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1 ALBERTA UTILITIES COMMISSION

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6 Application No. 29377-A001, 29377-A002

7 Proceeding ID No. 29377

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10 OYEN WIND POWER PROJECT

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16 PROCEEDINGS

17 _____

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20 Volume 1

21 June 9, 2025

22 Held via videoconferencing

23 Calgary, Alberta

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1 that we can go back the way we normally do.

2 So with me in the Calgary hearing room is

3 Commission lawyer Jaimie Graham, and we also have our

4 lead application officer, Sophie Jiang, our hearing

5 coordinator, Oluwafunke Adebayo, and some other

6 Commission staff members.

7 As we gather here today, I would like to

8 acknowledge that we are conducting this hearing on

9 Treaty 7 territory. We acknowledge the First Nations

10 and Métis peoples of Alberta, whose presence continues

11 to enrich our community. We pay our respects to the

12 First Nations and Métis ancestors of this place and

13 affirm our relationship with one another.

14 The purpose of this hearing is to consider

15 applications from RES Oyen Wind GP Corp. under

16 Proceeding Number 29377 to construct and operate the

17 466-megawatt Oyen wind power project approximately 8

18 kilometres north of Oyen, Alberta, in special areas

19 number 3. This is part 1 of the hearing, and part 2 of

20 the hearing will commence on July 7th, 2025.

21 On May 13th this year, Commissioner Slawinski and

22 I conducted a site visit along with several Commission

23 staff members. We accessed the site by vehicle along

24 public roads without representatives of any party being

25 present.

2

1 Proceedings taken at the Alberta Utilities Commission via

2 videoconference.

3 _____

4 Volume 1

5 June 9, 2025

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7 Cairns Price	Chair
7 Vera Slawinski	Commission Member
8 Jaimie Graham	Commission Counsel
9 Sophie Jiang	Commission Staff
9 Oluwafunke Adebayo	Commission Staff
10 Terri-Lee Oleniuk	
11 Elyse Bouey	For RES Oyen Wind LP
12 Ifeoma Okoye	
12 Chinedu Kema	For Oyen Landowners Group
13	
14 Joanne Lawrence, CSR(A), RPR	
14 Diana Halvorsen, CSR(A), RPR	Official Court Reporters
15 _____	
16	
17 (PROCEEDINGS COMMENCED AT 9:09 A.M.)	
18 THE CHAIR: Good morning. Apologies for the	
19 delay here. So I -- my name is Cairns. I'm one of the	
20 Commission members here. I'm here with Commissioner	
21 Slawinski. We'll be the panel for this hearing.	
22 We're having some IT issues, so we're going to	
23 just start with the camera on the two of us rather than	
24 having our own individual cameras, and then at the	
25 break or at worst case at lunch, we'll sort it out so	

4

1 After I register the parties, I will ask counsel

2 for -- and maybe I'll just ask the applicant's counsel

3 now. What is the preferable way of -- it is RES or

4 RES?

5 MS. OLENIUK: Good morning, Chair. RES.

6 THE CHAIR: RES. Okay. So I'll ask counsel

7 for RES to introduce its witness panel, and the hearing

8 will proceed according to the detailed hearing schedule

9 issued at Exhibit 129. Please also refer to

10 Exhibit 119 for the Commission's process for exhibits,

11 aids to cross, opening statements, and other hearing

12 matters.

13 Today, we will endeavor to sit until 4:30 p.m.

14 We'll start subsequent hearing days at 9:00 a.m. and

15 aim to conclude each day at 4:30. We'll break for

16 lunch for one hour, from approximately noon to

17 1:00 p.m. We'll also have short breaks in the morning

18 and afternoons.

19 As always, there will be some flexibility around

20 break times to avoid interrupting the flow of the

21 hearing. Please request an additional break if one is

22 required.

23 The proceeding record in eFiling currently

24 contains exhibits numbered 1 to 141. Any new exhibits

25 will be recorded starting at Exhibit 142. I ask that

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1 parties provide an document's exhibit number and PDF
2 page number when referring to it in a question or
3 response to a question or otherwise when referring to
4 the contents of an exhibit.

5 For all exhibits that are entered during the
6 hearing, counsel should provide a short general
7 description of the name of the document at the time the
8 request is made to have the document marked as an
9 exhibit.

10 And I note that there are a number of aids to
11 cross that have been provided, and I'll just remind
12 everyone that if the Commission determines that an aid
13 to cross-examination should be added to the record,
14 this is for identification purposes only. The aid to
15 cross-examination itself is not evidence. Only the
16 witness's responses are evidence.

17 Please keep your microphones muted and your video
18 turned off unless you're speaking or are part of a
19 witness panel that's giving evidence. If a
20 participant's audio or video connection to the hearing
21 fails, please email Ms. Jiang or Ms. Graham. They will
22 notify me of any issues, and I will stop the hearing to
23 provide the participant a chance to restore connection.
24 If you lose the connection, you will be locked out of
25 the session and will need to be readded.

6

1 If someone experiences an emergency during the
2 hearing that interferes with their participation, if
3 you can, please let us know, and we will proceed
4 accordingly. Please speak slowly and clearly so that
5 an accurate transcript can be prepared by the court
6 reporters. I ask that only one person speak at a time.

7 Transcripts will not be publicly available on the
8 eFiling system. Parties may purchase a copy of the
9 transcript from the court reporter, and funding for
10 this is available for local interveners who file a cost
11 claim.

12 A live webcast of the hearing will be broadcast
13 through the Commission's website and will be available
14 for viewing during the hearing.

15 That concludes my opening remarks, and I will now
16 formally register the participants for this hearing.
17 Ms. Terri-Lee Oleniuk and Ms. Elyse Bouey representing
18 the project applicant, RES Oyen Wind LP or RES.

19 MS. OLENIUK: Thank you, Chair, and good
20 morning. As you noted, my name is Terri-Lee Oleniuk,
21 and I'm joined by my colleague, Elyse Bouey. We are
22 with Blake Cassells and Graydon LLP representing the
23 applicant, RES. Ms. Bouey will introduce the RES
24 witness panel following the registration of
25 appearances.

7

1 THE CHAIR: Okay. Thank you. And another
2 matter of clarification. Is it RES Oyen Wind LP or RES
3 Oyen GP Corp?

4 MS. OLENIUK: It's RES Oyen Wind GP Corp is the
5 applicant. That's correct.

6 THE CHAIR: Okay. Okay. Yeah.

7 MS. OLENIUK: We'll just refer to it as RES
8 throughout.

9 THE CHAIR: Yes, yeah, for everyone's benefit.

10 MS. OLENIUK: Yes, thank you.

11 THE CHAIR: Okay. And for the interveners,
12 Ms. Ifeoma Okoye and Mr. Chinedu Kema representing the
13 Oyen Landowners Group or OLG.

14 MS. OKOYE: Yes, you are correct. Good
15 morning, Mr. Chair. My name is Ifeoma Okoye. With me
16 is my colleague, Chinedu Kema. We are from Ackroyd
17 LLP. We are counsel for the OLG, Oyen Landowner Group.

18 THE CHAIR: Okay, thank you. Are there any
19 other parties that wish to register?

20 Okay. Does anyone have any preliminary matters?
21 All right. Seeing none, Ms. Oleniuk or -- well,
22 Ms. Bouey, please proceed.

23 MS. BOUEY: Thank you, Chair. I'm pleased to
24 introduce the witness panel for RES as the applicant in
25 the proceeding concerning the proposed Oyen wind power

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1 project. A full listing of the RES witness panel and
2 curriculum vitae for each witness was provided for the
3 Commission and intervener counsel in Exhibit 126.

4 RES has also filed affidavits for each witness
5 identifying and adopting their written evidence and
6 confirming any corrections to that evidence. Those
7 affidavits are filed as Exhibits 132 to 138.

8 The corporate witnesses representing RES in its
9 application for approval of the project include
10 Ms. Isabelle Deguise, who is the director of
11 development for western Canada with RES -- sorry,
12 Renewable Energy Systems Canada Inc., and Ms. Deguise
13 will be acting as the chair for the RES witness panel
14 during the hearing.

15 We also have Ms. Marika Gibson, who is a
16 development manager with Renewable Energy Systems
17 Canada Inc. and the lead project manager for the Oyen
18 wind power project. These witnesses have jointly
19 adopted the bulk of RES's prefiled materials on behalf
20 of the applicant.

21 Turning now to RES's third-party expert witnesses,
22 we would like to introduce Mr. Trevor Cuthbert, who is
23 a senior principal and project director with WSP
24 Environmental Consulting Ltd., which we will refer to
25 as WSP. Mr. Cuthbert is responsible for speaking to

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1 matters related to environmental permitting,
 2 conservation and reclamation for the project.

3 We also have Ms. Kristine Sare, who is a
 4 principal -- sorry, a senior principal and terrestrial
 5 ecologist with WSP and will be responsible for speaking
 6 to matters related to wildlife, vegetation, and
 7 wetlands.

8 Turning next to Mr. Andrew Faszler, who is a senior
 9 engineer with WSP and will be responsible to speaking
 10 to matters related to noise and shadow flicker.

11 We also have Dr. Christopher Ollson, who is a
 12 senior environmental health scientist with Ollson
 13 Environmental Health Management and responsible for
 14 speaking to matters related to health and safety.

15 The final member of the RES expert panel is
 16 Mr. Daniel Carrocci who is the president of Sunset
 17 Renewable Asset Management Inc., and responsible for
 18 speaking to matters related to the reclamation cost
 19 estimate prepared for the project.

20 These witnesses have through their prefiled
 21 affidavits adopted the reports, materials, and evidence
 22 that were prepared by them or under their direction and
 23 control. They have also confirmed and acknowledged
 24 their duty to provide evidence to the Commission that
 25 is fair, objective, and nonpartisan.

10

1 That concludes our introduction of the RES witness
 2 panel, and after the witnesses have been sworn or
 3 affirmed, we will also invite Ms. Deguise to provide a
 4 brief outline of RES's opening statement and intended
 5 testimony. We understand from the direction that was
 6 provided with the Commission's detailed hearing
 7 schedule in Exhibit 129 that the Commission has read
 8 all prefiled opening statements in advance of the
 9 witness panel being seated, so Ms. Deguise will not be
 10 reading the full version of RES's opening statement,
 11 but that was filed as Exhibit 139. Instead, she will
 12 provide some brief summary remarks before the applicant
 13 panel is turned over for questioning.

14 Following her opening remarks, we will also be
 15 asking Ms. Deguise a few questions in direct evidence
 16 concerning the code of practice for solar and wind
 17 renewable energy operations, which was released by the
 18 Government of Alberta on June 4th, as well as AUC
 19 bulletin 2025-06, released by the Commission on June
 20 6th.

21 We understand from the Commission's letter filed
 22 as Exhibit 130 that it intends to issue an information
 23 request in relation to this issue, and RES's deadline
 24 to respond to the request will be after the oral
 25 hearing; however, we thought it would be helpful for

11

1 all parties if RES briefly provided updated information
 2 regarding its position with respect to the application
 3 of the code and the bulletin to this project, including
 4 with respect to the project's reclamation cost estimate
 5 and plan for reclamation security. This approach
 6 accords with the Commission's practice note concerning
 7 direct evidence and opening statements dated March
 8 26th, 2025.

9 With that, we would ask that the witnesses now be
 10 sworn or affirmed.

11

12 **K. SARE, T. CUTHBERT, A. FASZLER, C. OLLSON, D. CARROCCI,**
 13 **M. GIBSON, I. DEGUISE (For RES Oyen Wind GP Corp.),**
 14 **sworn/affirmed**

15 **MS. BOUEY EXAMINES THE PANEL:**

16 Q. We will now invite Ms. Deguise to provide some summary
 17 remarks on behalf of RES.

18 A. MS. DEGUISE: Hi, good morning, Chair,
 19 Commissioners, and everyone in attendance today. I'm
 20 Isabelle Deguise, as Elyse -- Ms. Bouey mentioned,
 21 director of development for western Canada for RES
 22 Canada Inc., and I'm joined by my colleague, Ms. Marika
 23 Gibson, who was the project lead for the Oyen wind
 24 power project.

25 So overall, RES Oyen Wind LP is a wholly owned

12

1 subsidiary of RES Canada, which is part of a broad -- a
 2 very large global portfolio here at RES. We were
 3 founded in 1982 and have become the world's largest
 4 independent renewable energy company and one of the
 5 most experienced developers and constructor of
 6 renewable energy projects globally. We've delivered
 7 more than 28 gigawatts worldwide and plan to add
 8 another 26 gigawatts of new capacity in the next
 9 5 years.

10 We've been a leader in Canadian renewable energy
 11 sector for over 20 years, developing and constructing
 12 more than 30 projects across five provinces. With
 13 2.9-gigawatt of capacity delivered, RES has been one of
 14 the most successful wind developers across Canada,
 15 particularly in Alberta, and overall, we've been
 16 responsible for about 18 percent of all of the
 17 country's operational wind energy.

18 For this Oyen wind project, we've taken a very
 19 iterative and comprehensive approach to developing the
 20 project since it was first conceived in 2016, and the
 21 current iteration in front of you today, which dates
 22 back to 2022. From the outset, the project was planned
 23 and developed to achieve compliance with the applicable
 24 regulatory requirements and be responsive to
 25 stakeholder feedback.

13

1 Although the final project equipment selection
2 will not occur until closer to project construction,
3 all of the modelling assessments that we've done and
4 are presenting to you today are conservative. Those
5 assessments demonstrate that the project has been
6 responsibly sited and that potential impacts on local
7 residents and the environment will be within acceptable
8 limits.

9 Thanks to our proactive approach in addressing
10 concerns and effectiveness in maintaining open
11 communication, we received numerous letters of support
12 from project stakeholders, such as the special areas
13 board, the Town of Oyen, and Alberta Health Services.
14 A community volunteer also sent us a letter of support
15 thanking RES for our sponsorships over the years and
16 involvement in several local events.

17 However, we understand that members of the Oyen
18 Landowners Group have outstanding concerns with the
19 potential effects of the project, and RES has
20 endeavored to work closely with the landowner group
21 members in proximity to project infrastructure to
22 address those concerns wherever possible. This
23 includes the relocation, the removal, or the
24 repositioning of certain turbines and underground
25 cables in response to landowner group concerns.

14

1 In conclusion, as an experienced and responsible
2 developer, RES looks forward to bringing this project
3 into operation. We're confident we can do so safely in
4 accordance with applicable requirements.

5 Our proven track record of -- as a responsible
6 developer and addressing stakeholder concerns through
7 the development and approval phase of the project shows
8 our commitment to building a project that will bring
9 many benefits to the local community and all Albertans.

10 Thank you for the opportunity to introduce
11 ourselves, and we look forward to discussing the
12 project in greater detail over the course of this
13 hearing. Thank you.

14 Q. MS. BOUEY: Thank you, Ms. Deguise. We also
15 understand that RES has had an opportunity to review
16 and consider the new code of practice that was released
17 by the government and the reclamation security
18 guidelines released by the Commission last week.

19 Does RES have any updated information to provide
20 in relation to its previously filed materials in light
21 of these new guidelines?

22 A. MS. DEGUISE: Yes, we have reviewed and
23 considered both the code and the guidelines. We
24 understand that compliance with the new reclamation
25 security regime its mandatory, and we confirm that RES

15

1 will comply with all applicable requirements.

2 At this time, RES intends to provide reclamation
3 security directly to the Government of Alberta and not
4 to hosting landowners. RES will comply with all
5 applicable requirements in the code in providing the
6 required security estimate and appropriate form of
7 security to the government, which may include an
8 updated third-party cost estimate.

9 RES intends to update the security estimate in
10 accordance with schedule 1 of the code of practice
11 after receiving Commission approval for the project and
12 prior to commencing construction in order to obtain a
13 registration under the code. We understand that AUC
14 bulletin 2025-06 and Commission's reclamation security
15 guidelines for wind and solar power plants are
16 specifically intended to address the alternative option
17 where applicants choose to opt out of the new
18 requirements for government-held reclamation security.

19 As RES intends to provide the entirety of the
20 reclamation security to government and not to hosting
21 landowners, RES understands the Commission's guidelines
22 do not apply to the project.

23 Q. Thank you for providing that update, Ms. Deguise.

24 MS. BOUEY: That concludes our questions for
25 direct evidence, and with that, we will now turn the

16

1 applicant panel over for questioning by OLG counsel and
2 the Commission.

3 THE CHAIR: Okay. Thank you. So you may
4 proceed.

5 **MS. OKOYE CROSS-EXAMINES THE PANEL:**

6 Q. Good morning, RES panel. Mr. Chair, by way of a road
7 map, I will deal with the issues relating to
8 environmental and biodiversity impacts, including bats,
9 noise, decommissioning, and reclamation and other
10 landowner issues. My colleague, Mr. Kema, will deal
11 with the health and safety impacts. That's our plan
12 for cross-examination today.

13 So I will start off with Ms. Sare. And first of
14 all, on the issue of bats. In Exhibit 71, PDF 36,
15 information request 14(b) states, and I quote:
16 (as read)

17 "Postconstruction bat fatality reports
18 from other wind power projects (WPPs)
19 were not considered when planning the
20 bat surveys for the project. ECMP
21 results for neighbouring WPP are
22 considered and compared during the
23 postconstruction monitoring report --
24 reporting that will begin following
25 project commissioning."

17

1 End of quote. Ms. Sare, did you author this report?
 2 A. MS. SARE: Yes. Yes, I did.
 3 Q. Sorry, did you author the response? Sorry, I should
 4 have been more clear.
 5 A. MS. SARE: The response, yes.
 6 Q. Yes, okay. So in your reply evidence, you indicate
 7 that you and Mr. Cuthbert have been supporting the RES
 8 Oyen power project since 2016. Did you work with RES
 9 in relation to the siting of this project?
 10 A. MS. SARE: Yes, that's -- that's correct.
 11 Q. Okay. I'd like to bring up Aid To Cross Number 3, the
 12 bat mitigation framework for wind power development,
 13 PDF page 1. And if we can go to the third paragraph,
 14 Ms. Adebayo, please. So the third paragraph there
 15 says: (as read)
 16 "Wind energy projects must be
 17 appropriately sited and well planned to
 18 avoid or minimize bat mortalities."
 19 Do you see that?
 20 A. MS. SARE: Yes, I do.
 21 Q. Since bat fatality reports from neighbouring projects
 22 were not reviewed, what siting efforts did you and RES
 23 make in siting and planning this project to avoid or
 24 minimize bat mortalities?
 25 A. MS. SARE: So we conducted baseline surveys

18

1 in accordance with the preconstruction protocols for
 2 wind projects in Alberta. That's the Lawson 2010
 3 preconstruction guidance document, and we followed
 4 those requirements in terms of selecting bat detector
 5 locations across the proposed study area for the
 6 project, including raised detectors at select locations
 7 to collect baseline bat data at a -- at an elevation of
 8 30 metres.
 9 Q. So you did not find it relevant to look at what other
 10 projects were reporting relating to bat fatalities in
 11 that area?
 12 A. MS. SARE: So at the -- so the baseline
 13 surveys were conducted in 2022. There were -- with the
 14 initial project, there were surveys conducted in 2016,
 15 and no, that -- the -- the level of bat activity at
 16 existing developments does not dictate how you select
 17 locations to monitor within a given project study area.
 18 So we are looking at the features within our
 19 specific project study area to target bat detector
 20 locations that may be attractive to bats and to get a
 21 representative sample of the area that we are
 22 interested in.
 23 So no, the -- the fatality rates at other wind
 24 sites in the province are not dictating how we design
 25 our sampling study for -- for baseline bats in a given

19

1 project study area. That's correct.
 2 Q. But do you consider the bat fatality rates from other
 3 projects relevant to your consideration of siting of
 4 this project?
 5 A. MS. SARE: So there are landscape features
 6 that we do know are more attractive to bats, and so
 7 when we are designing our baseline studies, when WSP is
 8 retained to conduct baseline studies for a project, we
 9 are given a project study area within which to design
 10 our baseline studies and so we will target locations
 11 that may be attractive to bats.
 12 For example, if there's forested habitats or
 13 coulees, we will select locations that are proximate to
 14 those to confirm whether or not they are indeed
 15 supporting higher activities of bats than other
 16 locations within the project study area, and then we
 17 are also trying to get a representative sampling of the
 18 study area as well.
 19 So not only targeting attractive features that may
 20 be in your targeted study area but getting a
 21 representative sample of the habitat types across your
 22 study area.
 23 MS. OKOYE: Okay. So if we can --
 24 Ms. Adebayo, if we could -- oh, actually, before we
 25 move on, Mr. Chair, could we have Aid To Cross

20

1 Number 3, bat mitigation framework, marked as an
 2 exhibit for identification?
 3 THE CHAIR: Yes, we can mark that as
 4 Exhibit 142.
 5 MS. OKOYE: 142. Thank you, sir.
 6 **EXHIBIT 142 - AID TO CROSS**
 7 **NUMBER 3, BAT MITIGATION FRAMEWORK**
 8 MS. OKOYE: Ms. Adebayo, could we please bring
 9 up Exhibit 89, PDF 9. Okay.
 10 Q. So, Ms. Sare, before we talk about the exhibit that is
 11 up on the screen, you did mention that there was one
 12 raised detector where you placed -- that you placed in
 13 the project area for monitoring purpose for your survey
 14 purpose. Do you --
 15 A. MS. SARE: There were two raised detectors.
 16 Q. But one failed; right?
 17 A. MS. SARE: One failed for most of the fall
 18 migration period but not the spring migration period.
 19 Q. So do you feel that one raised detector that was
 20 effective is sufficient for such a large project in
 21 terms of the survey that you did?
 22 A. MS. SARE: Yes. This -- this study area had
 23 been studied previously as well in 2016, when two
 24 raised -- or one raised detector was deployed in 2016,
 25 so we did feel we had a good understanding of bat

21

1 activity for this project.
 2 Q. So the raised detector in 2016 was at the same location
 3 as the raised detector in 2022; correct?
 4 A. MS. SARE: That's correct.
 5 Q. Okay. No other place did you have a different raised
 6 detector; correct?
 7 A. MS. SARE: No, that's correct, in both times.
 8 So we got representative sampling across a number of
 9 years from -- from that location.
 10 Q. Sure so you feel --
 11 A. MS. SARE: Which was very central to the
 12 project study area.
 13 Q. Okay. So you feel that that one raised detector in the
 14 same location in 2016 and 2022 is sufficient for a
 15 large project area like the Oyen wind facility.
 16 A. MS. SARE: In combination with the remaining
 17 ground detectors, yes, I do.
 18 Q. Okay. All right. So we've got in front of you the
 19 wind facilities in the area of the proposed Oyen wind
 20 project. Do you agree with the location of the Oyen
 21 wind facility and the nearby Sharp Hills and Lanfine
 22 wind facilities?
 23 A. MS. SARE: Sorry, can you please clarify what
 24 you mean with agreeing with the location? It looks
 25 like it's accurately represented on the map.

22

1 Q. That's all I'm asking.
 2 A. MS. SARE: Okay.
 3 Q. Is it accurate, to your belief?
 4 A. MS. SARE: Yes.
 5 Q. Okay. Thank you. Ms. Adebayo, we can take the doc --
 6 oh, no, sorry, actually leave it up.
 7 So the bat migration activities in and through the
 8 Sharp Hills and Lanfine wind facility areas would be
 9 relevant when considering bat migration in Oyen wind
 10 area and the proposed project impacts on migratory
 11 bats; correct?
 12 A. MS. SARE: So the Sharp Hills and Lanfine
 13 projects were not constructed at the time of the
 14 baseline surveys for the Oyen project.
 15 Q. Were they not constructed in 2022?
 16 A. MS. SARE: No, they were not.
 17 Q. Okay.
 18 A. MS. SARE: They may have been under
 19 construction at that time, but they were not
 20 operational -- I should clarify. They were not
 21 operational in 2022.
 22 Q. Okay.
 23 A. MS. SARE: Sharp Hills was not, and I'm --
 24 subject to check, I don't believe Lanfine was
 25 operational through the spring and fall migration

23

1 periods at that time.
 2 Q. So you're saying that in 2016 as well as in 2022.
 3 A. MS. SARE: 2016, they were not. There was --
 4 yes, there's -- I'm confident that there were no
 5 operational projects at Lanfine or Sharp Hills during
 6 the 2016 studies.
 7 In 2022, they were not fully operational. Sharp
 8 Hills was not, and I don't believe Lanfine was
 9 operational for all of 2022 either.
 10 Q. What about 2023? Did you -- and your -- you
 11 conducted --
 12 A. MS. SARE: Yes.
 13 Q. -- these land surveys in 2023; correct?
 14 A. MS. SARE: The bat surveys were conducted in
 15 2022.
 16 Q. Okay. All right. If we can go to Exhibit 115, PDF 13,
 17 Ms. Adebayo. If we go to PDF 13 and Table 1. Could
 18 you please expand that? Thank you.
 19 Here, you provided data on bat activity per
 20 detector for the fall of 2016.
 21 A. MS. SARE: Yes.
 22 Q. In OLG's information request, Exhibit 71, PDF 32, the
 23 OLG requested RES to provide the bat acoustic survey
 24 report for 2016 and other years. RES responded by
 25 providing a summary of the 2016 spring and fall bat

24

1 survey efforts; correct?
 2 A. MS. SARE: Correct.
 3 Q. Why then are you providing the full fall 2016 bat data
 4 now instead of providing it as part of your response to
 5 the OLG information request?
 6 A. MS. SARE: I think at the time, it -- this
 7 information was not readily available, and we didn't
 8 feel that it was -- we had provided sufficient response
 9 to the OLG request at that time, and it took -- it took
 10 until the reply evidence for us to acknowledge that
 11 this information would -- would indeed be valuable to
 12 present, so we presented it at that time.
 13 Q. So you said the information was not available when you
 14 provided the response to the IR from the OLG.
 15 A. MS. SARE: It was -- it was not readily
 16 available, that's correct.
 17 Q. But you did provide a summary that was based on this
 18 table in that response, didn't you, Ms. Sare?
 19 A. MS. SARE: Yes, yes, we did.
 20 Q. So where did you get --
 21 A. MS. SARE: We had --
 22 Q. Okay. Where did you get that information from?
 23 A. MS. SARE: We had sum -- we had summarized
 24 information more readily available than this
 25 information. We had to validate this information

25

1 before we could present it, and that was -- that
 2 process was not readily available at the time of the
 3 OLG response.
 4 Q. Okay. So what is the source of Table 1 in this
 5 exhibit?
 6 A. MS. SARE: This was taken from the
 7 environmental evaluation that was prepared in 2016 --
 8 Q. So can you --
 9 A. MS. SARE: -- for the project at that time
 10 that was then put on hold, so it was never formally
 11 submitted as part of an application.
 12 Q. So can you undertake to provide the report from
 13 which -- that 2016 report from which this table was
 14 sourced?
 15 A. MS. SARE: I can undertake to provide that,
 16 yes.
 17 Q. Okay.
 18 **UNDERTAKING - TO PROVIDE THE 2016**
 19 **REPORT FROM WHICH TABLE 1 IN**
 20 **EXHIBIT 115 WAS SOURCED**
 21 Q. MS. OKOYE: Now, what was the make and model
 22 of the bat detectors used in the 2016 study?
 23 A. MS. SARE: They were the same or similar to
 24 that used in the 2022 study, so it's the full spectrum
 25 SM3 bat detector that was used.

26

1 Q. Okay. So in terms of the number of raised detectors,
 2 and I believe we've talked about that and you're
 3 talking about detectors that are at an elevation height
 4 of 30 metres --
 5 A. MS. SARE: M-hm.
 6 Q. -- there is only one raised bat detector used in this
 7 2016 survey; correct?
 8 A. MS. SARE: That's correct.
 9 Q. And that's the SBATMT that we see on the last row --
 10 A. MS. SARE: Correct.
 11 Q. -- correct? Now, looking at Table 1 that we have in
 12 front of you, it shows a large variation in migratory
 13 bat activity across the low detectors, from 0.39 to
 14 8.17 migratory bat passes per detector night; correct?
 15 A. MS. SARE: That is correct, yes. That is not
 16 atypical of a project study area to see a large degree
 17 of variation in bat activity.
 18 Q. Can you expand on that a little bit? What do you mean
 19 by not typical to see a large variation of migratory
 20 bats?
 21 A. MS. SARE: Sorry, it's not atypical. So
 22 it's --
 23 Q. Oh, atypical. Okay.
 24 A. MS. SARE: It's quite common to see a range
 25 of bat detector -- or bat activity levels across your

27

1 project study area.
 2 Q. At such a large variation is typical?
 3 A. MS. SARE: Yes, I would say yes.
 4 Q. Okay. So if we can go to Exhibit 9, PDF 91,
 5 Ms. Adebayo, please. That's Table 6-20. Thank you.
 6 It's a summary of bat activity by detector
 7 location in fall of 2022. You would agree that this
 8 also shows a large variation in migratory bat activity
 9 for the low detectors from 1 to 8.27 migratory bat
 10 passes per detector night; correct?
 11 A. MS. SARE: Correct.
 12 Q. Now, will the large variation in migratory bat activity
 13 in 2016 and the 2022 fall period suggest a variation in
 14 risk to migratory bats across this Oyen facility?
 15 A. MS. SARE: No, it would not. In both 2016
 16 and in 2022, the risk to migratory bats would have been
 17 considered high, based on the bat mitigation framework.
 18 In both time periods, there were more than two
 19 migratory bat passes per detector night, and that
 20 automatically classifies the project as posing a high
 21 risk to migratory bats.
 22 Q. Okay. The average migratory bat activity recorded by
 23 the one functioning raised detector in 2022 was -- and
 24 you can see it on the screen -- was 4.05 bat passes per
 25 detector night, and in 2016, it was 0.46 bat passes per

28

1 detector night. Do those data reflect the actual risk
 2 to bats across the proposed facility?
 3 A. MS. SARE: The actual risk to bats across the
 4 proposed facility will only be confirmed during
 5 operations. Based on our baseline data, the entire
 6 dataset needs to be taken into account, and, like I
 7 said, the project area classifies as high risk to
 8 migratory bats.
 9 This has been reviewed by AEPA, and that is their
 10 position on this project area as well, and it's very
 11 difficult to pick out a single detector and try to
 12 extrapolate that and draw conclusions about risk to
 13 bats postconstruction.
 14 Q. So you're saying that the fact that you've got a large
 15 number of bat passes both in the raised detector and
 16 also in the low detector -- in the low detectors, that
 17 that will not signify an actual risk to bats in terms
 18 of fatalities.
 19 A. MS. SARE: No, I think I was saying the
 20 opposite, that because the average bat activity levels
 21 across all of the detectors for migratory bats,
 22 particularly when you're looking at the August 1 to
 23 September 10 timeframe is above the two bats per
 24 detector night, that that signifies that the project
 25 area qualifies as a high risk to migratory bats.

29

- 1 Q. So basically high risk does not equate to fatalities is
2 what you're saying.
- 3 A. MS. SARE: I am -- yes, that's what I'm
4 saying as well, that there is not a good correlation
5 between your baseline bat activity levels and your
6 operational fatality rates for bats. There has been
7 quite a lot of literature showing that those do not
8 correlate as well as we might like them to,
9 unfortunately.
- 10 Q. Okay. So both the mean low detector migratory bat
11 activity and the migratory bat activity at the raised
12 detector were lower in 2016 than in 2022. Why is that?
13 Was it due to a change in the detector type or model?
- 14 A. MS. SARE: No, it's unlikely related to the
15 detector type or model. I can't say with any certainty
16 that we used the exact same detectors, but we did use
17 the same make of detector, and there's interannual
18 variation in bat activity levels. So these studies
19 were conducted 6 years apart, approximately, and
20 it's -- it's very possible that it's just due to a
21 different temporal period that's being sampled, the
22 variation -- we'll get variation from year to year.
- 23 Q. Okay. So the 2022 bat survey data used the same
24 detector type and model as used in Lanfine and Sharp
25 Hills postconstruction bat surveys; correct?

30

- 1 A. MS. SARE: It would -- it would have been
2 similar. They all used full spectrum SM3 detectors for
3 the most part. There could be some variation, and
4 sometimes there's variation in the type of microphone
5 that's used as well for picking up bat calls, but
6 they're largely similar.
- 7 But even with the same detector and the exact same
8 microphone, you will get variation between detector
9 types. So there -- there is some variation that can be
10 attributed to the detector, even within the same models
11 being used.
- 12 Q. So given that they use the same or similar detector
13 type and model between Lanfine and Sharp Hills as well
14 as in Oyen, do you agree that this makes the bat data
15 collected from the two operating wind facilities close
16 to Oyen comparable to the data at Oyen?
- 17 A. MS. SARE: Yes, I would agree that we can
18 reasonably compare the data between Lanfine, Sharp
19 Hills, and Oyen, recognizing that there's interannual
20 variation as well.
- 21 Q. Okay. Thank you. So, Ms. Adebayo, we can take the
22 document down. Thank you.
- 23 In Exhibit 115, PDF 14, paragraph (d), you state
24 that the bat pass rate for all bats for August 1 to
25 10th of September, September 10, was 2.94 passes per

31

- 1 detector night, with 1,364 passes over 463 detector
2 nights. You recall?
- 3 A. MS. SARE: Could we please pull that exhibit
4 up?
- 5 Q. Sure, let's pull that up.
- 6 A. MS. SARE: Thank you.
- 7 Q. Exhibit 115, PDF page 14, Ms. Adebayo, please. If we
8 go to PDF page 14 and the response to number (d).
9 Okay. So you see there it says: (as read)
10 "RES accepts the revised calculations
11 that omit the failed detector and only
12 include the August 1 to 10 September
13 date range. The pass rate for all bats,
14 excluding the failed detector, for 1
15 August to 10 September 2022 was 2.94
16 passes per detector night (1,364 passes
17 over 463 detector nights)."
- 18 A. MS. SARE: Right. Dr. Barclay pointed out
19 that the detector that failed partway through the
20 migratory period should be excluded. His rationale for
21 that was that it would be biasing the bat detector
22 rate, which I agreed with to some -- to some extent.
- 23 In some cases, depending on whether you've caught
24 the peak or not, it could bias it upward or down. In
25 this case, it was biasing it down slightly, so we did

32

- 1 recalculate it, and the difference ended up being a
2 0.03 difference in passes per detector night. So it
3 was a very nominal difference that was not going to
4 change any of our conclusions, but for technical
5 accuracy, we updated the calculation.
- 6 Q. So from August 1 to September 10 is 41 days. Do you
7 agree?
- 8 A. MS. SARE: Agree.
- 9 Q. So with 11 detectors, 10 low and one raised, over 41
10 nights, there would be only 451 detector nights and not
11 463 detector nights; correct?
- 12 A. MS. SARE: I'm sorry. I can't do the math in
13 my head on the spot. You're suggesting that the 463
14 detector nights is the wrong value --
- 15 Q. Yes.
- 16 A. MS. SARE: -- to be used there? Is that
17 what you're suggesting?
- 18 Q. That's what I'm suggesting.
- 19 A. MS. SARE: Subject to check, please. I will
20 take another look at that value.
- 21 Q. Okay. So will you take it, then, subject to check that
22 when you considered 11 detectors over a 41-night
23 period, and you divide that with the 1,364 that you --
24 passes per detector night that you have, that will only
25 come up to 451 detector nights? Will you take that

33

1 subject to check?
 2 A. MS. SARE: Subject to check.
 3 Q. So if we use the 451 detector nights over the 1,364
 4 passes, the mean bat activity is 3.02 passes per
 5 detector night, not the 2.94 as stated; correct?
 6 A. MS. SARE: No, I will -- if I'm checking the
 7 463, I will be checking the 1,364 value until. I'll
 8 validate these values, both of them.
 9 Q. Okay. So do you undertake, then, to cross-check the
 10 numbers that you've presented in this Exhibit 115, PDF
 11 14, in relation to your response (d)?
 12 A. MS. SARE: Yes, I will undertake to do that
 13 check.

**UNDERTAKING - TO CROSS-CHECK THE
 NUMBERS THAT WERE PRESENTED IN
 EXHIBIT 115, PDF 14, IN RELATION TO
 RESPONSE (D)**

18 Q. MS. OKOYE: So if we go to PDF page 15 of the
 19 same document, at the top of the page. So there, you
 20 noted in the prior page challenges correlating
 21 preconstruction bat activity with fatality rates using
 22 Lanfine and Sharp Hills examples. There you stated:
 23 (as read)
 24 "If the mortality rate threshold is
 25 exceeded, mitigation measures will be

35

1 been followed across Alberta in terms of managing bat
 2 fatalities, and yes, that bat mitigation framework has
 3 been designed with consideration of Alberta's bat
 4 populations and managing species at risk, so yes.
 5 Q. So you're saying that your proposed mitigation, to not
 6 implement curtailment immediately upon the start of the
 7 operation of the facility, is appropriate, even though
 8 you do have species at risk, bats, occurring or
 9 recorded in your preconstruction surveys.
 10 A. MS. SARE: Yes, that's right. That's the
 11 policy by which bat fatalities are managed in the
 12 Province of Alberta, and yes, it is -- it is
 13 appropriate to follow that policy.
 14 Q. Okay. So if we go further on that PDF page 15, and
 15 Ms. Adebayo, if you could -- yes, that's perfect.
 16 You provided at this Table 1, activity level
 17 preconstruction and bat fatality rates postconstruction
 18 in Lanfine and Sharp Hills. You reported bat fatality
 19 numbers for 2014 for Lanfine and for Sharp Hills wind
 20 farms.
 21 Now, Dr. Barclay's report did not contain any data
 22 for the 2024 monitoring data for Lanfine wind facility.
 23 Can you undertake to produce the 2024 postconstruction
 24 monitoring report for Lanfine that you used in
 25 producing your Table 1?

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1 investigated and implemented as deemed
 2 acceptable through consultation with
 3 AEPA-FWS."
 4 You then continue to say: (as read)
 5 "Monitoring and implementation -- and
 6 implementing mitigation measures in
 7 consultation with AEPA-FWS is more
 8 appropriate for the project than
 9 initiating curtailment immediately upon
 10 the start of operation of the facility."
 11 Correct?
 12 A. MS. SARE: That's correct. That is in
 13 alignment with the bat mitigation framework.
 14 Q. Is it appropriate for the migratory bat population,
 15 including the species at risk that are recorded in the
 16 bat migration surveys for curtailment measures, to be
 17 delayed as you propose?
 18 A. MS. SARE: Sorry, can you repeat your
 19 question?
 20 Q. Is it appropriate for the migratory bat population,
 21 including the species at risk that are recorded in the
 22 bat migration surveys, for curtailment measures to be
 23 delayed as you propose?
 24 A. MS. SARE: So this is in accordance with the
 25 bat mitigation framework. This is the process that has

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1 A. MS. SARE: Those documents are available on
 2 the AUC eFiling website, but yes, I can -- I can
 3 undertake to provide those.
 4 Q. Okay.
 5 **UNDERTAKING - TO PROVIDE THE 2024
 6 POSTCONSTRUCTION MONITORING REPORT FOR
 7 LANFINE THAT WAS USED IN PRODUCING
 8 TABLE 1**
 9 Q. MS. OKOYE: So given the high fatality rates
 10 at the two nearby sites, Lanfine at 4.8 migratory bats
 11 per turbine in 2024 and Sharp Hills at 15.93 migratory
 12 bats per turbine in 2024, despite the implementation of
 13 operational mitigation and the proposed location of
 14 Oyen wind, why is it an appropriate option to wait to
 15 determine what the fatality rate at Oyen will be rather
 16 than to implement immediate curtailment measures during
 17 the fall migration period?
 18 A. MS. SARE: So the mortality rates at Lanfine
 19 are at the low end of the range deemed acceptable in
 20 the bat mitigation framework. AEPA manages bat
 21 fatalities at wind facilities in the province between
 22 the 4 to 8 bats per turbine threshold, and so you can
 23 see there that Lanfine is at the low end of that
 24 threshold, and they have not been required to implement
 25 operational mitigation.

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1 They have implemented voluntary blade feathering
2 below operational turbine cut-in speed, which is
3 3 metres per second, whereas Sharp Hills has
4 implemented bat mitigation -- bat turbine curtailment
5 at that facility.

6 The difference between these two sites is that
7 Sharp Hills partially overlaps with a high value
8 landscape, whereas Lanfine does not, and Oyen is
9 similar to Lanfine in that it's been entirely sited
10 outside the high value landscape, and therefore, it
11 stands to reason that the fatalities at Oyen may more
12 closely approximate those at Lanfine because siting is
13 arguably the most important factor determining bat
14 fatalities during operations.

15 Q. So the operational mitigation that was implemented in
16 Lanfine, was that implemented at the beginning of
17 operation?

18 A. MS. SARE: Yes, that was implemented at the
19 beginning of operation.

20 Q. And it was voluntary --

21 A. MS. SARE: It was.

22 Q. -- by the proponent; correct?

23 A. MS. SARE: Yes, it was. Yes, it was.

24 Q. But you're advocating -- or, sorry, you're suggesting
25 that RES do the opposite: Wait until there's fatality

38

1 before you implement any operational mitigation;
2 correct?

3 A. MS. SARE: I'm suggesting that RES follow the
4 bat mitigation framework, which has been the policy in
5 Alberta for renewable projects.

6 Q. But essentially, in effect, what you are recommending
7 that RES do is that they do not implement any
8 operational mitigation until fatalities occur; correct?

9 A. MS. SARE: Unless required to do so, that's
10 correct.

11 Q. Okay. Ms. Deguise --

12 A. MS. DEGUISE: Yes.

13 Q. -- what is the cost of implementing curtailment
14 immediately upon commencement of operations?

15 A. MS. DEGUISE: We have -- we have looked into
16 that at a high level, and there is certainly a cost in
17 the expected generation of the project to implement
18 curtailment measures.

19 Q. And what is that cost? That's my question.

20 A. MS. DEGUISE: Well, that is quite variable,
21 depending on our final turbine selection activity as
22 well as the -- as well as, you know, the cost of the
23 electricity that we would -- that we would sell, and at
24 that point, that information becomes commercially
25 sensitive.

39

1 Q. Okay. So at this point, based on the currently
2 proposed wind turbines that -- I know it will change,
3 but based on the currently proposed wind turbines, are
4 you able to share what the cost of implementing
5 curtailment immediately upon operation is?

6 A. MS. DEGUISE: No, I'm not able to at this time.

7 Q. Okay. So, Ms. Adebayo, if we can go to PDF page 14 of
8 the same document, and I'll go back to you, Ms. Sare.
9 Paragraph number 2, if we can have that centred,
10 please. Thank you.

11 You indicate there that the mortality threshold of
12 four bat mortalities per turbine per year will become a
13 standard threshold for mortality rates at wind power
14 projects that will trigger implementation of
15 mitigation; correct?

16 A. MS. SARE: That is -- that is our
17 understanding, yes.

18 Q. Then at paragraph 3 of the same PDF page 14, you state:
19 (as read)

20 "Bat fatality rates at Lanfine were
21 below the threshold that triggers
22 mitigation (Table 1)."

23 You see that?

24 A. MS. SARE: I don't see that, but yes, so --

25 Q. It's paragraph 3. I just needed to confirm if that's

40

1 correct. Okay?

2 A. MS. SARE: It's not up on the screen, but --

3 Q. It's there. Look -- no, if we go back to PDF page 14,
4 please, the bottom of the page. Paragraph number 3.

5 A. MS. SARE: Okay.

6 Q. Do you see where it says -- I think that's, one, tow,
7 second sentence, bat fatality rates at Sharp Hills.

8 A. MS. SARE: Yes, below -- below the threshold
9 that triggers mitigation, yes. That is -- that is
10 correct. Four to eight bats is the threshold that
11 triggers mitigation in the bat mitigation framework,
12 correct.

13 Q. Okay. And I was talking also in respect also to
14 Lanfine, which is just right there on the first
15 sentence.

16 A. MS. SARE: Yes, yes.

17 Q. Okay. So now on that Table 1 that we were looking at
18 earlier on PDF page 15, in both years of 2023 and 2024,
19 the bat mortality rate was exceeded for both years;
20 correct?

21 A. MS. SARE: For Lanfine?

22 Q. Yes, Lanfine. For 2023 and 2024.

23 A. MS. SARE: The threshold that AEPA manages
24 bat fatality at is four to eight. It's a range of
25 thresholds.

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1 Our understanding is that, going forward, we may
2 see AEPA managing closer to the four threshold rather
3 than the eight threshold, but most projects right now
4 are being managed at the upper end of that threshold.

5 So for example, if a project currently, in
6 2023-2024, if they're reporting bat fatalities of, say,
7 six bats per turbine, they will not necessarily be
8 required to implement mitigation.

9 So AEPA reserves the right to manage within a
10 range, and I believe they use that to some degree to
11 have flexibility in terms of perhaps the number of
12 projects in an area. If there are few projects in an
13 area, they may manage it at the eight threshold. If
14 there are many, they may manage it closer to the four.

15 I can't -- that's --

16 Q. Yeah, that's fine.

17 A. MS. SARE: -- speculating a little bit, but
18 yes, it's four to eight is the threshold.

19 Q. Okay. So that four to eight threshold is occurring in
20 Lanfine because there is already voluntary curtailment
21 measures being implemented; correct?

22 A. MS. SARE: So I can't speak to the motivation
23 for Lanfine to implement the --

24 Q. No, I'm not asking you to speak to the motivation. I'm
25 saying that you're having the number four --

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1 A. MS. SARE: Yes.

2 Q. -- to eight -- 4 to 4.8 --

3 A. MS. SARE: Okay.

4 Q. -- because there is containment measures in place from
5 the get-go.

6 A. MS. SARE: The blades, the blade feathering
7 is -- yes, they have 4 to 4.8, correct.

8 Q. Yes. Blade feathering, yes. But without that blade
9 feathering, the fatality rate in Lanfine could be
10 higher than the range of 4 to 4.8; correct?

11 A. MS. SARE: It could be, yes.

12 Q. So if we can go back to Aid To Cross Number 3,
13 Ms. Adebayo. I think that's Exhibit I believe 143. If
14 we go to PDF page 3. Sorry, PDF page 5. So the second
15 bullet point there says: (as read)

16 "Annual total bat fatalities at a wind
17 power development in the range of 500
18 bats per development per year is
19 concerning to ESRD Wildlife Branch."

20 A. MS. SARE: Correct.

21 Q. And then it goes further to discuss when there is a
22 cumulative -- when there is a number of wind projects
23 in an area, that you have to consider the cumulative
24 fatalities from all of those projects when you're
25 looking at the 500 number; correct?

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1 A. MS. SARE: AEPA will take into consideration
2 other projects on the landscape. That's correct.

3 Q. All right. So given the high fatality rate at Sharp
4 Hills, Table 1 of your PDF page 15 of Exhibit 115,
5 amounting -- given that the -- there's a high fatality
6 rate at Sharp Hills that amounts to over 1,000
7 fatalities per year despite mitigation, any fatalities
8 at Oyen will add to the bat fatality rate in the area
9 and should automatically trigger mitigation at Oyen
10 wind without waiting for any unmitigated fatality rate
11 to be measured; correct?

12 A. MS. SARE: Oyen is not yet built, and Sharp
13 Hills has another year to reduce their fatalities to an
14 acceptable threshold.

15 So the threshold to which Oyen will be -- will be
16 managed, they could well be below that -- the threshold
17 that would trigger operational mitigation for that --
18 for that area. If they are closer to the 4 bats per
19 turbine, like Lanfine, then they may not require
20 operational mitigation, whereas Sharp Hills, which is
21 located in a high value landscape, may throughout the
22 life of its operations require operational mitigation
23 or more operational mitigation than the other projects
24 in the area.

25 Q. Well, currently, what we do know, based on the 2024

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1 numbers from Sharp Hills, is that they are already
2 exceeding the 500 per wind development per year --

3 A. MS. SARE: That's right.

4 Q. -- in that location; correct?

5 A. MS. SARE: That's right; however, Oyen is not
6 yet built, and we don't know what their fatality
7 rate -- and hopefully, they will get that fatality rate
8 down. That is the intent of the bat mitigation
9 framework is to maintain those fatalities below the
10 acceptable threshold.

11 Q. So, Ms. Deguise, in Lanfine wind project, the
12 proponents adopted a voluntary mitigation of blade
13 feathering at the get-go in order to mitigate bat
14 fatalities. Why wouldn't RES adopt a similar approach?

15 A. MS. DEGUISE: We feel that we -- the project
16 should abide by the current policy that is in place,
17 and that is this bat mitigation framework, and again,
18 the -- as Ms. Sare has mentioned, that preconstruction
19 information data does not -- there's strong evidence,
20 does not correlate to postconstruction fatality
21 results, thus we feel it's important to measure bat
22 mortality during operations to understand at a, you
23 know, pre-curtailment situation such that should we
24 exceed the bat mortality thresholds, at that point, we
25 will implement mitigation measures.

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1 Q. Okay. Ms. Adebayo, could we have Exhibit 89, PDF 11,
2 brought up.

3 So specifically on the table, if we can focus on
4 the table. Thank you.

5 So here, Dr. Barclay noted that with 35 turbines
6 in Lanfine, the fatality rate in 2023 is 140 based on
7 four migratory bat passes per turbine and with
8 operational mitigation. With your 2024 figure of 4.8
9 bat passes per turbine, that would equate to 168
10 migratory bats killed in 2024 at Lanfine wind facility;
11 correct?

12 A. MS. SARE: I would -- yes, I will accept that
13 value, yep.

14 Q. Okay. So for Sharp Hills, Dr. Barclay noted that with
15 67 turbines, the fatality rate is 1,067 migratory bats
16 killed in 2024 based on 15.93 migratory bats per night
17 and with operational mitigation; correct?

18 A. MS. SARE: Correct.

19 Q. So we had looked at Aid To Cross Number 3, the bat
20 mitigation framework, and at PDF 4, it states:
21 (as read)

22 "Initiation of discussions and
23 consultations between wind power
24 developers and ESRD Wildlife Branch
25 regarding operational mitigation and

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1 development proposed in close proximity
2 to another wind power development with a
3 high risk of bat fatality is much more
4 likely to require mitigation."

5 Do you agree that AEPA's relevant threshold for
6 initiating discussions and consultations with AEPA is
7 either when the annual bat fatality numbers per wind
8 development or in combination with nearby wind
9 development is 500 per year?

10 A. MS. SARE: That is -- that is the threshold
11 that has been identified in this bat mitigation
12 framework, yes.

13 Q. With fatalities at 168 in Lanfine and 1,067 in Sharp
14 Hills, do you agree that the combined numbers are above
15 the 500 threshold that is required to trigger
16 consultation with AEPA on operational mitigation and
17 adjustments at Oyen wind?

18 A. MS. SARE: Yes. So Oyen -- RES has been in
19 consultation with AEPA on operational mitigation. That
20 was a commitment that was required in their AEP
21 submission -- or their REP submission, renewable energy
22 project submission.

23 So they have identified the types of operational
24 mitigation that are feasible for the project, and it
25 does include blade feathering and curtailment. So that

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1 adjustments are based on a combination
2 of any of the following."
3 And then the page we had looked at earlier --
4 Ms. Adebayo, we can go there if it makes things easier.

5 Aid To Cross Number 3. So it then continues at that
6 second bullet: (as read)

7 "Annual total bat fatalities at the wind
8 power development in the range of 500
9 bats per development per year is
10 concerning to ESRD Wildlife Branch. For
11 example, 500 bat mortalities per year at
12 one wind power development will have a
13 similar effect on the bat population as
14 five wind power developments in the same
15 local area, each with 100 bat
16 mortalities per year. Therefore,
17 proximity to other wind power
18 developments, the level of bat
19 fatalities at these developments and the
20 projected level of bat fatality -- the
21 level of bat fatality risk at the
22 proposed site based on preconstruction
23 surveys will be factored into
24 discussions regarding siting and
25 mitigation. A new wind power

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1 conversation has been initiated for the project.

2 And the question is whether or not it is
3 necessary, and that's typically determined after one
4 year of postconstruction fatality monitoring to
5 understand if the project does indeed trigger that
6 mitigation.

7 And yes, it is likely for the project, and that's
8 determined by the fact that it was in the high risk
9 category for bats based on the level of migratory bat
10 activity and the fact that there are nearby wind power
11 facilities that are contributing cumulatively to bat
12 fatality does suggest that it is likely; however, the
13 Oyen project is not yet built. The Sharp Hills project
14 is continuing to adapt their mitigation plan to reduce
15 those levels -- those fatality levels, and so the
16 cumulative scenario when Oyen is on the landscape is
17 unknown at this time, as is the level of bat fatalities
18 at that site.

19 So given the uncertainty in terms of the level of
20 activities cumulatively on the landscape at the time
21 when Oyen becomes operational as well as whether or not
22 Oyen will indeed have high fatalities at that site,
23 that -- that is why the one year of operational
24 monitoring is important.

25 And then there's the -- in terms of understanding

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1 the effectiveness of the mitigation that's being
 2 implemented, it's -- it's really difficult to assess
 3 that efficacy when you don't have that initial fatality
 4 rate without your treatment before you implement it.
 5 Q. So within -- I'm not sure where the noise is coming
 6 from. Okay.
 7 MS. OKOYE: Dr. Ursula, could you please mute
 8 yourself?
 9 THE CHAIR: Sorry, this is the chair. Let's
 10 take a moment to make sure everyone's microphones are
 11 off unless they're testifying.
 12 SPEAKER: We have to allow them to commit
 13 the crime, and we're going to report the crime directly
 14 to the premier. We're not going to let them know that
 15 we know. But this is absolutely --
 16 MS. OKOYE: Thank you.
 17 THE CHAIR: Okay.
 18 Q. MS. OKOYE: Thank you. So with any additional
 19 bat fatalities at Oyen, the combined number from the
 20 three facilities would be in excess of 500; correct?
 21 A. MS. SARE: It's quite likely that the
 22 combined fatalities will be in excess of 500 when all
 23 three projects are on the landscape.
 24 Q. Thank you. So bat fatalities in excess of 500 across
 25 the three facilities is not sustainable for the

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1 population of migratory bats and will result in decline
 2 in the migratory bat populations; correct?
 3 A. MS. SARE: That is -- that is a very
 4 difficult question to answer because our understanding
 5 of the migratory bat population is -- is not clear. We
 6 don't have a good grasp on how many migratory bats
 7 there are in -- on the continent, and we don't have a
 8 good understanding of that connectivity in the
 9 population and in terms of whether or not we would see
 10 the declines in the Alberta bat population based on an
 11 excess of 500 in this one locality is a really
 12 difficult question to answer. We do know our bat
 13 populations are declining.
 14 Q. And with the three facilities potentially having --
 15 already, we know that Sharp Hills is in over 500
 16 fatalities. When you add Oyen, regardless of the
 17 number of fatalities in Oyen, you're already going to
 18 have more than 500.
 19 A. MS. SARE: Yes. I --
 20 Q. And my question to you, and without knowing the actual
 21 number of migratory bats that are still in existence in
 22 Alberta, would you agree that bat fatalities in excess
 23 of 500 would have a population effect that would result
 24 in a decline of the population of bats, migratory bats?
 25 A. MS. SARE: I will -- I cannot -- I'm not a

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1 bat population expert. I will leave that type of
 2 response to Dr. Barclay to comment on a threshold of
 3 500 and how that's going to affect the trajectory of
 4 bat populations is outside my area of expertise.
 5 Q. Sure. Thank you, Ms. Sare. Now let's talk about other
 6 environmental impacts.
 7 So AUC Rule 7 -- now we're talking about pronghorn
 8 migration. AUC Rule 7, SP15, states that the
 9 environmental evaluation must identify the specific
 10 ecosystem components, including wildlife species and
 11 habitat that may be adversely affected by the project;
 12 correct?
 13 A. MS. SARE: Correct.
 14 Q. Ms. Adebayo, you can take the document down. Thank
 15 you.
 16 So if we go to Aid To Cross Number 4, the wildlife
 17 directive for wind energy projects, and PDF 6. If you
 18 have it in front of you, I can continue while that
 19 comes up.
 20 So you've got standard 100.2.2 that states:
 21 (as read)
 22 "Proponents must conduct the surveys as
 23 per 100.2.1 in a manner appropriate for
 24 the detection -- in a manner appropriate
 25 for the detection of potentially

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1 affected species in the proposed project
 2 area plus the buffer zone. Survey
 3 protocols must follow the GOA Sensitive
 4 Species Inventory Guidelines."
 5 Then if we go back up to the top of the page,
 6 Ms. Adebayo. Same page, yeah, just there. Thank you.
 7 I think that's sentence 3. It says: (as read)
 8 "Surveys are to be designed, conducted,
 9 and supervised by experienced wildlife
 10 biologists and appropriate environmental
 11 professionals."
 12 Then towards the bottom of that paragraph, it says:
 13 (as read)
 14 "Surveys must be designed based on local
 15 and migratory wildlife species
 16 assemblages, habitats, area topography,
 17 and project design. Preconstruction
 18 planning and surveys provide a baseline
 19 as well as identify potential risks to
 20 wildlife (Kingsley and Whittam 2003)."
 21 Now, the 2013 Sensitive Species Inventory Guidelines
 22 provide guidance on pronghorn; correct?
 23 A. MS. SARE: Subject -- subject to check. We
 24 have not used the 2013 Sensitive Species Inventory
 25 Guidelines to survey for pronghorn, in my experience as

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1 a consultant.
 2 Q. Okay. Now, pronghorn is listed as a species at risk in
 3 Alberta, specifically a sensitive species; correct?
 4 A. MS. SARE: Correct.
 5 Q. Did you do any studies as part of the Oyen wind project
 6 on pronghorn?
 7 A. MS. SARE: The baseline studies we conducted
 8 for the Oyen wind project followed the requirements of
 9 this directive, and they do not include pronghorn
 10 surveys. Despite the preamble that then goes in to
 11 outline the specific requirements under this directive,
 12 those requirements do not include pronghorn surveys.
 13 Q. So in effect, you did not do any studies on pronghorn;
 14 correct?
 15 A. MS. SARE: We did not specifically study
 16 pronghorn. We did record incidental observations of
 17 them throughout the other studies that we conducted.
 18 MS. OKOYE: Sure. Thank you. Mr. Chair,
 19 could we have Aid To Cross Number 4 marked as the next
 20 exhibit for identification?
 21 THE CHAIR: Yes, we'll mark that as
 22 Exhibit 143.
 23 MS. OKOYE: Thank you.
 24 **EXHIBIT 143 - AID TO CROSS NUMBER 4,**
 25 **THE WILDLIFE DIRECTIVE FOR WIND ENERGY**

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1 **PROJECTS**
 2 Q. MS. OKOYE: Ms. Adebayo, could you please take
 3 the document down.
 4 In Exhibit 9, PDF pages 12 and 113, you noted
 5 observations of pronghorn in the project area, but you
 6 did not provide any mapped information regarding
 7 pronghorn in either your Exhibit 8 or 9; correct?
 8 A. MS. SARE: Correct.
 9 Q. Is it your position that pronghorn do not migrate
 10 through or forage in cultivated lands?
 11 A. MS. SARE: No, they will -- they will use
 12 those lands, and we did observe them throughout our
 13 studies; however, the research that has been done on
 14 pronghorn does show that they select for native
 15 habitats, and those habitats likely provide higher
 16 quality forage for them than cultivate landscapes. But
 17 they will use cultivated landscapes, as we know, but
 18 they prefer to use native landscapes.
 19 Q. Okay. So can you recall roughly what percentage of
 20 your pronghorn observations were in native grassland
 21 and which of them were in the tame pasture or
 22 cultivation?
 23 A. MS. SARE: No, I'm sorry, I can't. I can't
 24 recall the proportions of those incidental observation.
 25 Q. Is that something is that you can undertake to check

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1 your records and provide, the pronghorn observation
 2 data, including UTM location, dates, and the habitat
 3 they were observed at?
 4 A. MS. SARE: Did we not provide that
 5 information in our --
 6 Q. No.
 7 A. MS. SARE: Okay. Can undertake to provide
 8 more detail on the incidental pronghorn observations.
 9 Q. Including the percentage, the rough percentage, of
 10 those that were observed in native grassland and the
 11 ones that you observed in tame pasture or cultivation.
 12 Is that agreeable?
 13 A. MS. SARE: Yes.
 14 Q. Okay.
 15 **UNDERTAKING - TO PROVIDE THE PRONGHORN**
 16 **OBSERVATION DATA, INCLUDING UTM**
 17 **LOCATION, DATES, AND THE HABITAT THEY**
 18 **WERE OBSERVED AT, AND INCLUDING THE**
 19 **ROUGH PERCENTAGE OF THOSE THAT WERE**
 20 **OBSERVED IN NATIVE GRASSLAND AND THE**
 21 **ONES THAT WERE OBSERVED IN TAME PASTURE**
 22 **OR CULTIVATION**
 23 A. MS. SARE: I will just point out that drawing
 24 conclusions based on our incidental observations will
 25 have somewhat limited -- limited value. We do know

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1 that they're moving through the landscape, and we know
 2 that they prefer native habitats.
 3 The project has been sited to avoid native
 4 habitats, and we know that wind facilities may, at a
 5 local scale, have some slight changes in behaviour that
 6 do not then correspond, it seems, to lower survival
 7 rates in pronghorn.
 8 So it's going to be very difficult to draw
 9 conclusions from the data provided from our
 10 incidental -- I think there's maybe a dozen incidental
 11 data points for pronghorn. It will be very difficult
 12 to use that information in a meaningful way.
 13 Q. MS. OKOYE: Sure. So you're aware that
 14 pronghorn have migrated through the project lands
 15 despite its cultivated state.
 16 A. MS. SARE: They will use those areas, yes,
 17 and I believe they will continue to use those areas so
 18 long as they are not fenced, which they are not
 19 proposed to be fenced.
 20 Q. Okay. So your environmental evaluation and renewable
 21 energy project submission, Exhibits 8 and 9, do not
 22 specifically mention pronghorn as a provincially listed
 23 sensitive species; correct?
 24 A. MS. SARE: They would have been listed in
 25 the incidental table in Exhibit X0009, and I believe

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1 that incidental table in Section 13 of that exhibit
 2 does include the provincial status of all the species
 3 that are listed. So...
 4 Q. Okay. Sure. Is it your view, then, that pronghorn are
 5 unaffected by wind power developments, or is it that
 6 wind projects are not a barrier to migration? Which
 7 one is your proposition?
 8 A. MS. SARE: My position is that they -- it is
 9 not a barrier to migration.
 10 Q. Not that it is not affected by wind power development;
 11 correct?
 12 A. MS. SARE: No. There -- we -- there has been
 13 studies that have shown that their -- their behaviour
 14 is altered by the presence of wind turbines, but not to
 15 a degree that affects their fecundity or their
 16 survival.
 17 THE CHAIR: Ms. Okoye, I note that it's 10:30.
 18 MS. OKOYE: Yes.
 19 THE CHAIR: So I'm not sure if you would like
 20 to break now or later, but I just thought I'd remind
 21 you.
 22 MS. OKOYE: Thank you, sir. I was just coming
 23 to that. I'll just ask one question. Then I'm done on
 24 pronghorn. Then we can go on break, if that's okay.
 25 THE CHAIR: Yes, certainly.

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1 Q. MS. OKOYE: Okay. So, Ms. Sare, prior to this
 2 proceeding, were you aware of the pronghorn work of
 3 Gates 2012 and Jakes 2015 cited in Mr. Wallis's report,
 4 Exhibit 101 on PDF pages -- PDF page 59 and elsewhere
 5 in his report?
 6 A. MS. SARE: No, I was not aware of Jakes'
 7 Ph.D. thesis, so Mr. Wallis brought that to my
 8 attention.
 9 MS. OKOYE: Okay. All right. Thank you.
 10 Thank you, Mr. Chair. We can go on break now.
 11 THE CHAIR: Okay. Let's reconvene at quarter
 12 to 11.
 13 (ADJOURNMENT)
 14 THE CHAIR: Okay. I can see everyone now. So
 15 we will continue.
 16 We did make an attempt to get our computers
 17 working and were unsuccessful, so we'll continue until
 18 lunch.
 19 MS. OKOYE: Thank you.
 20 Q. MS. OKOYE: Going back to you, Ms. Sare. PDF
 21 page 11 of Exhibit 115, you state that 11 of 84
 22 turbines will have a -- will have an RSA, rotor-swept
 23 area, within 100 metres of native grassland and eight
 24 turbines will overlap seasonal or higher permanence
 25 wetlands; correct?

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1 A. MS. SARE: Correct.
 2 Q. Would you agree that native grasslands and wetlands are
 3 the most significant habitats for birds, both breeding
 4 and migratory, in the area?
 5 A. MS. SARE: Native grasslands and wetlands
 6 provide very important habitat for prairie birds, yes.
 7 Q. And they are the most significant habitats; correct?
 8 Sorry, you --
 9 A. MS. SARE: Correct, correct.
 10 Q. -- nodded your head. Okay. Sorry. So in Exhibit 61,
 11 PDF 2, Alberta Environment and Protected Areas states:
 12 (as read)
 13 "There is a high risk to wetland habitat
 14 and amphibians which is partially
 15 addressed by the mitigations proposed by
 16 the proponent."
 17 End of quote. In your professional opinion, what are
 18 the risks that remain not fully mitigated?
 19 A. MS. SARE: So there are -- there's less than
 20 .1 percent of the available wetlands and native
 21 grasslands in the project study area that are
 22 permanently impacted by the project. So the residual
 23 impacts after mitigation are very, very, very small,
 24 and by extension, the impacts on the species using
 25 those habitats would be very, very, very small.

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1 Q. And what --
 2 A. MS. SARE: And that -- when we're talking
 3 about wetlands, if you then consider the compensation
 4 requirements under the Alberta wetland policy, those
 5 impacts are even further reduced. So the permanent
 6 impacts are compensated for per the wetland policy
 7 under the Water Act.
 8 Q. So what are those residual impacts that you say that
 9 are very, very small?
 10 A. MS. SARE: So specifically, if I can get my
 11 values here, it is 2.38 hectares of wetlands that are
 12 permanently impacted and 0.12 hectares of native
 13 grassland that are permanently impacted.
 14 Q. Okay.
 15 A. MS. SARE: So the project has avoided
 16 99.8 percent of native -- native grasslands and
 17 wetlands.
 18 Q. So what are those residual risks associated with the
 19 residual impacts that are unmitigated?
 20 A. MS. SARE: So those were identified in
 21 Exhibit X0008, our environmental evaluation, and they
 22 come out as being low.
 23 Q. Okay. All right. So in Exhibit 115, PDF page 16, you
 24 state that there is no evidence that data from
 25 nocturnal studies would assist in better design or

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1 implementation of operational mitigation measures.
 2 A. MS. SARE: Nocturnal studies for --
 3 Q. Nocturnal studies.
 4 A. MS. SARE: -- birds?
 5 Q. Yes, for birds, sorry. I should have told you we were
 6 talking about birds now.
 7 So if we could go to Aid To Cross Number 1, the
 8 chapter 7 in the book titled Advances in Weather Radar
 9 Volume 3, Imaging Applications Published in 2023 by the
 10 Institution of Engineering and Technology. Did you
 11 review this aid to cross, Ms. Sare?
 12 A. MS. SARE: Yes, I did.
 13 Q. So if we can go to PDF page 24, so that would be 264.
 14 If we go to the bottom of the page. Okay. Oh, sorry,
 15 if you can centre it such that 264 and 265 will appear
 16 on one page. Not possible? Okay.
 17 All right. Ms. Sare, could you please read the
 18 highlighted portion on page 264.
 19 A. MS. SARE: I actually can't. It's not
 20 showing. All I can see is the first sentence, the
 21 energy -- okay. That's a little bit better: (as read)
 22 **"The energy industry's infrastructure,**
 23 **in conjunction with the ambition to**
 24 **reduce CO₂ emissions and the transition**
 25 **to green energy, has seen a tremendous**

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1 **recent extension and expansion that is**
 2 **slated to continue in order to meet**
 3 **energy demands. This is particularly**
 4 **true for wind energy, and although the**
 5 **positive aspects for cleaner and**
 6 **renewable energy are undebated, the**
 7 **greater prevalence of wind turbines and**
 8 **their concentrations in favourable**
 9 **regions increasingly raises concerns for**
 10 **wildlife and, in particular, for**
 11 **collision risk of birds and bats with**
 12 **wind farms."**
 13 Q. Thank you. Ms. Adebayo, if we can go to PDF page 252,
 14 please. 252. Scroll down to where the highlighting
 15 is. Thank you.
 16 And can you read the highlighted for me, please,
 17 Ms. Sare.
 18 A. MS. SARE: (As read)
 19 **"Real-time forecasts of aerial bird**
 20 **migration are an important tool for**
 21 **mitigating collisions between birds,**
 22 **aircraft, wind farms, and other**
 23 **human-made structures (see also**
 24 **Section 7.3)."**
 25 Q. Thank you. So after reading this, in spite of some of

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1 the challenges, do you still think that there is no
 2 evidence from radar that could assist in better design
 3 or mitigation for impacts relating to migratory birds?
 4 A. MS. SARE: Within the context and policy in
 5 Alberta, no, I do not believe that the radar studies
 6 would be a useful addition for either understanding
 7 project impacts before operations or for mitigating
 8 them postoperations.
 9 The fact of it is that birds do not represent a
 10 large proportion of fatalities at wind sites in terms
 11 of their populations, so there have been a number of
 12 studies in both U.S. and Canada that show that although
 13 our bird populations are declining, there's no question
 14 about that, especially our grassland birds, the primary
 15 drivers for that decline are not wind facilities. It's
 16 buildings, collisions with buildings, transmission
 17 lines, domestic cats. Those are all killing birds in
 18 the order -- in much more significant orders of
 19 magnitude than those estimated from wind facilities.
 20 And so based on that, most of the species of birds
 21 that are being killed at wind facilities, it's one to a
 22 few individuals per year, not per turbine, per year,
 23 and those are not occurring in numbers great enough to
 24 drive regional population changes for those species.
 25 There are a few species that are experiencing

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1 higher mortality rates, horned lark, for example, and
 2 that tends to be related to their aerial displays that
 3 those species utilize during the breeding season, and
 4 so I don't believe the radar studies would be -- would
 5 be useful for mitigating those impacts.
 6 In Alberta, I believe the mitigation for birds
 7 will largely be driven by requirements for bats because
 8 it is the bat populations that are drive -- primarily
 9 driving the operational mitigation.
 10 MS. OKOYE: Okay. All right Mr. Chair, could
 11 we have Aid To Cross Number 1, Chapter 7, in the book
 12 entitled Advances in Weather Radar Volume 3, Imaging
 13 Applications marked as exhibit for identification?
 14 THE CHAIR: Yes, we'll mark that as
 15 Exhibit 144.
 16 MS. OKOYE: Thank you.
 17 **EXHIBIT 144 - AID TO CROSS NUMBER 1,**
 18 **THE CHAPTER 7 IN THE BOOK TITLED**
 19 **ADVANCES IN WEATHER RADAR VOLUME 3,**
 20 **IMAGING APPLICATIONS PUBLISHED IN 2023**
 21 **BY THE INSTITUTION OF ENGINEERING AND**
 22 **TECHNOLOGY**
 23 Q. MS. OKOYE: Ms. Adebayo, if we can go to
 24 Exhibit 115, PDF page 11. Go to the bottom of the
 25 page, the last sentence. Thank you. There, Ms. Sare,

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1 you state: (as read)
 2 "In comparison, the estimated number of
 3 fatalities from wind turbine collisions
 4 was in the hundreds of thousands (Loss,
 5 et al, 2015, and Erickson, et al,
 6 2014)."
 7 Correct?
 8 A. MS. SARE: Yes, and if we're looking at
 9 Canadian estimates, it's an older paper, as are some of
 10 these from 2013, so those estimates were in the tens of
 11 thousands back in 2013, but there was also a projected
 12 estimate out 10 to 15 years, which includes our present
 13 time, and that projected estimate was in the hundreds
 14 of thousands.
 15 So yes, within -- within Canada, the estimated
 16 bird fatalities due to wind facilities is in the
 17 hundreds of thousands, correct.
 18 Q. And that estimate is based on this -- the papers by
 19 Loss, et al, 2015 and Erickson, et al, 2014; correct?
 20 A. MS. SARE: And Zimmerling, et al, 2013, yes.
 21 Q. But those estimates are all more than 10 years old;
 22 correct?
 23 A. MS. SARE: The -- yes, but like I said --
 24 Q. Zimmerling 2013, Erickson 2014, Loss, et al, 2015, are
 25 all 10 years plus; correct?

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1 A. MS. SARE: Yes, but like I said, the
 2 Zimmerling 2013 projected out 10 to 15 years in that
 3 paper.
 4 Q. So if we can bring up Aid To Cross Number 2, the
 5 American Bird Conservancy January 2021 blog. If we can
 6 go to PDF page 4, please. There, it says: (as read)
 7 "As noted above, our projections leave
 8 little doubt that the annual toll in
 9 birds lost to U.S. wind turbines is at
 10 least more than half a million, and a
 11 similarly conservative estimate would
 12 put that number at nearly 700,000 birds.
 13 There is a case to be made that the
 14 number could exceed 1 million. And for
 15 multiple reasons stated above, these are
 16 all likely to be underestimates."
 17 Do you --
 18 A. MS. SARE: This is speaking to the U.S.
 19 specifically, correct.
 20 Q. Do you have any reason to doubt the veracity of those
 21 statements?
 22 A. MS. SARE: No, I do not, but like I said,
 23 this is specific to the U.S., and the values in Canada
 24 are not -- not projected to be the same as the U.S.
 25 Q. Do you agree that this number is just direct mortality

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1 from the turbines and does not include any new
 2 associated transmission or distribution line required
 3 to service wind projects or impacts related to
 4 alienation from their previously used habitat because
 5 of the wind projects?
 6 A. MS. SARE: The collector lines part of the
 7 Oyen project are all underground, so that's -- and in
 8 Alberta, that is a requirement, to bury all collector
 9 lines.
 10 Q. But in this --
 11 A. MS. SARE: So for any -- for any new project
 12 on the landscape in Alberta, the collector lines are
 13 all buried, so the context of the above-ground lines in
 14 this context I don't think is a valid comparison within
 15 our provincial jurisdiction.
 16 Q. Will the transmission line or distribution line that
 17 will be required for this project be underground as
 18 well?
 19 A. MS. SARE: No, but that's not part of this
 20 project application.
 21 Q. I know. Okay. So in terms of the number that is
 22 reported in this aid to cross which you've said is a
 23 U.S. number or based on U.S. turbines, the number is
 24 just speaking to direct mortality without looking at
 25 any other impacts from any other above-ground structure

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1 such as transmission lines; correct?
 2 A. MS. SARE: Correct, correct.
 3 Q. Do you agree that it is not just turbine blades but the
 4 towers themselves that also result in bird mortalities?
 5 A. MS. SARE: I'm sorry, could you please repeat
 6 that?
 7 Q. Do you agree that it is not just turbine blades but the
 8 towers themselves that also result in bird mortalities?
 9 A. MS. SARE: Correct.
 10 Q. Do you agree that siting wind projects away from the
 11 more productive wildlife habitats can significantly
 12 reduce the mortality and habitat alienation effects of
 13 wind turbines on wildlife?
 14 A. MS. SARE: Correct, which is why RES went to
 15 great lengths to site their turbines outside of wetland
 16 setbacks to the extent possible and outside of native
 17 grassland.
 18 Q. Okay.
 19 A. MS. SARE: Including the rotor-swept area and
 20 setback.
 21 MS. OKOYE: Mr. Chair, would we please have
 22 Aid To Cross Number 2, American Bird Conservancy
 23 January 2021 blog entered as the next exhibit for
 24 identification?
 25 THE CHAIR: Yes, we'll enter that as

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1 Exhibit 145. Thank you.
 2 MS. OKOYE: Thank you, sir.
 3 **EXHIBIT 145 - AID TO CROSS NUMBER 2,**
 4 **THE AMERICAN BIRD CONSERVANCY JANUARY**
 5 **2021 BLOG**
 6 Q. MS. OKOYE: So in Exhibit 115, we could go
 7 back to that, Ms. Adebayo, PDF page 11. You state that
 8 AEPA -- I think it's probably up. You state that:
 9 (as read)
 10 "AEPA currently has no policy to guide
 11 acceptable fatality rates for birds or
 12 the conditions that would trigger the
 13 need for operational mitigation, such as
 14 altering cut-in speeds at turbines with
 15 high bird mortality rates. RES will
 16 employ adaptive management and
 17 additional mitigation based on results
 18 of postconstruction monitoring and
 19 consultation with AEPA-FWS if
 20 necessary."
 21 Besides project siting, what are the most effective
 22 mitigations that can be done for wind turbines to reduce
 23 bird and bat fatalities? Is it marking? Reducing
 24 height? Changing the design? Having shutdown during
 25 peak periods of activity or migration, those kinds of

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1 things?
 2 A. MS. SARE: I would say that the blade
 3 feathering and curtailment is the most proven and
 4 effective mitigation for reducing both bird and bat
 5 fatalities.
 6 Q. Okay. Wouldn't use of currently available radar
 7 information about birds for project operation
 8 demonstrate your consideration of how to reduce the
 9 impacts of the turbine towers and rotor-swept areas on
 10 migratory birds?
 11 A. MS. SARE: It's very experimental, and there
 12 are situations where you have weather events coming
 13 through an area, and that causes increases in bird
 14 fatalities. But really, your weather monitoring can be
 15 used to make those kinds of inferences, and they're
 16 very one-off rare occasions when that happens, so it's
 17 difficult to say that there's the cost benefit of that
 18 type of experimental technology would prove useful both
 19 in terms of mitigating the risk to birds and in terms
 20 of the financial return of that investment in that type
 21 of technology. It's very uncertain in terms of its
 22 application at this time.
 23 Q. Okay. All right. So now going on to regional
 24 cumulative effects. Ms. Adebayo, please take the
 25 document down.

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1 So in Exhibit -- actually, if we can have
 2 Exhibit 101, PDF 80, brought up, please. PDF 80, yes.
 3 Here, Mr. Wallis produced a map of renewable
 4 energy projects that are either approved or under
 5 application to the AUC in southeastern Alberta.
 6 Correct?
 7 A. MS. SARE: Correct.
 8 Q. Are you aware of any cumulative effects assessment of
 9 these renewable energy projects specifically related to
 10 pronghorn?
 11 A. MS. SARE: No, I'm not aware of a cumulative
 12 effects study specifically on pronghorn.
 13 Q. Okay. In Exhibit 115, PDF 18, you note that if
 14 AEPA-FWS decides to investigate cumulative effects of
 15 wind energy facilities, standardized reporting by wind
 16 operators will support their initiative. So you're not
 17 opposed to a cumulative effects study; correct?
 18 A. MS. SARE: No, no, I am not.
 19 Q. So your position is that it's just beyond the scope of
 20 the work here; correct?
 21 A. MS. SARE: Correct. There is no regulatory
 22 requirement for RES to undertake the cumulative effects
 23 study as part of their application.
 24 Q. Okay. Thank you, Ms. Sare. We'll go on now to
 25 Mr. Faszler.

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1 Mr. Faszler, in Exhibit 12, Table 3, PDF page 16 --
 2 Ms. Adebayo, could you please take the document down.
 3 In Exhibit 12, Table 3, PDF page 16, it states
 4 that the permissible sound levels and the ASL, assumed
 5 sound level, for four receptors, R8 -- receptor 8,
 6 receptor 8A, R13, and R17, were adjusted due to
 7 proximity to Highway 41; correct?
 8 A. MR. FASZER: Yes, that's correct.
 9 Q. According to your Table 3, the PSLs were adjusted to 55
 10 dBA for nighttime and 45 dBA for nighttime -- sorry, 55
 11 dBA for daytime and 45 dBA for nighttime, and the ASLs
 12 were adjusted to 50 dBA for daytime and 40 dBA for
 13 nighttime; correct?
 14 A. MR. FASZER: Yes.
 15 Q. So you applied Category 2, proximity to transportation
 16 adjustments, as per Rule 12; correct?
 17 A. MR. FASZER: Yes.
 18 Q. So according to AUC Rule 12, Category 2 adjustments to
 19 the PSL is permitted when a dwelling distance is more
 20 than or equal to 30 metres but less than 500 metres
 21 from heavily travelled roads or rail lines; correct?
 22 A. MR. FASZER: Yes.
 23 Q. So what traffic data did you use to support the claim
 24 that Highway 41 is heavily travelled and to support the
 25 adjustment applied?

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1 A. MR. FASZER: Yeah, so it is the publicly
 2 available provincial traffic data, and it was the data
 3 point of the Highway 41 with the intersection of
 4 Highway 9, because that is the closest and
 5 representative traffic data in proximity to the
 6 project.
 7 Q. So I did provide you with some aids to cross, and so in
 8 terms of the data you relied on, are they the same data
 9 that was provided to you as aids to cross?
 10 A. MR. FASZER: It's the same data source. The
 11 data you provided is the newer years from 2024. But
 12 yes, the same data source.
 13 Q. What year did you use for the data you relied on?
 14 A. MR. FASZER: So I went back to check my notes.
 15 So it was 2021 and 2022.
 16 Q. Okay.
 17 A. MR. FASZER: The results of the data are
 18 generally consistent over the years, so that variable
 19 is not relevant.
 20 Q. Okay. That was going to be my next question, and you
 21 prompted that. Okay. Did you conduct a traffic count
 22 by any means?
 23 A. MR. FASZER: No, that is not typically not done
 24 as part of -- as part of a Rule 12 noise assessment.
 25 Q. Sure. So if we can bring up Aid To Cross Number 6, the

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1 daily traffic count for Highway 12 and Highway 41
 2 intersection. So if we blow that up a little bit,
 3 please, Ms. Adebayo.
 4 So the first page identifies a traffic count
 5 locator 134290 as being at the intersection of
 6 Highway 41 and Highway 12; correct?
 7 A. MR. FASZER: That is correct.
 8 Q. And if we --
 9 A. MR. FASZER: I'll point out -- I'll just point
 10 out that this intersection is approximately 60
 11 kilometres away from the project.
 12 Q. Okay. So if we go to PDF page 2, at the bottom of the
 13 page, it shows the annual summer daily traffic or ASDT
 14 heading southbound from the corner of Highway 12 and 41
 15 is 280; correct?
 16 A. MR. FASZER: That is correct for Highway 12.
 17 Q. So assuming this summertime ASDT count, the summertime
 18 traffic volume would be approximately 28 vehicles
 19 during the AUC nighttime period following the
 20 10 percent recommendation of Rule 12; correct?
 21 A. MR. FASZER: That is correct. I will just
 22 reiterate that this location is 60 kilometres --
 23 approximately 60 kilometres from the project, and we
 24 used other data for the -- for the project.
 25 Q. Okay. So if we go to PDF page 3, it shows the 100-hour

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1 estimate for traffic heading south in the morning is 25
 2 vehicles. That's at the bottom of the page. Correct?
 3 A. MR. FASZER: Yep. Yes.
 4 Q. And if we go to PDF page 4, it also shows a 100-hour
 5 highest hour estimate for the afternoon traffic heading
 6 south is 33; correct?
 7 A. MR. FASZER: That is what this item shows;
 8 correct.
 9 Q. So if we can go to Aid To Cross Number 5, the traffic
 10 count for Highway 9 and Highway 41 intersection, which
 11 you say is the closest; right?
 12 A. MR. FASZER: Correct.
 13 Q. So looking at -- yeah. The first page identifies a
 14 traffic count locator 135240 as being at the
 15 intersection of Highway 9 and Highway 41; correct?
 16 A. MR. FASZER: Correct.
 17 Q. If we go to PDF page 2, the annual summer daily traffic
 18 or ASDT, if we go to the -- yeah. The annual summer
 19 daily traffic or ASDT data for 2024 going northbound
 20 from the corner of Highway 41 and Highway 9 is 1,270;
 21 correct?
 22 A. MR. FASZER: Correct. So this -- this is more
 23 representative of the data that was used in the noise
 24 assessment, so taking roughly that 1,270, taking
 25 10 percent of that is 127, which is greater than 90.

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1 Q. Okay.
 2 A. MR. FASZER: As the criteria from AUC Rule 12
 3 for heavily travelled road for the nighttime period.
 4 Q. So if the AUC Rule 12 definition of heavily travelled
 5 road of 90 vehicles during nighttime consistently for
 6 one-month period is applied, the 28 vehicles per night
 7 in relation to Highway 41 and Highway 12 during the
 8 summer months does not meet the Rule 12 requirement for
 9 the application of an adjustment for the north end of
 10 the control section; correct?
 11 A. MR. FASZER: I would agree for the north end,
 12 but as I have stated, I don't -- my opinion is that is
 13 not representative of the project area as that portion
 14 of the highway is over 60 kilometres away.
 15 My opinion is the southern data point -- because
 16 this is approximately 2 to 7 kilometres from the
 17 project area, this is representative -- this exhibit
 18 and data is representative of the traffic in the
 19 project rather than the earlier data that was
 20 discussed.
 21 Q. Okay. So you said there is a 60-kilometre distance
 22 between Highway 9 and Highway 41 intersection?
 23 A. MR. FASZER: Not quite. It's the approximate
 24 distance from the project to those two locations. I
 25 think the distance between Highway 9 and Highway 12 is

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1 greater than 60 kilometres. I didn't -- I didn't
 2 specifically look at that distance.
 3 Q. Okay. So going north from Highway 9, there is 127
 4 vehicles per night, which, as you have mentioned, would
 5 satisfy the 90 vehicles per night criteria. But my
 6 question is, we do not know if these vehicles continue
 7 to pass by receptors R8A, R13, and R17 because there is
 8 no traffic count information available after this
 9 control point; correct? After this traffic control
 10 point; correct?
 11 A. MR. FASZER: Not specifically at the project
 12 area. I would agree with that. This is the closest
 13 traffic point to the project area.
 14 Q. Yes, but you don't have any information that will
 15 confirm that this 127 vehicles continued the
 16 approximately 60-kilometre distance to pass by
 17 receptors 8, receptors 8A, receptor 13, and receptor 17
 18 to warrant an adjustment to the PSL; correct?
 19 A. MR. FASZER: My opinion is this is consistent
 20 with practices of doing a noise assessment with AUC
 21 Rule 12 of using the closest and representative data
 22 point to establish traffic volumes in proximity to
 23 receptors.
 24 Q. You are not a traffic expert, are you?
 25 A. MR. FASZER: Not in traffic of itself. It's

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1 more the noise effects of traffic.
 2 Q. Okay. All right. So when you looked at -- I don't
 3 know if you took a look at Google Maps to see if there
 4 are any businesses along that stretch of over 60
 5 kilometres you mentioned. Did you find any businesses,
 6 for instance, a gas station, along that road that could
 7 result in traffic diverting to that gas station and
 8 probably going elsewhere?
 9 A. MR. FASZER: Towards, like, north of the
 10 project area, or?
 11 Q. North of the project area. North of this traffic count
 12 intersection.
 13 A. MR. FASZER: I have not done an extensive study
 14 of what is up in that area there. I -- my opinion is
 15 that it's likely traffic travelling to, you know,
 16 locations of homes and farm activities and other oil
 17 and gas and typical, you know, industrial, rural
 18 activities.
 19 Q. Yeah, but you don't know for sure that this 127
 20 vehicles per night of traffic would actually pass by
 21 receptors 8, 8A, 13, and 17 consistently for a
 22 one-night period in the summertime; correct? You don't
 23 know that.
 24 A. MR. FASZER: I would not say I definitively
 25 know that. I would also point out -- so the 127 is

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1 approximately, you know, 40 percent greater than the
 2 90, so there is also some conservatism of traffic that
 3 goes north past those dwellings relative to the 90
 4 traffic -- nighttime period traffic count criteria.
 5 Q. Given there's no basis for the application of
 6 Category 2 adjustments to the PSL for these four
 7 residences, what would the cumulative levels be for
 8 these four residences if they were all considered to be
 9 in Category 1?
 10 A. MR. FASZER: So it would be the project
 11 application case with a -- with a lower ambient sound
 12 level.
 13 Q. So are we talking about, for instance, the
 14 McKinstries - like, receptors 8 and receptors 8A and
 15 receptor 17 - that would likely result in an adjustment
 16 to their application case CSL daytime to 45 and 35 dBA?
 17 A. MR. FASZER: In this conceptual scenario, that
 18 is what would be applicable. I will repeat my opinion
 19 and position that the -- there -- the traffic is
 20 representative with sufficient conservatism such that
 21 those receptors have the applicable elevated
 22 permissible sound levels from a heavily travelled road.
 23 Q. So what conservatism did you apply in relation to --
 24 other than you adjusting the -- other than you
 25 adjusting the requirement in relation to adjacency to a

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1 highway, what other conservatism did you put in place
 2 to ensure that your numbers still remain conservative?
 3 A. MR. FASZER: So one I just highlighted is that
 4 traffic count that is at approximately 40 percent
 5 higher than the 90 limit criteria, if we pull up
 6 Exhibit, I think it's 56, it's I think PDF 14. Yeah,
 7 page 14 of this document.
 8 So this is an IR response to the Commission about
 9 conservatism in the modelling, so I think one more
 10 page. So it must be -- must be a cover page. So
 11 it's -- yeah, there we go.
 12 So if you scroll down, here is the conservatism of
 13 the modelling. So the response (a), each receptor was
 14 assumed to be downwind from each source 100 percent of
 15 the time. Downwind conditions tend to enhance noise
 16 propagation, so this assumption likely overestimates
 17 potential noise impacts.
 18 Ground conditions in most of the study area meet
 19 the definition of porous ground. Therefore, a ground
 20 factor very close to 1 is generally representative of
 21 the study area. Nevertheless, a substantial more
 22 reflective ground factor of .5 was used in the
 23 modelling. Reflective ground tends to enhance noise
 24 propagation, so this assumption likely overestimates
 25 potential noise impacts.

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1 And the project wind turbines and substation were
 2 modeled with maximum noise emissions 100 percent of the
 3 time because project noise sources will often operate
 4 with less than maximum noise emissions, e.g. noise
 5 emissions from the wind turbines are reduced during
 6 periods when hub height wind falls below 7 metres per
 7 second. This assumption likely overestimates potential
 8 noise impacts.

9 If you scroll down a little bit, I think we are at
 10 the end.

11 Q. Okay.

12 A. MR. FASZER: Oh, there is one more. There is
 13 one more. If we scroll down the page, there is one
 14 more data point.

15 Terrain features were the only acoustical
 16 screening elements considered in the noise model.
 17 Acoustical screening from anthropogenic features, e.g.
 18 buildings, and from vegetation were not considered
 19 because shielding can reduce noise levels at receptors.
 20 This modelling approach likely overestimates the
 21 potential noise impacts.

22 Q. Okay. And so -- thank you. Since given what we've
 23 discussed, we don't know -- there's no other traffic
 24 count data, information, that is available after the
 25 control point that we've talked about along the

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1 intersection of Highway 9 and Highway 14, so -- and the
 2 fact that you've applied a Category 2 adjustment to the
 3 PSLs for those four receptors we've talked about, which
 4 if you do apply a Category 1 adjustment, you've
 5 confirmed that that would result in lower numbers for
 6 the PSL.

7 Now, can you undertake to produce what the CSL
 8 levels will be for the four receptors by updating the
 9 numbers in Table 11 and Table 12 of your NIA if you use
 10 a Category 1 adjustment? Is that possible to do?

11 A. MR. FASZER: If that is wanted, I can undertake
 12 to produce that.

13 Q. Yes, I do want you to undertake to do so.

14 A. MR. FASZER: Yeah, as I've stated, my opinion
 15 remains that the values stated in the noise impact
 16 assessment are the representative values.

**UNDERTAKING - TO PROVIDE WHAT THE CSL
 LEVELS WILL BE FOR THE FOUR RECEPTORS
 BY UPDATING THE NUMBERS IN TABLE 11 AND
 TABLE 12 OF MR. FASZER'S NIA USING A
 CATEGORY 1 ADJUSTMENT**

22 Q. MS. OKOYE: What should RES do to mitigate the
 23 noise if it is over the PSL of 40 dBA?

24 A. MR. FASZER: Are you asking me that question?

25 Q. I'm asking you that question. You're the noise expert.

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1 A. MR. FASZER: Yeah, no, that's fine. So in that
 2 scenario, so as we just went through, there is
 3 conservatism, so one, I would look into the
 4 conservatism of those values. So one might be doing a
 5 postconstruction noise monitoring to assess what the
 6 actual measured values are, because it is -- it is
 7 likely that the predicted results are higher than
 8 measured. Additional mitigation can be sound optimized
 9 modes to reduce project noise emissions.

10 Q. Okay. But we don't have -- do you have any information
 11 relating to the sound optimized mode that you've
 12 mentioned? I believe in the response to AUC's IR, that
 13 was not produced.

14 A. MR. FASZER: So sound -- the sound optimized
 15 modes do exist for these turbines. That data is
 16 confidential.

17 Q. Okay. So in Exhibit 114, PDF 4, Table 1, you state
 18 that the project will be in compliance and that RES has
 19 removed two wind turbines, T10 and T29, from the
 20 project, but you've not produced an updated NIA
 21 removing these two turbines; correct?

22 A. MR. FASZER: That's correct. I don't think
 23 that is necessary for two reasons. One is the results
 24 as predicted are representative of turbines, so all
 25 that would happen is the results may go down a little

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1 bit, and then if we pull up the OLG IR -- the RES to
 2 OLG IR response, the turbines that have been dropped in
 3 that IR are kind of mid turbines, so they won't
 4 materially change the predicted results. So it won't
 5 change the compliance criteria of the project. I'm
 6 just trying to find that exhibit number for you.

7 Q. Okay. I will continue. If you do find it, then you
 8 can mention that.

9 Ms. Deguise, would RES commit to produce a revised
 10 NIA that reflects the noise impacts of the project,
 11 including removing the Category 2 adjustments from the
 12 four residences discussed earlier?

13 A. MS. DEGUISE: We could commit to doing that if
 14 that's something our noise expert feels would bring
 15 value to the evaluation of the project.

16 A. MR. FASZER: So as I have stated before, I do
 17 not -- I'm not of the opinion that that is appropriate
 18 for that -- because the -- one, we are providing as
 19 part of that undertaking the cumulative sound levels
 20 under the hypothetical scenario of the other
 21 permissible sound levels, and two, the results as
 22 predicted in the noise impact with those two dropped
 23 turbines are conservative and still are mostly
 24 representative, and three, the project ultimately will
 25 have to do a final project update, and that -- at that

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1 time, my opinion is it's more representative to provide
 2 those results.
 3 Q. Okay. So you've mentioned earlier that information
 4 relating to the noise reduced mode is confidential.
 5 Have you completed any field measurements for any of
 6 your clients to verify the claims of noise reduction
 7 from a noise -- from a reduced noise mode operation of
 8 wind turbines, and if you have done so, can you
 9 elaborate on the results of the measurements in general
 10 terms? In terms of what level of reduction was
 11 measured.
 12 A. MR. FASZER: No, I haven't specifically
 13 conducted an investigation into noise reduction modes,
 14 but the data sheets, both publicly and confidentially
 15 ones are available, are -- are relatively
 16 straightforward. So there's often sound optimized
 17 modes, you know, starting at half a decibel or one
 18 decibel, and then you can often get sound reduced modes
 19 of in excess of 6 decibels if so wanted or needed.
 20 THE CHAIR: I -- so it's the chair here. Can
 21 we -- can we bring the current exhibit down from the
 22 screen?
 23 MS. OKOYE: Yes, yes, for sure, Mr. Chair.
 24 THE CHAIR: Yeah, and then just as a reminder,
 25 so once the exhibit is no longer being specifically

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1 referenced, if we can just pull that down.
 2 MS. OKOYE: Thank you.
 3 THE CHAIR: Okay. Thanks.
 4 A. MR. FASZER: Sorry. Then just circling back,
 5 that exhibit that I was referring to was Exhibit 71,
 6 just for the record, if it's so wanted, where those
 7 source order rankings are in -- it's hard copy page 39.
 8 So Exhibit 71, hard copy page 39.
 9 Q. MS. OKOYE: Okay. So in the NIA, Exhibit 12,
 10 PDF 26, Table 11, you presented the application case
 11 cumulative noise level values to a single decimal
 12 point; however, in Table 12, PDF page 27, you rounded
 13 the values to the nearest whole number, thus indicating
 14 compliance.
 15 What is your opinion regarding whole number
 16 reporting for the results from comprehensive sound
 17 surveys?
 18 A. MR. FASZER: For postconstruction noise
 19 monitoring sound surveys or just general construction
 20 survey? Maybe just repeat the question.
 21 Q. What is your opinion regarding whole number reporting
 22 for the results from comprehensive sound surveys?
 23 A. MR. FASZER: Okay, so my opinion is consistent
 24 with the noise impact assessment and AUC Rule 12 that
 25 both predictions and postconstruction noise monitoring

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1 compliance criteria is assessed at whole-number
 2 precision.
 3 MS. OKOYE: Okay. All right. Thank you,
 4 Mr. Faszler.
 5 Mr. Chair, could we have Aid To Cross Number 5,
 6 traffic count for Highway 9 and Highway 41
 7 intersection, marked as an exhibit for identification?
 8 THE CHAIR: Yes, we'll mark that as
 9 Exhibit 146.
 10 MS. OKOYE: Thank you.
 11 **EXHIBIT 146 - AID TO CROSS NUMBER 5,
 12 TRAFFIC COUNT FOR HIGHWAY 9 AND
 13 HIGHWAY 41 INTERSECTION**
 14 MS. OKOYE: And also Aid To Cross Number 6,
 15 daily traffic count for Highway 12 and Highway 41
 16 intersection, marked as exhibit for identification.
 17 THE CHAIR: Okay. That will be Exhibit 147.
 18 MS. OKOYE: Okay. Thank you, sir.
 19 **EXHIBIT 147 - AID TO CROSS NUMBER 6,
 20 DAILY TRAFFIC COUNT FOR HIGHWAY 12 AND
 21 HIGHWAY 41 INTERSECTION**
 22 Q. MS. OKOYE: All right. We'll go back to
 23 Mr. Cuthbert.
 24 In your reply evidence, Exhibit 115, PDF 19, you
 25 state that removing turbine concrete foundation to a

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1 depth of 1.2 metres is similar with the oil and gas
 2 industry.
 3 Do you agree that the magnitude of the proposed
 4 wind facility and the size of the concrete involved in
 5 this project are different from the concrete pads for
 6 wells in the oil and gas industry?
 7 A. MR. CUTHBERT: Yes, I would agree with that
 8 statement. I would also note that there's other codes
 9 of practice, such as the code of practice for pits that
 10 allows burying of inert materials, such as concrete,
 11 that may be more on par with the volume of concrete
 12 associated with a wind turbine foundation.
 13 Q. So you further state at PDF 19 Exhibit 115 that the
 14 rationale for leaving uncontaminated or inert concrete
 15 in place was to avoid additional soil disturbance.
 16 A. MR. CUTHBERT: Yes, that is one of the rationale.
 17 Q. So the removal of concrete to a 1.2 metre depth would
 18 involve soil disturbance; correct?
 19 A. MR. CUTHBERT: Yes.
 20 Q. And removal of the entire concrete foundation can occur
 21 at the same time and during the same process as the
 22 removal of the 1.2 metres of concrete; correct?
 23 A. MR. CUTHBERT: I think if you're removing it to
 24 the entire foundation depth, you would have to have a
 25 larger excavation to remove all of that. So there

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1 would probably be a higher level of soil disturbance
2 associated with that, and you would also have a larger
3 area with potential changes in soil permeability if you
4 backfilled that entire volume.

5 Q. Yes, but that activity will occur at the same time as
6 the time that you're removing the 1.2-metre depth of
7 concrete; correct?

8 A. MR. CUTHBERT: Yes, if you're removing the
9 entire foundation depth at that time.

10 Q. So you cite the wind energy service guide, which
11 states: (as read)

12 "Environmental impacts during
13 decommissioning/full removal of
14 below-ground infrastructure can include
15 noise disturbances, ground disturbance,
16 and more. Additional environmental
17 concerns related to full foundation
18 removal may include compromised site
19 stability, erosion, or unwanted pathways
20 for surface and subsurface water due to
21 inappropriate backfilling of the site."

22 Would you agree that all of the environmental impacts
23 cited can also occur during the removal of the
24 1.2 metres of concrete? For example, there would be
25 noise from drilling, blasting, crushing of the

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1 1.2 metres of concrete; correct?

2 A. MR. CUTHBERT: Yes, and we had noted further down
3 potential adverse effects of not achieving similar soil
4 conditions between surrounding material and backfill
5 are certainly likely similar as if the foundations were
6 left in place. So yes, there would be similar effects
7 between the two.

8 Q. So the other concerns mentioned, such as site
9 stability, erosion or unwanted pathways for surface and
10 subsurface water are related to inappropriate
11 backfilling of the site; correct?

12 A. MR. CUTHBERT: Yes, that could be the case.

13 Q. If appropriate measures are put in place, backfilling
14 of the site can avoid issues related to site stability,
15 erosion, and creating unwanted pathways for surface and
16 subsurface water; correct?

17 A. MR. CUTHBERT: Yes, if those were the
18 requirements at the time, those measures could be put
19 in place.

20 Q. But if we do put the measures in place, then you can
21 achieve backfilling of the site successfully; correct?
22 And avoid those impacts.

23 A. MR. CUTHBERT: Yes, if those measures were put in
24 place at the time.

25 Q. Is there a plan by RES not to put those measures in

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1 place that will achieve site stability, erosion, and
2 creating unwanted pathways for surface and subsurface
3 water?

4 A. MR. CUTHBERT: No, that's not correct. RES has
5 committed they will follow the requirements of the CNR
6 directive or any updates that are in place in the
7 time -- at the time, so if that was the requirement at
8 the time, they would -- they would adhere to that, but
9 as of right now, the requirement is for partial removal
10 down to a minimum depth of 1.2 metres.

11 Q. Now we're talking about the backfilling operation, if
12 you were to remove all of the concrete, right? The
13 concerns that you've raised are in relation to the fact
14 that if you do remove all of the concrete beyond the
15 1.2 metres depth, that you're going to have issues with
16 site stability, erosion, and unwanted path ways for
17 surface and subsurface water.

18 So the question that I had asked you is does RES
19 currently have plans to ensure that there is site
20 stability, erosion, and unwanted pathways for surface
21 and subsurface water are not created?

22 A. MR. CUTHBERT: Yes, those would be standard
23 requirements to make sure that they meet equivalent
24 capability when they reclaim the land.

25 Q. Sure. Do you have experience with remediating and

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1 reclaiming oil and gas well sites?

2 A. MR. CUTHBERT: No, I do not personally.

3 Q. Okay. In your experience, what are the risks of
4 leaving a large-sized concrete underground at 82
5 locations in the project area?

6 A. MR. CUTHBERT: As I've noted, it's an inert
7 material, and the requirements for leaving that in
8 place are currently outlined in the CNR directive,
9 which was based on stakeholder feedback and other
10 industry best practices.

11 So as per AEP's guidance, I don't believe that
12 they feel that there would be impacts related to
13 leaving that volume of material in place.

14 Q. Okay. So if the rest of the concrete base are left
15 underground, what effects would that have on a
16 landowner wishing to create a dugout on his farm at the
17 proposed concrete pad location?

18 A. MR. CUTHBERT: So RES has also committed in
19 various places throughout Exhibit 0008 that the final
20 decommissioning reclamation will occur in accordance
21 with landowner expectations. So if a landowner had
22 plans to do that, then that would be discussed with RES
23 at the time, and they would meet his requirements.

24 Q. Okay. So in aid to cross -- if we can bring up Aid To
25 Cross Number 8, please, the conservation and

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1 reclamation directive.
 2 We can go to PDF page 45, please. Specifically
 3 under infrastructure, you see the first bullet point,
 4 first subparagraph. It says there: (as read)
 5 "The operator must demonstrate that the
 6 remaining infrastructure will not result
 7 in an adverse effect, i.e. will not
 8 interfere with restoring the site to
 9 equivalent land capability, including
 10 but not limited to impacts to surface
 11 and/or subsurface drainage or crop
 12 growth."
 13 Okay. I'll stop there.
 14 A. MR. CUTHBERT: Yes.
 15 Q. Are you suggesting in your reply evidence that once the
 16 turbine foundation concrete is reclaimed to a depth of
 17 1.2 metres, that RES does not have to demonstrate that
 18 the remaining infrastructure will not result in a -- in
 19 an adverse effect?
 20 A. MR. CUTHBERT: No, I'm not saying that at all.
 21 There are processes throughout the project life under
 22 the CNR directive and more recently in the COP that
 23 there will be additional fieldwork done and additional
 24 surveys conducted to understand what the requirements
 25 are to reclaim the site, and so that information would

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1 inform future updates to the CNR plan that would
 2 confirm whether any adverse impacts would be expected
 3 by only partially removing to that depth, and if those
 4 are anticipated, then they could change their CNR plan
 5 in the future to address that.
 6 Q. Okay. So if the obligation to demonstrate there is no
 7 adverse effect remains on RES, should the reclamation
 8 evaluation reflect the full removal cost of the turbine
 9 foundations pending the demonstration of no adverse
 10 effects?
 11 A. MR. CUTHBERT: No, I don't believe that would be
 12 appropriate, especially with the release of the new
 13 code of practice for renewables. It was -- which is
 14 Aid To Cross Number 10.
 15 On PDF 14, it specifically states that the
 16 reclamation security estimate should account for the
 17 removal of any below-ground infrastructure to
 18 1.0 metres and removal of concrete infrastructure to a
 19 minimum depth of 1.2 metres.
 20 Q. Okay. Did you also see in that Aid To Cross 10 that
 21 the government also indicated that they're relying on
 22 proponents complying with the conservative conservation
 23 and reclamation directive for renewable energy
 24 operations in preparing this code of conduct -- code of
 25 practice, sorry?

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1 A. MR. CUTHBERT: Yes, I would agree with that, and
 2 again, there will be additional information collected
 3 throughout the process, geotechnical studies, soil and
 4 vegetation field studies. The CNR will be updated
 5 every 5 years throughout the project life, as per the
 6 code of practice, and if there are changes to the CNR
 7 plan as a result of that additional information, then
 8 the reclamation planning as well as the cost estimates
 9 could be updated at that point in the project life to
 10 account for any changes.
 11 But based on the level of information that's
 12 required at the stage of the AUC application, which is
 13 based on a desktop review assessment, it's appropriate
 14 to assume that the 1.2-metre partial removal depth
 15 would be sufficient for the purposes of the CNR plan
 16 and the reclamation cost estimate.
 17 Q. So you're saying that even though -- and correct me if
 18 I'm wrong. Even though the conservation and
 19 reclamation directive has put an obligation on the
 20 operator to demonstrate that the remaining
 21 infrastructure will not result in an adverse effect,
 22 and you've recognized that there will be additional
 23 activities relating to that which also could mean
 24 additional costs, so you're telling the Commission
 25 today that they do not need to consider that as

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1 something that is required to be included in the
 2 reclamation evaluation as at today, even though the
 3 costs will change down the road, depending on if you
 4 use 1.2 metres.
 5 A. MR. CUTHBERT: That is what was released in the
 6 code of practice that came out last week, that the
 7 1.2-metre depth is appropriate for the purposes of the
 8 reclamation evaluation at this point.
 9 Q. All right. Thank you, Mr. Cuthbert. And I will go on
 10 to Mr. Carrocci.
 11 And, Ms. Adebayo, could you please take the
 12 document down. Oh, actually, sorry, could we have that
 13 document back up?
 14 If we can go to aid to cross, that same document,
 15 PDF 26.
 16 Mr. Carrocci.
 17 A. MR. CARROCCI: Hi.
 18 Q. There you are.
 19 A. MR. CARROCCI: We meet again.
 20 Q. Yes, we do meet again. Good to see you. So in that
 21 page, the page that you have in front of you, the
 22 government has listed -- well, they say seven but it's
 23 actually six regulatory organizations that they've
 24 listed that they've said have the authority to perform
 25 to prepare and sign off on reclamation plan and

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1 anything associated with that.
 2 Are you a member of any of these organizations:
 3 The Alberta Institute of Agrologists, the Alberta
 4 Society of Professional Biologists, Association of
 5 Professional Engineers and Geoscientists of Alberta,
 6 the Association of Chemical Profession of Alberta, the
 7 Association of Alberta Forest Management Professionals,
 8 or the Association of Science and Engineering
 9 Professional Technologists of Alberta?
 10 A. MR. CARROCCI: No, I am not.
 11 Q. Okay. Now, is Sunset -- you're the president of
 12 Sunset, correct?
 13 A. MR. CUTHBERT: May I --
 14 Q. Mr. Cuthbert, I'm done with you. Thank you.
 15 Okay, so is Sunset a member of any of the listed
 16 organizations in the CNR directive?
 17 A. MR. CARROCCI: No, we're not. We're a member of
 18 the Canadian Renewable Energy Association but not a
 19 member of any of these professional associations.
 20 Q. Okay. So have you assisted a client in preparing and
 21 submitting a reclamation certificate application in
 22 respect of land remediation and reclamation in Alberta?
 23 A. MR. CARROCCI: Not for a certificate application.
 24 Our decommissioning plans are supplementary to the CNR
 25 objectives, so -- yeah. I don't believe that we need

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1 to be a member of any of these, and any of these
 2 associations, they don't have the experience that we
 3 do.
 4 Q. Oh, okay. Ms. Adebayo, could you please take the
 5 document down.
 6 So are you saying that you have experience in
 7 land -- in preparing and submitting a reclamation
 8 certificate in respect of land remediation and
 9 reclamation?
 10 A. MR. CARROCCI: Not in terms of the certification.
 11 We have experience in decommissioning, in renewable
 12 energy construction and decommissioning.
 13 Q. Okay. So no experience in reclamation, correct? You
 14 understand there's a difference between decommissioning
 15 and reclamation?
 16 A. MR. CARROCCI: Yeah, absolutely. So
 17 decommissioning and reclamation, they do go hand in
 18 hand; however, we are not part of the environmental,
 19 the monitoring, the wildlife studies, the glare
 20 assessments. We have nothing to do with that. Bat
 21 studies, that's not us. We're there to physically
 22 deconstruct the infrastructure.
 23 Q. Okay. Perfect. And the evaluation -- the reclamation
 24 evaluation that you prepared, I think it's 25 --
 25 Exhibit 25.01, that is meant to just capture

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1 decommissioning costs; correct?
 2 A. MR. CARROCCI: The processes, the costs as well
 3 as the salvage value of recovered materials.
 4 Q. Of just the decommissioning process; correct?
 5 A. MR. CARROCCI: The process, the cost, and the
 6 salvage value of materials, yes.
 7 Q. Okay. All right. So in your reply evidence,
 8 Exhibit 113, PDF 2, you state: (as read)
 9 "Sunset is the first of few contractors
 10 in Canada to decommission a wind
 11 turbine."
 12 A. MR. CARROCCI: Yes. We've done --
 13 Q. What wind --
 14 A. MR. CARROCCI: We've done two of them now.
 15 Q. Okay. What wind project is this? And is it in
 16 Alberta?
 17 A. MR. CARROCCI: I'm under an NDA with our
 18 customer, but there is one in Alberta and there is one
 19 in Ontario.
 20 Q. Okay. And what is the size of the facility?
 21 A. MR. CARROCCI: Oh, it was I want to say 40 -- 40
 22 turbines plus on both projects.
 23 Q. Okay. On both projects. Okay. All right. Can you
 24 generally describe the activities that Sunset undertook
 25 in decommissioning those wind turbines?

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1 A. MR. CARROCCI: Absolutely. It was blade
 2 management, deconstruction of the nacelles, looking at
 3 subsurface conditions, foundation inspection,
 4 transportation of materials. There was a significant
 5 amount of transportation given the size of the
 6 infrastructure. All health and safety, and then
 7 obviously environmental, like just looking after the --
 8 following the CNR directive for wetland -- respecting
 9 wetlands, spill response, that kind of thing.
 10 Q. Okay. So in your report, Exhibit 225.01, the
 11 reclamation breakdown that you provided at PDF page 3,
 12 you had included the entire salvage value of the wind
 13 turbines; correct?
 14 A. MR. CARROCCI: Correct, yes.
 15 Q. Okay. Did you review the Aid To Cross 10, the code of
 16 practice, that was shared with your counsel yesterday?
 17 A. MR. CARROCCI: Yeah, yep, I've looked at it.
 18 Q. And would you agree that that code of practice for
 19 renewable energy -- for solar and wind renewable energy
 20 operations does not require that salvage value be
 21 included in the reclamation evaluation?
 22 A. MR. CARROCCI: I don't --
 23 MS. OLENIUK: Mr. Chair, if I could just jump in
 24 for a moment here and object to this question, and
 25 perhaps this is something I should have raised earlier

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1 in the morning, but our understanding -- and
 2 appreciating this has all just sort of happened last
 3 week, but our understanding is that in response to the
 4 release of the code that we're talking about, the
 5 Commission of course released its bulletin. It
 6 provided guidelines on its expectations for
 7 landowner-negotiated reclamation security programs and
 8 updated the interim information requirements for
 9 Rule 7, and those interim information requirements are
 10 essentially updated -- I'm paraphrasing -- to say, you
 11 know, if you confirm that you're providing it to the
 12 government, there's no further information that's
 13 required. If you're going to be providing security to
 14 landowners, there's a bunch of information that's
 15 required and associated guidelines.

16 But in effect since RES confirmed that it's going
 17 to provide security directly to the government, in our
 18 view, the issue of the reclamation cost estimate and
 19 the reclamation security is not relevant any longer to
 20 the Commission's consideration of the application
 21 because it's now the government that's going to be
 22 overseeing that program, including the estimate in
 23 accordance with the code and reclamation security in
 24 accordance with the code.

25 So it's our position that because of those changes

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1 had filed before, and as long as -- I still think, I
 2 believe that in the bulletin that the Commission
 3 issued, the Commission specifically stated that they
 4 still consider reclamation issues to be relevant to its
 5 consideration of the public interest.

6 So I would say that issues relating to reclamation
 7 and decommissioning of this project still remains a
 8 relevant consideration for the Panel to take into
 9 consideration.

10 In some views -- in some instances, I have -- I'm
 11 going to be shortening my questions and just getting
 12 some confirmation, but I still think that this is an
 13 issue that the Commission and the Panel should actually
 14 look into and get information on.

15 THE CHAIR: Okay. That's helpful. And so
 16 just to be clear -- and we'll provide an opportunity
 17 for Ms. Oleniuk to reply in a moment -- but -- so your
 18 position is to the extent that the issues are related
 19 to reclamation decommissioning as separate from
 20 reclamation security and in particular reclamation
 21 security under the government's new code of practice,
 22 then those are still relevant questions and that, you
 23 know, our public interest decision is to consider those
 24 issues.

25 But the real question is, you know, given what --

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1 and because of RES's confirmation this morning, that
 2 these topics are now outside the scope of the hearing.

3 THE CHAIR: If you'll just give me one
 4 moment. Thank you.

5 Ms. Okoye, I will give you an opportunity to
 6 respond also.

7 MS. OKOYE: Thank you, Mr. Chair. I do note
 8 that my friend was quick to introduce that new evidence
 9 this morning regarding RES's intention to comply with
 10 the code of practice, and I do note that prior to this
 11 morning, the information before the Commission is that
 12 Sunset, or RES, will be applying 100 percent of the
 13 salvage value of the turbines to the reclamation cost
 14 estimate. Now, this morning -- sorry.

15 A. MR. CARROCCI: May I -- sorry, you asked me a
 16 question --

17 THE CHAIR: No. No. Sorry, so, Ms. Okoye,
 18 you can continue briefly and then I'll convene with my
 19 copanelist, Commissioner Slawinski, and at the point,
 20 the experts will not be testifying on this.

21 MS. OKOYE: Thank you. So the new -- so this
 22 morning, my friend introduced the code of practice, and
 23 Ms. Deguise stated that they will be complying with all
 24 aspects of the code of practice, but the information
 25 that is currently before you is still based what they

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1 with what's just happened, to what extent is evidence
 2 that is on the record and essentially questions and
 3 responses from the witnesses related specifically to
 4 reclamation security part of our public interest
 5 decision. And I'll turn it over to Ms. Oleniuk.

6 MS. OLENIUK: Thank you, Chair. So in our view,
 7 the aspects, the physical aspects, of decommissioning
 8 and reclamation as set out in the conservation and
 9 reclamation report are still relevant to the
 10 proceeding, which is why I didn't object to those
 11 questions being asked. So the -- you know, sort of the
 12 how and the what around those physical aspects of
 13 reclamation, I think those are still squarely within
 14 the Commission's jurisdiction to consider. It is
 15 something the Commission still has in Rule 7. I don't
 16 think the code changed any of that.

17 In our view, what the code did change last week --
 18 and I think that's reflected in what the Commission
 19 issued on Friday -- is the fact that the government has
 20 now determined what needs to be in a cost estimate.
 21 Ms. Deguise indicated that RES would be looking at that
 22 and may be updating that in response to -- during
 23 direct evidence this morning, and the second part that
 24 it changed is with respect to reclamation security,
 25 where if it's being provided to the government, again,

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1 we don't see that the AUC has a role in that when it's
2 being provided directly to the government.
3 So our submission is any questions relating to the
4 reclamation security -- or to the reclamation estimate
5 under the code of practice are now irrelevant because
6 that's with the government, and any questions relating
7 to reclamation security itself, because it's being
8 provided to the government, is also out of scope.

9 THE CHAIR: Okay. That's helpful. One
10 moment.

11 So Commissioner Slawinski very helpfully reminded
12 me we're one minute away from lunch break, so we will
13 take our lunch, we'll come back, and we'll have
14 something to say on that before we continue with the
15 cross-examination. Okay?

16 We'll see everyone back at 1:00 p.m.

17 MS. OKOYE: Thank you, sir.

18 (PROCEEDINGS ADJOURNED AT 12:00 P.M.)

20 PROCEEDINGS ADJOURNED TO 1:00 P.M.

21 _____
22 _____
23 _____
24 _____
25 _____

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1 So be careful with questions in that regard. Is
2 that clear?

3 MS. OLENIUK: Yes, sir.

4 MS. OKOYE: That is clear, sir.

5 THE CHAIR: Okay. Great. So then we'll turn
6 it back to Ms. Okoye to continue with questioning the
7 applicant's experts.

8 MS. OKOYE: Okay. Thank you, sir.

9 Q. MS. OKOYE: I will just have two questions,
10 and I think that those two questions will go to
11 Ms. Deguise, and this is in relation to the code of
12 practice for renewable energy and your statement this
13 morning that RES will file an updated reclamation plan
14 and reclamation cost evaluation. Do I have that right?

15 A. MS. DEGUISE: Yes, correct.

16 Q. Okay. And in that updated filing, can you confirm that
17 RES will not include any salvage value of the wind
18 turbines in that filing?

19 MS. OLENIUK: Chair, this doesn't seem to be in
20 accordance with your ruling. These are specific
21 questions around the reclamation security cost estimate
22 that's going to be provided to the government at a
23 later date.

24 THE CHAIR: Yeah, no, I agree. So can you
25 please change your line of questioning, Ms. Okoye?

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1 Volume 1
2 June 9, 2025
3 P.M. Session

5 (PROCEEDINGS RESUMED AT 1:01 P.M.)

6 THE CHAIR: So I believe we have everyone now.
7 So we'll deal with the objection first.

8 So given the position of the applicant as
9 articulated by Ms. Deguise and counsel, Ms. Oleniuk,
10 taking into account the code of practice that was
11 recently released as well as the AUC's bulletin and the
12 clear position that the applicant is pursuing
13 government security, reclamation security, for the
14 purposes of this hearing, and in particular as it
15 relates to questions for the rest of today and also in
16 the rest of this hearing, issues related to reclamation
17 security and cost estimates related thereto under the
18 code of practice are considered out of scope for this
19 hearing.

20 Now, that -- as was understood by both counsel,
21 that does not mean that questions related to the
22 reclamation in general as it does not relate
23 specifically to reclamation cost -- or reclamation
24 security cost are out of scope, but we'd rather not
25 have to rule on this repeatedly.

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1 Q. MS. OKOYE: Sure. So, Ms. Deguise, can you
2 confirm that you -- in your updated filing with the AUC
3 regarding the reclamation plan as well as reclamation
4 cost evaluation, you comply with all of schedule 1 of
5 the code of practice for renewable energy projects?

6 MS. OLENIUK: Sorry to jump in again, Chair, but
7 my understanding is this reclamation cost estimate
8 doesn't in fact go to the Commission if the reclamation
9 security's being provided to the government. It
10 appears that it's provided to the government as part of
11 the registration process.

12 MS. OKOYE: I believe Ms. Deguise said this
13 morning that they will be filing an updated plan.

14 MS. OLENIUK: She didn't. She indicated that
15 there may be updates required to the plan, but I don't
16 believe there's a requirement to file an updated plan
17 with the Utilities Commission if the security is not
18 being provided to the landowner.

19 MS. OKOYE: Okay. All right. I will move on,
20 then, if that will not be filed, yes, don't need to go
21 there.

22 Q. MS. OKOYE: Okay. So going now back to you,
23 Ms. --

24 THE CHAIR: Sorry, and I'll say, I think we
25 should continue here, but in fairness to everyone, this

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1 did just happen.
 2 So it's not like we're -- this is highly unusual,
 3 a day before the hearing that, you know, a development
 4 like this would occur. So it's entirely fine that we
 5 had to go through this process. In fact, I anticipated
 6 we'd go through this process earlier on in the day, but
 7 now it's clear, I think.

8 MS. OKOYE: Okay. Thank you, sir.

9 THE CHAIR: Okay. Thank you.

10 Q. MS. OKOYE: Okay. So back to you,
 11 Ms. Deguise. In relation to shadow flicker concerns
 12 expressed by the OLG members, in Exhibit 71, PDF 55,
 13 RES proposes some mitigation measures that it is
 14 willing to implement to address shadow flicker concerns
 15 should that -- shadow flicker should that become a
 16 concern to residents.

17 The measures include installing blinds, curtains
 18 in windows facing the turbines, and erecting screening
 19 and/or vegetation barriers between receptors and nearby
 20 turbines.

21 So in the event that vegetation screening is
 22 required, where does RES intend to install the
 23 vegetation screening? Will that be on lands leased by
 24 RES, or would that be on the complaining residents'
 25 lands?

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1 A. MS. DEGUISE: The mitigation measures for shadow
 2 flicker would be done in consultation with the
 3 complainant at that time in terms of determining the
 4 most appropriate location and mitigation measure that
 5 we would install.

6 Q. So in that case, in terms of the vegetation screening,
 7 it could be on lands owned by RES, or it could be on
 8 the complaining resident's lands; correct?

9 A. MS. DEGUISE: Sure. That's a possibility.

10 Q. Okay. So if the resident does not want the trees on
 11 their lands, is RES willing to put the trees on the
 12 leased lands?

13 A. MS. DEGUISE: Yes, we would be open to that,
 14 should the lease -- the owner of the land that we are
 15 leasing for the project, we would have to check with
 16 them as well as the private landowner that they would
 17 be comfortable with installing some vegetation.

18 A. DR. OLLSON: So if I might, the problem with
 19 doing that -- I mean, the problem you have a vegetation
 20 cover --

21 Q. Excuse me, Dr. Ollson, sorry. My questions are for the
 22 corporate witnesses, and I really do not need your
 23 response. Thank you.

24 So will RES be responsible for maintaining the
 25 trees until they are fully established?

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1 A. MS. DEGUISE: Yes, we could include that as part
 2 of our -- the conservation and reclamation directive
 3 that requires that you ensure that your reclamation
 4 activities do, you know, take hold within the first
 5 three years of operations, and so we can make similar
 6 commitments should we -- should we plant vegetation as
 7 the mitigation measure to shadow flicker.

8 Q. And in terms of the height of the trees at the
 9 installation, are you looking at fully grown trees or
 10 small-sized trees, and will they be evergreen trees?

11 A. MS. DEGUISE: Yeah, I may -- I may turn that
 12 over to our witness and our expert on those affairs,
 13 given that the -- they were the ones who did the
 14 assessment for the project and is very familiar with
 15 this topic to speak in terms of the appropriateness of
 16 what vegetation is planted.

17 Q. So who are you referring the questions to?

18 A. MR. FASZER: So I can maybe do the initial
 19 response, and then if Dr. Ollson has some additional
 20 comments, he may add those comments.

21 So conceptually -- so maybe as introductory
 22 context, a bunch of dwellings in the area actually have
 23 vegetation already in place, and that is one of the
 24 conservatisms of the shadow flicker modelling in that
 25 vegetation screening is not included in the modelling

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1 so that the results overpredict four dwelling receptors
 2 that have existing vegetation screening, but to your
 3 question, the effectiveness of the vegetation
 4 screening, it essentially needs to, you know, block or
 5 interrupt that line of sight from the sun to the -- to
 6 the dwelling house, so that is -- you know, it's the
 7 nature of the height of those trees is specific of what
 8 time of the day when the shadow flicker is and very
 9 specific to individual -- individual houses.

10 So I would -- I would recommend looking into the
 11 details of that potential mitigation once the specifics
 12 of that hypothetical scenario are available. In my
 13 opinion, it's a little premature to look into the
 14 specifics of that scenario.

15 Q. But you do understand -- so --

16 A. DR. OLLSON: In fact, having visited the site
 17 yesterday, all four of the OLG members -- and actually,
 18 only three of them have any predicted shadow flicker --
 19 in each of those, all four houses, the orientation of
 20 the house and the windows and all of them have very
 21 significant tree breaks surrounding the houses already,
 22 20, 30-foot-high trees. All of them already do.

23 So I don't think you're going to need a tree break
 24 or vegetation planting around any of the four OLG
 25 members' homes within a kilometre and a half of a

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1 turbine because those tree breaks already exist.
 2 There's significant foliage, and they're both evergreen
 3 as well as deciduous trees, and so I don't believe that
 4 it is going to be the case where you're going to need
 5 vegetative screening in order to mitigate shadow
 6 flicker at the four OLG homes because they already
 7 exist.
 8 Q. Okay. Thank you, Dr. Ollson. Ms. Adebayo, could you
 9 please bring up Exhibit 93. And if we can go to PDF
 10 page 23.
 11 Look at the picture there that is at the top of
 12 the page, which was a picture presented by RES in
 13 response to OLG's information requests at PDF page 52
 14 of Exhibit 71.
 15 According to Mr. Gerald McKinstry, the trees noted
 16 just right underneath that picture: (as read)
 17 "The trees noted by RES would do nothing
 18 to shield us from shadow flicker. In
 19 fact, Gerald is physically taller than
 20 the referenced trees. RES agents had
 21 previously asked Gerald about the trees,
 22 and Gerald explained to the agents that
 23 the trees would not provide any shield."
 24 So in respect to Mr. Gerald McKinstry, Ms. Deguise, what
 25 specific mitigation measure will RES employ to minimize

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1 the shadow flicker at Mr. Gerald McKinstry's place?
 2 A. MS. DEGUISE: We -- we have listed in our
 3 submission the ones that we are proposing, and again,
 4 this would be in discussion with Mr. McKinstry once the
 5 facility is operational and, you know, we understand in
 6 greater detail his concerns around shadow flicker and
 7 how those are being experienced by him, and we can then
 8 proceed to work with him closely to implement any
 9 mitigation.
 10 Q. So since Mr. McKinstry -- Gerald McKinstry, because
 11 there are two of them -- Gerald McKinstry filed his
 12 submissions, has RES met with or discussed any
 13 potential mitigation measure to Mr. Gerald McKinstry's
 14 place related to shadow flicker concerns he has raised?
 15 A. MS. DEGUISE: I might turn this question over to
 16 Ms. Gibson, as she was involved in many of the
 17 discussions with our -- with the landowners and
 18 stakeholders here.
 19 Q. Sure.
 20 A. MS. GIBSON: Yeah. So while we had
 21 consultation with Mr. McKinstry, we discussed the
 22 options but never came to a specific option.
 23 It's always been the case where what happens in
 24 the future will -- if there is a shadow flicker above
 25 the guidelines, then that would be the conversation we

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1 would have at that time and discuss the appropriate
 2 measures at that time.
 3 Q. Okay. All right.
 4 A. MS. DEGUISE: I might just add as well that my
 5 understanding is Mr. McKinstry is under the guidelines
 6 there in terms of the number of hours. Perhaps
 7 Mr. Ollson could just clarify the number of hours here
 8 that is expected in our very conservative shadow
 9 flicker assessment, how many hours Mr. McKinstry will
 10 see of shadow flicker.
 11 Q. But you do understand, Ms. Deguise, that Mr. Gerald
 12 McKinstry has seen the shadow flicker modelling and is
 13 still saying that he did not have any shadow flicker
 14 before now and also before the construction of the
 15 project, and he still has a concern.
 16 So don't you think that RES should have taken that
 17 concern serious and had a conversation with
 18 Mr. McKinstry as to potential mitigation that could be
 19 implemented specific to his place?
 20 A. MS. DEGUISE: As Ms. Gibson clarified earlier,
 21 that we have discussed this with him and presented the
 22 possible options, but no, we did not agree to a
 23 specific mitigation that we would employ before the
 24 project is built, understanding that, again, this is a
 25 very conservative estimate of the potential shadow

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1 flicker that, you know, assumes Mr. McKinstry will be
 2 home at all times near a window when experiencing that
 3 shadow flicker.
 4 Q. Okay. So in Exhibit 56 -- and, Ms. Adebayo, could you
 5 please take the document down.
 6 In Exhibit 56, PDF 22, RES states that it will
 7 promptly respond to any shadow flicker complaints or
 8 concerns that may arise during project operations.
 9 What is the response timeline? Are you talking about
 10 24 hours?
 11 A. MS. DEGUISE: We would certainly target that for
 12 acknowledging receipt of the complaint by a landowner,
 13 stakeholder in the area.
 14 In terms of a response to addressing that, it's
 15 going to depend on the significance of the complaint
 16 and the agreed-upon mitigation with the -- with the
 17 landowner.
 18 Q. Okay. So, Ms. Adebayo, could we go back again to that
 19 Exhibit 93, PDF 21. And this is in relation to
 20 flashing red -- in relation to flashing red lights.
 21 Could we go -- scroll down a bit.
 22 So at the bottom of the page, Mr. Gerald McKinstry
 23 stated: (as read)
 24 "In addition, we will also be exposed to
 25 the red light -- red turbine lights.

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1 Red flashing rights in our windows all
 2 night long will have a detrimental
 3 impact on our residence and our
 4 nighttime -- if we could go to the next
 5 page -- relaxation and sleep. Because
 6 we live on a hill, these red lights will
 7 fall directly on our windows."
 8 Then he goes further to the second paragraph on PDF
 9 page 22. He says: (as read)
 10 "Gerald is a keen stargazer. He
 11 observes the stars and the planets at
 12 nighttime. Gerald has a night telescope
 13 for this given the high vantage point of
 14 our residence. With the red flashing
 15 lights from the wind turbine, Gerald is
 16 concerned that he will have to put up --
 17 he will have to put a stop to his
 18 stargazing activity if the project is
 19 allowed to proceed. If the Commission
 20 decides to approve the project, the
 21 project applicant should be obligated to
 22 implement measures to address impacts to
 23 Gerald's stargazing activity."
 24 So what measures will RES commit to put in place to
 25 address the project's impacts on Gerald's stargazing

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1 recreational activity, Ms. Deguise?
 2 A. MS. DEGUISE: Yeah, at this time, under -- you
 3 know, we have designed the project to follow all county
 4 bylaws as well as all federal and provincial
 5 requirements around lighting, and this is tied, as you,
 6 I'm sure, are very familiar with, the
 7 transportation from Navigation Canada and Transport
 8 Canada in regards to lighting on the turbines for
 9 safety reasons, and so we have submitted those
 10 documents and will update them prior to project
 11 construction in terms of confirming which turbines will
 12 have the lights and which ones won't. So we are
 13 following required legislation in terms of lighting.
 14 Q. So if the turbines that are around Mr. Gerald's --
 15 Gerald McKinstry's place that will have impacts on his
 16 stargazing activity are not required to be lighted, is
 17 RES committing to remove or shut the lights off, the
 18 flashing red lights for those turbines?
 19 A. MS. DEGUISE: No.
 20 Q. Assuming that is acceptable to Navigation Canada. Or
 21 Transport Canada, sorry.
 22 A. MS. DEGUISE: No, not -- no. I'll leave it at
 23 that. That would require some serious discussion with
 24 Transport Canada and Nav Canada, which are, you know,
 25 very important rules to follow for the safety of

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1 aircraft and other aerial activity.
 2 Q. So are there operational measures that you're aware of
 3 that can be used to minimize the use of red flashing
 4 lights? For instance, maybe the lights have to come in
 5 at certain times of the night, or they're motion
 6 sensed? I don't know. Are you aware of any of such
 7 operational mitigation measures that could be put in
 8 place?
 9 A. MS. DEGUISE: I am aware of some, yes.
 10 Q. Can you tell us which ones you're aware of?
 11 A. MS. DEGUISE: I'm aware of the aircraft
 12 detection lighting system.
 13 Q. Okay. And is that --
 14 A. MS. DEGUISE: This is not something that I have
 15 implemented on any of the projects that I have worked
 16 on, though, so -- yeah. It's not something that I can
 17 speak in detail to.
 18 Q. Okay. Is this something that RES can discuss with
 19 Transport Canada to see if that measure can be applied
 20 in relation to turbines around Mr. McKinstry's
 21 residence?
 22 A. MS. DEGUISE: Yes, we can speak to Transport
 23 Canada.
 24 A. DR. OLLSON: So if I might, with the ADLS
 25 system -- or the aircraft detection lighting system,

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1 it's not something that gets implemented for an
 2 individual with a couple turbines around them. It's an
 3 all-or-nothing project commitment, so it's
 4 radar-activated detection system, so it would be either
 5 implemented for the entire project or not at all.
 6 Q. Yes, I recognize that. Thank you for providing that
 7 information. But there are also other members of OLG
 8 that have raised similar concerns with shadow flicker.
 9 So if that's an option that is available that can
 10 be implemented on a project-wide basis, is that
 11 something that RES is willing to do?
 12 A. MS. DEGUISE: Well, just to clarify that this
 13 ADLS is for aircrafts at night with the red lights is
 14 my understanding.
 15 Mr. Ollson, if you can clarify that that is
 16 correct. It's not for shadow flicker.
 17 A. DR. OLLSON: That's right. Ms. Okoye, I think
 18 you may have just misspoken by saying shadow flicker.
 19 I think you meant the red light --
 20 Q. Sorry, I meant the red flashing lights, sorry.
 21 A. DR. OLLSON: No problem. So yes, it is for --
 22 so the ADLS system is for the turning off the red
 23 lights at night.
 24 Q. Okay. Sorry. Thank you. So in PDF page 23 of
 25 Exhibit 93, if we go there, Mr. Gerald McKinstry

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1 states: (as read)
 2 "We also note that the project
 3 applicant --
 4 That's at the bottom of the page, please. Under health
 5 and resonance, health impacts and resonance frequency:
 6 (as read)
 7 "We also note that the project applicant
 8 has not disclosed the resonance
 9 frequency of the wind turbines. The
 10 resonance frequency of the turbines
 11 should be disclosed by the project
 12 applicant."
 13 What is the resonance frequency of the turbines,
 14 Ms. Deguise?
 15 A. MS. DEGUISE: I'm going to have to turn that
 16 over to our noise expert on that matter.
 17 Q. Sure. Mr. Faszzer?
 18 A. MR. FASZER: So I'm not of the opinion there is
 19 a specific resonance frequency there. What this might
 20 be referring to is the blade bypass frequency, which
 21 essentially is the turbine RPM multiplied by the number
 22 of blades.
 23 Q. And what is the number?
 24 A. MR. FASZER: I don't know what the number is.
 25 I don't know what the -- its RPM is.

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1 A. DR. OLLSON: It's 11 revolutions per minute, or
 2 RPM. So -- I mean, I think if we look at this
 3 statement, it is probably more likely to do with -- I
 4 think -- you know, again, I shouldn't speculate, I
 5 guess, too much, but I think he's talking about the all
 6 in for sound.
 7 So, you know, of course, the sound from the
 8 turbines spans the full spectrum from inaudible to
 9 audible sounds, and it's going to vary at his property.
 10 Q. Okay. Thank you, Dr. Ollson. So now going to
 11 construction impacts. Ms. Adebayo, could you please
 12 take the document down.
 13 In Exhibit 71, PDF 48, RES provided the distance
 14 of project infrastructure to each of the OLG members'
 15 properties. OLG -- the nearest infrastructures are
 16 either an access road or underground cable.
 17 OLG members have expressed concerns about noise
 18 and dust during construction. Now, in relation to
 19 dust, what measures will RES put in place to mitigate
 20 dust arising from the project?
 21 A. MS. DEGUISE: Yes, typically during
 22 construction, we would water the roads, and in some
 23 situations, we would apply a tackifier to the roads in
 24 front of high-traffic areas and potentially in front of
 25 certain residences or just the high-activity areas that

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1 have the potential for disturbance with -- due to dust.
 2 Q. Okay. Thank you. Now, in Exhibit 56, PDF 20, RES
 3 states that, in quotes: (as read)
 4 "Screw piles would be used if practical
 5 because this type of pile driving
 6 produces less noise than impact pile
 7 driving."
 8 End of quote.
 9 Will RES commit to using only screw piles for this
 10 project, given their noise reduction benefits?
 11 A. MS. DEGUISE: No, I think -- I think that -- I'm
 12 not a construction or design engineer, but I'm pretty
 13 sure screw piles are mostly used at solar facilities,
 14 and in this case, this is a wind project, and we would
 15 be, you know, laying a foundation of rebar, with
 16 concrete. There would be no screw piles, subject to
 17 check with my engineering team. But that is a solar
 18 facility design.
 19 Q. Okay. I believe in that response, RES was talking
 20 about using that for the substation.
 21 A. MS. DEGUISE: Okay.
 22 Q. Just get to that. If we can bring up aid -- sorry,
 23 Exhibit 56, PDF page 20. If we scroll up, first of
 24 all, to PDF page 19, it states that -- to the bottom of
 25 the page: (as read)

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1 "RES expects the following activities
 2 would be required during project
 3 construction."
 4 And then RES expects the following equipment -- if we go
 5 to the next page: (as read)
 6 "RES expects the following equipment
 7 will emit noise during the construction
 8 activities listed above."
 9 And then in the first full paragraph, there it starts
 10 talking about: (as read)
 11 "Screw piles will be used if practical
 12 because the type of pile driving
 13 produces less noise than impact pile
 14 driving activity."
 15 So you're saying now that RES will not be using any
 16 screw piles for this project?
 17 A. MS. DEGUISE: Yeah, I think that -- that is
 18 specific to our substation. Thank you for correcting
 19 me there. That's not for the turbines themselves but
 20 at the substation location, and that would be a very
 21 small window. I think we say right there not to exceed
 22 two weeks. And so again, very limited, short duration
 23 impact there.
 24 Q. So even for that limited duration, will RES commit to
 25 using only screw piles?

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1 A. MS. DEGUISE: No, not at this time. It's going
 2 to be very specific to the geotechnical conditions of
 3 the -- of the final substation, you know, exact design
 4 there. And so no, I can't commit to that at this time.
 5 Q. Okay. Thank you. So in Exhibit 81, if we can go to
 6 that, please, Ms. Adebayo.
 7 Now, there is no information on how these visual
 8 simulations were created. It just says that it was
 9 produced by WSP. Who in WSP produces visual
 10 simulations, and who can speak to it? Ms. Deguise?
 11 A. MR. FASZER: Mr. Cuthbert is just attempting to
 12 unmute to respond to your question. He's just having
 13 some technical difficulties here.
 14 A. MR. CUTHBERT: Apologies for that.
 15 Q. Okay. So did you produce the visual simulations?
 16 A. MR. CUTHBERT: I did not personally produce
 17 these, but we -- WSP sent one of our people out to site
 18 with RES's land agent to collect the photographs for
 19 these. They were collected using a DSLR camera using
 20 very specific settings that replicate the human -- kind
 21 of what the eye would see in the field of vision, and
 22 then they were produced using a digital model after the
 23 photos were stitched together in a panorama to
 24 replicate the landscape and where the turbines would be
 25 visible.

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1 Q. What kind of lens? Was it a wide lens that was used to
 2 take the photographs?
 3 A. MR. CUTHBERT: It was not a wide-scale lens, it
 4 was a normal lens, but it was set to a specific focal
 5 length for the purposes of the photos. There was
 6 multiple photos taken that were then stitched together
 7 to create the panorama.
 8 Q. Okay. And do you agree that the heights of the
 9 turbines shown in the photographs are not to scale?
 10 A. MR. CUTHBERT: No, I don't agree with that. As I
 11 said, the camera specs that were used to take these
 12 should replicate the scale of the human eye, and there
 13 was a terrain model used to enter the turbines into the
 14 simulations so they would appear as they do on the
 15 landscape.
 16 Q. So you're saying that what we see in the visual
 17 simulations you've provided in this will represent the
 18 real-life view that the OLG members will have when this
 19 project is constructed?
 20 A. MR. CUTHBERT: Yes, they should be a reasonable
 21 simulation of what the view will be.
 22 Q. Okay. Okay. So in OLG's information request to RES,
 23 the OLG requested that RES provide visual simulations
 24 showing the turbines that were visible from the
 25 residences and yards of some members of the OLG, namely

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1 Mr. David McKinstry, Gerald McKinstry, Katheryn Bitz,
 2 Mark Schneider and Lindsay Robertson, as well as the
 3 Siegels.
 4 In its response, RES states that it has contacted
 5 the landowners for land access and is arranging times
 6 to visit and take photos to produce the visual
 7 simulations.
 8 Did RES obtain consent from all of the OLG
 9 members, and which OLG members -- if not all of them
 10 consented, which members did not consent?
 11 A. MS. DEGUISE: I'm going to hand this question
 12 over to Ms. Gibson.
 13 Q. Sure. Ms. Gibson?
 14 A. MS. GIBSON: So it is my understanding that our
 15 land manager did contact each of the landowners. If
 16 they did not get contacted, then they went to the road
 17 instead of the home.
 18 Q. Okay. So if we go to PDF page 4 of the Exhibit 81, the
 19 inset photo there at the bottom shows that the
 20 viewpoint location was at Mr. David McKinstry's yard;
 21 correct? If we blow that up and go there.
 22 A. MS. GIBSON: Okay.
 23 Q. So I understand from Mr. McKinstry, David McKinstry,
 24 that he was home waiting for RES's land agent and the
 25 photographer had to come on the date they had agreed

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1 upon, but no one came to his door.
 2 Why didn't RES land agents knock on Mr. David
 3 McKinstry's door to take the photos from his house as
 4 requested in the information request?
 5 A. MS. GIBSON: So our land manager spoke with
 6 Dave on March 24th at 1:18 p.m., and again on March
 7 26th at 12:49 p.m. to confirm access. He did miss a
 8 call from Mr. McKinstry in the morning, but Dave
 9 requested that they stop by the property at 1:30. No
 10 formal meeting was confirmed.
 11 While they were there, they did not want to bother
 12 Dave and go to the door, so they finished the photos
 13 and left.
 14 Q. But they took it from his yard, so they got into his
 15 yard; correct?
 16 A. MS. GIBSON: But they had spoken and confirmed
 17 that they would be at the property at 1:30.
 18 Q. Okay. All right. Ms. Adebayo, could you please take
 19 the document down.
 20 And one point of correction before I hand it over
 21 to my friend Mr. Kema to finish up.
 22 In RES reply evidence Exhibit 112, PDF 13,
 23 paragraph 53, RES states that it estimates there will
 24 be 75 to 100 local jobs created during the construction
 25 of the project.

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1 In RES's opening statement, Exhibit 139 PDF 4, RES
 2 states that it estimates that there will be 250 to 300
 3 local jobs created during construction of the project.
 4 Which of the two numbers is accurate?
 5 A. MS. DEGUISE: The 250 to 300. That was a typo
 6 that we failed to catch in the first submission.
 7 Q. So how many of those jobs will be filled from residents
 8 of Oyen?
 9 A. MS. DEGUISE: Try to fill as many as we can;
 10 however, the construction of a wind power project is
 11 quite specialized, and of course, with 250 to 300 jobs,
 12 everything from, you know, rebar tiers to folks who
 13 know concrete pours and security, that sort of thing,
 14 they may have to go beyond the town of Oyen to find
 15 construction workers on -- on this project.
 16 Q. So in your opening statement, Exhibit 139 PDF 4, you
 17 also reference that the project will create substantial
 18 tax revenue, and the OLG members would like to know how
 19 much tax revenue would be generated from this project.
 20 Can you advise on that?
 21 A. MS. DEGUISE: Yes, we do -- we have -- we have
 22 provided an estimate on that. We can -- we can do
 23 that.
 24 Again, it will, you know, depend on the final
 25 project that is built and what time it comes into

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1 service, along with the mill rate from -- from the
 2 county at the time, and so this is just an estimate at
 3 this time, and, Ms. Gibson, if you have that handy, I
 4 don't want to misspeak on the value.
 5 A. MS. GIBSON: Yeah, for sure. So phase 1 would
 6 start at approximately 3.3 million, roughly, from our
 7 last estimates, and be escalating basically throughout
 8 the project lifespan, and then the phase 2 would be
 9 approximately 3 million to start.
 10 So over the lifespan of the project, you would see
 11 around \$75 million if the project were to be 25 years
 12 for each phase.
 13 Q. Okay. Thank you.
 14 A. MS. GIBSON: And that, again, will need to be
 15 updated based on the mill rate at the time of
 16 operations.
 17 Q. Okay. Are you aware that in the County of Vulcan, the
 18 wind industry operating in that region has asked for a
 19 tax break from the municipality?
 20 A. MS. GIBSON: I am not aware.
 21 A. MS. DEGUISE: Not aware of that.
 22 Q. What guarantee or assurance is RES giving to OLG
 23 members that RES will not ask for a tax break from the
 24 municipality some years into the operation of this
 25 project if approved?

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1 A. MS. DEGUISE: I -- I cannot guarantee that far
 2 into the future, given that the facility is not meant
 3 to be operational for a few years from now.
 4 MS. OKOYE: All right. Thank you all for
 5 answering any questions. Subject to the answers to --
 6 sorry, answers to undertakings, I may have further
 7 questions, but for now, I'll hand it over to my
 8 colleague, Mr. Chinedu Kema, to finish up on questions
 9 relating to health and safety impacts.
 10 **MR. KEMA CROSS-EXAMINES THE PANEL:**
 11 Q. Thank you, Ms. Okoye. Good afternoon, Chair.
 12 Dr. Ollson, my questions are for you.
 13 Ms. Adebayo, please bring up Exhibit 116, PDF 11.
 14 Yeah, thank you.
 15 Dr. Ollson, your report, Exhibit 116, PDF 11, you
 16 noted that, and I quote: (as read)
 17 "It is a common misunderstanding that
 18 infrasound is inaudible. Levels of
 19 infrasound emitted from wind turbines
 20 are orders of magnitude below the
 21 infrasound audibility threshold."
 22 My question is, what level does infrasound -- at what
 23 level does infrasound become audible?
 24 A. DR. OLLSON: So yes, as you can see right
 25 there, if you were to look at the paragraph below the

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1 figure, it says right there that if -- so infrasound is
 2 commonly reported on what we call the dBG scale. That
 3 differs from the dBA scale that the AUC has under
 4 Rule 12. So when we report infrasound levels, it's on
 5 the dBG scale. And you can see that it's between 85 to
 6 95 dBG as stated there about halfway through that
 7 paragraph.
 8 Q. Okay. Thank you. So what is the frequency level of
 9 infrasound that would be emitted from the wind turbine
 10 currently proposed to be deployed for this project?
 11 A. DR. OLLSON: So if you're to -- we don't
 12 actually have the infrasound levels specific to this
 13 project itself or these specific turbines. They're not
 14 actually required to report under what we call the IEC
 15 or the International Electrotechnical Commission 61400,
 16 which is the frequencies that they provide to the sound
 17 engineers like Mr. Faszer.
 18 But if you were to turn up PDF page 49 of this
 19 exhibit, and if we could maybe blow that up just a
 20 little bit. What you'll see in that figure -- sorry,
 21 in the figure itself, I'd like to take a look at the
 22 figure.
 23 So what you can see here is these are infrasound
 24 levels that are measured from a turbine at 300 metres
 25 from the turbine. This is very common, whether you

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1 look at this turbine, other turbines, newer turbines
2 that you -- you're going to get that band. And the
3 infrasound level -- so again, infrasound, just for the
4 Commission, is the frequency in hertz along the X axis
5 there from 0 to 20 hertz. So if you were to come along
6 the X axis, when we discuss infrasound, it's that 0 to
7 20 hertz.

8 What you can see -- now, this is unweighted, so
9 this means this is just the straight out measurement on
10 an unweighted scale in decibels on the left-hand side.
11 That's the Y axis.

12 And it's that pink band that you see that kind of
13 runs across the centre of the figure there. So
14 depending on the frequency, you know, a common
15 frequency that we may look at is the 16-hertz
16 frequency. If you're to go up from there, you're
17 somewhere in the kind of 50 to 65 range. As you get
18 lower down in frequency, to 1 hertz, it would be
19 approximately 50 to about 75.

20 So you can see there that this -- this is very
21 representative of what we would expect from the
22 Nordex turbines that are being proposed for this
23 project.
24 Q. Okay. Thank you. For the image you have up, can you
25 tell me the capacity of the wind turbine that was used

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1 in comparing this image?

2 A. DR. OLLSON: Give me one second here and I'll
3 see if I can -- if it's actually listed here.

4 Yes, if you were to scroll up a little bit
5 further. Sorry, up, the other way. Sorry, if you were
6 to go back one page. Keep going, back to the next
7 page. Sorry, down at the bottom of this page. Keep
8 going. Right there. Perfect, thank you.

9 You can see that the turbines that they were
10 measuring were 1.8 to 3.2-megawatt turbines. Now, that
11 said, as turbines have gotten larger, depending on the
12 model of the turbine, it's not necessarily true that
13 you're going to get more infrasound than, you know, the
14 taller the turbines or the greater the blade length.

15 In fact, sometimes it can go vary either
16 direction, ask at the end of the day, it's really not
17 distinguishable between, you know, the larger the
18 turbines and varying levels of infrasound.

19 Q. Okay. Thank you. Can you confirm that for this
20 project, the capacity of the proposed wind turbine is
21 5.9 megawatts?

22 A. DR. OLLSON: I believe that's correct, yes,
23 subject to check.

24 Q. Thank you. For a 5.9-megawatt wind turbine, what is
25 the hearing threshold for the frequency of infrasound

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1 that will be emitted from the wind turbine?

2 A. DR. OLLSON: So again, if we could again call
3 up that figure on the next page again.

4 So it will vary. And again, just similar to what
5 we see here, and as I was stating, that regardless of
6 the size of the turbine, the frequencies are going to,
7 you know, range right from, you know, the low .1 hertz
8 right up into the sort of, you know, 3,000, 4,000 hertz
9 range on the audible side.

10 And so the frequency is -- you know, it will span
11 the full spectrum. It's the level in dB that one is
12 more concerned about, and again, we would expect it
13 would be very similar to what we have here in this
14 figure.

15 It is not -- it is not true and as we discussed in
16 the Forty Mile proceeding, it doesn't hold true
17 necessarily that larger turbines have -- emit more
18 low-frequency noise or infrasound than the older
19 turbines, and in fact, some of the older turbines, the
20 2-megawatt, 3-megawatt turbines, can actually emit
21 more. It all depends on the make and model, but again,
22 it is all within similar range to what we're looking at
23 here.

24 Q. Yeah, so just to be sure, can you confirm the dB level?
25 Because I want to tie down a number. Can you confirm

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1 the dB level for me?

2 A. DR. OLLSON: So again, if you were to look
3 across that pink -- depending on the frequency you were
4 looking at, along the pink line or the pink band there,
5 it will range up to, you know, perhaps the low 70s at
6 1 hertz, and when you get to 20 hertz, you're going to
7 get, you know, upwards of maybe somewhere in the low
8 60s.

9 Q. Okay. Thank you very much. Ms. Adebayo, please bring
10 up Aid To Cross 13. It's an article titled Should
11 Limit Values be Set for Infrasound Caused by Wind
12 Turbines. PDF 7, please.

13 Dr. Ollson, did you review this aid to cross?

14 A. DR. OLLSON: I did.

15 Q. Great. And do you agree that this article was
16 published in a credible peer-reviewed scientific
17 journal that was --

18 A. DR. OLLSON: It was by researchers out of
19 Poland that do quite a bit of work in the field, yes.

20 Q. Okay. Great. Thank you. And do you agree with the
21 main infrasound hearing threshold set out in the table?

22 A. DR. OLLSON: It's correct.

23 MR. KEMA: Okay. Thank you. Mr. Chair, I
24 want to apply to enter this aid to cross as exhibit for
25 identification purpose.

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- 1 A. DR. OLLSON: And if I might, within this aid to
 2 cross, if you go back up to the page 3 --
 3 Q. MR. KEMA: Sorry, Mr. Ollson, I have not gone
 4 to that particular page so I guess we should stick to
 5 the questions I'm currently asking you.
 6 A. DR. OLLSON: Sure.
 7 MR. KEMA: Thank you.
 8 THE CHAIR: Okay. We'll enter that for
 9 identification purposes as Exhibit 148.
 10 I just -- I'm just looking to counsel, Commission
 11 counsel, to confirm that's the correct number. Yeah.
 12 148. Thank you.
 13 MR. KEMA: Thank you, Mr. Chair.
 14 **EXHIBIT 148 - AID TO CROSS 13, AN**
 15 **ARTICLE TITLED SHOULD LIMIT VALUES BE**
 16 **SET FOR INFRASOUND CAUSED BY WIND**
 17 **TURBINES**
 18 Q. MR. KEMA: Dr. Ollson, do you agree that at
 19 low frequency levels from 10 hertz which have a hearing
 20 threshold of about 96 dB as reflected in Table 1
 21 currently up on the screen and below, it is possible
 22 for infrasound to be felt as a sensation of pressure at
 23 the ears.
 24 A. DR. OLLSON: I do not.
 25 Q. Okay. Ms. Adebayo, can you please bring up Aid To

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- 1 Cross 14. PDF 12, please. Thank you. If you can go
 2 down a bit. Sorry, PDF 13, yeah, down. Yeah, that's
 3 it. Thank you. Great.
 4 Dr. Ollson, did you review this Aid To Cross 14,
 5 which is an article by H. Moller and C.S. Pedersen on
 6 low and infrasonic frequencies published in 2004?
 7 A. DR. OLLSON: I have, and I'm familiar with this
 8 paper.
 9 Q. Sorry?
 10 A. I have reviewed it. I was previously familiar with
 11 this paper.
 12 Q. Thank you. Can you please review the highlighted
 13 provisions there.
 14 A. DR. OLLSON: Yes. So it says, and I quote:
 15 (as read)
 16 **"From around 10 hertz and lower, it is**
 17 **possible to follow and count the single**
 18 **cycles of the tone and the perception**
 19 **changes into a sensation of pressure at**
 20 **the ears. At levels 20 to 25 above**
 21 **threshold, it is possible to feel the**
 22 **vibrations in various parts of the body,**
 23 **example the lumbar, buttock, thigh, and**
 24 **calf regions. A feeling of pressure may**
 25 **occur in the upper part of the chest and**

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- 1 **the throat region."**
 2 Q. Thank you. The section that you just read confirms
 3 that at levels 20 to 25 dB above threshold, infrasound
 4 can be felt in various parts of the body. At 10 hertz
 5 and lower, infrasound is perceived as a sensation of
 6 pressure at the ears; correct?
 7 A. DR. OLLSON: Yes, and the important part of
 8 what you just read there was above the threshold and
 9 what the threshold there is referring to is the
 10 threshold of hearing. So you have to be 20 to
 11 25 decibels above the threshold of hearing before
 12 you're going to get these pressure sensations.
 13 So the easiest way to think about this -- so then
 14 you're into the -- you're well into the hundreds range
 15 of dB, and the easiest way to describe this for the
 16 Commission is if you're in your car or let's say you're
 17 by your stereo or whatever, and that thumping sound of
 18 the bass, so let's say you had the bass turned up very
 19 loudly on your stereo and in your car, and you can feel
 20 that pressure almost in your chest, that is what
 21 they're describing here. So this is above the
 22 threshold, above the hearing threshold is the threshold
 23 they're referring to.
 24 Q. Thank you. And, Ms. Adebayo, let's -- sorry,
 25 Ms. Adebayo, let's go back to Aid To Cross 13, Table 1,

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- 1 at PDF 7.
 2 So as we just discussed, and you agree with this
 3 table, at a dB level of 96, that is the hearing
 4 threshold; correct?
 5 A. DR. OLLSON: That's right, so you'd have to be
 6 20 to 25 above that, so again, you're in the 120 range
 7 before you'd feel that pressure.
 8 Q. So if there's -- your evidence is that infrasound
 9 becomes audible from the hearing threshold, which is 96
 10 dB and above, and so it means that for frequency, 10 Hz
 11 up until 1 Hz, infrasound becomes audible; correct?
 12 A. DR. OLLSON: At 96 dB, on dBZ, right, so
 13 unweighted, at the 10 hertz, yes, at 96 dB.
 14 Q. And same applies at 8 hertz.
 15 A. At 8 hertz, it would be 100 would be the hearing
 16 threshold.
 17 Q. Okay. Great. And 6.554, 3.5, 2.5 to 1.6, 1.25, and 1
 18 as reflected in that table; correct?
 19 A. DR. OLLSON: Yes, and as you can see, again,
 20 for each of those frequencies, you have a different
 21 level of infrasound in the dB, dBZ, you'd have to
 22 reach. So if you're at 1.25 hertz, you'd have to be at
 23 133.5.
 24 Again, we are nowhere near these levels when it
 25 comes to wind turbines themselves and the infrasound

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1 emissions from turbines. Again, if you were to go back
 2 to Exhibit 116 and PDF page 49, you can see if you were
 3 to follow the 10 hertz up from there, you'd look at the
 4 pink shaded area that at most -- this is at 300 metres.
 5 Remembering that your clients are at least 800 metres
 6 if not several kilometres away or over a kilometre from
 7 the turbines, you'd be in the range of about 70.

8 So you're well below the hearing threshold.
 9 You're well below that pressure sensation that you were
 10 describing, which would be well up into the 120 -- it
 11 would be at the top of this graph.

12 So this is why we know that with the turbines,
 13 you're not going to be hearing the infrasound. You're
 14 also not going to feel that pressure sensation from the
 15 turbines themselves. They're far too low.

16 I'd also remind the Commission that we're on the
 17 logarithmic scale here. So if we go from 70 to 80,
 18 that's an increase of 10. If you go up to 90, that's
 19 an increase of 100. If you go to 100, that's an
 20 increase of 1,000 in the pressure --

21 Q. Thank you, Dr. Ollson. I'm mindful of my time, and I
 22 appreciate that you want to provide more context and
 23 these issues are listed in your report. I'd like to
 24 move on with my questions.

25 A. DR. OLLSON: Sure.

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1 Q. Ms. Adebayo, please bring up Exhibit 116, PDF 11. I
 2 believe that's the last paragraph. Oh, yeah, that's
 3 it.

4 Yeah, Dr. Ollson, you stated here that there
 5 remains a small handful of researchers that claim that
 6 infrasound from wind turbines is the cause of serious
 7 health impacts of those living around wind turbines.
 8 Just to understand this, your statement, are you making
 9 a distinction between serious health impacts as opposed
 10 to general impacts, general health impacts?

11 A. DR. OLLSON: No, any health impacts. So again,
 12 there remains a handful of researchers that believe,
 13 you know, as does Dr. Bellut-Staeck, as did
 14 Dr. Alves-Pereira, who testified in the Forty Mile
 15 proceeding that exposure to wind turbine infrasound
 16 causes call it general health impacts, any health
 17 impact that you want.

18 Q. So your position, just to have this correctly, is that
 19 infrasound from wind turbines does not cause any form
 20 of health impacts, whether serious or unserious?

21 A. DR. OLLSON: That's correct.

22 Q. Thank you. And what is your definition of "health"?

23 A. DR. OLLSON: Well, the World Health
 24 Organization, 1948, defines health as the complete
 25 mental, social, and physical wellbeing, and that's how

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1 I define health. So all three of those aspects.

2 Q. Thank you very much. And same exhibit, 116, PDF 11,
 3 you've stated, and I quote:

4 "From the outset, I want to reiterate
 5 that the weight of peer-reviewed
 6 published scientific evidence in
 7 credible research journals has
 8 demonstrated that living in proximity to
 9 wind turbines in accordance with the AUC
 10 Rule 012, 40/45 dBA PSL at nighttime is
 11 equally protective of the accompanying
 12 infrasound levels that people experience
 13 during all of the research studies
 14 conducted around the world."

15 End of quote.

16 And my question is, do you agree that your
 17 statement which refers to all of the research studies
 18 conducted around the world is quite a broad proposition
 19 or conclusion that lacks nuance?

20 A. DR. OLLSON: No, in fact, I think that
 21 statement is quite correct.

22 If you look at the credible peer-reviewed
 23 scientific studies that have been published in credible
 24 peer-reviewed journals on medical, epidemiological or
 25 environmental health in -- that's published in PubMed,

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1 what you're going to find, and if you were to go down
 2 to appendix B, a listing of those that what you see
 3 there is that this is a settled science, that
 4 infrasound levels from turbines, whether you're
 5 standing right beneath them, whether you're living
 6 300 metres away and certainly when you're living, you
 7 know, the 800 metres plus, kilometre plus we're looking
 8 at at this project, are far below the levels that would
 9 cause impacts to people living around wind turbines.

10 Q. Okay. Thank you. Still on PDF 11, and I'm quoting
 11 paragraph -- it's a paragraph I'm quoting. You've
 12 stated: (as read)

13 "Although it is true that blade pass
 14 frequency does produce an infrasound
 15 signature specific to the wind turbines
 16 in the low Hz frequency range, this is
 17 useful only so far as being able to
 18 potentially distinguish infrasound from
 19 wind turbines from other sources of
 20 infrasound (e.g. home HVAC systems and
 21 even the wind itself)."

22 And what is the blade passing frequency rate of the wind
 23 turbines to be deployed in the proposed project?

24 A. DR. OLLSON: Yes, and so back to Ms. Okoye's
 25 question, I did look it up. So it's 11 RPM. So

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1 there's 11 revolutions per minute of the blades passing
 2 the turbines, there are three blades, and so the blade
 3 pass frequency in hertz is approximately .6 hertz.
 4 Q. Okay. Thank you very much. And what is the infrasound
 5 frequency range of home HVAC systems?
 6 A. DR. OLLSON: So, again, it's probably more
 7 useful if you were to go down to the next page on PDF
 8 page 12, and actually, if you go down to the next
 9 figure, just a little bit further down, the Health
 10 Canada figure right there. If we could maybe even blow
 11 that up, a little bit, Madam Court Reporter (sic), that
 12 would be great.

13 What you're seeing here, this is what we're
 14 meaning by the signature. So you can see that these --
 15 so that is the infrasound from point -- this is Health
 16 Canada measuring infrasound around wind turbines, down
 17 as low as 0.1 hertz, up to -- and you can see the
 18 20 hertz just past the 10.

19 You can see that the blade pass frequency and what
 20 happens there for these particular turbines, we can
 21 pick out these bumps or the peaks, and what we know as
 22 the blades passing the tower, that is the infrasound
 23 peaks that we see specific to the turbines.

24 You get from, you know, all sources of infrasound,
 25 so right now, in the room that you're sitting in,

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1 you referred to?
 2 A. DR. OLLSON: That's correct, and the AUC has
 3 heard about this study over the last decade.
 4 Q. Yeah, but that's not my question.
 5 A. DR. OLLSON: Yes, this is the study.
 6 Q. Thank you. Let's go to PDF 5 of the study, please.
 7 And based on PDF 5, under experienced health effects,
 8 do you confirm, Dr. Ollson, that one of the
 9 participants reported being ill, the participant that
 10 conduct the study had health, headache, nausea while
 11 testing and severe effects for three days after
 12 testing; correct?

13 A. DR. OLLSON: So to put this into context,
 14 Mr. Robert Rand is an acoustician who is one of the
 15 people I've referred to above in my report as that
 16 there is a handful of researchers that believe that
 17 infrasound causes health impacts. Mr. Rand was --

18 Q. Sorry, Dr. Ollson, if I can comment, my question is not
 19 about Mr. Rand. My question is specific to what you
 20 are seeing on the screen, whether Mr. Rand reported
 21 being ill three days after testing.

22 A. DR. OLLSON: He did, and the other four
 23 researchers did not.

24 Q. Thank you very much. And do you agree that long-term
 25 24/7 occupation of residents in proximity to a wind

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1 Mr. Kema, and all of us, whether it's the fan coming
 2 from your HVAC system, whether it's even the air
 3 passing through the duct system, whether it's your air
 4 conditioner, each one has a slightly different
 5 signature to it, and that's how we can detect -- you
 6 know, we can start to sort it out, you know, from
 7 general infrasound, which is typically what we measure,
 8 to if you want to be very specific about the wind
 9 turbine itself. This is how that signature works.

10 Q. Okay. Thank you very much. And in PDF -- same PDF 12
 11 of your report, you referenced the study by Dr. Bruce
 12 Walker and others that measured infrasound and low
 13 frequency noise indoors and outdoors at three homes
 14 near the Shirley wind farm in Wisconsin; correct?

15 A. DR. OLLSON: Correct.

16 Q. And given the fact that you referenced that study in
 17 your report, I assume that you are relying on that
 18 study; correct?

19 A. DR. OLLSON: I am very familiar with the study,
 20 correct.

21 Q. Great. Ms. Adebayo, please bring up Aid To Cross 15.
 22 It's the actual study, a cooperative measurement survey
 23 and analysis of low frequency and infrastructure at the
 24 Shirley wind farm in Brown County, Wisconsin.

25 Dr. Ollson, do you confirm that this is the study

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1 turbine may increase the risk of adverse health
 2 effects?

3 A. DR. OLLSON: I do not. Not at the AUC Rule 12
 4 and the setback for noise, nor the setbacks that we
 5 have for this project.

6 I do agree that if you have a project that may be
 7 sited much, much closer, less than 300 metres, that it
 8 is potential too loud of a noise level and that that
 9 could cause issues for the home occupants, but quite
 10 simply, the projects that we have here in Alberta, no,
 11 I do not agree with that.

12 Q. So when you say -- so a project sited close to
 13 residents, what metres are we referring to?

14 A. DR. OLLSON: Less than 300 metres.

15 Q. And can we speak a specific number, please? So
 16 anywhere down from 299 metres would have noise impact
 17 that can lead to adverse health impacts? Is that what
 18 you're confirming?

19 A. DR. OLLSON: So what I'm confirming is we know
 20 over 50 decibels of sound, and most of those studies
 21 come from the United States because again, quite
 22 simply, you have a 40-decibel sound regime in almost
 23 all the provinces, and in Alberta, it goes even further
 24 because it's a 40-decibel cumulative under Rule 12, so
 25 the most you could have under PSL 1 would be

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1 38.4 decibels.
 2 We know that from studies in the United States
 3 that up to 50 decibels is not going to cause adverse
 4 health effects. Similarly, in Europe, we've seen
 5 studies of up to 45 decibels. In the Health Canada
 6 study, the most comprehensive study that was conducted,
 7 confirms that up to 46 decibels, when we had some older
 8 projects in Canada that were sited closer, that those
 9 would be without adverse health effects.
 10 Q. So are you saying that notwithstanding the proximity of
 11 the wind turbine to residents, provided that it's not
 12 more than 50 decibels, there are no adverse health
 13 impacts?
 14 A. DR. OLLSON: That's correct.
 15 Q. Okay. Have you conducted any observation or survey
 16 that required you to reside at a residence that was in
 17 close proximity to a wind turbine?
 18 A. DR. OLLSON: Sorry, could you repeat that?
 19 Q. I'm sorry. My question is, have you conducted any
 20 observation or survey or experiment or assessment that
 21 required you, Dr. Ollson, to reside at a residence that
 22 was in close proximity to a wind turbine?
 23 A. DR. OLLSON: I have participated in a number of
 24 noise complaint issues in the United States where I
 25 work with a team of acousticians and physicians in

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1 order to determine the sound level at the complaining
 2 residence and whether or not it may be adversely
 3 impacting the individual.
 4 Q. Okay. But you did not reside close -- you did not
 5 reside at a residence close to the wind turbines that
 6 you had to study or in which you conducted your
 7 assessments; correct?
 8 A. DR. OLLSON: Sorry, I missed the first word
 9 there. I mean, I have been to residents that are close
 10 to turbines, much closer to this, where noise
 11 complaints have been lodged. Is that what you're
 12 asking?
 13 Q. Yes, and what was the duration of your exposure?
 14 A. DR. OLLSON: Oh, my exposure, my personal
 15 exposure? I spend weekly around Canada and the United
 16 States, spending time around wind projects.
 17 For example, yesterday, while driving around
 18 Alberta, I was -- I drove through at least a half dozen
 19 wind projects over several hours during my -- my time
 20 driving around Alberta. So I -- I am in close
 21 proximity to wind turbines personally, certainly on a
 22 monthly if not, you know, weekly basis.
 23 Q. So my question, to rephrase, is what was the duration
 24 of your exposure to a specific wind turbine, not
 25 driving through a wind turbine project but --

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1 A. DR. OLLSON: The longest exposure that I've had
 2 to a wind project?
 3 Q. Yes.
 4 A. DR. OLLSON: I rented a house that was
 5 450 metres from a turbine for one week. That's the
 6 longest I've spend personally by a wind turbine.
 7 Q. And I'm assuming you had no health impacts; correct?
 8 A. DR. OLLSON: I did not.
 9 Q. Thank you. PDF 7 of same Aid To Cross 15, Ms. Adebayo,
 10 please.
 11 Dr. Ollson, can you please read the first
 12 highlighted paragraph at PDF 7?
 13 A. DR. OLLSON: Yes, sorry, just one second. I'm
 14 having a bit of a computer issue here: (as read)
 15 **"The critical questions are what**
 16 **physical effects did these low**
 17 **frequencies have on residents and what**
 18 **LFN" -- that's low frequency noise --**
 19 **"limits, if any, should be imposed on**
 20 **wind projects. The reported response at**
 21 **residence R2 by the wife and their child**
 22 **was extremely adverse while the husband**
 23 **suffered no ill effects whatsoever,**
 24 **illustrating the complexity of the**
 25 **issue. The family moved away for a**

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1 **solution."**
 2 Q. Thank you. Can you please also read the second
 3 paragraph.
 4 A. DR. OLLSON: (As read)
 5 **"A most interesting study in 1986 by the**
 6 **navy reveals that physical vibration of**
 7 **pilots in flight simulators induced**
 8 **motion sickness when vibration frequency**
 9 **was in the range of 0.05 to .9 hertz**
 10 **with the maximum (worst) effect being at**
 11 **about .2 hertz, not too far from the**
 12 **blade passing frequency of future large**
 13 **wind turbines. If one makes the leap**
 14 **from physical vibration of the body to**
 15 **physical vibration of the media in the**
 16 **body, it suggests that adverse response**
 17 **to wind turbines is an acceleration or**
 18 **vibration problem within the very low**
 19 **frequency region."**
 20 Q. Thank you. After reading this from the survey study
 21 that you cited in your report, do you agree that the
 22 claims that exposure to low frequencies from wind
 23 turbines can lead to adverse health effects cannot be
 24 simply dismissed as unsubstantiated?
 25 A. DR. OLLSON: So in fact again, this report was

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1 produced -- they did the work in 2013. Residence R2 is
2 actually 300 metres from the turbine, and what they --
3 this was done in 2014.

4 Since that time, research groups from around the
5 world, including my own at the time in 2015, have
6 published on the level of infrasound on low frequency
7 noise and potential health impacts on those residents
8 living around it.

9 Again, if you were to go to appendix B -- I don't
10 think we need to do it right now -- of my report, you
11 will see that the decade of research that has occurred
12 since this initial unpublished report was provided. So
13 that work has been done.

14 It -- certainly in the early 2012, '13, '14
15 timeframe, we were looking to see what the levels of
16 infrasound were around wind turbines, and that led to
17 the last decade of research and publication in this
18 field.

19 Q. Can you please read the third paragraph of the same PDF
20 7?

21 A. DR. OLLSON: (as read)

22 **"The four investigating firms are of the**
23 **opinion that enough evidence and**
24 **hypotheses have been given herein to**
25 **classify LFN and infrasound as a serious**

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1 **issue, possibly affecting the future of**
2 **the industry. It should be addressed**
3 **beyond the presence of practice of**
4 **showing that wind turbine levels are**
5 **magnitudes below the threshold of**
6 **hearing at low frequencies.**

7 End quote. And again, that's what I just reiterated.

8 There had been a last decade of research --
9 Q. Sorry, Dr. Ollson, if I may, please. I know you --
10 again, like I said, I know you want to provide more
11 context as necessary, but as much as possible, we
12 should stick to the question that I'm asking so that I
13 make good use of my time that I have during this
14 cross-examination.

15 MS. OLENIUK: Chair, I've refrained from
16 objecting so far, but my understanding of the purpose
17 of an aid to questioning is not simply to have a
18 witness read in paragraphs. It's to -- the purpose of
19 the aid is to assist the party questioning the witness
20 about the evidence of that witness.

21 So I suggest, if Mr. Kema's not going to ask
22 Dr. Ollson for his opinion regarding the paragraphs
23 that he's reading, that it's improper.

24 MR. KEMA: If I may, this particular study
25 was referenced by Dr. Ollson in his report, and he

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1 relied on it in his report, so I'm currently asking him
2 questions on the survey and study that he cited and
3 also relied on.

4 THE CHAIR: So my position on this would be
5 you're certainly entitled to ask questions on this, but
6 I'd focus more on the questions and less on having him
7 reading into the record what's in the aid.

8 MR. KEMA: Thank you, Mr. Chair.

9 Q. So, Dr. Ollson, back to my questions. Do you agree
10 with the conclusion in the survey that low-frequency
11 noise and infrasound should be classified as a serious
12 issue in the industrial wind turbine industry?

13 A. DR. OLLSON: In 2014, that certainly was the
14 position that I held, and that is where the last decade
15 of research was done. We weren't studying this back in
16 2014, nor was anybody else really that heavily invested
17 around the world.

18 Over the last decade, there's 20-plus papers,
19 research articles, laboratory tests and the like that
20 have been done specifically for wind turbine infrasound
21 and low-frequency noise that it's demonstrated that the
22 hypothesis or the concern in 2014 certainly has not
23 come to manifest.

24 So it was a concern in 2014. It's certainly
25 something that's been investigated extensively around

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1 the world, and you see that those studies all come to
2 similar conclusions, that this is no longer an issue
3 that we need to be concerned by.

4 MR. KEMA: Okay. Thank you very much.

5 Mr. Chair, if I can please apply for this aid to
6 study -- Aid To Cross, rather, Number 15, which is
7 cooperative measurements of the analysis of low
8 frequency and infrasound at the Shirley wind farm in
9 Wisconsin be entered as an exhibit for identification
10 purpose.

11 THE CHAIR: So just to confirm, that's Aid To
12 Cross 15?

13 MR. KEMA: 15, yes, Mr. Chair, thank you.

14 THE CHAIR: Okay. We'll mark that as
15 Exhibit 149.

16 MR. KEMA: Thank you.

17 **EXHIBIT 149 - AID TO CROSS NUMBER 15,**
18 **COOPERATIVE MEASUREMENTS OF THE**
19 **ANALYSIS OF LOW FREQUENCY AND**
20 **INFRAOUND AT THE SHIRLEY WIND FARM IN**
21 **WISCONSIN**

22 Q. MR. KEMA: Dr. Ollson, in your report, you
23 stated, and I quote: (as read)

24 "Just because one can correctly measure
25 infrasound emitted from wind turbines

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1 does not mean that it is at a level that
2 can cause adverse health impacts."
3 End of quotes.

4 My question is at what level does infrasound cause
5 adverse health impacts?

6 A. DR. OLLSON: Yes, so in fact, if you were to go
7 down -- and if you bear with me for one second in my
8 report, if you were to look at, for example, the
9 16-hertz frequency, and these are some of the papers
10 that Dr. Bellut-Staeck actually included in her report,
11 and certainly the AUC has heard about in previous
12 proceedings -- sorry, if you give me a second here.

13 So if we go to PDF page 21, please, so in some of
14 these studies, in the animal models that we look at, we
15 certainly know that infrasound can cause health impacts
16 and biological physical impacts in mammalian species,
17 and the levels that are typically used in these studies
18 are around in the 120 to 130 dB in -- at the 16 hertz
19 frequency.

20 So we're talking about, you know, almost a million
21 times greater sound pressure level at that 16 hertz
22 frequency of infrasound than what we get from wind
23 turbines. So you certainly -- it can cause issues, and
24 the question is at what level, and as I stated here
25 that it's well -- actually, if you scroll down --

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1 sorry, if we can go down to a little further on this
2 page. Keep going, keep going. Right about there,
3 please.

4 So that 130 dB at 15 hertz, which is almost
5 a million times greater pressure level than what you
6 get from the turbine at the 16 hertz frequency. So
7 yes, infrasound can cause health impacts at much, much
8 greater levels.

9 It was similar to what you saw in the aid to cross
10 that you asked me about from noise and health where at
11 the 10-hertz frequency, you can start feeling
12 sensations up around 120 hertz. We know that somewhere
13 in that -- 120 decibels, and we know that above that is
14 kind of when we cross that line from infrasound to
15 causing health impacts.

16 Q. Okay. Thank you. And so just to pinpoint a particular
17 number, you agree that at 130 dB at 16 hertz,
18 infrasound can indeed cause adverse health impacts.

19 A. DR. OLLSON: Absolutely.

20 Q. Great. And do you also agree that at the -- and just
21 one moment. At the 10-hertz level, infrasound can
22 cause adverse health impacts?

23 A. DR. OLLSON: It can. And again, above the 120
24 dB.

25 Q. Okay.

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1 A. DR. OLLSON: So we're looking at, like, 70, 75
2 dB from the turbines. In order to get that effect,
3 you're well above the hearing threshold, you're well
4 above -- and you're in about 120, 130 decibels again.

5 Q. Okay. Thank you. So my question is, given the rapid
6 expansion of wind energy projects, do you agree that as
7 part of the siting criteria for a wind project,
8 permissible levels should be set specifically for
9 infrasound?

10 A. DR. OLLSON: No.

11 Q. Okay. Thank you. And, Ms. Adebayo, please go to PDF
12 17 of the same exhibit, 116. Yeah, that's the last --
13 the paragraph at 7.3. Thank you.

14 Dr. Ollson, your position is that those living
15 with preexisting medical conditions will not be
16 impacted by the proposed project; correct?

17 A. DR. OLLSON: That's correct.

18 Q. And you're aware that Lindsay and Vicki Robertson are
19 concerned that the noise and vibration from the turbine
20 close to their residence will exacerbate or increase
21 their kids' migraines; correct?

22 A. DR. OLLSON: Yes, I recall that, yes.

23 Q. That's reflected at PDF 9 of your report, Exhibit 116,
24 just -- yeah.

25 A. DR. OLLSON: That's correct.

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1 Q. At PDF 8 of your report, Exhibit 116, if we can go
2 there. The distance of the nearest wind turbine,
3 that's T26, so the residence of Lindsay and Vicki
4 Robertson is 1,290 metres; correct?

5 A. DR. OLLSON: That's correct, and the
6 corresponding sound level, which is the important part
7 for the Robertsons and where I would hope that they can
8 take some solace is if you go across the table there,
9 under the nighttime noise level of the Oyen project,
10 which would be the same as the daytime level, the value
11 at the Robertsons' residence is 33.4, well below --
12 well below anything that would suggest potential health
13 concerns.

14 Migraines have been studied living around wind
15 turbines, and certainly when we're this far below the
16 AUC Rule 12 level that no, I do not -- I don't believe
17 that there's any literature that would suggest that
18 they would have -- that their children would be
19 suffering from increased migraines from the turbines.

20 Q. Thank you. Have you conducted any primary research on
21 the impact of wind turbines on individuals with
22 preexisting medical conditions?

23 A. DR. OLLSON: I have not, but Health Canada and
24 many of the other research studies around the world
25 certainly have and do include issues such as migraines

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1 and other preexisting medical conditions.
 2 So there's nothing in the literature or in other
 3 epidemiological research studies that suggest that --
 4 and this is the same as you would -- you know, later in
 5 the report, this is the same conclusion that the AUC
 6 has come to in numerous other proceedings, where I
 7 certainly understand the concerns that people have for
 8 preexisting medical conditions.
 9 When we look at simply the sound levels that we're
 10 talking about here, the setback distances, they will
 11 not be adversely impacted or their preexisting
 12 conditions will not be exacerbated.
 13 Q. Okay. Thank you. Thank you, Dr. Ollson. In your
 14 report, you stated -- and this is at PDF 18 to 26.
 15 Your position there is that -- you provided your
 16 position on the expert report by Dr. Ursula
 17 Bellut-Staeck; correct?
 18 A. DR. OLLSON: That's correct.
 19 Q. And your position is that the Commission should not
 20 give any weight to her evidence; correct?
 21 A. DR. OLLSON: Yes.
 22 Q. And you also reviewed her CV as stated in PDF 26 of
 23 your report; correct?
 24 A. DR. OLLSON: I have.
 25 Q. And based on your review of her CV, you are aware that

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1 Dr. Ursula Bellut-Staeck is a medical doctor; correct?
 2 A. DR. OLLSON: I am.
 3 Q. And you also -- based on your review of her CV, you're
 4 aware that she specializes -- that is
 5 Dr. Ursula Bellut-Staeck specializes in the subfield of
 6 cardiovascular physiology, microcirculation, and vital
 7 endothelial functions; correct?
 8 A. DR. OLLSON: That is what her CV says, yes.
 9 Q. Are you a medical doctor?
 10 A. DR. OLLSON: I am not.
 11 Q. And you also do not specialize in the subfield of
 12 cardiovascular physiology, microcirculation, and vital
 13 endothelial functions; correct?
 14 A. DR. OLLSON: I do not.
 15 Q. Are you aware of the research on Piezo channels which
 16 led to the award of the 2021 Nobel prize in medicine?
 17 A. DR. OLLSON: I am. So just to be clear, I do
 18 have a degree in biology, molecular biology,
 19 toxicology. I certainly am aware that
 20 Dr. Patapoutian -- I'm going to butcher his name --
 21 Patapoutian in 2011 -- or sorry, 2010, I believe it
 22 was, first reported on Piezo1 and Piezo2 channels.
 23 Q. Okay. And given the fact that -- do you disagree with
 24 the outcome of that research?
 25 A. DR. OLLSON: Well, I mean, I think the -- to be

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1 clear, that research has nothing to do with infrasound,
 2 and then nowhere other than Dr. Bellut-Staeck -- so the
 3 research on Piezo1 cells that led to the award of the
 4 Nobel prize over a decade later was on mechanistic
 5 activation of those channels in inflammation and nerve
 6 transduction. So it has nothing to do with infrasound.
 7 It's physical mechanosensitive issues.
 8 Q. Thank you very much. What's your understanding of the
 9 functions of the Piezo channels?
 10 A. DR. OLLSON: So the Piezo channels are protein
 11 channels in the cell layer that when they -- the
 12 conduction of things like calcium 2 plus, so they're a
 13 channel of, you know, having calcium back and forth, in
 14 and out of cell walls, into the cell itself.
 15 Q. Is it your position that they have nothing to do with
 16 infrasound, or there's no impact on the Piezo channels
 17 caused by infrasound?
 18 A. DR. OLLSON: So my understanding of the Piezo 1
 19 channel is that it's a mechanical force issue and that
 20 that is the -- and this is what the Nobel Prize was
 21 awarded for on the work on the Piezo channels. I am
 22 not aware of any other researcher, and I did do a
 23 search and did look -- I'm not aware of any researcher
 24 that -- other than Dr. Bellut-Staeck that has suggested
 25 that infrasound plays any role on the Piezo1 channel.

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1 Q. Thank you. Let's -- Ms. Adebayo, can you please go to
 2 PDF 19 of Exhibit 116. Thank you.
 3 And in your report, PDF 19, your position,
 4 Dr. Ollson, is that no association has been found
 5 between living in proximity to wind turbines and sound,
 6 infrasound, low-frequency noise, shadow flicker, or
 7 anything else being emitted from wind turbines;
 8 correct?
 9 A. DR. OLLSON: That's correct.
 10 Q. And do you agree that there is possible correlation
 11 between long-term exposure to wind turbines and sleep
 12 disorders?
 13 A. DR. OLLSON: I do not. I follow the opinion of
 14 the reporting and the research done by Health Canada,
 15 the Australians, and then Dr. Jeffrey Ellenbogen out of
 16 the United States, were that sound levels up to 49
 17 decibels, 46 to 49 decibels, do not impact sleep of the
 18 local residents.
 19 Q. Ms. Adebayo, can you please bring up Aid To Cross 17.
 20 I believe PDF 1. Just go down a bit. Thank you.
 21 And, Dr. Ollson, did you review this Aid To Cross
 22 17, which is an article titled Association Between
 23 Exposure to Wind Turbines and Sleep Disorders, a
 24 Systemic Review and Meta-Analysis?
 25 A. DR. OLLSON: I did, and I was familiar with the

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1 paper prior to this hearing.
 2 Q. So you agree that it was published in a credible
 3 peer-reviewed scientific journal?
 4 A. DR. OLLSON: I do.
 5 Q. Can you please read the highlighted provisions in the
 6 abstract, and -- yeah. Thank you.
 7 A. DR. OLLSON: So the first sentence says:
 8 (as read)
 9 **"To date, there is scarce evidence on**
 10 **the association between sleep disorders**
 11 **and noise generated by wind turbines."**
 12 **The end of the paragraph says: (as read)**
 13 **"In conclusion, our preliminary findings**
 14 **suggests that there may be a possible**
 15 **relationship between exposure to wind**
 16 **turbines and sleep disorders, although**
 17 **no conclusions can be drawn in terms of**
 18 **causality due to the nature of the**
 19 **retrieved data and the poor quality of**
 20 **current evidence."**
 21 Q. Based on your review of this particular paragraph and
 22 given your expertise, do you agree that there's, again,
 23 a possible correlation between long-term exposure to
 24 wind turbines and sleep disorders, or your position
 25 remains that there are no relation between exposure to

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1 wind turbines and sleep disorders?
 2 A. DR. OLLSON: Yes, I do not. So if we go to PDF
 3 page 4, please. And unfortunately, the researchers,
 4 they included some papers in here that are not proper
 5 studies. They have included others that actually are,
 6 such as the Michaud, et al, 2016, the Bakker 2012,
 7 which is up to 54 decibels, the Nissenbaum paper which
 8 has been discredited in the past, but what they've
 9 missed here is the updated work from Health Canada, the
 10 work from Dr. Ellenbogen in the United States, and most
 11 importantly, recently, the work both on audible noise
 12 as well as infrasound on sleep and wind turbines out of
 13 Australia.
 14 So there's a number of studies that have been
 15 completed that are not listed, and in fact there are
 16 several that are not listed in this study.
 17 So the reality here is that the researchers have
 18 come late to the game here. They're not overly
 19 familiar, but most importantly if you come down to PDF
 20 page 7, right at the bottom of PDF page 7, please, in
 21 the conclusions, that they suggest there might be a
 22 dose response relationship between wind turbine noise,
 23 sleep disorders. No conclusions could be drawn.
 24 This is where again if you were to go back to my
 25 exhibit, which I don't think we need to necessarily do,

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1 but if you'd like to, work by Dr. Ellenbogen, who's a
 2 preeminent sleep specialist physician in the United
 3 States, Harvard-trained physician who has been working
 4 in this field for the last decade, that when he
 5 published his most recent study on wind turbines and
 6 noise that we quite simply do not see that up to
 7 49 decibels.
 8 Same thing for Health Canada, up to 46 decibels.
 9 The same as the Australian researchers, above
 10 40 decibels.
 11 So I think if you look at the credible journals,
 12 the credible both laboratory as well as in-home sleep
 13 studies, we don't see that effect, certainly not under
 14 Rule 12 sound levels.
 15 Q. Thank you. But you agree that this Aid To Cross 15,
 16 the article was published -- sorry, Aid To Cross 17,
 17 the article was published in a reputable peer-reviewed
 18 journal; correct?
 19 A. DR. OLLSON: Yeah, it certainly was, and
 20 again --
 21 MR. KEMA: Again, I'm mindful of time,
 22 Dr. Ollson. I want to sort of move on. Thank you.
 23 Thank you, Ms. Adebayo, can you please bring up --
 24 and if I can please ask the chair to apply for this aid
 25 to cross to be committed it as exhibit for

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1 identification purpose.
 2 THE CHAIR: That's Aid To Cross 17?
 3 MR. KEMA: Yes, Aid To Cross 17 is an article
 4 titled Association Between Exposure to Wind Turbines
 5 and Sleep Disorders: A Systemic Review and
 6 Meta-Analysis.
 7 THE CHAIR: Yes, we can add that to the record
 8 for identification purposes, and we'll mark it as
 9 Exhibit 150.
 10 MR. KEMA: Thank you.
 11 **EXHIBIT 150 - AID TO CROSS 17, ARTICLE**
 12 **TITLED ASSOCIATION BETWEEN EXPOSURE TO**
 13 **WIND TURBINES AND SLEEP DISORDERS: A**
 14 **SYSTEMIC REVIEW AND META-ANALYSIS**
 15 Q. MR. KEMA: Ms. Adebayo, please bring up Aid
 16 To Cross 19, it's a 2014 judgement of the Irish High
 17 Court regarding wind turbine noise, specifically PDF
 18 153.
 19 THE CHAIR: If I -- I'll just interject here
 20 for a moment.
 21 So we're at 2:30, which is typically when we take
 22 our break. Maybe if we can just bring the exhibit down
 23 for a moment. Yeah.
 24 So we're at 2:30, and I'm just wondering how much
 25 longer this line may continue for, or would you like to

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1 take the break now, or?
 2 MR. KEMA: I'd like to take the break now,
 3 Mr. Chair, and it's --
 4 THE CHAIR: Okay. And just for the purposes
 5 of scheduling or planning the rest of the afternoon,
 6 how long do you anticipate further requiring for your
 7 cross-examination?
 8 MR. KEMA: Not more than 30 minutes.
 9 THE CHAIR: Okay. That's reasonable. So
 10 we'll reconvene at 2:45.
 11 MR. KEMA: Thank you, Mr. Chair.
 12 THE CHAIR: Thank you.
 13 (ADJOURNMENT)
 14 THE CHAIR: Okay. Our plan is to complete
 15 questions from the Commission counsel and Commission
 16 today too, so if you can continue with your
 17 examination, Mr. Kema.
 18 MR. KEMA: Thank you, Mr. Chair, and I should
 19 be done in the next 15 minutes, hopefully.
 20 Q. MR. KEMA: Dr. Ollson -- Ms. Adebayo, please
 21 bring up Exhibit 116 at PDF 20. Thank you.
 22 Dr. Ollson, you criticized Dr. Bellut-Staeck that
 23 her work is not published in a credible peer-reviewed
 24 journal that is indexed by PubMed; correct?
 25 A. DR. OLLSON: Correct.

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1 Q. And, Ms. Adebayo, please bring up Aid To Cross 18,
 2 which is a PubMed page for Dr. Bellut-Staeck.
 3 Did you review this aid to cross, Mr. --
 4 Dr. Ollson?
 5 A. DR. OLLSON: Yes, I did.
 6 Q. From your review of this Aid To Cross 18, can you see
 7 that Dr. Bellut-Staeck's work was published in the
 8 German Medical Weekly in 2022?
 9 A. DR. OLLSON: Yes. And so just to be clear,
 10 first of all, this article is in German. I did have a
 11 chance to review it. This is not a -- certainly the
 12 German Medical Weekly is indexed in PubMed.
 13 This appears to be, and from my review of her
 14 one-page paper, it's an opinion piece that was
 15 published in the Medical Weekly German magazine. So it
 16 is essentially a one-page synopsis of the work that
 17 she's published in her other papers, but by no means is
 18 it an authoritative piece on the issue.
 19 Q. Thank you, Dr. Ollson, but the question is, German
 20 Medical Weekly is referenced in PubMed; correct?
 21 A. DR. OLLSON: It is, and I do not believe --
 22 MR. KEMA: Mr. Chair, if I could please apply
 23 for this Aid To Cross 18 to be admitted as an exhibit
 24 for the purpose of identification. It's a PubMed page
 25 for Dr. Bellut-Staeck.

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1 THE CHAIR: We'll enter that for
 2 identification purposes as Exhibit 151.
 3 MR. KEMA: Thank you.
 4 **EXHIBIT 151 - AID TO CROSS 18, A PUBMED**
 5 **PAGE FOR DR. BELLUT-STAECK**
 6 Q. MR. KEMA: Ms. Adebayo, please go to page 26
 7 of Exhibit 116.
 8 Dr. Ollson, you provided your opinion on the issue
 9 of public safety raised by the members of the Oyen
 10 Landowners Group, and you provided comments on tower
 11 collapse, blade failure, and risk of fire; correct?
 12 A. DR. OLLSON: That's correct.
 13 Q. And from a review of your CV, Appendix A of your
 14 report, you're not a wind turbine engineer; correct?
 15 A. DR. OLLSON: That's correct.
 16 Q. You're also not a wind turbine technician; correct?
 17 A. DR. OLLSON: That's correct; however, I did sit
 18 as the Canadian representative on the International
 19 Electrotechnical Commission on risk assessment for wind
 20 turbine failures, which was an international committee
 21 made up of members from over 35 countries dealing with
 22 the risk assessment of wind turbine failures.
 23 In addition to that, what not in my CV because it
 24 was published just after I filed this report is a
 25 peer-reviewed publication that I did coauthor along

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1 with Dr. Jonathan Rogers of Georgia Tech who has
 2 appeared before this Commission on a wind turbine blade
 3 failure issue in Kansas recently.
 4 Q. Thank you, Dr. Ollson. Ms. Adebayo, can you please go
 5 to PDF 27 of Exhibit 116. Thank you.
 6 And, Dr. Ollson, you stated here, and I quote:
 7 "According to the media reports the fire
 8 crews were on scene and set a perimeter
 9 while the turbine fire burned itself
 10 out. This is standard operating
 11 procedure for wind turbine fires. In
 12 the rare event that turbine fires do
 13 occur, proper coordination and training
 14 with local EMS and fire services is
 15 key."
 16 From a review of your CV at Appendix A of your report,
 17 you're not a fire safety, fire protection, or a fire
 18 suppression engineer; correct?
 19 A. DR. OLLSON: That's correct. Again, I've
 20 worked on wind turbine fires over the last 15 years and
 21 sat as the Canadian representative on the risk
 22 assessment --
 23 Q. You've stated that previously, and that was not my
 24 question.
 25 And you're also not a fire consultant; correct?

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1 A. DR. OLLSON: I do consult on fires from issues
 2 of wind turbine, solar, and battery storage facilities.
 3 Q. And is this referenced in your CV?
 4 A. DR. OLLSON: I do not know if it's referenced
 5 directly in my CV. I've certainly appeared before this
 6 Commission 10 times in the past discussing wind turbine
 7 fires.
 8 Q. Thank you. At the same PDF, 27 of Exhibit 116, you
 9 stated: (as read)
 10 "To the best of my knowledge, there has
 11 not ever been property damage and
 12 certainly not personal injury or
 13 fatalities as a result of -- "
 14 And I'm sort of -- I think there's a typo there:
 15 (as read)
 16 "As fires from wind turbines."
 17 A. DR. OLLSON: Sorry, that should have been
 18 referenced to in Canada.
 19 Q. Okay.
 20 A. DR. OLLSON: And certainly the fatalities --
 21 there have been fatalities, there have been a handful
 22 of fatalities from wind turbine fires around the world,
 23 and certainly there has been some property damage.
 24 Q. Okay. So you're confirming before the Commission that
 25 around the world, there's been wind turbine fires that

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1 have led to fatalities, property damage, and personal
 2 injury.
 3 A. DR. OLLSON: There have been around the world a
 4 handful, a very few, but there have been a handful of
 5 fires that have resulted in those issues, yes.
 6 Q. Okay. Thank you very much.
 7 Ms. Adebayo, can you please bring up Aid To Cross
 8 20. It's a summary of wind turbine accident data
 9 published by Scotland Against Spin, specifically PDF
 10 page 2. If you could please go to the -- I think the
 11 last paragraph. Yes, thank you.
 12 Dr. Ollson, can you please read the last paragraph
 13 in PDF 2?
 14 A. DR. OLLSON: (As read)
 15 **"The biggest problem with wind turbine**
 16 **fires is that because of turbine height,**
 17 **the fire brigade can do little but watch**
 18 **it burn itself out. While this may be**
 19 **acceptable in reasonably still**
 20 **conditions, in a storm it means burning**
 21 **debris being scattered over a wide area,**
 22 **with obvious consequences. In dry**
 23 **weather, there is obviously a wider area**
 24 **fire risk, especially for those**
 25 **constructed in or close to forested**

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1 **areas and/or close to housing or**
 2 **workplaces. Five fire accidents have**
 3 **badly burned wind industry workers."**
 4 Q. Do you agree with that statement in terms of the impact
 5 of wind turbine fires?
 6 A. DR. OLLSON: I agree that depending on the
 7 placement of a turbine and the issues around that,
 8 these issues can be -- this is specifically referring
 9 to areas in Europe, where there have been some of those
 10 issues.
 11 The reality is, again, when we look at the project
 12 here, and the Oyen project specifically, if you look at
 13 the area that turbines are located, that the best we
 14 would have would be a grassfire or a crop fire,
 15 depending on the time of year, and these are issues
 16 that are well-equipped to be dealt with by the fire
 17 groups, including I believe it's been referenced in
 18 this proceeding that the Oyen fire department has been
 19 consulted by the project and that they do not -- they
 20 have not at this point expressed concern and that there
 21 will be training and/or anything else that the fire
 22 department needs.
 23 Q. Thank you. And you referenced grassfire or crop fire.
 24 Is it possible that the grassfire or a crop fire can
 25 lead to larger impact as wildfires or can cause

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1 wildfires?
 2 A. DR. OLLSON: Well, certainly a -- I mean, one
 3 of the biggest challenges we have here in the province
 4 of Alberta is a grassfire. Grassfires are started by
 5 all sorts of issues, whether it be a thrown cigarette
 6 butt, a lightning strike or the like, and these are
 7 things that the fire departments are very well equipped
 8 to deal with and deal with on a yearly basis.
 9 Q. Thank you. But do you agree that wind turbine fire can
 10 cause grassfire or crop fires?
 11 A. DR. OLLSON: It can if it's not properly
 12 managed, and this is where we see if you -- for
 13 example, the fire that occurred in the Pincher Creek
 14 area last summer, the fire department responded to that
 15 fire as per their training that it did -- you did have
 16 burning embers and debris from the turbine, and they
 17 put out the ground fires or the spot fires that did
 18 occur.
 19 That is the common practice certainly here in
 20 North America on projects such as the Oyen project,
 21 where it is basically located either in pastureland or
 22 in cropland.
 23 Q. Thank you.
 24 A. DR. OLLSON: So they can occur. They're very
 25 rare, and a good example of the fire that happened at

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1 Pincher Creek last summer is an example of what we've
2 been discussing.

3 MR. KEMA: Thank you. Mr. Chair, if I could
4 please apply to -- for Aid To Cross 20, which is a
5 summary of wind turbine accident data up to first
6 published by Scotland Against Spin be admitted or
7 marked as exhibit for identification purpose.

8 THE CHAIR: Certainly. That will be
9 Exhibit 152.

10 MR. KEMA: Thank you.

11 **EXHIBIT 152 - AID TO CROSS 20, A**
12 **SUMMARY OF WIND TURBINE ACCIDENT DATA**

13 Q. MR. KEMA: Ms. Adebayo, can you please bring
14 up Aid To Cross Number 21, PDF 5.

15 Dr. Ollson, this is an article published by
16 members in the department of mechanical engineering,
17 Imperial College London. Did you review this Aid To
18 Cross 21?

19 A. DR. OLLSON: I have and I was familiar with it
20 before the proceeding.

21 Q. And did you review the information stated that burning
22 debris from a wind turbine fire in 2012 in Riverside,
23 California, caused a wildfire, and the wildfire
24 destroyed forests and burned power lines?

25 A. DR. OLLSON: Yes. And so in particular, in

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1 referenced -- that's Aid To Cross 21 -- did you also
2 review the information that wildfire reported in the
3 media between 2012 to 2016 show that 12 percent of the
4 wildfires caused secondary fires in industrial or
5 forested areas?

6 A. DR. OLLSON: Yes, again, these are European
7 fires that occur where we've got turbines that are
8 situated in forested areas --

9 Q. I understand. I understand that fact. This is not a
10 Canadian article. It's referenced clearly in the
11 article that it is based on European fires.

12 A. DR. OLLSON: But the important part here,
13 Mr. Kema, is not --

14 Q. Did it not --

15 THE CHAIR: Okay, okay, the chair is here. So
16 when a question is asked, there needs to be an
17 opportunity to provide an answer. It's not helpful for
18 anyone, and it's not helpful for the transcript for you
19 to be speaking over each other, okay? So please ask a
20 question and then please provide an answer.

21 A. DR. OLLSON: And, Mr. Chair, if I might, you
22 know, again, I read the paragraph. I'm putting context
23 to what the issue there is that -- and I would agree
24 with this. If you're -- so we have turbines even in
25 Canada located in forested areas, like actually in

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1 that fire in 2012, the fire department did not respond
2 within a short period of time to deal with the issue
3 around the turbine fire itself, but again, we're
4 talking about a fire that occurred, you know, almost
5 13 years ago now.

6 It certainly -- as I've stated before, these
7 issues can occur. That's why you need proper training
8 and then response by the fire department.

9 So it certainly can happen. Any fire can cause
10 that. So grassfire in the Province of Alberta, we
11 certainly see acres and acres of grassfires occurring
12 every -- hundreds of acres if not thousands in this
13 province every year, and not just --

14 Q. Thank you, Dr. Ollson. So when you referenced the
15 facts that the firefighters in the case of the
16 California fire did not respond quickly or swiftly or
17 within a short period of time, can you let me know the
18 timeframe within which the firefighters responded in
19 that case?

20 A. DR. OLLSON: I don't have the exact number, but
21 I believe -- and again, this is now anecdotal, but from
22 talking to other responders that were there back --
23 this is now going back a decade, it took more than an
24 hour for the fire department to respond.

25 Q. Okay. Thank you. So also in the article that's

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1 forested areas, mostly in -- on the east coast.

2 You also have turbines not in Canada but in Europe
3 that are located in industrial parks, right in, you
4 know, where you would, like, commonly see perhaps up in
5 Edmonton.

6 So certainly those pose a greater risk when you
7 have a fire in a turbine that is located in a forest,
8 which is hard to access, hard to get to, and/or in an
9 industrial area where you have many buildings and
10 structures around, they pose a higher risk than a fire
11 that would be in Oyen.

12 Q. MR. KEMA: Thank you, Dr. Ollson. In terms
13 of fire being a significant risk, do you agree that
14 there is a significant risk that burning debris from
15 wind turbine fires can scatter over a wide area?

16 A. DR. OLLSON: Yeah, again, if not properly
17 managed. And so when they say a wide area, we're
18 talking about at the base of the turbine, typically,
19 certainly not beyond the tip height of the turbine
20 itself.

21 So in this case, what we're looking at is a
22 200-metre tall tower, so typically within tip height is
23 where we would see the debris or the falling debris and
24 embers.

25 It is typically -- you know, when you get a fire

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1 at a turbine, it's often the largest cause of a fire at
2 a turbine these days is from an excessive lightning
3 strike. So all turbines have lightning arrest systems
4 and protection systems. The typical fire would be from
5 a very high voltage lightning strike. That can cause a
6 fire in both the blade as well as the nacelle.

7 The embers falling are typically then from the
8 blade, can be from the nacelle, and again fall within
9 tip height. And that's why the fire department is
10 there to provide that perimeter around the turbine to
11 ensure that spot grasses of fires like those at Pincher
12 Creek do not then spread.

13 MR. KEMA: Thank you, Dr. Ollson. Yeah,
14 Mr. Chair, I think that's all from me, and thank you
15 very much, Dr. Ollson, for providing your responses to
16 my questions.

17 A. DR. OLLSON: Thank you, Mr. Kema.

18 THE CHAIR: Okay. Thank you. So next we'll
19 be moving to questions from Commission counsel.

20 Before we begin, just as a point of clarification,
21 we had provided a letter on the record on Friday, June
22 6th, regarding the new reclamation security guidelines,
23 and so as a result of the submissions this morning, we
24 just want to make it clear that we will not be
25 following up with an IR, an information request, in

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1 department has the latest and greatest training
2 available to them.

3 Q. RES also committed to ongoing engagement with the fire
4 department to discuss any evolving requirements. If
5 the project is approved, does RES intend to consult
6 with the fire department prior to construction
7 commencing?

8 A. MS. DEGUISE: Yes.

9 Q. And if a formal training plan is produced prior to or
10 during construction, would RES commit to updating it as
11 the project moved through the construction and
12 operation phase?

13 A. MS. DEGUISE: Yes.

14 Q. I'm going to move to some questions regarding the
15 environment.

16 Ms. Sare or Mr. Cuthbert, Alberta Environment and
17 Parks, or AEPA assesses wildlife and wildlife habitat
18 based on project siting. Do you know if AEPA assesses
19 rotor-swept areas in its assessment of risk to wildlife
20 and wildlife habitat?

21 A. MS. SARE: That information is provided in
22 our renewable energy project submission, and so yes, I
23 do believe that AEPA considers that information when
24 they're writing their referral report.

25 Q. My next questions are in relation to bats. Again,

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1 this proceeding related to the reclamation security.
2 Okay.

3 And I'll turn it over to Commission counsel for
4 questions.

5 **MS. GRAHAM QUESTIONS THE PANEL:**

6 Q. Good afternoon. My first questions concern the
7 emergency response plan.

8 Ms. Deguise and Ms. Gibson, RES's reply evidence
9 is that the fire chief for the Oyen volunteer fire
10 department confirmed that the department currently has
11 the necessary training and equipment and respond to
12 emergency situations on the project lands, and RES also
13 indicated that it's willing to work with the fire
14 department if additional training or equipment needs
15 arise in the future.

16 If at some point in the future the fire department
17 requests additional training, a formal training plan,
18 or equipment, would RES provide that additional
19 training, training plan, or equipment?

20 A. MS. DEGUISE: We would certainly contribute to
21 that, absolutely. I would just say given the number of
22 other facilities in the vicinity of the Oyen wind farm,
23 like we saw this morning with Sharp Hills and Lanfine,
24 it would seem to make sense that, you know, we could
25 all collaborate together to ensure that the Oyen fire

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1 Ms. Sare or Mr. Cuthbert.

2 The bat mitigation framework for wind power
3 development recommends engagement with AEPA when bat
4 mortalities exceed 4 to 8 mortalities per turbine per
5 year. What other metrics would be helpful in assessing
6 bat mortalities caused by turbines?

7 A. MS. SARE: The count of fatalities really is
8 the prime metric that is used. So maybe I'm not quite
9 understanding your question.

10 Q. Sure. So aside from the metrics stipulated in the
11 framework, based on your professional experience and
12 training, are there any other metrics that would be
13 helpful in assessing bat mortalities caused by wind
14 turbines?

15 A. MS. SARE: So we -- we know that bats are
16 active -- more active in these areas at certain times
17 of year, certain times of the night, certain climatic
18 conditions. So there's a fair amount of information,
19 existing information available for that that can be
20 used to help predict when bats may be more prevalent in
21 the study area.

22 Q. Dr. Barclay mentions a number of factors that
23 contribute to bat population declines, including
24 cumulative effects and slow reproductive rates. What's
25 the contribution of turbines in relation to bat

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1 declines as compared to other factors?
 2 A. MS. SARE: I can't speak to the -- in terms
 3 of percentages, but we do know that wind facilities do
 4 cause a substantial number of bat fatalities across
 5 North America. Unlike with bird populations, where
 6 it's not considered to be a significant source of
 7 mortality to populations, for bats, it is considered to
 8 be an important factor, but I can't speak to the
 9 relative contribution.
 10 Habitat loss is of course an extremely important
 11 factor. When we're just talking about -- we're talking
 12 about migratory bats, but of course, we have diseases
 13 that are affecting our other species of bats in the
 14 province as well, such as white nose syndrome, which is
 15 the prime cause of declines in some of our smaller bat
 16 species like little brown myotis.
 17 Q. Given the slow reproductive rates for Albertan bats and
 18 international distribution ranges for some of Alberta's
 19 migratory bat species, would there need to be an
 20 international agreement and action to reduce the level
 21 of bat mortalities, with mortalities as described in
 22 Dr. Barclay's report, to a sustainable level?
 23 A. MS. SARE: I do feel that Alberta's
 24 contribution to this broader North American issue is
 25 limited in the ability to change the trajectory of bat

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1 populations, but of course, it's a contributing factor.
 2 Whether or not an international agreement would be
 3 required, I can't say, but it's a broader issue. It's
 4 definitely a broader issue than can be tackled in
 5 Alberta alone.
 6 Q. I'm going to move to some questions on wetlands.
 7 In Exhibit 8, which is the environmental
 8 evaluation prepared by WSP, PDF page 36 -- and,
 9 Ms. Adebayo, if you could please bring this to share on
 10 the screen as well.
 11 Land cover types are presented in Table 3.1-1.
 12 One of the land cover types is wetlands, while another
 13 one is waterbodies, and there's a number of terms in
 14 the most left-hand column.
 15 I'm hoping I can go through some of the terms and
 16 get them defined. And my questions, I believe, are for
 17 Mr. Cuthbert; is that right?
 18 A. MR. CUTHBERT: Hi.
 19 A. MS. SARE: I can respond to questions on
 20 wetlands once that exhibit is up so I can see the
 21 terms.
 22 MS. GRAHAM: Ms. Adebayo, I believe it's
 23 sharing on the external Zoom but not on the internal
 24 Zoom platform. Thank you.
 25 Q. So my first question is for the term "wetlands." It's

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1 the land cover type, and it's about three quarters of
 2 the way down. How is that defined in the table?
 3 A. MS. SARE: Sorry, I'm trying to -- so I may
 4 not be able to see -- I don't think I'm seeing the full
 5 table. I can see up to wet features.
 6 Okay. So you're referring to, under wet features,
 7 natural wet features, wetlands, and then underneath
 8 that, ephemeral waterbodies, drainages, watercourses,
 9 waterbodies?
 10 Q. Correct. And if it helps, I'm going to -- or I'm
 11 looking for a definition for wetlands, and then on the
 12 second or the following row, EWB, drainage,
 13 watercourses, and waterbodies.
 14 A. MS. SARE: So under the Water Act, we have
 15 our definition of wetlands, which includes certain
 16 classes of wetlands. It does not include ephemeral
 17 waterbodies, which were typically considered Class 1.
 18 So Class 1 wetlands would be your typical
 19 ephemeral waterbody. So the wetlands include classes 2
 20 and higher.
 21 Q. And then for watercourses and waterbodies, how are
 22 those defined, and how do they relate to the wetlands?
 23 A. MS. SARE: Right. So you have your
 24 drainages, which are again more ephemeral wet areas
 25 that are seasonal and may be wet for a period during

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1 the spring, whereas a watercourse is a more permanent,
 2 linear feature on the landscape, and then your
 3 waterbodies would be your named lakes, for example.
 4 Q. So if I understand, wetlands and watercourses would not
 5 fall under the broader term of waterbodies in this
 6 table.
 7 A. MS. SARE: That's -- that's right. Yes.
 8 Q. Is there a percentage for how many of the wetlands
 9 would be Class 3 or higher wetlands?
 10 A. MS. SARE: Yes, there is. Let me think
 11 where... I think if we go to... If we can bring up
 12 Exhibit 0009. I'll have to find the table.
 13 Sorry, I'm trying to navigate on my own screen
 14 here. PDF page 69. And actually -- okay, my
 15 apologies. Exhibit 0008, PDF page 69.
 16 We have our breakdown of wetlands, and we can see
 17 that the Class 3 -- you were asking for Class 3 and
 18 higher or just Class 3?
 19 Q. Class 3 and higher, please.
 20 A. MS. SARE: Yes. So Class 3 and higher,
 21 there's 134 wetlands in total, and so of that, we have
 22 approximately just under 50, 45 to 50 that are Class 3
 23 and higher. So 91 of the 134 wetlands are Class 2,
 24 temporary wetlands.
 25 Q. Thank you. And, Ms. Adebayo, you can take the exhibit

1 down, please.
 2 I understand from Exhibit 9, which is also the
 3 environmental evaluation, that wetland impacts reported
 4 in the AEPA RES report are different from those in the
 5 environmental evaluation, with the information in the
 6 evaluation -- environmental evaluation being the most
 7 current and accurate.

8 Was the definition of waterbodies consistent
 9 between the AEPA referral report submission and the
 10 environmental evaluation?

11 A. MS. SARE: Yes, the definition of waterbodies
 12 was consistent. There were steps to refine our
 13 understanding of wetlands on the landscape that had be
 14 taken between the renewable energy project submission
 15 and the environmental evaluation.

16 So we refined our mapping layer of wetlands in the
 17 study area, and this was through a more detailed
 18 desktop assessment that looked at historical aerial
 19 imagery to better understand the permanence of the
 20 wetlands on the landscape, and so we had some shifting
 21 in the classes of wetlands, but the definitions for
 22 wetlands did not change.

23 Q. So the difference was largely due to the mapping
 24 exercise, and specifically the greater use or use of
 25 the historical aerial imagery; is that correct?

1 A. MS. SARE: That is correct. And that is
 2 typical of the process.

3 Our initial mapping for the entire project study
 4 area is higher level scale and appropriate for the
 5 assessment that's done at the time, but then as the
 6 project progresses, we refine that mapping. Once the
 7 footprint is defined, then we can narrow down that area
 8 that's being mapped and go into greater detail mapping
 9 wetlands in and around the project footprint to better
 10 understand how it's interacting, and then that's in
 11 future supplemented by very detailed field surveys to
 12 support applications under the Water Act, and so it
 13 gets further refined as the project progresses through
 14 the approval process and the permitting process.

15 Q. Have the results about wetland impacts been field
 16 verified yet?

17 A. MS. SARE: I believe there has -- maybe
 18 Trevor can speak to this. I believe there have been
 19 some studies undertaken to start supporting that
 20 process, but the information that we provided in the
 21 environmental evaluation is the latest. We have not
 22 updated the mapping layer since then.

23 A. MR. CUTHBERT: M-hm. No, and -- pardon me. The
 24 (indiscernible) surveys and the Water Act wetland
 25 policy are scheduled to be completed this summer, is my

1 understanding.

2 Q. What impact, if any, does the more current and accurate
 3 information available about wetland impacts in the
 4 environmental evaluation have on the validity of the
 5 information supplied to AEPA and the referral report?

6 A. MS. SARE: Well, we try to provide a
 7 reasonable but precautionary preliminary map so that
 8 when we do refine it, the impacts tend to decrease
 9 rather than increase. So that is the approach that we
 10 try to take, but again, we're trying to balance that --
 11 that level of precaution with what we think is actually
 12 happening on the landscape.

13 So it is a bit of a balance to be precautionary
 14 but not unrealistically precautionary. And so as we
 15 refine our estimates, the impacts to wetlands should --
 16 should decrease.

17 A. MR. CUTHBERT: And just to be clear, I believe
 18 it's on the record, but Alberta Environment was advised
 19 of the changes to the wetlands mapping at the AUC's
 20 request, and they provided an update to the referral
 21 report as Exhibit 0061. So it did note a slightly
 22 higher risk to wetlands because of the additional
 23 Class 3 impacts, but it did not change the overall low
 24 risk rating for the project.

25 Q. I'm going to transition to some questions on noise.

1 Mr. Faszer, in Exhibit 56, which is RES's IR,
 2 information request, responses, IR response 7(b), PDF
 3 16, and I don't believe you need to bring this up, but
 4 RES states: (as read)

5 "In the unlikely event of a
 6 noncompliance issue once the project
 7 commences operations, RES could switch
 8 one or more turbines into a noise
 9 reduced operating mode to reduce sound
 10 levels at receptors and bring the
 11 project into compliance with acceptable
 12 PSL limits."

13 Do you agree with RES's statement that the reduced noise
 14 modes can bring sound levels back within compliance?

15 A. MR. FASZER: Yes, I agree that in that
 16 scenario, if there were to be a noncompliance due to
 17 noise above the permissible sound level, reducing
 18 turbines into lower noise emission sound-optimized
 19 modes can reduce the noise emissions to have the
 20 project be in compliance with the applicable
 21 permissible sound level.

22 Q. And RES advised that the sound power levels for each
 23 noise reduction mode are confidential, so, Mr. Faszer
 24 or for the RES witnesses, given this, how can the
 25 Commission assess the effectiveness of noise reduction

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1 mode as a mitigation tool in cases of noncompliance
 2 with Rule 12?
 3 A. MS. DEGUISE: Mr. Faszler, do you want to take
 4 this one, or would you like me to take this one?
 5 A. MR. FASZLER: Well, I suspect it would likely be
 6 both of us. What I can say is I have seen the
 7 sound-optimized modes. They do exist, and they are
 8 consistent with, you know, other turbine providers and
 9 vendors and models, and then I think RES can comment on
 10 the nature of the contractual confidentiality of that
 11 document.
 12 A. MS. DEGUISE: Yeah, it is just commercially
 13 sensitive for the -- for the turbine manufacturer, but,
 14 again, no, they are aware of what we've committed here,
 15 and we will of course be completing the operational
 16 surveys as well.
 17 Q. Mr. Faszler, aside from reduced noise modes, what other
 18 potential mitigation measures can be implemented in the
 19 event of a Rule 12 noncompliance during the project
 20 operation?
 21 A. MR. FASZLER: So in my experience, for noise for
 22 a wind turbine project, sound-optimized modes are the
 23 most effective, and they are, you know, generally --
 24 they would be sufficient such that additional noise or
 25 alternate noise mitigation would not be needed.

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1 Q. Are there any other mitigation measures, or is this the
 2 only one you're aware of?
 3 A. MR. FASZLER: It is -- for a wind turbine
 4 project, it is generally the only mitigation measure.
 5 And it is generally effective.
 6 Q. Ms. Deguise and Ms. Gibson, once the project commences
 7 operation, in the event of noncompliance with Rule 12,
 8 will RES commit to implementing noise-reduced operating
 9 modes for select turbines to reduce sound levels at
 10 receptors?
 11 A. MS. DEGUISE: Yes.
 12 Q. And would RES commit to curtailing a contributing
 13 turbine or turbines if the use of reduced noise modes
 14 cannot reduce the sound levels at the receptor in
 15 question within compliance?
 16 A. MS. DEGUISE: If that is the mitigation that is
 17 recommended by our noise expert, who completes the
 18 postconstruction operational monitoring as well as, you
 19 know, confirming with the turbine manufacturer that
 20 there are no other mitigation options that should be
 21 considered, then yes, that is something that RES can
 22 implement.
 23 Q. My next questions concern health impacts associated
 24 with infrasounds and are likely for Dr. Ollson and
 25 Mr. Faszler.

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1 Dr. Ollson, you commented on a 2014 study from
 2 Health Canada titled Wind Turbine Noise and Health
 3 Study, in part. What does Health Canada conclude with
 4 respect to infrasound from wind turbines and health
 5 impacts?
 6 A. DR. OLLSON: So Health Canada in -- they're
 7 almost -- the study was first released in 2014 --
 8 Q. Dr. Ollson, I think your microphone is impacted.
 9 A. DR. OLLSON: Sorry. How is that?
 10 Q. Much better, thank you.
 11 A. DR. OLLSON: Sorry about that. Yes. So the
 12 Health Canada study was first released in 2014.
 13 Subsequently there had been almost 20 publications,
 14 most of which were in the 2016 timeframe.
 15 We see from Health Canada is that they -- that the
 16 impacts that they've studied that you can use the
 17 audible sound level to also then support the infrasound
 18 low frequency noise levels, that there was no
 19 additional information garnered by including either low
 20 frequency noise or infrasound.
 21 So basically, if you used the audible sound level
 22 of up to 46 decibels as a surrogate for infrasound low
 23 frequency noise, that all of the findings are
 24 consistent with those levels as well.
 25 Q. The Health Canada study has a few qualifications in

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1 terms of not generalizing the results where the results
 2 do not permit conclusions about causality, to name a
 3 few.
 4 How should the Commission rely on the study's
 5 findings when evaluating infrasound from the wind
 6 turbines and potential health impacts?
 7 A. DR. OLLSON: Yeah, and certainly it's an
 8 excellent question. I mean, and that's why if you
 9 were -- I don't think we need to turn it up. That's
 10 why I've suggested that the Commission review appendix
 11 B of my report at Exhibit 116, and that is that no one
 12 study can conclusively demonstrate, you know, the
 13 absence of health impacts. Certainly leads us to that
 14 conclusion.
 15 It is the subsequent decade-plus of research
 16 that's been done since then, whether it be in the
 17 United States, whether it be in Europe, whether it be
 18 in Australia, where the consistent -- the findings in
 19 those other studies are consistent with the Health
 20 Canada study, which was the most comprehensive ever
 21 undertaken.
 22 So I think when you look at the totality or the
 23 weight of the scientific evidence, that's how the
 24 Commission -- and they have in the past -- should be
 25 looking at this issue.

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1 Q. And I believe the point of some of the questions
2 earlier today was some of the studies -- or there might
3 be some scientists or specialists in the field that
4 come to different conclusions than the Health Canada
5 study.

6 In your view, are there any, you know, credible
7 studies or research that -- on this topic that
8 contradict what the Health Canada study arrives at in
9 its conclusion?

10 A. DR. OLLSON: No. And I think this Commission
11 has heard largely from those others in the past. For
12 example, from Dr. Alves-Pereira, who believes that
13 infrasound from wind turbines can cause vibroacoustic
14 disease, that was heard extensively in the Forty Mile
15 hearing at a minimum. Wind turbine syndrome, in
16 other -- you know, this handful of call them
17 researchers, I guess, if you'd like, postulating that,
18 you know, infrasound or other issues cause health
19 impacts is certainly not borne out by the weight of
20 scientific evidence.

21 It hasn't been -- you know, this Commission has
22 not accepted it, nor have other authorities with
23 jurisdiction accepted those types of issues.

24 Q. And, Dr. Ollson, will the project produce infrasound
25 that can be measured or detected at nearby residences?

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1 A. DR. OLLSON: So the answer is yes, and the
2 qualification of that is that infrasound is not
3 something that's typically measured in let's say a CSL
4 survey or other types of postconstruction surveys
5 around things like gas plants or the like. It takes
6 highly specialized equipment as well as those with
7 acousticians with training in specifically measuring
8 and then reviewing the data on infrasound.

9 So it's not something we see that is done anywhere
10 in Canada, including here in Alberta or North America
11 and to the best of my knowledge, in any other project
12 around the world. It is more of a research type study
13 than it is, you know, for postconstruction monitoring.

14 Q. And just to confirm from what I believe I heard you say
15 earlier today, the infrastructure -- infrasound would
16 likely not be at levels that would adversely impact
17 residents' health; is that correct?

18 A. DR. OLLSON: Yes, we know that that's the case,
19 that the level of impact and biological effects of
20 infrasound is orders of magnitude higher than what we
21 would see from infrasound from turbines.

22 You know, you have similar levels coming from your
23 air conditioner, from the fan from your furnace in your
24 house already. We're all exposed to it on a given day.
25 Even cyclical like infrasound is produced by a turbine.

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1 Q. Is there an acceptable limit for infrasound levels
2 caused by wind turbines in relation to human health?
3 A. DR. OLLSON: So, again, what we've seen and
4 what we look at is essentially the perception or the
5 threshold, which is the hearing threshold, which again
6 is still well beyond that of the turbine infrasound
7 even at the base of the turbines.

8 So certainly we know that if we keep below the
9 perception or the audibility side, which again on the
10 dBG scale would be 85 to 95 dBG, that that is well
11 protective because you need to reach levels of, you
12 know, for example, as we discussed earlier today, 130,
13 give or take, which is, you know, almost a million
14 times greater sound pressure level than what you would
15 see from a turbine.

16 It's why, we can quite simply, all of us can be in
17 the room today, we're all experiencing infrasound right
18 now. It's why you can drive in your car. It's all of
19 those issues that infrasound, you know, it certainly
20 exists in the environment from many, many different
21 sources similar to wind turbines. It's quite simply at
22 a level that is far below what we would experience in
23 normal environmental conditions.

24 Q. Is there a recommended setback distance between wind
25 turbines and residences, again considering infrasound

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1 and potential health effects?

2 A. So no, again, the setback distances that we look at,
3 you know, the one that used to be used, and it
4 primarily came out of Ontario, that sort of 550-metre
5 setback, we've certainly seen in Alberta that that's
6 more or less been increased by most counties to sort of
7 800 to 1,000 metres.

8 Those setback distances are meant to protect for
9 the audible sound level because we're trying to stay
10 below the PSLs, of course, and as well as the public
11 safety side, things like ice throw from a blade
12 failure, tower collapse and the like.

13 So the infrasound will travel further than some of
14 the higher frequencies. We can certainly detect it.
15 For example, Health Canada was able to detect
16 infrasound from turbines up to 11 kilometres away, but
17 the levels are quite simply so low you could literally
18 live underneath the turbine -- not that we're going to
19 do that -- and still the level of infrasound would be
20 far below the level that would cause health impacts.
21 It's the audible sound that we're more concerned about.

22 Q. My next questions are about infrasound evaluation and
23 monitoring.

24 Would infrasound evaluation or monitoring be
25 helpful for the Commission's understanding of

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1 project-caused infrasound and health impacts?
 2 A. DR. OLLSON: No. And again, this is something
 3 the Commission's wrestled with on a number of occasions
 4 in the past and found that it's not needed. And the
 5 reason I say that, again, is we look at all these
 6 highly specialized studies that have been done, if you
 7 were to go to appendix B, if you were to look at the
 8 work we did by my research group and others back 2015
 9 in the last decade, is we that know that the levels are
 10 far below that that would cause impacts.

11 The focus really does need to be and should be on
 12 doing the postconstruction monitoring for the audible
 13 sound. And in fact, Alberta is a bit unique where
 14 there are other jurisdictions that do require a CSL
 15 survey after, but in my experience -- and I realize
 16 it's not necessarily written into Rule 12, but in all
 17 of the projects that I've been involved in before the
 18 AUC, there has been a requirement for postconstruction
 19 monitoring. Many jurisdictions just do that if
 20 there's -- on a complaint basis, so I think you're more
 21 than protected at the AUC to ensure that that CSL
 22 survey that's done makes sure that the project is
 23 operating within accordance to Rule 12.

24 Q. Thank you. I just have a follow-up question on
 25 wetlands for Ms. Sare again.

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1 Earlier you took me to Exhibit 8, PDF 69, in terms
 2 of counting how many Class 3 and above wetlands there
 3 were. Was that number based on information you had
 4 before doing the detailed mapping exercise?

5 A. MS. SARE: That number -- that -- sorry, that
 6 exhibit was from the environmental evaluation. So that
 7 was based on the more detailed mapping exercise.

8 Exhibit -- sorry, let me just see here.
 9 Exhibit 0008. Sorry, my correction. That was based on
 10 the -- no, that's right. That was the environmental
 11 evaluation. My apologies. Not the Alberta Environment
 12 renewable energy project submission, which has --

13 Q. Okay. Thank you.

14 A. MS. SARE: -- the older values. Sorry.
 15 Yes.

16 Q. Thanks for that clarification. And I'm going to move
 17 to shadow flicker.

18 Ms. Deguise and Ms. Gibson, in Exhibit 56, PDF
 19 page 22 -- and again, I don't believe you need to bring
 20 this up -- in response to IR 7, RES submitted it would
 21 promptly respond to any shadow flicker mitigation
 22 measures that may arise during project implementation.

23 In the unlikely event that shadow flicker is
 24 determined to be an issue, based on consultation with a
 25 qualified expert, then RES is willing to implement

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1 mitigation measures to reduce shadow flicker at
 2 impacted receptors.

3 Who would be the qualified expert in that
 4 scenario?

5 A. MS. DEGUISE: In terms of -- sorry, if you just
 6 reread that language, are you looking for the qualified
 7 expert around opining on the mitigations or in terms of
 8 the shadow flicker impacts?

9 Q. The sentence states: (as read)

10 "In the unlikely event that shadow
 11 flicker is determined to be an issue
 12 based on consultation with a qualified
 13 expert."

14 So I read it to understand that the qualified expert
 15 would be informing RES in terms of if it's an issue or
 16 not.

17 A. MS. DEGUISE: Right. I understand what you're
 18 saying now. Thank you.

19 Yes. I mean, the -- we find that, you know,
 20 shadow flicker and other visual -- potential visual
 21 impacts are quite subjective, and in this situation
 22 here, we're referring to our qualified experts that we
 23 have in front of us here today who have a lot of
 24 experience dealing with shadow flicker and the
 25 potential impacts of shadow flicker as a way to, you

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1 know, potentially sort of validate what a landowner is
 2 concerned about and corroborate the potential
 3 mitigation that we will be proposing and agreeing to
 4 implement postconstruction.

5 Q. And in the same IR response, RES submitted that shadow
 6 flicker can be effectively mitigated by several
 7 methods, including installing blinds and curtains and
 8 erecting screening and vegetation barriers.

9 If these mitigation measures are not sufficient,
 10 would RES be willing to curtail the operation of
 11 contributing wind turbines by locking the rotor to
 12 prevent the blades from spinning at certain times of
 13 the year to mitigate shadow flicker from the project?

14 A. DR. OLLSON: So if I might jump in,
 15 Ms. Deguise, I think what we have to be careful about
 16 here is that, you know, it is the question about what
 17 is the level of shadow flicker, first and foremost.

18 And so I don't -- my recommendation would be that,
 19 you know, if you're -- under the 30 hours of actual shadow
 20 flicker a year, adjusted case shadow flicker a year,
 21 then, you know, that would be more of a voluntary
 22 mitigation side that a company would undertake.

23 Really, like, there may be some level of shadow
 24 flicker, but the goal is never to get down to zero
 25 hours of shadow flicker a year.

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1 So the AUC has consistently looked at I think two
2 issues. One is, you know, a report 13 months after the
3 operations begin of any shadow flicker complaints that
4 have occurred, and then number 2 would be, you know,
5 any mitigation that has occurred.

6 So if a local resident had let's say 5 hours of
7 shadow flicker but they really wanted zero, you know,
8 perhaps that's something where RES could work with them
9 to put some trees or the blinds or something like that
10 in, and I would not suggest that curtailment would be
11 needed in that case.

12 I mean, just, you know, to do that and to expect
13 zero hours of shadow flicker at all projects and all
14 sites is just not realistic, and it causes issues
15 around the grid stability, the project and then
16 providing power into the grid, but first and foremost,
17 shadow flicker is not a health issue. It can certainly
18 be a nuisance issue, and we see by using that 30 hours
19 of adjusted or actual shadow flicker a year, we don't
20 tend to get complaints on shadow flicker anywhere in
21 North America, or if they do, they're very rare.

22 So I would suggest to RES that if they wanted to
23 do something voluntary, if it was under the 30 hours of
24 actual, then that would be appropriate if that's what
25 they should choose, but I certainly wouldn't mandate

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1 know, from -- in the summertime, you know, 6:00, 5:00
2 in the morning right through till, you know, in Alberta
3 here, you guys, it stays quite light out until 9,
4 10 o'clock at night.

5 So it is the theoretical or the maximum. And then
6 what is the common practice not only here in Alberta
7 but in North American jurisdictions is to make that
8 adjustment, and that adjustment is primarily driven by
9 the sunshine hours a year, and they do it by month in
10 the project area.

11 So when you look at that -- because of course if
12 it's a cloudy day, if it's raining, if it's snowing,
13 you're not going to have the potential for shadow
14 flicker. And so that's how you get to the adjusted
15 case.

16 And it is that adjusted case and almost
17 universally we see in North America the use of the no
18 more than 30 hours a year of adjusted case shadow
19 flicker. In -- and the reason that we do need a limit
20 is to control that nuisance side.

21 In the past, especially in states like Illinois or
22 Indiana in the U.S., back in the early 2000s, mid 2010
23 range, you would have five turbines to the east of a
24 home at 300 metres. You'd have five turbines to the
25 west of the home at 300 metres, and they were getting

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1 it.

2 A. MS. DEGUISE: Thank you, Dr. Ollson.

3 Q. Sure, I can repeat my question. If it's insufficient,
4 again it's not saying to make it zero, just if it's
5 insufficient, is RES willing to curtail the operation
6 of contributing wind turbines by locking the rotor to
7 prevent the blades from spinning at certain times of
8 the year to mitigate shadow flicker from the project?

9 A. MS. DEGUISE: No, we would only consider
10 curtailment if the shadow flicker is over the 30 hours
11 a year.

12 Q. Dr. Ollson, the shadow flicker assessment in Exhibit 7,
13 which was prepared by WSP, models a worst case and an
14 adjusted case scenario. Can you walk me through why
15 both cases are presented?

16 A. DR. OLLSON: Yeah. So typically -- I mean, you
17 need the theoretical or the worst-case scenario, so
18 what the model will do -- and, Mr. Faszer, jump in if
19 you'd like, but the way the modelling occurs, it's a
20 physics-based model that simply looks at, you know,
21 where the sun is in the sky, and then from there, you
22 know, where the turbines are, where the rotor's going
23 to be, and then the potential for shadow to actually
24 occur.

25 That is if it's, you know, sunny every day, you

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1 hundreds upon hundreds of actual shadow flicker a year
2 at the home.

3 Once these -- now, that is no longer the case.
4 They've also adopted the no more than 30 hours of
5 actual, and we've seen the complaints, if exist at all,
6 have come dramatically down.

7 Q. So, you know, you just discussed the 30 hours of actual
8 or adjusted case shadow flicker being the benchmark.
9 What are your views on using shadow flicker per day as
10 a measure in determining the need for mitigation?

11 A. DR. OLLSON: So I do not believe you should be
12 looking at the number in minutes at a time, and the
13 reason for that -- and if you just bear with me for one
14 second, if we -- I don't know that we need to turn it
15 up, but in my report in PDF -- or, sorry, Exhibit 116,
16 I do discuss the literature that's been done here in
17 North America around shadow flicker and why even in
18 fact -- you can't even tie annoyance or nuisance with
19 shadow flicker to the total number of hours a year, and
20 certainly not to the minutes at a time.

21 So if you look at -- the over 30 minutes at a time
22 I don't believe helps at all from a perspective of
23 limiting that. The two studies that have shown that
24 are the Voicescu, et al, 2016. That is the Health
25 Canada research on shadow flicker and annoyance, and

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1 then the Haac 2022 from the U.S.
 2 Both studies have confirmed the same thing is that
 3 we certainly aren't able to correlate the number of
 4 minutes at a time to annoyance, so I don't believe it's
 5 something that's needed.
 6 Trying to curtail or deal with the number of
 7 minutes a year, that can cause a lot of problems. In
 8 this case, you only have a handful of residents within
 9 a kilometre and a half of turbines. In other areas
 10 where you may have, you know, hundreds of homes within
 11 one and a half kilometres of a turbine, to start
 12 curtailing or shutting turbines down over 30 minutes at
 13 a time, maybe it's 41, 45 minutes - it's typically not
 14 much over 30 - causes a lot of havoc in terms of trying
 15 to program that into curtailment, whereas over 30 hours
 16 a year of actual is relatively easily done.
 17 So not needed from a health perspective or even a
 18 nuisance perspective.
 19 MS. GRAHAM: Thank you, witness panel, for
 20 responding to my questions today. Commission Chair and
 21 Panel, those are my questions.
 22 THE CHAIR: Thank you. Commissioner
 23 Slawinski?
 24 MS. SLAWINSKI: Thank you, panel. I had a few
 25 questions coming into today, but you've been very clear

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1 on your position on a number of matters that I had some
 2 questions about, so I have no follow-up questions for
 3 you, and thank you again for your attendance.
 4 THE CHAIR: Thank you. As it turns out, I
 5 also do not have any questions, so that brings us to
 6 the conclusion -- oh, I will double-check to see if
 7 there's any redirect from counsel for the applicant.
 8 MS. OLENIUK: Thank you, Chair. I just have one
 9 question.
 10 THE CHAIR: Okay, proceed.
 11 **MS. OLENIUK RE-EXAMINES THE PANEL:**
 12 Q. Thank you. The question is for Dr. Ollson. So several
 13 times during your testimony today, you've referenced
 14 studies from various jurisdictions indicating no
 15 adverse effects on sleep from wind turbine noise at
 16 levels of 45, 46, 49, and 50, I believe.
 17 Could you clarify, Dr. Ollson, whether those noise
 18 levels you referred to are project-only noise levels or
 19 if they're cumulative noise levels.
 20 A. DR. OLLSON: Those are project-alone noise
 21 levels. So for example, with the AUC with the
 22 cumulative noise level, you can only have -- if you
 23 take the 35 baseline, you can only actually have 38.4
 24 wind turbine alone, so well above what we see from the
 25 AUC Rule 12. But they are -- they are project alone.

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1 MS. OLENIUK: Thank you, Dr. Ollson. Chair
 2 Price, those are the only questions I had. Thank you.
 3 THE CHAIR: Okay. So this witness panel,
 4 then, is released, and they can step down.
 5 A. MS. SARE: Mr. Chair, if I may just jump in,
 6 I have responses to two undertakings that I'd like to
 7 provide verbally, if time allows, if that's of interest
 8 now for the Commission.
 9 THE CHAIR: Sure. I think that makes sense,
 10 yeah.
 11 A. MS. SARE: Okay. So for the first one, it is
 12 Exhibit 115, PDF page 14, paragraph (d).
 13 There was a question about the number of detector
 14 nights used in the calculation for all bat passes,
 15 excluding the failed detector, and the reply evidence
 16 states 463 detector nights, and I stand corrected. It
 17 was 451 detector nights, which changes the overall
 18 passes from 2.94 passes per detector night to 3.02
 19 passes per detector night.
 20 This revised value does not change any of our --
 21 any of our conclusions drawn in the environmental
 22 evaluation or the renewable energy project submission.
 23 That was one undertaking.
 24 And the second undertaking relates to
 25 Exhibit 0071, PDF page 19, and there was a question to

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1 provide clarification on the land cover -- the
 2 proportion of land cover where pronghorn were observed.
 3 So for those incidental observations of pronghorn
 4 recorded during the baseline studies, I can confirm
 5 that about 71 percent of observations were observed on
 6 roadways, so road crossings and road allowances. 14 --
 7 about 14 percent of pronghorn observations were in
 8 native grassland land cover, and 14 percent of
 9 pronghorn observations were in cultivated land cover.
 10 We looked into the road allowance pronghorn
 11 observations, and of those observed on roadways,
 12 40 percent of those roadways were bisecting cultivated
 13 land cover, 20 percent of those roadways were bisecting
 14 a native cultivated combination, and another 20 percent
 15 were bisecting a tame pasture cultivated combination of
 16 land cover, and 20 percent -- the remain 20 percent
 17 were outside of this project's study area, where we did
 18 not have land cover classified.
 19 And that -- that includes the -- two of the
 20 undertakings from this morning.
 21 THE CHAIR: Okay. Thank you. So now this
 22 panel is released.
 23 (PANEL STANDS DOWN)
 24 THE CHAIR: So tomorrow we will continue with
 25 the OLG expert witness panel providing their direct

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1 evidence beginning at 9:00 a.m., and our plan is also
 2 to finish all our questions tomorrow of that panel.
 3 So we do have Wednesday reserved for contingency,
 4 and I'd ask that everyone continue to hold that, but
 5 our plan is to complete this part 1 of this hearing
 6 tomorrow afternoon. Okay. So we're adjourned for
 7 today. Thanks.
 8 (PROCEEDINGS ADJOURNED AT 3:52 P.M.)
 9 _____
 10 PROCEEDINGS ADJOURNED TO 9:00 A.M., JUNE 10, 2025
 11 _____
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1 Certificate of Transcript
 2
 3 We, the undersigned, hereby certify that the foregoing
 4 pages 1 to 214 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 Edmonton, Province of Alberta, on the
 9 9th day of June, 2025.
 10 _____
 11 "Joanne Lawrence"
 12 Joanne Lawrence, CSR(A), RPR
 13 Official Court Reporter
 14 _____
 15 "Diana Halvorsen"
 16 Diana Halvorsen, CSR(A), RPR
 17 Official Court Reporter
 18
 19
 20
 21
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 23
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 25

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 7 Wind GP Corp.)
 8 MS. BOUEY EXAMINES THE PANEL 11
 9 MS. OKOYE CROSS-EXAMINES THE PANEL 16
 10 MR. KEMA CROSS-EXAMINES THE PANEL 131
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 3 VOLUME 3, IMAGING APPLICATIONS PUBLISHED IN 2023
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 6 EXHIBIT 145 - AID TO CROSS NUMBER 2, THE AMERICAN 69
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