN: Well, if we go back to the data which is at page 11 of the report --

MR. NETTLETON: Sorry, Mr. Chairman, the data, to be clear, that has been filed this morning, which is Exhibit J7.3, figure 2, shows the demographics of the poles that are in poor condition, with an average age of 45 years. That's the data that this panel can speak to.

MR. SEGEL-BROWN: I mean, this report is addressed to Mr. Jesus, is it not?

MR. JESUS: Yes, it is.

MR. SEGEL-BROWN: So it appears to me that this is based on observations over almost a decade, and it includes tens of thousands of replaced poles. So you're just saying that the sample is inadequate with regard to the really old poles; not that it's adequate generally?

[Witness panel confers]

MR. SEGEL-BROWN: I think we are getting into too much detail on the report. I'll move on to another --

MR. BOWNESS: So I think maybe just one piece on this

data point aspect. If we look at the curve that you did have up there, which was the Schedule E, I believe.

MR. SEGEL-BROWN: Yep.

MR. BOWNESS: You will see that the data points are dropping off at the 70, 80 year mark.

MR. SEGEL-BROWN: Umm...

MR. BOWNESS: There is no data beyond 80 years, so you're making an assessment, an extrapolation that the rest of this curve is valid when no utility, including ourselves, have any experience with poles that are greater than a hundred years old.

So if this graph holds true with real data, with real life experience, when we come back in our next filing, we'll have additional information, we'll have additional data points, and we may have different recommendations on the path forward.

But right now our approach is to look at condition data to put forward an investment plan that's prudent for this rate filing period, and that is based on the condition data which is to replace 72,000 poles during the next five years.

MR. QUESNELLE: Let's put aside what we can draw, what inferences we can draw from the report. I think the point that Mr. Segel-Brown is making, though, is there is another graph, and that graph is data points on the failure rates of the poles, as opposed to when they're taken out of service.

I think your questions, Mr. Segel-Brown, are trying to

extrapolate how would this graph inform you. They've given the responses to that and I think the fact that we do have another graph that is on a different dataset, I think is a -- has merit from a point of view of we have to know that it exists and it is in the report, we have that now. I don't think we're going to get much further, Mr. Segel-Brown, beyond argument.

MR. SEGEL-BROWN: Okay. Has the quality of Hydro One's poles improved over the last 80 years?

[Witness panel confers]

MS. BRADLEY: You said that has the condition of our --

MR. SEGEL-BROWN: So the quality of the poles at time of installation, has that improved over the last 80 years? Are you installing better poles now than you were 80 years ago?

MS. GARZOUZI: I don't know the answer to that.

MR. SEGEL-BROWN: Similarly, would you know if the quality of your installations has improved over the last 80 years? What I'm getting at is would we expect the poles which are installed more recently to last longer than those which are failing now.

MS. BRADLEY: I think the only time I could comment on that is you could buy composite poles today, composite poles today that are more resistant to things like woodpecker damage. They are significantly more expensive.

But to take a wood pole that was built 80 years ago, I don't have a perfectly preserved one from 80 years ago to

compare to ones we would buy today. I'm not sure we could speculate on that.

MR. SEGEL-BROWN: Thank you. Those are all my questions.

MR. QUESNELLE: Thank you, Mr. Segel-Brown. Mr. Dumka?

CROSS-EXAMINATION BY MR. DUMKA:

MR. DUMKA: Good afternoon, panel. I'm Bowden Dumka, and I'm here for the Society of United Professionals.

I just have several questions. I'm not going to ask about asset life or anything like that. I just want a little bit of clarification on the settlement agreement that was filed the other day, the Anwaatin settlement agreement.

If we could get that up; that's Exhibit K4.4.

MR. QUESNELLE: Mr. Dumka, before you -- I thank you for providing up front what area you would be covering.

I would just like to ask Mr. Nettleton -- it is filed here -- what relief is your client looking for in connection with the -- what we would view as occurring in that settlement.

MR. NETTLETON: Thank you, Mr. Chairman. The short answer is there is no relief being sought in this proceeding with respect to the settlement.

What the settlement is in regards to is the settlement of the issue that gave rise to the Anwaatin motion to review and vary decision, 2016-0160.

That was given proceeding number EB-2017-0335 and in

that proceeding, Mr. Chairman, the settlement agreement has been filed and the request that has been made in that proceeding by the settling parties is that the Board, that panel, approve the settlement. And approval of that settlement would then not require the Board to reach a decision on the motion to review and vary.

The conditions of the settlement have been articulated in that document. I anticipate that there may be need for that panel to use the transcript in this proceeding to inform them of what the conditions are and what the expectations are of the parties, particularly around the recovery of costs and the like with respect to this pilot project.

So in anticipation of that, we want to make clear that there is no incremental ask being made to the capital plan in this proceeding. I think what has come out on the record is that the way in which the project is going to be funded, or is expected to be funded is through redirection, and that means that there would be no need for any incremental capital forecast increase in this application.

MR. QUESNELLE: Okay. But redirection is -- all the evidence here is about what you plan on spending money on and the merits of it.

MR. NETTLETON: Yes.

MR. QUESNELLE: So if some of these activities are not going to occur then, if that settlement is accepted.

MR. NETTLETON: I think that's the point. That's a very good topic that should be put to the witnesses in this

proceeding about how that's going to come about, because I'm not sure it's necessarily -- things aren't going to get done. It could also be things get done more efficiently and that the proceeds of that efficiency would then be used to address the capital requirements of this program.

MR. QUESNELLE: Okay, thank you.

MR. DUMKA: If we can get the settlement proposal up, and if we could flip to the PDF page 7, and if we could just focus on part J -- if we just roll down a little further, part J states:

> "A technical review of Phase I implementation is targeted for completion within six months of in-service timing. This information is intended to be used to inform the approaches, design and viability of Phase 2."

My question is just what's the expected timeline for phase 2. The six months after you've got phase 1 is completed is in the fall of next year. So what's the anticipated timeline for the phase 2 installation?

Really where I'm going with that is I'm just wondering if it goes ahead and meets all the criteria in terms of economy and delivering what you'd expect it to, how long will it take to complete that project? Is it going to be in the five-year period, or is it going to be beyond the CIR period?

MS. BRADLEY: At that point, phase 2 is committing to technical assessments, not to construction of those facilities. So if there were opportunities where it was --

it seemed like a sound investment to meet whatever the needs were in an area, it could be dealt with through a few ways.

If it's a worse performing feeder and it would fit into our worse performing feeder program as a reasonable investment there, then it might be funded in that plan. But there is no commitment around in-service of any of those projects.

MR. DUMKA: All right. That's fine. So I think that possibly could be done then in the five-year period, if it meets all that criteria, et cetera, et cetera. Okay.

My other question is a bit broader and it's on part M on the same page, and that sentence reads:
"Anwaatin and Hydro One will consult and cooperate on any other longer-term wires and/or non wires electricity reliability proposals and solutions affecting the Anwaatin First Nation communities, and may jointly pursue other projects intended to improve reliability in other regions served by Hydro One."

It's the back end of that sentence that I'm just looking for some clarification on.

The way this reads to me is that you may be partnering with Anwaatin on other projects which may or may not necessarily be in a service area that serves the Anwaatin. It could potentially be other First Nation groups or, for that matter, it could be other communities that have problems in terms of reliability, et cetera.

Is that a correct interpretation?

MS. BRADLEY: Yes, I would say one of the intents was to drive more collaboration between Hydro One and the communities, and this solution has a couple of phases to it, the storage phase, which is what Hydro One is proceeding with the assessment of currently.

MR. DUMKA: Right.

MS. BRADLEY: There is also a generation -- a solar generation side of it, which is really more of the Anwaatin community, but if there was a combined solution out of those two let's say we'll look at, is there any future opportunities that come out of that.

MR. DUMKA: Right, where my question is really headed is if we have other non-First Nation -- whatever their politically correct term is -- non-First Nations communities in northern Ontario that are having problems, they are outliers, just like the -- these areas that are serving the Anwaatin, would this type of solution be considered, whether with, you know, Hydro One by itself or whatever, dealing with similar sorts of reliability issues?

MS. BRADLEY: I guess two points. One, we did not talk about any details of what potential collaborative efforts would look like. We just said that --

MR. DUMKA: Right.

MS. BRADLEY: -- once we have the results we will talk about how that could be used going forward.

As far as storage itself as a solution, or use of distributed energy resources in the system, we have been looking within Hydro One at what sorts of solutions, you

know, are being used outside of Hydro One. The cost of those solutions is dropping fairly dramatically, and we have been keeping in touch with our partners in the industry, so that we have given thought and are prepared to move forward, but we've been doing that anyway, so we are looking at solutions and where they make sense. This partnership is something different that we haven't gotten into what the mechanics would look like.

MR. DUMKA: I see. Right. And I guess the inference of what you're saying is in other regions of the province you may be dealing with other communities in terms of this, potentially, depending upon how viable these sorts of alternatives are, dealing with issues?

MS. BRADLEY: That's correct. We actually have in evidence in JT2.16 an application that we have made for a similar project on Christian Island with another community, so, yes, we are looking at that in other areas.

MR. DUMKA: Okay, and just further to -- maybe what we can just flip to -- this is an Anwaatin IR, and it's Exhibit I, tab 6, Schedule Anwaatin 2.

And if we could just look at Part F of the question, I think that's on page 2, and the IR reads:

> "Please describe how Hydro One is accommodating the demand for DERs connected to the distribution system in terms of making its distribution network and customer services DER-friendly, especially in areas where system reliability is a significant issue, such as northern Ontario."

If we go to page 5, I just -- I want to ask you a question on the second paragraph of your reply. And that reads:

> "Hydro One also participates in joint research with utilities and organizations such as EPRI and CEATI..."

However you pronounce that one:

> "...to keep a watching brief on emerging technologies and better ways to enable DER technology grid connections. Further, Hydro One strives to keep aware and, as appropriate, participate in developing or updating technical standards (e.g. IEEE, CSA) that would more effectively enable DER connections to the grid."

My question is, with joint research and the technical standards that you are working on with these other groups, is there anything anticipated over the test period, over the next five years, which you expect will be able to help you in this settlement proposal initiative or other similar such initiatives? Is there anything in the pipeline -- you know, we've got sort of a description of some things that are going on without specifics that we -- okay, we've got project X that's being worked on right now, and we anticipate in two years that will be completed and we can pick that up if appropriate.

MS. BRADLEY: Ms. Garzouzi is intimately more familiar with these, so just give her one second to find a reference.

[Witness panel confers]

MS. GARZOUZI: Over the term, if I could point you to JT3.15, we're actually working with EPRI on an energy storage project, and the expected completion of that is September 2018, so expect to have findings.

It's not about putting something in the ground or in-service; it's a study, it's an analysis with EPRI, and it's exclusive to Hydro One.

More specifically, in the Leamington area, we are enabling distributed energy resource management solution, which is effectively a demand response for both load and generation.

We have an unprecedented growth load in the area and a request for distributed generation, and so we plan on operating the system based on its operating limits, instead of based on its planning limits.

That is expected to be in-serviced or starting to utilize that at the end of 2018, and we would like to continue to utilize that over the planning period. If we find it to be redeployable, we will then redeploy it in the rest of Ontario.

MR. DUMKA: Okay, thank you, those are my questions.

MR. QUESNELLE: Thank you, Mr. Dumka. Mr. Brett.

MR. BRETT: Thank you, Mr. Chairman. I have a compendium here, which I guess we should mark.

MR. SIDLOFSKY: Sorry. That will be Exhibit K8.2.

EXHIBIT NO. K8.2: BOMA CROSS-EXAMINATION COMPENDIUM FOR HONI PANEL 5.

MR. BRETT: K8.2. And I did send it around a couple of days ago, and I gave Mr. -- I gave the Board some copies, a few copies, the hard copies I have.

Does the Board have copies of the compendium?

MR. QUESNELLE: I believe we do.

MR. BRETT: It's not very long. It's --

MR. QUESNELLE: Thank you.

MR. BRETT: What about the panel? Do you have copies of the compendium? I can call up the individual items. Otherwise they're all simply -- from there -- that's great. They are all references to the evidence.

CROSS-EXAMINATION BY MR. BRETT:

MR. BRETT: Panel, my name is Tom Brett, and I represent the Building Owners and Managers Association. I know some of you from earlier proceedings. And I have questions this afternoon on the three topic areas. The first is priorities, the second is productivity initiatives, and the third is some very brief questions on the options, different program options you put forward.

I have no questions or maybe only one question on poles, which I'll leave to the end. But if I could ask you to turn up -- this was not on the compendium, but it's from the evidence. This is Exhibit B1.1.1, DSP section 3.7, page 7 of 11, and that's a chart -- it's a graph. Just push it up a little further.

Now, you will agree with me that this graph that you put here is actually, as I understand it, is a list of your projects. They are coded; the names, the project names are

in the code across the bottom.

It is a list of your 2018 capital projects greater than $1 million, and it shows the relative size of the projects, correct?

MS. GARZOUZI: That's correct.

MR. BRETT: And you have similar graphs to this in the following four pages for each of 2019, '20, '21 and '22, right?

MS. GARZOUZI: That's correct.

MR. BRETT: Now, I notice that -- I notice that much of your capital, and I suppose this isn't very unusual, is consumed by about the top 20 projects or so. Then the remainder of them -- sorry, I should say I've counted a total of 47 projects; is that about right?

MS. GARZOUZI: Mr. Brett, I just wanted to clarify. It's investment summary documents, which is a combination of projects and programs.

MR. BRETT: I understand. But so I guess really the right way to say it is it's 47 investment summary documents?

MS. GARZOUZI: That's correct.

MR. BRETT: And you have said earlier -- well, my second -- the question I just asked you about relative size, is that about right, that about the first top 20 projects are the are 9 percent or so of the total cost. That's pretty rough, but...

MS. GARZOUZI: Subject to check, yes.

MR. BRETT: And the other point I would ask is that I

noticed that these graphs -- and as I've said, there is one for each year of the plan. Once you get out to the back years of the plan, the sort of right-hand part of the project list, the smaller capex projects, it looks fairly similar.

And I take it that's because, as you said earlier, you don't really have -- you haven't really yet honed in on exactly how the project configuration will be for the last two or three years.

You've focused more on the first couple of years; is that fair? Or is that more just a representative -- is that a little bit more just of a representative nature of these?

MR. BOWNESS: Sorry, I think the comment that you are referring to is a comment that I made the other day about the maturity of projects as they are in future years.

So projects represent about 20 percent of the overall work. Programs is 80 percent, so 80 percent of these graphs has maturity to it and doesn't have that timeliness concern that the 20 percent that's projects.

MR. BRETT: Just on that point, on the 80/20 split, when you say 80 percent are programs, you mean that 80 percent of these expenditures are parts of ongoing utility programs essentially, I mean something like a pole replacement or a --

MR. BOWNESS: Repeatable, short duration type of work.

MR. BRETT: That goes on every year. Each item, though, is the subject of a project, a quote-unquote

project assessment, correct?

In other words, each year you -- I'm not putting this very well, but in each -- you still have a separate project assessment explanation for each of those items, whether they are programs or project, right?

MS. BRADLEY: I'm not sure what you mean by assessment, but for example...

MR. BRETT: Well, each of these is coded. I guess all I'm saying is that there is an explanation, there is a sheet somewhere in the evidence that explains each one of these items, the 47 items on this sheet --

MS. BRADLEY: That's correct.

MR. BRETT: -- whether they are called programs or projects.

MS. BRADLEY: Correct, and how they're costed.

MR. BRETT: I might call them all projects colloquially, but I understand the distinction you are making.

MR. BOWNESS: As an example, you'd see that SR9 is our pole replacement program. So you will see that in each year, SR9 exists and the size of that bar represents the number of poles times their unit cost to deliver that overall program.

MR. BRETT: Right, I understand.

MR. NETTLETON: Just to be clear, I think the documents that my friend is referring are referred to as investment summary documents, which is a term of art, effectively. It's used for purposes of regulatory

applications made by Hydro One.

MR. BRETT: Yes, I understand that, thank you. My next question is really with these 47 projects or programs, have you produced a ranking of these 47 items in priority for each of these years? In other words, for 2018, do you have a list that prioritizes each of these items from 1 to 47 for 2018?

I haven't seen one in the evidence, but I may very well have missed it.

MR. BOWNESS: I think, from a prioritization perspective, there are two aspects here. The first aspect is the planning process to develop the investment, and we could spend a fair bit of time talking about the prioritization process on which investments should be done in a calendar year.

MR. BRETT: That's the process, yes.

MR. BOWNESS: That's the process and then, once they are in execution, what I'm accountable to deliver is the portfolio that's been prioritized and deliver the full portfolio to the scope schedule and budget.

Throughout the year, we are making adjustments based on what's actually happening with delivery. But my accountability is to deliver everything that has been prioritized through the investment planning process.

MR. BRETT: I understand that, and that is helpful. But my question is a little different.

There is a piece in the middle that is missing, and that is what is the actual priority. What is the priority

listing of these 47 -- I'll call them projects.

Let me just finish my question. I really want to know whether you have such a document and if you do, I would like you to file it because it's an important document that, as an aside, many other utilities do file.

But if you don't, then I'd like to ask you about, you know, why you do not. And then -- so maybe you could just address that.

MR. JESUS: Exactly, so maybe I can help. I can take you to JT3.1.17.

MR. BRETT: Could you turn that up, please?

MR. JESUS: Point 17. Can you scroll down? There is an attachment.

MR. BRETT: I'm sorry, I'm still looking the this graph here.

MR. JESUS: While we're waiting, this document identifies all the ISD documents over the period '18 to '22. So you'll see --

MR. BRETT: Excuse me, could you speak into your mic a little bit?

MR. JESUS: Certainly. So for each one of the ISD documents shown there in column A is the investment name, the expected cost flows, and the priority. So you have the priority ranking based on demand: high priority, medium priority and low priority.

And the final column is whether or not it is a new investment as per this distribution system plan.

MR. BRETT: So you -- in this particular table,

Though, you would agree with me that this table you've showed me does not rank the projects from 1 to 48 in priority. It has some system of categorization.

When you say -- first of all, you agree with me this isn't what I was asking about; this is something different?

MR. JESUS: So it ranks -- if you were to sort this list, you would have demand programs, which are must do. There is no way around it. They are referred to trouble calls, so those are the programs that there is no option.

And then for the programs that are determined to be high priority, medium priority, low priority, the way that we arrived at that, Mr. Brett, is we looked at the total value of that investment based on the risk assessments that the planner did, so the total risk being mitigated is one criteria, and then the total value per dollar of risk being mitigated, we rank ordered them, and we took the top third as being high priority, the middle as being medium priority, and low priority. That was the process.

MR. BRETT: Okay. And among the -- once you get into the medium, high priority, and low priority, you have not ranked them within those categories, correct?

MR. JESUS: So we rank ordered them all.

MR. BRETT: No, I -- I'm not -- sorry, I'm not being clear or you're not -- I'm not being clear. I'm asking whether -- what I'm looking at here is equivalent to a ranking of from 1 to 48 for all of your projects, and I think the answer is it's not, is it? It is a more broad-based sort of categorization. Let's just get that clear

first, and then we can move on.

MR. JESUS: The way we rank it, according to this document -- so we have the ranking, we have done that higher level, if you will, as you put it, and if you'd like we can provide the rank order of all of them.

MR. BRETT: Yes, if you could provide us an undertaking to rank order of all of them, from 1 to 48, numbered from 1 to 48, what you're saying you can do, I would appreciate that.

MS. BRADLEY: I would just like to state that a number of them here are demand, so new connections, trouble calls, joint-use program, they won't be like a one, two, three. We don't prioritize those. It is --

MR. BRETT: I understand that. In fact, that was going to be my next set of questions to you. The demand -- what you are calling demand here, as I understand it, is -- and I was going to take you to, actually, one of Mr. Rubenstein's exhibits, but maybe in the interests of time I will not. But --

MR. NETTLETON: Sorry, Mr. Brett, let's deal with the undertaking. So I think what the witnesses are saying is that they will exclude the demand projects from the ranking that you've requested, and so it won't be one to 48. It will be whatever the number is, excluding the demand projects, and then there will be a rank order assigned. Does that --

MR. BRETT: I think if you want to be particular about it you can rank all of the demand projects as one and then

you can commence with the first non-demand project as two.

MR. QUESNELLE: There we go. Now we can have the undertaking.

MR. BRETT: Now we're settled.

MR. QUESNELLE: We're just waiting for him to --

MR. SIDLOFSKY: Sorry, could I just interrupt you there? That will be J8.3.

UNDERTAKING NO. J8.3: TO PROVIDE A RANKING OF THE DEMAND PROJECTS AS ONE AND THEN A RANKING OF THE FIRST NON-DEMAND PROJECT AS TWO.

MR. BRETT: Maybe I can also -- I want to ask, of the -- well, let's look at Mr. Rubenstein's exhibit for a moment. This is page 6 of K6.2, and this is a breakdown of the capital projects in a traditional system access, system renewal, system service, and development capital operations, capital -- sorry, and general plan, so it's the four customary divisions, and then you've layered over that your way of categorizing -- an additional way you have of categorizing project.

So just maybe one question on this --

MR. NETTLETON: Sorry, Mr. Brett, we'll pull it up on the screen if you could just give us the page number that you --

MR. BRETT: I gave you that, didn't I?

MR. NETTLETON: Well, we're --

MR. BRETT: It's page 6.

MR. NETTLETON: Ms. McKinnon is just -- thank you.

MR. BRETT: And just a couple of questions on this

table.

The system access, I noticed that you don't have in your system access category any relocations. Most of these documents that I've seen have a -- one of the -- for want of a better word -- the "must do" projects is relocation, when a municipality or transit authority comes to you and says, We'd like you to move your line, and there are statutes and regulations that deal with how the costs are shared in those situations.

You don't appear to have any in there. Is that a -- are you labelling that some other way, or is that -- you just -- or you just don't have any relocations in 2018? Are you with me?

MS. GARZOUZI: Yes, Mr. Brett. System access, sustaining capital lines.

MR. BRETT: Right.

MS. GARZOUZI: That line would be the relocations.

MR. BRETT: So that's lines. Okay, lines. All right. And --

MS. GARZOUZI: So that's the dollar amount. There are hundreds of projects under that.

MR. BRETT: Hundreds?

MS. GARZOUZI: Yes. So if you want the --

MR. BRETT: You understand I don't need a --

MR. QUESNELLE: Mr. Brett, Mr. Brett, this is an oral hearing, so we have to allow the witnesses to speak.

MR. BRETT: I understand.

MR. QUESNELLE: Don't cut them off, please. They are

giving you full answers.

MR. BRETT: Sorry, did you have something else to add?

MS. GARZOUZI: Yes, thank you, Mr. Chairman.

ISDSA-01, joint use and lines relocation has the summary for that investment.

MR. BRETT: Thank you.

On your system service line -- well, sorry, let me just go back half a step. Could you give me the total dollar value of your system access. I'm sorry, I have that. I have that on a previous table. My apologies.

Just one other question on this table. The development -- under your system service, your development capital system capability reinforcement, could you just explain at a high level what that is?

MS. GARZOUZI: The ISD that describes this is SS-02. These are areas of the province that are capacity constraints where we're seeing pockets of growth, and we would enable a capital plan, which might also include addressing some upgrades. But it's driven by load growth, or capacity constraints.

MR. BRETT: Now, the largest category here is the system renewal. And the question I had -- and I guess my question really applies to both system renewal and the other components of your list here for 2018; in other words, for the full 628 forecast dollars here.

Do you make any distinction between the projects that you're going to fund -- the capital projects you are going to fund from your, what I'll call your base capital budget

and the projects that you propose to fund through your capital index? Do you distinguish those at all?

MS. GARZOUZI: I don't believe we do. I'm not aware.

MR. BRETT: Sorry, I can't hear that. Could you --

MS. GARZOUZI: I didn't understand the second part of your question. Can you repeat that?

MR. BRETT: Yes, and it may be that if -- it may be that -- let me repeat the question.

You've got a set of capital estimates of capital projects here for five years, correct?

MS. GARZOUZI: That's correct.

MR. BRETT: This is your custom IR.

Now, some of those projects, you have asked in your -- as part of this application for an additional funding tool, if I can put it that way, called your capital index, which will be used and applied to the -- to the amount of capital that you would otherwise have under a straight revenue-requirement plan in order to complete -- in order to be able to finance the total list of the total capex that's described in this table.

Now, I may have the wrong panel for this, but I wanted to give each of you -- I wanted to give this panel the opportunity, since you are on the capital end of this, sort of the point of the spear, if you like, to answer that question.

If you don't -- if you can't, that's fine.

MR. NETTLETON: I'm not sure what the question is, other than...

MR. BRETT: I've just asked the question. I'm sorry. I've asked whether or not they categorized their capital into two pieces, a piece from their base rates and a piece from their capital index.

MR. NETTLETON: So just to be clear, are you asking whether the grand total amounts take into account the two buckets that you've just described?

MR. BRETT: I'm asking what the ratio of that is, whether it does and, secondly, how much of it is funded by -- whether they've identified separately the projects that are identified that are going to be financed by the capital index, the projects in this list of 48.

MR. BOWNESS: What we're looking at within this table and within our capital ask is the full capital assets, breaking down the three point $3.5 billion into these categories. And there is no incremental ask within this application for other capital work, beyond what's articulated in this table.

MR. BRETT: Okay, I understand that. So there aren't -- you don't need to seek separate approval for any of these projects, the way someone would, for example, an applicant would if they were proposing a price cap plus an ICM regime? You're not...

MR. BOWNESS: I think the specifics around any of the regulatory models might be better handled by the finance team.

MR. BRETT: Okay, thank you. I appreciate that. I think we'll go to the productivity now, please, and I would

ask you to -- I would ask you to turn up my compendium. I want to get a chance to use this; this is at page 4, first of all.

I'd like you to look first at -- when you see on page 4 of the document "Productivity reporting governance documents", and then over on page 6, you have a definition there of productivity. I just want to read a part of this little package here:

> "Productivity gains are the results of an improved planning or execution of work that increases value to customer," and value is defined up above. "This value can be measured through output/input metrics which often are based on the cost per unit of output in a given work program and then these metrics are measured over-time to show the increasing value to customers for program spending. Savings from new technologies and process innovations will naturally impact these metrics as they reduce costs to the customer, while providing consistent or improved service levels. Productivity is quantifiable and can be measured through dollars or other numeric units."

Now, if you could turn over to page 8 of my compendium, you will see there a list of your detailed productivity -- your detailed productivity savings forecast, and this was discussed briefly earlier on.

I want to just look at one or two of these items in a

little more depth. And I'm doing this really by way of example. We don't have time to go through all of them, obviously, and there are a certain commonalities, but I want to just drill down to a couple.

The first is a move to mobile-- and this, by the way, is the list of your -- if you can turn over to the move to mobile, to page 9 of my compendium, where it describes the details, kind of an outline of the move to mobile.

I just want to point out and ask you about one particular sentence here.

MR. QUESNELLE: Go one more page, please?

MR. BRETT: Page 9 -- yes, the large paragraph, the first paragraph, the last two sentences:

> "An upgrade to the existing PCAD scheduling tool and associated process improvements will result in a 5 percent increase in field productivity and a reduction of eight clerical/administrative positions managed through attrition. The elimination of the current paper-based processes will result in an additional 21 clerical/administrative positions also managed through attrition."

I just have a few questions on this. The first question is: Is this now in effect? Is the move to mobile now fully operational across your system?

MR. BOWNESS: Yes. So just from an evidence perspective, we did update the productivity table in Staff 123, so it might be good to use it as the grounding

document.

But yes, move to mobile did go live throughout the months of February till June of 2017, and it is in place across our entire distribution lines field operation. And we're currently working on a project with -- in our forestry division around rolling out the additional technology with a planned go-live of later this year of the forestry teams.

MR. BRETT: And the savings that you listed for move to mobile and this may be -- in 2018, it's 10.3 million, right? That's back on page 8.

MR. BOWNESS: On the capital side, yes.

MR. BRETT: On the capital side.

MR. BOWNESS: And just scrolling down in this updated table, you'll see on the OM&A side there is another -- sorry, it's moving -- 2.7 million.

MR. BRETT: All right, that's where you get to your total -- I think you were citing something close to 100 million, right, for your five years.

MR. BOWNESS: Yes, the bottom line numbers within this table are all the productivity initiatives across the distribution side of our business. And as you'll see in 2018, that is 36 million of capital, 29.4 of OM&A, and then 4 which is corporate common, which is spread across on the...

MR. BRETT: Yes. Now, you -- in the passage I read you a moment ago on the savings, you talked about savings are going to be realized through attrition. How long was

that going to take? In other words, you're talking about roughly 26 -- almost 30 positions here. Are they -- when will those savings actually start to roll in, in the sense that as I understand it from another document that you filed, which I'll turn up in a moment, but the savings are largely, as I read it, based on the savings of these salaries, benefits and so on for these 30 people.

How soon is that going to happen? Is that going to happen in 2018, for example?

MR. BOWNESS: So the primary driver of the savings is actually the 5 percent increase in field productivity. The field force, that's hundreds of staff that are impacted through improved scheduling and planning of work, is the primary driver of the savings that you see in the Staff 123 document.

The administrative cost savings on the back office are slowly ramping up. We're about halfway towards our steady state numbers of the 29 positions that you see within this document, and we anticipate that by the end of 2019, we will be at steady state on the back office savings.

MR. BRETT: That's your 2.8, your 3 million, basically?

MR. BOWNESS: The numbers are spread within both capital and OM&A, so the back office savings do have a benefit on both sides. But you do have to look at these items in aggregate.

But if you look at the field productivity, the savings that we're seeing within the field productivity are

offsetting the ramp-up within the clerical savings positively.

MR. BRETT: Can I ask you to turn up Exhibit J23, please, and look at -- this is an undertaking that you gave toward the beginning of the hearing, and it deals with a move to mobile and how you constructed the savings tables and the -- I'm looking at page 3 in particular. That would be 3 of 9, Exhibit J23.

And you see there the -- there's the first three items -- it is the first three lines in that table. The first two, I take it, show the back-office savings, and the one that you've just been talking about, the capital scheduling optimization, is the 8.5 million, is that what you were just describing a moment ago, that being the bulk of the savings?

MR. BOWNESS: So the numbers that I was referring to on the head-count reductions, those would be the first two lines of the plan, so you will see over in the right you will see the calculation assumptions --

MR. BRETT: Right.

MR. BOWNESS: -- which is a reduction of 21 clerical full-time equivalents --

MR. BRETT: Right.

MR. BOWNESS: -- and in the second one the reduction of eight clerical full-time equivalents.

MR. BRETT: Right.

MR. BOWNESS: The items in the rest of the table are with respect to the targeted savings in the field with

respect to improved planning, scheduling, and execution of work.

MR. BRETT: I'm asking you about line 3, which is scheduling and optimization, which is 8.5 million, which constitutes, give or take, 85 percent of the capital here, and the way you've described this is 5 percent of 900 FTE at a labour rate of 157,000 PWU.01.

Now, 5 percent of 900 is 45 FTE, and are you suggesting that the -- if I look at the -- are you -- are you saying there that the number of FTEs will be reduced by 45 over the five-year period? Is that what this is saying? The field FTEs?

MR. BOWNESS: No, the attrition was with respect to the back-office resources. Our expectation within our field forces is that we're driving improved, what we would call wrench time, so improved productivity time to be able to deliver our work more cost-effectively.

MR. BRETT: So in effect, you're saying there won't be actual reductions in cost, there won't be any field -- FTEs in the field laid off, but you will -- your field people will be able to accomplish more, your existing 900 field people will be able to accomplish 5 percent more work --

MR. BOWNESS: Yes, so --

MR. BRETT: -- 5 percent more value, and that's how you get the 8,000,527.

MR. BOWNESS: Yeah, so if you look at the approximate $800 million of -- well, if I take just distribution lines, the $600 million of capital expenditure, in future years

we're still spending 600 million, but we are accomplishing more units per the asset plan as to what's required, but our staff levels are not anticipated to reduce, but we are planning on seeing productivity in our unit costs on specific metrics.

An example of that is within our pole replacement program. We've seen through the implementation of move to mobile our labour effort to replace a pole has gone from 39 hours to 34 hours for the crew to be able to replace the pole.

That's been helping us keep our unit costs in check, as can be seen in the OEB scorecard, which allows us to do additional poles by reinvesting in the assets.

MR. BRETT: Just going back to this line for a moment. The -- my question -- I put my sort of general question about this area is: Are each of those initiatives that you've described, each of these -- each of these productivity initiatives, which are listed in the evidence, what your evidence deals with, both in the evidence here and in your -- in the interrogatory response, and I think you gave Dr. Elsayed a reference to that table a couple of days ago -- is each of these a separate project that is identified in the capital budget? In other words, I recall some reference to -- or are these embedded, so-called?

In other words, my question is, can we look at the items of the list of capital projects that we talked about earlier and find each of these capital initiatives, and if they're not -- if there are some that are not capital, for

example, your procurement initiative, which we probably -- I won't have time to get into, but which seems to be driven mainly by OM&A -- considered by OM&A -- well, it's driven by smart management, essentially, and smart operations. But for each of these ones that requires capital, do we have a separate place in the capital budget that we can look and see define the project, the amount of money?

And then the -- and then in addition to that, and this is part 2 of the question: How are the savings going to be monitored each year and how are they going to be reported so that the Board and intervenors and others have sort of total transparency on this?

In other words, you can see what's happened and you can see that the savings are -- how -- what savings are being realized from that particular initiative.

In other words, it is not simply buried in the OM&A. I shouldn't say "buried". It is not simply embedded in the OM&A budget in subsequent years, but it's identified separately.

Can you answer those part A and B there?

MR. BOWNESS: Yes, so I think, you know, on a previous panel Mr. Lopez spoke to our overall productivity tracking and the methodology and framework as to, how do we track our productivity savings and how do we report upon those within our corporate scorecard and then how we also report on our achievement of that into our financial reporting requirements, so I think if we look back at the transcript on that there will be some part of the answer within that,

and I don't want to repeat or make an error with respect to how the finance team is tracking that.

What I can say is that if we can pull up Staff 123 as an example. What we did with the move to mobile savings is we updated our planned costs within the filing with respect to the move to mobile expected savings, so the business plan reflected those savings right embedded within the business plan and the budget.

So by delivering upon the work program we are effectively delivering upon the move to mobile savings. So that's the macro view.

However, on a micro level, what we do on a monthly basis is we have about ten different types of work that we assess every month as to how we're performing as compared to the 2015 baseline, so as the example with pole replacements we're looking at how many hours are we spending deploying poles in May of 2018 as compared to the baseline of 2015. And then based on that we cost that out at labour rates and we demonstrate a productivity saving, and every month each team on each one of these work streams is doing similar-level bottom-up culminations that culminates in a monthly update that goes to our executive leadership team meeting and on a quarterly basis is reported to our board as a part of our team scorecard.

MR. BRETT: When you say "work stream", you are talking about poles, stations --

MR. BOWNESS: So the items within here. Move to mobile is a distribution lines initiative. Procurement,

you can talk to the next panel with Mr. Berardi. He will be able to speak to the specifics on procurement. Mr. Lincoln Frost-Hunt, I believe, is on the next panel. We can talk to him about the IT savings. But there's customer -- there's a number of different groups here that are contributing savings to the overall enterprise productivity that is $400 million in the 2018 to '22 period.

MR. BRETT: Yes, that's the forecast.

MR. BOWNESS: That's correct.

MR. BRETT: So you'll have a -- you'll have a -- there is a regime to actually track each of these separate productivity initiatives and the savings that arise from each of them; is that the idea?

MR. BOWNESS: There is a very robust framework that is put in place with finance -- our finance team is leading that tracking on a monthly basis, and it does culminate up to executive leadership team updates, as well as board updates on a quarterly basis.

MR. BRETT: Will that information also be reported as part of your annual reports to the Board, that productivity...

MR. BOWNESS: As a part of our...

MR. BRETT: Sorry, I'll just finish up -- the progress on meeting these productivity targets and paying down -- effectively paying down the cost demonstrating these savings over five years. Does that information get reported to the Board, to the OEB, on an annual basis as part of your annual report update?

MR. BOWNESS: When you are referring to the Board, are you referring to the Ontario Energy Board?

MR. BRETT: I am.

MR. NETTLETON: Mr. Chairman, I'll let Mr. Bowness -- but I don't think any prior panel has spoken to that, that specific question. And I think that the breadth of that type of question would probably best taken by way of undertaking.

I don't know if Mr. Bowness has other thoughts.

MR. BOWNESS: At this time, I'm not aware of a process where our annual productivity savings are reported to the Ontario Energy Board, but we could look into that as a follow-up.

MR. BRETT: Perhaps you could give an undertaking. I agree with Mr. Nettleton, your counsel.

MR. NETTLETON: I think the undertaking would simply be for Mr. Bowness to consult and inquire with the other panels. And particularly, I think it would be related to panel 1, which is the reporting expectations associated with the methodology that's before the Board.

MR. QUESNELLE: Thank you. We'll take that as an undertaking.

MR. SIDLOFSKY: That will be J8.4.

UNDERTAKING NO. J8.4: MR. BOWNESS TO CONSULT AND INQUIRE WITH OTHER PANELS, IN PARTICULAR PANEL 1, ABOUT REPORTING EXPECTATIONS ASSOCIATED WITH THE METHODOLOGY BEFORE THE BOARD

MR. BRETT: Mr. Chairman, I just have one other

question, or two other brief questions. Should I just ask them now?

MR. QUESNELLE: And this is on the program options?

MR. BRETT: No, this is different. This is on the...

MR. QUESNELLE: So this will be your last?

MR. BRETT: This is on the final issue. I've done program -- yes, sorry, it is program options, yes.

MR. QUESNELLE: Thank you. Please continue.

MR. BRETT: If you could turn up Exhibit I, tab 29, this is Staff schedule 164, page 4. So that's Exhibit I, tab 29, schedule 164, page 4 of four.

If I look at the first paragraph there under little C, the last two sentence:

> "Plan C was not fully developed into specific plans and projects because the option, as a whole, was deemed not viable due to a degradation of SAIDI and SAIFI that would result based on plan C funding level."

So am I right that this -- I'm taking this to say that you didn't fully cost out plan C as you did plans A and B and B modified; is that fair?

MR. JESUS: Yes, that's correct. We did not fully develop a plan that represented plan C, because it was deemed to be not viable.

MR. BRETT: And you say it would not be viable because it would decrease reliability, as I understand it.

I recall from your tables that you have a 2 percent decrease in reliability with schedule -- with plan C. Is

that right, Ms. Bradley?

MS. BRADLEY: We went to the board with a plan A and B as we've talked about, and they asked us to come back with a plan that would be less costly for our customers.

In November of 2016, we went back to our board with our reassessment, saying we were looking for an update and that update looked at potential paths to accomplish 2018 -- a lower 2018 rate increase, a detailed analysis of the options for customer bills and reliability, data on asset replacement rates and impacts on asset condition.

It included an analysis of productivity to see where we could be more productive in the outcomes that that would have, summaries of customer feedback and some history on OEB decisions.

So they come back to the board, we went with that information.

That is found in SEC.4, attachment 2, the document that we used to facilitate that discussion with the board of directors. So those are the factors that were considered.

In plan C, in this attachment that went to the board, there is detailed information on asset condition and the impacts that asset condition would -- that the different levels of spending would have on even asset condition.

If you could bring up Exhibit I3, SEC.4, attachment 2, and if we just, as an example, look at page 12 of that document...

MR. BRETT: I hesitate to interrupt you, and I really

don't mean to interrupt. But you're not -- the answer is not responsive to my question. I asked about schedule or option C, and whether option C...

MR. QUESNELLE: Option C is the bottom chart that I'm looking as here right now. I think Ms. Bradley is getting to the nub.

MR. BRETT: I asked about the 2 percent reduction in the reliability.

MS. BRADLEY: I thought you were asking about the reasons why plan C was not acceptable to our board, and this is the document that we used to go back and talk about plan C. So I thought it was relevant.

But here you can see the level of analysis we did on plan A, which was to eliminate poor condition assets. This was stationed specifically in this the chart. Plan B, which left some poor condition assets, and plan C which left a larger portion of our assets in poor condition.

We had this type of information that we took to the board and yes, reliability was parts of that. But this level of analysis was done and then we were sent back to come up with something that was a more sustainable plan than plan C.

MR. BRETT: If you turn up page 1 of our compendium, please, this is a table that has been discussed quite a bit here, so I just want to ask one final question on it to tidy this up.

This is a SAIDI projection for investment plan options, do you agree?

MS. BRADLEY: I agree.

MR. BRETT: Perhaps I can add to put the question a bit finer. If you look at table 4, SAIDI projection for investment plan options, and if you look over at plan C, which is the second column to the right, then look down at the estimated impact to SAIDI, which is the second-last line, and you will see a negative 2 percent.

Am I to read that if plan C were -- and I suppose this has to be subject to the caveat that you haven't fully costed plan C. But subject of that caveat, plan C would result, in your view, in a 2 percent decrease or deterioration of reliability over the five years of the plan. Is that right? Is that what this says?

And I might add, just while you're conferring, on the second page, page 2, we have the same chart, essentially the identical chart for SAIFI and in the same column, the second from the right, an estimated impact to SAIFI, second line from the bottom, it also says a 2 percent reduction in -- I guess a 2 percent degradation in SAIFI would result from implementing plan C, right?

MS. BRADLEY: Yes, we did believe that there would be a degradation of reliability if plan C was implemented.

MR. BRETT: But you have -- as I understand it, you have a -- if you turn up briefly -- and this is the last question this this area.

If you turn up Exhibit B1.1.1, this is going back to the distribution system plan, DSP section 3.3, page 12. So that's B1.1.1, DSP section 3.3, page 12.

There it is. Could you scroll down, please? Okay, I think that's fine.

If you look at the first bullet under the second paragraph, you talk about Hydro One listening to its customers in order to address their concerns, and they've incorporated a number of initiatives.

And you talk about deferring in the first bullet, deliberately deferring early year capital investments to pace investments to minimize rate impacts, et cetera.

And then you say -- and this is the sentence I would like you to comment on:

> "This includes management -- managing rate of replacement and where appropriate accepting decreased levels of reliability performance to minimize rate impacts."

Now, do I -- I'm reading that to say that you accept the principle that it may be necessary to accept some deterioration in reliability performance in order to -- in order to give ratepayers what they ask for as a first priority, which was to hold costs as low as humanly possible.

Am I reading that correctly?

MS. BRADLEY: What this was saying was we had early year capital investments that we deferred in an attempt to minimize rate impacts, and that was the rate impacts in the first year, where customers were seeing an increase as a result of load decline, so we have adjusted our spend pattern to reflect the decreases in load that we've

experienced and minimized the impact of that on customer rates in the early years of this application.

MR. BRETT: Thank you for that. And I have just one question on poles which I will ask Ms. Garzouzi, and I think you and I spoke about this at some length in the technical conference, but the subject has been covered very thoroughly.

My question is just -- and this is a question I also asked you in the technical conference, but I'll ask it again. You had mentioned that there -- or rather, the evidence in your case at the moment, I believe, is that you are going to spend 72 -- you are going to replace 72,000 poles over the five-year period; right?

MS. GARZOUZI: That's correct.

MR. BRETT: And my understanding is those 72,000 poles include both poles that are in poor condition and poles that are destroyed by various sundry causes, and I think in the -- and I think in the technical conference I asked you -- we talked a bit about that and tried to break that down, and I believe, subject to -- and you can take subject to check or you can just give me your current view -- that you had said that 40 percent of each of the annual slices of that 72,000, 40 percent would be directed to poles that are in poor condition and the remaining 60 percent would be devoted to poles that had been destroyed by various causes and effects.

Now, we haven't discussed that precise point in this part of the proceeding through -- there's been a lot of

stuff to discuss, so is that still the case?

MS. GARZOUZI: Mr. Brett, the 72,000 poles that are being proposed for replacement for the planning period are poles in poor condition only. In addition, every year poles are replaced in the system for other reasons: Joint use, trouble calls, system renewal -- system optimization --

MR. BRETT: What is the average --

MS. GARZOUZI: -- motor-vehicle accidents, and so the 72,000 specifically for the wood-pole replacement program in addition -- so that's the five-year number.

MR. BRETT: I understand.

MS. GARZOUZI: Every year there is about 12,000 poles that are replaced for other reasons.

MR. BRETT: Okay. So effectively over the five years there is going to be 72,000 plus another 60,000 on average?

MS. GARZOUZI: That's correct.

MR. BRETT: Okay. Thank you very much. Those are my questions.

MR. QUESNELLE: Thank you, Mr. Brett.

We'll break until ten after 4:00. Thank you.

--- Recess taken at 3:53 p.m.

--- On resuming at 4:14 p.m.

MR. QUESNELLE: So, Ms. Grice, if you want to get started today, we won't -- according to your time estimate here, I don't think we'll expect you to finish today, but we'll get as far as -- I think we'll target to quarter to?

MS. GRICE: That's fine, thank you.

MR. QUESNELLE: Whatever is a good break for you around that time period.

CROSS-EXAMINATION BY MS. GRICE:

MS. GRICE: Okay, thank you. Before we get started, I just want to clarify an undertaking that was provided to Mr. Brett. He asked for a listing of non-demand projects by priority, and I just wanted to clarify what it is that we're going to be receiving.

And if we could please turn up Exhibit JT3.9, table 1 on that page shows a ranking or a total value for system renewal projects based on units of risk mitigated provided by financial benefits.

And even though this is just for system renewal, I just wanted to clarify. Is that what we would can expect to receive is a full listing based on total value for all demand investments?

MS. BRADLEY: I thought we were asked for a list, like a ranked list of number 1 to 42 is how Mr. Brett described it. And we explained that number 1 might have a lot of demand. But my understanding was it's just a ranked list.

MS. GRICE: Are you able to provide it on this basis, so just what the ranking is for the total value column?

MR. JESUS: So effectively, you'd like us to add the ranked order to this list? Is that what you're suggesting?

MS. GRICE: No, for all non-demand investments, so a similar list but ranked by total value.

MR. JESUS: Isn't that what this is, though?

MS. GRICE: So like the list that you are providing is

the highest number that you are going to be giving -- in your understanding of the undertaking, is it going to align with the highest total value project?

MR. JESUS: So it's going to align based on total risk mitigated as well as total value, and we rank ordered them. We took the average of the two and we rank ordered them. That's the process that we used for determining that priority.

So we are providing a list that says demand is all one, and then the rest of the rankings 1 to 44.

[Witness panel confers]

MR. QUESNELLE: I think the question is will this column be replicated in that listing, the information, that type of information. Is that your question, Ms. Grice?

MS. BRADLEY: It's here already. We can provide that list, no problem. It is effectively the same thing is what I'm saying.

MS. GRICE: Okay, thank you.

MR. QUESNELLE: Do you have a problem with that, Mr. Brett?

MR. BRETT: Well, I'm not quite sure. I think -- no, I have no problem with this list. What I had asked for, and I believe they've agreed to do, is to provide a prioritized list of the 48 projects and they would start with number 1 would be -- demand I think is an unfortunate word. Number 1 would be the projects --

MR. QUESNELLE: Non-discretionary.

MR. BRETT: Yes, they're non-discretionary that are

required by legislation or by codes. I think we all know what we're talking about, non-discretionary projects.

That's the first thing and you are saying, in effect, those all have to be done. There is no discretion, they have to be done as a matter of law. And then from there, I'd like just -- I'd asked for a ranking from the rest of them. Let's say there's 30 left. I asked for, and I think I got agreement to have a list of 2 to 30 for those remaining projects.

MR. QUESNELLE: Taken that they are one in the same and the way they would have prioritized this is to do this analysis and they would provide this analysis in the -- in the provision of what you're asking for.

I think we're clear. Is everybody good? We are going to get this type of information, it will be ranked and the highest value will be number 2, other than the demand ones, and then we'll they'll go from there and they will be associated with this information.

Okay? Great, Thanks.

MS. GRICE: Okay, thank you. Just one last question while we have this table up. Can you just please confirm what the denominator is, financial benefit? Is that equal to cost, or is it something else?

MR. JESUS: I believe that that's the cost.

MS. GRICE: Okay, thank you. So I have a compendium that we need to mark, please.

MR. SIDLOFSKY: That will be Exhibit K8.3.

EXHIBIT NO. K8.3: AMPCO CROSS-EXAMINATION COMPENDIUM

FOR HONI PANEL 5

MS. GRICE: Before I begin, I just want to mention that I collaborated with Ms. Girvan from Consumers Council of Canada, and have incorporated some of her questions.

Okay, so if we can please turn to page 35 of the compendium, this is a page from the AESI final report. And in this report, as stated halfway down the page:

> "AESI did identify areas of opportunity for Hydro One to better demonstrate alignment with the OEB requirements."

And in the first one, it references table 13, which is the table that shows SAIDI by outage cause, and the AESI pointed out that Hydro One only reports on eight causes rather than the ten prescribed by the OEB.

And if we could just please turn to page 44, this is a page out of the 2006 Electricity Distribution Rate Handbook that shows the cost codes that are prescribed by the OEB. And I'll just point out number 4 is lightning and number 6 is adverse weather. Those are the two cost codes that Hydro One is not reporting on.

And if you just go forward to page 47, this is the latest version of the table with the 10 cause codes showing, and major events has now been added as cause code number 10.

So if we can please now turn to page 5 of the compendium, this is the table 13 that is referenced and it shows the eight cause codes that are being used by Hydro One and all of the values.

And if we can now turn, please, to page 38, we asked Hydro One why it is not using adverse weather and lightning as cause codes, and Hydro One responded that they're not using adverse weather and lightning as cause codes because we incorporate those causes into our existing cause codes, and where they're putting adverse weather and lightning is under tree contacts and defective equipment. Is that correct?

MR. JESUS: Yes, that's correct, and the reason why we're doing that is because if we didn't do that, when the responders, or the responders to the incident and they arrive at site, they would look at the tree that has fallen into a line, broken a pole, and they would categorize almost every incident as tree-caused -- sorry, as lightning or adverse weather.

And what we're trying to do is prevent them from doing that, so that when they get there they are actually categorizing the outage description as whether or not it is a broken pole, or whether or not there's a tree contact that caused the outage if there is no broken pole, as opposed to everything was weather-related.

MS. GRICE: By doing that, are you not over-stating the SAIDI and SAIFI contributions by defective equipment and tree contact because you're putting that data into those two categories?

MR. JESUS: The reality is all of those tree contacts are very likely due to weather. So having them then moved into weather would not be useful from a planning point of

view. That's why we do that.

So you can -- you can separate it into the cause codes that we are area doing, or you can categorize everything as being weather-related or lightning.

MS. BRADLEY: I would actually like to add to that. We can't control the weather, but we do have programs that are intended to mitigate the risk of trees contacting lines, whether it is during a normal sunny calm day or during adverse weather. We can't use this data to do analysis of the things that we can't control, be that through our work programs or through our design standards. If we look at it just saying "weather", it doesn't help us in doing our analysis and developing programs or plans to address what's actually failing on the system.

MS. GRICE: But if the failure was caused because of adverse weather or lightning, don't you have a better view of your system assets? If you have defective equipment in its own category --

MS. BRADLEY: My belief is that we have to design our system and maintain our system to be able to withstand the weather conditions that we face, and in industry, in general, there is a lot of discussion around increasing the resilience of our assets as weather patterns continue to change, so we have to keep an eye to that and how our assets are impacted by those weather changes.

MS. GRICE: Okay. Well, I asked in the second part of the interrogatory if Hydro One had a sense of what the contribution of adverse weather and lightning to those

categories -- what it was doing to those categories, and if we can please just turn to page 50 of the compendium. And, sorry, the response by Hydro One is that you don't have the data and you don't -- you answered that the -- the answer is, no, you don't have the data.

MR. JESUS: So the only other thing I would add is that all force majeure events are due to weather, and we capture those as force majeure events, so we can tell you what tree contacts, what defective equipment occurred during those force majeure events.

MS. GRICE: Right. And that is another cause code that the OEB has prescribed, but there's two that you're not using and you are putting them in defective equipment and tree contacts, so I just -- I went through the 2016 yearbook and I tried to grab a utility that I thought had weather patterns that would be similar to Hydro One, and that would be Greater Sudbury.

Would you agree with me that there is a similarity in terms of both utilities are susceptible to a variety of extreme weather conditions?

MR. JESUS: No, I would not agree with that, because we cover the entire province. Sudbury is only one small pocket of the province.

MS. GRICE: But it is within your territory; is that correct? If we can --

MR. JESUS: It's a small portion of our territory --

MS. GRICE: If we can just -- sorry, just bear with me. I have a map of your distribution area in my

compendium. Just one moment, please. Can we turn to page 40, please.

Could you point out which green area which is representing municipal LDCs, which one represents Greater Sudbury?

MR. JESUS: Sorry, I don't know where Sudbury is on that map.

MR. BOWNESS: North Bay would be the east end of Lake Nipissing, so the body of the water you see up at the top of the graph there would be North Bay, so I would imagine the green box to the left of that would be Sudbury, subject to check.

MS. GRICE: Okay. So that's within your service territory, and that's why I picked it, was because I was trying to look at an LDC that is in the rural part of your service territory, so if we just can go back, please, to page 50.

MR. QUESNELLE: Ms. Grice, you are accepting Mr. Jesus' caveat to that that it's within it but it's -- I think your question was one that would represent the same weather patterns, and he's suggesting, well, no, it can't be the same, because it's just a small part of their whole system. Is that something you accept or --

MS. GRICE: I guess what -- I'll restate it. There would be overlapping weather systems in Greater Sudbury than, you know, say -- picking Guelph. That's a better -- a better choice of an LDC in terms of looking at weather -- adverse weather conditions --

MS. BRADLEY: I don't think that they would experience the same weather patterns that we experience in, say, Leamington or have the impacts of salt on roads that contaminate our systems that are along, say, a 401 highway, so I wouldn't agree that it's an exact like for like. I mean, do they have some cold weather? Probably not like our far north areas that aren't even on that map.

MR. NETTLETON: Mr. Chairman, what I'm hearing Ms. Grice put to the witnesses -- and maybe I'm incorrect on this, but I think what she's suggesting is that Sudbury is an LDC that is a representative LDC of Hydro One's entire system, and I think what I'm hearing the witnesses say is, no, it's not a representative LDC, particularly from a weather perspective, because there is far greater area and location and geographic diversity than what Sudbury would have, so I think that's the fundamental disconnect here.

MS. GRICE: I'll accept that. I'm just --

MR. QUESNELLE: I just want to establish the basis on which the questions were going to be asked. That's all.

MS. GRICE: So I'm more -- my question isn't so much about that; it's if we look at Greater Sudbury and we look at the pie charts, and Greater Sudbury does track adverse weather and tree contacts separate from defective equipment, and that's just what I wanted to look at, so if you look at the orange pie under "frequency by cause", 18 percent is defective equipment. And then the next one beside it is adverse weather, and that's 14 percent. And then on the other side of the orange pie chart is tree

contacts, which is 13 percent, so you agree with me, when you add those two up, for this -- in this particular example, it's 27 percent, and that is a material contribution to SAIDI and SAIFI.

MR. NETTLETON: But, Mr. Chairman, I'm sorry, I don't know how the witnesses would be able to speak to these statistics for an LDC that they don't have responsibility for. I don't know whether this LDC has the same sorts of conditions of location of poles, how and where they -- the operations are carried out. I don't think it's fair to have these types of questions be put in the context of showing similarity. I think that if she wants to ask, are you familiar with the Sudbury system, are you familiar with how their system relates to yours and how your SAIDI and SAIFI statistics compare to Sudbury, then fine.

MR. QUESNELLE: I think what Ms. Grice has successfully done is point out that a utility that has an indicator that includes lightning, it's not an insignificant contribution. And if Hydro One can respond as to why they would see that in their case, it is not something that would be significant because of a different weather pattern or whatever, then perhaps why they -- in not reporting lightning separate, they don't feel that it distorts the picture, that is the point of Ms. Grice's question, and I think with the caveats that they don't have the same weather patterns, if someone is that significant, do they have any knowledge as to why they would be -- have such a different circumstance that it wouldn't be

significant.

MS. BRADLEY: Can I ask for the specific question now that you're asking? Sorry, I...

MS. GRICE: So I think we've established that in this particular case there is a material contribution of outages to adverse weather and lightning that, when shown separated from defective equipment, you get a different picture of what's going on in the system, and I guess the question is: Why does Hydro One -- is there something else going on with your service territory that you don't think these distinctions would be comparable?

MS. BRADLEY: I believe that we need to understand where our assets aren't able to withstand the conditions that they're expected to operate in is more meaningful than saying, you know, weather, which is not in my control, contributed to a problem, because that might have been equipment, it might have been a tree, and it's easier for us to use this information to improve our system if we know what the asset is that's within our control that has had a problem.

MR. QUESNELLE: Ms. Bradley, you've mentioned on both occasions that things that are out of your control, and you mentioned that they can't withstand the weather therefore, but I think that the other element of lightning, do you consider that in the same fashion? It's not in your control, but a transformer that breaks down before its expected end of life which is chalked up to equipment failure versus one that is hit by lightning, wouldn't one

lead you to a different conclusion that, okay, here's the expected life of my assets and lightning being 10 percent of the driver for that? That perhaps there's other ways you can do lightning protection on your system as opposed to not worrying about it?

Like you do have design elements around lightning protection, lightning arresters and what have you. Do you not have any lightning strike information in your database?

MS. BRADLEY: I know we use lightning information if we're investigating a particular failure or issue that we've had. It could be a power quality issue or an asset issue. When we do that, we actually do the research to confirm that there's been a lightning strike. I'm not sure how these utilities are capturing, but when we say it's a lightning strike we actually need evidence from the weather systems that say that.

I think it would be quite an undertaking to do that all of the time, if you didn't have a substantial program to install surge protection. We don't have surge protection on the majority of our feeders, for example. We have it in the stations.

MR. QUESNELLE: You do on your transformers, though?

MS. BRADLEY: We do in stations, yes.

MR. QUESNELLE: And your distribution pole top transformers?

MS. GARZOUZI: We do have surge arresters on our lines in areas where we've had lightning activity, a power quality issue, certain customers. We've done studies

specifically for that and we've assessed. But on a trouble call, if a pole top transformer failed, it's not being identified as lightning; it is being identified as the pole top failed.

MR. QUESNELLE: Thank you.

MS. GRICE: Thank you. I just have one follow-up question to this. If we could go back, please, to page 35. Underneath the first bullet, AESI says in the last sentence:

> "Hydro One recognizes this difference in reporting and is working on correcting its outage cause data."

Is that what Hydro One is planning on doing?

MR. JESUS: I think, obviously because we are only reporting on the 8 factors, we're looking at improving our outage reporting system across the board. And if it's -- if it makes sense to capture these additional risk factors or these additional causes, cause codes, then we will do so.

But in the example regarding lightning, if you categorize it as lightning, I guess I'm having difficulty in terms of what failed during the lightning storm. Was it a conductor? Was it an insulator? Was it the wood pole?

So lightning was there, but what was the end result of that, just that you had lightning activity?

I think from the way we're approaching it and the reason why we've done it is we want to identify specifically what has failed on the system due to weather.

Most of the time, it's due to weather. Most of the time it's due to lightning and weather.

So at the end of the day, having what actually failed as a result of that weather is the approach that we've taken.

I think going forward, we're going to look at potentially reporting on those additional cause codes.

MS. GRICE: Okay, thank you. If you look at the third bullet on this page, AESI also made another recommendation and they suggested that you include other reporting metrics, such as job estimate to actual.

And the response was that you acknowledge that this was a meaningful metric and stated that it would be considered in the future.

And we've heard in previous panels that Hydro One is working on improving its job estimating. So I just wanted to follow-up and ask why you'd want to push this measure out into the future and why that isn't, say, a metric that's in this application?

MR. BOWNESS: When I look at how we execute our projects internally, we're constantly tracking our budget to our forecast. And then ultimately, when the project completes, what was our budget to our actuals.

So within our internal delivery model, we absolutely track this information. What we can look at here is how we aggregate that information up to be able to provide it in as a part of the regulatory framework. But that's something we can definitely consider.

MS. GRICE: Thank you. I'm moving on to a new area now. Can you please turn back to page 5?

So this again is the cause codes that Hydro One is tracking as input to SAIDI, and under "defective equipment", you will see that it's one of the highest contributor's to SAIDI based on the data that you're collecting in that category.

And if we can now turn to page 28, we asked in part O if Hydro One could provide a chart that sets out the types of equipment causes that fall into defective equipment, and then their individual contribution to SAIDI and SAIFI for each equipment type, in terms of number of customer interruption hours, the number of customer interruptions for each of the years 2011 to 2017.

And the response is on page 33. And you had a bit of a discussion already today with Mr. Segel-Brown about what falls under defective equipment.

And in response to AMPCO under part O, you state:

> "Hydro One does not report customer interruptions to the level of granularity required for equipment sub-component failures. Only system level numbers can accurately be provided."

And we asked you the same thing in the last Hydro One case, in EB-2013-0416.

Can you turn to page 12, please. This was a technical conference undertaking, and at that time, you were able to provide with us a pie-chart showing all of the individual equipment contributors to defective equipment.

And if you turn the page, that one was for SAIDI and then the next page shows the contribution to SAIFI by equipment. How come you can't do that now?

MR. JESUS: So the reason why it's very difficult to produce that is our systems are not -- they are not designed to produce it to that lower level of detail.

They are actually embedded in the commentary, so there are actually comments whether in terms of whether it is a line recloser, pole top transformer, et cetera.

So in order to produce this type of graph, we would need to comb through the entire database and parse out, effectively by comments that are entered by the field, in terms of which equipment actually failed.

So it is very, very difficult. We do have a list, as you can see, that we've prepared. This is a list from 2013 and I don't know what period of time. But the ask was to go back was to go back to 2012 to 2017 and comb through the database, and actually parse out everything based on those failures.

That's why we said we don't report it to that level of granularity, and it is not -- and it's not accurate.

MS. GRICE: Sorry, it is not accurate -- is this table accurate?

MR. JESUS: I mean, I would imagine that they produced it based on the information that was available over the period of time, and someone must have done what they did to produce that table.

I can't see the years. What is the time period for

this? Is it one year? I'm not sure.

All I'm saying is that from a systematic point of view, I can't filter down and say here's all my line recloser failures. Here's my insulator failures. If I had it, I would give it to you.

MS. GRICE: But it seems like if it was produced here, that -- has your system deteriorated in some way that we couldn't get some version of a pie chart for this application?

MR. NETTLETON: Well, Mr. Chairman, I think Mr. Jesus just answered what he would have to do in order to produce or reproduce this in this proceeding. And what I heard was he said that he's not comfortable relying on comments that are made that would have had to have been used for purposes of preparing this document.

But I also heard him say that he isn't aware of who produced it; it wasn't Mr. Jesus that produced this.

So I think what I'm hearing is, is that he's not comfortable because the data set that is in the Hydro One system now is not collected with a degree of veracity that would give Mr. Jesus the comfort to prepare the document.

MR. QUESNELLE: No, I understood the answer as well. I think Ms. Grice is pointing out because it is a pretty stark difference out of the two responses, both in a short time frame.

MR. NETTLETON: Yes.

MR. QUESNELLE: And when you look at the SAIDI graph here, we are down to a point -- half a percent, 2.4. These

aren't round numbers, so someone has gone through and either took on an awful lot of work to go through thousands and read out the narrative on these reports or there was something that was calculated. And I think it begs the question as to what has changed, and I recognize it is not the same personnel, but can we take an undertaking to find out how this was produced and why it can't be produced now?

MR. NETTLETON: I guess my observation is if this was known by my friend at the time that she asked the interrogatory, it's -- I guess I'm curious why it wasn't referenced in the interrogatory so that there would have been some context to what was produced and what the expectation was.

MR. QUESNELLE: Well, I would -- and I'm speaking for Ms. Grice, but if it was produced readily before without any hesitation in response to an IR, I think her assumption was probably it's just going to happen again.

MR. NETTLETON: But I don't know if that --

MR. QUESNELLE: You get my point, Mr. Nettleton, that you wouldn't have to say I asked for this before to substantiate the request for it again. You typically just expect that the answer would be there.

If I look at that graph and someone suggested to me that Hydro One doesn't do this on a automatic basis and they had to recreate this type of report, that would have been --

MR. NETTLETON: I see that this was produced during the technical conference, it wasn't filed as part of an

interrogatory to the proceeding. It came out of the technical conference of the 2013.

So you're right. There obviously was some work effort taken after the filing of the application in the technical conference proceeding, but I just -- I -- it would have been nice to know what you're after.

MS. GRICE: Sorry, can I just clarify? I actually did ask this exact question in the interrogatory that's referenced in this undertaking, and I got a answer that I couldn't understand, so I asked it again at the technical conference, and this is what I got.

So it was asked the first round of interrogatories, just to clarify.

MR. NETTLETON: In the 2013 proceeding?

MS. GRICE: Yes.

MR. NETTLETON: Okay, thank you. We can -- Mr. Jesus, can you provide the undertaking that's being asked?

MR. JESUS: So in -- just before I agree to produce the undertaking, I mean, can we just turn to AMPCO 28. So I -- 29, AMPCO 28. And in this interrogatory we tried to accommodate Ms. Grice by categorizing it in terms of the contribution due to poles, the contribution due to stations, and the contribution due to other line components. And then tree contacts is there in terms of the high-level categories.

So in terms of defective equipment, the high-level bucket that we've tried to produce and we did produce are highlighted in those rows. The details of those other line

components, whether they are insulators or guy wires or all that other stuff that you had in there, it is not that easily rendered, because again we have to comb through the database.

DR. ELSAYED: Can I ask a question --

MR. JESUS: Is that sufficient, or do you actually want those details?

MR. QUESNELLE: Back up for a minute here. What I had suggested for an undertaking was an explanation as to how it was produced and why it can't be now. I wasn't suggesting that the company undertake a creation of it.

Ms. Grice, if you are asking for that, that's a -- we'll deal with that, but that wasn't my suggestion.

MS. GRICE: No, I just have more questions on this area, though.

DR. ELSAYED: Yeah, I do have a question, though, a general question. How do you report internally? Isn't there an interest internally in the company to understand the contributors to your reliability...

MR. JESUS: So we report reliability at the system level, so we -- as per the J1.1 that we demonstrated this morning, and in terms of the causes and what the historical numbers are and where those targets are going in the future, we report it to that level of granularity to our senior management.

DR. ELSAYED: And the causes are not broken down in a similar fashion to this pie chart?

MR. JESUS: The causes are broken down as per the

eight cause codes that we report to, as well as the force majeures, so we identify all of the adverse -- not adverse, foreign interference, tree contacts, equipment, human element, et cetera, et cetera. What we don't report is the lightning and the adverse weather, and we don't get to that level of granularity.

MS. BRADLEY: But more directly to answer your question, yes, we would like to have that information, and that is one of the benefits that we are hoping to be able to achieve through the move to mobile platform now that it's up and running. That would just provide with us a more systematic approach to categorizing by equipment type versus relying on a conversation between field staff and the control room about what they think is they're fixing a problem that is captured in a text block somewhere, so we are working towards exactly what you're saying.

DR. ELSAYED: Thank you.

MS. GRICE: Thank you. So what strikes me about looking at this pie chart is that we spent a lot of time talking about poles, but this chart is showing at that time that the most significant contributor to SAIDI by equipment was conductors, and then after poles it was insulators, so do you have a sense of, is that still the case now, without going through all of your data...

MR. JESUS: Could we go back to the AMPCO 28 interrogatory which shows the contribution from poles versus others? So the contribution of poles to SAIDI is .4, and the other line components is 1.4, so there is --

there are drivers of the SAIDI associated with those other elements that you are referring to.

And the reason why poles is because there is a program to manage poles. There are programs to manage other line components, but generally speaking the other line components are run to failure type of programs, where they fail and we replace them.

MR. QUESNELLE: Ms. Grice, I will make the observation -- I don't know if this helps or not, but when we've got a pie chart here that has contribution to SAIDI by equipment, it's -- and I think Ms. Bradley has identified this, you know, in a general sense, that -- as to why they don't do tree contacts, for instance, there is nothing in here about what's the causal effect on this. So if you have a storm and it is the conductors that go down, I would think that perhaps that's how you get to 27.7 percent, but are these conductors that failed on their own? That's not known.

I don't know if you want to comment on that, Ms. Bradley, but it's just an observation here as to what's not on this chart is also to your point -- the points you've been making as to what informs you as to what --

MS. BRADLEY: I would agree that as we develop our asset strategies we have to look at the entire system and how all the elements work together.

MS. GRICE: Okay, thank you.

And if we can turn then to page 23, I just noticed this as we were sitting here. It was asked by Staff in part C:

"What are the most significant asset failure modes captured in the number of line equipment-caused interruptions?"

And in part C you list poles, conductors, insulators, and switch failures, and those appear to be the four highest categories in the pie chart we were just looking at.

So just from an asset management perspective, would that tell you then that those assets are the ones that investments should be directed towards?

MS. GARZOUZI: Can you repeat your question, please?

MS. GRICE: In part C of the answer, you are identifying the most significant asset failures in terms of their contributions to SAIFI and SAIDI, and you've listed poles, conductors, insulators and switch failures.

I guess I'll just step back and just ask: If you don't have the level of granularity of the data, how did you know these four are the most significant contributors?

MR. JESUS: I believe that that list, we have had -- as you've indicated, we produced that list back then. We did look at, on a one-year basis -- subject to check, I'll have to refresh my memory and go back to the office and work with my team to decide -- to actually identify how we came up with that list.

But there was an annual list, they combed through the database and they came up with that list.

MS. GRICE: Is that the order of priority, or the order of contribution?

MR. JESUS: I'd have to look. I'd have to confirm.

MS. GRICE: Can we now please turn to AMPCO 23, and that is on page 16.

MR. NETTLETON: Mr. Chairman, are we sitting past 4:45.

MR. QUESNELLE: Well, we are now.

MS. GRICE: Oh, gosh, I had 5:00 in my head. I am so sorry.

MR. QUESNELLE: Yes, carry on, finish your question off.

MS. GRICE: I'm sorry, okay. I apologize.

Will you take it, subject to check -- I mean, I don't want to ask you to go back and look at all that data. But will you accept that those four then are your significant contributors to SAIDI and SAIFI?

I'm not asking for their priority, but they're the largest contributors?

MS. GARZOUZI: Our biggest contributor to SAIDI and SAIFI is actually vegetation management; it's tree related outages.

MS. GRICE: I'm specifically referring to defective equipment.

MR. JESUS: So your question, just so I understand, when you produced this table, you are asking whether or not I would agree to that.

MS. GRICE: Sorry, I was just -- I want to move on and ask you some questions about conductors and insulators.

MR. JESUS: Sure.

MS. BRADLEY: But on the AMPCO 28 example that we went to where the breakdown was provided, poles, distribution stations and other line components were broken down.

The other line components was 1.3. Other line components is insulators, conductors, switchers -- I mean, there's not a lot of other line components. So the assets you mentioned are the majority of those.

MS. GRICE: Okay. So if we go -- thank you. If we go to page 16 of AMPCO's compendium, which is the -- oh, we're here, table 23.

You have data for some of your assets, but you don't have any data for conductors and insulators. And given that we've just established that that is a large contributor to SAIDI and SAIFI under "other line components", why is it that there is no data shown in this table?

MR. QUESNELLE: I don't know that we've established that it was a large contributor, Ms. Grice. They gave an answer that suggested that they're not that large, I believe.

MS. GRICE: Not that -- oh.

MR. QUESNELLE: Well, I think it is a large part of a very small sub-component is the way I took the answer.

MS. BRADLEY: Correct.

MS. GRICE: But isn't the sub-component as a whole greater than defective equipment or poles?

MS. GARZOUZI: There's a few questions, so I'm just going to break it down.

So for I24, AMPCO 23, that table is a table that was provided by AMPCO, and it asked to complete the table based on ACA data that was available.

So we do have conductor information and report insulator defects on a defect basis. We just don't call them "asset condition assessments"; they would be defects.

So why do we do that? Because we don't maintain those assets. We would correct the defect. In the example of a frayed conductor, we would go and replace that frayed conductor. If there are too many splices in a stand, we would address that stand, but we do not maintain it the way we would maintain a transformer, a station.

MS. GRICE: Would you not equate number of defects with poor condition? Would that not be a natural correlation?

MS. GARZOUZI: No. I distinguish them because there isn't a maintenance activity. It's a run to fail -- it's like a pass or fail. It's not like something can be done to change the oil to extend the life, to maintain that piece of equipment. So I think that they're different.

MS. GRICE: Do you do poles the same way? Do you categorize pole as a number of defect, number of defective poems? Is that how you categorize those?

MS. GARZOUZI: We have condition information on our pole. We have a lot of information on our pole. So we have what we would call the master data, which would be its size and class and manufacture and species.

We would also collect other things. Woodpecker

defects, shell thickness, hammer test pass or fail, and so there's a lot more information that is collected on that piece of wood pole.

MS. GRICE: Okay. The request in AMPCO 23 was a table that we put together, but the idea was to get a sense of how many conductors, insulators had -- were in poor condition or were defective, and there isn't anything on the record that highlights that.

Is there somewhere else you can point me to?

MR. QUESNELLE: Ms. Grice, I think what we just heard on the record is why there isn't, because I don't think we are going to find a condition report on something that they don't monitor condition, because the condition isn't a determinative factor. A defect is repaired.

MS. GRICE: Sorry, I guess I was looking for number of defects.

MS. BRADLEY: But if there is a defect, the defect gets fixed. If the insulator -- if there is a defect on the insulator, it means its broken and replaced.

If there is a conductor, as Ms. Garzouzi said that's frayed and a defect is input, the field staff go and repair that and they have a criteria that says in a certain span, you can repair so many times and then you replace the span.

So the defect doesn't -- we don't wait until there's five defects on an insulator and then go and replace it. It's a different maintenance strategy.

There is nothing much we can do to fix it; we can replace it.

MR. QUESNELLE: I think you might argue that there's a different way to approach that, Ms. Grice, but I think that's what it would be.

MS. GRICE: Thank you. Just one last question on conductors and insulators, and then I'll stop.

MR. QUESNELLE: Okay. Is it going to require a long answer?

MS. GRICE: I hope not, I hope not. Page 18, please, of the compendium. And this question we asked for asset failures. And what I see on the table is that you have asset failure information for your station transformers and then for your poles, correct? Those are the only two assets that you have asset failure information for?

MS. GARZOUZI: That's correct.

MS. GRICE: Based on the pie-chart that you prepared at the last proceeding, would you have been able to provide failure data by those asset types at that time?

[Witness panel confers]

MR. QUESNELLE: Mr. Nettleton, I had asked earlier about perhaps taking an undertaking -- your client taking an undertaking to report on the difference of ability to report at the level of granularity. I think this is part and parcel of that, and I think that perhaps if we took it as an undertaking we could have an opportunity to discuss with your colleagues.

MR. NETTLETON: I would be happy to do that and would ask the Board to allow me the opportunity to discuss these undertakings with the panel over the weekend, and we can

move forward on that basis.

MR. QUESNELLE: That would be fine. We can do that. Can we take that as an undertaking, Mr. Sidlofsky?

MR. SIDLOFSKY: That will be Undertaking J8.5.

UNDERTAKING NO. J8.5: TO REPORT ON THE DIFFERENCE OF ABILITY TO REPORT AT THE LEVEL OF GRANULARITY.

MR. QUESNELLE: Okay. Thank you very much. And with that -- as I mentioned this morning, we will start at 9:00 a.m. on Monday. Everyone have a nice weekend. Thank you very much.

--- Whereupon the hearing adjourned at 5:06 p.m.