

1 YUKON UTILITIES BOARD

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7 YEC BATTERY ENERGY STORAGE SYSTEM (BESS) PROJECT

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17 P R O C E E D I N G S

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21 Volume 2

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25

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 2 1171 Front Street, via videoconferencing at Whitehorse,
 3 Alberta.

4

5 Volume 2

6 May 5, 2021

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8 Richard Buchan	Chair
9 Bonnie King	Vice-Chair
Andre Fortin	Board Member
Anne Middler	Board Member

10 Alison Sabo	Board Counsel
Jaimie Graham	Board Counsel

11 Deana Lemke	Board Staff
12 Dwayne Ward	Board Staff
Abhinav Ayri	Board Staff

13 P. John Landry, QC	For Yukon Energy Corporation
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14 Christopher Cullingham	For ATCO Electric Yukon
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15 Patrick McMahon	For Utilities Consumers'
16 Roger Rondeau	Group

17 Scott Pressnail	For Yukon Conservation Society
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18 John Maissan	In his own stead
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19 Donna Gerbrandt, CSR(A)	Official Court Reporters
20 Lorelee Vespa CSR(A) RPR CRR	

21

22 (PROCEEDINGS COMMENCED AT 9:41 A.M.)

23 THE CHAIR: Good morning, everyone. I think

24 we're going to pick up, that is carrying on with

25 Ms. Sabo's questions. But before we do that, I just

1 want to check if there's anything of administrative
2 matter arising, technical issues or whatever to deal
3 with before we proceed?

4 MR. LANDRY: Mr. Chair, if I may, we did file
5 today electronically, a little different than we
6 normally would do. We would normally bring it in and
7 hand them to you, but that will be another day
8 sometime. We filed electronically answers to the four
9 undertakings as we understand the undertakings on the
10 record. It was sent to all parties, but -- and we know
11 that some, you know, may have looked at it, some may
12 not.

09:40

13 If I could take a moment just to ask the panel to
14 go over quickly those undertakings just to ensure that
15 when we have them on the record and in case any
16 questions arise, it's probably a good time to do it.

17 So I leave it to you, sir, but if I could have a
18 moment to do that, that would be helpful.

19 THE CHAIR: Yes, that sound like a reasonable
20 approach. So, yeah, proceed, Mr. Landry.

09:40

21 MR. LANDRY: Panel -- I believe it will be
22 Ms. Milojevic to go through the four undertakings
23 as we understand them, and if you could just take
24 them through slowly one by one, that would be
25 great.

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Undertaking Responses

1 UNDERTAKING RESPONSES:

2

3 M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI (For Yukon
4 Energy Corporation), previously affirmed

5 A. MS. MILOJEVIC: Sure, thank you.

6 So the first undertaking was referring to
7 UCG-YEC-1-16, part (c) and/or YUB-YEC-1-46, to advise
8 what time period the 134 comments were received. This
9 was in reference to the public engagement done for the
10 project.

09:41

11 So our response just outlines the sources of the
12 public comments that were received, as described in the
13 report filed in the attachment to YUB-YEC-1-46(a). And
14 essentially the comments were received between
15 September 3rd, 2020, and October 13th, 2020.

16 For Undertaking No. 2, the undertaking was to
17 provide a copy of the TransGrid study. So this study
18 was referenced in some of the IRs being discussed in
19 the cross yesterday. It was available publicly as part
20 of YEC's 2016 resource plan, and was attached in
21 Undertaking 2 and is now on the record in this
22 proceeding.

09:42

23 Undertaking No. 3 was referring to consolidated
24 IR responses pdf page 197, to advise whether the
25 projected GHG emission value of 606,736 tons was

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1 assuming only a subset of generation sources or was it
2 limited in any way to certain facilities at the
3 Whitehorse facility or did it look at all of the
4 sources available on the grid?

5 So I know there's a few paragraphs here in the
6 response, but to boil it down to the question, the
7 Golder report, GHG projections looked at all generation
8 sources available on the Yukon Interconnected System,
9 so it was not limited in any way to facilities at the
10 Whitehorse facility.

09:42

11 I also note from that response that the Golder
12 report assumed thermal savings, based on analysis done
13 early 2019, of only 1.6 gigawatt hours of annual
14 thermal reduction. The updated assumptions in our
15 Part 3 application assume 6.3 gigawatt-hours per year
16 of thermal reduction. Accordingly, we would expect
17 that the GHG savings realized by the project will
18 exceed what was shown in the Golder report, just to
19 give a general indication of direction.

20 Undertaking No. 4. Referring to the previous
21 undertaking, to advise whether GHG emissions recorded
22 in Table 9 would materially vary or not if the scope of
23 the sources of power in the Golder report were
24 expanded.

09:43

25 The response is no, since the sources of power

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1 considered in the Golder report were all sources of
2 power available on the interconnected system.

3 That's all, Mr. Chair.

4 MR. LANDRY: So, Mr. Chair, that is the only
5 housekeeping matter we have, and so I put it back to
6 you.

7 THE CHAIR: Thank you, Mr. Landry.

8 Ms. Sabo, are you ready to carry on? Oh, wait a
9 sec.

10 Okay. So -- and those are in written form; right? 09:44
11 Yeah. So Exhibit B-6, 7, 8, and 9, will be those
12 exhibit numbers we attached to those undertaking
13 responses.

14 EXHIBIT B-6 - YEC UNDERTAKING RESPONSE

15 EXHIBIT B-7 - YEC UNDERTAKING RESPONSE

16 EXHIBIT B-8 - YEC UNDERTAKING RESPONSE

17 EXHIBIT B-9 - YEC UNDERTAKING RESPONSE

18 MR. LANDRY: Thank you, sir.

19 Thanks, Ms. Lemke.

20 MS. SABO: Thank you, Mr. Chairman and 09:44
21 Mr. Landry. Good morning to everyone on the virtual
22 hearing today and to the Yukon Energy panel for the
23 busy day of responses they're going to give us.

24 Mr. Landry and I were talking yesterday, and I was
25 remiss in one thing. The Yukon Utilities Board does

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Questioned by Ms. Sabo

1 have two interns this year who are listening in on the
2 record. There is Jada Perkins, who is a first-year law
3 student at the University of Calgary, and
4 Dale Johnston, who is a second-year University of
5 Calgary student. So we're glad to have them listening
6 in to the hearing and to learn from all of your
7 expertise.

8 And I'll just proceed with questions, Mr. Chair.
9 That's all I had as preliminaries.

10 **MS. SABO QUESTIONS THE PANEL:**

09:45

11 Q. In the rest of my questions today I will be referring
12 to the application, which is Exhibit B-1; the
13 consolidated IRs, but the Yukon board IRs for your
14 reference are at B-3; the opening statement, which is
15 Exhibit B-5; and the transcript.

16 And my current estimated time of cross, due to
17 some busy work last night from our team, is about three
18 hours today. So everyone can govern themselves
19 accordingly. You're in my care.

20 I would like to follow up, Mr. Hall, to start off
21 with a transcript reference about capacity shortfall
22 and an answer you gave. So if you could please turn up
23 the transcript, page 174 and line 14. And just let me
24 know when you're there.

09:46

25 A. MR. HALL: Andrew Hall. Yeah, I've got the

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1 **materials here, so please go ahead.**

2 Q. Thank you, sir. So starting in line 14 on that page,
3 it states in part: (as read)

4 "...in Figure 4.1, where the red line is
5 the non-industrial peak and you can see
6 that the sum total of the coloured
7 sections are below the red line until
8 such time that Moon Lake, the yellow
9 line, is added."

10 So that response relates to Figure 4.1 and Table 4.1 in
11 the application. And if anyone wants to pull that up,
12 that's at pdf page 32 or hard copy page 28.

13 So do you remember those tables, sir, that address
14 capacity and forecast non-industrial peak?

15 A. **MR. HALL:** **Yes, I've got them in front of me**
16 **here.**

17 Q. Great. So I'm looking specifically at Table 4.1, and
18 the committed and planned supply options, and the
19 BESS line, which is projected to add, starting in 2022
20 and 2023, 7,000 megawatts over the life of this table.

21 The question we have in follow-up to what you said
22 yesterday is if we were to move the BESS project from
23 the forecast in this table and the figure, will there
24 still be a capacity surplus once Moon Lake -- the
25 Moon Lake project connects?

09:47

09:48

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Questioned by Ms. Sabo

1 A. MR. HALL: Yes. So essentially what you're
2 asking is if in, for example, Figure 4.1, if we were to
3 remove the purple segment, everything would shift down
4 so that yellow segment would shift down. And so if I
5 look, there would be a slight surplus of capacity in
6 2028/29, but then it would flip -- you would still have
7 a deficit the following year, 2029/30 and 30/31. You
8 would -- you know, so you'd be forced back into the
9 rental business in those outer years.

10 Q. So, given that response, would you agree that your
11 response means that capacity shortfall concerns in the
12 forecast capacity are not necessarily mitigated by
13 removing the BESS Project, and there's also a reliance
14 on the Moon Lake project connection?

09:49

15 A. MR. HALL: Andrew Hall. Yeah, I think the
16 point I was making yesterday is that each project
17 contributes from the time that it's built going forward
18 to addressing this shortfall. So once the BESS is in
19 service, it's contributing 7 megawatts of dependable
20 capacity, and it does that every year through its
21 useful life.

09:50

22 And, you know, what we've very clearly
23 communicated is, in doing so, it avoids the requirement
24 to rent four diesel generators through the period until
25 such time as Moon Lake is constructed.

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1 Q. Thank you for that clarification, sir.

2 I have some questions about system planning,
3 renewables, and more traditional energy projects. And
4 I'm going to start by taking you to the IRs, pdf
5 page 270. And that's going to be -- so pdf page 270,
6 the response to YEC-1-43(a) through (c). And it's on
7 pages 1 of 2 of the hard copy.

8 In that response, (a) through (c), YEC stated:
9 (as read)

10 "In October 2019, it was determined that
11 considering the results of the
12 technical, environmental, and
13 socio-economic research, as well as
14 feedback from the public, YEC would
15 focus potential options to address or
16 replace capacity at existing generation
17 facilities on an incremental basis as
18 diesel engines are retired. The results
19 of the public engagement in particular
20 indicated there is limited social
21 licence for a greenfield diesel project
22 in the Yukon at this time."

23 So can you talk about the general feedback of the public
24 and the limited social licence for a greenfield diesel
25 project at this time? I'd just like a little more

09:51

09:52

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
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1 detail there, sir.

2 A. MR. HALL: Sure. So going back to that
3 period, we did initiate some planning work on the
4 20-megawatt diesel plant. It included, you know,
5 public engagement and public outreach. We held a
6 number of public meetings, if I remember, and we had a
7 number of sites identified, so we were talking about
8 very real potential project locations. And so we
9 reached out to both the public and the relevant
10 First Nations.

09:53

11 And I think, as outlined in the IR response, the
12 feedback we received was pretty negative in the sense
13 that people, you know, in general did not support us
14 spending a substantial amount of money on a new
15 20-megawatt permanent diesel plant.

16 You know, I think that general sentiment has been
17 echoed in a number of subsequent surveys that we've
18 done, where the public in general is very strongly in
19 support of investment in renewable supply options.
20 And, really, that then gets reflected in policy that
21 has been rolled out, subsequently both at the federal
22 level, as I referred to yesterday, and also the
23 territorial through Yukon government's Our Clean
24 Future.

09:53

25 So, really, you know, the feedback we got was

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1 there was likely to be a lot of resistance and
2 opposition to construction of a 20-megawatt greenfield
3 diesel plant.

4 I would also point out that, you know, the
5 conversations with the First Nations probably, you
6 know, led to similar conclusions. You know, they were
7 not in favour of diesel plants necessarily. Their
8 citizens had a number of similar concerns.

9 So, you know, I think the -- we looked at that
10 situation. And then subsequently what was unfolding
11 from a policy perspective and our board really through
12 the 10-year renewable plan articulated a very different
13 direction in terms of pursuing renewable options;
14 namely Atlin and Moon Lake, and the battery for that
15 matter, as capacity solutions going forward.

09:54

16 Q. And as part of that public engagement process, what
17 extent does costs, you know, of green versus
18 traditional project costs go into that discussion? Or
19 is the public engagement primarily about the need?

20 A. MR. HALL: Subject to check, I do believe
21 that we presented some cost information. I mean,
22 obviously, as an economically -- you know, we were
23 aware of the regulatory construct that we have in the
24 Yukon, obviously, which considers costs very carefully.
25 And so if I remember correctly, we would have presented

09:55

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1 cost information to the public.

2 And, so, you know, the intent there is to provide
3 a balanced view. So it's not only about environmental
4 attributes, for example, but we are transparent around
5 cost implications.

6 So, yes, I mean, you know, cost is important to
7 us, absolutely.

8 Q. And just to follow up on that, Mr. Hall, I'm trying to
9 get a sense on what is the process that YEC undertakes
10 to evaluate the costs and benefits given that feedback
11 on renewable projects, as being favoured by the public,
12 versus the more traditional projects such as thermal,
13 which might be more economical?

09:56

14 A. MR. HALL: Yeah. So if you look, for
15 example, at the analysis presented in the 10-year
16 renewable plan and you look at the resource options and
17 the information presented on each. And I'll just pull
18 up the reference table. So it's Table 3 on page 48 of
19 the 10-year renewable plan.

20 So what you see there is an assessment of a range
21 of different supply options. And, you know, the left
22 hand -- and so what's presented is the technical
23 attributes. So their capacity, for example, their
24 annual energy production. But the whole right-hand
25 side of the table is very much around costs, not only

09:56

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1 in terms of upfront capital, operating and maintenance
2 costs. And then two key sort of metrics that we then
3 distill down, which is your levelized cost of energy
4 and levelized cost of capacity.

5 So, you know, the intent is very much to ground
6 the analysis in economics and, you know, in terms of
7 specifically targeting the renewable options. And I
8 think in particular about Atlin and Moon Lake and the
9 battery, is that there was a recognition that
10 significant federal funding was required to bring the
11 costs of those renewable options in line with thermal
12 alternatives. And so that's -- we were very
13 transparent and clear that we would only move forward
14 with these projects if federal funding was indeed
15 secured.

09:57

16 And so here we have an example in the battery
17 project where we've secured the federal funding and
18 we're bringing the project forward with, you know, more
19 than 50 percent of the costs covered by the feds.

20 In a similar strategy with Atlin, for example.
21 So, you know, we have a major initiative underway to
22 secure the required federal funding to bring that
23 project from an economic perspective in line with
24 thermal alternatives.

09:58

25 So that is the overall approach that we took in

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1 the 10-year plan and in subsequent execution of the
2 plan.

3 Q. At a very high level, Mr. Hall, what are the additional
4 costs of going green versus using a traditional
5 facility to provide capacity?

6 A. MR. HALL: Well, it's a very good question.
7 In the case of the battery, which I -- you know, is the
8 subject of this proceeding, we've provided an analysis
9 that shows there's actually a ratepayer benefit to
10 going with the battery versus the diesel alternative.

09:59

11 So there's no cost -- in this case there's no
12 additional cost, it's a benefit.

13 Q. I was just thinking more from a structural perspective,
14 you know, are there any different drivers of costs than
15 you would normally see from a traditional facility
16 perspective? And if the answer is "there aren't any"
17 or "I don't know," that's fine.

18 A. MR. HALL: Yeah, I think -- we don't really
19 look at it that way. As I said, you know, our strategy
20 financially is to -- if there is a premium to going
21 green, to use those words, that we would pursue federal
22 funding to essentially eliminate those additional
23 ratepayer costs.

10:00

24 So the approach very definitely is to not burden
25 ratepayers with additional costs in terms of securing

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1 that renewable feature.

2 Q. I'm going to take you back to the transcript again,
3 page 97, and starting at line 13. And I'm going to
4 read this in, Mr. Hall, and it says: (as read)

5 "Our board of directors also made a very
6 deliberate decision not to pursue a
7 permanent solution, i.e. a permanent
8 large new diesel plant and instead, you
9 know, instructed us to focus on
10 renewable projects such as Atlin and
11 Moon Lake."

10:00

12 And to the extent you can comment on it, sir, what were
13 the reasons the board relayed to you on social policy
14 reasons or other reasons for their decision?

15 A. MR. HALL: Okay. I'd say there was a couple
16 of reasons. The first was the -- you know, in making
17 that decision the board was taking into account the
18 public and First Nation feedback that we had received.
19 Right?

20 So they were taking a look at that -- that
21 information and considering what the implications of
22 that would be if and when we went to the assessment and
23 permitting phase of that permanent diesel project. So
24 that was the first factor.

10:01

25 And I would imagine their conclusion was, you

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1 know, that there was likely to be significant public
2 opposition during the regulatory phase, which would
3 increase the risk of securing the required approvals
4 for the project from the permitting agencies and
5 YESA [verbatim]. So that would be the first one.

6 The second one was they, at that time, were
7 beginning to formulate the strategy around the focus on
8 renewable options. In particular, as I said in the
9 transcript, you know, shows the focus on Atlin and
10 Moon Lake. And so the conclusion was, well, if
11 you're -- if you've got a plan that's going to deliver
12 a large step increase in capacity from, say, Moon Lake,
13 that really erodes the justification of building a
14 20-megawatt diesel plant. There's just no point.
15 Because if Moon Lake is coming along in 10 years, it
16 would essentially make the diesel plant, in some
17 respect, obsolete.

18 So with a long-term tech plan in place, the
19 permanent diesel plant didn't really make sense in the
20 board of context of the overall plan.

21 Q. Thank you, Mr. Hall. And given that, I know, going
22 back to our Figure 4.1 and Table 4.1, I understand this
23 is a consolidated approach with all of those projects
24 in the plan that you're trying to build towards.

25 So, I guess, just at a very practical level, what

10:02

10:03

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1 if one of those projects doesn't come to fruition? I
2 know we talked a little bit about that at the beginning
3 today, but what would be the default, or would you just
4 kind of have to adapt and come up with a new project to
5 meet capacity?

6 A. MR. HALL: Yeah. I think it's important to
7 realize that these plans are -- do evolve over time, no
8 doubt. And, yes. I mean, if circumstances were to
9 change and we were simply not able to secure the
10 required amount of federal funding for Moon Lake, for
11 example, then we may well have no real other option but
12 to reconsider a 20-megawatt diesel plant. So it's a
13 possibility in the future under certain scenarios.

10:04

14 But right now Plan A, and the plan we're working
15 on, is to pursue that federal funding and be successful
16 with that endeavour, and if we're able to then start
17 the planning work on Moon.

18 But to summarize, yes. I mean, we can always
19 re-evaluate plans and bring other options back onto the
20 table if circumstances change.

10:05

21 Q. Thank you. I'd like to talk a little bit more about
22 the 5.2 million after -- for this project after federal
23 funding. And given that there's some social policy
24 items, and you commented on the clean energy plan of
25 the Yukon government, I'm just wondering if YEC

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1 explored additional subsidization from the Yukon
2 government or local sources to offset the costs that
3 would be borne by ratepayers of that 15.2 million?

4 **A. MR. HALL:** At this time, no, we haven't
5 pursued additional funding, but I would point out,
6 again, that the business case for ratepayers is a
7 positive. Table 4.3, to bring everyone back to that.
8 There is a positive business case for the battery at
9 the current level of funding.

10 So, in a sense, you know, additional funding in
11 some respects isn't required to protect ratepayers any
12 further. There's a benefit there already.

13 **Q.** And if the project goes over the 30 percent
14 contingency, would that be a tipping point for YEC with
15 the BESS Project? Would that be kind of a lever where
16 you might explore additional funding?

17 **A. MS. MILOJEVIC:** So, Mr. Chair, in response to
18 JM-YEC-1-33 part (b), YEC did present that the
19 BESS Project would break even in terms of no longer
20 providing ratepayer savings, but also not introducing
21 ratepayer costs if the capital costs increased by
22 42.5 percent.

23 So as shown in part (d) of the same IR, so page 4
24 of 5 of that IR, we did show that same Table 4.3 that's
25 in the application, but with the project capital costs

10:06

10:07

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1 increased by 30 percent, which shows that over the
2 20 years of the project, on a net present value basis,
3 the project still saves over \$2.4 million for
4 ratepayers.

5 So even if the capital cost is on the plus
6 30 percent side of the estimate, it still provides
7 savings/benefits for ratepayers.

8 Q. So Ms. --

9 A. MR. HALL: So, Ms. Sabo, just to make an
10 associated point. You know, yesterday I talked a
11 little bit about the way these projects advance through
12 the planning process, and we talked about this --
13 what's called the stage-gate approach. So what's going
14 to happen here over the next two, three, months is
15 we're going to get results back from the RFP process
16 for the battery, which will confirm a substantial part
17 of the capital cost. And then we would take that
18 information and package the project up for our board of
19 directors to make a final investment decision. And so
20 that -- that's kind of in the, you know, late July or
21 August time frame based on the timeline as it looks
22 today.

10:08

10:08

23 So our board will have the opportunity at that
24 time to make a final decision. I mean, if we get bids
25 back that are pushing the project to be uneconomic, you

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1 know, we would make a rational decision at that point,
2 right, not to pursue it. We're certainly not expecting
3 that to be the outcome, but, you know, we do have that
4 decision point ahead of us.

5 Now, I just wanted to make that clear because --
6 and it's very important we have these very disciplined
7 stage gates prior to undertaking and committing the
8 company to the costs.

9 Q. Thank you. That's helpful, Mr. Hall. And I'm assuming
10 that, you know, if that decision is made in July, where
11 there's a significant cost change, then maybe that's
12 where you do -- like you say, you either rebalance the
13 priority for funding of this project, or potentially
14 would you go out and look for other funding to
15 subsidize?

10:09

16 A. MR. HALL: Yes, absolutely, yeah. That would
17 be a very valid approach at that point, is to go out
18 and see if we can secure funding to pull the economics
19 back into favourable territory.

20 Q. Okay. Government or otherwise. I guess I should be
21 clear on that, because there could be loans or other
22 private sources of funding.

10:10

23 A. MR. HALL: Yeah. I mean, it's important to
24 note that government grant funding is about the only
25 way to buy down those costs for the purposes of

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Questioned by Ms. Sabo

1 **ratepayers.**

2 Q. Yeah. I shouldn't go too far off track, but I had just
3 learned that there's social policy lending now, which,
4 apparently, some banking institutions are doing that.
5 I just found out about that recently. So, thank you,
6 Mr. Hall. I know it's usually government subsidized in
7 some way. So thank you.

8 I'd like to take you back to the IR response and
9 take you to line 10 on page 2 of 2, if you still have
10 that up.

10:10

11 **A. MR. MOLLARD:** **Sorry, what was the reference,**
12 **Ms. Sabo?**

13 MR. LANDRY: Which IR is it, Ms. Sabo?

14 Q. MS. SABO: My apologies, I just had my mic
15 off. It's IR 43 at pdf page 270, line 10 on page 2 of
16 2 of the hard copy.

17 **A. MR. HALL:** **Okay.**

18 Q. And in that response, YEC states that it would focus
19 potential options to add or replace capacity at
20 existing generation facilities on an incremental basis
21 as diesel engines are retired.

10:11

22 How does YEC see the additions or replacements of
23 capacity through renewal projects, specifically
24 coinciding with diesel retirements? I know Mr. Mollard
25 said yesterday, you know, there was an increasing

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Questioned by Ms. Sabo

1 ramping up of rental diesel units. So I'm just
2 wondering how the coordination of the additional
3 renewable capacity is going to be dealt with in terms
4 of maybe ramping down some of the diesel retirements.

5 A. MR. HALL: I think there's only a certain
6 amount that we can do to -- to work with timing. And
7 what I'll point out is if you look at the timing of the
8 diesel replacements, we've already retired a couple of
9 Mirrlees engines in our Whitehorse facility. So from
10 that perspective we already, you know, have a deficit
11 in terms of trying to maintain our existing fleet at a
12 certain amount of capacity.

10:12

13 And then looking forward, the next diesel unit
14 that we'll retire is up in Faro. And, you know, we
15 have a little bit of flexibility to maybe delay that by
16 a year or two, but ultimately it's not a very prudent
17 thing to do, to continue to operate a diesel engine
18 when it's really reached end of life. You're unable to
19 support it from a spare parts perspective, et cetera.

20 So, you know -- so we have a fairly set schedule
21 in terms of when those diesel engines retire.

10:13

22 And then in terms of the planning of the
23 replacement projects, as we -- as we indicated
24 yesterday, I mean, those can be driven by planning and
25 permitting timelines. So, you know, it takes time to

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1 get through YESAA, it takes time to do the design and
2 the procurement activities.

3 So you do your best to try and line these things
4 up in time, but it's not a precise exercise, if that's
5 what you're asking about.

6 And so, you know, we attempt to not have big
7 discontinuities of how much capacity we have on the
8 system, but the reality is that it does bounce around a
9 little bit. And you can see, for example -- how you
10 can observe that is on Table 4.1 of the application,
11 page 28. If you look at the bottom of the -- the
12 bottom row, which is your capacity shortfall, you know,
13 that number bounces around a little bit from year to
14 year as projects are coming online and units are being
15 retired.

10:14

16 Q. Thank you, Mr. Hall. I'm going to switch gears a
17 little bit and I want to talk just generally about the
18 Hatch report and that there was three siting options
19 for the project, and that was reflected in the Hatch
20 report.

10:15

21 I wanted to know from YEC what were the parameters
22 or evaluation criteria that YEC or Hatch used to
23 determine in locating potential sites? Like, how did
24 we arrive at these three options?

25 A. MR. HALL: So, in general, we talked a lot

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1 yesterday about proximity to our substations, our
2 high-voltage substations. So that was a primary
3 driver, is that we looked for sites that were located
4 close to places that the battery could intertie into
5 the grid.

6 And the reason for that is you really don't want
7 to be burdening this project with a new transmission
8 line to connect the battery to that substation, because
9 transmission is relatively expensive and it's difficult
10 to permit, to be honest, particularly around built-up
11 urban areas like Whitehorse. So we looked to proximity
12 to substations, No. 1. And so that identified the
13 Takhini substation and our Whitehorse facility here,
14 which has two substations as being, you know, general
15 locations of interest.

16 And then we looked for locations where settlement
17 land was available, because we very deliberately wanted
18 to create an opportunity for a land lease with the
19 affected First Nations. So we looked for parcels --
20 locations where there was parcels of settlement land
21 close to our substations.

22 So using those two criteria alone it narrows
23 things down really quite a lot. And, you know, what we
24 found is there was a parcel of KDFN settlement land
25 right next to our Takhini sub, and likewise there were

10:16

10:16

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1 two parcels, one belonging to Ta'an Kwach'an Council
2 and one to KDFN, close to Whitehorse here. So that was
3 really the logic that was applied.

4 Then there was a subsequent analysis to do the
5 down selection of the three, the three locations. But
6 I think in terms of that first step of location
7 identification, that's what we followed.

8 Q. And just to be clear on that response, Mr. Hall, it's
9 both of those criteria used together? I guess as a
10 follow-up, did you look at sites, say, out of
11 Whitehorse that didn't involve First Nations land? So
12 I'm just trying to think did you use both of those
13 requirements in conjunction or did you evaluate, okay,
14 well maybe there was some outside of Whitehorse, but
15 didn't involve First Nations or Indigenous land?

10:17

16 A. MR. HALL: No, I mean, the sites had to meet
17 both criteria. And I would say we were fortunate in
18 that there were settlement lands, parcels extremely
19 close to our substations. I mean, I'm not sure you
20 could get them closer. So, you know, we were fortunate
21 in that respect, but they did have to meet both
22 criterion.

10:18

23 Q. Did those criterion just get generated internally or
24 was there government discussions or other stakeholders
25 that were driving those criteria?

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1 A. MR. HALL: No, that was internally generated.
2 And, you know, the first -- the first criterion,
3 namely, you know, proximity to a substation, that's a
4 pure economic driver, right? I mean, it just makes
5 economic sense to be close to a substation. And
6 technical sense in terms if you look at the hardware
7 required to connect to the grid. It's much more
8 convenient to do it through a substation.

9 And then in terms of the -- looking for
10 First Nation settlement land, that was a very
11 deliberate strategy of our board and of the company, to
12 make economic opportunities available to First Nations
13 through our new project.

14 Q. Okay. Thank you. I'm going to move to a different
15 area, Mr. Hall, and we had a fulsome discussion
16 yesterday about the terms of reference. So if I could
17 get you to pull those up again. And I'd like to take
18 you specifically to Section 3(c) again, which deals
19 with the risks of the project.

20 A. MR. HALL: Okay.

21 Q. Thank you. We'd like some more information on -- and
22 discussion on these risks.

23 How should the Board assess the risk of the need
24 and the costs of the project given that vendor
25 selection is not finalized?

10:19

10:20

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1 A. MR. HALL: Right. So if you think about the
2 risk of the need, I would draw you back to Figure 4.1
3 in the application, which shows that we have a capacity
4 deficit today. You know, we rent diesels today. So
5 the opportunity to avoid renting diesels and deliver
6 those savings to ratepayers exists today. And I think
7 it's pretty unlikely that our peak demand is going to
8 drop. You know, if anything, it's going to keep on
9 growing.

10 So I would propose that the risk of need is
11 virtually zero, because we rent today. We're not
12 talking about a future need that may transpire. This
13 is a need we have today. So I think that risk is low,
14 if not zero.

10:21

15 In terms of the risk on the costs, a couple of
16 comments. You know, we've shown that, you know, with
17 a -- I would argue a very sizeable increase in capital
18 costs, the project still delivers benefits to
19 ratepayers. And we've been through that point at
20 length in terms of looking at the scenarios that
21 Ms. Milojevic just spoke to around, you know, what
22 happens to those economics at a plus 30 percent cost
23 escalation. And we've demonstrated, in my view, that
24 the economics are robust and in a way accommodate a
25 cost escalation that I can't really foresee happening.

10:22

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1 The other point that we haven't spoken about a lot
2 is this project is quite different from the other kinds
3 of projects that we've undertaken. Namely, it's
4 pretty -- relatively simple, I would say.

5 You know, when you build a hydro facility, you're
6 doing extensive civil work; you're subject to large
7 geotechnical risk; you don't know what's under the
8 ground until you start digging, basically; and you're
9 building in the field large dams, large structures.

10 This battery project is very different from that.
11 There's very minimal site work required. We're not
12 excavating a whole lot. We're not blasting. It's
13 basically clearing land and pouring some fairly limited
14 foundation work.

10:23

15 And then you're installing containerized modules
16 that get shipped up from the supplier. So the amount
17 of site work required is much lower.

18 So I would say the features of this project in
19 terms of the way it will be executed speak to much
20 lower construction risk and therefore, I would say,
21 lower cost risk overall. And so that's the way
22 we've -- and we were very deliberate in terms of, you
23 know, pointing to a containerized solution. We didn't
24 want -- we wanted to avoid having to build a building
25 to house this battery, which again would have

10:24

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1 introduced risk, and really wanted to simplify the way
2 this project will be executed. And so that's -- that's
3 really the approach. And I think -- I would say the
4 Board can take some comfort that the nature of the
5 project speaks to lower cost risk overall.

6 A. MR. MOLLARD: And if I could just offer a
7 comment, Ms. Sabo. We talked a little bit about this
8 yesterday in terms of when we were going through the
9 terms of reference. The terms of reference very
10 specifically talks about potential impacts on rates. 10:24
11 And while we didn't specifically provide rate impact
12 information, I would highlight the table that we
13 provided at 4.3, which is really the foundational
14 economic piece. That table is essentially prepared on
15 a revenue requirement basis.

16 So while you can't see from that table exactly
17 what impact to a customer, it does highlight what the
18 impact to revenue requirement, which becomes rates, is.
19 So in that way we are showing that impact or that risk
20 through that table. 10:25

21 Q. Okay. Thank you, Mr. Mollard. I might be going back
22 there a little bit later. So thank you for planting
23 that seed.

24 So, Mr. Hall, given that there's limited or no
25 geotechnical work, I'm assuming there won't be a

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1 geotechnical report on this project?

2 A. MS. MILOJEVIC: There will be a geotechnical
3 assessment done in order to finalize the civil
4 engineering. So it will be a smaller endeavour than
5 for a more geotechnical intensive project, as Mr. Hall
6 was referring to, but there will be a geotechnical
7 report.

8 Q. And, Ms. Milojevic, when would that report expected to
9 be completed?

10 A. MS. MILOJEVIC: The geotechnical work is expected
11 to be completed in Q2 2021. So we would expect the
12 report shortly after the physical work is done.

13 Q. Thank you. Mr. Hall, you've already talked a little
14 bit about, you know, risks and maybe net zero risks or
15 positive risks as a result of a project. I just want
16 to follow up a little bit more about whether the size
17 and configuration of the BESS, how the risk of that
18 will factor in when we don't have the recommendation
19 from a selected vendor yet.

20 A. MS. MILOJEVIC: So --

21 Q. Maybe I can help out a bit here. You had said
22 yesterday that you expected the technical details of
23 the 40-megawatt hours of the system might be subject to
24 small changes. So that was kind of one example of what
25 we were thinking of.

10:26

10:27

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1 A. MR. HALL: Right. So we've specified the
2 battery in a particular way, and the key metrics there,
3 as you point out, are the amount of energy storage, so
4 the megawatt hours, and that's been set at 40, and then
5 the inverter size, so set at 20 megawatts. That
6 combination, in our view, offers the optimal solution
7 to deliver the benefits that we're targeting.

8 Now, we obviously will look at the vendor quotes
9 that come in for that solution. And, you know,
10 obviously the first check will be can they meet the
11 technical specs and is their price in range with our
12 current budget.

10:28

13 If we find that we're not meeting either of those
14 two, so, in other words, the vendors can't meet our
15 technical spec or the pricing is out of line, then
16 there is a process where we could look at making some
17 adjustments to, you know, fit within budget, would be
18 the simple way to say it.

19 But I don't want to get ahead of myself in the
20 sense that we don't -- you know, at this time we have
21 solid costing information from our advisors at Hatch,
22 and we don't have any indication that we have a budget
23 problem at this time.

10:28

24 Q. And when you say --

25 A. MR. HALL: Sorry, that will be subject,

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1 obviously, to the final round of RFP, which is yet to
2 come in the next couple of months.

3 Q. Okay. When you say that there may be a process to
4 address that, I'm assuming that's an internal process,
5 management or management and the board?

6 A. MR. HALL: Correct.

7 Q. Other risks that we wanted to ask about is both the
8 NAV Canada and Transport Canada approvals are
9 outstanding. Can you maybe give me an update on where
10 that's at and what you think the risk to the project of
11 those approvals would be.

10:29

12 A. MS. MILOJEVIC: Yes, Ms. Sabo. So both
13 applications for the NAV Canada and Transport Canada
14 land use assessments were submitted in March of this
15 year. So we expect those to be concluded likely this
16 month, based on the normal timing.

17 Both are fairly low risk. When you're talking
18 about these assessments, they're mainly concerned with
19 is there any potential obstruction with the flight
20 path, given the proximity of the site to the Whitehorse
21 airport.

10:29

22 But this project, again, is a lot different than,
23 let's say for example, the LNG project, where you have
24 a plume coming out of the stack that could
25 potentially -- that would have to be analyzed around

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1 potential interference with aviation. The battery
2 project relatively is very short. It is not tall. It
3 doesn't send anything up into the air visually.

4 So we expect, as sort of the worst case, it might
5 be some lighting requirements or obstruction markers.
6 So poster signs or lights or beacons to alert the
7 location of the battery. That would be well within
8 what we've estimated in cost. So we don't see a large
9 risk.

10 Our position on that has been informed also with
11 discussions with Yukon government and staff at the
12 airport itself, confirming that there are battery
13 projects near airports and that just generally the
14 nature of the project presents a low risk with regards
15 to those assessments.

16 Q. Okay. And any estimation on timing for those
17 approvals, either, you know, an average of how long
18 they usually take or if you have more specific
19 knowledge about your expected approval times?

20 A. MS. MILOJEVIC: We did respond to that in an IR.
21 Just give a moment, Ms. Sabo, and I will pull it up.

22 Q. Thank you.

23 A. MS. MILOJEVIC: Perhaps we could take an
24 undertaking, Ms. Sabo, to follow up. I believe it's
25 within the range of 90 days, but we did confirm it in

10:30

10:31

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1 an IR, so we can come back with that.

2 A. MR. MOLLARD: YUB 33.

3 A. MS. MILOJEVIC: Oh, we do have it, sorry.

4 A. MR. MOLLARD: Apologies, YUB 33. I believe it's
5 (c) response.

6 "While the timelines can vary, the
7 NAV Canada assessment typically takes 8
8 to 12 weeks, and the Transport Canada
9 process typically takes 90 days."

10 Q. Okay. And no update to that timing on an actual basis
11 that you know of?

10:33

12 A. MS. MILOJEVIC: So typically the process is you
13 submit the application, they go through their process,
14 and you hear at the end if there's any recommendations.
15 So we don't expect a back-and-forth. We will just hear
16 when the assessment is completed.

17 Q. Thank you. Since the dates that the Hatch study was
18 prepared and just given the general climate, economic
19 climate, and COVID circumstances we're in right now,
20 does YEC foresee that there will be any risk to
21 materials costs or O&M that maybe weren't contemplated
22 at the time the Hatch study was prepared?

10:33

23 A. MR. HALL: Yeah. I mean, it's a very good
24 question. There's certainly -- you know, people are
25 starting to talk about inflation drivers related to

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1 COVID and shortage of certain raw materials, lumber for
2 example, but, you know, I would point that -- out a few
3 things.

4 The one is, as I just sort of described, the
5 amount of site work required in this project is
6 relatively low. So our exposure to, you know, what you
7 would normally consider being required, you know, and
8 where inflation could be brought to bear, we assess as
9 being pretty low.

10 The second point is, you know, most of the costs
11 of this project are tied up in the battery supply.
12 And, yes, there may be some inflation drivers on
13 certain components of the battery, but also we know
14 that batteries overall in general are getting cheaper,
15 as more production is brought online. So you've got a,
16 you know, a driver that's moving in the opposite
17 direction.

10:34

18 So at this point we don't have any evidence either
19 way that the capital costs are going to change. And
20 obviously, again, the certainty around that will
21 be -- will come through the RFP process in the next
22 couple of months.

10:35

23 Q. Okay. Thank you, Mr. Hall. We've talked a little bit
24 about, and there's information on the record and some
25 of this was mentioned yesterday, that certain

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1 agreements are outstanding, like the finalization of
2 the vendors and the debenture agreements. I'm just
3 wondering if you could kind of itemize for me the other
4 agreements that are outstanding at this time.

5 A. MR. HALL: I'll start the list, and my
6 colleagues can chime in if they have others.

7 Yeah, obviously our major procurement contracts
8 are outstanding. We have an owner's engineer contract
9 signed, but the other contracts, which would be the
10 battery supply and then for the site construction, have
11 yet to be procured and signed.

10:36

12 The -- we are targeting final project agreements
13 with each First Nation, but they will be very
14 consistent with the term sheet that has already been
15 signed with the First Nations, and we're not expecting
16 any changes in the material terms, particularly as they
17 relate to the debenture.

18 So in terms of agreements, my colleagues, any
19 other comments?

20 A. MR. MOLLARD: Yeah. So similar to the project
21 agreements with the First Nations, we have a term sheet
22 for the land lease with Kwanlin Dün First Nations
23 Development Corporation that needs to be finalized.

10:36

24 A. MS. MILOJEVIC: And finally, Ms. Sabo, I would add
25 the agreement with ATCO Electric Yukon regarding the

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1 use of the right-of-way for the transmission line for
2 the project.

3 Q. Thank you. I'm going to circle back a little bit more
4 and follow up with the N-1 criteria, Mr. Hall. And I
5 know we keep on going to capacity, but it's such an
6 important part of this. And I wanted to follow up with
7 you on an answer you gave to Ms. Graham at page 159 of
8 the transcript, and it's line 7. So 159, line 7.

9 And the question she asked you was related to
10 whether a diesel generator provides a better ability to 10:37
11 mitigate loss of curtailed load during an N-1 event
12 relative to the BESS Project.

13 So starting at line 7, you replied: (as read)
14 "...I would argue that a diesel is worse
15 because a BESS -- as we discussed in the
16 application, it has almost instantaneous
17 ability to ramp to full output, whereas
18 a new diesel plant can take several
19 minutes to ramp up. And so a BESS has
20 much greater ability to keep the grid 10:38
21 stable and operating versus a diesel
22 engine."

23 And it occurred to us, suppose an event lasts for a long
24 duration let's say from a day to a week. Will the
25 diesel generator still be considered worse than the

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1 BESS Project in mitigating loss of production?

2 A. MR. HALL: Look, I'll point out that both are
3 appropriate solutions. Like -- and we live by that
4 today. We have diesel units in our fleet that we count
5 towards our ability to meet the N-1 criterion. So I
6 think -- it's not like a diesel doesn't work. I
7 believe the question was more like, well, which is
8 better. And I was pointing out one of the features of
9 the BESS that would make it better, particularly right
10 when the event happens.

10:39

11 So that was the point that was being made.
12 Because appreciate, you know, if you have an N-1 event,
13 namely the Aishihik plant got flooded, for example,
14 what would happen today would be the diesel units
15 wouldn't be able to ramp up sufficiently quickly, and
16 so we would -- the grid would go black and then we
17 would have to recover and restart.

18 If we had the BESS, we would have a chance of
19 keeping the grid operational and avoiding that blackout
20 and recovery. So that was the feature that I was
21 pointing to in the response yesterday.

10:39

22 But I just -- I want to make the point that diesel
23 engines work as a solution to meet the N-1 criterion.

24 Q. Right. If you had a longer duration event, from a day
25 to a week say, would that be one scenario?

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1 A. MR. HALL: Yeah, I don't think -- I mean --
2 yes. I mean, you know, it's possible that an N-1 event
3 could last for -- you know, I think our planning
4 criterion is a couple of weeks. And that sort of
5 speaks about, well, you have to do some repairs that
6 would take a couple of weeks, right?

7 And so, you know, I think both would work equally
8 well over the longer term, i.e. the two-week period.

9 Q. Mr. Mollard, was there something you wanted to add to
10 the earlier comment?

10:40

11 A. MR. MOLLARD: Yeah. No, just to sort of tag
12 onto what Mr. Hall said. They both in a longer outage
13 would serve the same function. The battery would still
14 be required to recharged in off peak hours, and that
15 may be one of the scenarios we're charging with a
16 different source than we would like to. We may not
17 have sufficient hydro resources to recharge, but when
18 we need the resource, the diesel and the battery would
19 both be there for us to serve that need, as Mr. Hall
20 said.

10:41

21 Q. Right. From whatever source that you could draw from
22 in the circumstances?

23 A. MR. MOLLARD: Exactly.

24 Q. I'd like to take you back to the IRs, and IR 17 to the
25 Board, the response to (b) and (c). And that's on pdf

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1 page 158. So IR 17(b) and (c).

2 THE CHAIR: Ms. Sabo, sorry to interrupt.

3 It's probably a good point in the morning to take a
4 break.

5 MS. SABO: Sure. That would work for me. I
6 can stop after the next two questions, if that would
7 work for you, Mr. Chairman.

8 THE CHAIR: If that's a good point in your
9 flow, carry on.

10 MS. SABO: Thank you.

10:42

11 Q. Do you have that, panel?

12 A. MR. MOLLARD: Yes, we're just reading the
13 question and the answer.

14 Q. Great. Thank you. So I'm looking specifically at
15 part (c), where YEC stated: (as read)

16 "YEC followed a competitive process for
17 sourcing diesel rentals as follows."

18 And then it goes on to explain its public competitive
19 tenders for each of 2018 and 2019, 2019 and 2020, and,
20 finally, 2020 and 2021.

10:42

21 So what is driving the increase in number of diesel
22 units forecast through modelling to meet the winter
23 season? Is it the modelling itself, weather, demand,
24 and/or other factors?

25 A. MR. HALL: So the increase in the number of

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1 rentals is driven by largely an expectation that our
2 peaks will continue to grow. And you see that
3 expectation, again, bringing everyone back to
4 Figure 4.1 in the application, where that red line, so
5 the forecast non-industrial peak, is growing.

6 And we've got excellent evidence of that. I mean,
7 I would point out that -- and this is in our GRA
8 application, the data. But in 2018 our peak was
9 93 megawatts, and in 2020 it had grown by a full
10 10 megawatts, to 103. So we've got both historic
11 growth and forecasts future growth.

12 And, you know, what are the drivers of that?
13 Well, it's ongoing growth in the population of the
14 Yukon, growth in housing starts, and a shift towards
15 electric heating over fossil fuel heating, which we see
16 in new subdivisions such as Whistle Bend, for example.

17 So I think the trend and the expectation of a
18 continued trend of growth and peak demand is well
19 founded and well supported in fact.

20 Q. And that's what's driven the projections in the red
21 line for the non-industrial peak in Figure 4.1?

22 A. MR. HALL: Correct. In the longer term there
23 is modelling involved as we look, you know, further
24 out, and that draws upon expectations around
25 electrification. So we know coming out of Yukon

10:43

10:44

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1 government's Our Clean Future strategy that there's a
2 significant amount of funding support going towards
3 some adoption of electric vehicles, for example, and
4 electrifying space heating. So they have specific
5 programs to subsidize the purchase of electric vehicles
6 and electrification of home heating.

7 Q. Thank you. And I've got one more question about diesel
8 units. Is the option of buying diesel units to cover
9 shortfall available as an alternative? I know you've
10 done your comparative analysis on renting, but we were
11 wondering if buying diesel units would be a good
12 alternative, to cover capacity shortfall?

10:45

13 A. MR. HALL: Yeah, I mean, it's a curious
14 question in the sense that, for us, buying diesel units
15 really is the 20-megawatt permanent diesel facility. I
16 think as a utility, the idea that we would buy these
17 rental units and somehow situate them in our parking
18 lot on a permanent basis, that has a number of -- of
19 consequences that, you know, it makes it an option that
20 we really wouldn't consider.

10:46

21 As Mr. Mollard pointed out yesterday, these rental
22 units are not quite configured for utility service
23 perfectly. And so if I was looking at a purchase
24 decision, I would look at buying quite a different
25 thing.

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1 So I view the rental decision versus the permanent
2 purchase quite differently.

3 A. MR. MOLLARD: And I would add, Ms. Sabo, just as
4 an anecdotal comment, you know, there's an old saying
5 that you look like you rented it, and these units have
6 generally had a pretty hard life. So if we were
7 speccing something to place on the grid that we
8 absolutely needed to have because they're there for the
9 N-1, we wouldn't look at something that had the kind of
10 use history that these rental units have.

10:46

11 Q. Okay. And you both mentioned you'd look at something
12 else. What would other options be?

13 A. MR. HALL: Well, ultimately, where you end up
14 is something along the lines of a 20-megawatt diesel
15 plant. It might not be 20 megawatts. I think there's
16 a case that we present -- you know, we present some
17 economics in the application around a 12.5-megawatt
18 diesel plant, but you're in the game of looking at a
19 permanent diesel facility.

20 Q. Right. So not smaller options? We're again back into
21 those larger facility options?

10:47

22 A. MR. HALL: Correct, yeah.

23 Q. Thank you.

24 MS. SABO: Mr. Chairman, thank you for
25 letting me go long. I'm not sure if you want to take

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Questioned by Ms. Sabo

1 10 or 15 minutes.

2 THE CHAIR: Let's take 15. And since it's our
3 only morning break, maybe we can go through till noon
4 or shortly after.

5 MS. SABO: Fine with me, sir.

6 (ADJOURNMENT)

7 THE CHAIR: Okay. Ms. Sabo, are you ready to
8 carry on?

9 MS. SABO: Yes, please, Mr. Chairman.

10 THE CHAIR: Then please proceed. 11:06

11 Q. MS. SABO: Panel, with respect to the
12 BESS Project, I promised I would ask some more
13 questions about costing.

14 Is it YEC's position that you're only relying on
15 the Hatch report for the accuracy of the estimated
16 BESS Project costs?

17 A. MS. MILOJEVIC: No. I would say that we are
18 relying on the typical class estimate. So when you're
19 talking about engineering, as you pursue different
20 levels of detail of engineering, you typically have a
21 class of estimate, which essentially gives you your
22 range. 11:06

23 So the Hatch report gives us an estimate for the
24 BESS system at a plus or minus 30 percent capital cost
25 range, but then there are other costs in addition to

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1 the Hatch report, such as owner's costs, that we've
2 also included at that level of accuracy at this time,
3 based on where we are in the design process.

4 Q. All right. And you've done that based on your own
5 costing information and your own judgment?

6 A. MS. MILOJEVIC: Yes.

7 Q. Are there any limitations, from the YEC perspective, on
8 the comments and findings in the Hatch report regarding
9 cost estimates?

10 A. MS. MILOJEVIC: Sorry, Ms. Sabo, could you just
11 clarify the question for me, please?

11:07

12 Q. Yeah. So the Hatch report goes through the estimated
13 cost for the project. Are there any limitations to
14 that report and its findings or its recommendation on
15 technical requirements, from a company perspective?

16 A. MS. MILOJEVIC: No. We are confident in the cost
17 estimates provided at the class level of plus/minus
18 30 percent. As I said, they do omit some of the
19 owner's costs, which we did include in our application
20 as part of the total project costs.

11:08

21 THE COURT REPORTER: Sorry, Ms. Sabo, are you speaking?

22 MS. SABO: Oh, thank you, Madam Court
23 Reporter.

24 Q. Given that completion for the project is expected for
25 winter 2022/2023, are there any other factors not

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1 included in the Hatch report that will drive the
2 completion of that project either on that date or after
3 that date?

4 A. MR. HALL: The overall project execution
5 timeline will be driven by a couple of different
6 factors. So, first of all, we have the expected
7 timeline on the permitting, which we don't believe, you
8 know, there's any uncertainty around. We're in, as
9 Ms. Milojevic outlined yesterday, yes, the submission
10 is in and we expect the permitting to proceed fairly
11 adroitly here.

11:09

12 The key drivers will be the delivery lead time for
13 the battery hardware itself, and the transformer in
14 particular. So that's the transformer that pumps up
15 the voltage and -- to the required voltage to get the
16 power to the Whitehorse facility here. So that lead
17 time has not yet been confirmed. And, you know, we'll
18 only have certainty around there once we have those
19 RFPs in and place the order.

20 Q. Thank you. I'm going to take you back to the plus or
21 minus 30 percent accuracy or contingency. If you could
22 turn up pdf page 20 of the application, hard copy
23 page 16, and I want to go to Table 3.4, which was
24 discussed yesterday as well.

11:10

25 MR. LANDRY: Sorry, what was the pdf

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Questioned by Ms. Sabo

1 page number in the application again?

2 MS. SABO: Page 20, Mr. Landry. Hard copy
3 16.

4 MR. LANDRY: Thank you.

5 Q. MS. SABO: And Table 3.4, in the third row of
6 that table is the battery system costs of 19,985. And
7 I just wanted to know if you could give me a breakdown
8 on how that estimate was derived, that total estimate
9 of 19.9 million.

10 A. MS. MILOJEVIC: That estimate was derived in the
11 Hatch report, so I'll ask Ms. Zuliani to outline its
12 estimate.

13 Q. Thank you.

14 A. MS. ZULIANI: Thank you, Ms. Sabo. So the
15 estimate was derived based on benchmark pricing and
16 inhouse data that we have from other projects for
17 battery costs of a similar nature, as well as including
18 allocations for other components of the battery system,
19 as well as an allocation for added costs due to the
20 Arctic climate.

21 Q. And is that a proprietary database that you use or do
22 you pull that from public sources?

23 A. MS. ZULIANI: Both. We do pull from public
24 benchmarks, but we also use inhouse data we gather on
25 other projects as benchmarks to keep current.

11:11

11:11

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1 Q. Okay. And on a very high level, what type of costs are
2 included in that 19.9 number? What cost categories go
3 into that?

4 A. MS. ZULIANI: So primarily this is driven by the
5 cost from the battery vendor, as well as allocation for
6 other components, such as communications, added costs
7 for Arctic conditions, and transportation to the site
8 and whatnot.

9 Q. Okay, that's helpful. Is there any other context that
10 you can give me on anything else that's included in
11 there?

11:12

12 A. MS. ZULIANI: I'll just say that the battery
13 system goes with the power conversion system, which is
14 the inverter and the other electrical components of the
15 system, as Mr. Hall mentioned.

16 Q. Ms. Zuliani, I'll come back to you in a minute. I'm
17 going to pop back to the YEC panel. They might defer
18 it back to you, but this might seem like a seemingly
19 simple question, but in Table 3.4, it shows the
20 estimated capital cost of the project facilities. And
21 YEC states that the 3. -- or, sorry, rather
22 31.7 million used 2020 costs plus or minus 30 percent.
23 And then it says they included a 15 percent
24 contingency.

11:13

25 So what I'm trying to understand with Table 3.4

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Questioned by Ms. Sabo

1 is, is the plus or minus 30 percent baked into that
2 table and then a 15 percent contingency applied? Or
3 does this table only reflect a 15 percent contingency?

4 A. MS. MILOJEVIC: The table includes a contingency
5 of 15 percent, which is applied to the battery system
6 and power conversion system. So essentially the
7 largest portion of the project costs include that
8 amount, the contingency of 15 percent on that.

9 Other elements in the Table 3.4 do not have their
10 own separate contingency applied, which is why,
11 Ms. Sabo, if you look at the contingency line in
12 Table 3.4, the total percent contingency included in
13 the \$31.7 million estimate is actually 12 percent. So
14 when you look at the total estimated cost, it's
15 actually a 12 percent contingency included.

11:14

16 Then because of the accuracy of the cost estimate
17 that we are at at this point in the design, we would
18 say that the cost variance, so the accuracy, is plus or
19 minus 30 percent. So the plus or minus 30 percent is
20 applied to the 31.7 million, which is after the
21 12 percent contingency that's been included in that
22 number.

11:15

23 Q. Okay. Thank you. And, Ms. Milojevic, do I have it
24 right that the expected net benefit to customers will
25 be seen at or about Year 7 given that contingency? I

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Questioned by Ms. Sabo

1 thought you had said that somewhere on the record. I
2 just wanted to confirm.

3 A. MS. MILOJEVIC: No, I don't believe so.

4 Q. Okay.

5 A. MS. MILOJEVIC: If you look at Table 4.3 on
6 page 39 of the application, there is a net annual
7 ratepayer saving in the first year of the project. So
8 in the last column of the table, that's the sum of
9 ratepayer savings. So if those numbers were negative,
10 it would be an in-year cost, positive implies a
11 savings.

11:16

12 So in the first year there is a savings. And that
13 is that \$31.7 million estimate, apologies.

14 Q. No problem. So you're referring to the total annual
15 savings, which is Column H?

16 A. MS. MILOJEVIC: It's Column I.

17 Q. Oh, sorry. Yeah. So the total annual savings are in
18 Column H and then the net annual are in Column I?

19 A. MS. MILOJEVIC: That's correct. So Column I
20 accounts for the total annual savings in Column H, but
21 it also accounts for the project costs from Column D.

11:16

22 Q. Okay. Maybe I got your seven in there when it starts
23 to kind of have that cumulative impact in there.

24 Thank you very much for walking me through that.

25 Ms. Zuliani, I want to take you to the

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Questioned by Ms. Sabo

1 Hatch report, in Tables 11-1 and 11-2 of that report.
2 The pdf page is 165 and the hard copy of report -- in
3 the small page number in the report is 99. And let me
4 know when you're there, madam.

5 **A. MS. ZULIANI:** Yes, I'm here.

6 **Q.** Okay. Those tables provide cost estimates for two
7 different sites: the TKC site in Table 11-1 and the
8 KDFN site in 11-2.

9 And it provides costs -- capital cost estimates
10 for CapEx in the last three columns of each of those
11 tables. So I was wondering if you could just generally
12 walk me through how those three columns -- I'm assuming
13 in each of the table you used the same methodology or
14 base data, but can you walk me through how those
15 estimates and those columns of those tables are
16 derived. So BESS CapEx other and total CapEx.

11:17

17 **A. MS. ZULIANI:** So the BESS CapEx, as we just
18 discussed, is derived based on our benchmark pricing of
19 batteries of similar projects, with allocations for
20 project-specific considerations like cold weather,
21 transportation, and allocation for installation, and
22 allocation for other electrical components and
23 communication components within the BESS.

11:18

24 The other CapEx is based on engineering costs as
25 well as site preparation costs, which were derived

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1 based on estimates from our civil engineering team.

2 And then the total CapEx is the sum of the columns
3 before that. So the inverter transformer
4 interconnection CapEx, the BESS CapEx, and other CapEx.

5 I think we may have missed the inverter
6 transformer and interconnection CapEx. And those are
7 based on costs for -- again, benchmark costs and our
8 database for inverters, transformers, other electrical
9 components needed in the system, and the
10 interconnection estimate to the Whitehorse Rapids
11 facility.

11:19

12 Q. Okay. And would that be a material change to the
13 numbers in these tables? The --

14 A. MS. ZULIANI: Sorry. We at Hatch did not miss a
15 cost. When you just stated -- you stated the last
16 three columns, there's actually four columns of cost in
17 there.

18 Q. Oh, I'm sorry, yes, you're right. There's the
19 inverter, transformer, interconnection CapEx, which is
20 the fourth column from the left. Thank you.

11:19

21 A. MS. ZULIANI: Yes.

22 Q. Okay. So in preparing these tables, do you prepare a
23 benchmark summary or report to YEC that shows
24 how -- how your benchmark works and what the
25 comparators are?

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Questioned by Ms. Sabo

1 **A. MS. ZULIANI:** So this is the information we
2 provided to Yukon Energy, or YEC. The benchmarks are
3 based on either public information or, as I mentioned,
4 based on our inhouse databases developed through our
5 projects. So, no, we don't provide those to YEC.

6 **Q.** Okay. Yeah, I was just trying to get a sense of how
7 many comparators you use and kind of what criteria you
8 use. So, I mean, if you're verbally able to speak to
9 that, that would be helpful. Or if you don't have that
10 information available, if you could take that away as
11 an undertaking, about the number of comparators you
12 use.

11:20

13 **A. MS. ZULIANI:** So, I mean, for the major project
14 costs, we use it either based on quotations, either
15 we've solicited them from vendors on discussions with
16 vendors. So we use up-to-date information as we can
17 gather for the project from respective vendors.

18 **Q.** Okay. So do you keep track of the number of
19 comparators you use to compare them to this specific
20 project or is it just a general review of what's going
21 on in terms of other projects that are similar?

11:21

22 **A. MS. ZULIANI:** Well, given the level of
23 engineering we're at on this project, it's a general
24 review. That is part of why we're doing the two-stage
25 procurement, which I would pass back to my colleagues

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Questioned by Ms. Sabo

1 at YEC.

2 Q. Okay. Thank you. I'd like to talk about the levelized
3 cost of capacity, and YEC had responded to the Board in
4 an IR, and that's IR 27 on pdf page 224, hard copy
5 page 1 of 1. And this will be to the YEC panel.

6 And you'll see in that IR, YEC states that the
7 levelized cost of capacity is \$235 per kilowatt hour,
8 including transmission and interconnection.

9 And then I'm going to move you to the application,
10 pdf page 26. And on that page YEC talks about the
11 Whitehorse interconnection facility.

11:22

12 So I'm trying to get a sense on how these two
13 responses are interrelated. More specifically, have
14 the costs for this project been included in the total
15 costs for BESS? For the Whitehorse interconnection
16 facility, have those costs been included in the total
17 cost for BESS?

18 A. MR. HALL: So the Whitehorse interconnection
19 project has a broader scope than just, you know,
20 accommodating the BESS Project. What we face in the
21 Whitehorse facility is a concern around the number of
22 generation sources that are being connected to our
23 S150 substation. And so those would include rentals,
24 the LNG plant, and the expected diesel replacement
25 units in the future.

11:23

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1 So the Whitehorse interconnection project looks at
2 sort of rejigging the way in which these various
3 sources connect to the system and actually connecting a
4 couple of the sources over to the Riverside substation
5 across the river. And so its scope is broader and its
6 need exists today. We need to do that Whitehorse
7 interconnection study -- the project, sorry, whether
8 the battery was proceeding or not.

9 But, I mean, having said that, the Whitehorse
10 interconnection study will -- does anticipate the
11 battery being connected, and then the battery -- sorry,
12 in its design.

11:24

13 Q. And given that response, how does that affect -- is
14 that factored into the total costs of BESS, that
15 interconnection, or not, Mr. Hall? I'm just kind of
16 wondering what the interrelated impact of the costs
17 are.

18 A. MR. HALL: So if I point you to Table 3-4 of
19 the application, on page 16 of the application, there
20 is a specific line item, "Grid connection," which would
21 connect the battery project to the fence-line of the
22 Whitehorse facility, and then any other costs, you
23 know, related to the interconnection project would then
24 be part of that separate project.

11:25

25 Q. In the case of the purchase of the 12.5-megawatt

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Questioned by Ms. Sabo

1 Takhini diesel option, would a similar costing analysis
2 be done as what's in Table 3.4?

3 A. MR. HALL: Well, it certainly would have been
4 done. It would have been based on a certain level of
5 accuracy. I believe there's a report that -- we
6 mentioned the Midgard estimates in Footnote 30 on
7 page 17. So there was a study done by Midgard that
8 would have fleshed out an estimate of the Takhini
9 diesel facility.

10 Q. Thank you. I want to move a little bit to talk about 11:26
11 operating expenses. And you can go to hard copy
12 page 17 of the application, pdf 21, and we were near
13 there already, on Table 3.5, the estimated annual
14 operating costs for project facilities in 2020 dollars.
15 The Board would like further detail on how these
16 estimates were derived. I see you have some notes
17 there, but maybe you could just walk me through the
18 table, whoever is best to speak to that.

19 A. MS. MILOJEVIC: Yes, Ms. Sabo. So the annual site
20 lease, the first row in the table was determined from 11:27
21 the actual lease offer that we received for the site,
22 and that expected cost.

23 The annual operating expense and the OpEX in Row 2
24 was taken directly from the Hatch report around the
25 cost to operate a battery. And that includes

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1 maintenance and -- preventative maintenance and spare
2 parts were required for maintaining the unit.

3 The third item, property tax, was based on the
4 current City of Whitehorse mill rates and the expected
5 value of the project. So calculation based on what we
6 believe the best estimate of the property tax would be
7 with our knowledge to date.

8 The fourth row, insurance, was also based on an
9 estimate from the Hatch report.

10 And then, finally, the transmission operating and
11 maintenance would be the O&M costs to maintain the line
12 that runs from the battery site to the Whitehorse
13 Rapids facility. And so that's essentially vegetation
14 management to keep the line clear. And that's a
15 general estimate based on 1 percent of the capital
16 costs, which is a typical number used in planning
17 transmission O&M.

11:28

18 Q. And I understand, you know, property taxes is quite
19 high, and you've said that's the case given Whitehorse
20 and where this project is located.

11:28

21 Is that a significant driver on location of the
22 project? I know, Mr. Hall, we talked this morning
23 about what the major criteria were, but how much did
24 property tax impact the decision on site, if at all?

25 A. MR. HALL: Well, it certainly was a factor

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Questioned by Ms. Sabo

1 that we were concerned about during the site selection,
2 and that explains why we -- we made submissions to
3 the -- to the City of Whitehorse to try and get a
4 reduction to the mill rate.

5 But at the end of the day, as we outlined in the
6 application, the Takhini site wasn't really an option
7 for us at the end of the day because Kwanlin Dün,
8 once -- you know, they actually didn't forward us an
9 offer for the Takhini site at the end of the day. And
10 I would speculate that they observed the outcome of our
11 public engagement on this Takhini site and they -- they
12 probably noticed that there was quite a bit of public
13 opposition to the Takhini location. And on that basis
14 we actually never received a lease offer from them for
15 the Takhini site.

16 So at the end of the day the choice was between
17 the two sites in Whitehorse.

18 Q. Thank you. And I think that's well detailed in your
19 application, Mr. Hall, but I appreciate that additional
20 explanation.

21 In terms of the annual OpEx, annual costs of
22 230,000, how much rigour or analysis was used to
23 determine that estimate?

24 A. MS. MILOJEVIC: I'll ask Ms. Zuliani to comment.

25 Q. Thank you.

11:29

11:30

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Questioned by Ms. Sabo

1 **A. MS. ZULIANI:** Thank you, Ms. Milojevic. So,
2 again, this is based on Hatch's internal information
3 based on other projects and from vendors. Typically
4 with these projects vendors do engage in a site
5 preventative maintenance visit once or twice a year.
6 As allocated -- explained in the note, we did allocate
7 a cost for technicians to come to site, as well as an
8 allocation for parts. Batteries tend to be a
9 relatively low maintenance item, there's not a lot of
10 replacement parts.

11:31

11 **Q.** And is that -- in the Footnote 2 at the end, where it
12 says plus the \$2.25 per kilowatt hour per year and
13 \$4 per kilowatt per year for parts and preventative
14 maintenance, is that based on an averaging of prior
15 periods or is that again just an estimate from
16 judgment, and similar projects?

17 **A. MS. ZULIANI:** It's based on similar projects, as
18 well as items that a vendor would offer as part of
19 their preventative maintenance offering.

20 **Q.** Okay. Thank you. I'd like to move to another
21 Board IR, IR 10(d), at pdf page 141. And it's page 1
22 of 2. So pdf 141.

11:31

23 And in that IR the Board asked: (as read)
24 "From an O&M perspective, what does YEC
25 forecast the annual thermal management

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Questioned by Ms. Sabo

1 costs to be for each year of its
2 expected 20-year life? Please provide
3 details."

4 And then if you go to the next page, as the response to
5 part (d), that starts with: (as read)

6 "The BESS will have a modest electrical
7 consumption during idling periods to
8 cover auxiliaries and heating in the
9 winter. It is anticipated that this
10 electric consumption would be 2 to
11 4 percent of the total annual energy
12 throughput. However, the consumption
13 will depend on the selected vendor
14 system configuration. Heating load will
15 also vary year to year, depending on the
16 ambient conditions."

11:32

17 So, Ms. Zuliani, either you or YEC could answer this,
18 but I'm wondering how the 2 to 4 percent was determined.

19 **A. MS. ZULIANI:** So, again, it's based on typical
20 configurations for an HVAC, for a containerized battery
21 system.

11:33

22 **Q.** Did Hatch make any adjustments to that range of 2 to
23 4 percent to reflect Yukon's northern climate?

24 **A. MS. ZULIANI:** This would have been based on
25 northern climate projects.

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Questioned by Ms. Sabo

1 Q. Okay. And those were the ones that were referenced,
2 such as the one in Quebec or the Northwest Territories,
3 those types of projects?

4 A. MS. ZULIANI: Well, it would have been based on
5 projects where Hatch was involved in the northern
6 climate type project.

7 Q. Okay. Do you know how many of those were used to
8 derive the 2 to 4 percent?

9 A. MS. ZULIANI: It's based on a few projects.
10 It's fairly typical. I mean, this is a, you know, an
11 HVAC unit, it's a fan, a heating system. It's not
12 going to vary drastically from project to project.

11:34

13 Q. Okay. So I'm just trying to get an understanding on
14 scale, you know, because I'm not as familiar
15 with -- with battery storage projects. So are we
16 talking about under 5? You know, under 10? 20?
17 What's kind of the number of -- roughly the number of
18 projects you would look at to derive that estimate of 2
19 to 4 percent?

20 A. MS. ZULIANI: Well, it would be under five
21 projects, but, again, it's a fairly standard unit.
22 It's a fairly small component of the operating costs,
23 so...

11:34

24 Q. Okay. Thanks, Ms. Zuliani.

25 I'm going to move to some questions about

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Questioned by Ms. Sabo

1 operating reserve, and there was some questions on that
2 yesterday. But I'm going to have the panel turn up
3 IR 51 on page 395, that's the pdf. And then the
4 response starts on pdf 396, hard copy page 2 of 4.

5 And I'm looking at part (a) where YEC stated:

6 (as read)

7 "When Yukon Energy is experiencing high
8 water all of the hydro generator
9 capacity is used to generate power and
10 therefore cannot be used for operating
11 reserve. Spinning reserve only occurs
12 when a generator is not at nameplate
13 capacity."

11:35

14 To confirm, when there is high water and the hydro
15 generator is not at nameplate capacity, hydro can
16 provide some or all of operating reserve; is that right?

17 **A. MS. MILOJEVIC: Could you repeat your question one
18 more time, Ms. Sabo?**

19 **Q.** No problem. When there is high water and the hydro
20 generator is not at nameplate capacity, hydro can
21 provide some or all of the operating reserve; is that
22 correct?

11:36

23 **A. MS. MILOJEVIC: Yes, that is correct.**

24 **Q.** Okay. And can hydro provide operating reserve during
25 off peak?

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Questioned by Ms. Sabo

1 **A. MS. MILOJEVIC:** Yes. Hydro can provide operating
2 reserve at any time if the operator operates the unit
3 at less than its full output.

4 **Q.** And that's true for the whole year round? I understand
5 it would be more difficult in winter, but that could be
6 done all year round; yes?

7 **A. MS. MILOJEVIC:** Yes, that's correct.

8 **Q.** Can hydro provide all operating reserve for off peak
9 during non-winter periods?

10 **A. MS. MILOJEVIC:** It depends on the circumstance. 11:37
11 So when we think about -- just kind of going back to
12 the basics of operating reserve, when we talk about
13 operating reserve, it's essentially -- in order to keep
14 the grid online, we need to match the load, the demand
15 with the supply, or generation.

16 And so in order to be able to respond to load
17 increases, if we suddenly have jumps up in load or if
18 we lose a generator, we need to have generation
19 available that can instantly ramp up to either replace
20 the lost generation or to address the growth in the 11:37
21 load or the increase in the load.

22 So any time that we want to provide operating
23 reserve from a hydro unit, you run the unit at less
24 than its full output. Depending on the time of year
25 and the specific system conditions on the time, at the

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Questioned by Ms. Sabo

1 time, that may mean that you would have to run thermal
2 units and -- and end up with a fuel cost for the
3 thermal in order to replace the energy you're not
4 providing with the hydro unit because you're using it
5 for reserve.

6 So I believe, Ms. Sabo, your question was around
7 off peak. It is likely the hydro units could be
8 providing operating reserve, but it would also just
9 depend specifically on their operating restriction at
10 the time and what the load was.

11:38

11 Q. Okay. Thank you. If I can now take you to the table
12 in that IR response, the response part (c) through (e),
13 and it's on hard copy 3 of 4. At the top of the
14 page there you'll see it.

15 And in that table does the calculation of the
16 savings include any BESS-related capital costs?

17 A. MS. MILOJEVIC: No. So this is the savings based
18 on using the battery for operating reserve. Those
19 savings and the battery costs are reflected in
20 Table 4.3 of the application, which presents the
21 project economics overall.

11:39

22 Q. Okay. And the O&M costs are also not included in this
23 table we just went through, where it was in the
24 application; correct? So no operating and maintenance
25 costs in this Table 1 as well?

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Questioned by Ms. Sabo

1 A. MS. MILOJEVIC: No. This table is meant only to
2 show the savings from the battery operating reserve use
3 case. The economics, which include the operating
4 costs, the recharging costs, and the capital costs,
5 again, are in Table 4.3 of the application with the
6 project economic justification.

7 Q. Great. Thank you for that clarification.

8 If you could now go to IR 65, which also dealt
9 with operating reserve, and it's pdf page 479, hard
10 copy page 1 of 2, and it's 65(a).

11:40

11 And on that page the Board asked a question on a
12 statement from the Hatch report, and I'm looking at
13 line 22, which states: (as read)

14 "No. When YEC is experiencing high
15 water flows, often the hydro generators
16 must be operated at maximum output and
17 therefore cannot be used for operating
18 reserve. Accordingly, during years with
19 high water flow volumes, the BESS will
20 directly reduce the amount of thermal
21 generation as it will reduce the number
22 of thermal units required to be online
23 to provide the operating reserve
24 unavailable from the hydro units."

11:40

25 Can you explain whether the hydro generators operate at

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Questioned by Ms. Sabo

1 maximum output only if the load exceeds the maximum
2 output? Just wondering from an operating perspective
3 how that works.

4 **A. MS. MILOJEVIC:** So when we dispatch the system,
5 there would be a number of factors considered. So, for
6 example, you may have some units offline, in which case
7 you might be up at maximum output; or you may be at
8 less than maximum output, for example, if you need the
9 unit to provide operating reserve. So it would depend
10 on the specific system conditions at the time.

11:41

11 **Q.** And if there's a need for baseload thermal
12 generation -- I'm going to start that again.

13 If there is a need for baseload thermal
14 generation, is operating reserve covered by further
15 incremental thermal generation or is hydro held back to
16 provide a store of operating reserve?

17 **A. MS. MILOJEVIC:** Yes. Hydro would be held back to
18 provide a store of operating reserve.

19 So just to be clear, Ms. Sabo, this is the key
20 operating reserve benefit that the battery provides.
21 So where -- when you have thermal generation online and
22 you have a hydro unit that's not at its maximum output
23 because it needs to be able to provide operating
24 reserve, when the battery is connected to the grid, the
25 battery is simply being plugged into the system, as it

11:42

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1 were, is providing that operating reserve.

2 You can then increase the output of the hydro
3 units, which then increases your hydro generation and
4 decreases your thermal generation accordingly. With
5 those fuel costs savings from being able to operate
6 your hydro units at a higher output level, that results
7 in the operating reserve savings from the battery
8 that's presented in the application.

9 Q. Thank you. I'm going to take you to pdf page 15 of the
10 application, hard copy page 11.

11:43

11 And we just wanted to clarify some information in
12 the application compared to Footnote 14 that's detailed
13 in the application.

14 So on hard copy page 11, pdf page 15 of the
15 application, YEC states at the start of the last
16 paragraph of that page: (as read)

17 "Based on 2019/2020 year YIS operation
18 an average annual water flow, the
19 average monthly operating reserve on
20 hydro turbines ranges from 2 megawatts
21 to 8 megawatts across the year (includes
22 all months), with an annual average of
23 4.8 megawatts."

11:43

24 And then if you look at the footnote statement, it
25 references the 2019 to 2020 year and the report dated

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1 August 24th, 2020, of Hatch. Do you see that?

2 A. MS. MILOJEVIC: Yes.

3 Q. Great. And our question is, given those two items,
4 with 2019 and 2020, the fiscal year being incomplete at
5 the date the report was prepared and full actuals would
6 not have been known, can you help me out on how the
7 numbers were derived, the 2.4 to 2.8 and the average of
8 4.8? I'm just trying to clarify, given those
9 statements, how were those numbers really calculated.

10 A. MS. MILOJEVIC: Yes. So, typically, when we refer 11:45
11 to years, we refer to these double years you'll see.
12 So you'll see us talk about winter 2019/2020 or
13 2018/2019. And that's because from the utility's
14 perspective our peak period goes from the winter which
15 starts in November, December of the year and ends in
16 February the following year. So we talk about -- we
17 tend to talk about those winters as year/year, even
18 though it's not a calendar year.

19 I'd have to ask Ms. Zuliani to comment on exactly
20 which months were specifically looked in the Hatch 11:45
21 analysis being referred to on this page.

22 Q. Great. Thank you. I also think of March to March, so
23 that's helpful.

24 Ms. Zuliani, can you help me out?

25 A. MS. ZULIANI: Yes. So Yukon Energy provided us

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1 the data from when we started the project, which was
2 mid January 2020. So it was from mid January 2019 to
3 mid January 2020, encompassing the peak that was
4 included in January 2020, which is why we included that
5 period of January.

6 Q. Ms. Zuliani, can you provide me with any more
7 information on how Hatch determined the average water
8 year water flows in your report?

9 A. MS. ZULIANI: That was provided to us from
10 Yukon Energy.

11:46

11 Q. Okay. And either you or Yukon Energy, can you give me
12 a description of what the information used to derive
13 that average included?

14 A. MS. MILOJEVIC: So it would have been using our
15 historical average, which is what we used to determine
16 an average water year.

17 A. MR. HALL: Sorry, this is a fairly important
18 concept that underpins a number of different
19 calculations that we make for admitting (phonetic)
20 purposes.

11:47

21 So I believe we're up to 38 water years of history
22 that are taken and looked at together and used to
23 develop an average over that period.

24 Q. And that's a hard average, not like a rolling average?
25 You actually take your entire historical dataset?

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1 A. MR. HALL: Correct. So as each year is
2 added, the dataset becomes bigger.

3 Q. Okay. I'm going to go to the application again, pdf
4 page 16, hard copy page 12. And at the bottom of the
5 page there's a paragraph that starts: (as read)

6 "The Hatch analysis estimated potential
7 reduction in direct thermal generation
8 used to provide operating reserve by
9 estimating when thermal generation was
10 used in 2019/20 to provide operating
11 reserve. However, the full benefits of
12 the thermal displacement as estimated by
13 Hatch are not expected to be realized
14 given the relationship between thermal
15 generation and subsequent hydro storage
16 availability."

11:48

17 And this may be best for Ms. Zuliani. Given that
18 estimate average annual water flows are noted to be used
19 in Footnote 14, which we just discussed, and the
20 application refers to estimating when thermal generation
21 was used in 2019 to 2020 to provide operating reserve,
22 is there any more detail you can provide me? Is there a
23 disconnect here on the calculations or is this
24 IR -- does it just confirm what you had told me about
25 how these numbers were calculated for operating reserve?

11:49

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1 **A. MS. ZULIANI:** Sorry, could you please repeat the
2 **question, Ms. Sabo?**

3 **Q.** Okay. Given that the estimated annual water flows are
4 noted to be used and for Footnote 14 and the
5 application refers to estimating when thermal
6 generation was used in 2019/2020 to provide operating
7 reserve, are those statements consistent between what's
8 in Footnote 14 and what's on -- in page 12 of the
9 application at the bottom of the page?

10 And if you need a moment to read that, that's
11 fine.

11:50

12 **A. MS. ZULIANI:** So my understanding is after we
13 submitted our report with our estimates, Yukon Energy
14 reviewed those estimates and decided for the purpose of
15 this application to reduce them, as outlined in
16 Footnote 17, to just include the spring period.

17 But Hatch was not involved in that process.

18 **Q.** Okay.

19 **A. MS. MILOJEVIC:** If I could provide some context
20 maybe, Ms. Sabo.

11:51

21 So when we talk about the direct thermal
22 generation used to provide operating reserve, that is
23 driven by the hydro used to provide operating reserve
24 that I believe you were referring to in Footnote 14.

25 So Hatch's calculation, which used average water,

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1 determined when -- so essentially when a hydro unit was
2 providing operating reserve and at the same time a
3 thermal unit was online, again, during those periods,
4 that's when a battery would be able to provide the
5 operating reserve, increase the output of the hydro
6 unit, and, as a result, decrease the thermal generation
7 and result in those fuel costs.

8 And Ms. Zuliani referred to an adjustment that YEC
9 made. So Hatch did their calculation based on the year
10 2019/2020 and looked at year round how much thermal
11 savings could be -- could be gained by use of the
12 battery, again, to increase the hydro production and
13 decrease the thermal production required for operating
14 reserve.

15 As I explained, I believe in Mr. Maissan's cross
16 yesterday, when we looked at that, we believe that in
17 an average water year, if you didn't use the thermal in
18 the fall and winter at some point, you would use it
19 elsewhere in the year. And so we reduced the savings
20 calculated by Hatch by two-thirds. As I outlined
21 yesterday, that's probably on the very conservative
22 side, but we did make that adjustment, as well as
23 adjust the fuel cost to reflect the same fuel prices as
24 shown in the 2021 GRA from mid 2020.

25 Q. Thank you. Ms. Zuliani, do you have anything else to

11:51

11:52

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1 add on how you calculated the estimated savings of BESS
2 or anything else you'd like to add in general?

3 A. MS. ZULIANI: I think Ms. Milojevic covered it
4 well. We used the average water year, compared to
5 2019, and identified opportunities throughout the year
6 on an hour-by-hour basis, outlining when thermal was on
7 and when it could potentially be replaced by hydro if
8 the BESS was available for operating reserve.

9 We never went above the annual -- or the long-term
10 average water year. We never assumed that hydro would
11 come online if there was a model.

12 Q. Okay. Thank you, panel.

13 MS. SABO: Mr. Chairman, that's a good place
14 for me to break, if you're so inclined.

15 THE CHAIR: Very good. That seems reasonable.
16 So we'll take an hour and a half. That would get us
17 back here at 1:25 Yukon time, give or take, plus or
18 minus.

19 Okay. Be back at 1:25.

20 (PROCEEDINGS ADJOURNED AT 11:54 A.M.)

21

22 PROCEEDINGS ADJOURNED TO 1:25 P.M.

23

24

25

11:53

11:54

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1 Volume 2

2 May 5, 2021

3 P.M. Session

4

5 (PROCEEDINGS RESUMED AT 1:32 P.M.)

6

7 **M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI** (For Yukon
8 Energy Corporation), previously affirmed

9 THE CHAIR: Okay. Welcome back, everyone.

10 Ms. Sabo, are you ready to proceed with the
11 remainder of your questions?

13:30

12 MR. LANDRY: Mr. Chair, if I may -- sorry,
13 Ms. Sabo -- I wonder if I could just do a bit of
14 housekeeping on the record, if that's okay, Ms. Sabo,
15 before you start?

16 THE CHAIR: Sure.

17 MS. SABO: Thank you, Mr. Landry. Go ahead.

18 MR. LANDRY: I apologize for interrupting.

19 The panel has a couple of corrections and
20 clarifications that I think would be worthwhile getting
21 on the record now, given the type of questioning of
22 Ms. Sabo and potentially by the Board. So if I could
23 be given a little bit of indulgence here and ask the
24 panel to maybe read the corrections and/or
25 clarifications into the record.

13:30

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI

1 THE CHAIR: Now's the time for it.

2 MR. LANDRY: Panel?

3 A. MS. MILOJEVIC: All right. So a couple of
4 corrections -- thank you, Mr. Landry, thank you,
5 Mr. Chair -- in the application.

6 So the first being on page 17 of the application,
7 the hard copy I'm referring to, Footnote No. 30. The
8 footnote reads LC0C for 12.5 kilowatts new diesel.
9 That should -- the "kilowatt" should be "megawatt." So
10 it should read: "LC0C for 12.5 megawatt new diesel." 13:31

11 The second correction -- oh, sorry. Yes. So the
12 second correction is on page 28 of the hard copy of the
13 application. This is Table 4-1.

14 In the title it reads: "Forecast Non-Industrial
15 Peak and Dependable Capacity under N-1 Capacity
16 Planning Criterion: 2021/22-2030/31 Winter
17 (megawatts)."

18 The megawatts should be corrected to kilowatts.
19 So the values shown in the table are shown in
20 kilowatts. 13:32

21 Then on the transcript from yesterday's process,
22 on page 112, line 6 through 7, Ms. Sabo asked if the
23 BESS Project will displace 7.2 megawatt hours of
24 thermal generation, and Mr. Hall replied "yes." The
25 "yes" is on page 112, line 15. A correction is needed

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1 in that the BESS Project will replace 7.2 megawatts of
2 thermo generation. So it's just the unit correction
3 there, from megawatt hours to megawatts.

4 And then finally, in Ms. Sabo's questions to
5 myself this morning around Table 3-4 on page 16, hard
6 copy of the application, the estimated capital costs
7 for project facilities, Ms. Sabo had a line of
8 questioning around the contingency in this application.
9 And I had noted that the 15 percent contingency was
10 only applied to the estimates provided by Hatch.

13:33

11 When I was stating that, I believed I noted just
12 the battery system and power conversion system line
13 items in the table. However, it should be noted that
14 the only costs that were excluded from the Hatch report
15 in terms of what would not have had a contingency
16 applied are the line items planning costs and owner's
17 costs. All of the other line items including
18 engineering services and project management, grid
19 connection, and site preparation costs were included in
20 the Hatch estimate and, therefore, were part of the
21 costs that the 15 percent contingency was applied to.
22 I just wanted to provide that clarification.

13:34

23 Thank you, Mr. Chair.

24 THE CHAIR: Thank you. That certainly helps.

25 MR. LANDRY: Thanks, Mr. Chair. So I

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Questioned by Ms. Sabo

1 appreciate your indulgence, and back over to Ms. Sabo.

2 MS. SABO: Thank you. And I have no further
3 questions on those corrections, for the record.

4 **MS. SABO QUESTIONS THE PANEL:**

5 Q. Panel, we have been waiting for this final topic. I'd
6 like to talk about the debenture investment. And I
7 appreciate that there's ongoing negotiations on this
8 issue, so I appreciate that you might not be able to
9 fully respond to some of these if information isn't
10 public or there may be limitations on how you can
11 respond given those negotiations. But I'm going to ask
12 and try to keep my questions fairly factual, except for
13 a few scenarios.

13:34

14 I'd like to take you to your opening statement,
15 Exhibit B-5, and on page 5 of that opening statement.
16 And therein, before its concluding paragraph YEC
17 states: (as read)

18 "The proposed debenture investment
19 approach is a measure that enables
20 First Nation investment in clean energy
21 development with no change in the costs
22 paid by ratepayers. Similar debentures
23 have been provided to enable
24 First Nation investments in YEC
25 transmission, hydro (Mayo B), and LNG

13:35

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1 projects in the past. The BESS Project
2 is the first instance when Yukon Energy
3 is to provide such a debenture rather
4 than Yukon Development Corporation."

5 And in the next paragraph: (as read)

6 "The proposed debenture investment
7 opportunity for KDFN and TKC is a loan
8 that will receive a return based on
9 YEC's annual return on equity. The
10 proposed debenture investment will be
11 included as part of YEC's equity return
12 when setting rates without any changes
13 in the 40 percent equity share assumed
14 in the capital structure when setting
15 rates. The end result will provide the
16 same overall return as part of YEC's
17 revenue requirement as it would
18 currently for YEC without any impact to
19 ratepayers."

13:36

20 So given that opening statement, I just wanted to
21 confirm that this is not a traditional loan in the sense
22 that YEC as a public utility would not normally require
23 such a debenture agreement funding for the equity cost
24 for a project. Is that fair?

13:36

25 **A. MR. MOLLARD:** I'm going to ask you to read that

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Questioned by Ms. Sabo

1 question again, if you could, Ms. Sabo. I want to make
2 sure I got all of it.

3 Q. Okay. This is not a traditional loan in the sense that
4 YEC is a public utility, would not normally require a
5 debenture agreement with First Nations for funding for
6 the equity costs of a project?

7 A. MR. MOLLARD: Yes. I just got tripped up a
8 little bit on your first statement because it is
9 structured as a traditional loan instrument, but I'll
10 focus on what you said at the end. In normal course of
11 business the equity component would be provided by the
12 shareholder, Yukon Development Corporation, either
13 through a direct investment or through accumulated
14 earnings.

15 Q. Thank you. And I understand what I just read in the
16 opening statement means that the arrangement that is
17 contemplated with the two Indigenous groups does not
18 create an equity interest in the rate base of YEC?

19 A. MR. MOLLARD: Yes. I'm going to use slightly
20 different wording, Ms. Sabo. It does not give them
21 ownership interest.

22 Q. Right.

23 A. MR. MOLLARD: And that's just a fine point
24 between sort of legal and accounting jargon, if I could
25 say it that way.

13:37

13:38

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Questioned by Ms. Sabo

1 Q. Right. And maybe just to add to that, on a conceptual
2 level rather than a lawyer and accounting level, how I
3 see this is there's a loan to YEC and how the interest,
4 for lack of a better word, to be paid on that loan is
5 based on the percentage of equity? It's not an
6 ownership interest? Do you see what I'm saying?

7 A. MR. MOLLARD: That's correct.

8 Q. Okay. Thank you. That's helpful for context.

9 I'd like to understand a little bit more on why
10 YEC is required to be a party to the agreement rather
11 than Yukon Development Corporation, that has
12 traditionally been done for facility projects in the
13 past.

13:39

14 A. MR. HALL: Andrew Hall. So historically,
15 Yukon Development Corporation entered into these kinds
16 of transactions with Yukon First Nations on prior YEC
17 projects. In this case they did not have the ability
18 to do so, and so Yukon Energy -- you know, our board
19 made the decision that Yukon Energy would be entering
20 into the transaction.

13:40

21 A. MR. MOLLARD: With the understanding that we
22 would be able to get the approval of this Board to do
23 what we're asking for to treat it as equity.

24 A. MR. HALL: Right.

25 Q. Okay. And you said, Mr. Hall, that YDC did not have

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1 the ability to do so. So was that financially driven
2 or for some other reason?

3 A. MR. HALL: I can't really speak to
4 their -- their reasoning. That would be for them to
5 speak to. But we were just instructed that at this
6 time they were not able to be the counterparty in this
7 transaction.

8 Q. Thank you. I think that's sufficient, Mr. Hall.

9 Other than YEC being the contracting party, are
10 there other differences in the debenture agreements
11 you're contemplating for the BESS Project that would be
12 different from past agreements? I'm just wondering on
13 terms or subject matters, is there any differences
14 other than YEC is the contracting party and not YDC?

13:40

15 A. MR. MOLLARD: Just to be clear, Ms. Sabo, you're
16 talking about the differences between this deal and the
17 previous deals that were done under YEC's umbrella?

18 Q. Yes. Like the agreements. Are there any major
19 differences we should know about?

20 A. MR. MOLLARD: And I can't remember which one.
21 This note is based on our actual ROE for the year. I
22 believe the Mayo Dawson note was a blended debt and
23 equity note from the early 2000s. And LNG was blended.
24 And, sorry, LNG was also a blended rate.

13:41

25 But other than those rate differences, the terms

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1 are basically the same. It's a pretty standard
2 debenture note.

3 Q. Okay. Thank you. Given YEC's position that the
4 agreement -- the costs of the agreement will be neutral
5 to ratepayers, wouldn't it be the preference to have
6 somebody else be the signatory, like the government of
7 Alberta or YDC, if possible? I'm just thinking there's
8 cost impacts potentially to this agreement, and, you
9 know, having it through YDC or the government might
10 provide some backstop or some other things you're not
11 able to provide to the agreement, rather than the
12 utility doing it.

13:42

13 A. MR. MOLLARD: That would have been our preferred
14 choice, to have it executed through the parent, but, as
15 we said, they declined to participate. So we were left
16 with this option.

17 Q. Okay. Will the debenture be used in YEC's overall
18 calculations to determine its cost of long-term debt?

19 A. MR. MOLLARD: No. The proposal that we put in
20 front of you is that it will be -- the interest paid
21 will be considered return, not interest costs. So
22 that's just to respect that -- to keep everybody whole
23 we have to keep that -- the interest and the principal
24 on the equity side of the formula.

13:43

25 Q. Thank you, Mr. Mollard. I'm always thinking forward to

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Questioned by Ms. Sabo

1 a GRA, as you well know.

2 I noted -- if I could take you to IR 7 (d) through
3 (f). And that response is in the consolidated IRs, I
4 believe on page 134, and the hard copy is page 4 of 6.
5 And just keep that IR open because most of my remaining
6 questions will deal with IR 7.

7 So in IR 7 (d) through (f), lines 3 to 13, there
8 is a response that says, in summarizing -- and I'll
9 summarize it. It says if an option is purchased to --
10 included to purchase the battery after five years by
11 Kwanlin Dün First Nation or Ta'an Kwach'an Council, is
12 included in the agreement.

13 I was just wondering if you could give me more
14 context on -- I know that there hasn't currently been
15 legal opinions on whether anything is going to trigger
16 the *Public Utilities Act*, but if there's an option to
17 be included, that may change ownership interest.

18 So are there going to be legal opinions on that
19 final language if there's an ownership interest?

20 **A. MR. MOLLARD: Yes. There would be legal**
21 **requirements to have this reviewed as to whatever the**
22 **final terms were.**

23 **Q.** But currently we're just dealing with the debenture
24 agreement without options, as what's been submitted in
25 the application, Mr. Mollard; right?

13:44

13:45

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1 **A. MR. MOLLARD:** **Yes.**

2 **Q.** We're not dealing with an option yet?

3 **A. MR. MOLLARD:** **Correct.**

4 **Q.** Thank you. I'm going to bounce you over to the terms
5 of reference, and term of reference 3(e). And that's
6 the one that reads: (as read)

7 "Impacts on YEC and ratepayers of the
8 debenture investment opportunity that
9 YEC is providing to TKC and KDFN in
10 recognition of the BESS Project's
11 location on the overlapping Traditional
12 Territory of the TKC and KDFN and the
13 benefits of TKC and KDFN support for
14 this Project's development at this
15 time."

13:45

16 So in terms of that terms of reference, how can the
17 Board view whether there are impacts to YEC and its
18 ratepayers due to the debenture investment opportunity
19 without us actually knowing the finalized terms of the
20 agreement?

13:46

21 So how are we supposed to evaluate the agreements
22 and the impacts on ratepayers and YEC without having
23 finalized agreements?

24 **A. MR. MOLLARD:** **I think the short answer,**
25 **Mr. Chair, is that the items that were remaining to be**

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1 negotiated will not affect the treatment of the note.

2 So if the Board sees through to bless this
3 arrangement and say, yes, you can proceed on this
4 basis, while the numbers may change, it won't affect my
5 overall costs and it won't affect ratepayers. Because
6 effectively what we've committed to do is saying that
7 whatever that debenture principal amount becomes, I
8 will adjust my equity slice with my shareholder to
9 ensure that I'm at 40 percent value.

10 As the Board previously directed, we must stay
11 60/40. So I'm just substituting a KDFN dollar for a
12 YDC dollar, or vice versa. So that will keep me whole
13 and that will keep ratepayers s whole.

13:47

14 Q. And do you have an estimate of the timing, Mr. Mollard,
15 on when those agreements will be finalized?

16 A. MR. MOLLARD: The finalization won't be able to
17 be done until we finish the project because the value
18 of the debenture is based on the ultimate project
19 costs.

20 Q. Right. And I'm going to get there in a few questions.
21 I'm just trying to think about if there are material
22 changes that would impact the substantive terms of the
23 debenture agreement or the project, how would YEC
24 communicate that either to the Board or the government,
25 given the approval its asking for from the government

13:48

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by Ms. Sabo

1 of Yukon?

2 A. MR. HALL: I can answer the first part,
3 Andrew Hall.

4 So we have to approve -- seek the approval of the
5 Yukon government for the -- any implications for
6 territorial debt cap of this transaction. And so there
7 would be a process that we'd be going through with the
8 government at such time that the dollar value of the
9 investments is known, and that would be after
10 construction is complete.

13:49

11 Mr. Mollard can speak to, you know, how we would
12 bring this forward to the Yukon Utilities Board.

13 A. MR. MOLLARD: Yeah. So ultimately from a rates
14 perspective, when we have the project complete and the
15 debenture settled, we would at some point be required
16 to come before this Board for a prudency examination.
17 And they would be looking at not only the costs of the
18 project as it flows through return and depreciation,
19 but also through that debenture cost, which would
20 be -- that would be the first time it would be included
21 in our revenue requirement. So there would be an
22 opportunity for the Board to review it at that time.

13:49

23 Q. Okay. Thank you, sir.

24 I'm going to move up back to the IR, and YEC 7(b),
25 if you can get there. And I'm looking at line 20 once

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI

Questioned by Ms. Sabo

1 you're there. Therein it states:

2 "The timing for the capital investment
3 with respect to the debenture has not
4 been determined by the parties. It is
5 expected that a reasonable time period
6 will not be required after projects
7 enter service and YEC determines the
8 final net capital cost amount."

9 So how will YEC determine what is a reasonable time
10 period after the project enters service and it can
11 determine the final net capital cost amount?

13:50

12 **A. MR. MOLLARD:** For the purposes of determining
13 that, a net capital cost amount, it's really just a
14 paperwork exercise. It depends how quickly we get the
15 bills in from your subcontractors, you know, go through
16 and confirm that the amounts are all valid with the
17 work orders. It's an administrative procedure to wrap
18 up the project and determine what the final number is.
19 Typically I would expect 60 to 90 days sort of to wrap
20 that up.

13:51

21 **Q.** That would seem to be a usual billing period,
22 Mr. Mollard, so that's helpful.

23 I'm going to move to part (g) of the IR response
24 and starting on lines 28. And that's on hard copy
25 page 4 of the IR.

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1 In line 28 YEC quotes the application and
2 states -- and I'm not going to read this all out, but
3 it starts with: (as read)

4 "In accordance with current accounting
5 regulations the project First Nation
6 debentures would be treated as long-term
7 debt given the nature of the financial
8 instrument."

9 And then the response goes on.

10 So reading that, can you confirm by YEC providing
11 an equity level of return for this investment it's
12 effectively providing an offsetting long-term debt
13 return on the remainder of net rate base to ensure that
14 the total net rate base maintains the 60/40 debt equity
15 ratio?

13:52

16 So I know that's a long-worded question, but I'm
17 just trying to confirm you're going to balance the 60/40
18 debt equity ratio.

19 **A. MR. MOLLARD:** Yes, that is confirmed.

20 And just to help a little bit, Ms. Sabo, and the
21 true-up -- to be clear, the true-up to 60/40 is done
22 annually and it is on a corporate basis. So we have to
23 assess how much net income we've made and how much that
24 adds to equity, where our rate base is at the end of
25 the year, which drives out the 60/40 split, and then we

13:52

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI

Questioned by Ms. Sabo

1 true up off of that. So it won't be a transaction that
2 is isolated to this project and the equity assigned to
3 this project. It will be done on a corporate basis,
4 but the effect will be the same.

5 Q. Okay. So that's interesting, because are you going to
6 be able to track kind of the rebalancing of that split
7 as it relates to this project or it will just be
8 adjusted as part of -- like you say, as part of your
9 quarterly?

10 A. MR. MOLLARD: Yeah, no, excellent question.

13:53

11 So what will happen is that the -- because this is
12 legally a debenture, and I'm required to repay
13 principal, the amount that the First Nation will hold
14 will be going down over time.

15 So I'll actually have to -- in effect, I'll be
16 looking at this every year and saying, okay, well, the
17 First Nation, all other things being equal, I've paid
18 down a portion of the First Nations', quote unquote,
19 equity, therefore, I have to increase YDC's equity,
20 which in our circumstance usually means a reduced
21 dividend, but it will balance out in that that way so
22 we respect overall to 40 percent balance.

13:54

23 Q. Okay. I'm sure our rates folks will love to get an
24 illustrative example in a DRA, but I'm not going to
25 undertake for you to do that now, Mr. Mollard.

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by Ms. Sabo

1 **A. MR. MOLLARD:** Thank you.

2 **Q.** And we talked about this earlier, but I just want to
3 make it really clear, from YEC's perspective, is the
4 debenture agreement -- and I'm going to use the term
5 that it's a "deviation" from traditional YEC financing,
6 and maybe that's not accurate, you can comment on
7 that -- but can you explain for me your perspective why
8 these debentures make sense from an economic or a
9 financial perspective?

10 We've talked about the social and -- and benefits
11 on a monetary basis to the band, but I'm wondering if
12 you can talk about the economics or financial benefits
13 of these debenture agreements?

13:55

14 **A. MR. MOLLARD:** So short answer is, it doesn't
15 make sense from a financial perspective, it's neutral
16 from a financial perspective, so I have no -- I have no
17 inclination either way financially.

18 But from a project perspective and a relationship
19 perspective, we need to consult with the First Nations,
20 we need their support on the project. So it makes
21 sense from that perspective of -- of First Nation
22 support and social licence.

13:55

23 **Q.** And, Mr. Mollard, can you comment, I understand, maybe
24 not this type of arrangement, but financial
25 arrangements with First Nations are becoming more

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI

Questioned by Ms. Sabo

1 common in Canada, right, on all sorts of projects.

2 Can you maybe give me some context on whether you
3 think this is similar to what's being done elsewhere,
4 if you know?

5 A. MR. HALL: I think what's important to
6 consider here is that there are obligations, actually,
7 under Chapter 22 of the final agreement as it relates
8 to providing this kind of investment opportunity.
9 Now -- and that really explains some of the investments
10 that were offered in the prior Yukon Energy projects. 13:56
11 So there's precedent through final agreements in Yukon
12 that speak directly to this kind of investment.

13 As we outlined in the application, in this
14 particular case, you know, our view was that obligation
15 wasn't necessarily there because of the nature of the
16 project; but, you know, for the reasons I outlined and
17 spoke to yesterday, our Board made a decision to offer
18 the -- an investment nonetheless.

19 But in terms of the nature and trigger for this
20 kind of investment, there's good precedent with our 13:57
21 corporation in this jurisdiction, let alone other
22 jurisdictions. And -- you know, I think I'll stop
23 there.

24 Q. And just to -- just a clarifying point, Mr. Hall. You
25 said Chapter 22 outlines the obligations. So is that

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI

Questioned by Ms. Sabo

1 kind of -- I'm just trying to think, what's the title
2 of Chapter 22? Is it the obligations of each of the
3 parties? Can you give me more context on kind of what
4 that chapter does?

5 **A. MR. HALL:** Sure. So, subject to check,
6 Chapter 22 of, in this case, the time and Kwanlin Dün
7 final agreement speaks to economic investment
8 opportunities, I believe.

9 It's a fairly standard chapter that appears, I
10 think, pretty consistently in all of the individual
11 final agreements.

13:58

12 **Q.** Okay. Mr. Hall, yesterday you stated on the
13 transcript, and I don't think you need to pull it up,
14 that -- but on page 87, you said that the term sheet
15 has been signed with the two Indigenous groups.

16 Is that term of reference sheet confidential or
17 proprietary? Are you able to provide it on the record
18 of this proceeding?

19 And if you want the transcript reference, it was
20 page 87, lines 9 to 11.

13:59

21 **A. MR. HALL:** Ms. Sabo, I'm going to have to
22 take an undertaking on that, because I don't recall the
23 confidentiality provisions that may exist in that term
24 sheet, so I'm going to have to revert on that.

25 **Q.** That's fine, Mr. Hall. Just to confirm the

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Questioned by Ms. Sabo

1 undertaking, you are going to undertake to check
2 whether the term sheet that has been signed, as noted
3 on page 87 of the transcript, if that is confidential,
4 and if it's not, that you will disclose it to the
5 Board.

6 **A. MR. HALL:** **Yes, correct.**

7 **UNDERTAKING - TO CHECK WHETHER THE TERM**
8 **SHEET THAT HAS BEEN SIGNED, AS NOTED ON**
9 **PAGE 87 OF THE TRANSCRIPT, IS**
10 **CONFIDENTIAL; IF NOT, TO DISCLOSE IT TO**
11 **THE BOARD**

13:59

12 **Q. MS. SABO:** Thank you, panel, we really
13 appreciate all of your questions -- answers and
14 questions, I guess, over the last few days.

15 Subject to any follow-up on undertakings, which we
16 will do in writing if necessary, that concludes my
17 questions on behalf of the Board staff.

18 **A. MR. MOLLARD:** **Thank you.**

19 **MS. SABO:** **Thank you.**

20 **THE CHAIR:** Mr. Landry, what we're thinking is
21 that members of the Board would like an opportunity
22 overnight to sort of digest today's proceeding, the
23 evidence and so on, but we're mindful that it is as
24 well still relatively early in the afternoon.

14:00

25 I'm wondering whether you would like to take time

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1 this afternoon to do redirect with your panel, and then
2 in the morning, the Board could put their questions to
3 the panel, following which you'd have a second crack
4 at, you know, dealing with anything that arises from
5 the Board's questions.

6 Does that sound workable for you?

7 MR. LANDRY: Mr. Chair, I don't think my
8 redirect will be long, but if you would just give me a
9 moment to just take a look at my notes, I could see if
10 I could accommodate that.

14:01

11 THE CHAIR: Certainly.

12 MS. SABO: Maybe we can take a five- or
13 ten-minute break and come back if Mr. Landry needs --

14 MR. LANDRY: If we could, just give me one
15 moment because the timing would probably be better if I
16 do it now.

17 Look, why don't we do this -- am I back on video?
18 Let me give it a go and I may have to seek your
19 indulgence tomorrow, Mr. Chair, if indeed I have a
20 couple of follow-up questions. If that's okay with
21 you, I'll give it a go now.

14:02

22 It might be helpful to you because some of them
23 are clarifications that might be helpful for the Board
24 in their discussions overnight.

25 THE CHAIR: Certainly. Yeah. We're quite

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1 flexible.

2 MR. LANDRY: Okay. Well, look, let me try a
3 few, and if I get bogged down, we may switch off, but
4 let's see if I can make some headway.

5 **MR. LANDRY RE-EXAMINES THE PANEL:**

6 Q. Panel, and I guess this is really to Mr. Mollard.

7 In one of the questions from Ms. Sabo, she was
8 referring to the other First Nation investments that
9 had been done through YDC, and you mentioned the LNG
10 project, I believe, and the Mayo-Dawson line, which
11 were, I think you said, a couple of them had a blended
12 interest between equity and debt.

13 You did not mention the investment in Mayo B. How
14 is the interest in that debenture calculated, do you
15 know?

16 A. MR. MOLLARD: Subject to check, that's also an
17 equity return similar to this note that we've proposed
18 for this project.

19 Q. Okay. So it's -- in a sense, LNG and Mayo-Dawson are
20 different than either Mayo B or this debenture;
21 correct?

22 A. MR. MOLLARD: That's correct.

23 Q. Okay. Over to Ms. Zuliani, if I can.

24 There were a number of questions, Ms. Zuliani,
25 that Ms. Sabo asked of the YEC panel in relation to the

14:03

14:03

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1 Hatch report, and one of them related to any
2 limitations, which was a fair question, that she asked
3 of the panel of the findings that were in the Hatch
4 report.

5 And then that ultimately led, as you'll recall,
6 I'm sure as people were listening, you'll recall to
7 various questions on cost that were estimated by --
8 mainly by Hatch, but also by Yukon Energy, and I want
9 you to focus sort of on your report, or the report of
10 Hatch.

14:04

11 What is your level of confidence on the estimates
12 that you have provided in your report given the stage
13 of the process that Ms. Milojevic mentioned which is
14 the plus or minus 30 percent?

15 **A. MS. ZULIANI:** Yeah, I mean, we're confident that
16 the costs are within that range based on the
17 information we put into the level of engineering at
18 that time. But there is the additional engineering to
19 be done, of course.

20 **Q.** Right. And in terms of battery projects, what is the
21 sense of how battery projects are coming out now as
22 more and more are being used in terms of cost?

14:04

23 **A. MS. ZULIANI:** Well, generally speaking, as the
24 industry develops, the costs are decreasing due to long
25 improved manufacturing, economies of scale and whatnot,

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
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1 so the costs are decreasing.

2 So, generally, the costs are reasonable and can be
3 estimated based on other projects.

4 Q. Thank you. Now, I wonder if I could take you to your
5 report, Ms. Zuliani, or the Hatch report, and just so
6 we have a reference on the record, it's in relation to
7 Ms. Sabo's questions regarding Table 11.1 and 11.2,
8 which I believe if people go to the application, I
9 think I have this right, pdf 165. So let's see if I am
10 right. I've just got to get out my --

14:05

11 MS. SABO: Yes, that's correct, Mr. Landry.

12 MR. LANDRY: Thank you. Just give me a second
13 to get there myself.

14 Q. Okay. Do you have pdf 169? I guess in the report it's
15 page 99 before you, Ms. Zuliani?

16 A. MS. ZULIANI: Yes.

17 Q. Do you recall when Ms. Sabo asked you a number of
18 questions on 11.1 and 11.2?

19 A. MS. ZULIANI: Yes.

20 Q. I notice, if I go on to the BESS size, on the far left
21 column, that for either one, either the TKC site or the
22 KDFN site, that the actual size, at least in those
23 tables, is not the size that we're talking about here;
24 correct?

14:06

25 A. MS. ZULIANI: That's correct. It's in a later

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1 **table in the report.**

2 Q. And that's where I was going to take you. So if you go
3 to, I believe, and you can confirm this, to Table 11.5,
4 which is pdf 167 and page 101 of the report, and that
5 Table 11.5 is in relation to the KDFN site; correct?

6 A. **MS. ZULIANI: Yes, that's correct.**

7 Q. And the sizing of the project, which one of the three
8 items there would accord with what we're discussing at
9 this hearing?

10 A. **MS. ZULIANI: The last row in the table, the**
11 **20-megawatt, 40-megawatt hour system.**

14:07

12 Q. Okay. And, if I understand it, the capital pool CapEx,
13 and you went through how you calculated these in these
14 tables, is 28.8 million?

15 A. **MS. ZULIANI: Yes.**

16 Q. Okay. If you can just indulge me for a moment,
17 Ms. Zuliani, if you could go back a couple of pages, to
18 pdf 164, which is page 98 of the report.

19 A. **MS. ZULIANI: Yes.**

20 Q. And just to make sure everybody is there.

14:08

21 There you'll see, I don't know, about halfway down
22 the page, it says: "The CapEx costs include..." and
23 there's a number of items bulleted there. Are those
24 the CapEx costs that would have been included in
25 that -- using Table 11.5, the 28.8 million?

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1 **A. MS. ZULIANI:** Those are other items that are
2 included in there in addition to the major equipment
3 capital costs.

4 **Q.** Right. And so effectively, if I understand the
5 comment, down below the bullets where it says:

6 (as read)

7 "Allocations for owner's costs,
8 permitting, et cetera, have not been
9 included in the estimate."

10 Correct?

14:09

11 **A. MS. ZULIANI:** That's correct. Yukon Energy
12 estimated their owner's costs.

13 **Q.** Okay. So just so we have a full reflection of that, if
14 you can now going to Table 3. -- oh, gosh. I think
15 it's 3... I think it's 3.1, let's try page 20 of the
16 pdf, if I've got the right one. I'll find out pretty
17 quick here. 3.4 maybe it is.

18 Yes. So if you go to pdf 20, which is Table 3.4,
19 the estimated capital costs for the project, now,
20 that's the capital costs that was -- that was mentioned
21 by the YEC panel; correct?

14:09

22 **A. MS. ZULIANI:** Yes.

23 **Q.** Okay. So if I just look at that, the 28.88 million
24 that you had estimated is in that 31.698; correct?

25 **A. MS. ZULIANI:** Yes.

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1 Q. So that leads me to a third line of questioning. Not
2 you, Ms. Zuliani, thank you for that.

3 Mr. Hall, Ms. Sabo was asking you about the
4 certainty of these costs and the plus or minus
5 30 percent estimate, and you mentioned a stage-gate
6 approach.

7 A couple of things. I think for the purposes of
8 the hearing, it would be a good idea if you could
9 explain, again, in a little bit more detail what the
10 stage-gate approach is; and, secondly, you did focus in 14:10
11 on the time frame that -- which I believe is a part of
12 that stage-gate approach, where you'd be going to get
13 approval from the YEC board, I believe you said in
14 July and August of this year.

15 I wonder if you could explain at a high level the
16 stage-gate approach and the importance of that part of
17 the stage-gate approach and what would need to be
18 completed by then for the Board to come to its
19 decision. And when I say "the Board," by the way, just
20 for clarification on the record, the board of directors 14:11
21 of Yukon Energy.

22 **A. MR. HALL:** So, firstly, in terms of the
23 stage-gate approach, when Yukon Energy undertakes a
24 project of this nature, it involves a number of tasks
25 that are completed through time. We start with initial

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1 design, environmental assessment, then move through to
2 permitting and procurement, and then finally
3 construction.

4 And so if we think about that progression of tasks
5 over, in some cases a number of years, we'll typically
6 break it up into a number of discrete chunks. And by
7 "chunks" I mean groups of activity where we'll ask our
8 board for approval to complete a certain amount of
9 work, and then come back to them to review the project
10 again and get approval for the next chunk of work. And
11 that decision point is referred to as a "stage gate."

14:12

12 And so in a project like this we would probably
13 have three or four stage gates prior to commencing
14 construction and making the final investment decision.

15 So at this time we've got approval from our board
16 to -- to undertake the tasks that are ongoing right
17 now. So to complete the YESAB application and complete
18 permitting, to go through this Part 3 proceeding that
19 we're engaged in right now, and to complete the
20 procurement of the battery and the site construction
21 contracts.

14:13

22 So when we get to around, I'll call it August for
23 simplicity, we will bring this project back to our
24 board, and at that time we'll have an updated budget
25 based on the RFP results, and we will know the outcome

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1 of this Board's consideration of the Part 3 application
2 and the subsequent government decision on the
3 certificates that we've applied for.

4 And we'll take that package of information to our
5 board in August, and they will make a decision whether
6 to proceed with procuring the battery, which is
7 basically what other companies call the final
8 investment decision, right? And at that time they
9 would likely approve the whole project to proceed in
10 its entirety.

14:14

11 So I think to cut to the chase, there is a final
12 decision to be made, and I believe the point I made
13 earlier is if there's a massive change in cost such
14 that the project is no longer economic and no longer
15 confers a benefit to ratepayers, our board will have an
16 opportunity to cease further work at that time, at that
17 stage gate decision point.

18 Q. And at that stage gate, given the items that you've
19 listed, and you heard my questioning of Ms. Zuliani of
20 the 28.8 or so million dollars that Hatch was involved
21 in, at that time you would then have those numbers
22 crystalized when you went to your board in August. Is
23 that fair?

14:14

24 A. MR. HALL: So we would have a -- the RFP
25 result, which would be a firm proposal from the

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI

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1 selected battery vendor. So those costs would be known
2 with certainty. We would have a proposal from the site
3 construction contractor, which would give
4 further -- further certainty around the site
5 construction work. And then the other line items, for
6 example, the transformer, we would have our key results
7 on that.

8 So the basic idea, Mr. Landry, is to get certainty
9 on as many of those cost line items as possible.

10 Q. Just looking at Table 3.4 again, Mr. Hall, from what I
11 understand you're saying, that would mean you'd have
12 certainty on virtually, for the most part, all that was
13 there; correct?

14:15

14 A. MR. HALL: Correct. I mean, there may be
15 some contracts that are completed on what's called a
16 time and materials basis. I don't know. Ms. Milojevic
17 may be able to comment. But I would argue that for the
18 majority of costs, we would know them with certainty,
19 yes.

20 Q. Thank you. Mr. Mollard, I wonder if you could go to
21 the infamous Table 4.3, which is at the pdf 43 of the
22 application. There were a number of questions Ms. Sabo
23 included that asked about that, and I just wanted to
24 make sure I understood the comment that you made back
25 to Ms. Sabo today where you mentioned revenue

14:16

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1 requirement in relation to this table, that it did have
2 revenue requirement related numbers in it.

3 I wonder if you could just take us through this
4 table a little bit and explain in a bit more detail
5 what you mean by that.

6 A. MR. MOLLARD: Sure. So what this table is
7 fundamentally trying to show is ultimately what does it
8 mean to ratepayers from these two alternative
9 approaches: our baseline approach being rental diesels
10 and the option to install the BESS Project.

14:17

11 And so it looked at the annualized costs, which is
12 how we set our -- determine our revenue requirement.
13 And so for the annual capital cost, for example in
14 Column A of 1,530,000, that would include the revenue
15 requirement impacts from the project, which means the
16 depreciation, as well as the return that we're entitled
17 to by virtue of the Act.

18 In addition to that there will be the operating
19 costs, which is again part of our annual revenue
20 requirement, and so on and so forth.

14:17

21 So, again, we're not providing what the effect of
22 doing this project will be on an individual ratepayer's
23 bill, but this gives the same answer in the sense that
24 it provides the board with the effect on an annual
25 basis of what the revenue requirement, which becomes

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1 rates, is for the company.

2 And so at the end of the day we show that
3 executing on this project provides a net benefit to
4 ratepayers of some \$12.7 million.

5 Q. Can I try it this way, Mr. Mollard: You're
6 effectually -- because I think there's an item in the
7 term of reference, is that you're effectively showing
8 the impact on ratepayers, but not the impact on
9 individual ratepayers. Is that a fair statement?

10 A. MR. MOLLARD: If I could say it this way,
11 Mr. Landry, it's the effect on ratepayers but not the
12 effect on their bill.

13 Q. Okay.

14 A. MR. MOLLARD: I'm not providing that.

15 Q. Thank you. That's what I meant to say, thank you.

16 MR. LANDRY: Mr. Chair, those are all the
17 questions I have at the moment, just going through my
18 notes. I may seek a bit of indulgence tomorrow
19 morning, but hopefully some of those questions might
20 have helped a little bit as you consider your questions
21 overnight.

22 THE CHAIR: I am sure everybody is
23 appreciative of that little extra clarification.

24 So we'll resume again tomorrow morning at 9:30,
25 and we'll see how the time goes tomorrow. I'm pretty

14:18

14:19

1 sure we'll not be going till the end of the day
2 tomorrow.

3 So, thank you all, and enjoy the rest of your day.
4 (PROCEEDINGS ADJOURNED AT 2:21 P.M.)

5

6 PROCEEDINGS ADJOURNED TO MAY 6, 2021, AT 9:30 A.M.

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1 Certificate of Transcript

2

3 We, the undersigned, hereby certify that the foregoing
4 pages 190 to 297 are a complete and accurate transcript of
5 the proceedings taken down by us in shorthand and
6 transcribed from our shorthand notes to the best of our
7 skill and ability.

8 Dated at the City of Calgary, Province of Alberta, on
9 May 5, 2021.

10

11

12

_____ "Lorelee Vespa"

13

Lorelee Vespa, CSR(A) RPR CRR

14

Official Court Reporter

15

16

_____ "Donna Gerbrandt"

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Donna Gerbrandt, CSR(A)

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Official Court Reporter

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