

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 3

22

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

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5 Volume 3

6 May 6, 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 9:34 A.M.)

23 THE CHAIR: Good morning, everyone.

24 Mr. Landry and Ms. Sabo, you're both with us?

25 MR. LANDRY: I am, sir.

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

1 MS. SABO: Yes, Mr. Chairman.

2 THE CHAIR: Great. Now, do either of you have
3 any preliminary matters to deal with before we get
4 started?

5 MR. LANDRY: If I may, Mr. Chair, a couple of
6 small matters. Similar to yesterday, we filed an
7 answer to an undertaking, the last undertaking from
8 yesterday, Undertaking 5. It's been sent to all
9 parties, but I'll have the panel basically read it in.
10 It's fairly quick. And we have one correction on the
11 record. So perhaps over to the panel, if they could
12 take care of that, if that's okay with you, Mr. Chair.

09:35

13 THE CHAIR: Certainly.

14

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

17 UNDERTAKING RESPONSES:

18 A. MR. HALL: Mr. Chair, it's Andrew Hall. So
19 I'll just speak to the undertaking that relates to the
20 term sheet. I'm not going to read it in word for word,
21 but I'll just precede it by saying that we did check
22 the term sheet, and it does have a confidentiality
23 provision that prevents us from filing it.

09:35

24 However, I will point out that the summary of key
25 terms on page 18 and 19 of the application, in our

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

1 view, summarize, you know, almost word for word what
2 appears in the term sheet as it relates to the project
3 investment.

4 THE CHAIR: That was page 18 and 19?

5 A. MR. HALL: Yes.

6 MR. LANDRY: Mr. Mollard, do you have a
7 correction on the record?

8 A. MR. MOLLARD: Yes, thank you.

9 Mr. Chair, this is a correction that Mr. Maissan
10 kindly pointed out for us. In the application, page 21
11 of the pdf, page 17 of the hard copy, Footnote 29,
12 there is a reference to -- and I'll just read the
13 portion of the sentence: (as read)

14 "And \$11 per kilowatt hours for variable
15 non-fuel O&M."

16 That should state: (as read)

17 "\$11 per megawatt hour for variable
18 non-fuel O&M."

19 THE CHAIR: Okay. Thank you for that.

20 And thank you, Mr. Maissan, for your close
21 scrutiny of the fine print.

22 MR. LANDRY: And, Mr. Chair, that's all we have
23 as preliminary matters.

24 THE CHAIR: Okay. Ms. Sabo, have you
25 anything?

09:36

09:36

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by The Chair

1 MS. SABO: Mr. Chairman, I just wanted to
2 confirm that Board staff doesn't have any questions on
3 the undertakings that were submitted by YEC. So the
4 only thing we would follow up on, on those
5 undertakings, is if the Board has anything further on
6 them, and we'll do that after the hearing as soon as
7 possible.

8 THE CHAIR: Okay. Thank you.

9 Okay. So I guess it's the Board's turn to ask
10 some questions.

11 Who leads first? Okay, let me get started here.

12 THE CHAIR QUESTIONS THE PANEL:

13 Q. Mr. Hall, yesterday you stated, or maybe it was
14 Tuesday, I think it was yesterday, you were describing
15 the two principal criteria for the -- for the
16 BESS Project, one of which was the proximity to the
17 high-voltage substation, where -- that would allow the
18 BESS unit to attach to the grid.

19 And then the second one was that the project be
20 placed on settlement land of one of the Yukon First
21 Nations. Did I get that reasonably accurate?

22 A. MR. HALL: Yes.

23 Q. Okay. So just -- now, I'm assuming that the
24 stipulation to involve First Nation -- one or more
25 First Nations in the project is, at least partly,

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09:38

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by The Chair

1 further to the obligations set out under Chapter 22 of
2 the UFA or the applicable settlement agreements; is
3 that correct?

4 **A. MR. HALL:** It certainly is consistent with
5 the spirit and intent of Chapter 22, absolutely.

6 **Q.** Were there any other considerations driving that --
7 that criterion? Did you receive any directions from
8 any source or, you know, can you tell us what other
9 factors led to nailing down that criterion?

10 **A. MR. HALL:** Well, we didn't receive any
11 instruction, other than from our board of directors
12 through their -- the strategy that they've articulated
13 to very deliberately, you know, create economic
14 opportunities for First Nations associated with
15 projects that we undertake.

16 And so the land lease is a very convenient tool to
17 create an element of that economic opportunity.

18 **Q.** Yes, okay. And I want to make it clear, as well, on
19 the record that this line of questioning does not in
20 any way imply the Board's disapproval of advancing the
21 economic opportunities and interests for First Nations.
22 It, you know -- but there are economic implications for
23 rates and so on that we are obliged by our mandate
24 to -- to enquire into. So, you know, I just wanted to
25 make that clear.

09:39

09:40

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

Questioned by The Chair

1 Now, with respect to the First Nation settlement
2 land criterion, is that rooted in your interpretation
3 of the terms of reference for this project?

4 **A. MR. HALL:** Mr. Chair, if you'll allow me,
5 I'll just take a quick look at the terms of reference
6 again.

7 **Q.** Absolutely. And primarily I'm referring to the -- the
8 six subparagraphs under paragraph 3.

9 **A. MR. HALL:** Mr. Chair, I think the question
10 probably rests a little bit on what you mean by
11 "rooted," but I would point out that, you know,
12 the -- the specific intent to create these
13 opportunities for economic benefit with the two
14 First Nations, and specifically through, you know, a
15 land lease, you know pre-dated the terms of reference.
16 So the terms of reference came much later. I mean,
17 we've been working on the land lease for, I would say
18 over a year.

19 So I don't think, you know, that that intent
20 wasn't driven by what we saw in the terms of reference,
21 if that's what you're asking.

22 **Q.** Okay. Mr. Mollard, please add any --

23 **A. MR. MOLLARD:** Sorry, Mr. Chair, I just wanted
24 to -- I just wanted to talk a little bit just in terms
25 of our process for settling this lease.

09:41

09:42

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

Questioned by The Chair

1 We are going through a benchmarking exercise with
2 the First Nations to the extent that we can get
3 comparable data to prove out that this settlement land
4 lease is going to be a rate that's equivalent to the
5 market. So even if we were to secure similar property
6 on non-First Nation land, we would expect that we would
7 pay the same amount. If that makes sense.

8 Q. Yeah. So -- well, on that point, how did you go about
9 estimating market value for comparable pieces of land
10 elsewhere outside of settlement land?

11 A. MR. MOLLARD: We're in that process now. The
12 First Nation has used a real estate consultant to
13 advise them on the range of market conditions. We've
14 looked at real estate listings.

15 We're not done that process. So the benchmark, I
16 can't speak completely to how we're going to get there,
17 but we are in that process. And we have done this in
18 the past. We have a previous land lease for some
19 industrial land up in the Kulan Industrial Park for our
20 distribution -- transmission and distribution crews.
21 And we did a similar exercise there, where we took
22 similar land.

23 But I want to be clear, it's a tough market to
24 benchmark because there's such little activity here and
25 so much variation between the quality of the land,

09:43

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

Questioned by The Chair

1 developed, undeveloped, serviced, not serviced, that
2 sort of thing, but we are -- we are going through a
3 process where we're benchmarking that rate to the
4 market.

5 Q. Okay. So to go back to paragraph 3 of the terms of
6 reference, now -- because that -- you know, that
7 essentially is instructions to the Board from the
8 Minister, effectively. Do you agree?

9 A. MR. MOLLARD: Agreed, yes.

10 Q. Yeah, okay. So if I understand your process, you
11 developed the terms of reference and then passed them
12 along to the Minister as a recommendation for her
13 direction?

14 A. MR. HALL: Yeah, correct, yes.

15 Q. Okay. So what I'm trying to ascertain is, since those
16 terms of reference in essence form a part of the
17 Board's marching orders, how does the -- how does the
18 stipulation for situating the project on settlement
19 land tie in with any one of those six criteria?

20 A. MR. MOLLARD: Well, I would say that to the
21 extent that the Board is being asked to assess the
22 impact on ratepayers, the settlement land question,
23 from our perspective, is not a factor because we are
24 using market-based rates. So ratepayers would be
25 indifferent because they would pay the same whether it

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09:45

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

Questioned by The Chair

1 was on settlement land or not.

2 Q. I see. Okay. And, I mean, given that this has not
3 been resolved at this point in time, I can sort of
4 infer from your answer that the Board's being asked to
5 sort of take it on spec that -- that that will, in
6 essence, be the final outcome of your finalized
7 agreement with the First Nation?

8 A. MR. MOLLARD: I don't believe that's the intent,
9 Mr. Chair. What we understand those terms of reference
10 is, for the Board to make a report to the Minister on
11 the project as it stands today, with all the
12 uncertainty that we've talked about over the last three
13 days.

09:46

14 Q. Okay.

15 A. MR. MOLLARD: That being said, the Board is not
16 abdicating its future responsibility to assess the
17 prudence of the project. So when we get this -- if
18 we're allowed to proceed and we get this built, we come
19 back to you with those final project costs, including
20 these lease costs, and we are required to provide
21 evidence to satisfy you that this is a prudent
22 expenditure. And the Board has the jurisdiction at
23 that point to approve or deny the collection of those
24 costs in rates.

09:47

25 Q. Okay. Yeah, because, I mean, that is -- one of our

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by The Chair

1 main concerns, of course, is that we have to put into
2 the balance the ratepayers' interests.

3 **A. MR. MOLLARD: Absolutely.**

4 **Q.** Now, if I can just -- because part of -- you know, to
5 be frank, what was concerning me was that by limiting
6 the options to First Nation land, it takes out of
7 consideration, or potential consideration, other
8 non-First Nation land that could be more economical
9 and, hence, have a -- you know, a different impact on
10 the rate potential.

09:48

11 So -- but I take from your answer, Mr. Mollard,
12 that your approach to negotiating a market value
13 settlement, as far as land costs goes, would mitigate
14 that concern?

15 **A. MR. HALL: Mr. Chair, I think -- you know, I**
16 **spoke about this a little yesterday, but in a normal**
17 **situation I would agree with you, that, you know, if**
18 **you limit it down to First Nation land you're somehow**
19 **eliminating or reducing your options.**

20 But in this particular case, if you actually look
21 at a map, it's very hard to find land that's actually
22 better situated. In other words, you know, try and
23 find a piece of Crown land that's actually closer to
24 our facility. It's not, you know, very easy.

09:49

25 And so I think in this case we just happen to be

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by The Chair

1 quite fortunate that both Ta'an had KDFN had settlement
2 land parcels literally across the road from our
3 facility.

4 So I think the Board can take some comfort that in
5 this particular case we were -- you know, we were
6 fortunate in that regard.

7 And then, of course, as Mr. Mollard has indicated,
8 we're -- that benchmarking exercise that he referred to
9 is intended to, in some way, simulate a competitive
10 process that would, you know, you might undertake to
11 secure land. 09:50

12 The other point I'd make is that there was a
13 competitive step where we accepted essentially bids
14 from both First Nations, so from Ta'an and KDFN, for
15 their respective parcels, right? And we selected the
16 KDFN site largely because it was just a much more
17 attractive financial offer.

18 So we've had, you know, one step that was
19 competitive already.

20 Q. Okay. Now, one of the disadvantages, of course, of the 09:50
21 two within city limits options is the property taxes,
22 whereas the placement in some proximity to the
23 Takhini subdivision -- or substation, rather, would at
24 least eliminate that cost factor.

25 How large -- I haven't seen the size of the

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

Questioned by The Chair

1 First Nation land parcels in proximity to that
2 substation, but was there no possibility of --
3 particularly in light of concerns from the neighbours,
4 that the -- the BESS Project could be located a little
5 further away but still close enough to link up with the
6 substation?

7 A. MR. MOLLARD: Unfortunately that wasn't an
8 option, Mr. Chair. It's a very small plot there and
9 it's all -- it's all co-adjacent to the neighbours
10 right around the power line there. We couldn't get
11 away from them with the available lots.

09:52

12 Q. I see. By the way, what is the furthest -- from a
13 hook-up perspective, what is the furthest distance that
14 the BESS Project could be located away from a suitable
15 substation?

16 A. MS. MILOJEVIC: It depends, Mr. Chair, on the
17 ability to energize the transmission lines.

18 Q. Yeah.

19 A. MS. MILOJEVIC: So when you're talking about --
20 we've talked a little bit about that blackstart
21 service, where the battery can provide power to start
22 up other units if we have a whole grid outage. So one
23 of the key factors around being able to get the
24 services from the battery to the grid is how long of a
25 transmission line it has to energize, which actually

09:52

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

Questioned by The Chair

1 takes quite a complex system impact study to determine
2 what the distance is.

3 So we looked -- I believe the range that was
4 considered for the lots to be considered within what we
5 thought was a reasonable range for that. But even when
6 a system impact study was conducted for the Takhini
7 site, for example, it was around the limits of the
8 length away from our main Whitehorse Rapids facility,
9 where you could actually be able to energize the
10 transmission line and provide those services.

09:53

11 So it's a fairly narrow band that you can connect
12 to.

13 Q. Okay.

14 A. MR. MOLLARD: And, Mr. Chair, if I could offer a
15 comment just on the math on that.

16 So we're still negotiating the numbers on the
17 lease, but it's going to come in for a 25-year lease
18 net present value of about a million dollars. So keep
19 in mind that number. And then you look at the
20 transmission side, where you're probably \$200,000 a
21 kilometre.

09:53

22 So when you're looking at the economics of the
23 project, you might be able to save a few bucks on the
24 lease, but if you're 5 kilometres away, you've blown up
25 the math.

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by The Chair

1 Q. Yeah.

2 A. MR. MOLLARD: So I offer that just as a helpful
3 comparison.

4 Q. No, the math has its persuasive aspects.

5 Now, the \$16.5 million contribution promised by
6 the federal government, is that -- are there any
7 conditions to that, attached to that, from the federal
8 government's side? You know, time limits or any other
9 stipulations that you have to check off before you get
10 the money?

09:54

11 A. MR. MOLLARD: There's conditions around what is
12 a qualifying expenditure, et cetera, there's rules
13 around communications, signage, that sort of thing,
14 advertising the contribution of the government.

15 I did go back -- because -- sorry, it's a detail,
16 but appreciate under the federal funding program
17 there's actually multiple agreements because the fed's
18 agreement is with Yukon Government Community Services,
19 I think; and then they flow the money to our parent,
20 Yukon Development Corporation; who then flows the money
21 to us. So the funding agreement we have with Yukon
22 Development Corporation does in fact have a term on it.
23 It expires December 31st, 2022. I did reach out to
24 them yesterday after our line of questioning and
25 confirmed that for all intents and purposes that term

09:55

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

Questioned by The Chair

1 can be extended. There is no restriction on that
2 funding. They will hold it for us until we need it.

3 Q. Okay, good. Yeah, because there's -- who knows what
4 kind of contingencies arise to slow things down and
5 push you beyond a deadline.

6 Now, I'd like to turn to the cost estimates
7 generally. And, again, appreciating that it's still in
8 the early stages and bids have not been finalized and
9 so on.

10 But as I understand the -- as presented in the
11 application, that essentially there's an estimated cost
12 of not taking into account the fed's 16.5 million,
13 estimated cost is 31.7 million, plus or minus
14 30 percent. That's a correct understanding?

15 A. MR. HALL: Correct.

16 Q. So I'm just -- well, first off, where did the plus or
17 minus 30 percent come from? What process led to that
18 particular conclusion?

19 A. MS. MILOJEVIC: Mr. Chair, that would have been
20 the level -- based on the level of engineering that
21 Hatch conducted to estimate the costs. And so we'll
22 often see something called "Class 5 cost estimates,"
23 which are plus or minus 50 percent. Then you have
24 Class 4, Class 3. And that's used often in engineering
25 projects.

09:56

09:57

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by The Chair

1 So the current level of engineering that's been
2 conducted gives a confidence of plus or minus
3 30 percent to the estimate.

4 Q. Okay. So, in other words, if I understand what you're
5 saying, it's an engineering standard that applies these
6 percentage ranges?

7 A. MS. MILOJEVIC: Yeah. So they can be a bit
8 dependent on the nature of the project. So you could
9 have a project that could be plus 30 percent minus
10 10 percent, for example. I would say the minus
11 30 percent in this case recognizes the rapidly dropping
12 prices in this particular market given that the battery
13 system itself is such a large portion of the project
14 costs. But, yes, so it is exactly that, an engineering
15 classification system around certainty of estimates.

16 Q. Okay. Now, is the assumed fall in pricing, is that
17 based on any -- any objective evidence or is it an
18 estimate based on a fluid situation, put it that way?

19 A. MS. MILOJEVIC: I'll maybe ask Ms. Zuliani to
20 comment just based on the industry and what Hatch is
21 seeing there.

22 Q. Yes, Ms. Zuliani, if you could --

23 A. MS. ZULIANI: Thank you, Mr. Chairman. This is
24 a known occurrence in the battery industry. There are
25 several public reports indicating that cost of

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09:59

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

Questioned by The Chair

1 batteries are declining. For example, Bloomberg
2 publishes an annual report showing this cost decline.

3 Q. Well, for example, the Bloomberg report, what would be
4 the date of that? Is that a current date?

5 A. MS. ZULIANI: Well, there was one recently
6 published in 2020. I mean, they publish it annually so
7 they probably haven't done their 2021 yet. But, yeah,
8 they publish it regularly.

9 IRENA, the International Renewable Energy Agency,
10 also has these forecasts. It's a fairly common open
11 issue -- or occurrence due to just the increases in the
12 industry, the amount of growth, and better
13 understanding of the technology as it becomes more
14 commonly deployed.

10:00

15 Q. Yes. You would agree with me, however, that another
16 factor to consider is basically supply and demand. So
17 if there is a demand, on the one hand it may increase
18 production, which may save cost on batteries, but at
19 some point, if the demand exceeds the supply, that may
20 push the costs up again. Would you agree with that?

10:00

21 A. MS. ZULIANI: Definitely that's a known
22 occurrence -- that's something that could occur. You
23 know, that's not what we've seen in the projects we've
24 worked on to date in the battery industry, that there
25 is a supply limitation at this time that's driving up

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

Questioned by The Chair

1 costs.

2 Q. I see. I think, if I recall, you were speaking to
3 Hatch's experience with northern battery projects. You
4 mentioned, was it five other projects?

5 A. MS. ZULIANI: No. Ms. Sabo asked how many
6 projects the HVAC estimate was based on, and I said
7 less than five.

8 Q. Oh, I see.

9 A. MS. ZULIANI: But, I mean, Hatch has worked on
10 the Raglan Mine project. We're currently working on
11 the Inuvik microgrid. We're working with a remote mine
12 in the Northwest Territories on a battery project and a
13 remote First Nation as well looking to develop a
14 battery project, all in the Northern Quebec and the
15 territories. As well we're working with Hydro-Quebec,
16 as they explore development of batteries in the Nunavut
17 region for some of the remote First Nations there.

18 Q. Okay. One thing we heard about sort of generally since
19 the arrival of COVID last year is problems with supply
20 chain delays and so on. Has that issue or that factor
21 been brought into your calculations?

22 A. MS. ZULIANI: In terms of the cost or in terms
23 of the schedule?

24 Q. Both. Because if there are supply chain delays, then
25 that's going to increase the demand and conceivably

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10:02

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by The Chair

1 push the price up. And I'm just wondering if that is a
2 factor that has been taken into account in arriving at
3 your price estimates for the batteries, which, you
4 know, are a substantial portion of this project.

5 A. MS. ZULIANI: Right. So, I mean, at the time of
6 doing the assessment, the pandemic wasn't as clear as
7 it is today or as full blown. However, that being
8 said, you know, we are doing this procurement and we
9 are working with the vendors to understand their
10 situation.

10:03

11 So, you know, as Mr. Hall mentioned yesterday,
12 this is part of the process and will be fully
13 evaluated, what the pricing is today, in our
14 assessments.

15 Similarly, in schedule, you know, we're working
16 with the vendors to understand their schedule, but
17 there's no indication at this time that there would be
18 a considerable delay.

19 Q. I see. Okay. So, Ms. Zuliani, as of today, given all
20 that you know of the market, do you stand by the quote
21 listed in Table 3.4 of the application of
22 estimated -- rounding upwards estimated \$20 million for
23 the batteries?

10:04

24 A. MS. ZULIANI: Our quote is based on the
25 28.9 million, which includes our contingency and based

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

Questioned by The Chair

1 on the level of engineering. So we stand by that
2 estimate based on the plus/minus 30 percent range,
3 given the level of engineering that was done when we
4 created it.

5 Q. Okay. So, yeah, I'm sorry, I may have missed the
6 underpinnings of the \$28.9 million amount. In
7 Table 3-4 you've got 19.985 million. And so
8 what -- what factors sort of went into grossing it up
9 to 28.9?

10 A. MS. MILOJEVIC: If I could add some clarity,
11 Mr. Chair. The elements in Table 3-4, with the
12 exception of planning costs and owner's costs. So the
13 other elements in that table sum to the 28.9 million
14 that Ms. Zuliani is referring to.

15 Q. Oh, I see.

16 A. MS. MILOJEVIC: So this just divides it out a
17 little bit more categorically than the Hatch report
18 estimate. It's just a little bit more refined, but
19 it's the same. Those numbers are pulled from the Hatch
20 report and that 28.9 million.

21 Q. Okay. I mean, I was trying to zero in on the cost of
22 the batteries themselves. So, as I said, rounded up
23 from this figure here, it's just shy of \$20 million.

24 So in light of that -- what I'm aiming for is to
25 try to get an understanding of how realistic the minus

10:05

10:06

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by The Chair

1 side of 30 percent is given current conditions.

2 You know, is 31.7 million a realistic mid point
3 between plus 30 percent and minus 30 percent?

4 Or -- because otherwise -- I mean, if we're talking
5 minus 30 percent, that takes us -- you know, that makes
6 the total project roughly \$23 million. And I'm
7 wondering how realistic that is in light of the
8 substantial proportion of the overall project costs
9 being rooted in the batteries.

10 **A. MS. MILOJEVIC:** I think, Mr. Chair, our current
11 estimate is the 31.7 million, and the plus or minus
12 is -- again, it's that range that it could vary, but I
13 would say today we're expecting that \$31.7 million is
14 the expected estimate rate of cost. The uncertainty, I
15 can't say at this time whether it's more likely to be
16 higher or lower. That's why it's an uncertainty on the
17 range there.

10:07

18 **Q.** Right. Maybe I suffer from the naivety of not being an
19 engineer or a mathematician, but when you say plus or
20 minus 30 percent, it implies that that's sort of a
21 genuine and realistic range. And if it's on the
22 negative side, the realistic thing is -- the realistic
23 margin is maybe 10 percent; and, you know, on the plus
24 side, you know, the upper end, the costs could exceed
25 30 percent. The estimate of the project value should

10:08

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by Mr. Fortin

1 be in the midpoint, and that's why I'm -- you know,
2 where I'm going with these questions, to see how
3 realistic 31.7 really is relative to these factors
4 we've been discussing.

5 A. MS. MILOJEVIC: Yeah. I think today we still
6 believe this is a realistic estimate and what the
7 midpoint of the range we expect to see the project
8 costs come in at.

9 Q. Okay.

10 THE CHAIR: Okay. I don't think I have any
11 more questions.

12 Mr. Fortin, would you like to proceed with your
13 questions?

14 MR. FORTIN QUESTIONS THE PANEL:

15 Q. Okay. So I'm a little nervous. I don't do this very
16 often. Good morning, panel.

17 With this question, just to be clear, I'm not
18 looking for an undertaking or report. You've kindly
19 supplied us with a lot of reading material for the GRA,
20 so the question has to do with maybe an item that has
21 some financial risks that I might have missed in the
22 discussion.

23 We all know that around the Whitehorse area
24 there's been highway constructions, the military, and
25 there's various dumps and those kinds of items. I was

10:09

10:10

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by Mr. Fortin

1 wondering if a Phase 1 environmental site assessment
2 had been done or is planned to be done on this
3 property?

4 **A. MS. MILOJEVIC:** Mr. Fortin, we are planning on
5 doing a Phase 2 environmental assessment. I believe I
6 had referenced yesterday geotechnical work that's
7 planned for June of this year, and that is the Phase 2
8 environmental assessment.

9 **Q.** Thank you. I've got to apologize for the next
10 question. It's probably something that I didn't quite
11 get.

12 If you look at the IR by John Maissan, IR 133, I
13 think it's page 45 of 49 for John's -- Mr. Maissan's
14 IR. I'll wait for everybody to get there.

15 On page -- I think it's Table 3. The one -- the
16 table that's laid out with the 30 percent cost overrun.

17 So my question is this: Am I correct to interpret
18 this table that it's indicating that the net financial
19 benefit to the ratepayer, the financial benefit, starts
20 to accrue on Year 8 of the 20-year project?

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

22 **Q.** And that was my question. The other ones are a
23 little -- maybe a little more involved.

24 It has to do with the Indigenous involvement.
25 Again, I apologize, because I really don't want to be

10:10

10:11

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by Mr. Fortin

1 here, but we are here.

2 If I'm assuming that the project cost --
3 Mr. Mollard said, you know, depending on the final
4 project cost, if I'm assuming -- let's assume that the
5 final project costs after it's all done is \$41 million.

6 What would the financial instrument, what would be
7 the contribution from the Indigenous group? Or is that
8 something that you can share with us?

9 **A. MR. MOLLARD:** So the formula that we apply,
10 Mr. Fortin, is based on the net rate base cost. So as
11 much as I hesitate to do math on the fly here, it would
12 look something like the 41 million, less the
13 contribution from the feds, times 40 percent, times
14 25 percent for each First Nation.

10:13

15 So what we're trying to match is the formula in
16 the umbrella final agreement that talks about the
17 First Nation being given access to 25 percent of the
18 net interest of the company in the project itself.

19 **A. MR. HALL:** So that math is outlined on
20 page 18 of the application, where it walks through the
21 calculation of how the First Nation investments are
22 derived once the total project costs are known.

10:13

23 **Q.** Thank you. I just have a follow-up question because I
24 wasn't clear yesterday I understood all about the
25 debenture. So my question is, if there was no

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

Questioned by Mr. Fortin

1 Indigenous financial contribution, does this project
2 can still go ahead?

3 A. MR. MOLLARD: Yes. The -- that contribution
4 would be covered by the shareholder Yukon Development
5 Corporation.

6 Q. Okay. Another follow-up question is the, I understand
7 that the board of directors of YEC has mandated that
8 this had to be on settlement land.

9 If that condition was removed, is there a
10 requirement from anyone else that you can share that
11 means that it has to be on settlement land? 10:15

12 A. MR. HALL: Mr. Chair, I would just like to
13 clarify that our board of directors didn't mandate that
14 it be -- the project be on settlement land. What
15 they've mandated is that management create economic
16 benefit opportunities for First Nations associated with
17 our projects.

18 So that's the overall mandate. Management then
19 looked at the situation and identified a lease as one
20 of the tools that allows us to do that. 10:15

21 So, you know, I just wanted to make that point.

22 Secondly, no, there's no other body, other than an
23 internal strategy or intent, that's directing us to
24 locate the project on settlement land.

25 Q. Thank you, Mr. Hall. In keeping with our marching

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by Mr. Fortin

1 orders from the Minister, which talk about part 3(d),
2 alternatives to the project, I'm not sure how to handle
3 this so I'll... Okay. Alternative to the project and
4 then the location.

5 Okay. During the prolonged cold snap last winter,
6 was there at any time a period of time where thermal
7 generation was not required?

8 A. MR. HALL: No. During the cold snap we were
9 running thermal all day.

10 Q. Okay. And during that same cold snap, did you have
11 enough reserve to meet the N-1? 10:17

12 A. MR. HALL: Mr. Chair, I'm going to have to
13 take an undertaking. I don't have the numbers in front
14 of me on that particular day. I think our overall goal
15 last winter was to rent sufficient diesels to meet the
16 N-1. So I think in general my answer would have been
17 yes, but I don't have a number of how close we were,
18 for example.

19 Q. Okay.

20 **UNDERTAKING - TO ADVISE IF DURING THE**
21 **COLD SNAP LAST WINTER YUKON ENERGY HAD**
22 **ENOUGH RESERVE TO MEET THE N-1** 10:18

23 Q. MR. FORTIN: Again, I'm kind of looking at
24 maybe under alternative to the project, I know that a
25 lot of eyes are on that. And I would like to round

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by Mr. Fortin

1 numbers. A lot of eyes are on that 15 million of money
2 available. My eyes are on the matching \$25 million
3 from the ratepayer. And, again, you'll have to indulge
4 me, it's just the ballpark.

5 Given the changing weather pattern with its effect
6 on our water supply available for generation, the
7 variability of wind, the shift in the weather in -- I'm
8 making an assertion here, but basically the shifting in
9 our weather in the last 20 years has been more from --
10 moving to a coastal weather, and given that there's a
11 potential need to recharge all these weather system, I
12 just want to explore this N-1 criteria. So in the
13 application the assessment is made that the BESS will
14 add a reliable capacity.

10:18

15 So Question Number 1, what is the reliable
16 capacity of the BESS?

17 **A. MS. MILOJEVIC: 7 megawatts of what we refer to as**
18 **dependable capacity.**

19 **Q. Dependable capacity. I'll change that from reliable to**
20 **dependable. And if it's operating at that capacity,**
21 **how long can it supply the 7 megawatts?**

10:19

22 **A. MS. MILOJEVIC: So, from an N-1 criteria**
23 **perspective, it supplies the peaks that occur in the**
24 **morning and the evening, and then it recharges**
25 **overnight, consistent with our load shapes.**

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by Mr. Fortin

1 Q. Yes, I understand that, but the question was, if the
2 BESS is operating at 7 megawatt of dependable capacity,
3 how long can it operate?

4 A. MS. MILOJEVIC: I believe it's just over
5 5 1/2 hours, Mr. Fortin. So it would -- it's
6 40 megawatt hours of energy storage. So if you output
7 at 7 megawatts, you lose 7 megawatt hours an hour.

8 Q. So basically after five hours it would be completely
9 out of service?

10 A. MS. MILOJEVIC: It would be fully discharged, yes. 10:20

11 Q. Yes. So what is the -- yes?

12 A. MR. HALL: So, Mr. Fortin, if I could point
13 you towards Figure 3.1 in the application and
14 Figure 3.2. So basically in Figure 3.1 there was an
15 analysis done of the load shape, and during cold
16 weather. And that was used to size the battery in
17 anticipation of it operating and providing that
18 dependable capacity through the duration when it's
19 required.

20 Q. Okay. Well, if you just indulge me, what is the 10:21
21 dependable capacity of the four rental diesels that the
22 BESS -- comparing the BESS to the four rental diesels?

23 A. MS. MILOJEVIC: It would be 7.2 megawatts.

24 Q. Okay. So operating at that capacity, how long can they
25 operate before scheduled service is required?

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by Mr. Fortin

1 A. MS. MILOJEVIC: I would say it -- yeah, it would
2 be, not indefinitely, sir, but several hundred hours.
3 Like, you know, you can operate them continuously.

4 Q. Okay. So now we're getting to where I'm going, is --
5 and you can comment please because I'm not sure I
6 understand how we can have 7 megawatt of dependable
7 capacity for the BESS and 7 megawatt of dependable
8 capacity for diesel generator when -- it's the same
9 words, but they sure seem to mean something different.

10 A. MS. MILOJEVIC: So I would say that -- when we
11 talk about dependable capacity, we're talking about a
12 specific functionality. So when we talk about from the
13 perspective of the N-1 criterion, it's the ability to
14 meet your peak load, not 24-hour-a-day service since
15 your load shape changes.

16 So when we talk about dependable capacity, it's
17 the ability to serve our peak loads during what we need
18 to assume a two-week N-1 event. As you know, the loss
19 of the Aishihik facility.

20 So you're right in that the technologies have
21 different attributes. So, for example, you can turn a
22 diesel unit on and leave it on. It doesn't discharge,
23 other than, you know, needing to refill the fuel;
24 whereas the battery does just discharge and recharge.
25 But both could meet the peak load and keep all firm

10:22

10:23

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

Questioned by Mr. Fortin

1 customers online to heat their homes and keep their
2 lights on for two weeks during an N-1 event, which is
3 the criterion we used to establish dependable capacity.

4 A. MR. MOLLARD: The other thing I would offer,
5 Mr. Fortin, is to keep in mind, the business case we
6 prepared is a lifecycle business case. The N-1 is a
7 one-in-10-year event. So it's really important to keep
8 in mind, you have to look at the costs of the
9 alternatives, where they're spending most of their time
10 just sitting there not doing anything, as well as other
11 use cases, which we presented in that table when we
12 talk about the operating reserve, used savings, and the
13 peak shifting uses.

10:23

14 So it's not just the N-1 that justifies the
15 project.

16 Q. No, I realize that. I'm just focusing on the N-1
17 because it appears the N-1 is the main driver or the
18 way it's been portrayed.

19 A. MR. MOLLARD: Yeah. Understood, yes.

20 Q. So, for me, for the proposed -- and, again, I'm using
21 the number 25 million that will eventually be picked up
22 by the ratepayer. And given that the N-1 is planned to
23 schedule, or whatever the word you want to use, once
24 every ten years, could you confirm that a new diesel
25 plant of 7 megawatt would have a dependable capacity to

10:24

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by Mr. Fortin

1 meet your N-1 requirement, a new plant?

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

3 **Q.** And at a high level, a greenfield operation, a
4 greenfield, what would that cost? And just -- I won't
5 hold you to it.

6 **A. MS. MILOJEVIC:** I can't speculate on the cost of a
7 7-megawatt unit.

8 **Q.** Could you speculate on the price of purchasing four
9 rental units?

10 **A. MR. HALL:** Mr. Fortin, we don't have the
11 information on what it would cost to purchase rental
12 units from Cat. I think I argued yesterday that we
13 would never do that if we're making a permanent
14 purchase decision. You know, these rental units as
15 they're currently configured are not a real option for
16 us.

17 **Q.** Okay. Just to shed some light on the -- during the
18 Minto PPA, the YEC was wishing to purchase some Cat
19 units from the mine. Do you remember -- can you recall
20 what those things might have been worth and what
21 capacity they might have been?

22 **A. MR. MOLLARD:** I'm sorry, Mr. Fortin, I don't --
23 I was around for that time, but I don't remember. That
24 was a dozen years ago now. I don't remember how big
25 those units were. They were a similar configuration, I

10:25

10:26

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

Questioned by Mr. Fortin

1 believe, but I can't say whether they were 1 megawatt
2 or 1.8 megawatts.

3 Q. So I'm not sure if I want an undertaking on you,
4 because that's more paper for all of us to deal with.
5 But if it is, you know, a 7.2 megawatt, I guess, what
6 was the number -- Mr. Hall --

7 A. MR. HALL: Yeah, sorry. Mr. Fortin, rather
8 than offer an undertaking, actually, I think one of the
9 important metrics that we've put before the Board is a
10 number of, quote, levelized cost of capacity, which 10:27
11 basically documents how much it costs to buy, you know,
12 a unit of capacity, and that allows you to compare
13 cross options; right. And, you know, we -- for the
14 purposes of the comparison we selected, because we had
15 information, a 12.5 megawatt diesel plant, but I think
16 it's a useful benchmark.

17 And so, you know, one of the things we noticed in
18 the numbers we presented, Mr. Chair, is that we did not
19 burden those numbers for what we called the Takhini
20 diesel plant with the property taxes that -- that are 10:28
21 being incurred to the battery.

22 So to have a nice apples-to-apples comparison, I
23 would suggest that we could take an undertaking to
24 update our levelized cost of capacity for a 12-megawatt
25 diesel plant to really provide a nice apples-to-apples

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by Mr. Fortin

1 comparison to the battery, and we can certainly take
2 that as an undertaking.

3 Q. Okay. That would be acceptable. Thank you.

4 UNDERTAKING - TO UPDATE THE LEVELIZED
5 COST OF CAPACITY FOR A 12-MEGAWATT
6 DIESEL PLANT TO PROVIDE AN
7 APPLES-TO-APPLES COMPARISON TO THE
8 BATTERY

9 Q. MR. FORTIN: City taxes. Again following our
10 marching orders from the Minister, there is a
11 substation at Takhini. Why is the BESS not being
12 placed there?

10:28

13 A. MR. HALL: So, Mr. Fortin, I spoke yesterday
14 about the process that we undertook to complete public
15 engagement on the three sites.

16 So we had, if you'll recall, the Takhini site and
17 then the two sites close to our Whitehorse facility.
18 And so we conducted a number of public meetings to meet
19 with residents who live close to each of those sites,
20 we did a bunch of door knocking, we had public comment
21 available through our website.

10:29

22 And what we learned, you know, very clearly was
23 that there was a lot of public opposition to the site
24 in Takhini. And, you know, one of the factors at play
25 was the resident that lives right next door to the

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

Questioned by Mr. Fortin

1 settlement land parcel had recently built some new
2 buildings, including residential buildings, like right
3 on the property line, which would be just over the
4 fence from where the battery would sit. So from her
5 perspective, you know, it was a real issue having what
6 she viewed as an industrial facility right across the
7 fence. So we certainly internalized that feedback.

8 But really the driver was when we went out to the
9 First Nations and requested their formal offers,
10 Kwanlin Dün effectively removed the offer for Takhini. 10:30
11 In other words, they did not give us a proposal for a
12 lease at Takhini.

13 So what we were left with was an offer from
14 Kwanlin Dün and one from Ta'an for the sites located
15 close to our facility here.

16 And I speculated yesterday that probably one of
17 the big drivers of Kwanlin Dün's decision is that they
18 didn't want to, as the lessor, undertake, you know,
19 that developer site with the public opposition that was
20 apparent at the Takhini site. 10:31

21 Q. Thank you. Mr. Mollard, I wonder if you could give me
22 a ballpark figure, over the life of the project what is
23 planned for the cost of the city municipal taxes on the
24 proposed location that we have now?

25 A. MR. MOLLARD: Sorry, Mr. Fortin. So a couple of

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by Mr. Fortin

1 references in the application. I can't answer
2 specifically, but I can offer some direction.

3 So we highlight in Table, I believe, 3.4 that the
4 annual cost at the outset for property taxes is roughly
5 297,000. And that rate is included in Table 4.3, the
6 lifecycle analysis, under Column B, annual operating
7 costs, and in the footnotes of that table you can see
8 that's escalated at 2 percent per year.

9 A. MR. HALL: So, in other words, the economic
10 case presented already includes those city taxes over
11 the life of the project.

10:32

12 Q. So would I be wrong to think that the municipal tax
13 over the life of the project at a cost of \$7 million to
14 the ratepayer, or approximately, in that range? I
15 don't well with math.

16 A. MR. MOLLARD: I would want to take that away and
17 check the math on that, Mr. Fortin. I can't do the
18 math on the fly. I don't even have a calculator with
19 me.

20 Q. Neither do I. 300,000. So 6 million plus inflation.
21 So I'm just looking for -- so --

10:33

22 A. MR. MOLLARD: That's a fair calculation,
23 Mr. Fortin.

24 Q. Okay. So \$7 million is going to be paid extra by the
25 ratepayer because the BESS is located inside the city

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by Mr. Fortin

1 limit.

2 So now I want again exploring alternatives. If I
3 remember -- I do believe that -- can you confirm that
4 the BESS is scheduled to connect to the distribution
5 system at 34 kV?

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

7 Q. Can you confirm that there is distribution equipment at
8 the Takhini substation operating at 34 kV?

9 A. MR. HALL: Mr. Fortin, we'd have to check
10 whether there's any low voltage running into Takhini. 10:34
11 We don't have that information.

12 Q. Okay. Can we confirm that?

13 MR. FORTIN: So that would be an undertaking of
14 some type, I guess?

15 THE CHAIR: Yes. Mr. Hall is nodding his
16 head.

17 **UNDERTAKING - TO CONFIRM THAT THERE IS**
18 **DISTRIBUTION EQUIPMENT AT THE TAKHINI**
19 **SUBSTATION OPERATING AT 34 KV**

20 Q. MR. FORTIN: So I will boldly go and assume 10:35
21 there's 34 kV at the Takhini substation. And my next
22 question is, how long would that 34-kV line from the
23 Takhini substation to the BESS, how long could, in
24 practical term, I know it's not going to be 20 miles,
25 but how long could that line be and still meet the

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by Mr. Fortin

1 requirement of the system?

2 A. MS. MILOJEVIC: Again, Mr. Fortin, as I had
3 explained to the chairman earlier, was that it would
4 depend, again, where you have to be able to energize
5 the transmission lines. It would be a detailed study
6 to determine exactly how far away you could place the
7 battery and still be able to provide the system
8 services.

9 A. MR. HALL: And I would also point out that
10 here we go developing linear infrastructure in
11 undeveloped land. So we have to consider that if you
12 go that route, now we're having to consult the same
13 public who had opposed the project on not only a
14 battery but now a transmission line.

15 So, you know, that -- you know, for the reasons
16 that we spoke about already, has a risk profile that's
17 way different from what's being contemplated with the
18 Whitehorse sites.

19 Q. If you indulge me, we'll just pursue that line a little
20 bit. Is there any -- around the Takhini substation, is
21 there any land graded or marked open space? Or Crown
22 land or...

23 A. MR. MOLLARD: Mr. Fortin, as we understand, that
24 area is outside of city limits so it's either titled
25 land, privately held, First Nations settlement land, or

10:36

10:37

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by Mr. Fortin

1 Crown land.

2 Q. So I would like -- do we need an undertaking to
3 say -- to see how far -- you said Crown land. So do we
4 need an undertaking to establish how far the Crown land
5 is from this Takhini substation?

6 A. MR. MOLLARD: Sorry, I just want to make sure I
7 understand the line of questioning. So I believe there
8 is Crown land relatively in proximity to the
9 substation. Is that the question you're asking?

10 Q. That's basically where I'm going, yes.

10:38

11 A. MR. HALL: There's undeveloped Crown land --

12 A. MR. MOLLARD: Adjacent.

13 A. MR. HALL: -- adjacent, yeah, to the west of
14 the substation, yeah.

15 Q. So, wild guess, probably no big study would be required
16 to see if the BESS can be located on that Crown land in
17 term of electrically if it's adjacent?

18 A. MR. HALL: Electrically it could, yes.

19 A. MR. MOLLARD: I would -- I would point out that,
20 that -- that I've been out there, and I would want to
21 understand the civil impacts, Mr. Fortin, because that
22 is low -- low country there.

10:38

23 So it might be a significant civil undertaking to
24 build a pad for the battery.

25 Q. So I'm just at the tail end here. So I just -- I'm not

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

Questioned by Mr. Fortin

1 known to be very diplomatic, so I won't start now.

2 So, if I understand correctly, the ratepayer is
3 going to pay \$7 million more in their power rates
4 because there's local objection to development around
5 the Takhini substation, whether for this project or a
6 diesel plant or anything in the future. And could you
7 comment on that.

8 A. MR. HALL: Yeah. I mean, look, we have made
9 a site selection based on a number of different
10 criteria. You know, local opposition was one of those, 10:40
11 that we talked about. The second was the intent to
12 locate on settlement land, and there was no settlement
13 land parcel available adjacent or close to the Takhini
14 site.

15 So I think it's a little unfair to just zero in on
16 one factor that was -- when we've talked about a number
17 of factors that have driven our site-selection
18 decision.

19 Q. No, I think I have something else here. Oh, yes,
20 sorry, it just came up this morning. 10:40

21 In a previous Board order the Board indicated
22 reservation about newer technology. I think 40,000
23 resident, something like 25,000 electrical customer
24 being at the leading edge of technology. Ms. Zuliani
25 has offered a list of a number of projects. Most of

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by Mr. Fortin

1 these projects are under review, under construction.

2 I wonder if there was some -- something -- are
3 there any sizeable battery projects north of 60 that
4 have been in operation for three years? And, if so,
5 just to follow up, dove tail, if so, is there any
6 records of how many times they blew up or they didn't
7 blow up and those kinds of things. So give us some
8 comfort, or give me some comfort. I'm just not at the
9 leading edge of technology here.

10 **A. MS. MILOJEVIC:** I'd ask Ms. Zuliani to give some
11 context on the projects that she raised yesterday, or
12 the day before.

13 **A. MS. ZULIANI:** Thanks, Ms. Milojevic.

14 So, to my knowledge, there has not been a single
15 lithium ion battery that's blown up in the Arctic. So
16 the technology -- there has been a few fires, and
17 they've been reviewed in depth and strategies are
18 ongoing to develop safety protocols; and those are in
19 our specifications.

20 In terms of the largest system that's been
21 operating, so the largest system that's operating right
22 now from our list of Arctic project is the 3-megawatt
23 one at Raglan Mine. That's been operating for about
24 two years now.

25 There's also a large project in Kotzebue, Alaska,

10:42

10:42

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

Questioned by Ms. King

1 which is about 1.2 megawatts, and that's been operating
2 since 2015, to our knowledge.

3 In terms of large projects, there has been a large
4 project operating in Ontario, which is a similar scale
5 of 8 megawatts, 40 megawatt hours, and that's been
6 operating since 2017.

7 And several projects in the US, but I know the
8 question was related to northern projects.

9 MR. FORTIN: Thank you, this concludes my
10 question.

10:43

11 Time for a break?

12 THE CHAIR: Yes, it is. So we'll break for
13 ten minutes and then resume.

14 (ADJOURNMENT)

15 THE CHAIR: Okay. Everybody ready to proceed?
16 Yes? All right.

17 Before Ms. King starts on her questions, I'm
18 reminded that Undertaking No. 5 will be entered as
19 Exhibit B-10. We'll keep on top of the bookkeeping.

20 **EXHIBIT B-10 - YEC UNDERTAKING RESPONSE**

10:57

21 THE CHAIR: So Ms. King, please.

22 MS. KING: Thank you.

23 **MS. KING QUESTIONS THE PANEL:**

24 Q. I just have one question, and it follows up on -- to do
25 with the location and the risks. And if you need to

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

Questioned by Ms. King

1 refer to it, it was referenced in page 223 of
2 yesterday's transcript starting at line 8 to 15, but
3 you can probably answer it without referring to that.

4 It was in a response to Ms. Sabo's questions
5 regarding the risk assessment on the proposed location
6 and the status of the application between NAV Canada
7 and Transport Canada. And the response basically was
8 there isn't a large risk.

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

17 So in that response, I'm wondering what locations, where
18 those locations of the battery projects near airports
19 that were discussed, and are they comparable in size to
20 the BESS Project? And the reason I'm asking is I
21 haven't really heard those as examples given by Hatch or
22 previously.

23 **A. MS. MILOJEVIC:** Yes, Madam Vice-Chair, I think I
24 would have to undertake to look back at what we had
25 identified as battery sites that had been near airports

10:32

10:59

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

Questioned by Ms. Middler

1 without -- without that low proximity driving any
2 additional design requirements. I just can't recall,
3 but I can certainly undertake to come back with that
4 information.

5 Q. Okay. Thank you.

6 **UNDERTAKING - TO ADVISE OF LOCATIONS OF**
7 **THE BATTERY PROJECTS NEAR AIRPORTS THAT**
8 **WERE DISCUSSED, AND ARE THEY COMPARABLE**
9 **IN SIZE TO THE BESS PROJECT**

10 MS. KING: And that's the question I really
11 had to follow up on.

12 A. MS. MILOJEVIC: Pardon me? Sorry?

13 MS. KING: Sorry. Anne is following up on my
14 question here.

15 (DISCUSSION OFF THE RECORD)

16 THE CHAIR: Over to you.

17 **MS. MIDDLELER QUESTIONS THE PANEL:**

18 Q. Okay. Thank you. For interest's sake, did you do any
19 sensitivity analysis on the BESS Project economics if
20 electricity production was not exempt from carbon tax?

21 A. MS. MILOJEVIC: No, we did not.

22 Q. Does Yukon Energy pay municipal property taxes on the
23 LNG facility?

24 A. MR. MOLLARD: Yes, we do.

25 Q. Okay. Referring to the project application page 16,

10:59

11:00

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

Questioned by Ms. Middler

1 Table 3-4, which shows the breakdown of estimated
2 capital costs, can you confirm which line items in the
3 table are covered in the outstanding RFP in the second
4 phase procurement? Is it the battery system and the
5 power conversion system?

6 **A. MS. MILOJEVIC:** Yes, it would be the battery
7 system and the power conversion system. There may also
8 be some of the costs in the engineering services that
9 could be provided by the vendor around the detailed
10 engineering of the battery system, but I believe it
11 will mainly be the first two you referenced.

11:01

12 **Q.** Okay. So, according to this table, then, that would
13 be -- without the engineering costs that would be
14 74 percent of the cost of the project?

15 **A. MS. MILOJEVIC:** That's correct, yes.

16 **Q.** Okay. I'm just noting there's a discrepancy. Earlier
17 on on page 16 it says that: (as read)

18 "The battery price has the greatest
19 impact on the Project economics as it
20 accounts...for 72 percent of the project
21 costs."

11:01

22 So the RFP itself is somewhere between 72 and 78 percent
23 of the total project costs?

24 **A. MS. MILOJEVIC:** So just to be clear, there are
25 multiple procurements around -- that will be the

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

Questioned by Ms. Middler

1 battery, which is a single procurement, and then there
2 is also the EPC contractor procurement, or site
3 preparation contractor procurement, referenced in the
4 last two days.

5 But, yes. Generally speaking, when you think
6 about the cost for the battery system and that
7 two-stage procurement I described, it would be,
8 depending on the cost, come in somewhere between 70 and
9 80 percent of the total project costs.

10 Q. Okay. To sum up those RFPs.

11:02

11 Ms. Zuliani spoke to this a bit earlier today when
12 we were talking about the decreasing costs of battery
13 technology over time, and I just wanted to confirm
14 whether or not observing the industry over the past six
15 months during these exceptional COVID times if there
16 has been any -- any observations or further things to
17 note about pricing for batteries.

18 A. MS. ZULIANI: I can answer that. We don't have
19 anything to note in the last six months in terms of
20 major price difference from what we see here.

11:03

21 Q. Yesterday, Mr. Hall, this is on page 216 of the
22 transcript, responding to a question about risk, he
23 described the project as being relatively simple and
24 how it's a containerized system and it doesn't require
25 building construction and, paraphrasing, is so much

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

Questioned by Ms. Middler

1 shielded from those commodity prices. But what about
2 other commodity prices? What about the containers
3 themselves? There's 18 40-foot steel containers.
4 Could the increasing steel prices or scarcity of steel
5 affect the cost of the containerized systems?

6 A. MR. HALL: It could. But I would argue that
7 out of 19 million, the actual containers themselves is
8 a tiny part of that. I mean, containers cost literally
9 thousands of dollars each.

10 Sorry. There would be some sensitivity on that
11 component, but as a percentage of the 19 million, it's
12 relatively small.

13 Q. Not material. Okay.

14 And I know that Mr. Chair asked this earlier, but
15 would there be any other trends or factors that could
16 affect battery costs in the short term in the
17 last -- in the past year and this coming year?

18 A. MR. HALL: Ms. Zuliani, do you have any
19 comments on that?

20 A. MS. ZULIANI: Not that we're necessarily aware
21 of that would significantly -- materially affect the
22 costs, in our experience.

23 Q. Okay. The terms of reference ask us to assess and
24 review the impact on rates and whether it is prudent to
25 build this project at this time. And in two months you

11:04

11:05

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

Questioned by Ms. Middler

1 and your Board will have RFP proposals to firm up the
2 numbers that were estimated last year that represent
3 the most significant costs of this project.

4 Further, YESAB recommendations, subsequent
5 decision documents, potential mitigations, supply,
6 construction contracts, final project agreements,
7 including site lease costs, NAV Can, Transport Can,
8 potential requirements around them are also
9 outstanding.

10 If the tables were turned and if you were an
11 economic regulator, do you think you have adequate
12 information at this time to make a recommendation about
13 whether this project is prudent?

11:06

14 **A. MR. HALL:** It's a great question, and we've
15 certainly observed, you know, a recurring theme of
16 questions around uncertainty. Our understanding of
17 these terms of reference is that, you know, that the
18 Board has been asked to make an assessment based on the
19 information that's been presented. I'm not sure that
20 anyone is asking you to make an assessment based on
21 information you don't have.

11:07

22 And if I think about our own business, we as
23 management and our board make decisions all the time
24 based on incomplete information, and you do the best
25 you can with the information you have.

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

Questioned by Ms. Middler

1 And so what we've presented is, you know, a
2 package of information based on the best available data
3 we have, and we've presented, in our view, a business
4 case that makes compelling sense for ratepayers.

5 So I would postulate that that's the basis on
6 which you make your recommendation to the government.
7 I don't think anyone is expecting you to look into the
8 future. And then I think we've pointed out several
9 times that ultimately, as our regulator, when we come
10 to bring the net ratepayer costs and apply to put them
11 into rates, you have another opportunity to -- to
12 assess prudence based on actual costs.

13 So that's my comment, Ms. Middler. Mr. Mollard
14 may have additional.

15 A. MR. MOLLARD: Yeah, if I could offer a bit more
16 there. I think, you know, from your perspective, and
17 hopefully we've done a good job of communicating that,
18 we've estimated the benefits from this project fairly
19 conservatively, we've sort of downgraded what could be
20 the upside from this project quite a bit, and we've
21 also provided some sensitivity analysis that the
22 economics hold up over a pretty broad range. Based on
23 the numbers, I think we had in one IR we said we could
24 go up to 40 percent and it's still a benefit.

25 So I would suggest that based on that we have

11:08

11:08

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Questioned by Mr. Fortin

1 proven economics at the level of the project costs as
2 we've estimated them today, and we can take some pretty
3 serious hits and it's still a good project.

4 THE CHAIR: Anything further?

5 MS. MIDDLEL: No. Thank you.

6 MR. FORTIN: I forgot one --

7 THE CHAIR: Mr. Fortin --

8 **MR. FORTIN QUESTIONS THE PANEL:**

9 Q. -- panel, I've been a bit unfair to -- through the
10 whole thing here.

11:09

11 I would like to get an undertaking to rerun
12 John Maissan YEC 33, Table 3 with the municipal taxes
13 completely removed. I'm curious to see what the
14 financial benefit to the ratepayer will be if there is
15 no taxes. Is that something we can do?

16 A. MR. HALL: Yes, we can do that.

17 **UNDERTAKING - TO RERUN JOHN MAISSAN**
18 **YEC 33, TABLE 3 WITH THE MUNICIPAL**
19 **TAXES COMPLETELY REMOVED**

20 THE CHAIR: Well, thank you, panel, for
21 withstanding the Board peppering you with questions.
22 And I think, as we expressed yesterday, this will be --
23 now comes Mr. Landry's opportunity to just tidy things
24 up a little bit if he feels that some of your responses
25 warrant further opportunity to clarify things.

11:10

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Re-cross-examined by Mr. Maissan

1 Mr. Landry.

2 MR. LANDRY: Mr. Chair, just a small point. If
3 there are any other questions that you're going to
4 allow, if I can put it that way, from either other
5 interveners or the Board counsel, it would probably be
6 best if I was the one that would sort of clean up, if
7 you know what I mean.

8 THE CHAIR: Yes, okay.

9 MR. LANDRY: And I don't know whether you
10 intend to allow that, but it's probably something to
11 bring to your attention. 11:11

12 THE CHAIR: Yes, okay. No, I appreciate that.
13 I spent more time on your side of this kind of process
14 than in this role, so...

15 Ms. Sabo, do you have anything further?

16 MS. SABO: Nothing outstanding, Mr. Chair.

17 THE CHAIR: Okay. And, Mr. Maissan, or UCG?

18 MR. MAISSAN: Mr. Chair, I do have one question
19 I'd like to follow up.

20 THE CHAIR: Yes. This is Mr. Maissan? 11:11

21 MR. MAISSAN: Yes, this is John Maissan
22 speaking.

23 THE CHAIR: Okay. Go ahead.

24 **MR. MAISSAN RE-CROSS-EXAMINES THE PANEL:**

25 Q. It was in regards to questioning by the Board. The

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Re-cross-examined by Mr. Maissan

1 issue of meeting 7.2 megawatts of firm requirement, in
2 the application, Figures 3.1 and 3.2 indicate that,
3 with the significant difference in load between night
4 and day, that 7.2 megawatts of dependable capacity can
5 be met day after day.

6 Am I correct in that understanding?

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

8 **Q.** Thank you.

9 **MR. MAISSAN:** That's my only question,
10 Mr. Chair.

11:12

11 **THE CHAIR:** Thank you, Mr. Maissan.

12 Do we have Mr. McMahon on for UCG?

13 **MR. MCMAHON:** Yes, I am here. I don't have any
14 further questions, although I do appreciate YEC's
15 prompt responses to the undertakings. Very much
16 appreciated.

17 **THE CHAIR:** Okay. Thank you.

18 Well, I think now is your moment in the spotlight,
19 Mr. Landry.

20 **MR. LANDRY:** I'm not sure about spotlight, but,
21 hopefully, a couple of issues I heard on some of the
22 questioning, that we might be able to help for the
23 record.

11:13

24 So I wonder, and I seek your indulgence, you of
25 all people know what redirect is like, so let me try it

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Re-examined by Mr. Landry

1 this way.

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

3 Q. I think I'll start with Ms. Milojevic on the issue
4 about the plus or minus 30 percent issue that was
5 raised by the Chair.

6 Madam, you talked about engineering
7 classifications, I think you started at Class 5, if I
8 remember correctly, and Class 3, Class 2.

9 First of all, I wonder if you could tell me
10 whether they -- I know you're an engineer -- are those
11 classification systems and how they are applied in any
12 specific circumstance, are they generally used in the
13 engineering trade?

11:14

14 A. **MS. MILOJEVIC:** Yes, they are.

15 Q. And you are familiar with them?

16 A. **MS. MILOJEVIC:** At a high level, yes.

17 Q. So that's a good segue over to Ms. Zuliani.

18 Ms. Zuliani, I wonder if you could just give the
19 Board some idea of that classification system at a high
20 level?

11:14

21 And, secondly, where it will lead me to is your
22 comfort level given the status of the present
23 engineering that is for this project of doing a plus or
24 minus 30 percent?

25 Could you help the Board in that regard?

1 A. MS. ZULIANI: Yes. So, I mean, as Ms. Milojevic
2 explained, they're based on the level of engineering.
3 As you do more engineering, you get more certain on
4 your costs because you have more details of your
5 project more firmly defined.

6 So, at the highest level, we have our Class 5
7 estimate which is options or scoping level study and,
8 typically, plus/minus 50 percent; Class 4 estimate,
9 which is where this project sits, is we've done a basic
10 engineering phase, defined the project, and based our
11 costs based on site specific considerations,
12 benchmarks, and any other information, as we pointed
13 out, based on past projects and discussions with
14 vendors of major components.

15 So, in that sense, we are confident, given the
16 level of engineering, that this cost is within the
17 range outlined here based on the information we have
18 today.

19 Q. And, madam, in your professional opinion as an
20 engineer, would you say that this is the proper
21 classification for this system at this time in the
22 project?

23 A. MS. ZULIANI: Based on my experience, yes, this
24 is.

25 Q. Thank you. I'd like to go back to the panel, and this

11:15

11:15

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Re-examined by Mr. Landry

1 is in relation to Mr. Fortin's questions of
2 Ms. Milojevic regarding the ability to -- sorry. Let
3 me start with this: This is in relation to the
4 questions that Mr. Fortin had in relation to the N-1
5 criteria.

6 And I'm going to build this a little bit with it
7 because -- and I'll start from where you started --
8 where you indicated that whether it was a battery or, I
9 think, and correct me if I'm wrong, a 7 megawatt or
10 7.2 megawatt diesel, both of them could satisfy the
11 requirement of N-1. First of all, do I have right?

11:16

12 **A. MS. MILOJEVIC: That's correct, yes.**

13 **Q.** Okay. So now I want to understand what that means
14 because I know Mr. Fortin went on the difference in
15 hours that a battery could operate versus a diesel
16 could operate.

17 So the first question I'd like to ask is, if we
18 look at N-1, which is the criteria we're talking about,
19 how often would the capacity that you're going to be
20 looking at, whether that be the battery or the diesel
21 unit, how often would that have to operate, say, over a
22 10-year period, N-1?

11:17

23 **A. MS. MILOJEVIC: So we plan, essentially, for N-1**
24 **once every 10 years. That's what we anticipate the**
25 **frequency to be.**

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Re-examined by Mr. Landry

1 Q. So that would mean the battery would have to supply
2 that once every 10 years or the diesel unit that we're
3 talking about would have to do that once every
4 10 years?

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

6 Q. Okay. And can I ask another question, this is a
7 technical question, you may have to help a little bit
8 on this, but at the moment on the system, we talk about
9 the capacity constraint that you and Mr. Hall and
10 Mr. Mollard have talked about; correct?

11:18

11 **A. MS. MILOJEVIC: Yes, the current shortfall in N-1**
12 **dependable capacity on the system, yes.**

13 Q. Okay. Is there an energy constraint on the system?

14 **A. MS. MILOJEVIC: No, there is not.**

15 Q. And let me just again, in this comparison Mr. Fortin
16 did between the battery and the diesel -- on the N-1
17 criteria, I want to focus on that -- what -- can you
18 compare what other benefits, if you went with, for
19 example, a battery versus a diesel unit, what other
20 benefits, besides the fact that it could meet the N-1
21 criteria, that is, the battery, what other benefit the
22 battery provides over the diesel unit?

11:18

23 **A. MS. MILOJEVIC: Yeah, so this comes a lot into**
24 **what the project economics are that we've presented in**
25 **Table 4.3 of the application.**

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

Re-examined by Mr. Landry

1 So, from a quantifiable perspective, we have
2 operating reserve use savings, which is where, because
3 each year, we can't actually generate electricity with
4 all the water that we have since we have to hold some
5 back for operating reserve, with the battery, we're
6 able to generate more electricity with the water in our
7 reservoir, so it produces a thermal savings. So that
8 is a direct cost savings that the battery creates that
9 a diesel facility could not.

10 Similarly, when we're talking about the peak
11 shifting use case, which is the ability, not during an
12 N-1 event, to not have to turn on diesel units for a
13 few units and then turn them back off. So the battery
14 creates those fuel savings as well by discharging
15 during peak and then recharging overnight.

16 And then there are quite a number of what we kind
17 of have referred to as "non-quantifiable benefits." So
18 these are reliability benefits that improve the
19 stability and power quality on the grid, and those are
20 outlined in the application, as we like to call them
21 "Other Benefits."

22 Those include: frequency regulation, voltage
23 control, load-shedding prevention, load-loss
24 stabilization.

25 I know, very complex terms, but in general, it's

11:19

11:20

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

Re-examined by Mr. Landry

1 services the battery provides to the grid that improve
2 customer reliability and helps us better restore from
3 or prevent outages.

4 Q. And those benefits that you just listed are benefits
5 that, if you went with diesel, that the diesel would
6 not provide. Do I have right?

7 A. MS. MILOJEVIC: Yeah, there are a couple
8 that -- N-1 is the main one that the diesel could
9 provide. There are many that would require a diesel
10 unit to be online, running and burning fuel, to be able
11 to provide; whereas the battery provides them simply by
12 being connected to the grid.

11:20

13 We did, I think, a fairly thorough run through in
14 reference to put it in case people are wondering in the
15 IR response to YUB-YEC-1-36 of what these different
16 reliability features are and how a diesel unit would
17 compare in terms of its ability to provide them.

18 So for most of them, though, the battery
19 definitely has an advantage in their provision over a
20 diesel unit.

11:21

21 Q. Thank you.

22 Ms. Zuliani, I'd like to just turn over to you
23 again with a question that was asked by Mr. Fortin, and
24 it's an issue, obviously, that we've seen from the
25 previous decisions of the Board which relates to the

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

Re-examined by Mr. Landry

1 use of batteries, and I'll put it "north of 60," I
2 believe that is what Mr. Fortin said, and you mentioned
3 a couple -- and please correct me if I'm wrong, I tried
4 to get my note down -- but you mentioned a couple north
5 of 60 that were in operation, I think one was
6 3 megawatts and perhaps a 2 megawatt. Do I have that
7 right?

8 **A. MS. ZULIANI:** There's one that's 3 megawatts and
9 there's one that's 1.2 megawatts in Alaska, north of --
10 yeah.

11:22

11 **Q.** Now, in your professional opinion, given that we now
12 have those two examples, how comparable are they from
13 the perspective of the ability to operate north of 60
14 to what this project would be, which would be the
15 megawatts that are being proposed here?

16 **A. MS. ZULIANI:** So, in my experience and in my
17 opinion, these are quite similar in that they are the
18 same basic technology.

19 We have lithium ion batteries in modules in racks
20 in a steel container which is insulated and has a
21 heating system and cooling system.

11:22

22 Whether we have 10 containers or one container
23 they're all based on the operating principle, the same
24 working principle, and the same design.

25 So having a larger system does not necessarily

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

Re-examined by Mr. Landry

1 change the ability to operate in the Arctic compared to
2 these other examples.

3 Q. Okay. So, in your professional opinion, Ms. Zuliani,
4 going from a 3 megawatt, let's use the highest one you
5 have, to the megawatts that we have here, do you
6 consider the operation -- that your expectation of the
7 operation would be any different than what has been
8 experienced for the 3 megawatt operation?

9 A. MS. ZULIANI: In terms of operating in the
10 Arctic, no.

11:23

11 MR. LANDRY: And those are all the questions I
12 have, Mr. Chair.

13 THE CHAIR: Thank you, Mr. Landry.

14 Okay. Well, is there any other business for
15 today, then?

16 The submissions -- what is it -- the 13th of May,
17 I think, was the deadline for final submissions?

18 MS. SABO: That's correct, Mr. Chairman.

19 THE CHAIR: Yes. And I think we have a
20 May 11th deadline for any outstanding undertakings; is
21 that correct?

11:24

22 MS. SABO: I believe that's correct.

23 THE CHAIR: Yeah, okay. Very good.

24 Well, I would like to, on behalf of the Board,
25 extend our appreciation for all of the hard work that

M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI
Re-examined by Mr. Landry

1 has gone into this hearing. Express our appreciation
2 for the guidance that counsel, Mr. Landry and Ms. Sabo
3 and Ms. Graham have lent to the process.

4 And members of the YEC panel and, Ms. Zuliani,
5 congratulations on withstanding our grilling, such as
6 it's been.

7 So, unless there's anything further, we will wind
8 this hearing up and retire to our process to come up
9 with a report by the deadline of June 30th, which is
10 the amended deadline that the Minister of Justice
11 permitted the Board.

12 I'll double check my checklist here of anything
13 else to deal with.

14 I suppose the other thing to note is, as we said
15 before, this is a -- this is the first time that this
16 Board has held a hearing in -- using technology through
17 a video process, and I suspect it's going to become
18 more commonplace in our processes and as it has been
19 elsewhere. Apart from the constraints that the COVID
20 pandemic has imposed on us, there are some practical
21 benefits to be had for future hearings.

22 But I'd like to extend, again, our appreciation
23 for everyone's patience and tolerance with the novel
24 nature of the hearing process. And, in particular, I'd
25 like to acknowledge our technological support through

11:25

11:27

1 Upstream Events, the local service provider, who has
2 gotten us set up, and provided all the technological
3 support.

4 Likewise, I'd like to thank the background support
5 through Amicus Reporting, and they will be -- the final
6 transcripts of these proceedings will be made available
7 publicly through electronic format. So the parties are
8 not required to order a copy of the transcript from the
9 court reporter. It will be available online through
10 the Board's website.

11:28

11 Thank you as well to the interveners for your
12 contributions to the process. Typically, the purpose
13 of interveners is to bring a unique perspective to
14 proceedings, and I think it's fair to say that
15 the information requests and the contributions of the
16 interveners to the hearing have helped to enhance the
17 perspective and, ultimately, the benefit to the public
18 in understanding what these proceedings and what this
19 project is all about.

20 So thank you to everyone, and with those remarks,
21 I will close the hearing. Thank you.

11:29

22 (PROCEEDINGS ADJOURNED AT 11:29 A.M.)

23

24 PROCEEDINGS CONCLUDED

25

1 Certificate of Transcript

2

3 We, the undersigned, hereby certify that the foregoing
4 pages 300 to 362 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 6, 2021.

10

11

12

_____ "Lorelee Vespa"

13

Lorelee Vespa, CSR(A) RPR CRR

14

Official Court Reporter

15

16

_____ "Donna Gerbrandt"

17

Donna Gerbrandt, CSR(A)

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Official Court Reporter

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- I N D E X -

VOLUME 3

1		
2		
3		
4		
5	<u>M. MILOJEVIC, A. HALL, E. MOLLARD, J. ZULIANI</u>	302
6	(For Yukon Energy Corporation)	
7	UNDERTAKING RESPONSES	302
8	THE CHAIR QUESTIONS THE PANEL	304
9	MR. FORTIN QUESTIONS THE PANEL	322
10	MS. KING QUESTIONS THE PANEL	341
11	MS. MIDDLEL QUESTIONS THE PANEL	343
12	MR. FORTIN QUESTIONS THE PANEL	349
13	MR. MAISSAN RE-CROSS-EXAMINES THE PANEL	350
14	MR. LANDRY RE-EXAMINES THE PANEL	352
15		
16		
17		
18		
19		
20		
21	EXHIBIT B-10 - YEC UNDERTAKING RESPONSE	341
22		
23		
24		
25		

EXHIBITS

21	EXHIBIT B-10 - YEC UNDERTAKING RESPONSE	341
----	---	-----

UNDERTAKINGS GIVEN

1		
2		
3	UNDERTAKING - TO ADVISE IF DURING THE COLD SNAP	326
4	LAST WINTER YUKON ENERGY HAD ENOUGH RESERVE TO	
5	MEET THE N-1	
6		
7	UNDERTAKING - TO UPDATE THE LEVELIZED COST OF	333
8	CAPACITY FOR A 12-MEGAWATT DIESEL PLANT TO PROVIDE	
9	AN APPLES-TO-APPLES COMPARISON TO THE BATTERY	
10		
11	UNDERTAKING - TO CONFIRM THAT THERE IS	336
12	DISTRIBUTION EQUIPMENT AT THE TAKHINI SUBSTATION	
13	OPERATING AT 34 KV	
14		
15	UNDERTAKING - TO ADVISE OF LOCATIONS OF THE	343
16	BATTERY PROJECTS NEAR AIRPORTS THAT WERE	
17	DISCUSSED, AND ARE THEY COMPARABLE IN SIZE TO THE	
18	BESS PROJECT	
19		
20	UNDERTAKING - TO RERUN JOHN MAISSAN YEC 33,	349
21	TABLE 3 WITH THE MUNICIPAL TAXES COMPLETELY	
22	REMOVED	
23		
24		
25		

YUB - YEC BESS PROJECT, Volume 3, May 6, 2021

\$	364:21 3(d) [1] - 326:1 3-4 [3] - 320:7, 320:11, 344:1 3-megawatt [1] - 340:22 3.1 [3] - 328:13, 328:14, 351:2 3.2 [2] - 328:14, 351:2 3.4 [2] - 319:21, 335:3 30 [15] - 315:14, 315:17, 316:3, 316:9, 316:11, 320:2, 321:1, 321:3, 321:5, 321:20, 321:25, 323:16, 352:4, 352:24 300 [1] - 362:4 300,000 [1] - 335:20 302 [2] - 363:5, 363:7 304 [1] - 363:8 30th [1] - 360:9 31.7 [5] - 315:13, 321:2, 321:11, 321:13, 322:3 31st [1] - 314:23 322 [1] - 363:9 326 [1] - 364:3 33 [3] - 349:12, 349:18, 364:20 333 [1] - 364:7 336 [1] - 364:11 34 [5] - 336:5, 336:8, 336:19, 336:21, 364:13 34-kV [1] - 336:22 341 [2] - 363:10, 363:21 343 [2] - 363:11, 364:15 349 [2] - 363:12, 364:20 350 [1] - 363:13 352 [1] - 363:14 362 [1] - 362:4	339:3, 354:9 7-megawatt [1] - 331:7 7.2 [5] - 328:23, 332:5, 351:1, 351:4, 354:10 70 [1] - 345:8 72 [2] - 344:20, 344:22 74 [1] - 344:14 78 [1] - 344:22	8	8 [3] - 323:20, 341:5, 342:2 80 [1] - 345:9	9	9:34 [1] - 301:22	A	A.M [2] - 301:22, 361:22 abdicating [1] - 309:16 Abhinav [1] - 301:12 ability [9] - 312:17, 329:13, 329:17, 354:2, 356:11, 357:17, 358:13, 359:1, 362:7 able [8] - 312:23, 313:9, 313:23, 337:4, 337:7, 351:22, 356:6, 357:10 absolutely [3] - 305:5, 306:7, 310:3 acceptable [1] - 333:3 accepted [1] - 311:13 access [1] - 324:17 according [1] - 344:12 account [2] - 315:12, 319:2 accounts...for [1] - 344:20 accrue [1] - 323:20 accurate [2] - 304:21, 362:4 acknowledge [1] - 360:25 activity [1] - 307:24 actual [2] - 346:7, 348:12 add [3] - 306:22, 320:10, 327:14 additional [2] - 343:2, 348:14 adequate [1] - 347:11 adjacent [5] - 312:9, 338:12, 338:13, 338:17, 339:13 ADJOURNED [1] - 361:22 ADJOURNMENT [1] - 341:14 advancing [1] - 305:20 advantage [1] - 357:19 advertising [1] - 314:14 ADVISE [4] - 326:20, 343:6, 364:3, 364:15	advise [1] - 307:13 affect [3] - 346:5, 346:16, 346:21 affirmed [1] - 302:16 Agency [1] - 317:9 ago [1] - 331:24 agree [4] - 308:8, 310:17, 317:15, 317:20 agreed [1] - 308:9 agreement [4] - 309:7, 314:18, 314:21, 324:16 agreements [3] - 305:2, 314:17, 347:6 ahead [2] - 325:2, 350:23 aiming [1] - 320:24 airport [1] - 342:11 airports [3] - 342:13, 342:18, 342:25 AIRPORTS [2] - 343:7, 364:16 Aishihik [1] - 329:19 Alaska [2] - 340:25, 358:9 Alberta [2] - 301:3, 362:8 Alison [1] - 301:10 allow [4] - 304:17, 306:4, 350:4, 350:10 allowed [1] - 309:18 allows [2] - 325:20, 332:12 almost [1] - 303:1 alternative [2] - 326:3, 326:24 alternatives [3] - 326:2, 330:9, 336:2 amended [1] - 360:10 Amicus [1] - 361:5 amount [3] - 307:7, 317:12, 320:6 AN [2] - 333:6, 364:9 analysis [4] - 328:15, 335:6, 343:19, 348:21 Andre [1] - 301:8 Andrew [1] - 302:18 Anne [2] - 301:9, 343:13 annual [3] - 317:2, 335:4, 335:6 annually [1] - 317:6 answer [7] - 302:7, 309:4, 310:11, 326:16, 335:1, 342:3, 345:18 anticipate [1] - 354:24 anticipation [1] - 328:17 apart [1] - 360:19 apologize [2] - 323:9, 323:25 apparent [1] - 334:20 apples [4] - 332:22, 332:25 APPLES [4] - 333:7, 364:9 apples-to-apples [2] - 332:22, 332:25 APPLES-TO-APPLES [2] - 333:7, 364:9 applicable [1] - 305:2 application [13] - 302:25, 303:10, 315:11, 319:21,	324:20, 327:13, 328:13, 335:1, 342:6, 343:25, 351:2, 355:25, 356:20 applied [1] - 352:11 applies [1] - 316:5 apply [2] - 324:9, 348:10 appreciate [3] - 314:16, 350:12, 351:14 appreciated [1] - 351:16 appreciating [1] - 315:7 appreciation [3] - 359:25, 360:1, 360:22 approach [1] - 310:12 approve [1] - 309:23 Arctic [4] - 340:15, 340:22, 359:1, 359:10 ARE [2] - 343:8, 364:17 area [2] - 322:23, 337:24 argue [1] - 346:6 argued [1] - 331:12 arise [1] - 315:4 arrival [1] - 318:19 arriving [1] - 319:2 articulated [1] - 305:12 ascertain [1] - 308:15 aspects [1] - 314:4 assertion [1] - 327:8 assess [4] - 308:21, 309:16, 346:23, 348:12 assessment [8] - 319:6, 323:1, 323:5, 323:8, 327:13, 342:5, 347:18, 347:20 assessments [2] - 319:14, 342:16 associated [2] - 305:14, 325:16 assume [3] - 324:4, 329:18, 336:20 assumed [1] - 316:16 assuming [3] - 304:23, 324:2, 324:4 AT [6] - 301:22, 336:18, 336:19, 361:22, 364:12, 364:13 ATCO [1] - 301:14 attach [1] - 304:18 attached [1] - 314:7 attention [1] - 350:11 attractive [1] - 311:17 attributes [1] - 329:21 available [8] - 312:11, 327:2, 327:6, 333:21, 339:13, 348:2, 361:6, 361:9 aware [1] - 346:20 Ayri [1] - 301:12
1	1 [3] - 323:1, 327:15, 332:1 1.2 [2] - 341:1, 358:9 1.8 [1] - 332:2 1/2 [1] - 328:5 10 [6] - 316:10, 321:23, 354:24, 355:2, 355:4, 358:22 10-year [1] - 354:22 1171 [1] - 301:2 11:29 [1] - 361:22 11th [1] - 359:20 12-megawatt [1] - 332:24 12-MEGAWATT [2] - 333:5, 364:8 12.5 [1] - 332:15 133 [1] - 323:12 13th [1] - 359:16 15 [2] - 327:1, 342:2 16 [2] - 343:25, 344:17 16.5 [2] - 314:5, 315:12 17 [1] - 303:11 18 [4] - 302:25, 303:4, 324:20, 346:3 19 [4] - 302:25, 303:4, 346:7, 346:11 19.985 [1] - 320:7									
2	2 [5] - 323:5, 323:7, 335:8, 352:8, 358:6 20 [2] - 327:9, 336:24 20-year [1] - 323:20 2015 [1] - 341:2 2017 [1] - 341:6 2020 [1] - 317:6 2021 [4] - 300:22, 301:6, 317:7, 362:9 2022 [1] - 314:23 21 [1] - 303:10 216 [1] - 345:21 22 [2] - 305:1, 305:5 223 [1] - 342:1 24-hour-a-day [1] - 329:14 25 [3] - 324:14, 324:17, 330:21 25,000 [1] - 339:23 25-year [1] - 313:17 28.9 [5] - 319:25, 320:6, 320:9, 320:13, 320:20 29 [1] - 303:11 297,000 [1] - 335:5	4	4 [2] - 315:24, 353:8 4.3 [2] - 335:5, 355:25 40 [4] - 324:13, 328:6, 341:5, 348:24 40,000 [1] - 339:22 40-foot [1] - 346:3 41 [1] - 324:12 45 [1] - 323:13 49 [1] - 323:13							
3	3 [15] - 300:21, 301:5, 306:8, 308:5, 315:24, 323:15, 349:12, 349:18, 352:8, 358:6, 358:8, 359:4, 359:8, 363:3,	5	5 [7] - 302:8, 313:24, 315:22, 328:5, 341:18, 352:7, 353:6 50 [2] - 315:23, 353:8							
		6	6 [4] - 300:22, 301:6, 335:20, 362:9 60 [4] - 340:3, 358:1, 358:5, 358:13							
		7	7 [12] - 327:17, 327:21, 328:2, 328:7, 329:6, 329:7, 330:25, 335:13, 335:24,							
						B	B-10 [3] - 341:19, 341:20, 363:21 background [1] - 361:4 balance [1] - 310:2			

YUB - YEC BESS PROJECT, Volume 3, May 6, 2021

<p>ballpark [2] - 327:4, 334:22</p> <p>band [1] - 313:11</p> <p>base [1] - 324:10</p> <p>based [25] - 308:24, 315:20, 316:17, 316:18, 316:20, 318:6, 319:24, 319:25, 320:2, 324:10, 339:9, 347:18, 347:20, 347:24, 348:2, 348:12, 348:22, 348:25, 353:2, 353:10, 353:11, 353:13, 353:17, 353:23, 358:23</p> <p>basic [2] - 353:9, 358:18</p> <p>basis [1] - 348:5</p> <p>batteries [10] - 317:1, 317:18, 318:16, 319:3, 319:23, 320:22, 321:9, 345:17, 358:1, 358:19</p> <p>BATTERY [5] - 300:7, 333:8, 343:7, 364:9, 364:16</p> <p>battery [43] - 312:21, 312:24, 316:12, 316:24, 317:24, 318:3, 318:12, 318:14, 328:16, 329:24, 332:21, 333:1, 334:4, 337:7, 337:14, 338:24, 340:3, 340:15, 342:13, 342:18, 342:25, 344:4, 344:6, 344:10, 344:18, 345:1, 345:6, 345:12, 346:16, 354:8, 354:15, 354:20, 355:1, 355:16, 355:19, 355:21, 355:22, 356:5, 356:8, 356:13, 357:1, 357:11, 357:18</p> <p>behalf [1] - 359:24</p> <p>benchmark [3] - 307:15, 307:24, 332:16</p> <p>benchmarking [3] - 307:1, 308:3, 311:8</p> <p>benchmarks [1] - 353:12</p> <p>benefit [8] - 306:13, 323:19, 325:16, 348:24, 349:14, 355:21, 361:17</p> <p>benefits [8] - 348:18, 355:18, 355:20, 356:17, 356:18, 357:4, 360:21</p> <p>Benefits [1] - 356:21</p> <p>BESS [20] - 300:7, 304:16, 304:18, 312:4, 312:14, 327:13, 327:16, 328:2, 328:22, 329:7, 333:11, 335:25, 336:4, 336:23, 338:16, 342:20, 343:9, 343:19, 364:18</p> <p>best [4] - 347:24, 348:2, 350:6, 362:6</p> <p>better [3] - 310:22, 317:12, 357:2</p> <p>between [7] -</p>	<p>307:25, 321:3, 342:6, 344:22, 345:8, 351:3, 355:16</p> <p>beyond [1] - 315:5</p> <p>bids [2] - 311:13, 315:8</p> <p>big [3] - 331:24, 334:17, 338:15</p> <p>bit [14] - 306:10, 306:24, 312:20, 316:7, 320:17, 320:18, 337:20, 345:11, 348:15, 348:20, 349:9, 349:24, 354:6, 355:7</p> <p>blackstart [1] - 312:20</p> <p>blew [1] - 340:6</p> <p>Bloomberg [2] - 317:1, 317:3</p> <p>blow [1] - 340:7</p> <p>blown [3] - 313:24, 319:7, 340:15</p> <p>BOARD [1] - 300:1</p> <p>board [4] - 305:11, 325:7, 325:13, 347:23</p> <p>Board [29] - 301:8, 301:9, 301:10, 301:10, 301:11, 301:12, 301:12, 304:2, 304:5, 308:7, 308:21, 309:10, 309:15, 309:22, 311:4, 332:9, 339:21, 347:1, 347:18, 349:21, 350:5, 350:25, 352:19, 352:25, 357:25, 359:24, 360:11, 360:16</p> <p>Board's [5] - 304:9, 305:20, 308:17, 309:4, 361:10</p> <p>body [1] - 325:22</p> <p>boldly [1] - 336:20</p> <p>Bonnie [1] - 301:8</p> <p>bookkeeping [1] - 341:19</p> <p>break [2] - 341:11, 341:12</p> <p>breakdown [1] - 344:1</p> <p>bring [3] - 348:10, 350:11, 361:13</p> <p>broad [1] - 348:22</p> <p>brought [1] - 318:21</p> <p>Buchan [1] - 301:7</p> <p>bucks [1] - 313:23</p> <p>build [3] - 338:24, 346:25, 354:6</p> <p>building [1] - 345:25</p> <p>buildings [2] - 334:2</p> <p>built [2] - 309:18, 334:1</p> <p>bunch [1] - 333:20</p> <p>burden [1] - 332:19</p> <p>burning [1] - 357:10</p> <p>business [5] - 330:5, 330:6, 347:22, 348:3, 359:14</p> <p>buy [1] - 332:11</p>	<p>Calgary [1] - 362:8</p> <p>Canada [2] - 342:6, 342:7</p> <p>capacity [23] - 327:14, 327:16, 327:18, 327:19, 327:20, 328:2, 328:18, 328:21, 328:24, 329:7, 329:8, 329:11, 329:16, 330:3, 330:25, 331:21, 332:10, 332:12, 332:24, 351:4, 354:19, 355:9, 355:12</p> <p>CAPACITY [2] - 333:5, 364:8</p> <p>capital [1] - 344:2</p> <p>carbon [1] - 343:20</p> <p>care [1] - 302:12</p> <p>case [10] - 310:20, 310:25, 311:5, 316:11, 330:5, 330:6, 335:10, 348:4, 356:11, 357:14</p> <p>cases [1] - 330:11</p> <p>Cat [2] - 331:12, 331:18</p> <p>categorically [1] - 320:17</p> <p>Centre [1] - 301:1</p> <p>certain [1] - 353:3</p> <p>certainly [6] - 302:13, 305:4, 333:1, 334:7, 343:3, 347:15</p> <p>certainty [1] - 316:15</p> <p>Certificate [1] - 362:1</p> <p>certify [1] - 362:3</p> <p>chain [2] - 318:20, 318:24</p> <p>CHAIR [28] - 301:23, 302:2, 302:13, 303:4, 303:19, 303:24, 304:8, 304:12, 322:10, 336:15, 341:12, 341:15, 341:21, 343:16, 349:4, 349:7, 349:20, 350:8, 350:12, 350:17, 350:20, 350:23, 351:11, 351:17, 359:13, 359:19, 359:23, 363:8</p> <p>Chair [29] - 301:7, 301:8, 302:5, 302:12, 302:18, 303:9, 303:22, 306:4, 306:9, 306:23, 309:9, 310:15, 312:8, 312:16, 313:14, 315:19, 320:11, 321:10, 325:12, 326:12, 332:18, 342:23, 346:14, 350:2, 350:16, 350:18, 351:10, 352:5, 359:12</p> <p>chairman [1] - 337:3</p> <p>Chairman [4] - 302:1, 304:1, 316:23, 359:18</p> <p>change [2] - 327:19, 359:1</p> <p>changes [1] - 329:15</p> <p>changing [1] - 327:5</p> <p>Chapter [2] - 305:1, 305:5</p> <p>check [5] - 302:21, 314:9, 335:17, 336:9,</p>	<p>360:12</p> <p>checklist [1] - 360:12</p> <p>Christopher [1] - 301:14</p> <p>circumstance [1] - 352:12</p> <p>city [6] - 311:21, 333:9, 334:23, 335:10, 335:25, 337:24</p> <p>City [1] - 362:8</p> <p>civil [2] - 338:21, 338:23</p> <p>clarify [2] - 325:13, 349:25</p> <p>clarity [1] - 320:10</p> <p>Class [8] - 315:22, 315:24, 352:7, 352:8, 353:6, 353:8</p> <p>classification [4] - 316:15, 352:11, 352:19, 353:21</p> <p>classifications [1] - 352:7</p> <p>clean [1] - 350:6</p> <p>clear [7] - 305:18, 305:25, 307:23, 319:6, 322:17, 324:24, 344:24</p> <p>clearly [1] - 333:22</p> <p>close [8] - 303:20, 312:5, 326:17, 333:17, 333:19, 334:15, 339:13, 361:21</p> <p>closer [1] - 310:23</p> <p>co [1] - 312:9</p> <p>co-adjacent [1] - 312:9</p> <p>coastal [1] - 327:10</p> <p>cold [4] - 326:5, 326:8, 326:10, 328:15</p> <p>COLD [2] - 326:21, 364:3</p> <p>collection [1] - 309:23</p> <p>Column [1] - 335:6</p> <p>comfort [4] - 311:4, 340:8, 352:22</p> <p>coming [1] - 346:17</p> <p>COMMENCED [1] - 301:22</p> <p>comment [6] - 313:15, 316:20, 329:5, 333:20, 339:7, 348:13</p> <p>comments [1] - 346:19</p> <p>commodity [2] - 346:1, 346:2</p> <p>common [1] - 317:10</p> <p>commonly [1] - 317:14</p> <p>commonplace [1] - 360:18</p> <p>communicating [1] - 348:17</p> <p>communications [1] - 314:13</p> <p>Community [1] - 314:18</p> <p>company [1] - 324:18</p> <p>COMPARABLE [2] - 343:8, 364:17</p> <p>comparable [4] - 307:3, 307:9, 342:19, 358:12</p> <p>compare [3] -</p>	<p>332:12, 355:18, 357:17</p> <p>compared [1] - 359:1</p> <p>comparing [1] - 328:22</p> <p>comparison [5] - 314:3, 332:14, 332:22, 333:1, 355:15</p> <p>COMPARISON [2] - 333:7, 364:9</p> <p>compelling [1] - 348:4</p> <p>competitive [3] - 311:9, 311:13, 311:19</p> <p>complete [2] - 333:14, 362:4</p> <p>COMPLETELY [2] - 349:19, 364:21</p> <p>completely [3] - 307:16, 328:8, 349:13</p> <p>complex [2] - 313:1, 356:25</p> <p>component [1] - 346:11</p> <p>components [1] - 353:14</p> <p>conceivably [1] - 318:25</p> <p>concern [1] - 310:14</p> <p>concerning [1] - 310:5</p> <p>concerns [2] - 310:1, 312:3</p> <p>CONCLUDED [1] - 361:24</p> <p>concludes [1] - 341:9</p> <p>conclusion [1] - 315:18</p> <p>condition [1] - 325:9</p> <p>conditions [4] - 307:13, 314:7, 314:11, 321:1</p> <p>conducted [4] - 313:6, 315:21, 316:2, 333:18</p> <p>confidence [1] - 316:2</p> <p>confident [1] - 353:15</p> <p>confidentiality [1] - 302:22</p> <p>configuration [1] - 331:25</p> <p>configured [1] - 331:15</p> <p>CONFIRM [2] - 336:17, 364:11</p> <p>confirm [7] - 304:2, 330:24, 336:3, 336:7, 336:12, 344:2, 345:13</p> <p>confirmed [1] - 314:25</p> <p>confirming [1] - 342:12</p> <p>congratulations [1] - 360:5</p> <p>connect [2] - 313:11, 336:4</p> <p>connected [1] - 357:12</p> <p>Conservation [1] - 301:17</p> <p>conservatively [1] - 348:19</p> <p>consider [3] - 317:16, 337:11, 359:6</p> <p>considerable [1] - 319:18</p> <p>consideration [2] -</p>
C				
<p>calculation [2] - 324:21, 335:22</p> <p>calculations [1] - 318:21</p> <p>calculator [1] - 335:18</p>	<p>changes [1] - 329:15</p> <p>changing [1] - 327:5</p> <p>Chapter [2] - 305:1, 305:5</p> <p>check [5] - 302:21, 314:9, 335:17, 336:9,</p>	<p>change [2] - 327:19, 359:1</p> <p>changes [1] - 329:15</p> <p>changing [1] - 327:5</p> <p>Chapter [2] - 305:1, 305:5</p> <p>check [5] - 302:21, 314:9, 335:17, 336:9,</p>	<p>changes [1] - 329:15</p> <p>changing [1] - 327:5</p> <p>Chapter [2] - 305:1, 305:5</p> <p>check [5] - 302:21, 314:9, 335:17, 336:9,</p>	

YUB - YEC BESS PROJECT, Volume 3, May 6, 2021

<p>310:7 considerations [2] - 305:6, 353:11 considered [2] - 313:4 consistent [2] - 305:4, 327:25 constraint [2] - 355:9, 355:13 constraints [1] - 360:19 construction [3] - 340:1, 345:25, 347:6 constructions [1] - 322:24 consult [1] - 337:12 consultant [1] - 307:12 Consumers' [1] - 301:15 container [2] - 358:20, 358:22 containerized [2] - 345:24, 346:5 containers [5] - 346:2, 346:3, 346:7, 346:8, 358:22 contemplated [1] - 337:17 context [1] - 340:11 contingencies [1] - 315:4 contingency [1] - 319:25 continuously [1] - 329:3 contractor [2] - 345:2, 345:3 contracts [1] - 347:6 contribution [6] - 314:5, 314:14, 324:7, 324:13, 325:1, 325:3 contributions [2] - 361:12, 361:15 control [1] - 356:23 convenient [1] - 305:16 conversion [2] - 344:5, 344:7 cooling [1] - 358:21 copy [2] - 303:11, 361:8 Corporation [6] - 301:13, 302:16, 314:20, 314:22, 325:5, 363:6 correct [19] - 305:3, 308:14, 315:14, 315:15, 323:17, 323:21, 331:2, 336:6, 344:15, 351:6, 351:7, 354:9, 354:12, 355:5, 355:10, 358:3, 359:18, 359:21, 359:22 correction [3] - 302:10, 303:7, 303:9 correctly [2] - 339:2, 352:8 COST [2] - 333:5, 364:7 cost [30] - 311:24, 315:6, 315:11, 315:13, 315:22, 316:25, 317:2, 317:18, 318:22, 320:21, 321:14, 323:16, 324:2, 324:4, 324:10, 331:4, 331:6, 331:11, 332:10,</p>	<p>332:24, 334:23, 335:4, 335:13, 344:14, 345:6, 345:8, 346:5, 346:8, 353:16, 356:8 costs [34] - 309:19, 309:20, 309:24, 310:13, 315:21, 316:14, 317:20, 318:1, 320:12, 321:8, 321:24, 322:8, 324:5, 324:22, 330:8, 332:11, 335:7, 344:2, 344:8, 344:13, 344:21, 344:23, 345:9, 345:12, 346:16, 346:22, 347:3, 347:7, 348:10, 348:12, 349:1, 353:4, 353:11 Counsel [2] - 301:10, 301:10 counsel [2] - 350:5, 360:2 country [1] - 338:22 couple [6] - 302:5, 334:25, 351:21, 357:7, 358:3, 358:4 course [3] - 310:1, 311:7, 311:20 Court [3] - 301:19, 362:14, 362:18 court [1] - 361:9 covered [2] - 325:4, 344:3 COVID [3] - 318:19, 345:15, 360:19 create [4] - 305:13, 305:17, 306:12, 325:15 created [1] - 320:4 creates [2] - 356:8, 356:14 crews [1] - 307:20 criteria [9] - 304:15, 308:19, 327:12, 327:22, 339:10, 354:5, 354:18, 355:17, 355:21 criterion [5] - 305:7, 305:9, 306:2, 329:13, 330:3 CROSS [2] - 350:24, 363:13 cross [1] - 332:13 Crown [8] - 310:23, 337:21, 338:1, 338:3, 338:4, 338:8, 338:11, 338:16 CRR [2] - 301:20, 362:13 CSR(A) [4] - 301:19, 301:20, 362:13, 362:17 Cullingham [1] - 301:14 Cultural [1] - 301:1 curious [1] - 349:13 current [5] - 316:1, 317:4, 321:1, 321:10, 355:11 customer [2] - 339:23, 357:2 customers [1] - 330:1</p>	<p>date [3] - 317:4, 317:24 Dated [1] - 362:8 dated [1] - 306:15 days [2] - 309:13, 345:4 deadline [5] - 315:5, 359:17, 359:20, 360:9, 360:10 deal [3] - 302:3, 332:4, 360:13 Deana [1] - 301:11 debenture [1] - 324:25 December [1] - 314:23 decision [4] - 331:14, 334:17, 339:18, 347:5 decisions [2] - 347:23, 357:25 decline [1] - 317:2 declining [1] - 317:1 decreasing [1] - 345:12 defined [2] - 353:5, 353:10 definitely [2] - 317:21, 357:19 delay [1] - 319:18 delays [2] - 318:20, 318:24 deliberately [1] - 305:13 demand [4] - 317:16, 317:17, 317:19, 318:25 deny [1] - 309:23 dependable [14] - 327:18, 327:19, 327:20, 328:2, 328:18, 328:21, 329:6, 329:7, 329:11, 329:16, 330:3, 330:25, 351:4, 355:12 dependent [1] - 316:8 deployed [1] - 317:14 depth [1] - 340:17 derived [1] - 324:22 described [2] - 345:7, 345:23 describing [1] - 304:14 design [2] - 343:2, 358:24 detail [1] - 314:15 etailed [2] - 337:5, 344:9 details [1] - 353:4 determine [2] - 313:1, 337:6 develop [2] - 318:13, 340:18 developed [2] - 308:1, 308:11 developer [1] - 334:19 developing [1] - 337:10 Development [3] - 314:20, 314:22, 325:4 development [2] - 318:16, 339:4 diesel [22] - 329:8, 329:22, 330:24, 332:15, 332:20, 332:25, 339:6, 354:10, 354:15,</p>	<p>354:20, 355:2, 355:16, 355:19, 355:22, 356:9, 356:12, 357:5, 357:8, 357:9, 357:16, 357:20 DIESEL [2] - 333:6, 364:8 diesels [3] - 326:15, 328:21, 328:22 difference [3] - 345:20, 351:3, 354:14 different [7] - 310:9, 329:9, 329:21, 337:17, 339:9, 357:15, 359:7 diplomatic [1] - 339:1 direct [1] - 356:8 directing [1] - 325:23 direction [2] - 308:13, 335:2 directions [1] - 305:7 directors [3] - 305:11, 325:7, 325:13 disadvantages [1] - 311:20 disapproval [1] - 305:20 discharge [2] - 329:22, 329:24 discharged [1] - 328:10 discharging [1] - 356:14 discrepancy [1] - 344:16 discussed [1] - 342:19 DISCUSSED [2] - 343:8, 364:17 discussing [1] - 322:4 DISCUSSION [1] - 343:15 discussion [1] - 322:22 discussions [2] - 342:10, 353:13 distance [2] - 312:13, 313:2 DISTRIBUTION [2] - 336:18, 364:12 distribution [4] - 307:20, 336:4, 336:7 divides [1] - 320:16 documents [2] - 332:11, 347:5 dollars [2] - 313:18, 346:9 done [10] - 307:15, 307:17, 317:7, 320:3, 323:2, 324:5, 328:15, 348:17, 353:9 Donna [3] - 301:19, 362:16, 362:17 door [2] - 333:20, 333:25 double [1] - 360:12 dove [1] - 340:5 down [5] - 305:9, 310:18, 315:4, 358:4, 362:5 downgraded [1] - 348:19 dozen [1] - 331:24 driven [2] - 306:20, 339:17 driver [2] - 330:17, 334:8 drivers [1] - 334:17</p>	<p>driving [3] - 305:6, 317:25, 343:1 dropping [1] - 316:11 due [1] - 317:11 .dumps [1] - 322:25 duration [1] - 328:18 during [10] - 326:5, 326:8, 326:10, 328:15, 329:17, 330:2, 331:17, 345:15, 356:11, 356:15 DURING [2] - 326:20, 364:3 Dwayne [1] - 301:12 Dün [3] - 301:1, 334:10, 334:14 Dün's [1] - 334:17</p>
E				
<p>early [1] - 315:8 easy [1] - 310:24 economic [8] - 305:13, 305:17, 305:21, 305:22, 306:13, 325:15, 335:9, 347:11 economical [1] - 310:8 economics [6] - 313:22, 343:19, 344:19, 348:22, 349:1, 355:24 edge [2] - 339:24, 340:9 effect [1] - 327:5 effectively [2] - 308:8, 334:10 either [3] - 302:2, 337:24, 350:4 Electric [1] - 301:14 electrical [1] - 339:23 electrically [2] - 338:17, 338:18 electricity [3] - 343:20, 356:3, 356:6 electronic [1] - 361:7 element [1] - 305:17 elements [2] - 320:11, 320:13 eliminate [1] - 311:24 eliminating [1] - 310:19 elsewhere [2] - 307:10, 360:19 end [2] - 321:24, 338:25 energize [4] - 312:17, 312:25, 313:9, 337:4 energy [2] - 328:6, 355:13 ENERGY [3] - 300:7, 326:21, 364:4 Energy [5] - 301:13, 302:16, 317:9, 343:22, 363:6 engagement [1] - 333:15 engineer [3] - 321:19, 352:10, 353:20 engineering [17] - 315:20, 315:24, 316:1, 316:5, 316:14, 320:1, 320:3, 344:8,</p>				
D				
<p>data [2] - 307:3, 348:2</p>				

YUB - YEC BESS PROJECT, Volume 3, May 6, 2021

<p>344:10, 344:13, 352:6, 352:13, 352:23, 353:2, 353:3, 353:10, 353:16 enhance [1] - 361:16 ENOUGH [2] - 326:22, 364:4 enquire [1] - 305:24 entered [1] - 341:18 environmental [3] - 323:1, 323:5, 323:8 EPC [1] - 345:2 equipment [1] - 336:7 EQUIPMENT [2] - 336:18, 364:12 equivalent [1] - 307:4 escalated [1] - 335:8 essence [2] - 308:16, 309:6 essentially [4] - 308:7, 311:13, 315:11, 354:23 establish [2] - 330:3, 338:4 estate [2] - 307:12, 307:14 estimate [12] - 315:21, 316:3, 320:18, 321:11, 321:14, 321:25, 322:6, 353:7, 353:8 estimated [8] - 315:11, 315:13, 319:22, 344:1, 347:2, 348:18, 349:2 estimates [4] - 315:6, 315:22, 316:15, 319:3 estimating [1] - 307:9 et cetera [1] - 314:12 evaluated [1] - 319:13 evening [1] - 327:24 event [4] - 329:18, 330:2, 330:7, 356:12 Events [1] - 361:1 eventually [1] - 330:21 evidence [2] - 309:21, 316:17 exactly [2] - 316:14, 337:6 EXAMINES [4] - 350:24, 352:2, 363:13, 363:14 example [7] - 313:7, 316:10, 317:1, 317:3, 326:18, 329:21, 355:19 examples [3] - 342:21, 358:12, 359:2 exceed [1] - 321:24 exceeds [1] - 317:19 exception [1] - 320:12 exceptional [1] - 345:15 exempt [1] - 343:20 exercise [3] - 307:1, 307:21, 311:8 Exhibit [1] - 341:19 EXHIBIT [2] - 341:20, 363:21 EXHIBITS [1] - 363:19 expect [2] - 307:6,</p>	<p>322:7 expectation [1] - 359:6 expected [1] - 321:14 expecting [2] - 321:13, 348:7 expenditure [2] - 309:22, 314:12 experience [4] - 318:3, 346:22, 353:23, 358:16 experienced [1] - 359:8 expires [1] - 314:23 explained [2] - 337:3, 353:2 explore [2] - 318:16, 327:12 exploring [1] - 336:2 express [1] - 360:1 expressed [1] - 349:22 extend [2] - 359:25, 360:22 extended [1] - 315:1 extent [2] - 307:2, 308:21 extra [1] - 335:24 eyes [3] - 326:25, 327:1, 327:2</p>	<p>financial [7] - 311:17, 322:21, 323:18, 323:19, 324:6, 325:1, 349:14 fine [1] - 303:21 fires [1] - 340:16 firm [3] - 329:25, 347:1, 351:1 firmly [1] - 353:5 first [7] - 304:11, 315:16, 344:11, 352:9, 354:11, 354:17, 360:15 First [24] - 304:20, 304:24, 304:25, 305:14, 305:21, 306:1, 306:14, 307:2, 307:6, 307:12, 309:7, 310:6, 310:8, 310:18, 311:14, 312:1, 318:13, 318:17, 324:14, 324:17, 324:21, 325:16, 334:9, 337:25 five [3] - 318:4, 318:7, 328:8 flow [1] - 314:19 flows [1] - 314:20 fluid [1] - 316:18 fly [2] - 324:11, 335:18 focus [1] - 355:17 focusing [1] - 330:16 follow [6] - 304:4, 324:23, 325:6, 340:5, 343:11, 350:19 follow-up [2] - 324:23, 325:6 following [2] - 333:9, 343:13 follows [1] - 341:24 Footnote [1] - 303:11 footnotes [1] - 335:7 FOR [2] - 333:5, 364:8 forecasts [1] - 317:10 foregoing [1] - 362:3 forgot [1] - 349:6 form [1] - 308:16 format [1] - 334:9 format [1] - 361:7 formula [2] - 324:9, 324:15 FORTIN [10] - 322:14, 326:23, 333:9, 336:13, 336:20, 341:9, 349:6, 349:8, 363:9, 363:12 Fortin [24] - 301:8, 322:12, 323:4, 324:10, 328:5, 328:12, 330:5, 331:10, 331:22, 332:7, 333:13, 334:25, 335:17, 335:23, 336:9, 337:2, 337:23, 338:21, 349:7, 354:4, 354:14, 355:15, 357:23, 358:2 Fortin's [1] - 354:1 fortunate [2] - 311:1, 311:6 four [3] - 328:21, 328:22, 331:8 frank [1] - 310:5 frequency [2] - 354:25, 356:22 front [1] - 326:13</p>	<p>Front [1] - 301:2 fuel [5] - 303:15, 303:18, 329:23, 356:14, 357:10 full [1] - 319:7 fully [2] - 319:12, 328:10 functionality [1] - 329:12 funding [3] - 314:16, 314:21, 315:2 furthest [2] - 312:12, 312:13 future [4] - 309:16, 339:6, 348:8, 360:21</p>	<p>302:18, 303:5, 304:22, 305:4, 305:10, 306:4, 306:9, 308:14, 310:15, 315:15, 324:19, 325:12, 326:8, 326:12, 328:12, 331:10, 332:7, 333:13, 335:9, 336:9, 337:9, 338:11, 338:13, 338:18, 339:8, 346:6, 346:18, 347:14, 349:16, 363:5 hand [1] - 317:17 handle [1] - 326:2 hard [3] - 303:11, 310:21, 359:25 Hatch [6] - 315:21, 316:20, 318:9, 320:17, 320:19, 342:21 Hatch's [1] - 318:3 head [1] - 336:16 heard [3] - 318:18, 342:21, 351:21 hearing [7] - 304:6, 360:1, 360:8, 360:16, 360:24, 361:16, 361:21 hearings [1] - 360:21 heat [1] - 330:1 heating [1] - 358:21 Held [1] - 300:23 held [2] - 337:25, 360:16 help [3] - 351:22, 352:25, 355:7 helped [1] - 361:16 helpful [1] - 314:2 helps [1] - 357:2 hence [1] - 310:9 hereby [1] - 362:3 hesitate [1] - 324:11 high [4] - 304:17, 331:3, 352:16, 352:19 high-voltage [1] - 304:17 higher [1] - 321:16 highest [2] - 353:6, 359:4 highlight [1] - 335:3 highway [1] - 322:24 hits [1] - 349:3 hold [4] - 315:2, 331:5, 348:22, 356:4 homes [1] - 330:1 hook [1] - 312:13 hook-up [1] - 312:13 hopefully [2] - 348:17, 351:21 hour [2] - 303:17, 328:7 hours [8] - 303:14, 328:5, 328:6, 328:7, 328:8, 329:2, 341:5, 354:15 hundred [1] - 329:2 HVAC [1] - 318:6 Hydro [1] - 318:15 Hydro-Quebec [1] - 318:15</p>
		F		
		G		
		H		
		I		

YUB - YEC BESS PROJECT, Volume 3, May 6, 2021

<p>344:19, 346:24 impacts [1] - 338:21 implications [1] - 305:22 implies [1] - 321:20 imply [1] - 305:20 important [2] - 330:7, 332:9 imposed [1] - 360:20 improve [2] - 356:18, 357:1 IN [2] - 343:9, 364:17 include [1] - 356:22 included [1] - 335:5 includes [2] - 319:25, 335:10 including [3] - 309:19, 334:2, 347:7 incomplete [1] - 347:24 increase [2] - 317:17, 318:25 increases [1] - 317:11 increasing [1] - 346:4 incurred [1] - 332:21 indefinitely [1] - 329:2 indicate [1] - 351:2 indicated [3] - 311:7, 339:21, 354:8 indicating [2] - 316:25, 323:18 indication [1] - 319:17 indifferent [1] - 308:25 Indigenous [3] - 323:24, 324:7, 325:1 indulge [3] - 327:3, 328:20, 337:19 indulgence [1] - 351:24 industrial [2] - 307:19, 334:6 Industrial [1] - 307:19 industry [5] - 316:20, 316:24, 317:12, 317:24, 345:14 infer [1] - 309:4 inflation [1] - 335:20 information [13] - 331:11, 332:15, 336:11, 343:4, 347:12, 347:19, 347:21, 347:24, 347:25, 348:2, 353:12, 353:17, 361:15 informed [1] - 342:9 infrastructure [1] - 337:10 inside [1] - 335:25 instruction [1] - 305:11 instructions [1] - 308:7 instrument [1] - 324:6 insulated [1] - 358:20 intend [1] - 350:10 intended [1] - 311:9 intent [6] - 305:5, 306:12, 306:19, 309:8, 325:23, 339:11 intents [1] - 314:25 interest [1] - 324:18</p>	<p>interest's [1] - 343:18 interests [2] - 305:21, 310:2 internal [1] - 325:23 internalized [1] - 334:7 International [1] - 317:9 interpret [1] - 323:17 interpretation [1] - 306:2 interveners [4] - 350:5, 361:11, 361:13, 361:16 Inuvik [1] - 318:11 investment [1] - 303:3 investments [1] - 324:21 involve [1] - 304:24 involved [1] - 323:23 involvement [1] - 323:24 ion [2] - 340:15, 358:19 IR [5] - 323:12, 323:14, 348:23, 357:15 IRENA [1] - 317:9 issue [7] - 317:11, 318:20, 334:5, 351:1, 352:3, 352:4, 357:24 issues [1] - 351:21 item [1] - 322:20 items [2] - 322:25, 344:2 itself [4] - 316:13, 324:18, 342:12, 344:22</p> <p style="text-align: center;">J</p> <p>Jaimie [1] - 301:10 job [1] - 348:17 John [5] - 301:13, 301:18, 323:12, 349:12, 350:21 JOHN [2] - 349:17, 364:20 John's [1] - 323:13 June [2] - 323:7, 360:9 jurisdiction [1] - 309:22 Justice [1] - 360:10 justifies [1] - 330:14</p> <p style="text-align: center;">K</p> <p>KDFN [3] - 311:1, 311:14, 311:16 keep [6] - 313:18, 329:25, 330:1, 330:5, 330:7, 341:19 keeping [1] - 325:25 key [2] - 302:24, 312:23 kilometre [1] - 313:21 kilometres [1] - 313:24 kilowatt [1] - 303:14 kind [4] - 315:4, 326:23, 350:13, 356:16 kindly [2] - 303:10, 322:18 kinds [2] - 322:25, 340:7</p>	<p>King [3] - 301:8, 341:17, 341:21 KING [5] - 341:22, 341:23, 343:10, 343:13, 363:10 knocking [1] - 333:20 knowledge [2] - 340:14, 341:2 known [4] - 316:24, 317:21, 324:22, 339:1 knows [1] - 315:3 Kotzebue [1] - 340:25 Kulan [1] - 307:19 kV [3] - 336:5, 336:8, 336:21 KV [2] - 336:19, 364:13 Kwanlin [4] - 301:1, 334:10, 334:14, 334:17</p> <p style="text-align: center;">L</p> <p>laid [1] - 323:16 land [43] - 304:20, 305:16, 306:2, 306:15, 306:17, 307:3, 307:6, 307:9, 307:10, 307:18, 307:19, 307:22, 307:25, 308:19, 308:22, 309:1, 310:6, 310:8, 310:13, 310:18, 310:21, 310:23, 311:2, 311:11, 312:1, 325:8, 325:11, 325:14, 325:24, 334:1, 337:11, 337:21, 337:22, 337:25, 338:1, 338:3, 338:4, 338:8, 338:11, 338:16, 339:12, 339:13 Landry [6] - 301:13, 301:24, 350:1, 351:19, 359:13, 360:2 LANDRY [10] - 301:25, 302:5, 303:6, 303:22, 350:2, 350:9, 351:20, 352:2, 359:11, 363:14 Landry's [1] - 349:23 large [6] - 311:25, 316:13, 340:25, 341:3, 342:8 largely [1] - 311:16 larger [1] - 358:25 largest [2] - 340:20, 340:21 LAST [2] - 326:21, 364:4 last [10] - 302:7, 309:12, 318:19, 326:5, 326:15, 327:9, 345:4, 345:19, 346:17, 347:2 lead [1] - 352:21 leading [2] - 339:24, 340:9 leads [1] - 304:11 learned [1] - 333:22 lease [13] - 305:16, 306:15, 306:17, 306:25, 307:4, 307:18, 309:20, 313:17, 313:24, 325:19, 334:12, 347:7</p>	<p>least [2] - 304:25, 311:24 leave [1] - 329:22 led [2] - 305:9, 315:17 left [1] - 334:13 Lemke [1] - 301:11 length [1] - 313:8 lent [1] - 360:3 less [2] - 318:7, 324:12 lessor [1] - 334:18 level [14] - 315:20, 316:1, 320:1, 320:3, 331:3, 349:1, 352:16, 352:20, 352:22, 353:2, 353:6, 353:7, 353:16 levelized [2] - 332:10, 332:24 LEVELIZED [2] - 333:4, 364:7 life [3] - 334:22, 335:11, 335:13 lifecycle [2] - 330:6, 335:6 light [4] - 312:3, 320:24, 321:7, 331:17 lights [1] - 330:2 likely [1] - 321:15 likewise [1] - 361:4 limit [2] - 310:18, 336:1 limitation [1] - 317:25 limiting [1] - 310:5 limits [4] - 311:21, 313:7, 314:8, 337:24 line [13] - 305:19, 312:10, 312:25, 313:10, 314:24, 334:3, 336:22, 336:25, 337:14, 337:19, 338:7, 342:2, 344:2 linear [1] - 337:10 lines [2] - 312:17, 337:5 link [1] - 312:5 list [2] - 339:25, 340:22 listed [2] - 319:21, 357:4 listings [1] - 307:14 literally [2] - 311:2, 346:8 lithium [2] - 340:15, 358:19 live [1] - 333:19 lives [1] - 333:25 LNG [1] - 343:23 load [8] - 327:25, 328:15, 329:14, 329:15, 329:25, 351:3, 356:23 load-loss [1] - 356:23 load-shedding [1] - 356:23 loads [1] - 329:17 local [3] - 339:4, 339:10, 361:1 locate [2] - 325:24, 339:12 located [5] - 312:4, 312:14, 334:14, 335:25, 338:16 location [4] - 326:4, 334:24, 341:25, 342:5 locations [2] -</p>	<p>342:17, 342:18 LOCATIONS [2] - 343:6, 364:15 look [10] - 306:5, 310:20, 313:19, 323:12, 324:12, 330:8, 339:8, 342:24, 348:7, 354:18 looked [3] - 307:14, 313:3, 325:19 looking [6] - 313:22, 318:13, 322:18, 326:23, 335:21, 354:20 Lorelee [3] - 301:20, 362:12, 362:13 lose [1] - 328:7 loss [2] - 329:18, 356:23 low [5] - 336:10, 338:22, 342:15, 343:1 lower [1] - 321:16</p> <p style="text-align: center;">M</p> <p>Madam [1] - 342:23 madam [2] - 352:6, 353:19 main [4] - 310:1, 313:8, 330:17, 357:8 MAISSAN [7] - 349:17, 350:18, 350:21, 350:24, 351:9, 363:13, 364:20 Maissan [9] - 301:18, 303:9, 303:20, 323:12, 349:12, 350:17, 350:20, 350:21, 351:11 Maissan's [1] - 323:13 major [2] - 345:20, 353:14 management [3] - 325:15, 325:18, 347:23 mandate [3] - 305:23, 325:13, 325:18 mandated [2] - 325:7, 325:15 map [1] - 310:21 marching [3] - 308:17, 325:25, 333:10 margin [1] - 321:23 marked [1] - 337:21 market [9] - 307:5, 307:9, 307:13, 307:23, 308:4, 308:24, 310:12, 316:12, 319:20 market-based [1] - 308:24 match [1] - 324:15 matching [1] - 327:2 material [2] - 322:19, 346:13 materially [1] - 346:21 math [8] - 313:15, 313:25, 314:4, 324:11, 324:19, 335:15, 335:17, 335:18 mathematician [1] - 321:19 matters [3] - 302:3, 302:6, 303:23 MCMAHON [1] -</p>
---	---	---	--	--

YUB - YEC BESS PROJECT, Volume 3, May 6, 2021

<p>351:13 McMahon [2] - 301:15, 351:12 mean [15] - 306:10, 306:16, 309:2, 309:25, 317:6, 318:9, 319:5, 320:21, 321:4, 329:9, 339:8, 346:8, 350:7, 353:1, 355:1 means [2] - 325:11, 354:13 meet [8] - 326:11, 326:15, 329:14, 329:25, 331:1, 333:18, 336:25, 355:20 MEET [2] - 326:22, 364:5 meeting [1] - 351:1 meetings [1] - 333:18 megawatt [16] - 303:17, 328:2, 328:6, 328:7, 329:6, 329:7, 330:25, 332:1, 332:5, 332:15, 341:5, 354:9, 354:10, 358:6, 359:4, 359:8 megawatts [14] - 327:17, 327:21, 328:7, 328:23, 332:2, 341:1, 341:5, 351:1, 351:4, 358:6, 358:8, 358:9, 358:15, 359:5 Member [2] - 301:8, 301:9 members [1] - 360:4 mentioned [4] - 318:4, 319:11, 358:2, 358:4 met [1] - 351:5 metrics [1] - 332:9 microgrid [1] - 318:11 mid [1] - 321:2 MIDDLE [3] - 343:17, 349:5, 363:11 Middler [2] - 301:9, 348:13 midpoint [2] - 322:1, 322:7 might [7] - 311:10, 313:23, 322:21, 331:20, 331:21, 338:23, 351:22 miles [1] - 336:24 military [1] - 322:24 million [26] - 313:18, 314:5, 315:12, 315:13, 319:22, 319:25, 320:6, 320:7, 320:13, 320:20, 320:23, 321:2, 321:6, 321:11, 321:13, 324:5, 324:12, 327:1, 327:2, 330:21, 335:13, 335:20, 335:24, 339:3, 346:7, 346:11 MILOJEVIC [40] - 302:15, 312:16, 312:19, 315:19, 316:7, 316:19, 320:10, 320:16, 321:10, 322:5, 323:4, 323:21, 327:17, 327:22, 328:4, 328:10, 328:23, 329:1, 329:10, 331:2, 331:6, 337:2, 340:10,</p>	<p>342:23, 343:12, 343:21, 344:6, 344:15, 344:24, 351:7, 352:14, 352:16, 354:12, 354:23, 355:5, 355:11, 355:14, 355:23, 357:7, 363:5 Milojevic [4] - 340:13, 352:3, 353:1, 354:2 mind [3] - 313:19, 330:5, 330:8 Mine [2] - 318:10, 340:23 mine [2] - 318:11, 331:19 Minister [6] - 308:8, 308:12, 309:10, 326:1, 333:10, 360:10 Minto [1] - 331:18 minus [13] - 315:13, 315:17, 315:23, 316:2, 316:9, 316:10, 320:25, 321:3, 321:5, 321:11, 321:20, 352:4, 352:24 minutes [1] - 341:13 missed [2] - 320:5, 322:21 mitigate [1] - 310:13 mitigations [1] - 347:5 modules [1] - 358:19 Mollard [8] - 303:6, 306:22, 310:11, 311:7, 324:3, 334:21, 348:13, 355:10 MOLLARD [29] - 302:15, 303:8, 306:23, 307:11, 308:9, 308:20, 309:8, 309:15, 310:3, 312:7, 313:14, 314:2, 314:11, 324:9, 325:3, 330:4, 330:19, 331:22, 334:25, 335:16, 335:22, 336:6, 337:23, 338:6, 338:12, 338:19, 343:24, 348:15, 363:5 moment [2] - 351:18, 355:8 money [4] - 314:10, 314:19, 314:20, 327:1 months [3] - 345:15, 345:19, 346:25 morning [4] - 301:23, 322:16, 327:24, 339:20 most [4] - 330:9, 339:25, 347:3, 357:18 moving [1] - 327:10 multiple [2] - 314:17, 344:25 municipal [4] - 334:23, 335:12, 343:22, 349:12 MUNICIPAL [2] - 349:18, 364:21</p>	<p>354:11, 354:18, 354:22, 354:23, 355:11, 355:16, 355:20, 356:12, 357:8, 364:5 naively [1] - 305:9 naivety [1] - 321:18 narrow [1] - 313:11 Nation [13] - 304:24, 306:1, 307:6, 307:12, 309:7, 310:6, 310:8, 310:18, 312:1, 318:13, 324:14, 324:17, 324:21 Nations [1] - 304:21, 304:25, 305:14, 305:21, 306:14, 307:2, 311:14, 318:17, 325:16, 334:9, 337:25 nature [3] - 316:8, 342:14, 360:24 NAV [2] - 342:6, 347:7 near [3] - 342:13, 342:18, 342:25 NEAR [2] - 343:7, 364:16 necessarily [2] - 346:20, 358:25 need [6] - 315:2, 327:11, 329:17, 338:2, 338:4, 341:25 needing [1] - 329:23 negative [1] - 321:22 negotiating [2] - 310:12, 313:16 neighbours [2] - 312:3, 312:9 nervous [1] - 322:15 net [5] - 313:18, 323:18, 324:10, 324:18, 348:10 never [1] - 331:13 new [3] - 330:24, 331:1, 334:1 newer [1] - 339:22 next [3] - 323:9, 333:25, 336:21 nice [2] - 332:22, 332:25 night [1] - 351:3 non [5] - 303:15, 303:18, 307:6, 310:8, 356:17 non-First [2] - 307:6, 310:8 non-fuel [2] - 303:15, 303:18 non-quantifiable [1] - 356:17 normal [1] - 310:16 north [5] - 340:3, 358:1, 358:4, 358:9, 358:13 northern [2] - 318:3, 341:8 Northern [1] - 318:14 Northwest [1] - 318:12 note [4] - 345:17, 345:19, 358:4, 360:14 notes [1] - 362:6 nothing [1] - 350:16 noticed [1] - 332:17 noting [1] - 344:16 novel [1] - 360:23 number [10] - 313:19, 326:17, 330:21, 332:6,</p>	<p>332:10, 333:18, 339:9, 339:16, 339:25, 356:16 Number [1] - 327:15 numbers [8] - 313:16, 320:19, 326:13, 327:1, 332:18, 332:19, 347:2, 348:23 Nunavut [1] - 318:16</p>	<p>OPERATING [2] - 336:19, 364:13 operating [17] - 327:20, 328:2, 328:17, 328:24, 330:12, 335:6, 336:8, 340:21, 340:23, 341:1, 341:4, 341:6, 356:2, 356:5, 358:23, 359:9 operation [6] - 331:3, 340:4, 358:5, 359:6, 359:7, 359:8 opinion [4] - 353:19, 358:11, 358:17, 359:3 opportunities [4] - 305:14, 305:21, 306:13, 325:16 opportunity [4] - 305:17, 348:11, 349:23, 349:25 opposed [1] - 337:13 opposition [3] - 333:23, 334:19, 339:10 option [2] - 312:8, 331:15 options [5] - 310:6, 310:19, 311:21, 332:13, 353:7 or... [1] - 337:22 order [2] - 339:21, 361:8 orders [3] - 308:17, 326:1, 333:10 otherwise [1] - 321:4 outage [1] - 312:22 outages [1] - 357:3 outcome [1] - 309:6 outlined [3] - 324:19, 353:17, 356:20 output [1] - 328:6 outset [1] - 335:4 outside [2] - 307:10, 337:24 outstanding [4] - 344:3, 347:9, 350:16, 359:20 overall [3] - 321:8, 325:18, 326:14 overnight [2] - 327:25, 356:15 overrun [1] - 323:16 own [2] - 301:18, 347:22 owner's [1] - 320:12</p>
O				
<p>O&M [2] - 303:15, 303:18 objection [1] - 339:4 objective [1] - 316:17 obligations [1] - 305:1 obliged [1] - 305:23 observations [1] - 345:16 observed [1] - 347:15 observing [1] - 345:14 obviously [1] - 357:24 occur [2] - 317:22, 327:23 occurrence [3] - 316:24, 317:11, 317:22 OF [6] - 333:5, 343:6, 364:7, 364:15 OFF [1] - 343:15 offer [9] - 311:17, 313:14, 314:2, 330:4, 332:8, 334:10, 334:13, 335:2, 348:15 offered [1] - 339:25 offers [1] - 334:9 Official [3] - 301:19, 362:14, 362:18 often [5] - 315:22, 315:24, 322:16, 354:19, 354:21 once [5] - 324:22, 330:23, 354:24, 355:2, 355:3 one [34] - 302:10, 304:16, 304:19, 304:20, 304:24, 308:19, 309:25, 311:18, 311:20, 312:22, 317:5, 317:17, 318:18, 323:15, 325:19, 332:8, 332:17, 333:24, 334:14, 334:16, 339:10, 339:16, 340:23, 341:24, 348:23, 349:6, 350:6, 350:18, 357:8, 358:5, 358:8, 358:9, 358:22, 359:4 one-in-10-year [1] - 330:7 ones [1] - 323:22 ongoing [1] - 340:18 online [3] - 330:1, 357:10, 361:9 Ontario [1] - 341:4 open [2] - 317:10, 337:21 operate [8] - 328:3, 328:25, 329:3, 354:15, 354:16, 354:21, 358:13, 359:1</p>	<p>P</p>			
<p>N</p>	<p>N-1 [25] - 326:11, 326:16, 326:22, 327:12, 327:22, 329:13, 329:18, 330:2, 330:6, 330:14, 330:16, 330:17, 330:22, 331:1, 354:4,</p>	<p>package [1] - 348:2 pad [1] - 338:24 page [11] - 302:25, 303:4, 303:10, 303:11, 323:13, 323:15, 324:20, 342:1, 343:25, 344:17, 345:21 pages [1] - 362:4 paid [1] - 335:24 pandemic [2] - 319:6, 360:20 PANEL [14] - 304:12, 322:14, 341:23, 343:17, 349:8, 350:24, 352:2, 363:8, 363:9, 363:10, 363:11, 363:12, 363:13, 363:14 panel [7] - 302:9, 302:11, 322:16,</p>		

YUB - YEC BESS PROJECT, Volume 3, May 6, 2021

<p>349:9, 349:20, 353:25, 360:4 paper [1] - 332:4 paragraph [2] - 306:8, 308:5 paraphrasing [1] - 345:25 parcel [2] - 334:1, 339:13 parcels [3] - 311:2, 311:15, 312:1 Pardon [1] - 343:12 parent [1] - 314:19 Park [1] - 307:19 part [5] - 308:16, 310:4, 319:12, 326:1, 346:8 particular [6] - 310:20, 311:5, 315:18, 316:12, 326:14, 360:24 particularly [1] - 312:3 parties [2] - 302:9, 361:7 partly [1] - 304:25 passed [1] - 308:11 past [4] - 307:18, 345:14, 346:17, 353:13 patience [1] - 360:23 Patrick [1] - 301:15 pattern [1] - 327:5 pay [4] - 307:7, 308:25, 339:3, 343:22 pdf [1] - 303:11 peak [6] - 329:14, 329:17, 329:25, 330:13, 356:10, 356:15 peaks [1] - 327:23 people [2] - 351:25, 357:14 peppering [1] - 349:21 per [3] - 303:14, 303:17, 335:8 percent [28] - 315:14, 315:17, 315:23, 316:3, 316:9, 316:10, 316:11, 320:2, 321:1, 321:3, 321:5, 321:20, 321:23, 321:25, 323:16, 324:13, 324:14, 324:17, 335:8, 344:14, 344:20, 344:22, 345:9, 348:24, 352:4, 352:24, 353:8 percentage [2] - 316:6, 346:11 perhaps [2] - 302:11, 358:6 period [2] - 326:6, 354:22 permanent [1] - 331:13 permitted [1] - 360:11 perspective [10] - 308:23, 312:13, 327:23, 329:13, 334:5, 348:16, 356:1, 358:13, 361:13, 361:17 persuasive [1] - 314:4 phase [2] - 344:4, 353:10</p>	<p>Phase [3] - 323:1, 323:5, 323:7 picked [1] - 330:21 piece [1] - 310:23 pieces [1] - 307:9 place [1] - 337:6 placed [2] - 304:20, 333:12 placement [1] - 311:22 plan [1] - 354:23 planned [4] - 323:2, 323:7, 330:22, 334:23 planning [2] - 320:12, 323:4 PLANT [2] - 333:6, 364:8 plant [6] - 330:25, 331:1, 332:15, 332:20, 332:25, 339:6 play [1] - 333:24 please [4] - 306:22, 329:5, 341:21, 358:3 plot [1] - 312:8 plus [12] - 315:13, 315:16, 315:23, 316:2, 316:9, 321:3, 321:11, 321:19, 321:23, 335:20, 352:4, 352:23 plus/minus [2] - 320:2, 353:8 point [13] - 302:24, 306:11, 307:8, 309:3, 309:23, 311:12, 317:19, 321:2, 325:21, 328:12, 337:9, 338:19, 350:2 pointed [3] - 303:10, 348:8, 353:12 portion [3] - 303:13, 316:13, 319:4 portrayed [1] - 330:18 position [1] - 342:9 possibility [1] - 312:2 possible [1] - 304:7 postulate [1] - 348:5 potential [5] - 310:7, 310:10, 327:11, 347:5, 347:8 power [6] - 312:10, 312:21, 339:3, 344:5, 344:7, 356:19 PPA [1] - 331:18 practical [2] - 336:24, 360:20 pre [1] - 306:15 pre-dated [1] - 306:15 precede [1] - 302:21 preliminary [2] - 302:3, 303:23 preparation [1] - 345:3 prepared [1] - 330:6 present [2] - 313:18, 352:22 presented [8] - 315:10, 330:11, 332:18, 335:10, 347:19, 348:1, 348:3, 355:24 presents [1] - 342:15 Pressnail [1] - 301:17 pretty [2] - 348:22, 349:2 prevent [1] - 357:3</p>	<p>prevention [1] - 356:23 prevents [1] - 302:23 previous [3] - 307:18, 339:21, 357:25 previously [2] - 302:16, 342:22 price [5] - 319:1, 319:3, 331:8, 344:18, 345:20 prices [4] - 316:12, 346:1, 346:2, 346:4 pricing [3] - 316:16, 319:13, 345:17 primarily [1] - 306:7 principal [1] - 304:15 principle [2] - 358:23, 358:24 print [1] - 303:21 privately [1] - 337:25 problems [1] - 318:19 proceed [3] - 309:18, 322:12, 341:15 PROCEEDINGS [3] - 301:22, 361:22, 361:24 Proceedings [1] - 301:1 proceedings [4] - 361:6, 361:14, 361:18, 362:5 process [16] - 306:25, 307:11, 307:15, 307:17, 308:3, 308:10, 311:10, 315:17, 319:12, 333:14, 350:13, 360:3, 360:8, 360:17, 360:24, 361:12 processes [1] - 360:18 procurement [6] - 319:8, 344:4, 345:1, 345:2, 345:3, 345:7 procurements [1] - 344:25 produces [1] - 356:7 production [2] - 317:18, 343:20 professional [3] - 353:19, 358:11, 359:3 profile [1] - 337:16 program [1] - 314:16 project [64] - 303:2, 304:19, 304:25, 306:3, 308:18, 309:11, 309:17, 309:19, 313:23, 316:8, 316:9, 316:13, 318:10, 318:12, 318:14, 319:4, 321:6, 321:8, 321:25, 322:7, 323:20, 324:2, 324:4, 324:5, 324:18, 324:22, 325:1, 325:14, 325:24, 326:2, 326:3, 326:24, 330:15, 334:22, 335:11, 335:13, 337:13, 339:5, 340:22, 340:25, 341:4, 342:14, 343:25, 344:14, 344:20, 344:23, 345:9, 345:23, 346:25, 347:3, 347:6, 347:13, 348:18,</p>	<p>348:20, 349:1, 349:3, 352:23, 353:5, 353:9, 353:10, 353:22, 355:24, 358:14, 361:19 Project [6] - 304:16, 312:4, 312:14, 342:20, 343:19, 344:19 PROJECT [3] - 300:7, 343:9, 364:18 projects [17] - 305:15, 315:25, 317:23, 318:3, 318:4, 318:6, 325:17, 339:25, 340:1, 340:3, 340:11, 341:3, 341:7, 341:8, 342:13, 342:18, 353:13 PROJECTS [2] - 343:7, 364:16 prolonged [1] - 326:5 promised [1] - 314:5 prompt [1] - 351:15 proper [1] - 353:20 property [7] - 307:5, 311:21, 323:3, 332:20, 334:3, 335:4, 343:22 proportion [1] - 321:8 proposal [1] - 334:11 proposals [1] - 347:1 proposed [4] - 330:20, 334:24, 342:5, 358:15 protocols [1] - 340:18 prove [1] - 307:3 proven [1] - 349:1 provide [9] - 309:20, 312:21, 313:10, 332:25, 337:7, 357:6, 357:9, 357:11, 357:17 PROVIDE [2] - 333:6, 364:8 provided [3] - 344:9, 348:21, 361:2 provider [1] - 361:1 providers [3] - 355:22, 357:1, 357:11 providing [1] - 328:17 Province [1] - 362:8 provision [2] - 302:23, 357:19 proximity [5] - 304:16, 311:22, 312:1, 338:8, 343:1 prudence [2] - 309:17, 348:12 prudent [3] - 309:21, 346:24, 347:13 public [8] - 316:25, 333:14, 333:18, 333:20, 333:23, 334:19, 337:13, 361:17 publicly [1] - 361:7 publish [2] - 317:6, 317:8 published [1] - 317:6 publishes [1] - 317:2 pulled [1] - 320:19 purchase [3] - 331:11, 331:14, 331:18 purchasing [1] - 331:8</p>	<p>purpose [1] - 361:12 purposes [2] - 314:25, 332:14 pursue [1] - 337:19 push [3] - 315:5, 317:20, 319:1</p>
Q				
<p>QC [1] - 301:13 qualifying [1] - 314:12 quality [2] - 307:25, 356:19 quantifiable [2] - 356:1, 356:17 Quebec [2] - 318:14, 318:15 questioning [5] - 305:19, 314:24, 338:7, 350:25, 351:22 QUESTIONS [10] - 304:12, 322:14, 341:23, 343:17, 349:8, 363:8, 363:9, 363:10, 363:11, 363:12 questions [14] - 304:2, 304:10, 322:2, 322:11, 322:13, 341:17, 342:4, 347:16, 349:21, 350:3, 351:14, 354:1, 354:4, 359:11 quick [2] - 302:10, 306:5 quite [6] - 311:1, 313:1, 323:10, 348:20, 356:16, 358:17 quote [3] - 319:20, 319:24, 332:10</p>				
R				
<p>racks [1] - 358:19 Raglan [2] - 318:10, 340:23 raised [2] - 340:11, 352:5 range [1] - 307:13, 313:3, 313:5, 320:2, 321:12, 321:17, 321:21, 322:7, 335:14, 348:22, 353:17 ranges [1] - 316:6 rapidly [1] - 316:11 Rapids [1] - 313:8 rate [6] - 307:4, 308:3, 310:10, 321:14, 324:10, 335:5 ratepayer [8] - 323:19, 327:3, 330:22, 335:14, 335:25, 339:2, 348:10, 349:14 ratepayers [3] - 308:22, 308:24, 348:4 ratepayers' [1] - 310:2 rates [6] - 305:23, 308:24, 309:24, 339:3, 346:24, 348:11 rather [2] - 311:23, 332:7 RE [4] - 350:24, 352:2, 363:13, 363:14 RE-CROSS-EXAMINES [2] -</p>				

YUB - YEC BESS PROJECT, Volume 3, May 6, 2021

<p>350:24, 363:13 RE-EXAMINES [2] - 352:2, 363:14 reach [1] - 314:23 read [6] - 302:9, 302:20, 303:12, 303:13, 303:16, 344:17 reading [1] - 322:19 ready [1] - 341:15 real [4] - 307:12, 307:14, 331:15, 334:5 realistic [6] - 320:25, 321:2, 321:7, 321:21, 321:22, 322:3, 322:6 realize [1] - 330:16 really [7] - 322:3, 323:25, 330:7, 332:25, 334:8, 342:21, 343:10 reason [1] - 342:20 reasonable [1] - 313:5 reasonably [1] - 304:21 reasons [1] - 337:15 receive [2] - 305:7, 305:10 recently [2] - 317:5, 334:1 recharge [2] - 327:11, 329:24 recharges [1] - 327:24 recharging [1] - 356:15 recognizes [1] - 316:11 recommendation [3] - 308:12, 347:12, 348:6 recommendations [1] - 347:4 record [4] - 302:11, 303:7, 305:19, 351:23 RECORD [1] - 343:15 records [1] - 340:6 recurring [1] - 347:15 redirect [1] - 351:25 reducing [1] - 310:19 refer [2] - 327:17, 342:1 reference [13] - 303:12, 306:3, 306:5, 306:15, 306:16, 306:20, 308:6, 308:11, 308:16, 309:9, 346:23, 347:17, 357:14 referenced [4] - 323:6, 342:1, 344:11, 345:3 references [1] - 335:1 referred [2] - 311:8, 356:17 referring [4] - 306:7, 320:14, 342:3, 343:25 refill [1] - 329:23 refined [1] - 320:18 regard [2] - 311:6, 352:25 regarding [2] - 342:5, 354:2 regards [2] - 342:15, 350:25 region [1] - 318:17 regularly [1] - 317:8</p>	<p>regulation [1] - 356:22 regulator [2] - 347:11, 348:9 related [1] - 341:8 relates [3] - 302:19, 303:2, 357:25 relation [3] - 354:1, 354:3, 354:4 relative [1] - 322:3 relatively [3] - 338:8, 345:23, 346:12 reliability [3] - 356:18, 357:2, 357:16 reliable [3] - 327:14, 327:15, 327:19 remarks [1] - 361:20 remember [5] - 331:19, 331:23, 331:24, 336:3, 352:8 reminded [1] - 341:18 remote [3] - 318:11, 318:13, 318:17 REMOVED [2] - 349:19, 364:22 removed [3] - 325:9, 334:10, 349:13 Renewable [1] - 317:9 rent [1] - 326:15 rental [5] - 328:21, 328:22, 331:9, 331:11, 331:14 report [7] - 309:10, 317:2, 317:3, 320:17, 320:20, 322:18, 360:9 reporter [1] - 361:9 Reporter [2] - 362:14, 362:18 Reporters [1] - 301:19 Reporting [1] - 361:5 reports [1] - 316:25 represent [1] - 347:2 requested [1] - 334:9 requests [1] - 361:15 require [2] - 345:24, 357:9 required [6] - 309:20, 326:7, 328:19, 328:25, 338:15, 361:8 requirement [5] - 325:10, 331:1, 337:1, 351:1, 354:11 requirements [2] - 343:2, 347:8 rerun [1] - 349:11 RERUN [2] - 349:17, 364:20 reservation [1] - 339:22 reserve [4] - 326:11, 330:12, 356:2, 356:5 RESERVE [2] - 326:22, 364:4 reservoir [1] - 356:7 resident [2] - 333:25, 339:23 residential [1] - 334:2 residents [1] - 333:19 resolved [1] - 309:3 respect [1] - 306:1 respective [1] - 311:15 responding [1] - 345:22</p>	<p>RESPONSE [2] - 341:20, 363:21 response [4] - 342:4, 342:7, 342:17, 357:15 RESPONSES [2] - 302:17, 363:7 responses [2] - 349:24, 351:15 responsibility [1] - 309:16 restore [1] - 357:2 restriction [1] - 315:1 rests [1] - 306:10 resume [1] - 341:13 retire [1] - 360:8 review [2] - 340:1, 346:24 reviewed [1] - 340:17 RFP [3] - 344:3, 344:22, 347:1 RFPs [1] - 345:10 Richard [1] - 301:7 risk [5] - 337:16, 342:5, 342:8, 342:15, 345:22 risks [2] - 322:21, 341:25 road [1] - 311:2 Roger [1] - 301:16 role [1] - 350:14 Rondeau [1] - 301:16 rooted [3] - 306:2, 306:11, 321:9 roughly [2] - 321:6, 335:4 round [1] - 326:25 rounded [1] - 320:22 rounding [1] - 319:22 route [1] - 337:12 RPR [2] - 301:20, 362:13 rules [1] - 314:12 run [1] - 357:13 running [3] - 326:9, 336:10, 357:10</p>	<p>339:11, 344:3 secondly [2] - 325:22, 352:21 secure [2] - 307:5, 311:11 seeing [1] - 316:21 seek [1] - 351:24 seem [1] - 329:9 segue [1] - 352:17 selected [2] - 311:15, 332:14 selection [2] - 339:9, 339:17 sense [3] - 307:7, 348:4, 353:15 sensitivity [3] - 343:19, 346:10, 348:21 sent [1] - 302:8 sentence [1] - 303:13 serious [1] - 349:3 serve [1] - 329:17 service [5] - 312:21, 328:9, 328:25, 329:14, 361:1 serviced [2] - 308:1 Services [1] - 314:18 services [5] - 312:24, 313:10, 337:8, 344:8, 357:1 set [2] - 305:1, 361:2 settlement [18] - 304:20, 305:2, 306:1, 307:3, 307:10, 308:18, 308:22, 309:1, 310:13, 311:1, 325:8, 325:11, 325:14, 325:24, 334:1, 337:25, 339:12 settling [1] - 306:25 several [4] - 316:25, 329:2, 341:7, 348:8 shape [2] - 328:15, 329:15 shapes [1] - 327:25 share [2] - 324:8, 325:10 shareholder [1] - 325:4 shed [1] - 331:17 shedding [1] - 356:23 sheet [3] - 302:20, 302:22, 303:2 shielded [1] - 346:1 shift [1] - 327:7 shifting [3] - 327:8, 330:13, 356:11 short [1] - 346:16 shortfall [1] - 355:11 shorthand [2] - 362:5, 362:6 showing [1] - 317:2 shows [1] - 344:1 shy [1] - 320:23 side [6] - 313:20, 314:8, 321:1, 321:22, 321:24, 350:13 signage [1] - 314:13 significant [3] - 338:23, 347:3, 351:3 significantly [1] - 346:21 similar [7] - 302:6, 307:5, 307:21, 307:22, 331:25, 341:4, 358:17 similarly [2] - 319:15, 356:10</p>	<p>simple [1] - 345:23 simply [1] - 357:11 simulate [1] - 311:9 single [2] - 340:14, 345:1 sit [1] - 334:4 site [13] - 311:16, 313:7, 323:1, 333:16, 333:23, 334:19, 334:20, 339:9, 339:14, 339:17, 345:2, 347:7, 353:11 site-selection [1] - 339:17 sites [6] - 333:15, 333:17, 333:19, 334:14, 337:18, 342:25 sits [1] - 353:9 sitting [1] - 330:10 situated [1] - 310:22 situating [1] - 308:18 situation [4] - 310:17, 316:18, 319:10, 325:19 six [4] - 306:8, 308:19, 345:14, 345:19 SIZE [2] - 343:9, 364:17 size [3] - 311:25, 328:16, 342:19 sizeable [1] - 340:3 skill [1] - 362:7 slow [1] - 315:4 small [4] - 302:6, 312:8, 346:12, 350:2 snap [3] - 326:5, 326:8, 326:10 SNAP [2] - 326:21, 364:3 so... [1] - 350:14 Society [1] - 301:17 somewhere [2] - 344:22, 345:8 soon [1] - 304:6 sorry [12] - 306:23, 314:15, 320:5, 331:22, 332:7, 334:25, 338:6, 339:20, 343:12, 343:13, 346:10, 354:2 sort [9] - 308:2, 309:3, 309:5, 314:13, 318:18, 320:8, 321:20, 348:19, 350:6 source [1] - 305:8 space [1] - 337:21 speaking [3] - 318:2, 345:5, 350:22 spec [1] - 309:5 specific [4] - 306:12, 329:12, 352:12, 353:11 specifically [2] - 306:14, 335:2 specifications [1] - 340:19 speculate [2] - 331:6, 331:8 speculated [1] - 334:16 spending [1] - 330:9 spent [1] - 350:13 spirit [1] - 305:5 spotlight [2] - 351:18, 351:20 stability [1] - 356:19 stabilization [1] - 356:24</p>
S				
		<p>Sabo [6] - 301:10, 301:24, 303:24, 318:5, 350:15, 360:2 SABO [5] - 302:1, 304:1, 350:16, 359:18, 359:22 Sabo's [1] - 342:4 safety [1] - 340:18 sake [1] - 343:18 satisfy [2] - 309:21, 354:10 save [2] - 313:23, 317:18 savings [5] - 330:12, 356:2, 356:7, 356:8, 356:14 saw [1] - 306:20 scale [1] - 341:4 scarcity [1] - 346:4 schedule [4] - 318:23, 319:15, 319:16, 330:23 scheduled [2] - 328:25, 336:4 scoping [1] - 353:7 Scott [1] - 301:17 scrutiny [1] - 303:21 second [3] - 304:19,</p>		

YUB - YEC BESS PROJECT, Volume 3, May 6, 2021

<p>staff [2] - 304:2, 342:11 Staff [3] - 301:11, 301:12, 301:12 stage [1] - 345:7 stages [1] - 315:8 stand [2] - 319:20, 320:1 standard [1] - 316:5 stands [1] - 309:11 start [5] - 312:21, 339:1, 352:3, 354:3, 354:7 started [4] - 302:4, 304:11, 352:7, 354:7 starting [1] - 342:2 starts [2] - 323:19, 341:17 state [1] - 303:16 status [2] - 342:6, 352:22 stead [1] - 301:18 steel [4] - 346:3, 346:4, 358:20 step [2] - 311:13, 311:18 still [9] - 312:5, 313:16, 315:7, 322:5, 325:2, 336:25, 337:7, 348:24, 349:3 stipulation [2] - 304:24, 308:18 stipulations [1] - 314:9 storage [1] - 328:6 STORAGE [1] - 300:7 strategies [1] - 340:17 strategy [2] - 305:12, 325:23 Street [1] - 301:2 study [5] - 313:1, 313:6, 337:5, 338:15, 353:7 subdivision [1] - 311:23 submissions [2] - 359:16, 359:17 submitted [1] - 304:3 subparagraphs [1] - 306:8 subsequent [1] - 347:4 substantial [2] - 319:4, 321:8 SUBSTATION [2] - 336:19, 364:12 substation [14] - 304:17, 311:23, 312:2, 312:6, 312:15, 333:11, 336:8, 336:21, 336:23, 337:20, 338:5, 338:9, 338:14, 339:5 suffer [1] - 321:18 sufficient [1] - 326:15 suggest [2] - 332:23, 348:25 suitable [1] - 312:14 sum [2] - 320:13, 345:10 summarize [1] - 303:1 summary [1] - 302:24 supplied [1] - 322:19 supplies [1] - 327:23 supply [9] - 317:16,</p>	<p>317:19, 317:25, 318:19, 318:24, 327:6, 327:21, 347:5, 355:1 support [3] - 360:25, 361:3, 361:4 suppose [1] - 360:14 suspect [1] - 360:17 SYSTEM [1] - 300:7 system [25] - 313:1, 313:6, 316:13, 316:15, 327:11, 336:5, 337:1, 337:7, 340:20, 340:21, 344:4, 344:5, 344:7, 344:10, 345:6, 345:24, 352:19, 353:21, 355:8, 355:12, 355:13, 358:21, 358:25 systems [2] - 346:5, 352:11</p>	<p>306:16, 306:20, 306:24, 308:5, 308:11, 308:16, 309:9, 318:22, 340:20, 341:3, 345:19, 346:23, 347:17, 356:25, 357:17, 359:9 Territories [1] - 318:12 territories [1] - 318:15 THAT [4] - 336:17, 343:7, 364:11, 364:16 theme [1] - 347:15 themselves [3] - 320:22, 346:3, 346:7 thermal [3] - 326:6, 326:9, 356:7 THEY [2] - 343:8, 364:17 they've [3] - 305:12, 325:15, 340:17 thorough [1] - 357:13 thousands [1] - 346:9 three [3] - 309:12, 333:15, 340:4 tidy [1] - 349:23 tie [1] - 308:19 tiny [1] - 346:8 titled [1] - 337:24 today [10] - 309:11, 319:7, 319:13, 319:19, 321:13, 322:5, 345:11, 349:2, 353:18, 359:15 tolerance [1] - 360:23 took [1] - 307:21 tool [1] - 305:16 tools [1] - 325:20 top [1] - 341:19 total [4] - 321:6, 324:22, 344:23, 345:9 tough [1] - 307:23 towards [1] - 328:13 trade [1] - 352:13 transcribed [1] - 362:6 transcript [4] - 342:2, 345:22, 361:8, 362:4 Transcript [1] - 362:1 transcripts [1] - 361:6 transmission [7] - 307:20, 312:17, 312:25, 313:10, 313:20, 337:5, 337:14 Transport [2] - 342:7, 347:7 trends [1] - 346:15 trial [1] - 358:3 try [3] - 310:22, 320:25, 351:25 trying [3] - 308:15, 320:21, 324:15 Tuesday [1] - 304:14 turn [6] - 304:9, 315:6, 329:21, 356:12, 356:13, 357:22 turned [1] - 347:10 two [12] - 304:15, 306:13, 311:21, 329:18, 330:2, 333:17, 340:24,</p>	<p>344:11, 345:4, 345:7, 346:25, 358:12 two-stage [1] - 345:7 two-week [1] - 329:18 type [1] - 336:14 typically [2] - 353:8, 361:12</p>	<p>325:6, 330:21, 339:20, 340:5, 340:6, 340:7, 340:15, 341:24, 343:11, 343:13, 345:10, 347:1, 348:22, 348:24, 349:24, 350:6, 350:19, 360:8, 361:2 update [1] - 332:24 UPDATE [2] - 333:4, 364:7 upper [1] - 321:24 upside [1] - 348:20 Upstream [1] - 361:1 upwards [1] - 319:22 US [1] - 341:7 useful [1] - 332:16 uses [1] - 330:13 UTILITIES [1] - 300:1 Utilities [1] - 301:15</p>
				<p>U</p> <p>UCG [2] - 350:17, 351:12 UFA [1] - 305:2 ultimately [2] - 348:9, 361:17 umbrella [1] - 324:16 uncertainty [4] - 309:12, 321:14, 321:16, 347:16 under [7] - 305:1, 306:8, 314:16, 326:24, 335:6, 340:1 underpinnings [1] - 320:6 undersigned [1] - 362:3 understood [2] - 324:24, 330:19 undertake [5] - 305:15, 311:10, 334:18, 342:24, 343:3 UNDERTAKING [14] - 302:17, 326:20, 333:4, 336:17, 341:20, 343:6, 349:17, 363:7, 363:21, 364:3, 364:7, 364:11, 364:15, 364:20 undertaking [14] - 302:7, 302:19, 322:18, 326:13, 332:3, 332:8, 332:23, 333:2, 336:13, 338:2, 338:4, 338:23, 349:11 Undertaking [2] - 302:8, 341:18 UNDERTAKINGS [1] - 364:1 undertakings [4] - 304:3, 304:5, 351:15, 359:20 undertook [1] - 333:14 undeveloped [3] - 308:1, 337:11, 338:11 unfair [2] - 339:15, 349:9 unfortunately [1] - 312:7 unique [1] - 361:13 unit [11] - 304:18, 329:22, 331:7, 332:12, 354:21, 355:2, 355:19, 355:22, 357:10, 357:16, 357:20 units [8] - 312:22, 331:9, 331:12, 331:14, 331:19, 331:25, 356:12, 356:13 unless [1] - 360:7 up [32] - 304:4, 307:19, 312:5, 312:13, 312:22, 313:24, 317:20, 317:25, 319:1, 320:8, 320:22, 324:23,</p>
				<p>V</p> <p>value [4] - 307:9, 310:12, 313:18, 321:25 variability [1] - 327:7 variable [2] - 303:14, 303:17 variation [1] - 307:25 various [1] - 322:25 vary [1] - 321:12 vendor [1] - 344:9 vendors [3] - 319:9, 319:16, 353:14 versus [2] - 354:15, 355:19 Vespa [3] - 301:20, 362:12, 362:13 via [2] - 300:23, 301:2 Vice [2] - 301:8, 342:23 Vice-Chair [2] - 301:8, 342:23 video [1] - 360:17 videoconferencing [2] - 300:23, 301:2 view [2] - 303:1, 348:3 viewed [1] - 334:6 voltage [3] - 304:17, 336:10, 356:22 VOLUME [1] - 363:3 Volume [2] - 300:21, 301:5</p>
				<p>W</p> <p>wait [1] - 323:14 walks [1] - 324:20 Ward [1] - 301:12 warrant [1] - 349:25 water [3] - 327:6, 356:4, 356:6 weather [6] - 327:5, 327:7, 327:9, 327:10, 327:11, 328:16 website [2] - 333:21, 361:10 week [1] - 329:18 weeks [1] - 330:2 WERE [2] - 343:8, 364:16 west [1] - 338:13 whereas [3] - 311:22, 329:24, 357:11 Whitehorse [6] -</p>

YUB - YEC BESS PROJECT, Volume 3, May 6, 2021

<p>300:24, 301:2, 313:8, 322:23, 333:17, 337:18 whole [2] - 312:22, 349:10 wild [1] - 338:15 wind [2] - 327:7, 360:7 winter [2] - 326:5, 326:15 WINTER [2] - 326:21, 364:4 wishing [1] - 331:18 WITH [2] - 349:18, 364:21 withstanding [2] - 349:21, 360:5 wonder [5] - 334:21, 340:2, 351:24, 352:9, 352:18 wondering [5] - 319:1, 321:7, 323:1, 342:17, 357:14 word [5] - 302:20, 303:1, 330:23 words [5] - 310:22, 316:4, 329:9, 334:11, 335:9 worth [1] - 331:20</p>	<p>ZULIANI [18] - 302:15, 316:23, 317:5, 317:21, 318:5, 318:9, 318:22, 319:5, 319:24, 340:13, 345:18, 346:20, 353:1, 353:23, 358:8, 358:16, 359:9, 363:5</p>
Y	
<p>year [8] - 306:18, 318:19, 323:7, 335:8, 346:17, 347:2, 356:3 Year [1] - 323:20 years [8] - 327:9, 330:24, 331:24, 340:4, 340:24, 354:24, 355:2, 355:4 YEC [10] - 300:7, 304:3, 325:7, 331:18, 341:20, 349:12, 349:18, 360:4, 363:21, 364:20 YEC's [1] - 351:14 YESAB [1] - 347:4 yesterday [15] - 302:6, 302:8, 304:13, 304:14, 310:16, 314:24, 319:11, 323:6, 324:24, 331:12, 333:13, 334:16, 340:11, 345:21, 349:22 yesterday's [1] - 342:2 YUB-YEC-1-36 [1] - 357:15 YUKON [3] - 300:1, 326:21, 364:4 Yukon [13] - 300:24, 301:13, 301:14, 301:17, 302:15, 304:20, 314:18, 314:20, 314:21, 325:4, 342:10, 343:22, 363:6</p>	
Z	
<p>zero [2] - 320:21, 339:15 Zuliani [13] - 316:19, 316:22, 319:19, 320:14, 339:24, 340:10, 345:11, 346:18, 352:17, 352:18, 357:22, 359:3, 360:4</p>	