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UNREDACTED CONFIDENTIAL

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Ontario

ONTARIO ENERGY BOARD

FILE NO.:	EB-2013-0321	
VOLUME:	15	UNREDACTED - CONFIDENTIAL
DATE:	July 17, 2014	
BEFORE:	Marika Hare	Presiding Member
	Christine Long	Member
	Allison Duff	Member

EB-2013-0321

THE ONTARIO ENERGY BOARD

IN THE MATTER OF the *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, Sched. B;

AND IN THE MATTER OF an application by Ontario Power Generation Inc. pursuant to section 78.1 of the Ontario Energy Board Act, 1998 for an order or orders determining payment amounts for the output of certain of its generating facilities.

Hearing held at 2300 Yonge Street,
25th Floor, Toronto, Ontario,
on Thursday, July 17th, 2014,
commencing at 9:39 a.m.

VOLUME 15

BEFORE:

MARIKA HARE	Presiding Member
CHRISTINE LONG	Member
ALLISON DUFF	Member

A P P E A R A N C E S

MICHAEL MILLAR	Board Counsel
VIOLET BINETTE RICHARD BATTISTA	Board Staff
CHARLES KEIZER COLIN ANDERSON CARLTON MATHIAS	Ontario Power Generation (OPG)
EMMA BLANCHARD	Canadian Manufacturers & Exporters (CME)
JULIE GIRVAN	Consumers' Council of Canada
DAVID MacINTOSH	Energy Probe Research Foundation
KENT ELSON	Environmental Defence
DAVID POCH	Green Energy Coalition (GEC)
PIPPA FEINSTEIN	Lake Ontario Waterkeeper
RICHARD STEPHENSON ALFREDO BERTOLOTTI	Power Workers' Union
JAY SHEPHERD	School Energy Coalition

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

Thursday, July 17, 2014

--- On commencing at 9:39 a.m.

MS. HARE: Please be seated. Are there any preliminary matters?

MR. KEIZER: None from OPG.

PRELIMINARY MATTERS:

MS. GIRVAN: Madam Chair?

MS. HARE: Yes, Ms. Girvan.

MS. GIRVAN: I'm just -- I am here on behalf of a group of intervenors today, just --

MS. HARE: Who is the group?

MS. GIRVAN: I am going to tell you -- and I would ask you if I could use acronyms, if that's okay -- it's AMPCO, CME, LPMA, VECC, SEC, and CCC.

And we just want to express a concern with the August 15th proposed date for argument. I will just set out a few things for you. Given this is a very long and complicated case with lots of evidence, many of us also have ongoing proceedings that have been sort of layered at the same time in June, July, and August; namely, the Hydro One distribution case, which is moving to a technical conference next week, subsequently an ADR the following week. We also have Horizon that is ongoing. Not everyone, but many of us.

We also -- I am not sure if the Board is aware of this, but Hydro One and stakeholders have initiated a settlement process for Hydro One transmission, which is going to take place over the next month.

And I know there might be not a lot of sympathy for this, but some people have booked holidays assuming that the hearing would be finished by the end of July.

So all of those things together, we were going to propose that Board Staff file on the 22nd and that intervenors file on the 29th, and --

MS. HARE: I'm sorry. Ms. Girvan, so you're saying Board Staff goes first on the 22nd?

MS. GIRVAN: Yes.

MS. HARE: Hmm-hmm.

MS. GIRVAN: And intervenors would follow a week after that. And I can say certainly from my perspective, we value looking at Board Staff's submissions ahead of time, and I find that if it's a couple of days it's really not all that useful, but a week ahead does -- is useful, to the extent that parties may want to consider what Board Staff has said and may want to adopt their submissions.

The other thing that intervenors typically do is -- which takes a bit more time -- is we share drafts with each other, and if we had a bit more time, that would enable us to do that.

It is useful in the sense that some of us, again, can adopt the positions of other parties, consider them, comment on them, make sure that we're coordinated to some extent, and we think that is probably useful to the Board.

So we are proposing those dates for your consideration, and as I said, that's why I'm here today.

MS. HARE: Thank you.

Mr. Keizer, do you have comments?

MR. KEIZER: Just a very few. OPG's view is that the argument schedule as currently prescribed is a reasonable one, and we should -- as you had proposed dates yesterday, that we should stay with those dates, given the length of the proceeding and particularly the timing since the application was originally filed.

So we -- in our view, the current schedule as proposed is the one we should go with, given the fact that we want to be able to move forward and the company wants to move forward.

MS. HARE: Okay. Thank you.

MS. GIRVAN: Could I just make one more comment?

MS. HARE: Of course.

MS. GIRVAN: If the Board doesn't -- isn't sort of --

MS. HARE: Persuaded?

MS. GIRVAN: -- isn't persuaded by my comments today, we would still like the ability to have Board Staff file before us, and because, again, as I said, I think many of us find that useful, especially in a case that is this complicated. We've got some very complicated issues that Board Staff has been significantly involved in, so...

MS. HARE: Okay. Thank you, Ms. Girvan. So we're going to take this into consideration during one of the couple breaks that we have today --

MR. MILLAR: Madam Chair, if I may.

MS. HARE: Yes, Mr. Millar.

MR. MILLAR: I just wanted to add, I don't think Staff has any problem with going first, but we can't file before the 15th, realistically.

MS. HARE: I don't think there was any suggestion of that. We were going to say the 14th.

[Laughter]

MS. GIRVAN: Thank you very much.

MS. HARE: Thank you.

So Mr. Poch, are you ready for cross-examination?

MR. POCH: I think we're back to the original order, Mr. Stephenson.

MS. HARE: I'm sorry. I'm sorry. I'm sorry, Mr. Stephenson, you're first. Yes?

ONTARIO POWER GENERATION - PANEL 8, resumed

Gary Rose, Previously Affirmed

Dietmar Reiner, Previously Affirmed

Eric Gould, Previously Affirmed

John Reed, Previously Affirmed

CROSS-EXAMINATION BY MR. STEPHENSON:

MR. STEPHENSON: Good morning, yes, thank you. And I anticipate I am going to be quite brief.

Good morning, panel. My name is Richard Stephenson. I am counsel for the Power Workers' Union.

Mr. Gould and Mr. Reiner, I think this is mostly for the two of you, I anticipate. The focus of my questions this morning is are going to be on the Modus reports and not the specifics or details of any of those reports. I suspect you're not going to have to look at any of them, for what it's worth. I am talking more at a concept level here.

As I understand it from the technical conference, Modus was engaged pursuant to an RFP process for this engagement. Am I correct about that?

MR. GOULD: Yes, sir.

MR. STEPHENSON: And -- is your mic on? Or it may not be pointed at you.

MR. GOULD: Yes, sir.

MR. STEPHENSON: Okay. And as I understand it, that RFP was issued sometime in the summer of 2012.

MR. GOULD: To the best of my recollection, yes.

MR. STEPHENSON: Okay. And Mr. Reiner, I think this is more for you. Presumably OPG made the decision to go down this path to engage somebody like Modus some material time prior to the RFP actually being issued.

MR. REINER: Yes, that's correct.

MR. STEPHENSON: And can you assist us at all when OPG made, maybe not the final decision, but turn its mind to and decided that this would be an appropriate step to take, to retain somebody like Modus?

MR. REINER: So that thinking was part of our overall assurance model for the project. We began putting the elements of that assurance model in place shortly after the approval to proceed into definition phase for the project occurred, which was 2010 kind of time frame.

That's where we began to look at, what is the best way to structure the organization to ensure the right controls are in place, how do we provide the right assurance through internal audit, through nuclear oversight, and how do we put into place elements that give our board an opportunity to see, independently from the project, how things are actually performing, and that's where the elements of that began to come together.

MR. STEPHENSON: So is it fair to describe this as the -- these consultants are one of the tools that OPG decided it was a good idea to employ as a part of the overall management of this project?

MR. REINER: Yes, that's correct. It was completely an OPG decision to implement that as part of our project management tool set.

MR. STEPHENSON: And specifically, given the timing of all this, that decision wasn't taken in response to any particular on-the-ground issue where there was a perceived problem or issue. This was done in anticipation of the overall project.

MR. REINER: Yes. That's correct. It was done consistent with how the project organization began to grow and evolve as the project progressed into definition phase.

MR. STEPHENSON: And is it fair to say, sir, that when you -- certainly by the time you had engaged Modus and their partners in this process -- and likely well before -- you fully anticipated that whomever it was that you ultimately retained would likely identify some issues where there were concerns and problems or improvements with various aspects of the project?

MR. REINER: Yes. And just so I can make the point clear, Modus were not brought into the project to essentially say that everything is going well and trust what the project management team is doing. That wouldn't -- that sort of an approach wouldn't lend itself to a proper assurance model.

The intent was to bring in expertise that has project management experience, large project management experience, has the capability to dive into specific subject areas, and do an independent assessment to see: Are there any gaps in the way things are being managed? Are there issues that project management hasn't yet seen that they need to address?

Part and parcel of that, certainly, they do also look at the practices that are being employed and do identify, you know, that there are practices here that are good and they need to continue.

But most certainly the intent was to strengthen the project management overall, and in doing so, it was part of our sort of overall kind of self-assessment approach in -- look for opportunities to learn, close gaps, take corrective actions and measures and improve the overall project.

MR. STEPHENSON: And is it fair to say that it was always the intention that part of their function would be to challenge management? In --

MR. REINER: Yes.

MR. STEPHENSON: -- the sense that: You should be doing this, or you should be doing that, or you should be

doing this better?
It was always intended that that was part of their function?
MR. REINER: That was intended. So the way this is structured, it isn't -- it isn't sort of work that's done independent and then just reports up to the nuclear oversight committee. It is intended to challenge management. And I can give you some examples.
There are findings periodically that come up, and one of them in one of the earlier reports talked about the scheduling approach for the project, where there was a significant amount challenged. As a matter of fact, we set up several meetings with the Modus team and the project management team to just walk through scheduling, what the experience was that Modus has seen, what their concerns were. We walked through the details and it was really a challenge meeting, and in the end we landed in a spot that Modus believed was the right place, we believed as project management was the right place, and we made some improvements to our scheduling process as a result.
MR. STEPHENSON: And to the extent that -- again, whether this was going to be Modus or anybody else, you were expecting to get critiques; correct?
MR. REINER: That's correct.
MR. STEPHENSON: And you also understood that you may or may not accept those critiques? You may challenge back the criticisms or critiques, and at the end of the day your views may prevail or their views may prevail or some other

ground may prevail; fair?

MR. REINER: That is -- that's correct. That is always -- so the role of Modus is not to direct management in terms of what should be done; it is to identify issues.

Every recommendation, and even some of the key findings, are logged by the project management team. We record how the items have been dispositioned. And you will see in that log that there are some items where the management team has indicated: No, we don't actually believe there is a gap here, and the approach is the correct approach.

But we do, as part of that, ensure that Modus understand why we're thinking that and what is driving us in that direction.

MR. STEPHENSON: Turning to you for a moment, Mr. Gould, you've done similar -- I don't like using the word "similar" -- you have done other big projects, complicated projects before?

MR. GOULD: Yes, I have. Several.

MR. STEPHENSON: And you have performed a similar function on those projects as you were performing on this project; fair?

MR. GOULD: Yes. Absolutely.

MR. STEPHENSON: And I take it it's been your experience that with big complicated projects, it's going to be a very rare thing, indeed, that you don't find something that you can make some constructive criticism about?

MR. GOULD: Well, I think what is important is to define why we're here. We're here to look at the project, to help the project in identifying, as Mr. Reiner said, gaps, and identifying with our experience and with our team those gaps so that these issues can be corrected before they materialize. That's the ultimate goal.

And as part of that, we inform management and the nuclear oversight committee of the board, primarily, of those risks and those gaps. We raise red flags, as I call them, to try and give management an opportunity to correct any potential problems before they become costly, to either cost or schedule the project.

MR. STEPHENSON: But I guess my point really is this. It's not been your experience that you show up on projects like this and you find yourself wanting of anything constructive to say, that you say: Wow, this is -- everything here is absolutely perfect and I can't think of anything I would do to improve it.

That hasn't been your experience?

MR. GOULD: It is not my experience, and it is not the industry's experience of megaprojects.

Projects of the nature of the Darlington refurbishment are filled with the potential for risks all the time. It's a question of characterizing those risks, it is a question of getting out in front of them, attempting to mitigate them when possible, and attempting to ameliorate the impacts. But it is part and parcel of the work.

MR. STEPHENSON: And to be fair, I mean, the value you add to these projects is by doing the kinds of things that we see reflected in your series of reports. That's your -- that is your value; isn't that fair? I mean, there's maybe more than that, in the sense of what you do on a day-to-day basis, but this is a significant part of the value you are intended to provide and do provide?

MR. GOULD: Well, I will let others judge our value, but we believe that it is very important that these issues, the issues that we identify, are called out in a clear and concise manner so that the board understands the risks and so that management understands the risks that we see through the prism of the experience that we have in the industry.

MR. STEPHENSON: Now, obviously in your reports you very clearly indicate a variety of issues that you've identified. The campus plan ones in particular are a category of them.

And needless to say, at the commencement of your engagement, you obviously had no idea what issues might pop up, but I take it you were not surprised that -- number one, that there were issues. I think we have already covered that. But even that the nature of these issues is not -- was within -- could have been within the realm of your reasonable expectation of the kinds of issues you might encounter?

MR. GOULD: So the first thing -- maybe the best way to approach that is the first thing that we did after coming on board a year ago February, February 2013, we engaged in a deep look at all of what was ongoing at the time, all the processes that were being developed, all of the work that was being developed, the progression of the estimates, the progression of the schedules for the work, the actual work that was in place.

And we attempted to boil that down to or a report that we prepared in August of 2013, which was our first report to the nuclear oversight committee and to management, that really, as we said, snapped the truck line. It identified sort of where the project was, from our view, as of August of last year.

And since then -- so all of our reports have been a progression based on that baseline assessment, to see how the project is progressing against that.

So we expected -- we come with the expectation that we will find what we find. What I would say to that is there is no textbook that you can go to that tells you how to manage a megaproject like the Darlington refurbishment.

MR. STEPHENSON: Right.

MR. GOULD: There are a lot of different authorities that will give you guidance, but there is no one way to do this. And so the -- we look at the way that the project is being developed and we compare that to our experience.

And that's what we've done here.

MR. STEPHENSON: Back to you, Mr. Reiner, for a moment. Leaving aside the fact that Mr. Gould is sitting directly beside you.

[Laughter]

You know, needless to say, you know, I'm sure that, you know, at least some of the aspects of the various reports that Mr. Gould has provided weren't exactly the most fun reading for you.

But is it fair to say that what we see reflected in those reports is Mr. Gould performing the precise task you would hope that he would perform?

MR. REINER: Yes, it is. You know, something that maybe folks in general aren't familiar with. It -- you know, as part of a good program it is important to be self-critical and have the ability to have others assess what you're doing so that you can make improvements.

It is particularly important in the nuclear industry, because without that, you know, there is a risk that complacency may set in, you're not turning over all the stones to see exactly what is happening in all areas of the business.

So this type of approach that we're using with the external oversight, it is not foreign to the industry. It is used elsewhere, and Nuclear Safety Review Board would be a good example, where the operations side of the business does exactly the same sort of thing.

And the intent is, really, to have people look with a very critical eye at the way you're doing your job, the way you are performing your business, to identify opportunities to take steps that can improve the outcomes.

And so it is not, you know, it's not a surprise. It's expected. It is part of a good -- it's part of a good corrective-action program.

MR. STEPHENSON: What do you say about this, sir. No doubt some people may say that -- you know, they look at these reports and say, Aha, here's evidence that OPG's management of this program has been weak or wanting in some fashion.

And there are others that are going to say, Well, no, actually, it's, you know, the reports and the fact that we've got somebody doing them and the fact that we're dealing with them is a sign of strength of the management of the project.

I mean, what do you say about, you know, those competing views?

MR. REINER: I would agree that the fact that we are doing this is a sign of strength on how the project is managed, but also the way that management responds to the findings that are identified would be the other part of this, that I would say, you know, it's not just a gap has been identified and, ah, there's a problem.

It is really all about, yeah, there's a problem or a potential issue. What is management doing to address that issue, and what processes, what responses, what corrective actions, you know, whatever the case may be. I think you need to look at that in totality, and then that would lead you to the place where you could say, you know what? The right things are being done and things are being looked at the right way and the right actions are being taken.

MR. STEPHENSON: Mr. Reed, I am just going to turn to you for a moment. I am not sure whether this falls in your bailiwick or it doesn't, and maybe you will tell me.

You're familiar, obviously, with the Modus reports. I heard that you have reviewed them. And were you aware back when you were doing your reports -- and if it's in there I may have missed it, and I apologize -- that OPG was, in fact, going to be engaging somebody like Modus to be performing the function that Modus is in fact performing?

MR. REED: Yes. And we, in fact, received the Modus 1 report before our five reports were issued.

MR. STEPHENSON: Okay. And speaking on the subject of a prudent contracting strategy, do you have any comment as to the wisdom or prudence or whatever of OPG engaging somebody like Modus to perform a Modus-like function over a project like this where you've got contractors performing the lion's share of the work?

MR. REED: Yes. I have offered opinions in other jurisdictions that the role of internal and external oversight is quite important in a project this large and that, in fact, the challenging nature of the organization and self-critical self-assessment processes needs to be incorporated, and that external oversight is an important part of that.

I view the role that Modus provides, as well as the role that we provide, as being part of that external oversight process, and it's what we like to see incorporated into any mega-project management team.

MR. STEPHENSON: Thank you very much, panel. Those are my questions, thank you.

MS. HARE: Thank you, Mr. Stephenson.

So I think that takes us to Mr. Poch on behalf of Green Energy Coalition.

MR. POCH: Thank you, Madam Chair. You will be aware that we've been -- I have been working with OPG to try to get an answer to JT3.17, which looks at --

MS. HARE: Yes.

MR. POCH: -- how overruns would flow through under the contracts, and they last night were able to provide me with more or less a spreadsheet that addresses that, which is quite helpful, but it is quite complicated.

I had a chance to speak to OPG this morning and Board Staff, and we think it might expedite things if we went into camera briefly so that OPG could take us through that document and I could ask a few questions about it, and then we could come back out of camera --

MS. HARE: Okay. Thank you. So is this the only document that will be in camera?

MR. POCH: I believe so, yes.

MS. HARE: Okay. So let's start with that.

MR. MILLAR: So Madam Chair, we will ask everyone who has not signed the undertaking or works for OPG or Board Staff to leave the room.

MS. HARE: Thank you.

--- In camera session commenced at 10:05 a.m.

MS. HARE: So is this good?

MR. KEIZER: Madam Chair, Mr. Poch and I also spoke this morning early, and one of the things that we thought would be helpful to you is, at the outset, before Mr. Poch commenced his cross, is if Mr. Rose, who I think probably has the most knowledge about this chart, but I am sure Mr. Reiner does too -- but if Mr. Rose could just, I guess, in terms of helping you to understand it, just speak about the mechanics of how these pieces of the chart fit together, just purely mechanically, so that then Mr. Poch has the context in which he can cross, and it may be helpful for you as well, in terms of understanding where things are going.

MS. HARE: So if I understood what you're saying, you are asking Mr. Rose to explain the second page of this undertaking response; is that correct?

MR. KEIZER: Well --

MS. HARE: The table?

MR. KEIZER: -- I think we all have a --

MS. HARE: No, no, no, no. Sorry, there is something else that we just are getting.

MR. KEIZER: Yeah, you are just getting it now, sorry. I thought you had it in front of you, but there's a --

MS. HARE: Sorry.

MR. KEIZER: -- fairly large spreadsheet.

MS. HARE: Okay. This gets an exhibit number, please? No?

MR. KEIZER: This is the answer to Undertaking 3.17.

MR. POCH: Madam Chair, I think that the large sheet is just a blow-up of page 2 of the undertaking response.

It just doesn't have the yellow highlighting. It is just in grey instead of yellow.

MS. HARE: Okay. Because somebody thought we can't see.

[Laughter]

MR. POCH: Certainly applicable in my case.

MS. HARE: Okay. Thank you.

MR. KEIZER: I can see this, but I don't know if I can understand it, but -- which is probably one reason why we need Mr. Rose to help us walk through, so --

MS. HARE: Okay. So please proceed, Mr. Keizer.

MR. KEIZER: So Mr. Rose, if you could just explain the mechanics of how the portions of this chart fits together in terms of the edification for the Panel and everyone else in the room as to how it works, so that it would help facilitate Mr. Poch in his cross.

MR. ROSE: Certainly. What we've done is we have taken the re-tube and feeder replacement contractual terms, we have applied it into a model here for purposes --

MS. HARE: I'm sorry, is your mic on?

MR. ROSE: My mic is on.

MS. HARE: It seems rather faint.

MR. ROSE: I'll try to lean in a little bit into it.

MS. HARE: Thank you.

MR. ROSE: We took the re-tube and feeder replacement contract for purposes of developing a model to explain how the target price contracting strategy works.

The top part of the page lays out some of the assumptions that we applied in this model. So we assumed a execution-phase target cost of $1.8 billion, and an execution phase fixed fee, which is set at 30 percent per the contract, at $540 million. The fixed fee is based on the profit and overheads for the contract.

We have touched on the limits that are in the contract. There is a schedule disincentive of $250,000 per day. So for every day that the contractor exceeds the target price, they are penalized $250,000.

We have a maximum cost disincentive, which is 48 percent of the fixed fee, so 48 percent times the $540 million fixed fee, as reported above.

And we have an overall maximum disincentive of 80 percent, which would include the schedule disincentive as well.

So going down to part A, part A calculates the cost disincentive portion, plus also includes some information on lost profit and overheads that the contractor would bear if they exceeded the target price.

So in the table, the boxed table, we have actually listed to the left the actual cost greater than target, a range. So you will see a set of ranges; for example, 25 million to 50 million dollars. In that example, where the cost is 25 to 50 million dollars above the target price, 25 percent of the disincentive is applied. So 25 percent times 25 million, as an example, would translate to a disincentive of 6.25 million. And you see that progressively builds up to greater than 250 million.

So in the case, in the scenario that we applied -- I will just go on the 25 percent scenario, but it applies across the table, that in the 25 percent cost overrun scenario, the cost overrun is actually $450 million -- 25 percent of the 1.8 billion -- which would result in a cost disincentive of $181,250,000 cost disincentive.

So when I go down further down the page it says: "Amount of fixed -–" that should say "Amount of fixed fee at risk for cost."

259 million is 48 percent of the 540 that is available. The 181 million that is calculated above is less than the 259. So the reason why I did that is that the cap, the cost cap is capped at $259 million. In this case, it is less than the 259, so the entire cost disincentive for the calculation above in the 25 percent cost scenario would apply.

That translates to a percentage of cost overrun recovered from the contractor in this case at 40 percent. So at a 25 percent cost overrun, OPG would recover 48 percent of the fixed fee that is eligible to the contractor in a $1.8 billion contract, $1.8 billion target price.

Now, going down further, I have also got a sub-heading in bold: "Contractor costs not reimbursed by OPG beyond the target price."

Our fixed fee accounts for profit and overheads that the contractor would bear for delivering against our target price.

For every dollar that they spend beyond our target price, they're not eligible to recover fixed fee -- the fixed fee's profit or overhead.

So in this case, assume the same 30 percent. There is an additional $135 million of incremental work represented by the $450 million that profit or overheads are not eligible to be paid to the contractor.

So in essence, they're -- what I would refer to as their cost exposure is 316 million. The amount that we deducted from their fixed fee of 181 million, plus the $135 million of lost profit and overhead on their amounts beyond the target price.

Now, obviously, the contractual terms, the fixed fee recovery ends at the 181. The message here is that -- it's just there is a motivation when they go beyond the target price, they are not getting any further profit or overhead irrespective of what that amount would be. They are getting none of it.

That's part A.

Part B is the schedule disincentive, very straightforward to calculate. For every day that the contractor goes beyond the target schedule -- every tube and feeder replacement contractor in this case -- which represents 60 percent of our critical path, for every day that they go long they're penalized $250,000.

So if they were six-month delayed, they would be penalized 45-and-a-half million dollars in addition to the cost disincentives reported above.

The conclusion says the total exposure to the contractor is equal to their cost incentives in part A, plus any lost profit or overheads that they would incur for going beyond the target price, plus any schedule disincentives for going long on the schedule, plus any rework or warranty costs that are at their cost.

So in our contract, there's terms of rework and warranty that OPG would not pay for.

MS. HARE: We have some questions.

QUESTIONS BY THE BOARD:

MS. LONG: Mr. Rose, could you explain the note up in the "Scenario" section? What does that mean when you say that incentives and disincentives are all subject to final negotiations? You have just taken us through the incentives.

MR. ROSE: Yes.

MS. LONG: Are you saying they haven't been agreed to by the contractor?

MR. ROSE: We have a contract with the re-tube and feeder replacement contractor that requires us to negotiate a -- the final target price.

The percentage fixed fee is already negotiated and in the contract, dependent on the target price that will be applied. So the fixed fee will be adjusted based on the band that the target price falls in.

The terms that I reported here are per the contract, just that the target price has not been negotiated yet. that is a part of this phase of the program.

MR. KEIZER: And that's because --

MR. ROSE: Or the schedule, sorry, for that matter, as well.

MR. KEIZER: -- as I understand it, the current contract relates to the definition phase, and the target price relates to the execution phase, which is yet to have occurred.

MS. LONG: I understand that the final price hasn't been determined and therefore the 30 percent number would not be determined, but when I see here that incentives and disincentives are subject to final negotiation, I just want to make sure -- has your contractor agreed to how part A and part B will be determined? They might not have agreed to the numbers per se, but they have agreed to the formula that you are going to use?

MR. REINER: Yes. The contractor has agreed to the formula, and this is written into the contract.

So as Mr. Rose said, the thing that hasn't been negotiated yet is what is the actual price and what is the schedule. And that is to be determined as we work to release-quality estimate, but the terms and conditions that were used to extract these formulas, they have been agreed to by the contractor.

MS. LONG: Okay. Thank you.

MS. DUFF: I have one question. During the project, once you have established the -- what was the term you used? That is yet to be determined for the actual price in the schedule? The --

MR. ROSE: Target price and target schedule.

MS. DUFF: The release, yes. Subsequent to this, two years down the road, can that target price change based on negotiations with the contractor again? So unforeseen event occurs and then you agree mutually to change that target price? That could still happen?

MR. REINER: That can happen. There are provisions that allow for a discussion that an unforeseen scope of work comes along that we want that contractor to execute.

We would go through a contract change order process and put that work into the contract, if that is what we decided to do. And then the target price would get adjusted, based, again, on a discussion with the contractor on what it would cost to execute that piece of work.

And it would get embedded into this process.

MS. DUFF: Thank you.

MS. HARE: Thank you.

So, Mr. Poch, ready to cross-examine?

CROSS-EXAMINATION BY MR. POCH:

MR. POCH: Thank you. Thank you for that walk-through, Mr. Rose. Just a few questions on this and then I think we can go back on the record, back on the public record.

First of all, this is with respect to the R&FR tranche of work. This same structure is the structure, and in fact the same -- the terms are the same for the other components where you are using target price mechanism?

MR. ROSE: Generally speaking, yes. The only difference I would tell you is that the schedule disincentive doesn't apply to many of our other contracts because they aren't on the critical path of the project.

MR. POCH: Okay. And this is all pertaining to the portion of the breakouts we have seen in other exhibits where you break it out by contractor, component, OPG management component, contingency, and so on. This is just the contractor component.

MR. ROSE: That is correct. It is for the single line related to where it says "target price". It obviously excludes the fixed-price components that we have negotiated with the contractor.

MR. POCH: Right. And it includes the significant tranche that is OPG's management and engineering and so on in-house?

MR. REINER: Yes. OPG's costs would essentially be time and material. So there is no --

MR. POCH: Right, understood. And obviously you eat 100 percent of that if there is any overage on that.

MR. REINER: Right.

MR. POCH: Okay. Now, the bottom, roughly a third of this page which -- following the bold line, "contractor costs not reimbursed by OPG", I just want to make sure I understand it.

This is what -- you are treating this as lost profit and overhead, but this would be profit and overhead that would be made if you were going to pay profit and overhead on the cost overrun, and that therefore is foregone. Is that what you're saying?

MR. ROSE: In essence, yes. If you -- another way of looking at this, if you were in a pure time and material contract, you would likely pay this amount.

MR. POCH: If -- this is kind of, I am going to call this fantasy profits. You don't have to use those words, but just to distinguish. There's no -- the contractor doesn't have an expectation of making these profits right now. The contract doesn't include this extra work.

MR. ROSE: I think the contractor would have an expectation of making profit for all of the work that they perform. I think what really we're alluding to here is that beyond the target price we wouldn't be paying them for profit, and I think that signals quite a motivation for them to ensure that they are able to deliver within the target price.

MR. POCH: Okay. All I'm saying is these values you have included here, it is not like you're clawing these values back.

MR. ROSE: No. As I said in the explanation, that we only claw back the amount, the 100 -- in the 25 percent cost overrun scenario, the $181 million. The message that I was getting across is that for every dollar beyond the target price there is no profit or overhead being paid to the contractor.

MR. POCH: Sure, okay. Thank you. I think I understand this. Thank you, Madam Chair.

MS. HARE: Thank you. We can now go on air? Yes?

MR. POCH: Yes.

--- On resuming public session at 10:22 a.m.

MS. HARE: We are resuming the cross-examination by Mr. Poch on behalf of the Green Energy Coalition.

MR. POCH: Thank you, Madam Chair. Perhaps we could start by giving an exhibit number to the GEC cross-examination materials.

MS. HARE: Oh, I'm sorry. Are people coming back that left?

MR. POCH: Oh, yes, we can give it a minute.

MR. MILLAR: While we're waiting, Madam Chair, we can mark the materials as an exhibit. It is K15.1.

EXHIBIT NO. K15.1: GEC CROSS-EXAMINATION COMPENDIUM FOR PANEL 8.

MR. POCH: I think we are back, Madam Chair.

Gentlemen, let's start with this contracting strategy question. Let's first of all be clear. For the -- you will have to help me again. RFR is short for...?

MR. REINER: Re-tube and feeder replacement.

MR. POCH: For the re-tube and feeder replacement, which is the largest tranche of the work, you don't have a final contract yet, you don't have a target price yet, because your engineering is not done.

MR. REINER: That's correct. We have the contract, the terms and conditions have been agreed to, but the target price and the target schedule have not yet been determined.

MR. POCH: What flexibility do you have to change the architecture of that contract?

MR. REINER: Well, the contracts do have off-ramps built into them. They have -- it can be quite extreme. We have termination for convenience clauses that could allow us to abandon the entire contract, and there are mechanisms that would allow, through contract amendments, to make changes, if needed.

MR. POCH: So there is still flexibility there if you wanted to change some of these terms?

MR. REINER: There is flexibility, yes.

MR. POCH: Okay. Now, in the technical conference you confirmed that the campus projects, which we have heard of -- gone over your original estimates -- in the main utilized the cost reimbursable target price contracting approach similar to the mechanism we were just discussing in camera for the re-tube and feeder replacement.

MR. REINER: Yes. It is a similar type of approach that provides incentives and disincentives. There are some differences, in that the incentives and disincentives are applied across a pool of project work that that contractor would execute.

MR. POCH: Sure. And in that case, I take it the cost overruns -- and you have already indicated in the technical conference -- the cost overruns that have been experienced are all being absorbed by OPG due to the nature of the cost overruns in that instance?

MR. REINER: They aren't all being absorbed by OPG.

MR. POCH: I'm sorry about that.

MR. REINER: But a large part of the cost overruns are related to scope of work, so increased scope of work, and those are being absorbed by OPG. There are some -- there are some cost overruns that are related to time taken to get engineering work completed, for example, that was done under a fixed-price basis, and so that would not be absorbed by OPG.

MR. POCH: I think you referred to those in the technical conference, and I believe it is not confidential, the component we're talking about? I am not talking about the amount, just the work component. I am looking to you to confirm it is not confidential. It was with respect to --

MR. REINER: Yes, I don't believe it is confidential.

MR. POCH: That was with respect to, I think, sewer and --

MR. REINER: That was with respect to the water and sewer project, and there are some small elements of that also in the auxiliary heating system project and the tool storage project.

MR. POCH: But in the main the cost overrun is being caused by OPG in the campus -- the cost overruns we have seen to date.

MR. REINER: The largest portion of the cost overrun is due to the fact that estimates were produced before the projects got a sufficient way down the path of understanding the scope of work and getting engineering completed in order to be able to price what it will cost to construct. That was the contributor to the -- that was the largest contributor to the cost overrun.

MR. POCH: Okay. I just want to clarify, Mr. Gould or Mr. Reiner, it was not Modus's task to evaluate whether OPG is getting the right price, either on the campus projects or on the refurbishment project as a whole. Correct?

MR. GOULD: Could I ask you what you mean by "the right" --

MR. POCH: You're not -- you're not --

MR. GOULD: Could I ask you what you mean by "the right price"?

MR. POCH: You are not vouching for the 10 billion, for example, or the --

MR. GOULD: No.

MR. POCH: -- or the point estimate?

MR. GOULD: No.

MR. REINER: No. That is -- maybe I will answer that as well just so it is on the record from OPG. No, we're not looking to Modus to identify that 10 billion is the right price for the scope of work that will be executed.

However, we do anticipate as we get towards a release quality estimate that we would do an independent validation of the work that got us to the ultimate point estimate, just to do an independent assessment to ensure that our methodology was sound and that the estimating was sound.

MR. POCH: Sorry, that is a process you are going to go through in the future?

MR. REINER: That is a process that we will go through, yes.

MR. POCH: And, you know, Modus did, in one of its -- in its March 4th report, look at -- address the issue of conformance with the Long Term Energy Plan seven principles, or six, I guess.

And in your report you identify a number of ways that OPG has addressed those principles, and you identify a number of potential gaps, and you offer observations and recommendations. Much of that is confidential, so I am not going to go into that with you now.

I just have a question. Did you evaluate the cost premium that would be paid if OPG were to move from a target pricing to a fixed or guaranteed maximum pricing approach? Assuming that was done at the appropriate stage of engineering.

MR. GOULD: We did not evaluate the -- from a standpoint, looking at a pure cost-to-cost analysis. We did not do it that way.

What we say here, relative to the guaranteed maximum price, is in our experience what we have seen is contractors, once they complete a certain level of project definition, may be inclined to agree to that type of provision. However, it usually comes at a cost, as all contract provisions and all guarantees would come at a cost.

MR. POCH: All right. And you haven't evaluated what that cost would be?

MR. GOULD: We have not done a side-by-side comparison or evaluated what -- how much more the contract conceivably could cost. I don't think that is something that, reasonably, anybody could truly do.

MR. POCH: No, I understand.

MR. GOULD: You'd have to get the contractor involved in that type of discussion.

MR. POCH: Fair enough.

Now, Concentric, Mr. Reed, your review used the regulatory prudence standard as its guiding standard. Obviously you were retained before the Long Term Energy Plan aspects came into play; is that fair?

MR. REED: That's true, yes.

MR. POCH: All right. And that regulatory prudence standard, in your view, would require a project proponent to -- a prudent project proponent to balance risk containment and cost containment in some fashion?

MR. REED: Yes.

MR. POCH: Now, you did earlier draw a distinction between prudent behaviour on the part of the proponent as opposed to prudent cost, and you're saying prudent standard is about prudent behaviour?

MR. REED: That's correct. It does not make a decision or a judgment based upon outcome; it does based upon decisions that led to that outcome.

MR. POCH: Right. But would you agree that outcome -- that is if you had a significant cost change, for example -- that may be an indicator of whether the behaviour was prudent?

MR. REED: Outcomes are frequently used as a guidepost, if you will in terms of where you look and conducting a prudence review. But it is just that, it is just an indicator as to where you ought to look further.

MR. POCH: Okay. Minimizing risk, as opposed to balancing risk and costs in the ordinary course, would not be the equivalence of the prudence standard?

MR. REED: I can accept that, if you take a very strict approach to minimization of risk.

I mean, reducing it to virtually nothing, if you, say, were to say reasonably minimize risk, I would say that is the same as the prudence standard.

MR. POCH: Mr. Reiner, we have seen a history of significant cost overruns on nuclear projects in Ontario, and indeed on the recent hydroelectric project at Niagara.

Would you agree that it is in light of that history that the government chose to explicitly list its principles for the cost risk containment in the nuclear refurbishment process when it issued the Long Term Energy Plan?

MR. REINER: I can't say whether it is a direct result of that. I think it is probably just a sensible thing to do for the government, to look for ways to minimize risks to the ratepayers.

MR. POCH: You'd agree this is a somewhat unprecedented situation, where the government has put out a, you know, four-colour glossy policy announcement where it explicitly lists these principles? You haven't worked under that situation before?

MR. REINER: Well, those principles are part of the

Long Term Energy Plan.

MR. POCH: Yes.

MR. REINER: And, I mean, the -- you know, the Long-Term -- this is, I guess, the first formal update to the Long Term Energy Plan that was first issued many years ago. So to me, I think, you know, it is -- the government, in its strategy on how it is going to meet electricity needs, has the prerogative to set forth the principles under which it is going to do that.

MR. POCH: Of course. It didn't do that in the prior Long Term Energy Plan directives. It -- this is new this time?

MR. REINER: Well, in -- you know, I would conclude, given that there's a significant amount of investment that's being -- that's being proposed through the Long Term Energy Plan, there's probably a level of detail here that the government needed to get to in terms of outlining the principles under which that will get done, that would have introduced it in this update to the plan.

MR. POCH: Would you agree what the government is directing here is to say to you, in your contracting strategy and in your management of this project: Buy us some insurance against significant cost overrun?

MR. REINER: I would put it a little differently. I don't think we are being asked to buy insurance against the cost overrun.

What we're being asked to do is minimize commercial risk. Buying insurance is actually a commercial risk, because you pay for that. A commercial risk translates to there's a value for money element that is embedded here.

So what this principle doesn't say -- at least my interpretation and our interpretation -- this principle does not say: Minimize or eliminate cost overruns at all cost.

What this principle says is: Minimize the commercial risk to the ratepayer.

We believe that our contracting strategy does exactly that, because we're dealing with work that is being executed inside an operating power plant. It is being executed in conditions where a contractor is faced with unknown conditions, unforeseen conditions, where the expertise on how to deal with those conditions lies with OPG.

The contractor is being asked to work in an operating facility. It isn't a greenfield project like a new build; it is an operating power plant that has interferences that run through the work that the contractor is doing.

And so there are -- the operating power plant considerations weigh in. And when you look at -- if you were to step back to see: Is there even an opportunity to shift all of that risk to a contractor? I think we went through some of that yesterday. And our contracting strategies go through that. We attempted to strive for a partnership model in the re-tube and feeder replacement contract, in a partnership model where we would say we'll do some sort of a sharing of that risk. And that wasn't attainable.

And so a large part of the management of this inevitably comes back to OPG. And so, really, this becomes, you know, execute the right strategy that minimizes the commercial risk that the ratepayer is exposed to. And that means when challenges and issues arise that have the potential outcome of causing a cost increase, that those are managed effectively to avoid that cost increase.

And an insurance premium wouldn't do that. It would pay for that upfront.

MR. POCH: I was using the term loosely. I was saying the government is saying: Where you can in your contract structure, pay a premium to your contractors to transfer risk to them. And I understand you can't --

MR. REINER: Yes, and we have --

MR. POCH: You can't do that in all cases.

MR. REINER: You can't do that in all cases, but we have done it in many cases.

So the tooling portion of the re-tube and feeder contract is on a fixed-price basis. There is steam generator work that's being done; that is on a fixed-price basis. There are materials being purchased for the turbine generator; the costs of those materials have been pre-established.

So there are significant portions that are fixed-price.

MR. POCH: We will come back to them momentarily, but I am just saying when I was using the term "insurance" --

and I was just really modifying the question to you -- you don't disagree, though, that the instructions to you are: Where you can shift that risk -- and you might have to pay a premium to do so -- your instructions are to try to do it, and you're just saying you either couldn't, in some cases, or you felt that the risk premium was too high to do it?

MR. REINER: Again, I will say there is no instruction -- I don't read in this any instruction that says: We want you to pay money to shift risk. I am not reading that in these principles.

MR. POCH: Okay. Now, if you turn to our materials in K15.1, at page 23A, I have just reproduced a part of the Concentric report there.

And they note in the paragraph just above the heading in the middle of the page that one of the risks that OPG is carrying is that, because you're coordinating various contractors and work components, that means you have to manage that coordination and you carry risk for that reason.

MS. HARE: Mr. Poch, where are you looking? I am looking at page 23A. What paragraph --

MR. POCH: This is the paragraph above the heading in the middle of the page.

MS. HARE: The one that starts with "Ontario Power Generation selection"?

MR. POCH: I may -- let's hope we're on the same page here. This is page 23A. It's Concentric, page 6 of the

Concentric report.

MS. HARE: Yes.

MR. POCH: And it says "by using this model Ontario Power Generation is accepting the challenge".

MS. HARE: Okay. Fine. Okay. We're on the same page then.

MR. POCH: Great. And Mr. Reiner, you would agree with that observation by Concentric?

MR. REINER: That's a fair observation. We accepted the challenge of managing each of the prime vendors, and it is a direct outcome of the experience that we saw on other large projects, including the large nuclear projects that had these significant cost overruns.

MR. POCH: I think it is probably trite at this point to point out on the next page, page 24 of our cross exhibits, in the second bullet point there near the bottom, that the choice of -- Concentric points out the disadvantage of the target-price approach being more limited risk transfer relative to a fixed-price agreement. I think we've discussed that already.

MR. REED: If I could intervene, that is not a fair characterization of what we said.

MR. POCH: Okay. I will just read it into the record:

> "Disadvantages create substantial oversight responsibilities. Once the cost of each unit exceeds the target price and caps for each unit, the contract is essentially a cost reimbursable, excluding vendor overhead and profit agreement,

with a more limited risk transfer relative to a fixed-price agreement."

What am I missing?

MR. REED: The comment that we have there with regard to that being a disadvantage is a comment with regard to the entirety of the contracting strategy, not simply the use of target price as an element. So it goes to the entirety of the multi-prime EPC model.

MR. POCH: Okay. Thank you.

And if you turn to page 25 of our materials, this is from D2-2-1, attachment 6-1. This is an OPG graphic that -- there's a graphic there which shows the risk and budget control, contractor control effort, how that changes with the -- with different kinds of contracts.

And I take it that the target-price approach is the one that's illustrated by the column on the right? Correct?

MR. REINER: It's illustrated in the column in the middle.

MR. POCH: Oh, I'm sorry, yes. Okay. And can you just explain what the difference between guaranteed maximum target-price approach is, as opposed to cost reimbursable?

MR. REINER: A guaranteed maximum would essentially put a cap on to the price, whereas a cost reimbursable, whatever the cost is for getting the work completed, is the cost that the company would bear. With a guaranteed maximum there is a price cap that would be established.

MR. POCH: But let me understand correctly. In the target-price mechanism you have used, if the contractor has a -- let's say they have a -- let's pick some numbers out of the air -- they have a $10 million contract, and on top of that let's just say there is -- they're getting a $5 million -- these are numbers Mr. Shepherd used, if you might remember, in the earlier technical conference, so I'm going to use the same ones.

On top of that they get $5 million towards overheads and profit. So a total of $15 million contract, let's say, for the sake of illustration.

In the mechanism you have used, if it turns out, because of the contractor not performing it perfectly, that they actually have $12 million in labour and materials costs --

MR. REINER: No. If --

MR. POCH: Let me just finish this so it is clear for the record. You're going to pay that extra $2 million subject to whatever claw-back mechanism, as we have spoken of earlier this morning, that you may have to get some of that back out of the 5. Right?

MR. REINER: No.

MR. POCH: Okay.

MR. REINER: And no because the example that you just gave, if, because of the contractor's performance --

MR. POCH: Ah, okay.

MR. REINER: -- there is a cost overrun, that would fall under a warranty provision or a rework provision and 100 percent of the cost and there is no overhead or profit paid, lies with the contractor.

MR. POCH: Poor choice of words. They're simply slow. They didn't instal the wrong piece, you know, such that there is a warranty or, you know, do work that has to be redone. They're simply slow. The kind of thing that your various penalty clauses are aimed at.

In that scenario they go from -- instead of coming in at 10 it comes in at 12. You are going to pay the two, correct? And then whatever -- you will have whatever disincentives are in your contract, you claw back out of the 5.

MR. REINER: No, I will also challenge that scenario, because simply slow would mean that we're sitting back and we're letting things unfold and we are not overseeing what the contractor does.

So a simply slow, if we had agreed to a target schedule, that means we had a discussion with the contractor on the time it would take to complete work. Our role in oversight is to monitor that.

If we are seeing that there are schedule slippages -- and this is why our model is so important -- we have direct visibility into the contractor's work and schedule on a day-to-day basis.

So we track progress daily, the amount of commodity that gets installed, the number of hours that are being spent on each work item. As soon as we see a slow performance we will ask for a recovery plan. The contractor is committed to providing a recovery plan, and so --

MR. POCH: I think we're confounding the issue here. You certainly -- I understand -- sorry to interrupt, but I understand that you are going to maintain as best you can transparency and working with the contractor.

But you -- but they're directing that work component. And if, in the end, they just don't do a good job of directing it and it comes in overbudget -- we're not talking about, you know, warranty issues here.

If that happens, despite your oversight, you are going to pay that, and then you are going to penalize them with the other mechanism, right?

MR. REINER: Maybe the better example to use is, if there is an unforeseen activity that --

MR. POCH: That's a scope change. That is different, isn't it?

MR. REINER: Well, that is a scope change, yes.

MR. POCH: Scope change you're going to pay 100 percent, right?

MR. REINER: A scope change, we would pay 100 percent, yes.

MR. POCH: Yes, no, I am talking about what these penalties are aimed at. The contractor is simply not being up to scratch apart from, say, the specifics you have spoken of with the warranty.

In that scenario, if it goes from 10 to 12 --

MR. REINER: Yes.

MR. POCH: -- for his labour costs, for example, you're going to pay the two, right? That is the contract. You're going to pay the two. You can then claw back some of that to the extent you can under your penalty clauses, correct?

MR. REINER: Yes. We would pay the two, and we would claw back a proportion of the fixed fee based on the model that Mr. Rose identified, and we would also not pay profit and overhead on that additional work.

MR. POCH: I understand.

MR. REINER: No contractor works without getting profit and overhead. So there is a huge incentive on their part to also do the same kind of monitoring that we're doing to ensure that their performance isn't slow, that their foremen in the field are monitoring the work closely, are supervising the activities, and are keeping the work progressing.

So there is no incentive here for a contractor to slow down a job to try to just recover cost.

MR. POCH: I understand. I'm not talking about what the -- the effectiveness of the incentive. I understand. You have laid that out very well --

MR. REINER: I think an important thing, though, is the outcome is always important to look at. I mean, we can discuss hypothetical scenarios that mathematically might result to the 12 million, but it is really about, what is the event that is causing the problem? And how, in our approach of managing the project, are we able to deal with the event in the structures we have put into place? And I think it is important to not overlook that.

MR. POCH: We spoke about this for two days last week, and this it is all there in the transcript, so I'm not going to ask -- not going to go over all of that again. I just want to make sure I understand and the Board understands how this contract structure works.

When we looked at this graphic you seemed to say you're in the middle and not on the cost reimbursable, and that's what triggered my question. It seems to me from what we've just said you are in the cost-reimbursable situation for your main contracts here, apart from the exceptions you have suggested for warranty, and obvious -- you're in the cost-reimbursable situation. You then have, within the limits spoken of, some disincentives that you impose on the contractor?

MR. REINER: Yes. Now, maybe I can explain what this --

MR. POCH: Is that yes, an answer yes?

MR. REINER: Well, Mr. Rose explained that in his previous testimony on exactly how the mechanisms work. So they work exactly as he described. And he went through scenarios of cost overruns and what we would pay and what we would claw back.

MR. POCH: I am just trying to get a simple answer to the question: Why is that not a cost-reimbursable?

MR. REINER: So what this graphic -- maybe I need to explain what this graphic tries to identify.

What this graphic identifies is that where -- where the oversight that is required on the contractor to perform the work effectively and where the level of certainty on scope -- which translates to completion of engineering design -- where the certainty of scope is high and where the oversight is low, that would take you to the left bar, and the type of contracting model that would be conducive to that would be a lump sum.

On the opposite side, what this highlights -- and this comes from the OPEX and the analysis that was done in establishing the strategy -- on the opposite end, it highlights that where you go into a contract with a very undefined scope -- and undefined could be because there are significant unforeseens, there may be interferences that the contractor encounters, but where the detail of the scope is less defined and also where the oversight on the contractor is high, a more conducive model would be a cost-reimbursable.

For the re-tube and feeder replacement job, given the way we're laying out sort of the progression towards the release-quality estimate, we're getting to quite a high definition on scope. So that's why that bar is up there.

But at the same time, there are still unforeseens and there are interferences that the contractor can't manage on their own. And that is where this target price model lends itself.

And that's -- this tries to depict how our strategy got us to where we are on the contracting strategies.

MS. LONG: Can I just interrupt here? So I think the question that Mr. Poch asked you was: If, in a guaranteed maximum target price contract, you can be compensated more than the target price, how is that not a cost-reimbursable contract?

That is what I am struggling with too.

MR. ROSE: Let me clarify, to help this out.

In the actual exhibit that you reference in your compendium, Exhibit D2-2-1, attachment 6-1 -- I'm not sure here. This is page 9 of 22.

Within the context of that document on page 16 of 22, there's actually a set of definitions, and the definitions for cost-reimbursable says:

> "Vendor is paid its actual labour and material costs with mark-ups for overhead and profit, which are usually at percentage of costs."

So in the example that is in this document, it is talking about the cost-reimbursable for every hour incurred, that costs are reimbursed with profit and overhead applied for every hour.

That is different from the target price, where profit and overhead is set aside based on a target price, and for every hour beyond that target price the profit and overhead is not included.

MR. POCH: Ms. Long? Thank you.

All right. I think that helps. I think what you're saying is there is a cost-reimbursable component to your target pricing approach you have taken. You're just not using that synonymously with the way you've used it in this exhibit. That is helpful.

MS. HARE: Mr. Poch, I think this is an appropriate time to take a break, then.

Before we do, though, I would like to ask you something to think about over the break and come back and answer.

You, in cross-examination, were making a difference between minimizing costs versus balancing costs and risks in the context of a prudence review.

And when we come back, I would like to understand better what you mean by that. Maybe nothing hinges on it, but you did make a difference between minimizing costs versus balancing costs and risks. So that would be of interest.

We will come back at 11:15.

--- Recess taken at 10:55 a.m.

--- On resuming at 11:20 a.m.

MS. HARE: Please be seated.

PROCEDURAL MATTERS:

I would like to first address the submissions of Ms. Girvan on behalf of a number of intervenors with respect to the schedule. And as a result, we have revised the schedule. So the date for argument in-chief remains the same.

The date -- we're going to have staff submissions first, and those will be on August 19th, and then intervenor submissions on August 26th, with reply on September 9th, because we are assuming, Mr. Keizer, that you do need two weeks?

MR. KEIZER: For sure.

[Laughter]

Even that might be a little bit -- have us under stress.

MS. HARE: So just to repeat, August 19th for Board Staff, August 26th for intervenors, and September 9th for reply.

CONTINUED CROSS-EXAMINATION BY MR. POCH:

Okay. Then, Mr. Poch, I left you with a question before the break.

MR. POCH: Yes, you did. Thank you, Madam Chair.

Just a little context of the distinction I was trying to draw, and you may have questions for the witnesses. Where I was going on this is trying to clarify the distinction which we draw, which the witnesses may not draw, between the standard in the LTEP principles, Long Term Energy Plan principles, on the one hand, and on the regulatory prudence standard, which Concentric brought to bear, and which the Board would ordinarily bring to bear, but of course in this case you are being asked to -- also to comment on the contracting approach compliance with the Long Term Energy Plan.

In the ordinary course there is -- it is prudent, one assumes, to enter in some balancing of cost and risk. I am not suggesting you wouldn't do some balancing of cost and risk in pursuit of the Long Term Energy Plan goals either, but there would be a, for example, if I could, you know, hazard a quantification, if there's a contract for a dollar and there's a 10 percent at risk that it might end up being $2, if you can lay off that risk for 10 cents, given the probability and consequence value, that would be the amount you would deem it would be prudent to go to. You've -- on your curve you have minimized your expected costs that way.

Whereas what I was driving at is, under the long -- our position, which is under the Long Term Energy Plan rules, that the pointer has been shifted, that the government -- what I was suggesting to the witnesses is the government is suggesting we place more emphasis on avoiding the risk aspect, the likelihood of a significant cost excursion, and it is worth paying more of a premium than you ordinarily would under the prudence test. Otherwise, why did they bother giving this extra set of rules? OPG was already subject to the prudence test.

I didn't pursue it further because I took the answers from the witnesses as being, they were viewing the Long Term Energy Plan principles as synonymous with the ordinary prudence standard. We will leave it to argument to disagree with them.

MS. HARE: Okay. Thank you.

MR. POCH: I hope I haven't mischaracterized your position.

MR. REED: I don't think it is actually fully correct or fully accurate, so if I could just comment on that briefly.

We see in the Long Term Energy Plan item 1, which is minimize commercial risk, but also item 6, which is to make site-project management, regulatory requirements, and supply-chain considerations and cost and risk containment the primary factors in developing the implementation plan.

So in my view, when you take 1 together with 6, which says you should make cost containment a primary factor, that does require balancing. To me the difference is in prudence we ask the question: Would a reasonable person, given this set of instructions from the LTEP, make such an effort to balance risk and cost? And I think the answer is, yes, they would.

MR. POCH: I am not going to bite. I think the Board appreciates where the difference of perspective lies, and I think we are really going to venture into argument if we go much further.

MS. HARE: Okay. Thank you.

MR. POCH: Gentlemen, I understand that the -- in terms of CANDU reactor refurbishments, the Wolsong reactor that was refurbished in Korea is the least expensive occurrence thus far. Is that right?

MR. REINER: It's the one that was executed very close to the schedule on cost that they estimated going into it. I don't offhand have the exact dollars to be able to do a relative comparison.

MR. POCH: Okay. I had understood it was the -- from the discussion, I think it was in the Modus -- perhaps you can help us, Mr. Gould. I think there was observations about this, that one of the contractors had made reference to this because it was a leading example. Does that confirm -- conform with your memory?

MR. GOULD: So what we talk about there is that the Wolsong plant was used as a reference plant for developing a stage of the estimate for the -- by the joint venture who is doing the re-tube and feeder replacement project.

MR. POCH: And I recall you went on to say why there were some problems with that approach. We don't need to get into -- that is not the purpose of my question here.

I was just really getting at the point that is your understanding from that implicit that the Wolsong was considered to be the best example we have, in terms of cost and schedule control, thus far?

MR. GOULD: I would say that that is a correct characterization.

MR. POCH: Okay. If you could turn to page 26 and 27 of the compendium. There -- this is actually material that was provided in the previous payments application before you, Madam Chair. And there it is a news report from World Nuclear News.

And if you turn on page 27, I read there in the first full paragraph, the second paragraph on the page, it is talking about the AECL having been awarded a large contract for Wolsong 1 re-tubing, and it says there:

> "The terms of contract include completion of the re-tubing for a fixed price and fixed schedule."

Does that conform with your understanding, gentlemen?

MR. REINER: I don't have any reason to believe that this is untrue, but just to be clear on what that scope included, the actual labour to perform the work was not provided by Atomic Energy of Canada, so Atomic Energy of Canada provided the technical expertise, the tooling, and the oversight. The actual physical labour of doing the work in the field was provided by the utility and managed by the utility.

MR. POCH: Okay. Now, gentlemen, I think probably any of you could answer this. But I take it as a given that every major project estimate includes, when we're talking about projects of this scale, includes a contingency allowance, because every project planner understands there is a high likelihood of needing that; is that fair?

MR. ROSE: Yes.

MR. POCH: All right. And if you would turn to page 28 of our compendium, we have reproduced there part of the Modus report. This is the -- from the June 26th -- the sort of cover report that Modus did, if you will.

And in the second paragraph there, Mr. Gould, you have said:

> "A concept within the estimate that is commonly misunderstood is the application of contingency. Contingency is included in the base estimate and refers to costs that will probably -- probably occur based on past experience. As a result, contingency is expected to be spent as the project progresses through its life cycle."

And you say:

"The utilization of contingency is not an indication of poor management."

Mr. Gould, I asked you about that, and I've reproduced the section of the transcript from the technical conference on page 29 of our materials. And in the -- again, in the first full paragraph, I asked you about -- I first recited that to you, and I asked you if, from your perspective, that was the case and therefore it is the 19 billion or the 12.9 with interest and escalation that is the -- is the number people should -- the realistic cost estimate people should have in mind for this project, as opposed to the point estimate without contingency in reserve, and you said: "Correct."

And first of all, I take it that that --

MR. GOULD: Is there a question there?

MR. POCH: I am getting to the question.

MR. GOULD: Okay.

MR. POCH: Setting up the question.

Mr. Reiner, at page 30 of these -- we don't have to go through them. I have just included the page that has all of this history that Environmental Defence provided us with, and that you have been taken to before and put your caveats on.

But would you agree that the planners that would have proposed these estimates that are referred to here, they would have included contingency in those?

MR. REINER: No, I don't -- I mean, I would assume that in some cases, yes, but I think in other cases likely not. And I say that only because when I look at the dates of when some of the estimates were produced, versus the date of the project, I think they would have been just very high-level estimates that didn't get that precise.

MR. POCH: All right. You haven't gone back and looked at, tried to dig through that history and figure that out?

MR. REINER: No. No, we have not.

MR. POCH: Okay. Now, in answer to -- actually, I will turn you to page 9 of our materials. This is the second page of JT2.2.

And you were asked to do, I think, what I was asking you to do in JT3.17 that we discussed this morning, to give a sense of where the chips will fall if there's significant overruns here. And I just want to make sure I am understanding that table correctly.

You show for pretty significant cost overruns, 50 or 100 percent, that the price, the total price that -- doesn't change very much.

Is that because in answering this, you have applied the contingency first?

MR. ROSE: So we actually did -- this question, I think, was asked of me at the technical conference.

MR. POCH: Yes.

MR. ROSE: My response was yes, in the -- when we looked at -- in the individual contract -- we looked at the major contracts -- when the price went up, we applied the contingency first.

MR. POCH: Right. And so what we can't see here is that -- how much of that contingency was taken up in any of these scenarios, and that's what we can see by reference to the JT3.17?

MR. ROSE: And also, I think we had an undertaking yesterday that would also -- that we were going to provide you the details of this table for Mr. Elson, and that is getting ready for filing.

MR. POCH: He has asked -- he has asked you an undertaking to fill out a table and I understand you are going to do so, so I don't need to pursue that further.

MR. ROSE: That is correct.

MR. POCH: Okay. If you turn to page 31 of our materials, I just wanted to -- we had a discussion earlier how you were pointing out that some of your contracts are fixed, and so they wouldn't be subject to the target price sharing of risk. And I just wanted to get a sense of those.

From the -- you can see this in the redacted -- even in the redacted version I have reproduced here. I have just summed up the ones that are labelled "fixed," which are the RFR tooling and mock-up, the steam generator and the turbine generator, the first line there.

Those four items? I've got them all; correct?

MR. ROSE: That is correct.

MR. POCH: I just added those up. It comes to 655 million; sound about right? Take it, subject to check?

MR. ROSE: Yes, yes.

MR. POCH: So just based on -- and these are -- these would be overnight costs?

MR. ROSE: These were overnight costs in 2013 dollars. That's correct.

MR. POCH: So they would be comparable to the $10 billion figure as opposed to the 12.9?

MR. ROSE: That is correct.

MR. POCH: Under an -- interest and escalation...

MR. ROSE: Are excluded from this estimate.

MR. POCH: Right. Okay. These would go up if we counted interest and escalation, but we're on an apples-and-apples basis.

So that would be 6.55 percent of the 10? 655 million?

MR. ROSE: That is 6.55 percent of the 10.

MR. POCH: So in other words, 93.45 percent of the cost estimate, of the $10 billion cost estimate, is either OPG cost or is under target -- in which case you bear the whole risk, or is target pricing with shared risk, or is still in the contingency and reserve pools; correct?

MR. ROSE: That is correct.

MR. POCH: Obviously you bear the risk?

MR. ROSE: There are some non-OPG costs, you know, insurance, fuel, that are not -- that are OPG's to pay, but they're not OPG labour. Just to clarify that.

MR. POCH: No, I understand. I'm just -- who is bearing the risk on these different pots? And so apart from that 6.55 percent, you're either bearing all of the risk or sharing the risk under the target pricing agreements?

MR. ROSE: Yes.

MR. POCH: Okay. So just to be clear, if we go back to that exhibit of the $15 million hypothetical contract -- 10 million in labour and materials and then 5 million in overheads and profit -- if scope changes occur and you renegotiate -- you therefore have to renegotiate -- and so the contractor hard costs change, the overhead and profits would presumably change, you would absorb all of that? That would be the expectation, that you would absorb all of that?

MR. ROSE: Yes.

MR. POCH: Okay. If there is an underestimate of work or materials, it turns out to be a more complicated job because of unforeseen factors, as I think is your position with the campus projects, all three categories go up, and again you absorb -- that is really the same thing? You're going to absorb it in that case?

MR. REINER: That's correct.

MR. POCH: Okay. And if the -- if we have, on the other hand, a cost increase driven by the contractor with the exception of warranty and rework, and they go up, that's what your -- we have discussed already today that is what the -- the penalties try to dissuade them from getting into that situation.

But if those costs were to exceed, in our little example of a $15 million contract, if those extra costs were to exceed the 5 million or even approach the

5 million, presumably, your contractor is just not going to want to carry on, and you would have to renegotiate in that case too; is that fair?

MR. REINER: There could be a potential of that, yes.

MR. POCH: Okay. Just so I understand the interest and escalation, the difference between the 10 and the 12.9, is that calculated -- assuming that the project completion occurs as you now envisage it, you figured out how much it is going to cost you to finance it until then, you figured out what the escalation will be and what inflation is, as applicable to these cost categories, and then you've discounted it back at 7 percent at 2014 or 2013 dollars?

MR. ROSE: So it is based on the -- the interest is based on the cash flows associated with how we expect to spend the funds associated to the 10 billion, based on our current schedule and our current business case.

MR. POCH: Right. But as I have described it -- with that additional thought -- I am correct that you then have added -- in your spreadsheet, you will have added your cost of capital, mix of debt and equity at the rates you use, to carry it to the completion of the project to in-service. And then you've -- and you've calculated escalation and then you have discounted back at 7 percent? That is the mechanics of how you do this, to get to 12.9?

MR. ROSE: No.

MR. POCH: No? Okay.

MR. ROSE: Mechanics are we take the $10 billion, based on a cash flow of how we're going to expend those dollars.

We have added to them a dollar amount for inflation, and we have added to them our interest.

MR. POCH: Yes. That's what I think I was saying.

MR. ROSE: We have not discounted it back to today's dollars. 12.9 billion is representative of the as-spent dollars in the years that they would be spent.

MR. POCH: Okay. What then would be the dollars -- this project is scheduled to be finished in, what, 2020?

MR. REINER: About 2025.

MR. POCH: Oh, 2025?

MR. REINER: Yes.

MR. POCH: I'm sorry. What is going to be the dollars -- at the end of the day? Because this Board -- at the end of the day you're going to come back to this Board and say, Okay. Let's put it all in rate base; so when they look back at this record, and you're going to be dealing in 2025 dollars -- and I understand you might do this in -- not all in one lump sum, but leaving aside that for the moment, what is your estimate now of what this whole project is going to cost in 2025 dollars, with interest and escalation, when you come before this Board at that point?

MR. ROSE: 12.9 billion.

MR. POCH: 12.9 billion in 2025 dollars.

MR. ROSE: That's correct, because it includes escalation for future years' cash flows.

MR. POCH: Okay. All right. And if the project takes longer, leaving aside the -- you saw there was some schedule penalties that you referred us to this morning.

Other than that, if it simply takes longer, I take it that the risk associated with interest and escalation is something that OPG bears?

MR. ROSE: That is correct.

MR. POCH: Okay.

MR. REINER: No, it is not -- just a qualifier on that. It wouldn't be that entire amount of interest and escalation, because you would have to look and see where the delay occurs, because there is an expectation, in fact, we will place units in-service as they are completed.

So the first unit will return to service, and we would put that into rate base in 2019. So it all depends on, you know, the scenario on what that amount might be.

MR. POCH: Yes. No, I wasn't suggesting that we could pin down what the extra interest and escalation might be. It depends what the delay was and what it applied to, obviously.

MR. REINER: Correct.

MR. POCH: Yes, understood. Thank you.

Okay. I wanted to just ask you about the in-service rate-base additions. And you can see at page 1 of our materials, other than the cover -- I think -- this is the -- in this table 1, this is where you -- where you have shown the -- what's happened to the campus projects. And I just wanted to compare that list to what is on page 2, which is the Modus report on the campus projects, or at least it is the part of the cover report which brings forward some of their findings on the campus projects.

This is the same list, right? We're talking about the same group of projects here? The in-service amounts pertain to the campus projects, the same ones that Modus was looking at.

MR. ROSE: Correct.

MR. POCH: Okay. And Modus gave you their observations. If I can paraphrase, they felt on the campus project that there was immature -- may not like that phrase. I know your counsel doesn't like it -- immature engineering and costing, and that they recommended OPG increase transparency and be more hands-on in their oversight. That is really a very high-level synopsis. Mr. Gould, I take it that doesn't offend you?

MR. GOULD: Well, I think this is a little bit too high-level of a synopsis, frankly, sir.

MR. POCH: Okay. And I am trying to avoid getting into it because we spent so much time on it last week and that record is available to us all.

But I just wanted to say what -- be clear what you didn't look at with respect to this. Am I correct that Modus did not seek to provide benchmarks for the heavy-water or the other campus project costs? You didn't go out and look at what other heavy-water facilities have cost to build elsewhere and --

MR. GOULD: To my knowledge, there isn't one.

MR. POCH: All right. And --

MR. GOULD: Which might be indicative of why the scope and estimates are migrating to the place that they have, because it is the first of a kind, and first-of-a-kind construction typically involves a lot more understanding of engineering and engineering of scope before you get a realistic estimate.

MR. POCH: Sure. You didn't do it for any of the other campus projects either, though.

MR. GOULD: That is not part of our scope on this project, sir.

MR. POCH: Okay. And Mr. Reiner, OPG hasn't filed with us, you know, benchmarking to the extent -- obviously it may not be possible for some of these projects, but you haven't filed benchmarking analysis of, you know, what it costs for an auxiliary heating plant or something?

MR. REINER: We --

MR. POCH: I haven't missed that, have I?

MR. REINER: No. We have not done that, and partly because, you know, there is a unique nature to some of these projects. Everywhere where a system ties into the nuclear plant, there is an engineering assessment that's required that really sort of forces you to do the benchmarking in a nuclear context. And the facilities we're looking at, there, you know, there aren't a lot of good test cases out there.

MR. POCH: Hmm-hmm, I understand. And Mr. Reed, I think you have already answered this in the broader sense, but specifically with respect to these campus projects, it wasn't part of your brief either to do that.

MR. REED: It was not part of our mandate to develop into the individual cost estimates, no.

MR. POCH: Okay. Mr. Reiner, I think you indicated in the technical conference that the heavy-water facilities are about 10 to -- at least as of July 8th, they were about 10 to 20 percent complete, and that the auxiliary heating plant or -- and these are the two that you have had the biggest cost overruns on -- that is about 35 to 40 percent complete? Correct?

MR. REINER: That is probably about right, yes.

MR. POCH: Now, does some of the unfinished work on those projects involve engineering, or is it just all pure construction at this point?

MR. REINER: There is some engineering, because you typically start -- it is possible to start construction before all engineering is complete. But the engineering is largely done, with the exception of finalized and stamped drawings being delivered, but in the case of the D2O storage project, we have gone back and revisited some of the technical requirements and looked to see if there are opportunities to make adjustment. And that involves engineering, and that would not yet be complete.

MR. POCH: Okay. It is really just the Darlington Energy Centre, which is the conventional building that is complete, right?

MR. REINER: That's complete. And the OSB refurbishment is also complete from an engineering perspective.

MR. POCH: But not from a construction perspective?
MR. REINER: Not construction, no. Yeah, sorry, in terms of what is complete, in terms of construction, it would be the Darlington Energy Complex.
MR. POCH: Now, just to be clear, I understand that the overruns you've experienced on these campus projects, because it is capital and it is getting amortized and it doesn't -- the amount coming into rates that you are proposing, it doesn't trip over your $10 million guideline for when we talk about it in these cases, but that you are nevertheless asking the Board to find, with respect to the -- the portion of these projects you're bringing into service, that there is prudence at this time. You were asking it to be included in rate base?
MR. ROSE: What we're asking for is what was originally filed is the 18.7 and the 209.4. That is to be included in rate base. We evaluated the revenue impact of the changes made in Exhibit N1-1-1 and the changes made in Exhibit D2-2-2, and they're both not material from a revenue requirement, and I believe that at the technical conference, through a discussion you had with Mr. Barrett, the discussion about prudence was made, and we're asking for an assessment of that.
MR. POCH: Thank you. And I just wanted to bring that out on the record in front of the Board, because that's something the Board is being asked to deal with.
Okay. And obviously you are not asking for prudence with respect to the Darlington refurbishment project, apart

from that, at this time?

MR. ROSE: For the overall cost estimate of the Darlington refurbishment project?

MR. POCH: Yes.

MR. ROSE: No.

MR. POCH: But you are moving on now to asking for capital budget approval, and I think the amounts there are -- I have reproduced somewhere, but I lost track of where they are.

MR. ROSE: I think with respect to the capital budgets we're asking for a finding that the proposed capital expenditures are reasonable.

MR. POCH: Okay.

MR. ROSE: And I think they are --

MR. POCH: Yeah, page 10 of my materials, I think is where that shows up, and similarly for some O&M and so on.

Okay. In that regard, I just wanted to look at some of the numbers as they progressed.

If you turn to page 3 of our materials, you can see this is from your updated business case summary for the big projects.

I am reading this correctly that at the 50 percent confidence level, the LUEC -- levellized unit energy cost -- is 7 to 7-and-a-half cents? In that range? 7.25 on the graphic; is that fair?

MR. ROSE: That is correct.

MR. POCH: Is that what you would refer to as your median estimate, median confidence value?

MR. ROSE: I don't believe we refer to it. I am just trying to figure out if we refer to our median confidence --

MR. POCH: We will come to this, just because later I will take you to places where you compared... yes. In fact if you go to page 5A of my materials, near the bottom of the page, second-last paragraph, this is from the business case summary. You say:

"The Darlington refurbishment project's median confidence LUEC is approximately 7 to 7-and-a-half cents."

So I think there is my answer.

MR. ROSE: Correct.

MR. POCH: And just at the time of this business case summary, the high confidence, the 90 percent, was in the 8.1 cent range; correct? And I think you have updated that now and I understand it is now 8.3; is that correct?

MR. ROSE: That's correct.

MR. POCH: Okay. Page 4, this is -- in your business case under alternative 4 -- abandon the DRP, do not plan to refurbish Darlington -- the paragraph there contrasts the Darlington LUEC and the gas alternative, including carbon taxes.

I take it this is -- this was part of your board's consideration as to whether or not to proceed?

MR. REINER: It was certainly looked at. The combined-cycle was used as a comparator to assess the economics of refurbishment, but it was not the basis for the decision to proceed.

The basis for the decision to proceed came from a shareholder directive that asked us to assess the feasibility of refurbishing the Pickering station, the Pickering B plant, and the Darlington plant.

We provided the results of that assessment back to the shareholder with a recommendation that we not refurbish the Pickering B plant but that we proceed with refurbishing the Darlington plant.

And the -- subsequent to that, we were directed by the shareholder to proceed with the definition phase for that project.

MR. POCH: Can I assume -- is my assumption correct that in doing that analysis for the shareholder, you would have looked at the same factors as -- roughly the same factors that you do in your business case?

MR. REINER: We look at a number of factors. Economics is certainly one of them, but there are other factors that weigh into that.

For one, Darlington is a base load generator, so that means it is a high-capacity factor, a full power type of plant. And so there are some differentiators. It produces, actually, two products for the power grid. One is energy, and that's what we most often speak about, but the other is capacity, and capacity is required for grid stability.

And so this weighs into sort of the analysis that the OPA does, and that comes forth in the LTEP and recognizes that there is a need for that type of a generation resource.

So those are all factors that weigh into the decision.

There are other factors, like community impacts, what the -- employment impacts in the community.

So there are a series of factors, but most definitely the cost is not ignored.

MR. POCH: Right. And the cost you have -- the benchmark you were using to look at the cost is the combined-cycle gas turbine because it can -- it can meet those system needs?

MR. REINER: It can meet those system -- it can meet those system needs, theoretically.

The reason we look at a -- also, we don't ignore the carbon tax, because replacing Darlington with combined-cycle gas would add a significant amount of greenhouse gas emissions, and it would essentially offset a large portion of what the government achieved through the closure of coal.

And that's why we don't ignore that factor. So really, the true, equitable comparison would be carbon-free combined-cycle. That would be the true economic comparator.

MR. POCH: Okay. And you have -- I just see, for the Board's information, at page 5A at the top paragraph you actually do indicate how much of the 7.5 is the carbon pricing. I think it is 0.6 cents, just by way of reference.

But I take it when you did this analysis, you didn't take into account, at least not explicitly, the externalities of your nuclear plants. You ensure for, what, at the time I guess it was 75 million, which would be about one apartment building, you know.

The rest of that risk cost, whatever it may be, it is not included in your analysis, is it?

MR. REINER: What is included is certainly any sort of insurance-related premiums. There is a safety analysis that gets done as part -- and it was done as part of the environmental assessment, that looks at the probabilities associated with releases.

Based on the outcome of that analysis, there is a requirement for us to meet a regulated standard, and that has resulted in investments in safety-related systems such as containment filter venting. So all of those costs are included, yes.

MR. POCH: But you agree with me the residual risk, you know, after you have done what your safety regulator tells you to do, the residual risk that you have insured against to this $75 million limit, whatever is left, you haven't counted that economic cost in your comparison?

MR. REINER: No. And it would be quite low, because the probability is extremely low.

MR. POCH: Well, obviously a whole separate debate, which we are not going to have here. But whatever that cost is, you haven't included it?

MR. REINER: That cost is not included in this economic assessment.

MR. POCH: Right. And I think it was yesterday Mr. Elson discussed with you the fact that you enjoy the benefit of government guarantee on -- on your borrowing, and you are publicly owned and so on, and whatever social cost is shifted there to the government.

You haven't accounted for that in your analysis either?

MR. REINER: Well, we have accounted for the cost of borrowing. We have, yes. I am not sure --

MR. POCH: You haven't accounted for what the extra cost would be without the government risk guarantee?

MR. REINER: I don't know how we can do that, because we are owned by the government and this is the environment we operate in. So I am not sure how we would go about doing that.

MR. POCH: I'm just confirming you haven't -- you may not be able to, but you haven't ––

MR. REINER: Our analysis is based on the project, the environment we operate in.

What we are asked by the province, what is reflected in the LTEP, it is reflective of the realities of the situation that we are in.

MR. POCH: I understand. I'm just confirming --

MS. HARE: Mr. Poch is looking for a yes or no answer.

MR. POCH: I'm just confirming you didn't quantify that cost which is borne by the government, therefore by the public, that risk cost.

You haven't quantified it? You may not be able to, but you haven't?

MR. REINER: Well, we have quantified the repayment of debt, which eliminates that risk.

So if you are asking is there a formula in this analysis that tries to quantify a scenario where there isn't a repayment and there is a residual risk to government, no, because it would -- we have not done that. It would be virtually impossible for us to do that.

MR. POCH: Now, the -- when we looked at Exhibit J2.2 earlier, the figures there for the -- the LUEC value -- LUEC values, levellized unit energy cost values -- the footnote indicated that they were -- excluded fixed corporate overheads and the OPEB, and that explains the difference between, I think it is 7.8 in that exhibit and the 8.3 you mentioned to me before. Correct?

MR. REINER: That is correct, yes.

MR. POCH: Okay. Would you agree, though, that if you didn't proceed with the Darlington refurbishment, at the point when you shut down that plant, and Pickering will be shut down by then, a bunch of corporate overheads that you are treating as fixed could disappear?

MR. REINER: That is quite possible, depending on how that transition is executed, yes.

MR. POCH: Now, just in terms of the sort of risks that are captured in your analyses and that aren't, in the earlier panel that was largely dealing with Pickering, we heard that there is a three-year project on to do a new probabilistic risk assessment which looks at -- I think it looks at the effect of multi-unit interactions rather than just dealing with single units separately.

It is going to take some years to do. It is complicated. Would you agree that that may lead to new -- the outcome of that may lead to new requirements from your safety regulator. And if so, that would be an example of a future capital cost uncertainty that isn't really -- it is difficult to include in your -- in the analysis, your business-case analysis?

MR. REINER: That particular example that you cited was for Pickering. And that may happen at Pickering. It is not the case for Darlington. We have done a probabilistic risk assessment. That risk assessment did look at multi-unit events, and that was incorporated.

So for Pickering -- for Darlington, excuse me, because we are essentially the first refurbishment to make its way through a new set of regulatory guidelines that the Canadian Nuclear Safety Commission has issued, and under those guidelines we are required to do that kind of analysis, and have done that, and have provided it to the Canadian Nuclear Safety Commission.

MR. POCH: Okay. And I perhaps put too much stress on the example there. I think, in fact, in the technical conference you mentioned that the CNSC, or Canadian Nuclear Safety Commission, has in fact already told you that they want you to look at seismic -- different standards for seismic qualification and fire suppression on some of this

Darlington project, and you are in the process of doing that. And I think you already -- correct me if I'm wrong -- you've already agreed there may be some cost implications of that that are not yet quantifiable.

MR. REINER: There is an outstanding regulatory issue regarding Darlington's compliance on fire safety to the current standard. So we are in discussion with the CNSC with putting closure to that. And closure -- just for background, closure doesn't necessarily mean that you must construct precisely to the standard. It means you must demonstrate how you are mitigating any gap that might exist, and in the case of seismic, there is a new seismic design curve that the Canadian Nuclear Safety Commission uses in assessing whether or not construction projects that have a nuclear safety component associated with them comply.

In the case of our projects, that's not an issue for the Darlington refurbishment as a whole. It could have an impact on some of the campus-plan projects. We have already addressed it for the D2O storage project. We're in the process of addressing it for the third emergency power generator project. That would be a second project that would fall under that requirement.

MR. POCH: But -- that's helpful. More generally, there could be -- there can always be either costs or delays in this project or eventual subsequent capital costs or operating costs due to regulatory issues that might arise from time to time. I think that is difficult to quantify, but you acknowledge that is a risk category?

MR. REINER: It is a risk category. And there is a process that deals with that. So as part of the licensing process, when we apply for a licence there is a requirement to do the safety assessments and to do the risk assessments, and those assessments are done against current standards.

And they also incorporate operating experience, nuclear operating experience worldwide. And we are required as part of the relicensing then to identify any potential gaps and mitigation. And the cost for doing that is included in the OM&A costs that the stations have, as well as the project portfolio costs. So they're accounted for through the business planning process.

MR. POCH: So if I could parse that, what you're saying is you expect, in the routine world that you have to live in, there's always going to be some dealing with your regulator, there is always going to be monitoring other worldwide, what's going on, responding to that. You do budget for a certain level of that. You're staffed up, you've got staff that that is their file to manage.

But then what I was asking about is, as a result of that there might be some new requirements. So that is an uncertainty that we can't budget for and you can't quantify at this time?

MR. REINER: Well, that -- I mean, the budgets that the nuclear fleet has in its business plan account for that. That's where those costs are captured.

So the costs that are captured here in the refurbishment program deal with compliance to the current standards. We were required to do an assessment which is part of that integrated implementation plan to identify, you know, how -- any potential gaps and addressing those gaps to the current standards.

MR. POCH: I understand. No, I was really looking at the risks in the LUEC, as opposed to in your capital cost overnight estimate. And the LUEC, which takes into account the future stream of operating capital costs, that is an uncertainty in the LUEC as well --

MR. REINER: It would be included in the LUEC, because it also takes into account the future OM&A costs and the future portfolio costs. So we have accounted for -- there is a capital investment component in the LUEC that deals with precisely the requirement to potentially do an upgrade because of a change in the licensing requirement.

MR. POCH: Okay. I didn't understand that, thank you.

Now -- and I know you have a number of uncertainties in your LUEC, and you do a Monte Carlo analysis to -- because they're not all going to arise at the same time, so that gives you a probabilistic range for -- depending on, in the shuffle, how many of these things happen to overlap one another.

In that analysis could you tell me, does that -- does that analysis take into account sort of more remote scenarios? For example, if you had a big multi-unit outage because of a significant accident at the plant, a loss of coolant accident, for example, is that part of that analysis, or that would be an extraordinary event that isn't captured in your LUEC?

MR. ROSE: The LUEC would include -- it includes a capacity factor that is based on our medium confidence based on ten years' experience. And we also have the lifetime experience.

So if that event fell within, you know, beyond that level of assumption within those capacity factors, it could be an externality. But we've not assumed 100 percent capacity factor, obviously. We've assumed average, based on the performance of Darlington life to date, and the medium confidence is based on the past ten years.

MR. POCH: Okay. I think the answer is you haven't explicitly accounted for that unless that happens to be part of the historic experience you have had with capacity factor and the uncertainty you have allowed for that; is that fair?

MR. ROSE: I believe that's fair.

MR. POCH: Okay. And just to get a sense of that, we -- if we wanted to look at how significant that was, and I am informed that your current probabilistic risk assessment for Darlington doesn't provide us with, at least in the -- what is published publicly doesn't provide us with estimates of outage lengths for different accident scenarios.

So we actually -- we went back to the earlier one, and I have included the few little excerpts of that, and Madam

Chair, I should say obviously the costs in this document will be quite dated, and I am not putting any emphasis on those. I am not going to be arguing that these are indicative of what the costs would be in an outage situation.

I just wanted, for the sense of the order of magnitude of the risk here, to discuss this with you if I could, Mr. Reiner. And you will see that starting at page 11 of our document. And I can -- you can maybe jump to the bottom line here at -- at page 14 of our materials is the -- they have looked at nine categories of accident. And correct me if I'm wrong. If we just look at the least significant accident, that is the FDC number 9, we have LOCA, which is loss of coolant accident, but there's no fuel failure.

So I assume in that case you wouldn't have a problem of contamination of the reactor with components of the fission products from the fuel. The only issue you would be dealing with would be, presumably, some radioactive steam that gets released; is that fair?

MR. REINER: Now, your -- maybe I need to make a couple of points here. This is delving into a subject matter where we would need to bring somebody with expertise.

I don't have that personally.

MR. POCH: All right.

MR. REINER: And this dates back to analysis that was done in the Ontario Hydro days under a regulatory regime that was quite different.

So the types of risks assessments that are done today are very, very different from this. They're quite stringently regulated through the Canadian Nuclear Safety Commission. So the order of probabilities of events today would look very, very different.

They're also reflective of the safety systems that are in the plant. So for example, if we talk about a steam release, a radioactive steam release, we have been required as part of the Darlington refurbishment to put a system into place that ensures that we can vent steam without releasing radioactive material, and therefore keep the containment structures intact in the station.

So those events, with the implementation of those systems, they really start to drop down the probabilistic curve.

MR. POCH: I can calm your concerns here, that in fact I picked that example precisely because it is a situation where there isn't a release to the environment. We are not talking about those scenarios here.

Let me just tell you why I'm asking about this and then I will let you comment.

We looked at this and said for that least of concerning of accidents that they looked at, you can see there there is a mean frequency per reactor-year of 2.3 times 10 to the -- to, in other words, a 2.3 percent chance of that for each reactor for each year it operates.

And then we looked at what is reproduced at page 13 of our materials, and this is the outage duration that would occur -- in the middle two columns -- for all four units if you have such an accident, if you look at the -- under FDC 9, the row for FDC 9, it says from four to 7.5 months, four units would be out.

And I just did the math, and it is, you know, 2.3 times 10 to the minus 2 times four units times 30 years, so an expected 2.76 events, with a four to 7-and-a-half month outage for all for units.

It seemed to me that is adding up to a significant number that would affect your assessment of average capacity factor, looking forward for 30 years.

I am wondering, given that you have -- your LUEC, as you said earlier, just said all you have done is looked at what the range of experience to date, am I correct that -- this kind of analysis that I have just gone through, and admittedly with old numbers -- I have heard your caveats -- you haven't done that in crystallizing your LUEC going forward?

MR. REINER: So we -- the LUEC going forward does not explicitly include an assumption of reduced capacity factor resulting from a significant safety event.

I just caution you not to take these numbers and conclude that it is a high-probability event, which I think you were doing.

MR. POCH: These were the only numbers available to me. And I hear your caution and I assure you -- I hear your caution. But you're telling me you haven't got other numbers to provide us with, and you didn't do that analysis?

MR. REINER: Well, there is a probabilistic risk assessment that was submitted to the Canadian Nuclear Safety Commission that was presented as part of the environmental assessment. These numbers would have been in that.

But the probabilities, again, end up being so low that it becomes an outlier when you apply it to the LUEC.

And it really does not -- you know, it becomes one of these very low-probability, high-consequence events that is at that top tail of the LUEC curve.

MR. POCH: All right.

MR. REINER: So it is -- it really doesn't weigh into the LUEC.

MR. POCH: Okay. I wanted to ask you about another area of costs that aren't --

MS. HARE: Can I -- I am sure it is in the evidence, but what is the date of this report, the Darlington probabilistic safety evaluation?

MR. POCH: This one is quite old. You can help me, sir ––

MS. HARE: How old?

MR. POCH: I think would be from the --

MR. REINER: This says Ontario Hydro, so that would be pre-1999.

MR. POCH: Yes. Which is why I cautioned --

MR. REINER: I do not know the date. I don't recognize this report.

MS. HARE: That's fine.

MR. POCH: We don't have -- we did look at the more recent one. And this information is not available to the public, so this is why we went back to this one.

MS. HARE: I think Ms. Duff has a question as well.

MS. DUFF: Do you mind if I interrupt?

MR. POCH: By all means go ahead.

MS. DUFF: Just regarding your current state, where you are -- the probability -- probabilistic events that are evaluated, that's done through the nuclear -- Canadian Nuclear Safety Commission, am I to understand that the scenarios that are reviewed and are presented and evaluated, this Panel can rely or should rely on the review and evaluation being done by that other commission with respect to this risk?

MR. REINER: I would say yes. This Panel would need to rely on that, because that's done through the environmental assessment process and the licensing process that the Darlington station is required to operate under, which the Canadian Nuclear Safety Commission administers.

MS. DUFF: Thank you.

MR. POCH: Thank you. And I wasn't suggesting otherwise, Ms. Duff. I was just looking at what the operating and capital cost consequences are of whatever risk that process allows to persist.

MS. DUFF: Understood.

MR. POCH: So turning to another aspect, we heard in a technical conference that you had a blue ribbon committee review, amongst other reviews you have done, of your scope. You continue to review your scope on an ongoing basis.

Thus far, they made a recommendation. I think it is -- I think I can say the amount. It is not confidential? You're nodding.

MR. REINER: No.

MR. POCH: What you have used the term "scrubbed" $179 million of the capital costs from the Darlington refurbishment project, some of which is deferred to the operating period.

I did discuss with you in the technical conference one example of that. There was $30 million of the cost of the turbine controls for Unit 2, which is the first unit you are refurbishing, have been deferred to the operating period.

And you explained you wanted to do that because there is a lot of uncertainty in –- in, I think you called it, the burn-in or the teething period for turbine controls. You wanted to get that out of your critical path.

MR. REINER: Yes. There were two reasons. That was one of the reasons, is there was a risk mitigation decision that was made.

But there was another primary reason. The life of the turbine generator, including the control system, is around about 300,000 equivalent full-power hours. And you will see in our evidence that the first unit is actually coming down well before that.

So there is useful life left in the existing system, and it would not make sense for us to replace it prematurely. There's a time value for money element here that also weighs into that decision.

MR. POCH: I guess what I was getting at is you have taken that out of your capital cost estimate for this project. It presumably is in your LUEC?

MR. REINER: It is in the LUEC, yes.

MR. POCH: Because it is foreseen in the future. But it is a cost that is only going to be incurred because of the refurbishment, and indeed you are going to incur it for the subsequent three units being refurbished; correct?

MR. REINER: Well, we are -- again based on sort of timing of when the units come off-line and the state of the system, it is in scope to be executed during refurbishment for the other three units. So it's included in the $10 billion cost estimate.

But the cost -- the $30 million deferral, that would be part of the project portfolio, which is in the LUEC and is in the nuclear business plan.

MR. POCH: Right. Okay. Another thing we have talked about is the tritium removal facility, and you're going to have to -- you're doing a life extension on that and you have to support that, necessitated by the longer life you are now predicting for Darlington.

I take it that that is not something that is -- other than -- the portion of that that you can avoid by doing the D2O handling facility, that life extension, that is a future cost that is also not part of your capital cost estimate, your 10 billion.

MR. REINER: Yes, it is not part of the 10 billion. Again, it would be in the project portfolio and would be in the LUEC.

MR. POCH: All right. You have identified -- and I think at page 21 and 22 of our materials -- I am almost done here -- you have identified...

I've got the wrong page, perhaps. Hang on.

Right. Yes. This is in response to Board Staff 58, L4.12, schedule 1, Staff 58, part (c). If you stop after doing the first unit, Unit 2, and you had a $.7 billion overrun and no further units built, you go -- you answer you would have an 11 to 15 cent per kilowatt-hour levellized unit energy cost for the power that would come out of that unit.

And then it says "production only", and I just wanted to ask you, what's that caveat, "production only", refer to?

MR. ROSE: I think the caveat is getting back to the question that is asked, that the other units, units 1, 3, and 4 would not be producing energy.

MR. REINER: Sorry. Yes. It is units to production only, not Unit 2, 3. Unit to production only.

MR. POCH: All right. And --

MS. HARE: Just to clarify for the transcript, you took us to page 21 and 22, and then you realized those were the wrong pages, and then you mentioned the interrogatory response. That is not in your compendium, right?

MR. POCH: No. I misspoke. This is indeed Staff 58 at page 21 and 22, and part (c) is responding to this scenario that staff posed --

MS. HARE: That starts with "while OPG believes"?

MR. POCH: Yes. That's right. part (c), this is OPG's answer --

MS. HARE: Yeah, okay. That's fine.

MR. POCH: -- they don't --

MS. HARE: Very good, thank you.

MR. POCH: -- don't think it is a realistic scenario, but there you are.

Is there somewhere where the Unit 2 costs are broken out separate from the overall project? The cost estimate? What is the equivalent of the 10 billion for the -- for Unit 2 only?

MR. ROSE: I don't recall.

MR. POCH: Can we get an undertaking to provide that, either point to where in the evidence it is or provide it?

MR. ROSE: We will take an undertaking to either provide it or let you know where it has already been provided.

MS. HARE: Thank you, Mr. Millar.

MR. MILLAR: J15.1.

UNDERTAKING NO. J15.1: TO PROVIDE INFORMATION RE: WHERE THE UNIT 2 COSTS ARE BROKEN OUT SEPARATE FROM THE OVERALL PROJECT AND TO PROVIDE THE EQUIVALENT OF THE 10 BILLION FOR UNIT 2 ONLY.

MR. POCH: And I guess there's a concern because the government has specifically said, Let's just do one unit and see how it goes before we commit to the other ones.

And we saw with the -- at least with that turbine situation that the first unit's in a different position than the other ones. Some of those costs are being deferred and so on.

Are there any other -- other than it being the first, are there other distinctions where there's costs that you are not seeing in Unit 2, but that you are going to see in the subsequent units?

MR. REINER: There wouldn't be anything. But, I mean, there are differences between units. They're not significant differences. So I would say this is probably the only case where there is a significant expenditure that would not be incurred on the first unit during refurbishment.

MR. POCH: Has there been any guidance from your shareholder as to what the acceptable end price is for -- end cost is for Unit 2?

MR. REINER: There hasn't been guidance, but the way that we are approaching this is, we are going to issue a release quality -- cost and schedule estimate. It is going to be a public release. That will form the yardstick against -- we get measured. We haven't got specific guidance that says you can be 1 percent or 5 percent or 10 percent over before we -- so I think it would be a case of, if we are in a scenario where there is a cost overrun or a schedule delay where it would need to be understood what resulted in that, and, you know, any decision would get made at that point in time.

Now, if it's an event that would result in a very significant cost overrun, it would also become very visible just by virtue of the fact that we are going to issue this release quality schedule.

And it will give the opportunity for the shareholder, this Board, and essentially the public to track our performance and progress on the project.

MR. POCH: All right. And I take it that that -- the fact that you have no guidance from the Minister on what is acceptable applies to both the Unit 2 costs and to the overall costs.

MR. REINER: It would apply to the Unit 2 costs and the overall costs, but our release quality estimate will break down, so it will identify that Unit 2 cost, and so that would form the base line.

MR. POCH: Thank you. Madam Chair, thank you, those are my questions. I think that is probably the last I will be in your hair for this hearing, so thank you --

MS. HARE: For now.

MR. POCH: -- for this opportunity.

MS. HARE: All right. Thank you, Mr. Poch.

I think we will take our lunch break now and then resume at 1:30 with CME's cross-examination by Ms. Blanchard. Thank you. So 1:30.

--- Luncheon recess taken at 12:27 p.m.

--- On resuming at 1:40 p.m.

MS. HARE: Please be seated.

The Panel apologizes for the delay. What we were doing was reviewing the interim cost claims with a view to issuing a decision next week. I just want to explain that we weren't having a leisurely lunch.

[Laughter]

MS. HARE: So, Ms. Blanchard, you're ready?

CROSS-EXAMINATION BY MS. BLANCHARD:

MS. BLANCHARD: Yes, thank you.

I am going to focus my questions this afternoon primarily on the issue relating to the reasonableness of the commercial strategy and contracting model. And with that in mind, I would like to take you to the Concentric report, and in particular the report that speaks to the overall contracting model, which is found at Exhibit D2-2-1, attachment 7-1. And I am going to start on page 4 of that report.

Now, in the context of this review, Concentric first set out some general observations that were going to frame the consideration of what was being proposed for DRP, and those are found starting under the heading "General observations." And there is really three key observations there.

The first one is that in Canada we have a very limited marketplace for both -- well, for nuclear, for qualified nuclear engineering fabrication and construction services.

And Concentric goes on to note that of the pool of vendors available in the Canadian market, only one has recently provided a full turn-key refurbishment of a CANDU reactor. And that's, I'm understanding, a reference to the Point Lepreau project.

So essentially, would you agree with me what is being flagged here is really less than ideal commercial circumstances for initiating a megaproject like this?

MR. REED: It is certainly less than perfect competition. So to the extent you believe that a heightened level of competition is ideal, I would agree with that.

MS. BLANCHARD: So do you not agree that competition is important for assisting with obtaining optimal contractual terms?

MR. REED: Some degree of competition is necessary. We run a lot of competitive processes where there have been two or three bidders and that was sufficient to produce a successful level of competition.

It is not perfect. There is not perfect competition in this market, and there are a lot of intellectual property restrictions that have to be abided by, as well as the limited pool of vendors.

But that doesn't mean that there aren't workable solutions to get to a reasonable price and to get to value for money.

MS. BLANCHARD: And while we're on the subject of the IP, because I think you were referring probably to the Alstom contract on the turbine component of the project, so I understand that there are a number of components of this project that have had to be sole-sourced, or where sole-sourcing was identified as the best approach because of IP issues or because of -- because of a general understanding that having the original designer in the midst can be optimal for these projects?

MR. REED: Yes. There is two separate issues there. One is IP and the other --

MS. HARE: If I could just interrupt, "IP," you're talking about intellectual property?

MS. BLANCHARD: I apologize. I --

MS. HARE: Can you please say that instead of "IP"? Because you know what happens? Years later people look at the transcript and they go: Like, what's that?

MS. BLANCHARD: I apologize, Madam Chair. Intellectual property.

MR. REED: Yes. So the first issue is intellectual property. And both fuel handling as well as the turbine had issues with regard to who had the rights to intellectual property with regard to the existing design and the existing configuration.

Apart from that, there's also many other reasons to have the OEM involved in a refurbishment. Whether that is specialized tooling or knowledge of the equipment, it's not just limited to the possession of intellectual property.

MS. BLANCHARD: And just for the record, the OEM is the original engineering designer?

MR. REED: It is the original equipment manufacturer. Sorry, I will try and avoid the use of acronyms as well.

MS. HARE: Please.

MS. BLANCHARD: No. Thank you. We're all guilty of it in this process.

So we have a number of components of the project that have been sole-sourced for a number of reasons, and that has produced some risks that have had to be managed. And those are identified in some of the other reports.

So I am going to come back to that in a moment, but essentially we're dealing with a market that produces less than perfect competition, and so that's one of the factors that is going to be driving the analysis or the selection of the contracting model for DRP?

MR. REED: That's fair.

MS. BLANCHARD: So then I am just going to move on to the next general observation. So the next observation -- and I am not going to get into this too deeply, because we have heard a lot of evidence on it, but the next observation looks at the three significant CANDU either return-to-service projects or refurbishments that have happened in recent years in Canada.

And the statement from Concentric regarding those three projects is, one, all three of them used a different contracting model. And none of those models represent a successful commercial strategy.

MR. REED: I'm not sure we have the phrase: None of them represent a successful strategy. But each used a different model and each of them faced challenges.

MS. BLANCHARD: So the actual line is:

"No Canadian CANDU refurbishment or return-to-service project to date represents a model of a successful commercial strategy."

MR. REED: That's correct.

MS. BLANCHARD: So I'm just going to touch, briefly, on the three, just to get a sense of what the options were.

So the first one was Pickering. And I think we've discussed a little bit this partnership model. And as I understand it, what that entails, from a very high level, is bringing a number of contractors together in a form of joint venture together with OPG, so that the risk of cost overruns and scheduling is distributed amongst the partnerships.

MR. REED: Your description of the partnering model is accurate. I am a little bit lost by your reference to Pickering.

I would not describe Pickering as being in a partnership model.

MS. BLANCHARD: Was it not? Okay. What was the model used at Pickering?

MR. REED: For the Pickering return-to-service -- or parts project, I assume we're talking about -- I have described that as more a self-perform model.

MS. BLANCHARD: A self-perform model?

MR. REED: Yes.

MR. REINER: Maybe I could weigh into that. It started on the first unit as a turn-key project.

MS. BLANCHARD: Okay.

MR. REINER: And because of the difficulties that were encountered on the first unit, when Unit 1 -- and that was Unit 4 -- when Unit 1 was executed it became essentially a self-perform model.

MS. BLANCHARD: So self-perform model as distinct from a multi-prime model that I will want to go to in a minute. But self-perform means that internally OPG employees completed the work?

MR. REINER: Let me define that a bit better.

It wasn't exactly a self-perform. The construction workforce was provided through a contractor. But OPG directly managed that workforce. It was done in conjunction with the contractor, but it was OPG management and oversight of that workforce. But the workforce did come through a contract.

MS. BLANCHARD: So omitting for a moment that it started as a turn-key, did it wind up like a multi-prime contract model, because OPG was acting as the project manager?

MR. REINER: It's sort of -- I would call it a hybrid, somewhat of a hybrid. There was a contract for the construction workforce. There was also a contract for engineering-related services with Atomic Energy of Canada, and I don't know precisely, but there may have been other contracts as well, but the similarity with that project and what we've done on refurbishment, what was recognized on Unit 1, is the more direct involvement of OPG to manage the work.

MS. BLANCHARD: So you have indicated that it was a hybrid. So in terms of what's being presented as the contracting model or commercial strategy, I understand there's two components.

One is, it's multi-prime. So OPG is the project manager, and there are a number of contractors that OPG is managing. And the second component is that there is a use of -- within those multiple contracts, a use of target pricing and sometimes fixed pricing wherever --

MR. REINER: There is a use of target pricing and fixed pricing, and maybe the other nuance that I can identify for you is the other change that was made for refurbishment, is the engineer/procure/construct concept.

So engineering for Pickering was done by Atomic Energy of Canada for the entire project, and then those engineering work packages were essentially handed over to the group that managed the construction work, and they created the comprehensive work packages that then are the instructions to the field for execution of the work.

And what we learned in that exercise is, when you have that kind of a disconnect, when the work starts to get executed in the field, if there is something in the plant that is different than what the engineering drawings tell you, there is a process where the constructor starts making field changes and needs to get things back to engineering. Engineering make changes. It needs to make its way back to the constructor. And that creates an opportunity for finger-pointing, if you will, because they are two separate contractors.

What we have done is, through the engineer/procure/ construct concept, we have tried to bundle work items into distinct scopes, you know, high-level scopes where the engineering and procurement and construction is all done by the same contractor to avoid those hand-offs that occur when engineering gets done and construction starts, so that there is one accountable entity to ensure that field walk-downs are done, there is an understanding of what physically is in the plant and what the deviations are relative to what the paper tells you from an engineering perspective.

So that would be a variation, a learning, that came out of that sort of evolution that happened through Pickering.

MS. BLANCHARD: But aren't you still having some -- some of the bundles -- you've described five major work packages.

MR. REINER: Yes.

MS. BLANCHARD: And within some of those five, at least if I were to take the turbine component for an example, my understanding is that Alstom is doing the engineering because they are the --

MR. REINER: The original --

MS. BLANCHARD: -- I want to say OEM, but the words that connect to that acronym.

[Laughter]

MR. REINER: Yes.

MS. BLANCHARD: And then there's others. And that actually was identified as a risk by Concentric when it was doing its review of that component.

MR. REINER: Yes. So the turbine generator bundle is unique in that regard, and the fuel handling as well, and to put context around it, the sole-sourcing component of that amounts to less than $250 million in the entire bundle of work. So there was a competitive process.

Now, we -- our initial strategy with the turbine generator work, because of these intellectual property restrictions that Mr. Reed talked about, the turbine generator sets for Darlington are custom-built to a specification from Ontario Hydro. They are not an off-the-shelf item, so to speak. They are completely customized for Darlington.

Back when Darlington was constructed, there wasn't a lot of thought given to intellectual property. And so the rights were retained by the original equipment manufacturer.

We had a desire to maintain that engineer/procure/construct concept and stay true to that strategy. So we embarked on a sole-source negotiation with Alstom for the entire scope of work: engineering, supply of materials, and management of the construction work force, which is a relatively large work package.

We could not get to a successful conclusion. And the premium that Alstom put on this job was so significant it essentially priced it from our perspective out of the market.

We recognize that there was a risk that was going to be incurred in separating the work. We separated engineering and procurement of parts and negotiated an agreement with Alstom for that part, and we negotiated a separate agreement that was run under a competitive process to manage the field installation and the construction part of it.

And essentially, in that particular contract, the integrator is now OPG. We have been able to mitigate that risk to a degree. We have got the two contractors signed -- signed off on an agreement that deals with the interchange of information and communications.

It is essentially, call it a collaboration agreement that avoids these issues that I talked about, where a designer may say something and then a constructor says, Well, that's not what I see here in the field. You need to go back and redesign. So we've mitigated that by getting both contractors to sign off on a collaboration agreement.

MS. BLANCHARD: Okay. So I'm not going to spend too much longer on the turbines, but there was a recommendation from Concentric that the Alstom contract be assigned to the contractor who is ultimately retained to do the bulk of the project in order to avoid what you're describing at Pickering, which was sort of the contractor in-fighting kind of situation.

And I think what I am hearing is, that didn't happen. There is something called a cooperation agreement that's been executed instead.

So OPG is remaining in a direct relationship with those two contractors, and there's been an attempt to mitigate that issue, but, you know, it's not the full assignment that Concentric was advocating.

MR. REINER: That's correct.

MS. BLANCHARD: Okay. So I was just going to go through the three quickly, so we've talked a little bit about Pickering. Point Lepreau, we've heard it was a turnkey fixed-price. You discuss it on page 7, or Concentric discusses it on page 7 of the report, when it is looking at the different alternatives that were considered.

And we have heard that Point Lepreau wasn't considered a successful delivery of a mega-project, in that it went over schedule and they were required to pay for additional power.

But there's also a statement which says that the turnkey strategy did largely protect NB Power from cost overruns. And so as I understand it, you know, the turnkey approach would still have been an attractive one in this situation but for the limited market and the statements from SNC-Lavalin that they were not prepared to consider that kind of arrangement on a go-forward.

MR. REED: Let me start that answer and then ask Mr. Reiner to chime in with regard to operational issues.

With regard to purely contracting issues and price, I would not conclude that but for the limited market that fixed-price or LST -- lump-sum turnkey contracting would have been the best choice.

It always comes down to price. It always comes down to a willingness to accept risk and the specific terms of those turnkey kinds of contracts.

As I said, there is typically six or seven categories of events and developments that are excluded from the price protection in a lump-sum turnkey contract, and those can essentially be a huge door that you could drive a truck through.

So I would not conclude that. It was attractive, obviously, to Lepreau. Lepreau is a fundamentally different position and type of project, and it is important to understand this.

Lepreau was going to be shut down. NB Power was shutting down Lepreau completely. There is nothing else going on at the site. And all of the activities on-site were focused on refurbishment. Totally different than an existing site where you've got three other operating reactors, three other units that are in full-scale operation, and you have many common systems between the four units, the biggest of which is fuel handling.

So the need for the owner to maintain control over the structure and avoid, essentially, turning over the keys of the plant to the contractor really helped drive the decision as much as the cost or risk transfer issue.

The ability to do a turn-key arrangement where you've got three other units on site, sharing systems that have to be operated and maintained under the authority, the licenced authority of OPG, is really completely different.

But, again, I would invite Mr. Reiner to comment on that further.

MR. REINER: Yes. And I think everything that Mr. Reed said is correct.

Now, the other insights I can offer you on this is the schedule delays had a direct financial impact on the utility.

And there is litigation currently. This isn't just the contractor picked up the cost and held the utility neutral. There is litigation currently underway to resolve the claims surrounding that.

So from -- if I were to look at it as, you know: Was that a successful model to mitigate risk? It did not mitigate schedule risk. In fact, it did the exact opposite.

I had explained this, and I can't recall if it was at the technical conference or not. The decision made by the contractor to progress the work, knowing that there is a technical issue, was left to the contractor to establish.

That decision was driven -- I'm quite certain that an input into that decision was the contract that they were operating under, fixed price, profit margins that needed to be made within that fixed price. So they took a risk.

It's a risk that we would not take, and we would never -- we would never empower a contractor to have the kind of position to make that risk judgment call on our behalf.

So from that perspective, it was not a successful outcome.

MS. BLANCHARD: All right. So then the last comparator that we have is Bruce, and I would suggest that that's another attempt to try to tie up all of these disparate parts of the project by hiring a third-party project manager to deliver the project, as another effort to distribute that risk for cost overruns.

And we're told that that was -- that was not an effective approach at Bruce and ultimately it was abandoned.

But we're also told that that also relates or ties back to this limited market, because one of the issues they had at Bruce was that the project manager -- or I think it was at Bruce, although maybe this was just suggesting that this might be an issue -- that because of the limited market, the project management company would likely also be the same company that would be delivering some parts of the work packages, and that would -– that creates friction amongst the vendors.

MR. REINER: In that particular case, that was, in fact, the case, that the project manager, they would also have a direct role in executing some of the work, and that they would create some complexity.

But I think the key learning in that was there was an attempt to -- so there was a recognition that the multi-prime model is actually a good model.

However, what happened there is, as you said, the project management got contracted out. And that led to decisions around the project that the owner, then, needed to intervene on in order to keep the project on track.

Now, I just maybe want to clarify something about sort of the limited market. What Mr. Reed identifies is 100 percent correct about the limited number of qualified suppliers.

There are ways to and processes in place that qualify suppliers to the standards required. And so when we enter into a RFP, for example, we do at times begin negotiations where a supplier may not be qualified. But when we embark on that kind of a process, we very quickly have a discussion with them about what the qualification entails, what they need to be able to demonstrate as part of their own quality program, and enhancements they need to make.

And that can have two outcomes. The supplier either says: Yes, we're prepared to go down that path, or: No, we're not prepared to go down that path, and we will pull back.

In regards to the re-tube and feeder replacement contract, which is the largest of them, we actually had very healthy competition.

We started with seven respondents to an expression of interest. We went through a process of narrowing those suppliers down, based on a criteria that looked at technical capability, project management capability, a number of criteria. We narrowed that field down to three contractors.

Through the acquisition of Atomic Energy of Canada by

SNC-Lavalin, there was a natural partnering that occurred, which narrowed the field to two.

And we actually took both contractors through the negotiation, right to very close to the finish line. And by having negotiations simultaneously with two contractors -- they both knew that the negotiations were underway -- it created a very healthy amount of competition.

MS. BLANCHARD: So at the end of the day, you only had two requests for proposals that were actually sent out?

MR. REINER: We narrowed the field to three, which then narrowed itself it two. And we asked those two suppliers to provide us a response, through the formal -- a submission on an RFP that we then issued to those two.

MS. BLANCHARD: Okay. So I am just going to move on a little bit now.

So the multi-prime model is the model that's being proposed for DRP. And we know that there are some significant risks associated with that model; like any model, but there are significant risks.

And one of those is that vendor-caused delays would affect other vendors. And so that is a risk that is unique to the multi-prime model, in that the owner is the middleman, and has to ensure that everyone plays nicely together?

MR. REINER: Yes. And that is a recognized risk. And that does drive, from an owner's perspective, a level of oversight.

But the way -- in large part, the way that risk gets mitigated is by bundling project work in such a way that you can essentially create construction islands where there aren't those kinds of interferences.

So for example, for the re-tube and feeder replacement job, the only contractor that will be inside the reactor vault at Darlington is the joint venture. The only contractor that will be on the turbine hall, doing the turbine generator work, is the Alstom -- Alstom and Aecon through this partnering agreement.

So we are able to, through scopes of work, island as much as we can, but there are examples where we can't island everything, and then there needs to be a coordination.

That has been factored into our scheduling methodology, and we have a process where each contractor attends a regular scheduling meeting where they bring their detailed schedules, they identify the potential interferences. Those get rolled up, and we have a discussion across all contractors to address: So this job is finishing today. What do you need to continue it tomorrow? Is another contractor in the way? So we have a look-ahead process where we start to clear those interferences. And that is run by OPG too, and that's exactly intended to mitigate that risk.

MS. HARE: Ms. Blanchard, if I can interrupt, you actually didn't ask a question. You haven't for a while. You make a statement, giving Mr. Reiner the opportunity to make long speeches, but I don't actually know what the question is and what he is answering.

MS. BLANCHARD: I apologize. I will try to --

MS. HARE: Well, not just you, but also the witnesses; please, just answer the questions.

MR. REINER: Yes. I was just attempting to clarify the ––

MS. HARE: If you look back at the transcript, you will see -- because Mr. Keizer is frowning at me -- you will see that there are lots of opportunities here where there are long speeches here, but you know, I'm looking at my fellow panellists and saying: What was the question that he is answering?

MR. KEIZER: Well, I think Mr. Reiner believed there was a question, and I believe Ms. Blanchard believed there was one as well.

MS. HARE: Okay. You can look back and see what the question was.

MR. KEIZER: And I believe Mr. Reiner is trying to be helpful to the Board.

MS. HARE: No, I am sure he is. Hey, listen. I have been a witness. I know what it's like.

[Laughter]

It is not pleasant.

[Laughter]

MS. HARE: But it is also not helpful to go on instead of just hitting the high points.

MR. KEIZER: Well, I believe he will do his best to answer the question.

MS. HARE: Thank you.

MS. BLANCHARD: Okay. So I am going to ask a question that maybe has a short answer.

You've got five major work packages, but in those five there are a number of significant subsets. And so to just get a sense of the number of -- a sort of ballpark number of major vendors that you are dealing with, I wondered whether it would be useful to refer to the breakdown of the contracts that was provided in Undertaking JT2.3, where the five packages are broken down into different forms of contracts.

You went over this with Mr. Poch this morning. It is at page 31. So would each of these lines represent different vendors? I am counting 17.

MR. REINER: No. If you look on the left side of that --

MS. BLANCHARD: Yes, yes.

MR. REINER: -- so re-tube and feeder replacement -- I apologize if this is going to sound like a speech. I am trying to be helpful -- re-tube and feeder replacement is a joint venture, SNC-Lavalin and Aecon, so two contractors under joint venture -- that is for everything, so it is under one contract.

MS. BLANCHARD: Yes.

MR. REINER: Fuel handling, there are two contracts.

MS. BLANCHARD: Yeah.

MR. REINER: One is for de-fuelling with General Electric --

MS. BLANCHARD: Yeah.

MR. REINER: -- the other has not yet been determined.

MS. BLANCHARD: Okay.

MR. REINER: Steam generators is the -- Alstom doing the engineering and -- sorry, excuse me, my mistake, steam generators is Babcock & Wilcox, partnered with Atomic Energy of Canada, under one agreement, turbine generator is the Alstom for engineering and components, and Aecon to do the construction work. And balance of plant, there are two contractors, E.S. Fox and Black & McDonald.

MS. BLANCHARD: Okay. So I counted ten. Yes, okay. So there's ten major vendors, and then whatever subcontractors they might --

MR. REINER: Correct.

MS. BLANCHARD: Okay. So Concentric indicates that the project team has limited experience in managing vendors under the multi-prime model, and that is in the last paragraph on page 6, and goes on to recommend that owner support services would be necessary to supplement that experience.

And so are the owner support services that Concentric is referring to the kind of services that Modus is providing? Is that what's being referred to when you're describing owner support services?

MR. REED: I will start. No, I would include Modus as providing additional support services, but OSS is a defined set of vendors.

An example is Faithful & Gould, who is brought in for cost estimation. Others have been brought in for engineering. Mr. Reiner can probably speak to the specific names, but OSS is a defined group of vendors that are on call to provide support services in different functional areas.

MS. BLANCHARD: Okay. So --

MR. REINER: That's correct.

MS. BLANCHARD: So would Modus be considered under this umbrella then? I wasn't clear on your answer.

MR. REINER: No. We would not consider Modus under that umbrella, because Modus was contracted by the nuclear oversight committee, not by the project.

MS. BLANCHARD: Okay.

Okay. I'm going to go back now to the report on the turbines, and I am going to go -- so that is attachment 7-2, and I am going to go to page 11 of that report, where Concentric is providing some observations and recommendations relating to how -- to how that project has been -- or how that contract has been structured to date.

And in particular, there's a discussion about achieving internal alignment, and that relates to the issues that were identified when the sole-source negotiations with Alstom continued for a period and then ultimately produced this proposal, which was out of keeping with OPG's expectation.

So when Concentric is discussing, you know, working towards internal alignment, is that a reference to a situation where management might be at odds with the people who are running the procurement? Or why is there improvement being suggested here? It seems -- I guess, to rephrase the question, there's a suggestion that there is room to improve on internal alignment. And so what was -- what was the issue there?

MR. REED: The issue was alignment between two different management groups within the company, supply chain and project management. In this case, project management advanced the discussion of moving to a sole-source strategy within the project management group, and believed it had supply chain on board with that decision.

Supply chain ultimately has to sign-off, or the VP of supply chain ultimately has to sign off on the sole-source justification for moving to that strategy.

There was an unfortunate situation where the position or the person in that position, the VP of supply chain, changed over in the middle of a sole-source consideration, and what looked like it had been alignment on a strategy did not become alignment with the new individual coming into that position.

So it ended up not being terribly problematic. It is the kind of thing where we recommended that there be better documentation and a discussion earlier in the commercial strategy with supply chain on the course being taken, rather than waiting til you get to the point of the submission of the sole-source justification.

MS. BLANCHARD: So at our technical conference last week, Mr. Gould, we were reviewing your report from May of this year. And I can take you to the report if necessary. But just generally, one of the comments was that the information was not making its way up to management about the problems that were being encountered with the contractor. And so that there was a lack of communication. That was one of the red flags that you identified in your report.

MR. GOULD: That's the case, but I think it is a different -- completely different set of circumstances than Mr. Reed just spoke to.

MS. BLANCHARD: I'm not suggesting they're the same circumstances. I am just drawing a parallel, in terms of communication issues between different groups.

MR. GOULD: And that's one of the things that we look for when we come into a project. We look to see that there's appropriate reporting and appropriate reporting-up, and that the issues necessary for management to see are visible.

So it is -- it happens with every project that there's always some flaws.

MS. BLANCHARD: Okay. So there's discussion in the Concentric report about how gated approvals are going to be of assistance. So at various points in the delivery of the project there will be an opportunity to reconsider whether it is economically feasible to proceed.

And when we're discussing this, I would like to go to the LTEP, and there's the one page that we're referring to. It appears in several documents that should be before you today, including -- this is from -- the one that is up on the screen is from the Environmental Defence compendium, but it also appears in the GEC compendium. I am just looking at the LTEP, the seven bullets.

And in particular, at the bottom of the page, in the middle, the instruction is to begin refurbishing -- so the:

"Ontario plans to refurbish units at Darlington and Bruce generating stations."

Then going further on:

"Darlington and Bruce plan to begin refurbishing one unit each in 2016. Final commitments on subsequent refurbishments will take into account the performance of the initial refurbishments with respect to budget and schedule."

And so the LTEP seems to be suggesting that these megaprojects should be structured in a way that is -- I am going to use the word "modular." So, you know, you would do one unit, and then that would be your test case. And you would stop at the end of that unit and do a full analysis about whether or not to proceed with the others.

And so -- you're smiling.

MR. REED: I am just waiting for the question. I didn't want to jump in too soon.

MS. BLANCHARD: To what extent are these contracts set up to work -- to operate that way?

MR. REED: They are set up with a number of off-ramps and a number of what we call "pivot points," whereby you can choose one strategy and then pivot to an alternative strategy based upon new information.

The biggest and best example is in the re-tubing and feeder replacement project, where you can -- at the end of establishing a target price, you can actually terminate the services of SNC-Aecon if you want to, take the mock-up, take the tooling and move it to another vendor, if you choose to pivot at that point to a different strategy.

But there are many other examples in terms of assignment of work, in terms of contracting approach. A number of the contracts, for example, have the ability to pivot from fixed pricing to firm pricing, or from pass-through pricing to firm pricing over time.

So in addition to off-ramps there are pivot points. So that type of flexibility -- and I think the key phrase there was incorporating the lessons learned -- is something that we found to be present in almost all of the contracts, and we view that as a good thing.

MS. BLANCHARD: Okay. I am now going to jump to a different area, which is in our technical conference last week we discussed the 6 to 10 billion dollar range that is referenced. And I asked the question: Do you think it is reasonable to refer to a $6 billion outcome in the context of this project?

So I would like to put that question to you again. Do you think that referring to a $6 billion outcome is reasonable in the context of this project?

MR. REINER: I would not refer to a $6 billion outcome. The $6 billion, if you were to look at the S-curve, the probability curve of project cost, when you pick a confidence range, you will see there's a 6 to $10 billion range that aligns with the confidence that had been communicated.

But our point estimate is not converging on 6 billion. It is inside the 6 to 10 billion range, but it is not converging on 6 billion.

MS. BLANCHARD: So I think we heard that -- now, here's where -- if this is confidential, please don't answer, but you did what is called a Monte Carlo analysis and you obtained a probability for the $6 billion in 2009, and are you able to tell me what that probability was for 2009?

MS. DUFF: Is there a reference? I'm sorry, it would be helpful if I could refer to something in the evidence as you're proceeding.

MS. BLANCHARD: Unfortunately my reference is the transcript, which hasn't been redacted yet, and so I have been sort of dancing around that in an effort to not go in camera.

If it can't be answered easily, I can move on.

MR. ROSE: I can answer it --

MS. HARE: Ms. Blanchard, sorry. Ms. Blanchard, if it is important to you we can go in camera.

MS. BLANCHARD: Well, I wouldn't mind hearing what Mr. Rose has to say, and if it is not satisfactory, then we can go in camera.

MS. HARE: Fine.

MR. ROSE: So in 2009, based on an early level of planning, the $6 billion figure was approximately 50 percent confidence.

MS. BLANCHARD: And so what is the confidence now, now that there have been the additional five years under our belts in terms of working on this project.

MR. ROSE: It's less than 10 percent confidence.

MS. BLANCHARD: Less than 10 percent confidence?

MR. ROSE: That's correct.

MS. BLANCHARD: Okay. But the confidence in the upper range, the 10 million, that's the 9 -- the 98.6?

MR. ROSE: So in 2009, based on our level of planning, we had carried a larger -- I would say we carried a larger, much larger management reserve than we have today. Obviously through our planning, understanding of our scope, finalization of our scope, awarding of our contracts, progressing of engineering, our confidence, our understanding of the scope and the cost estimate has improved.

And the certainty band is tighter, but it's shifted to the right.

MS. BLANCHARD: So is there a reason why that new, tighter confidence band isn't being used in the context of this application in describing the project?

MR. ROSE: No. There is not a reason for that, no. We could put a range on it. We could do the same thing we did in 2009, is look at the P 50 point and the, you know, the P 99, as we did here, and that would be the range.

MS. BLANCHARD: I think that would be helpful. Can I get an undertaking for that?

MR. ROSE: Yes, we can do that.

MS. BLANCHARD: Thank you.

MR. MILLAR: J14.9. (sic)

UNDERTAKING NO. J15.2: TO PROVIDE CURRENT DARLINGTON REFURBISHMENT PROJECT COST RANGE AT P50 AND P99

MS. BLANCHARD: So there's very high confidence in the 12.9 billion, which is the number that includes inflation and capitalization.

We have also heard, though, that OPG is charting new territory in terms of running a multi-prime megaproject. This is OPG's first -- or would you agree that this is OPG's first multi-prime megaproject?

MR. REINER: I think it is certainly the first of the scale that we are executing. There may have been others that were done in a multi-prime way in other parts of the business, across OPG, but certainly in nuclear and of the scale that we are talking about, this is the first.

MS. BLANCHARD: And it's also the first in Canada?

MR. REINER: If you're asking about the --

MR. MACINTOSH: Megaprojects.

MR. REINER: The refurbishments? Or megaprojects in general?

MS. BLANCHARD: Nuclear refurbishment mega --

MR. REINER: Nuclear refurbishments, I mean, Bruce had a multi-prime model, but they subcontracted the management of those contractors and then brought the management of those contractors in-house. So they actually did have a multi-prime model.

MS. BLANCHARD: With a project management --

MR. REINER: With the project management subcontracted. But midway through their refurbishment, they terminated that contract and they took control of the project themselves and project management, each of the prime contractors.

MS. BLANCHARD: So in the context of OPG's request that the Board make a finding about the commercial strategy and the contracting model selected -- so one of the findings that OPG is asking the Board to make is relating to the reasonableness of the commercial strategy and the contracting model -- would you agree that it's reasonable to suggest that that be conditional on -- that there be a proviso added that this finding only holds to the extent that the recovery from ratepayers will be no greater than the revenue requirement associated with 12.9 billion?

I can try to rephrase it, but if... that's the question.

MR. REINER: I would not, because then essentially what you would be suggesting is that this becomes a -- this becomes a capped contract --

MS. BLANCHARD: Yes.

MR. REINER: -- essentially. I mean, that's not the model we operate under in our cost recovery and rate recovery, so --

MS. BLANCHARD: Well, not capped in perpetuity, but capped for the purposes of this decision. You will have to come back for the next application, and, you know, there may be more information then.

But in terms of what the Board is asked to approve today --

MR. KEIZER: I think that would be something for argument, where, if my friend wanted to propose conditions associated with the order, we would have to respond to that in argument. But I don't think that these witnesses have contemplated that scenario in the scheme.

MS. LONG: I thought what Ms. Blanchard was asking is whether or not that was a reasonable strategy for us to make a determination on a contracting strategy that contemplates going over the 12.9 billion. That's what I understood the question to be.

MR. KEIZER: Oh, I interpreted it as that --

MS. LONG: I wouldn't expect that these witnesses would --

MR. KEIZER: -- what -- is what the Board order should be.

MS. LONG: -- be speaking to the issues. I expect you might speak to conditions in argument, but I think what she was asking, is this a reasonable strategy when we consider what a reasonable strategy is.

So I think, Mr. Reiner, you could probably answer that question.

MS. HARE: But I also don't understand it, to tell you the truth, because if then it is capped for these payment amounts and then they can come back to ask for more, what is the difference? What does that accomplish? That is what I am trying to understand.

MS. BLANCHARD: Well, I mean, if you go to the last rate decision -- and I have reference to that. It is on page 72 of that decision -- what the Board was grappling with then is the same thing that the Board is grappling with now, which is that there is a history of cost overruns associated with these mega-projects. I don't think that is in dispute.

And there's a concern that in the regulated context the ratepayers bear -- I am now reading from the decision -- ratepayers bear a particular risk in relation to these large nuclear projects, because they have a history of going over budget.

So we have heard that OPG has all of these strategies in place to mitigate that risk, and it seems to me that it would be appropriate for them to say, We're seeking your approval as to the reasonableness of our strategy, as long as it's in the context of our high-confidence estimate, you know. The two things are paired.

MS. HARE: And then we will come back later if in fact it is more.

MS. BLANCHARD: Well, we will come back and --

MS. HARE: Is that what you're asking?

MS. BLANCHARD: -- we'll -- I mean, if it proves -- if you are above the 12.9, you know, I think a rethink of the contracting strategy is necessary.

MS. HARE: It might be too late.

MR. KEIZER: I think we will have progressed, and I think -- I still hear my friend asking if that is a condition that we want the Board to -- as part of its decision. I think the appropriate place for that to respond to is in argument.

MS. HARE: Is argument. I think so too, Ms. Blanchard.

MS. BLANCHARD: Okay. That was my last question.

MS. HARE: Fine, thank you. Mr. Millar?

CROSS-EXAMINATION BY MR. MILLAR:

MR. MILLAR: Madam Chair. And good afternoon, panel. My name is Michael Millar. I am counsel for Board Staff.

First let me tidy up an administrative matter. I improperly marked or identified the undertaking that you gave to Ms. Blanchard -- I was looking at yesterday's sheet, so I called it J14.9. In fact, it's J15.2, so that is just to clarify the record.

And while we are dealing with housekeeping, I have provided to OPG and to the Board Panel Board Staff's compendium for this panel, and I propose to mark that as Exhibit K15.2.

EXHIBIT NO. K15.2: BOARD STAFF CROSS-EXAMINATION COMPENDIUM FOR PANEL 8.

MR. MILLAR: Panel, I will start with some high-level overview, and in fact, much of my cross-examination will be dealing with higher-level issues, and I won't be getting into the weeds as much as some of my friends may, but just to start with the very basics, can you confirm for me that the Darlington refurbishment project is a multi-year, multi-phase project and that you currently expect that the entire project will be completed about 2025?

MR. REINER: Yes, that is correct, with field execution completed in 2025, closeout of the project 2026.

MR. MILLAR: And with respect to the two test years that are currently before the Board, you're seeking the following approvals, and I would ask you to turn to page 3 of my compendium.

I think Mr. Poch covered these with you earlier today, so if you could scroll to the bottom I will go over this very quickly.

First, there is the ask about the commercial and contracting strategies. The ask related to the proposed capital expenditures in the test years. And then there is a little bit of OM&A there as well. And then there is the request with relation to the in-service additions to rate base that we see there.

Those are your asks; is that correct?

MR. REINER: These are the asks, but the numbers have changed from these numbers through the impact statements that we subsequently filed.

MR. MILLAR: That's correct. And I will get to that in a moment.

MR. REINER: Okay.

MR. MILLAR: There's been some discussion in this proceeding that the establishment of the provincial supply mix is not OPG's job, and that's done, I guess, by the OPA and the provincial government.

Do you recall, there have been some discussions about that through this proceeding?

MR. REINER: That is correct, yes.

MR. MILLAR: So I would like to explore with you what role, if any, OPG itself has in determining if the Darlington refurbishment project goes forward.

There's a few documents on the record in relation to this. There's the Long Term Energy Plan, which has been discussed with some of the parties, and there's also a letter from the Minister of Energy to OPG that is dated March 8th, 2011.

Is there anything else on the record, or not on the record, for that matter, that indicates where it is you have been told to do the Darlington refurbishment project?

[Witness panel confers.]

MR. REINER: We will just take a moment to go through that. There were some things in the previous hearing that were filed as well that provided some direction from the shareholder and some additional things, I believe, for this hearing.

MR. KEIZER: Would it be more expeditious for you if we actually just undertook to advise you if there was something in addition to the letter and the LTEP?

MR. MILLAR: Sure. I think that would -- I have a couple of more follow-up questions in this area. So if it is not something you can put your finger on in the next 30 seconds, then perhaps an undertaking would be suitable.

MS. HARE: Perhaps, Mr. Millar, because we are going to take a break in probably 15 minutes, you could leave that line of questioning until after the break?

MR. MILLAR: Okay. Let me move --

MS. HARE: Give the witnesses a chance to look it up?

MR. MILLAR: Thank you, Madam Chair.

Could you turn to page 7 of the compendium, please.

You know, this is on the same line, so why don't -- I will skip this question for now as well. I may return to it. It is a quotation from the March 8th letter that I referred to, but since we may discuss this more after the break, I will move on for the time being.

Maybe go back to page 5 of the compendium then. You will see here there's an extract from the Long Term Energy Plan. And I want to ask you in particular about some of the off-ramps that are identified here, or at least the concept of off-ramps as it is identified.

You can see just before the list of the seven items it states, for example:

> "Appropriate off-ramps will be implemented should operators be unable to deliver the projects on schedule and within the established project budget."

And it says:

> "The nuclear refurbishment process will adhere to the following principles."

And if you look at number 3:

"Entrench appropriate and realistic off-ramps and scoping."

Do you see that?

MR. REINER: Yes.

MR. MILLAR: I would like to hear a little bit more about these off-ramps. Who is responsible for establishing the off-ramps?

MR. REINER: So the off-ramps, they occur in a number of places. They have been established at the project level in the contracts, and Mr. Reed spoke to that earlier. There are mechanisms in the contracts that allow for off-ramps, as well as changes in strategy.

We also have a process in place. If I can refer you to page 2 of your compendium. That diagram depicts the approvals that we will be seeking for funding releases along each step of the way.

So that would be another control that is in place at the board level to determine whether an off-ramp would need to get executed.

And then when that decision gets made or as we lead up to that decision, we would also confirm with the shareholder that they are comfortable with the decision that is being made by the board.

We also have -- we also have a regulatory off-ramp with the Canadian Nuclear Safety Commission that occurs at the end of each project, and it is essentially a validation that they have asked us for, where we need to present back to the Nuclear Safety Commission the accomplishments in regards to implementing and rectifying the safety gaps that were identified in the integrated implementation plan.

So that would be kind of the series of off-ramps.

MR. MILLAR: So you listed quite a number there, and I won't be able to remember them well enough to go through all of them.

First of all, let's make sure what we understand what we mean when we say an "off-ramp."

When I think of an off-ramp, I think an option to decide not to continue with the project. Are we talking about the same thing here?

MR. REINER: We're talking about the same thing, yes. Now, there could be a change, of course, but no, we're talking about the same thing.

An off-ramp is we decide not to proceed.

MR. MILLAR: If you look at the yellow dots that we have on the screen in front of us, there's a number of them, but it looks like the next -- 3 and 4 have already happened; is that right?

MR. REINER: That is correct.

MR. MILLAR: Five is the next one to happen? That is when the release-quality estimate is ready?

MR. REINER: Yes.

MR. MILLAR: So at that point, OPG will come to a decision to either continue with the project or not continue with the project; is that correct?

MR. REINER: Yes. And let me just also -- between 4 and 5, that diagram doesn't actually show it, but there is an annual process. I think it is footnoted down at the bottom of that diagram. There is a bullet that talks about detailed planning releases, and how those are breaking down -- broken down.

So number 4 is done an on an annual basis. There is 4A, 4B, 4C. Last year we passed 4C. We will be back to our board of directors this November, requesting a funds release for 4D. And as we do that, we provide updates on the cost estimate and the economics of the project, to give our board of directors an opportunity to alter course or potentially stop the project.

MR. MILLAR: Let me focus on the release-quality estimate now. There is a number of them, but that's -- aside from perhaps 4D, that's the next major one, at least that is listed here.

So at that point, the board, OPG's board, will make a go/no-go decision.

What are the criteria for making that decision?

MR. REINER: We haven't yet established the detailed criteria, but I think it is safe to assume that if the cost of the project exceeds the $10 billion that we have identified, when that threshold is surpassed there would be a serious discussion about next steps. I think we would be in a hold at that point in time.

Whether or not that triggered an immediate off-ramp, I couldn't tell you at this point, but there would certainly be a hold at that point.

MR. MILLAR: Okay. So total cost is the big thing that would be looked at, at that point?

MR. REINER: Exactly. Total cost would be the big thing.

MR. MILLAR: If I heard you correctly, if you go over $10 billion, you're not saying that there is a -- 100 percent that will trigger an off-ramp, but there would be a very serious look as to whether or not to continue with the project?

MR. REINER: Exactly.

MR. MILLAR: Thank you. That's helpful.

And again, who -- was it OPG and OPG's board of directors that determines what these off-ramps are? Or was that the role of the OPA or the provincial government somehow?

MR. REINER: In this diagram, this is OPG and OPG's board of directors. This is a reflection of the board direction and board process.

This wasn't -- this wasn't a provincial direction. However, it does align with the off-ramps that the LTEP is proposing.

MR. MILLAR: So the off-ramps that we're looking at here, first, are set by OPG's -- by OPG, and it's OPG that has the power to decide to go or no-go with the Darlington refurbishment project?

MR. REINER: The OPG board would have that power to make that decision. I mean, obviously it would be in consultation with the shareholder, but that would be -- it would be board-level authority to make that kind of decision.

MR. MILLAR: With respect to the Ontario Energy Board, who you are before today, obviously, what role, if any, does this Board have in deciding if the Darlington refurbishment project goes forward?

MR. REINER: In my view, we are not seeking a decision from the Ontario Energy Board whether or not this project goes forward.

That's a decision that is made -- again, from my perspective -- outside of this process. What we are here to seek is exactly what the -- what we went through on your first slide.

MR. MILLAR: Right. And that is for the test period, obviously?

MR. REINER: Yes.

MR. MILLAR: I don't know if you can answer this. Will OPG ever -- is it OPG's view that the Board's approval is necessary to go forward with the Darlington refurbishment project, whether or not -- it might not be now. You're right, you're not even at the release-quality estimate yet, but from what I am understanding from you is the Board will be asked in a series of rate applications to put money into rate base as assets come into service, but I am not hearing a step ever where the Board is actually asked to opine on whether or not the Darlington refurbishment project overall is a good idea.

MS. HARE: Mr. Keizer?

MR. KEIZER: Well, I think that is actually a legal question, in terms of what statutory parameters exist, which would require -- you know, it exists, for example, for transmission companies to come for leave-to-construct, but I don't believe there is a parallel provision for generation construction.

So I think it is something for argument as to the parameters of the Board's jurisdiction in respect to that.

MS. HARE: And you will address that in your arguments?

MR. KEIZER: I figured that would be the next question.

MS. HARE: Is that a long list?

MR. KEIZER: Madam Chair, we will address that in argument.

[Laughter]

MR. MILLAR: So I won't receive an answer now as to whether or not you ever intend to come and ask the Board for approval to conduct the Darlington refurbishment project?

MR. KEIZER: Well...

MR. MILLAR: I took it the answer was no. In argument, we could argue whether or not that is the right answer, but I --

MS. HARE: Yes. That is why I asked Mr. Keizer to address in argument in-chief, because then others have the opportunity to respond.

Mr. Shepherd, you look very puzzled.

MR. SHEPHERD: Madam Chair, I thought this was noncontroversial, that they're not and will never ask for this Board's permission to -- and they have no legal requirement to do so.

MS. HARE: That's fine. They can set out their position in argument, then.

MR. SHEPHERD: Well, I don't want to have to do the legal research if we -- if we all agree on the answer.

MR. KEIZER: I think Mr. Shepherd's puzzled look, I think one time we're actually on the same side.

[Laughter]

MR. SHEPHERD: Perish the thought.

[Laughter]

MR. KEIZER: So that is our view. We do not -- there is not statutory requirement.

MS. HARE: But I assume Mr. Millar is asking for a reason.

MR. MILLAR: No, it wasn't entirely clear to me if that was the company's position or not, so -- I thought that was probably the case.

MS. HARE: Do you want this addressed in argument, or no need?

MR. MILLAR: If we have his answer now, there that is sufficient for me.

MR. KEIZER: I believe also, Madam Chair, we will, one, I –- my –- I think -- my position, obviously, is that I don't believe there is a statutory provision requiring it. And I think it was touched on on the issues submissions that were made and the ultimate issues decision.

MS. HARE: Okay. Thank you.

MR. MILLAR: Okay. I will move on to my next area.

Could I ask you to turn back to page 3 of the Board's -- pardon me, Madam Chair. Did you want to break around three o'clock?

MS. HARE: Whenever is convenient in terms of your flow of questions.

MR. MILLAR: I will see if I can get through a little bit more, and then maybe we will look to take a break.

MS. HARE: Thank you.

MR. MILLAR: Thank you. Back to page 3, the second bullet point deals with your proposal that the Board make a finding that the proposed capital expenditures in the test period are reasonable. And I recognize the numbers might have changed a little bit, but that is not really relevant to my question right now.

As I understand it, these are expenditures you are making in the test year that will not actually close to rate base; is that correct? They won't be used and useful, and therefore you are not seeking actually any payment amounts associated with them?

MR. ROSE: A subset of these expenditures would be included in the approval for in-service additions, two points down. Correct.

MR. MILLAR: Which is a fairly small proportion of that?

MR. ROSE: Comparatively, yes.

MR. MILLAR: Okay. Thank you.

And I would just like to explore with you -- this is something that actually comes up in other proceedings too, so I am not trying to be difficult about this but I would like to hear the company's position on this.

What does a finding of reasonable mean with respect to those expenditures that aren't closing to rate base?

I take it it is not a prudence review, because they're not -- there's no payment amounts associated with them, but if the Board gives you what you asked for, what does that mean?

MR. KEIZER: Well, I think, actually -- sorry to interrupt my friend, but I think we're following the course of the filing requirements, and those are the same requests that we sought in the last --

MR. MILLAR: Maybe I could make the question simpler. And I recognize it is a difficult question to answer, because Mr. Keizer is quite right. They are required to put this information forward.

Let me change the question. You will still be coming forward at a later date for a prudence review when these amounts close to rate base; is that correct?

MS. HARE: Well, let's just be clear. You don't really mean prudence review. You mean a review for reasonableness of the costs?

MR. MILLAR: Well, OPG takes a very strict view on what the word -- I am trying to not anger Mr. Keizer by using a word he doesn't like.

Normally when amounts close to rate base, for example, the items in the fourth bullet there, they seek a prudence review when those close to rate base, and I --

MS. HARE: Well, I think Mr. Reed went to great extent to explain what a prudence review is, and there's a legal definition -- well, you and I have had this discussion before.

MR. MILLAR: Many times.

MS. CHAPLIN: What a prudence review is and it isn't. So they will definitely come for an assessment as to whether they're reasonable. Prudence starts with somebody asserting that an action was taken that was imprudent.

MR. MILLAR: The point of my question is not to get into a discussion about --

MS. HARE: And I was the last one to be involved in this --

MR. MILLAR: -- what if any difference there is between --

MR. KEIZER: I think in terms of just --

MS. HARE: Just ask your question again.

MR. MILLAR: My question is, in the amounts under bullet 2, for those items that are not actually closing to rate base in the test period, which is most of that money, at some later date those amounts will become used and useful and OPG will return to the Board and seek a finding that it is either reasonable or prudent to close those items to rate base. Is that correct?

MR. KEIZER: From OPG's position, yes. To be able to seek rate recovery, we would have to have capital additions to rate base, which would imply we would have to meet the appropriate standards to accomplish that.

MR. MILLAR: Okay. Madam Chair, maybe now would be a good time for a break, collect ourselves.

[Laughter]

MS. HARE: Okay. Why don't we break until 3:15.

--- Recess taken at 2:53 p.m.

--- On resuming at 3:23 p.m.

MS. HARE: Please be seated.

MR. KEIZER: Madam Chair, if I may, in Mr. Millar's earlier examination, he had made inquiries about other areas of provincial approval or recognition or acceptance of the Darlington refurbishment, however you want to characterize it.

MS. HARE: Yes.

MR. KEIZER: And we had indicated we would look at the break. The witnesses have made reference to two documents at the previous proceeding. So there are two letters.

First is a letter to Tom Mitchell from Brad Duguid, and that was filed in the EB-2010-0008 proceeding, and it was marked as Exhibit D2-2-1, attachment 3.

And there was also a letter filed in that proceeding -- and unfortunately I don't have the second page, but in any event it is a letter to Mr. Hankinson. And it was also filed in EB-2010-0008, and -- I guess it was from Dwight Duncan. And it was Exhibit D2-2-1, attachment 5.

So those were the additional -- and I advised my friend during the break and we're just putting it on the record.

MS. HARE: Mr. Millar, you have those?

MR. MILLAR: I don't have them in front of me, but we certainly have access to them.

MS. HARE: Do you need them?

MR. MILLAR: No.

MS. HARE: Thank you. So please proceed.

MR. MILLAR: Thank you.

MR. KEIZER: I had only one other comment.

MS. HARE: Oh, I'm sorry.

MR. KEIZER: And that is that apparently Mr. Reiner advised that he has -- he wanted to make a correction of something he may have -- concerned whether he misspoke about something earlier today, so I will turn to Mr. Reiner.

MS. HARE: Okay. Thank you.

MR. REINER: This was in regards to the questions that were being asked about the Pickering A return-to-service contracting arrangement, so the first unit, Unit 4.

The intent was for OPG to do it under a partnering agreement. The partners were going to be OPG, CANEC -- which was a consortium of Comstock and Stone & Webster -– and Atomic Energy of Canada.

Atomic Energy of Canada refused to sign that partnership, so it became a design-bid build, with no sharing of risk through the -- through a partnership approach.

The design work was done by Atomic Energy of Canada, and then the OPG became the construction manager, but Comstock -- CANEC provided the construction workforce.

There were some complexities with the contractors through that project and the Comstock arrangement unwound midway through that process.

Pickering Unit 1 continued on, on a similar path, but OPG became the designer, not AECL. And OPG was also still the construction manager. But the construction, the execution was done under a multi-prime-type model, with Black & McDonald, Babcock & Wilcox, and Crossby Dewar executing construction work packages.

MS. HARE: Okay. Thank you.

Mr. Millar, please proceed.

MR. MILLAR: Thank you, Madam Chair.

Panel, I think when we broke we were still looking at page 3, so maybe we could go back there, quickly.

I would like to move now to a discussion of the approvals you're seeking for the in-service additions to rate base. You can see that at the fourth bullet.

Now, I understand there have been some updates to these numbers, but with respect to 2014 and 2015, what we see here listed are $18.7 million and 209.4 million; is that correct?

MR. ROSE: That is correct.

MR. MILLAR: I think your microphone is off, sir.

MR. ROSE: Apologies. Yes, that is correct.

MR. MILLAR: And we will discuss that there have been some changes to that in a moment, but just so I'm clear, you haven't actually updated the application on account of those updates; is that correct? You're still seeking to close these amounts to rate base through this application?

MR. ROSE: That is correct.

MR. MILLAR: Thank you. I am going to ask you about the changes to the numbers in a moment, but before I do that, just a more high-level question, and I will see where we get with this.

I would like to discuss -- so Mr. Barrett indicated in some previous testimony that you are, in fact, seeking a prudence review of these costs and that they are expected to close to rate base.

How -- I guess I see some difficulty possibly when you are closing -- many of these projects are not completed; is that correct? You have started the work on them and some of them are entering service, but the project itself is not completed; is that fair?

You can look at any -- maybe turn to page 11 of the compendium. That might assist us a little bit.

MR. ROSE: Yes. I have page 11 up. The only project that is complete is the Darlington Energy Complex. It is significantly -- there's a couple of minor in-service amounts for the externals of that facility, but the rest of them are in progress.

MR. MILLAR: So let's just take one at random, the very first one, Darlington OSB refurbishment.

What does "OSB" stand for?

MR. ROSE: Operations support building.

MR. MILLAR: So you are seeking to close $29.7 million of that to rate base in the test period, but that -- so what that indicates to me is that a portion of that project will come into service at that time; is that right?

MR. ROSE: That is correct.

MR. MILLAR: I know the numbers have actually been updated, but just for the purpose of this discussion I want to explore that with you.

So a portion of that will enter into service.

Does a finding of prudence in this regard signal that the Board is actually finding the entire Darlington OSB refurbishment to be prudent, or is it just those amounts that are closing to rate base in the test period?

[Witness panel confers]

MR. ROSE: We believe it is just related to those amounts closing to the -- in the rate period.

MR. MILLAR: Do you see any concern -- I don't want to put you on the spot with this question because I don't know the answer to it either, but do you see any concern with the Board making a finding of prudence on say, whatever, a quarter of a project without actually making any finding as to whether the entire project itself is a good idea?

Should that give us any cause for concern?

MR. REINER: Just a clarification, maybe. I am not sure that we're asking that the project is a good idea.

I mean, the project is part and parcel of what is required as part of the refurbishment, so what we're really looking at is -- is the prudence around the approaches used, the strategies, and then related to those projects, the costs incurred as a result of that approach to bring these facilities into service.

MR. KEIZER: I think it may be helpful as well for us to be able to set out exactly the relief we're seeking in argument in-chief, and that will provide, I think, an answer to Mr. Millar's inquiry.

MR. MILLAR: Let me approach this a slightly different way with a slightly different series of questions.

Still on page 11, that table that we have in front of us, this shows the numbers as they were when the application was originally filed, and then it shows the N1 update, and then the most recent update that was just filed earlier in July; is that correct?

MR. ROSE: That is correct.

MR. MILLAR: And the totals that you are actually seeking to close to rate base -- which are in the application as originally filed -- are about $228 million; is that right? That's the 18.7 plus the 209?

MR. ROSE: That is also correct.

MR. MILLAR: And as it turns out, the amounts that are actually going to be used and useful are a little bit higher now. They're up to about 290 million; is that right?

MR. ROSE: That is also correct.

MR. MILLAR: And what I understand from your application, then, is that that delta of about 62 million or so, you're not actually seeking any particular approval for the prudence of those amounts? You're sticking with what was in your original application; is that correct?

MR. ROSE: That is correct. The revenue requirement was assessed and was deemed to be not material.

MR. MILLAR: Okay. So although the overall amount that is actually going to be used and useful is higher than the amounts that you are seeking approval for, for some of the individual projects the number is lower.

And I am thinking, in particular, of the heavy water storage facility; that is the D2O storage facility that is the second item there.

And just to go over the numbers, originally -- and in fact, today -- you're seeking to close $83.5 million of that project to rate base; is that correct?

MR. ROSE: That is correct.

MR. MILLAR: Can you tell me what that -- that is not the whole project; correct?

MR. ROSE: At time of filing, that was the -- in essence, the whole project.

MR. MILLAR: Oh, it was?

MR. ROSE: Yes.

MR. MILLAR: Okay. Thank you.

MR. ROSE: Now just to clarify on that, there are parts of this project that are, I guess, not capitalized, not eligible for capitalization.

So that would be the difference between the project and this amount.

MR. MILLAR: Understood. But if we look to what is actually going to happen now or the best estimate of what's going to happen, only about a total of $16.5 million of that will actually be used and useful in the test period?

MR. ROSE: That is also correct.

MR. MILLAR: That's just the 15.5 plus the 1.0.

And in addition -- I don't think we need to get into the details here. Some others have already discussed it and Mr. Shepherd may discuss it as well -- but the Modus report identified a number of concerns with respect to that project. Is that fair?

MR. ROSE: That is correct.

MR. MILLAR: Okay. So it seems to me there may be two issues here. The first is that the amounts that you're actually seeking to close to rate base and to get a prudence review for, those won't actually be used and useful in the test period; is that right?

MR. ROSE: Other than the portions noted, you are right.

MR. MILLAR: Right. So the vast -- I don't know about the --

MR. ROSE: In this case the vast majority --

MR. MILLAR: The large portion of it is not actually going to be used and useful, and yet you still want a prudence review for the whole project, essentially.

MR. KEIZER: I think that there is a bit of confusion here, and so for the sake of the record, I think we just want to be clear.

One, I think that probably unfortunately the finance panel, which was dealing with rate base additions and other things, would have been the better place, I think, for these questions, but unfortunately they have moved on. We certainly can take an undertaking to clarify exactly what we're doing.

I think my understanding is that the amounts of 14 and 15 -- so 18.7 in the 2009 is what OPG is seeking to add to rate base, recognizing that some of the projects that are listed in the original filed columns now have shifted because of delays and other things. Some of those other projects that are shown in the updated exhibit have changed in terms of amounts.

And so the end result being is they still fall within that envelope of 18.7 in 2009. And therefore, that is the amount that is still being sought to be closed into rate base.

The D2O storage facility, parts of it is coming into service; you're correct. Other parts have been delayed based upon the evidence to 2016.

MR. MILLAR: And I do understand that, Madam Chair. But as I understood it, the ask in this case is still to have the entire $83.5 million associated with the heavy-water facility closed to rate base. If I am mistaken about that, then --

MR. KEIZER: That's not the position of OPG. And if you wish, we can clarify that by way of an undertaking, if you need it on the record.

MR. MILLAR: I do. And I will just give you my question, is -- I guess Mr. Barrett said earlier that OPG is seeking a prudence review for the amounts that are closing to rate base. And the amounts you're actually seeking to close to rate base specifically with the D2O facility are not actually going to -- going into service in the test period.

So I don't -- I'm not clear if a finding of prudence is being sought for matters that are not actually closing to rate base.

MR. KEIZER: I think the confusion is, is that when the update was done the projects did change and shift as a result of the update in Exhibit D2-2-2. The implications of that, though, is that the changes in the amounts were not material to the revenue requirement.

So as a result OPG said -- is saying, effectively, We're going to continue with our original ask, and recognizing that the projects as shown in the far right column of this table at D2-2-2, schedule 2 is a current status of the projects, and that is the nature of what's going into rate base.

So I think that may be the source of the confusion. It is confusing, and I think it may be helpful if we actually put that on the record more clearly, other than through the technical-conference discussion that took place with Mr. Barrett --

MR. MILLAR: Okay. But --

MS. LONG: So Mr. Keizer, are you able to do that by tomorrow, just in case the panel has some questions before we -- hopefully we finish tomorrow.

MR. KEIZER: Yes, that's fine.

MS. LONG: In the event that we have some questions for the panel about that? It would be helpful if we could see it tomorrow.

MR. KEIZER: That's fair. And I believe the results, though -- and I'm sure that someone will correct me if I am wrong, but I believe there was also an undertaking filed arising from the technical conference that talked about those parts that were going into service that were used and useful and those parts that were not.

So we will cross-reference that undertaking in the undertaking response.

MR. ROSE: That undertaking is JT3.5.

MR. KEIZER: We will put it in when we move to the answer.

MR. MILLAR: So this new undertaking is J15.3.

UNDERTAKING NO. J15.3: TO ADVISE WHETHER A FINDING OF PRUDENCE IS BEING SOUGHT FOR MATTERS THAT ARE NOT ACTUALLY CLOSING TO RATE BASE.

MR. MILLAR: And just to be clear, Mr. Keizer, I actually do understand why OPG didn't update the application, not really saying that was the wrong idea. It was just, it's not clear to me now for which of these line items OPG is seeking a prudence review.

MR. KEIZER: I understand, and I think probably what we need is a table that is clear and that everyone can understand and therefore look at and ask any questions that is necessary and any explanation needed to make sure --

MS. LONG: Yes.

MS. HARE: And I will go back to my, you know, pet peeve. Is it really a prudence review that you are seeking? Look it up legally, what a prudence review is.

And the other thing is, my understanding is it is not used and useful, it is used or useful.

MR. KEIZER: You are absolutely correct, Madam Chair, it is used or useful. I agree with that. And I apologize for the mistake.

And I think the appropriate response, I guess, with respect to it is that we are seeking to add it to rate base, and in terms of the application of whatever appropriate standard the Board should use in reflecting those facts we would address in argument.

MS. HARE: Thank you.

MR. MILLAR: Thank you, Mr. Keizer, Madam Chair. I will move on.

I wanted to discuss in a little bit more detail the release quality estimate and what that will mean. First of all, Mr. Reiner, I think this is already on the record, but I understand that the release quality estimate is scheduled to be ready in about October of 2015. Is that still the case?

MR. REINER: That's still the case.

MR. MILLAR: And could you turn to page 16 of the compendium, please. So we didn't have to go in camera. I have provided the public version of this document, which takes out all of the numbers. But if you could imagine that there are numbers behind the black-outs there.

Is it fair to say that when the release quality estimate is completed, the numbers that we can't see there may well change? They might go up, they might go down. They probably won't be identical to what we don't see in front of us right now.

MR. REINER: Yes, the numbers will change.

MR. MILLAR: Okay. And is it OPG's -- do you propose to file the release quality estimate with the Board when it is prepared?

MR. REINER: We hadn't thought about that, but we expect that to be a public document.

MR. MILLAR: Let me take you to page 25 of the compendium. This is an extract from the decision in the last payments case.

If you could look at the middle paragraph, it states:

> "Approval of the expenditures for the test period should not be taken as acceptance of the business case underlying the entire project. Once the Darlington Refurbishment Project reaches the stage of having a release quality cost estimate, the Board expects to examine the reasonableness of proceeding with the project. At that time the Board may consider establishing a framework within which prudence could be examined should the project proceed forward."

Is that OPG's expectation of how this will go forward? I know we discussed this a little bit previously. But is it OPG's expectation that the Board will have a role in reviewing the release quality estimate?

MR. REINER: Certainly we wouldn't expect the Board to have a role in regards to validating the release quality estimate, but we would certainly -- we would certainly want the Board to be in agreement with the methods by which we achieve the release quality estimate, the work that was done to assess the scope, to get the estimates for the -- for the construction work, the contracts, the precise target prices and schedules would be in that release quality estimate.

We talked about, through this hearing, the process we're using for that and what our contracts call for. We would certainly expect the Board to find that that was a reasonable approach.

MR. MILLAR: Let me approach this a slightly different way. As we discussed earlier, the release quality estimate, at least for OPG, is a -- it is a go/no-go point. Is that right? There will be a decision made to go or not to go?

MR. REINER: There would be, yes.

MR. MILLAR: It's one of those yellow circles we --

MR. REINER: Yes.

MR. MILLAR: -- discussed earlier.

So beyond that, what's the -- I think you discussed this a little bit earlier, but I would like to tease it out a little bit more.

What is the significance of the release quality estimate to OPG's management? Is that the yardstick against which you're going to measure your actual cost performance for the project?

MR. REINER: That's exactly right. Both cost and schedule.

MR. MILLAR: Cost and schedule?

MR. REINER: Yes.

MR. MILLAR: So let's imagine the release quality estimate comes back, and let's say it is $9 billion, and then in 2025 you finish up and it actually costs $12 billion, or $7 billion, for that matter, but let's say it is $12 billion.

What will that mean? Does that mean that OPG failed to do the project in a cost-effective manner?

MR. REINER: I guess it would depend on the scenario that resulted in that. So if -- if there were -- so your example had a $3 billion cost overrun.

If we had a $3 billion cost overrun on the first unit refurbishment, I would fully expect that the off-ramp would be executed. And that would be --

MR. MILLAR: Okay, but I'm not sure that was exactly my question.

If the number comes in, if the end number comes in at higher than whatever the release-quality estimate's is, will OPG regard that as a failure of cost control?

MR. REINER: Not -- not necessarily. There may be some unknown things that occurred during that time period that don't have anything to do with the project itself or the execution of the project itself.

So again, we would need to look at what caused that kind of a cost overrun.

If that cost overrun were the result of the execution of the work, and the environment that we're executing in didn't change and the approach is precisely the approach that we have outlined here, then we would consider that to be a failure.

MR. MILLAR: What about from the perspective of this Board? Would it be reasonable for the Ontario Energy Board to use the release-quality estimate as the yardstick against which it ultimately measures the reasonableness of the Darlington refurbishment project costs?

MR. REINER: I would think it would be a key input to that, but not -- not the only input.

MR. MILLAR: What if the Board were to say something like this: Your release quality estimate is 9 -- 10 billion, whatever it is. That's what we're giving you. You get $9 billion and don't ask us for anything more.

Would that be a fair thing for the Board to say?

MR. REINER: Not -- in my opinion, not under the current regulatory structure that we operate under.

MR. MILLAR: Mr. Reed, sorry, I haven't meant to ignore you.

There was a discussion you had yesterday relating to how prudence reviews or reasonableness reviews or whatever you want to call them are conducted in some other jurisdictions, and you gave the example of Florida; do you recall that?

MR. REED: Yes.

MR. MILLAR: I guess from what I understood from your testimony, Florida Power & Light is, I guess, doing a major refurbishment or a series of refurbishments or new build or whatever it is, but there's a $20 billion project or series of projects that is underway; is that right?

MR. REED: That's correct.

MR. MILLAR: And I take it -- I don't know exactly how the regulatory regime works in Florida, but I guess they must go to their regulator to seek approval for recovery of these amounts?

MR. REED: Yes, they do.

MR. MILLAR: And what I understood from you is that they do an annual prudence review, in fact. They appear to go before their regulator every year. Is that what I understood?

MR. REED: Yes. Just by way of explanation, the regulatory regime in Florida up until six years ago was almost the same as Ontario. But then it was supplemented by a new law passed by the legislature and signed by the governor, called the Nuclear Cost Recovery Clause Act.

And under that act, costs were reviewed each year as to the prudence and reasonableness of those costs, and the budget for the upcoming year was reviewed each year.

And cost recovery was provided on a current basis, not everything goes into rate base at the time of commercial operation.

So the cost recovery regime was changed.

And as I understand it, OPG had proposed a construct at some point in the past that was not that much different from what has been experienced in Florida.

But in Florida, each year's costs are reviewed after that year is completed, and the budget for the following year is also reviewed for reasonableness. And importantly, the decision as to whether to continue with the project is also reassessed every year.

So there are two filings per year, and that includes a reassessment of the cost-effectiveness -- more than cost-effectiveness. A reconsideration of whether the project is in the public interest.

MR. MILLAR: So just two follow-up questions on that.

I guess these annual reviews serve as a go/no-go; is that what I understood you to say?

MR. REED: It's a go/no-go confirmation by the Florida Public Service Commission, yes.

MR. MILLAR: So it is the regulator in that case who makes that determination?

MR. REED: It is made first by the board of directors of Florida Power & Light, or of NextEra Corporation, their parent company, but confirmation of that is received each year by the regulator.

MR. MILLAR: And you talked about cost recovery on a current basis. Would I be right in assuming that means essentially that CWIP goes into rate base, that construction work-in-progress goes into rate base immediately, so you don't have to wait until the project is finished?

MR. REED: It is not quite that simple. There is two categories of cost and different treatment for each in Florida. And this is the same in Georgia and almost the same in South Carolina.

Pre-construction costs, which are licensing, development, permitting, all of the NRC processes to establish and to secure a COLA, a combined operating licence, are recovered dollar for dollar, without carrying charges and without going into rate base. They are recovered as expenses, on an annual basis.

Construction costs are rate base items, and what is recovered are the carrying charges on that each year.

So technically, CWIP is not going into rate base but you are recovering the AFUDC, the allowance for funds used during construction, on an ongoing basis.

So separate treatment for pre-construction and construction.

MR. MILLAR: Okay. I understand. Thank you.

In your experience, do other jurisdictions have a similar set up as Florida?

I know they probably aren't all that many jurisdictions that have $20 billion capital projects underway, but is Florida unique in that regard, or is that something you see in other jurisdictions as well?

MR. REED: No. It is not unique. I mentioned Georgia and South Carolina. Both of them have comparable dual-unit new nuclear programs underway. The laws are similar in those two states.

And that's really been found to be necessary for investor-owned utilities, to provide the confidence for those companies to get approval from their board and to move forward.

In fact, in other states where utilities sought that type of cost recovery mechanism and did not secure it, the utilities have, in fact, withdrawn from sponsoring new nuclear projects.

There are lots of other states that are in between. An example that I was thinking of when we had a discussion on the record earlier is Minnesota.

Minnesota, you get a certificate of need or a certificate of public convenience and necessity, and then whenever you have a cost deviation from your cost estimate of greater than 10 percent, you have to file a notice of change to circumstances. And that gives the commission there an opportunity to reconsider whether the project is in the public interest, and allows you to have confidence that the commission has reviewed the new circumstances and is in agreement or disagreement with you, with regard to the decision to continue.

So that's sort of a hybrid, and it is triggered by the bandwidth of plus or minus 10 percent around the estimate that was used under the certificate of need case.

MR. MILLAR: Thank you. That is very helpful.

Let me move on to my next area, and that's with respect to your ask regarding the commercial and contracting strategies. Maybe just to refresh our memory, we can turn to page 18 of the compendium.

And I have just reproduced there what the actual issues list says in regard to this issue. It is issue 4.11, "Are the commercial and contracting strategies used in the Darlington refurbishment project reasonable?"

And then if you flip to page 19 -- this is just taken from your prefiled evidence -- I just want to understand exactly what the ask is here.

So as we see presented, at least at a very high level here, starting at line 11, it says:

"As noted, the Darlington refurbishment project is a multi-phase project made up of individual projects of various sizes. As part of the definition phase, OPG developed an overall commercial strategy and separate contracting strategies for all major project work packages. The commercial strategy sets out an overall commercial framework with guiding principles for establishing and maintaining commercial relationships with third parties to support the Darlington refurbishment project."

And then it moves on to contracting strategies:

"A contracting strategy is the means for successful implementation of the project delivery approach for the major project work packages making up the Darlington refurbishment project. Each contracting strategy is freestanding and takes into account factors such as the nature and scope of the work, the vendor marketplace, and any potential long-term commercial arrangements. Each contracting strategy results in a recommendation on the most suitable sourcing approach, contract structure and pricing mechanism for that specific work package."

I'm sorry to take you through all that, but I had to remind myself a little bit what we were discussing here.

So that at a very, very, very high level is what we're talking about here; is that correct?

MR. REINER: That's correct.

MR. MILLAR: Just to be clear, do these commercial and contracting strategies apply to the campus projects as well?

[Witness panel confers.]

MR. REINER: There isn't a specific contracting strategy for the facilities in campus-plan projects. These contracting strategies cover the work during the execution phase.

Now, it does cover a set of prerequisite projects under the balance of plant contracting strategy, and that would include projects like containment filtered venting, the third emergency power generator, essentially the projects that are part of the environmental assessment commitments that we were required to address.

MR. MILLAR: I think -- I want to be careful I don't get into confidential information. I think the best estimate we have of the total cost of the project that is on the public record is the 6- to $10 billion; is that right?

MR. REINER: That's correct.

MR. MILLAR: Of that 6- to $10 billion, what portion of that is covered under the commercial and contracting strategies?

MR. REINER: So without getting into the breakdowns, which is where the answer lies, it would be -- it would be in the 50 to 60 percent range.

MR. MILLAR: Are you able to discuss at a high level what is excluded from this? I understand that the campus project -- projects are one thing. What else wouldn't be covered under this?

MR. REINER: So not covered in the contracting strategies are OPG project management costs, operations and maintenance costs for maintaining the units during the refurbishment time period, the cost of fuel to restart the units, the cost of waste storage for -- related to the components that are taken out of the refurbishment units, insurance costs, Canadian Nuclear Safety Commission costs. Those would be excluded. They're not covered by the contracting strategies.

MR. MILLAR: Okay. Thank you.

In September 2011 you retained Concentric. And if you could turn to page 20 of the compendium -- again, this is all just taken from the application -- I want to get the words right as you stated at line 14:

"Concentric was retained to review whether the commercial and contracting strategies for the Darlington Refurbishment Project were reasonable and prudent."

And then Concentric prepared its report, which is before us today, and that was -- I have portions of that at page 21, if you could turn to that. Down at the bottom there, you see the -- Concentric sought to answer three primary questions that are listed there:

"Is the commercial strategy selected by OPG for the turbine generators work package reasonable? Is the company executing commercial strategy in a reasonable manner?"

And then finally:

"Do the selected commercial strategy and execution of that strategy meet the regulatory standard of prudence?"

Now, I am very hesitant to get into this area, because I don't want to anger Mr. Keizer or, indeed, Ms. Hare with a discussion of the word "prudence", but I note that the issue as it is framed before the Board says, are the commercial and contracting strategies reasonable, and here in the Concentric report and, indeed, the quote I took you to from the pre-filed evidence, says reasonable and then in some cases prudence.

Should I read anything into that? Are these meant to be synonyms in this area, or are we talking about different things? I recognize some of this may ultimately be for argument or may be ignored entirely. But why was the word "reasonable" chosen in some cases and "prudent" in another?

MR. REED: I can answer with regard to our statements and the company with regard to theirs.

We view them as being slightly different, and the third point really went to, if these costs were challenged in a regulatory proceeding, accepting that, of course, in many jurisdictions there is a presumption of prudence in the absence of a challenge, the question was asked: Do we think they would be defensible, do we think they would be defensible if challenged under a standard prudence challenge framework as it is used across North America.

MR. MILLAR: Does the company have anything to add to that?

MR. REINER: I think in our particular case, just going back to what we are asking for in this hearing, we are asking for a determination of reasonableness on the contracting strategies.

MR. MILLAR: Okay. If we could turn to page 22, please, of the compendium. I guess this is another question for Mr. Reed. You will see the second bullet point there states that:

> "Concentric did not verify the appropriateness of any of the cost estimates, amongst some other things."

Is that correct? Just reading from the second bullet point there:

"Concentric did not independently verify the appropriateness, sufficiency, or correctness of the project schedules, cost estimates, scope, et cetera."

MR. REED: That's correct.

MR. MILLAR: Okay. So is it fair to say -- I just want to make sure I understand what your reporting compass is -- the actual costs flowing from any of these contracts, that is beyond the scope of your review; is that fair?

MR. REED: That's correct. Our review is on the commercial strategy and on the contracting strategies. We didn't make any attempt to validate scope and, therefore, we could not validate the cost estimates. That was being undertaken by another firm, Faithful & Gould, but not by us.

MR. MILLAR: I want to explore quickly and finally on this particular point, I have a bit of confusion personally, at least -- and maybe it is not shared by others, but I want to make sure I understand exactly what OPG's ask is with respect to its commercial and contracting strategies.

So assume with me for a moment that the Board actually makes the finding that you want. They say, yes, these commercial and contracting strategies are reasonable. I would like to get your understanding of what that would mean.

Would that amount to a finding by the Board that any of the actual costs incurred under these contracts are reasonable or prudent?

MR. REINER: I think the actual determination of whether or not the costs are prudent, that would occur as part of the process of putting those costs into rate base. And at this stage, you know, we are -- with the exception of the campus-plan projects, we're not putting -- we're not putting any of the costs tied to these contracts into rate base.

MR. MILLAR: Okay. So what does a -- what would a positive Board finding under this issue actually give you? What does it mean to OPG?

MR. REINER: Well, it would mean to us that the approach that we are taking is recognized as being a -- the right approach, given the scopes of work we're executing and the complexities associated with that work.

And when the discussion occurs around placing assets in-service, what we would be talking about, do the costs -- do the outcomes align with the release quality estimate and schedule that were developed as part of this approach? The variances -- what are the variances related to? What were the issues that may have resulted in variances? And were the decisions made that may have driven variances prudent decisions? And at that point in time we would be looking to get those costs into rate base.

MR. MILLAR: You spoke about variances, but you are asking for approval of the contracting and commercial strategy. There is no -- there are certainly all sorts of numbers before the Board, but under this issue, you're not asking for approval of any of the numbers that flow from these contracts, are you? I thought it was about the strategy.

MR. REINER: That's correct.

MR. MILLAR: There is no variance to look at.

MR. REINER: Not at this -- not in this hearing, but there will be in future hearings.

So our approach here is, rather than waiting until the Darlington refurbishment is completed, we took an approach of transparency, creating an opportunity for the way we are managing the project, the contracts we're implementing to be assessed and reviewed.

But we're not seeking, in relation to the contracts, any cost recovery here.

MR. MILLAR: And more -- well, I shouldn't say more than that. Let me put the question to you.

Would a positive finding under this issue, if the Board said: Yes, the commercial and contracting strategies are reasonable, would that in OPG's mind amount in any way to a pre-approval of any of the costs that flowed from those contracts?

MR. KEIZER: Maybe I can help, Mr. Millar.

The understanding is that the application was made with respect to commercial and contracting strategies which is an approach. We're not here today seeking the ultimate prudence or -- sorry, or the approval of the activities with respect to the implementation of those contracts or the activities that would do to bring them to the full consummation.

So to some extent, for example, the R&FR contract, or the re-tube and feeder replacement contract, you know, the target price has yet to be negotiated. So that is not in a position to be fully implemented, and at a later date when the -- but there is an approach, of the target pricing and whatever else that is associated with that.

So today what the Board has in front of it is the approach. And to some extent it was captured in the undertaking we reviewed this morning in very concrete terms.

But the latter part of establishing a release-quality estimate and the activities that you will actually undertake to fulfil the contractual terms and the decisions you make in regard to those contractual terms, a lot of that stuff is still yet to come.

So it is not OPG's position here that they're saying: Well, if you approve -- say that the contracting strategy is a reasonable one, that somehow that is a pre-approval of future costs or in-service requests or whatever else.

MR. MILLAR: Okay. So I take that to mean that to the extent the Board approves the approach, that doesn't necessarily mean that it is approving all of the costs that flow from that approach; is that fair?

MR. KEIZER: That is correct.

MS. LONG: I'm sorry to go into this, Mr. Millar, but maybe you're going to have to simplify this for me a bit.

When I look at, I guess, the paragraph that Mr. Millar took you to on his compendium, page 19, where contracting strategy is defined in section 6, and I go to the second-last line, line 20, where it says:

> "Contracting strategy results in a recommendation on the most suitable sourcing approach, contract structure and pricing mechanism for that specific work package."

Is it OPG's view that by this Panel saying that it is a reasonable contracting strategy, that in some way the Panel is tying itself to saying that you used the most suitable sourcing approach, contract structure and pricing mechanism?

MR. KEIZER: Well, to the extent that you would believe them to be reasonable, in the circumstances, as the Board has before it today, I mean, those circumstances can change, other things can happen. You know, the project itself can be, so I don't think that anything -- that it's a blank cheque.

I think it is an approach of this is -- at this stage of the project today, given the fact that there are still things yet to be developed or negotiated, or to be implemented, that -- for example, that -- the fact that you have done a multi-prime target pricing approach as opposed to a fixed -- seeking a fixed-price approach appears to be reasonable based upon the facts as presented, I think then it is factually based as of today.

MS. LONG: Then if we go to contract structure, I thought I understood you, Mr. Keizer, to say we're not approving the contract per se.

So what does contract structure mean in that context?

MR. KEIZER: I think in this context it means the fact that you are -- it's based around a target pricing mechanism. As opposed to –- we're not asking you to review the -- let's say the R&FR, re-tube and feeder replacement contract, and say: We've read the contract; we think it is a good contract.

I think it is going at a much higher level --

MS. LONG: Maybe I am thinking of this, like, in my -- I'm a lawyer, so maybe I'm thinking -- I'm thinking contract structure; I am not opining on whether or not I think your off-ramps are reasonable. I am not drilling in to what your actual contract structure is.

What you're saying is --

MR. KEIZER: That's correct. That's correct.

MS. LONG: -- the type of contract, high-level, what you have chosen?

MR. KEIZER: Yes.

MR. REINER: And it is really around engineer, procure, construct. Right? That is the structure we have selected here. OPG managing a project, contractors providing essentially integrated engineer, procure, construct services. And there's slight variations in each contract to that structure.

For example, the turbine generator where engineering is Alstom, engineering and procurement, and construction is Aecon. And we landed there because of the intellectual property issues.

So it is at that level.

MR. KEIZER: I think just for further context -- and I don't want to preclude Mr. Millar in his cross-examination more than I already have, but I think the other element is that in the Board's last decision, there has -- it was an indication that we would come back and report where we were in the progress of it.

And I think that OPG wanted to come back and give the Board an ability to look at where we were, what we were doing and whether we were doing something that was reasonable, so that -- and as Mr. Reiner said, to be visible so that we didn't come five years from now and say: Well, this is what we've done and you have to bless it, you know, after the fact.

So it really is this is where we are today, and it's at a high level. And I think what we can do and will do in the argument in-chief to facilitate that is break this -- the part you particularly have pointed out here, and say: This is where we are. This is what our ask is.

So to the extent that it is very clear -- but that is effectively -- hopefully I have been able to capture it for you, that it is at a high level, based upon the facts today.

MS. LONG: Sorry to disrupt you, Mr. Millar, but we want to be very clear on what the ask is.

MR. KEIZER: No, I understand. And it's not a –- and I understand exactly where you're coming from because it is an unusual ask, typically not what the Board would see. So I understand that.

MR. MILLAR: Thank you.

One final question in this area and then I will move on to my last area. What about if the Board says no? Let's imagine a decision comes back and the Board says: No, your commercial and contracting strategies are not reasonable. Where would that leave you?

And this perhaps gets to what Mr. Keizer was saying. I mean, I think if the Board said no to a certain closure to rate base, it is very clear what that means, that that wouldn't close to rate base, there would be a revenue requirement impact, et cetera.

On this one it is not clear to me -- I guess I have a slightly better understanding of what a yes answer means, but what does a no answer mean?

MR. KEIZER: I'm sorry. I don't mean to keep jumping in. I think we'd have to see -- OPG would have to see what the decision actually said and what the parameters were. I think it is a difficult question to answer.

MR. MILLAR: I agree.

MS. HARE: It is a difficult question to answer, but it is one that, if Mr. Millar hadn't asked, the Panel was going to ask.

So maybe you want to think about that overnight and come back with an answer.

MR. KEIZER: We will.

MS. HARE: In other words, what are the consequences if the Board says: Premature to approve contracting strategies?

MR. KEIZER: I think I know the answer, but I will consult and we'll make sure we have an answer for you tomorrow.

MS. HARE: Yes, please do.

MR. MILLAR: Thank you, Madam Chair.

And just to be clear, my question wasn't so much about the Board declining to answer, declining to give a yes or a no or to delay a decision. It was: What if the Board said no, it is not reasonable?

MS. HARE: Our question is a bit different, though.

[Laughter]

MR. MILLAR: I would go with what she asked.

[Laughter]

MR. KEIZER: I liked your question better, Madam Chair.

[Laughter]

MR. MILLAR: My final area, and this should only take a few moments, could you turn to page 23, please?

This is a table that Staff actually prepared, but it is all data taken directly from the application.

And it is showing the schedule of the refurbishments and -- as well as the expected end-of-life of the facilities currently.

So just to take a step back, as I understand it, the four Darlington reactors are currently approved to operate for 187,000 hours; is that right?

MR. ROSE: No, the design life of the Darlington reactors are 210,000 effective full-power hours.

MR. MILLAR: I see. That may make this shorter than I had expected.

I had understood you were going to the Canadian Nuclear Safety Commission to get an extension on how long the reactors could run. Maybe I am mistaken about that. Maybe you have already done it?

MR. ROSE: No. There is actually a fuel channel life extension project that is evaluating the option of extending the life to, you know, beyond 210,000 effective full power hours.

There is work underway at this moment, but the final decision on that has yet to be made.

MR. MILLAR: So has that hearing already taken -- there is no decision yet. But what is the status?

MR. REINER: So that is a fairly lengthy project that spans many years. It will reach a decision point mid-way through the Unit 2 refurbishment, because there are components that have to be used that come out of Unit 2 to actually finalize this assessment.

But each step along the way, as new information is found, we report back to the Canadian Nuclear Safety Commission to identify our findings, but ultimately it would conclude about mid-way through Unit 2.

MR. MILLAR: And so looking at our chart here, I guess the number I gave you, 187,000, isn't the correct one. It is 210,000, is what you currently have approval for?

MR. ROSE: That is correct.

MR. MILLAR: So it looks like it wouldn't be until Darlington -- the Unit 4 refurb that we might get into some issues here. My question is, if you don't get the approval you are requesting from the Nuclear Safety Commission, it looks like Darlington 4 will have to shut down before you had intended to -- a good two years before you'd intended to start the refurbishment; is that correct?

MR. REINER: Yes. If we don't get the approvals we're seeking -- I don't know precisely what that translates to in terms of days, but we would have to shut the unit down before we get to refurbishment.

MR. MILLAR: Oh, actually, no, Mr. Battista reminds me. Unit 1, you might be okay. But Unit 3, it looks like its end-of-life is prior to the end of the -- is prior to the refurb as well.

MR. REINER: Yes, and in -- that's correct. We would -- there are some -- there are some anomalies related to Unit 3 that we are currently looking at, and we have, in fact, made a decision, and I believe it is -- it's...

[Witness panel confers.]

MR. REINER: So we've made a decision recently based on results of the fuel channel life management project that has had us change the order of the units. So Unit 3 would actually get refurbished before Unit 1, even though -- even though, in terms of hours of operation, you know, that would extend Unit 1 out. There are some anomalies with the Unit 3 fuel channels that are tied back to the initial manufacturing of those fuel channels.

So we would -- but I think we would be okay on Unit 3, getting to the start of Unit 3, the second unit, but we would run into the issue that you talked about on the third unit and the fourth unit if we don't get the approvals.

MR. MILLAR: Which would be Unit 1 and 4?

MR. REINER: Which would be Unit 1 and 4.

MR. MILLAR: Okay. So without -- I guess maybe -- you will recall on page 2 there was the schematic or the diagram showing the timing of the proposed refurbishments.

If you don't get this end-of-life extension, the extension to the hours you can operate the facilities, would you just leave those reactors idle for the interim? Or would you be looking to move up the schedule? Or have you made that determination?

MR. REINER: We haven't yet made a determination, but I think, you know, we would -- our first approach would be, minimize idle time. And we would look for opportunities to pull the schedule forward and avoid the idle time. That would be -- that would be sort of our first course of action.

But we haven't yet looked at that. Based on the results that we are seeing from the fuel channel life management project and life extension project, our confidence is growing significantly. It is in fact very high that the fuel channels can get to the number of hours that we're looking for to actually get us to the Unit 4 refurbishment without idle time.

There is an additional element of work here that is still of concern to the Nuclear Safety Commission, and it deals with, you know, without getting too technical, a component that is inside the fuel channel that also is showing signs of aging, and we have to determine that it's, in fact, fit for service, and so that is part of that fuel channel life extension project. And that's a bit of an unknown still at this point for us.

MR. MILLAR: When do you expect a decision from the Canadian Nuclear Safety Commission?

MR. REINER: We would -- so in terms of timing, we need to extract some of those components during the Unit 2 refurbishment. They will then get analyzed, and that becomes essentially the final data point.

There are several data points along the way. We recently extracted a fuel channel from Darlington that formed one of the data points. All information coming from that was positive. It reflected good outcomes that give us high confidence that we can get to where we need to go, but we need another data point, and that will come during the Unit 2 refurbishment.

MR. MILLAR: So it will be a couple of years?

MR. REINER: It will be a couple of years.

MR. MILLAR: And if you aren't successful in getting that approval -- I don't want to get into all the details, but obviously, whether you end up moving the schedule around or there's some idle time or a little bit of both, that will obviously have impacts on the cost of the project.

MR. REINER: That may have impacts on the cost. I mean, we are already looking at, in that period of time, overlaps in the schedule. So our cost estimates already reflect simultaneous unit refurbishments.

So we would essentially be looking at advancing some of those overlaps and increasing that overlap time period. And we would expect the cost of that to be, you know, not a significant change in cost. It could, in fact, be a lower cost. There is a potential for that kind of an outcome as well.

MR. MILLAR: Thank you very much, gentlemen. Those are my questions.

MS. HARE: Thank you, Mr. Millar.

Mr. Shepherd, we do have a hard stop at 4:30. Would you like to start, though?

MR. SHEPHERD: I have two short sets of questions that are probably better asked today --

MS. HARE: Okay. That's fine.

MR. SHEPHERD: -- and will help everybody tomorrow, I think.

MS. HARE: Fine. Do you have a compendium?

MR. SHEPHERD: I do not. I may have one by tomorrow morning, but I won't have one now.

CROSS-EXAMINATION BY MR. SHEPHERD:

MR. SHEPHERD: The first is -- and this is probably for you, Mr. Reiner. And thank you very much for filing JT3.3, which summarizes the SNC-Aecon contract.

But from a lawyer's point of view, that wasn't really detailed enough for us, and I am going to ask if you can undertake to file the contract.

Now, Madam Chair, I've talked with my friends about this, and we don't actually want thousands of pages. So what we have agreed to, I think, is that they will provide me with an electronic copy of the whole contract. I will go through and tick off the various schedules, of which there will be dozens, that we don't need, and hopefully get the thousands down to 100 or 200 pages of contract that actually is necessary to understand how it is really working under the hood.

And I think my friend has agreed to that. He can confirm that, I think.

MR. KEIZER: Yes. We had a discussion with Mr. Shepherd during the break, and OPG is prepared to do that, and I think Mr. Shepherd has indicated that he is agreeable that the entire thing be covered in confidentiality, given the nature of the contract.

MR. SHEPHERD: Oh, for sure.

MR. KEIZER: So he consents to that. And so we would be doing it on that basis.

I would assume that once Mr. Shepherd has decided what pieces he would want, that would be the piece that would be filed as part of the undertaking?

MR. SHEPHERD: That's right. I am asking for an undertaking to provide the base contract and key schedules, and we can work out what those key schedules are, but I am hoping it is not more than 100, 150 pages.

MS. HARE: Okay. Fine. So that gets an undertaking number, Mr. Millar.

MR. MILLAR: Yes. JX15.4.

UNDERTAKING NO. JX15.4: TO PROVIDE THE BASE SNC-AECON CONTRACT AND KEY SCHEDULES.

MR. SHEPHERD: The second area of questions that I --

MS. HARE: I just want to understand, then. So that is filed as a confidential document. There is no dispute by anybody that it should not be confidential? Is that correct?

MR. KEIZER: As between Mr. Shepherd and myself, that's the case, yes.

MR. SHEPHERD: I would be surprised, but I have been surprised before.

MR. MILLAR: I doubt very much there will be any dispute about that, Madam Chair. I can't speak for other parties, of course, but it is really only Mr. Shepherd who has asked for it, so I don't think it's necessary to have any process around it.

MS. HARE: Well, that is what I was wondering. So --

MR. KEIZER: And the summary itself was filed in confidence, and I think parties accepted that that would remain in confidence as a JX undertaking.

MS. LONG: And then Mr. Shepherd, you're going to speak to this tomorrow, and we're going to have copies, or it's going to be available for people to take a look at? Is that how it's going to work?

MR. SHEPHERD: I would assume we will have copies tomorrow, but they may be only electronic, I don't know, but I don't plan to have a lengthy cross on it, but there may be a couple of issues which I identified in the summary which I may have to ask a couple of questions about.

MS. HARE: And will we have to go in camera?

MR. SHEPHERD: I do not know.

MS. HARE: All right. We will deal with that tomorrow then.

MR. SHEPHERD: Thank you.

The second area that I have some brief questions is follow-up to the question about the approval for the commercial and contracting strategies.

I divided this into two sections: what is the strategy that you are proposing and what is the nature of the approval you are asking about.

So the strategy has, as I see it -- and tell me whether this is right -- at least three components: use of the multi-prime contractor model, use of the EPC -- the engineer, procure and construct model -- and use of, in some cases, target pricing, and in some cases, fixed price for particular work packages.

It has at least those three components, right?

MR. REINER: Yes. It has at least those three components. And it would be what we submitted in evidence under attachment 7, I believe it is, that has the overarching commercial strategy and each of the contracting strategies.

MR. SHEPHERD: I am going to come to that in a second, but I just want to make sure we have a clear understanding of the key components that you are saying: We have made this decision. We want the Board to say: Yes, good decision.

So then the second -- before we leave the components of the strategy, there are two other parts that appear to me to be part of the strategy that you haven't really been talking about a lot, but...

The first is you're using a gating system, a very rigid gating system for moving forward on the project, which is key to your commercial strategy, right?

MR. REINER: Well, the gating system is a project controls vehicle. It's not so much key to the commercial strategy.

Regardless of what kind of a commercial strategy you would implement, you would still have a gated-type system in place to control the releases of money to the project. And those are essentially -- they are largely internal releases that get provided to the project managers, that would then trigger an approval to proceed with work. And the contractor would execute that work under the terms of the contract.

MR. SHEPHERD: So the gating system, then, is not part of the strategy you are asking for approval for?

MR. REINER: It is not part of the strategy.

MR. SHEPHERD: Then the other part is, depending on the particular component of the overall project, you have chosen an RFP or a sole-source approach to that component.

And you are asking for approval of those choices as well, right? Is that part of the strategy?

MR. REINER: We -- we're not seeking approval on how the contracts came to be, whether it be through a competitive or a sole-sourcing process.

The approval would be the contract itself, and the overarching strategy.

I mean, there is a -- you know, underneath the contracting strategies, there are various levels of details. The sourcing approach, which is what you described, is one. There are negotiating strategies, which is also a subset of that. There were a variety of other processes that were utilized to actually implement the contracts.

MR. SHEPHERD: All right. The reason I ask this is because you said -- if you look at page 19 of the Staff compendium, K15.2, you say that -- I lost it.

"A contracting strategy is the means for successful..."

No, no, no. That is the wrong one. Hang on.

I just had it a second ago. Oh, yes, here we are. The last sentence of 6.0:

"Each contracting strategy results in a recommendation on the most suitable sourcing approach."

That is RFP versus sole-source, right?

So you are asking this Board to say that you are using the most suitable sourcing approach? Or you are not asking them to agree to that yet?

[Witness panel confers]

MR. REINER: So the ask was -- the ask is around the strategy.

Now, I recognize that that is an element of the strategy, the approach taken. I think that tends to be -- that tends to be a simpler discussion, because in cases where -- in large part, competitive bidding processes were used to achieve the contracts.

There are only a few cases -- and I had quantified those earlier. There's about $250 million in total contract value that relates to sole-sourcing, and it relates to restrictions on intellectual property that required us to go down that specific path.

I don't know that there is an opinion here that can change that. That is the path.

MR. SHEPHERD: I only have sixty seconds more, so -- as I understand it, that's the strategy, then. And I am going to ask you one more question about that.

And what you are asking the Board is to determine the reasonableness of that strategy as a strategy, and the reasonableness of your execution of it so far; is that right?

MR. REINER: And -- well, yes, because the execution of it resulted in contracts.

MR. SHEPHERD: Okay.

MR. REINER: And thus the commercial strategy and the contracting strategy.

MR. SHEPHERD: The reason I wanted to ask this on the record now is because, obviously, this is going to be an area of some argument, and precision matters. And I am going to ask you to take a look at the transcript of these five minutes overnight and be very precise with us on what's in, what's out, what are the key components and what the Board is being asked to say.

If you could do that, that would be very helpful for us.

MR. REINER: Yes.

MR. SHEPHERD: Thank you. And that is all for today.

MS. HARE: Thank you, Mr. Shepherd.

So we will meet again tomorrow at 9:30.

--- Whereupon the hearing adjourned at 4:30 p.m.