



**Capital Power Generation Services Inc.**

**Halkirk 2 Wind Power Project**

**April 11, 2018**

**Alberta Utilities Commission**

Decision 22563-D01-2018

Capital Power Generation Services Inc.

Halkirk 2 Wind Power Project

Proceeding 22563

Applications 22563-A001 and 22563-A002

April 11, 2018

Published by the:

Alberta Utilities Commission

Eau Claire Tower, 1400, 600 Third Avenue S.W.

Calgary, Alberta

T2P 0G5

Telephone: 403-592-8845

Fax: 403-592-4406

Website: [www.auc.ab.ca](http://www.auc.ab.ca)

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## 1 Decision summary

1. In this decision, the Alberta Utilities Commission must decide whether to approve the applications filed by Capital Power Generation Services Inc. (Capital Power or the applicant) for the construction and operation of the Halkirk 2 Wind Power Project (the project), pursuant to sections 11, 14 and 15 of the *Hydro and Electric Energy Act*. The project would be located five kilometres north of the existing Halkirk Wind Power Facility (Halkirk 1)<sup>1</sup> and approximately 12 kilometres north of the town of Halkirk, in the County of Paintearth. After considering the record of the proceeding, and for the reasons outlined in this decision, the Commission finds that approval of the project is in the public interest having regard to the social, economic, and other effects of the project, including its effect on the environment.

2. In reaching the determinations set out in this decision, the Commission has considered all relevant materials comprising the record of this proceeding, including the evidence and submissions provided by each party. References in this decision to specific parts of the record are intended to assist the reader in understanding the Commission's reasoning relating to a particular matter and should not be taken as an indication that the Commission did not consider all relevant portions of the record as it relates to that matter.

## 2 Introduction and background

3. On April 13, 2017, Capital Power filed two applications with the AUC for approval to construct and operate the project. The applications were registered as applications 22563-A001 and 22563-A002, and were designated as Proceeding 22563. The project consists of the following components:

- Seventy-four 2.0-megawatt (MW) wind turbines, each with a hub height of 95 metres and a rotor diameter of 110 metres, with a total capability of 148 MW in the following locations:

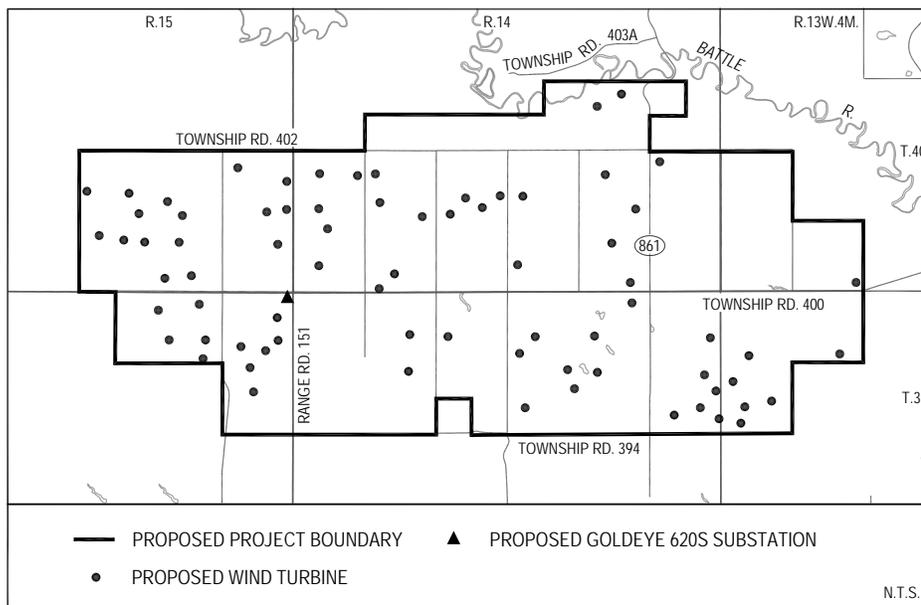
Sections	Township	Range	Meridian
31	39	13	W4M
25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36	39	14	W4M
25, 26, 33, 34, 35, 36	39	15	W4M
6	40	13	W4M
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18	40	14	W4M
1, 2, 3, 4, 9, 10, 11, 12	40	15	W4M

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<sup>1</sup> Power Plant Approval U2013-656, Proceeding 2974, Application 1610166, December 27, 2013.

- A 34.5-kilovolt (kV) collector system, consisting of underground power lines.
  - A new substation, to be designated as the Goldeye 620S Substation, for future connection of the project to the Alberta Interconnected Electric System. The substation would contain one 34.5/240-kV, 100/133/167-megavolt-ampere transformer, one 240-kV circuit breaker, six 34.5-kV circuit breakers, and potentially one set of 34.5-kV STATCOM equipment with a capacitor bank. The substation would be located in the northeast quarter of Section 35, Township 39, Range 15, west of the Fourth Meridian.
4. The project area is located within the County of Paintearth in central-east Alberta. It is generally south of the Battle River and north of the Paintearth Creek with Range Road 154 to the west and Highway 36 to the east.
5. The location of the project is shown in the following map:

**Figure 1 - Halkirk 2 Wind Power Project proposed location**



6. A public hearing commenced on Tuesday, November 21, 2017, in Red Deer, Alberta before Panel Chair Neil Jamieson, Commission Member Joanne Phillips, and Commission Member Tracee Collins, to consider the evidence in the proceeding. The primary participants in the hearing were the proponent, Capital Power, and an intervener group identifying itself as the Battle River Group (BRG). The BRG consists of 16 individuals and families located within two kilometres of the project and the Circle Square Ranch (a corporation) located approximately six kilometres from the project. Eleven individuals and families identifying themselves as members of the BRG were granted standing on August 23, 2017. The hearing adjourned on November 23, 2017.

7. All submissions were reviewed by the panel and taken into account in coming to their decision. A copy of the Commission's ruling on standing is attached as Appendix A.<sup>2</sup>

<sup>2</sup> Exhibit 22563-X0077, Standing Ruling.

8. On January 22, 2018, Capital Power filed a project amendment relating to the location of certain collector lines. Capital Power explained that the collector lines were relocated from certain landowners' lands. The Commission subsequently issued information request rounds 3 and 4 on January 30, 2018 and February 20, 2018, to clarify aspects of the underground collector system relocation.

### 3 Legislative scheme

9. The Commission regulates the construction and operation of power plants in Alberta. The wind generation project proposed by the applicant is a "power plant" as that term is defined in Subsection 1(k) of the *Hydro and Electric Energy Act*. Section 11 of the *Hydro and Electric Energy Act* states that no person may construct or operate a power plant without prior approval from the Commission. In addition, sections 14 and 15 of the *Hydro and Electric Energy Act* direct that approval from the Commission is necessary prior to constructing or operating a substation or a transmission line.<sup>3</sup>

10. Accordingly, the applicant has applied to construct and operate the project pursuant to sections 11, 14 and 15 of the *Hydro and Electric Energy Act*.

11. When considering an application for a power plant and associated infrastructure, the Commission is guided by sections 2 and 3 of the *Hydro and Electric Energy Act*, and Section 17 of the *Alberta Utilities Commission Act*.

12. Section 2 lists the purposes of the *Hydro and Electric Energy Act*. Those purposes include:

- To provide for the economic, orderly and efficient development and operation, in the public interest, of the generation of electric energy in Alberta.
- To secure the observance of safe and efficient practices in the public interest in the generation of electric energy in Alberta.
- To assist the government in controlling pollution and ensuring environment conservation in the generation of electric energy in Alberta.

13. Section 3 of the *Hydro and Electric Energy Act* requires the Commission to have regard for the purposes of the *Electric Utilities Act* when assessing whether a proposed power plant and associated infrastructure is in the public interest under Section 17 of the *Alberta Utilities Commission Act*. The purposes of the *Electric Utilities Act* include the development of an efficient electric industry structure and the development of an electric generation sector guided by competitive market forces.<sup>4</sup>

14. In Alberta, the legislature expressed its clear intention that electric generation is to be developed through the mechanism of a competitive, deregulated electric generation market. Section 3 of the *Hydro and Electric Energy Act* directs that the Commission shall not have regard to whether the proposed power plant "...is an economic source of electric energy in

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<sup>3</sup> Defined in Section 1(1)(o)(iii) of the *Hydro and Electric Energy Act*, RSA 2000, c H-16, "transmission line" includes substations.

<sup>4</sup> *Electric Utilities Act*, SA 2003, c E-5.1, Section 5.

Alberta or to whether there is a need for the electric energy to be produced by such a facility in meeting the requirements for electric energy in Alberta or outside of Alberta.” Accordingly, in considering an application before it, the Commission does not take into account the potential need and cost of a project.

15. The Commission’s public interest mandate is located within Section 17 of the *Alberta Utilities Commission Act*, which states:

**Public interest**

**17(1)** Where the Commission conducts a hearing or other proceeding on an application to construct or operate a hydro development, power plant or transmission line under the *Hydro and Electric Energy Act* or a gas utility pipeline under the *Gas Utilities Act*, it shall, in addition to any other matters it may or must consider in conducting the hearing or other proceeding, give consideration to whether construction or operation of the proposed hydro development, power plant, transmission line or gas utility pipeline is in the public interest, having regard to the social and economic effects of the development, plant, line or pipeline and the effects of the development, plant, line or pipeline on the environment.

16. In Decision 2014-040,<sup>5</sup> the Commission reiterated its approach to assessing whether the approval of a power plant is in the public interest as follows:

The determination of whether a project is in the public interest requires the Board [the Commission’s predecessor] to assess and balance the negative and beneficial impacts of the specific project before it. Benefits to the public as well as negative impacts on the public must be acknowledged in this analysis. The existence of regulatory standards and guidelines and a proponent’s adherence to these standards are important elements in deciding whether potential adverse impacts are acceptable. Where such thresholds do not exist, the Board must be satisfied that reasonable mitigative measures are in place to address the impacts. In many cases, the Board may also approve an application subject to specific conditions that are designed to enhance the effectiveness of mitigative plans. The conditions become an essential part of the approval, and breach of them may result in suspension or rescission of the approval.

In the Board’s view, the public interest will be largely met if applications are shown to be in compliance with existing provincial health, environmental, and other regulatory standards in addition to the public benefits outweighing negative impacts.<sup>6</sup>

17. The Commission is of the view that the above approach to assessing whether a project is in the public interest is consistent with the purpose and intent of the statutory scheme. Further, the Commission considers that this approach provides an effective framework for the assessment of wind energy projects.

18. Rule 007: *Applications for Power Plants, Substations, Transmission Lines, Industrial System Designations and Hydro Developments* applies to an application for the construction and operation of power plants, substations and transmission lines, which are governed by the *Hydro and Electric Energy Act*. The application must meet the informational and other requirements set out in Rule 007. Specifically, an applicant must provide technical and

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<sup>5</sup> Decision 2014-040: 1646658 Alberta Ltd. – Bull Creek Wind Project, Proceeding 1955, Application 1608556, February 20, 2014. Errata issued on March 10, 2014.

<sup>6</sup> Decision 2014-040, page 16.

functional specifications, information on public consultation, environmental and land-use information including a noise impact assessment. The application must also meet the requirements set out in Rule 012: *Noise Control*.

19. Further, an applicant must obtain all approvals under other applicable provincial or federal legislation.

#### **4 Consultation**

20. The AUC prescribes consultation requirements for applicants in Rule 007. The purpose of a public consultation program is to inform parties whose rights may be directly and adversely affected by a project.

21. Appendix A, *Participant Involvement Program Requirements*, in Rule 007 requires that an applicant include a description of its participant involvement program (PIP) in its application to the AUC. Rule 007 specifies that a PIP must be conducted before an application is filed, and should include the distribution of a project-specific information package, a discussion of options, alternatives and mitigation measures and responses to questions and concerns raised by potentially affected persons. The applicant is expected to ensure that information is conveyed in an understandable manner to the public and that the project is discussed with the widest possible audience as early as practical.

22. The PIP should also obtain feedback and suggestions with respect to the project, with a view to modifying the project to reduce impacts on parties whose rights may be directly and adversely affected to the extent practical. The applicant is required to make all reasonable attempts to contact potentially directly and adversely affected persons to discuss the project and address any questions or concerns.

23. The PIP includes both a public notification and a personal consultation component. Rule 007 states that for power plant developments, including wind power plants, the applicant must provide public notification to all occupants, residents and landowners within 2,000 metres from the edge of the proposed power plant site boundary. The applicant must provide personal consultation to all occupants, residents and landowners within 800 metres from the proposed power plant site boundary. Further, Rule 007 directs that for major power plant applications, if there are populated areas just outside the 2,000-metre limit, applicants should consider including those areas in the public notification.

24. The Commission and its predecessor, the Alberta Energy and Utilities Board, have previously expressed what is expected of applicants in conducting an effective notification and consultation program. In Decision 2008-006,<sup>7</sup> the Board stated that "...the program should include responding to questions and concerns, discussing options, providing alternatives and potential mitigation measures, and seeking confirmation that potentially affected parties do not object." The Board went on to state that it "...expects applicants to be sensitive to timing constraints the public may have especially when dealing with landowners engaged in agricultural endeavours."

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<sup>7</sup> Decision 2008-006: Montana Alberta Tie Ltd. 230-kV International Merchant Power Line Lethbridge, Alberta to Great Falls Montana, Applications 1475724, 1458443 and 1492150, January 31, 2008, page 36.

25. Also, in Decision 2011-329,<sup>8</sup> the Commission discussed the role of interveners and applicants when it stated:

The Commission considers that consultation is a two-way street. The applicant has a duty to consult with landowners and residents in the vicinity of the project in accordance with AUC Rule 007, and make reasonable efforts to ensure that all those, whose rights may be directly and adversely affected by a proposed development, are informed of the application, and have opportunity to voice their concerns and to be heard.

Landowners and residents are entitled to consultation; however, as a practical matter, landowners and residents must make their concerns known to the applicant so that they may be discussed and addressed. ...<sup>9</sup>

#### 4.1 Views of the applicant

26. Capital Power designed and conducted a formal PIP to comply with Rule 007.<sup>10</sup> Capital Power stated that it considered and communicated all applicable rules and regulations for protection of the environment, human health, and existing land uses.

27. Capital Power stated that the PIP was conducted in good faith and that it identified, contacted, and consulted with all landowners and other interested stakeholders as prescribed in Rule 007.<sup>11</sup>

28. Capital Power stated that it had sought to meaningfully engage all stakeholders. Capital Power's PIP included mailing project-specific information packages to stakeholders within 2,000 metres of the project area, and directly consulting with residents and landowners within 800 metres of the project area boundary.<sup>12</sup>

29. Capital Power stated that it had provided an opportunity for some landowners to be participating landowners. Participating landowners were either a signatory to an option to lease agreement, or had otherwise agreed to support the project.<sup>13</sup> It was Capital Power's preference to have all landowners participate.<sup>14</sup>

30. Capital Power conducted two open house sessions at the Halkirk Community Hall in October 2016.<sup>15</sup> A Capital Power representative for safety and the environment was present at its open house sessions and a Golder Associates Ltd. (Golder) representative was present as an environmental consultant at those sessions.<sup>16</sup> In testimony, Capital Power confirmed that an

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<sup>8</sup> Decision 2011-329, NaturEner Energy Canada Inc.: 162-MW Wild Rose 2 Wind Power Plant and Associated Eagle Butte Substation, Proceeding 625, Application 1606143, August 2, 2011.

<sup>9</sup> *Ibid*, paragraphs 169-170.

<sup>10</sup> Exhibit 22563-X0184, Final Argument of Capital Power, page 10, paragraph 35.

<sup>11</sup> Exhibit 22563-X0184, Final Argument of Capital Power, page 11, paragraph 35.

<sup>12</sup> Exhibit 22563-X0017, Attachment C, Participant Involvement Program, PDF page 5, Section 2.1.

<sup>13</sup> As the AUC understands it, this was in exchange for remuneration of some kind.

<sup>14</sup> Exhibit 22563-X0131, Reply Evidence of Capital Power, page 13, paragraph 56.

<sup>15</sup> Exhibit 22563-X0017, Attachment C, Participant Involvement Program, PDF page 7, Section 2.4.1.

<sup>16</sup> Exhibit 22563-X0017, Attachment C, Participant Involvement Program, PDF page 9, Section 2.5; Transcript Volume 2, page 344.

independent expert in the field of wind turbine impacts on human health was not involved in the consultation process for this project.<sup>17</sup>

31. In its PIP, Capital Power stated that “[f]or inquiries regarding topics not covered by specific site studies conducted within the proposed Project Area, Capital Power typically addresses general concerns by seeking out independent, well-researched information on these topics, and provides stakeholders with easy access to third-party, independent and credible scientific sources of information, as well as government regulations.”<sup>18</sup>

32. Capital Power asserted it was diligent in responding to concerns raised by stakeholders. According to Capital Power, certain members of the BRG chose not to have any direct contact with Capital Power despite being provided multiple opportunities to do so.<sup>19</sup>

33. Capital Power stated that multiple attempts were made to contact and discuss option to lease agreements, and landowners were encouraged to seek legal advice prior to signing the agreements. Ultimately, 70 per cent of the landowners in the project area agreed to enter into an option to lease agreement and/or participate in the project. The evidence is that many individuals agreed to sign the agreements at the first opportunity while others signed the agreements over a period of several months.<sup>20</sup>

34. In response to an allegation by the BRG that Capital Power targeted non-resident landowners or elderly landowners to sign option to lease agreements, Capital Power replied that it did not target any particular landowner, regardless of residency status or age, prior to approaching others, which resulted in a process that was conducted in a fair and consistent manner.

35. Capital Power recognized that there may have been opportunities to improve its consultation efforts but maintained that all landowners in the area were provided with project information. Capital Power submitted that Rhonda Fuller’s claim that she had not received the information package was inconsistent with the information in the consultation records which confirmed that information was sent by mail and also electronically.<sup>21</sup>

36. Capital Power stated it would continue to work diligently and co-operatively with all landowners in the area, including members of the BRG, to obtain input in developing further work plans and provide transparency in reporting on the performance of the project. Capital Power recognized that it must continue to consult and communicate information for the entire life of the project.<sup>22</sup>

## 4.2 Views of the interveners

37. The BRG contended that Capital Power’s consultation was lacking in transparency and meaningful landowner consultation. The BRG was concerned that Capital Power had

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<sup>17</sup> Transcript Volume 2, page 344.

<sup>18</sup> Exhibit 22563-X0017, Attachment C, Participant Involvement Program, PDF page 4, Section 1.2.1.

<sup>19</sup> Exhibit 22563-X0184, Final Argument of Capital Power, page 11, paragraph 37.

<sup>20</sup> Exhibit 22563-X0184, Final Argument of Capital Power, PDF page 10, paragraph 33.

<sup>21</sup> Transcript Volume 2, page 247, lines 6-15; Exhibit 22563-X0040, Mailing List with Legal Land Descriptions, PDF page 2, line 23; Exhibit 22563-X0028, PIP Appendix C-12A to C-15, PDF page 152, Consultation record with NE-36-39-15-W4M.

<sup>22</sup> Exhibit 22563-X0184, Final Argument of Capital Power, PDF page 12, paragraphs 42-43.

commenced the option to lease process before it started its participant involvement process, and noted that Capital Power confirmed that it began its option to lease process by contacting residents with enough land base to host a wind turbine.<sup>23</sup>

38. BRG members stated that they were told that other landowners, including their neighbours, had signed the option to lease agreements when that was not the case. Donald Coulthard stated:

One of our good neighbours, friends, signed up approximately three weeks before we knew the project was even coming into the area. And the reason these neighbours signed up was, as many members of this group have expressed, the land agent told these people that most of their neighbours had signed up, and that if they didn't sign they were going to see the windmills across the fence from them, but they would not get compensation. So as a result they signed. They now have many regrets that they did. Had they known this previously, they claim they would not have signed.<sup>24</sup>

39. The BRG claimed that Capital Power targeted stakeholders that owned land but did not reside in the project area earlier in the process. The BRG submitted that only six of the 22 participating landowners that signed in October 2015 and five of the 15 participating landowners that signed in November 2015 resided within the project area.<sup>25</sup> The BRG submitted that the overwhelmingly large number of non-resident participating landowners supports its position that Capital Power targeted most of the non-residents in the area before making the project known to residents in the area. The BRG stated that Capital Power obtained the largest number of participants from October to November 2015.<sup>26</sup>

40. The BRG also claimed that Capital Power used high-pressure tactics to have stakeholders sign option to lease agreements. One such example occurred when Capital Power's land agents obtained the signature of 85-year-old Ardeth Jackson at the end of a four-hour discussion without her consulting with a lawyer.<sup>27</sup> The BRG believed that Capital Power's land agents should have left the agreement to be reviewed by Ms. Jackson and her son before obtaining the signature; instead, they chose to stay until the agreement was signed.

41. Ms. Fuller stated that the only information she received was from information on the Renewable Energy Program, and that she had not received any project-specific information.<sup>28</sup> Ms. Fuller confirmed at the hearing that she had chosen not to respond to telephone calls.<sup>29</sup>

42. The BRG stated that the PIP was lacking in information and should have included information regarding the potential or perception of adverse health effects experienced by residents living close to a wind power project.

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<sup>23</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 35, paragraph 96, citing Transcript Volume 2, page 240.

<sup>24</sup> Transcript Volume 3, page 721, lines 6-17.

<sup>25</sup> Exhibit 22563-X0187, BRG Final Argument, PDF pages 36-37.

<sup>26</sup> Exhibit 22563-X00187, BRG Final Argument, PDF page 38, paragraph 103, citing Exhibit 22563-X0151, Participating Landowner Summary for Halkirk 2.

<sup>27</sup> Transcript Volume 3, page 608-609, lines 13-3.

<sup>28</sup> Transcript Volume 3, page 659, lines 7-14.

<sup>29</sup> Transcript Volume 3, page 658, lines 13-16.

### 4.3 Commission findings

43. Rule 007 states that a PIP must be conducted before a facility application is filed with the Commission. It is therefore a fundamental component of any facility application. It is the applicant's responsibility to meet the notification and consultation requirements under Rule 007.

44. In Decision 2011-436, the Commission made the following comments with respect to effective consultation under Rule 007:

... In the Commission's view, effective consultation achieves three purposes. First, it allows parties to understand the nature of a proposed project. Second, it allows the applicant and the intervener to identify areas of concern. Third, it provides a reasonable opportunity for the parties to engage in meaningful dialogue and discussion with the goal of eliminating or mitigating to an acceptable degree the affected parties concerns about the project. If done well, a consultation program will improve the application and help to resolve disputes between the applicant and affected parties outside of the context of the hearing room.<sup>30</sup>

45. In Decision 2011-329, the Commission discussed the role of interveners and applicants as follows:

The Commission considers that consultation is a two-way street. The applicant has a duty to consult with landowners and residents in the vicinity of the project in accordance with AUC Rule 007, and make reasonable efforts to ensure that all those, whose rights may be directly and adversely affected by a proposed development, are informed of the application, and have an opportunity to voice their concerns and to be heard.<sup>31</sup>

46. The Commission acknowledges that an effective consultation program may not resolve all landowner concerns. There may be situations where individual stakeholders may feel that the consultation effort, as it pertained to their interests specifically, was insufficient or superficial. The above-noted views of the parties demonstrate that the perceptions of the applicant and some interveners about the quality and effectiveness of the public consultation are quite different. This is not the fault of the applicant or the interveners; it merely reflects the fact that the parties do not agree.

47. Many of the BRG members' concerns with Capital Power's consultation program began when Capital Power obtained option to lease agreements with certain members of the community. The Commission notes that there is a regulatory regime in place which governs the activities of land agents for certain projects, but that this regime does not apply to wind power projects. Specifically, under the *Land Agents Licensing Act* and the *Land Agents Licensing Regulation*, there are legislated requirements relating to the conduct of negotiations and standards for land agents to follow. For example, if a land agent entered into negotiations for an interest in land for an oil well, the agent would be required to leave a copy of the lease agreement with the landowner and could not recommence negotiations, nor accept a signed agreement, until at least 48 hours had passed.<sup>32</sup>

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<sup>30</sup> Decision 2011-436: AltaLink Management Ltd. and EPCOR Distribution & Transmission Inc. – Heartland Transmission Project, Proceeding 457, Application 1606609, November 1, 2011, page 57, paragraph 283.

<sup>31</sup> Decision 2011-329, page 30, paragraph 169.

<sup>32</sup> *Land Agents Licensing Act*, RSA 2000, c L-2, Section 17.

48. As stated above, these requirements do not apply to wind power plants. One of the effects of the *Electric Utilities Act* is that power generation is deregulated in Alberta and, consequently, there is no right of expropriation for power plant infrastructure. That is, if a landowner does not agree to a wind turbine being sited on his or her land, the applicant must site the project elsewhere.

49. The Commission considers that there is one standard for consultation for transmission lines, power plants and gas utility pipelines articulated in Rule 007. As indicated above, this project is a type of power plant. In applications for infrastructure where the land interests can be subject to expropriation, such as transmission lines and gas utility pipelines, many of the persons conducting consultation are regulated by the *Land Agents Licensing Act* and are bound by certain standards of conduct.<sup>33</sup> The fact that the personnel conducting the consultation may not be regulated elsewhere may lead to increased scrutiny by the Commission. The Commission expects Capital Power to be forthcoming and meet the principles articulated in Rule 007 during all phases of the consultation process. The Commission is of the view that compliance with the *Land Agents Licensing Act* may help meet the requirements of Rule 007, and encourages applicants to seek guidance from these regulatory requirements.

50. In the factual context of this case, the Commission finds that Capital Power's consultation program met or exceeded the regulatory requirements of Rule 007 in the course of the negotiating process. Capital Power retained Access Land Services Limited (Access Land), a central-Alberta based land broker, to assist in consultation with landowners including obtaining option to lease agreements.<sup>34</sup> Based on the testimony of Capital Power, the consultation records, and the evidence presented by the BRG, the Commission finds that accurate project information was presented and landowners were given an opportunity to have their concerns heard which meets the regulatory requirements of Rule 007.

51. One of the primary concerns expressed by members of the BRG was their allegation that Capital Power targeted non-residents before making the project known to residents in the area, and obtained option to lease agreements prior to informing the community at large about the project. Based on the evidence, the Commission does not find that Capital Power sought to contact non-residents first during its option to lease process. A review of the participating landowner summary for the project indicates that a number of landowners with residences in the project area signed agreements in the fall of 2015.<sup>35</sup> A review of Capital Power's consultation summary for the project indicates that a number of landowners with residences in the project area were first contacted in the fall of 2015,<sup>36</sup> as well as landowners without residences in the project area.<sup>37</sup> The Commission considers that the evidence on the record of this proceeding indicates no "targeting" or otherwise preferential treatment by Capital Power of resident versus non-resident landowners in the project area.

52. However, regardless of this factual finding, the Commission notes that there is no regulatory requirement that an applicant for a wind power project must contact both resident and non-resident landowners in the same timeframe. Similarly, there is no prohibition on obtaining

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<sup>33</sup> *Land Agents Licensing Act*, sections 1(d) and 3.

<sup>34</sup> Exhibit 22563-X0017, Attachment C, Participant Involvement Program, PDF page 4.

<sup>35</sup> Exhibit 22563-X0151, Participating Landowner Summary for Halkirk 2.

<sup>36</sup> E.g. Exhibit 22563-X0016, PIP Appendix C-12a to C-15, PDF pages 95, 99-100, 104, 109, 111, 115-117, 122, and 125-127.

<sup>37</sup> E.g., Exhibit 22563-X0016, PIP Appendix C-12a to C-15, PDF pages 87 and 88.

option to lease agreements prior to informing the larger community about a project. What is important for the Commission's consideration of the PIP is that all landowners are given a sufficient opportunity to learn about the project and have an opportunity to engage with Capital Power regarding their concerns, in accordance with the purposes of consultation articulated in paragraph 20.

53. The Commission will now address the consultation concerns raised by members of the BRG.

54. The Commission finds that Capital Power attempted to contact Ms. Fuller multiple times after its initial visit, as per Ms. Fuller's own testimony. The consultation record supports Capital Power's assertion that it mailed out a project-specific information package to Ms. Fuller on September 23, 2016.<sup>38</sup> The Commission understands that recollections will vary with the passage of time, and emphasizes that these differences in recollection demonstrate the importance of record-keeping during the consultation process. In this case, Capital Power did just that. Although the Commission acknowledges the importance of the concerns expressed by individual interveners such as Ms. Fuller, the Commission must assess the fundamental components of the consultation process as a whole, in light of the nature and scope of the project at hand.

55. With respect to Ms. Jackson, the Commission notes that she is neither a member of the BRG, nor a party to the proceeding, despite being included in both the applicant's consultation program and being sent both the notice of application and notice of hearing by the Commission.

56. The Commission finds that one area for improvement in connection with the applicant's consultation practices was how health-related information was provided. Capital Power's initial information packages provided in its PIP contained little information on health-related concerns, notwithstanding that early stakeholder feedback included some concerns with respect to the project's impacts on human health.<sup>39</sup> The Commission understands that Capital Power did not include an expert who could speak to health concerns at its open house sessions, although the Commission acknowledges that Capital Power personnel included its own representative on health, safety and the environment. The Commission considers that Capital Power's PIP would have been more robust if it had initially included access to third-party, independent and credible scientific sources of information on the impacts of wind power projects to human health.

57. The legitimate individual concerns expressed by the interveners must be weighed against the overall scale and success of the consultation program. As well, upon examining many of the grievances identified above, the Commission finds that Capital Power provided adequate reasons and responses for the steps it took during the consultation program.

58. The Commission acknowledges the testimony of Capital Power on the efforts it employed to notify and engage in discussions with potentially affected families. The Commission finds that Capital Power made considerable efforts to contact individual landowners in an attempt to address the concerns expressed. The Commission also recognizes Capital Power's efforts in relation to members of the BRG who expressed concerns about the

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<sup>38</sup> Exhibit 22563-X0028, PIP Appendix C-12A to C-15, PDF page 152, Consultation record with NE-36-39-15-W4M.

<sup>39</sup> E.g., Exhibit 22563-X0016, PIP Appendix C-12a to C-15, PDF page 185.

impacts of the proposed wind turbines and associated infrastructure after the application was filed with the Commission. As stated in Decision 2011-329 and repeated above, the Commission also emphasizes the importance of stakeholder participation in the consultation process. Landowners and residents must also make reasonable efforts to voice their concerns to a project proponent.

59. For the reasons above, the Commission concludes that Capital Power's consultation and PIP meet the regulatory requirements of Rule 007.

## **5 Agriculture**

### **5.1 Views of the applicant**

60. Capital Power stated that project infrastructure had been largely sited to avoid permanent and temporary impacts within areas of native vegetation<sup>40</sup> and that it would work with landowners hosting the project infrastructure to minimize general agricultural impacts. Capital Power also indicated that no construction activities would occur on non-participating landowner lands. To the extent that agricultural impacts arise, Capital Power committed to work with affected parties to find reasonable mitigation.<sup>41</sup>

61. Two noxious weeds, Canada thistle and perennial sow thistle, were observed in the project area. To mitigate the introduction or spread of weed species, Capital Power stated that all construction equipment entering the project area would be in a clean condition, and that Capital Power would abide by the Alberta *Weed Control Act* and *Weed Control Regulation* and would eradicate any prohibited noxious weed species.<sup>42</sup>

62. Capital Power recognized the project's potential impact on aerial spraying, but noted that none of the members of the BRG would have wind turbines on their lands, and the only issue for its members would be whether wind turbines on neighbouring lands could cause any impact. Those wind turbines would already require 100-metre setbacks from the property lines of non-participating landowners.<sup>43</sup>

63. Capital Power committed to working with pilots operating near the project to minimize impacts to aerial spraying operations. If spraying is anticipated within 150 metres of a wind turbine, the wind turbine may be suspended from operating during that period. Capital Power would also develop a contact list of all known aerial spraying companies in near proximity to the project area. Information would be provided to each identified company with contact information for Capital Power and a protocol for spraying near the wind turbines.<sup>44</sup>

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<sup>40</sup> Exhibit 22563-X0013, Environmental Evaluation Report, PDF page 63.

<sup>41</sup> Exhibit 22563-X0178, Undertaking Response 8, PDF page 2.

<sup>42</sup> Exhibit 22563-X0013, Environmental Evaluation report, Section 3.4.3.3, PDF page 60, Section 3.4.4.2, PDF page 60 and Section 3.4.5, PDF page 63.

<sup>43</sup> Exhibit 22563-X0184, Final Argument of Capital Power, PDF page 22, paragraph 82.

<sup>44</sup> Exhibit 22563-X0178, Undertaking Response 8, PDF page 2.

## 5.2 Views of the interveners

64. Many members of the BRG own land in the project area that they farm as either mixed grain operations or grain and cow/calf operations. A significant concern raised by the BRG was the project's impact on aerial spraying.<sup>45</sup>

65. Gerard Fetaz was previously an aerial spraying operator in the area and has a private airstrip that would be directly obstructed by Wind Turbine T051. Mr. Fetaz stated that:

from my experience doing it in the past, these wind turbines would be a real detriment to the area.

... if you got any towers or large trees around, it does very much affect which fields that can be sprayed. And it was always an option for the local farmers that on a wet year, or when the crops are taller and if you've got to get in there and spray for bugs or something and you can't get -- or you don't want to use land equipment to do it, then it is a real advantage to get an airplane in there to do the work.<sup>46</sup>

66. The BRG noted that Capital Power had committed to working with aerial spraying operators in the area but still expressed concerns regarding the effectiveness of shutting the wind turbines off. In particular, the BRG expressed concerns with the mitigation technique due to:

- The claim by Mr. Fetaz that Wind Turbine T051 will prevent him from taking off and landing his aircraft.
- The short notice that spraying operators are usually given before commencing aerial spraying operations.
- The lack of communication between Capital Power and all aerial spraying operators in the area.
- Capital Power's lack of knowledge of the safe distance between wind turbines and landing and take-off of aircrafts.<sup>47</sup>

67. The BRG requested that Capital Power obtain the contact details of all aerial operators in the project area, advise them of its proposed commitment, seek their input on other effective mitigation besides what has been proposed, and communicate the results to the members of the BRG.<sup>48</sup>

68. At the hearing, members of the BRG expressed concerns with weeds and diseases being spread by the equipment that would be going from site to site.<sup>49</sup>

## 5.3 Commission findings

69. The Commission is satisfied that agricultural impacts to non-participating landowners can be mitigated by Capital Power's commitment to clean equipment in accordance with the *Alberta Weed Control Act* and *Weed Control Regulation*. The Commission expects Capital Power to

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<sup>45</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 64, paragraphs 186-187.

<sup>46</sup> Transcript Volume 3, pages 576-577, lines 22-8.

<sup>47</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 65, paragraphs 190-192.

<sup>48</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 65, paragraph 193.

<sup>49</sup> Transcript Volume 3, page 701, lines 13-20.

meet its commitment to work with landowners hosting project infrastructure to minimize general agricultural impacts, and to the extent impacts arise, work with affected parties to find reasonable mitigation.<sup>50</sup>

70. The Commission does not find any other direct agricultural impacts, as the project is not on lands belonging to the interveners.

69. With respect to impacts on aerial spraying operations, the Commission accepts Capital Power's commitment to work with pilots operating near the project to minimize impacts to aerial spraying operations and notes that Capital Power stated that if spraying is anticipated within 150 metres of a wind turbine, the wind turbine may be suspended from operating during that period. Given the potential safety risks of flying next to a wind turbine and taking into account the benefits of aerial spraying to agricultural operations, the Commission expects Capital Power to not only consult with pilots but also to shut-down wind turbines at the pilots' request during aerial spraying.

71. The Commission finds that there is potential for Wind Turbine T051 to obstruct the Fetazes' airstrip. The Commission notes that PP14 of Rule 007 allows an applicant to locate a wind turbine within 50 metres of the applied-for coordinates without having to reapply, unless there is an adverse impact on the permissible sound level or wildlife setback distance. The Commission finds that, if the project is approved, the following condition of approval is warranted:

- Capital Power shall engage with the Fetazes to locate Wind Turbine T051 in a manner which minimizes the effects of the wind turbine on the safe operation of the airstrip, to the extent possible within 50 metres of the applied-for coordinates. Prior to construction, and no later than two years from the date of this decision, Capital Power will advise the Commission of the results. The Commission will then decide if further process is necessary.

## **6 Hydrogeology**

### **6.1 Introduction**

72. The BRG was concerned that the project would impact the quality and quantity of water in the project area. The BRG retained Roger Clissold of Hydrogeological Consultants Ltd. to provide evidence on the risk to local aquifers and/or water wells.<sup>51</sup>

73. In response to the BRG's concerns with respect to the project's impact on groundwater, Capital Power retained Don Haley of Golder to conduct a literature review. Mr. Haley produced a technical memorandum that was filed on the record as a part of Capital Power's reply evidence.<sup>52</sup>

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<sup>50</sup> Exhibit 22563-X0178, Undertaking Response 8, PDF page 3.

<sup>51</sup> Exhibit 22563-X0114.01, H-Evidence of Roger Clissold (part 1); Exhibit 22563-X0115, H- Appendices to Roger Clissold Report (part 2).

<sup>52</sup> Exhibit 22563-X0126, Appendix E to the Reply of Capital Power.

## 6.2 Views of the applicant

74. Mr. Haley's memo supported the view that any vibrations from wind turbine construction and operation are of such a minor nature that they could not reasonably lead to impacts on the subsurface structures of the soils and affect groundwater wells.<sup>53</sup>

75. In response to evidence provided by Mr. Clissold regarding the North Kent Wind 1 LP project (North Kent wind development) that focused on ground vibrations generated by pile driving during foundation construction, Mr. Haley noted that pile driving was a construction method that generates significantly more ground vibration than the construction method that would be used for this project.<sup>54</sup> Despite this, Mr. Haley noted that publicly available documents provided on the North Kent wind development website concluded that:

The vibration magnitudes from pile driving were inconsequential for the wells and no greater than what may be induced by other common day-to-day sources, such as operation of the water well pumps themselves.<sup>55</sup>

76. Capital Power also responded to concerns with the potential impact on groundwater caused by dewatering during the construction process. Capital Power stated in its environmental evaluation report for the project prepared by Golder,<sup>56</sup> and confirmed in testimony, that there will be a relatively small amount of dewatering required for construction activities, and the expected effect on water levels of wells in the area would be temporary. The groundwater table will rise after the dewatering process stops.<sup>57</sup>

77. With respect to the operation phase of the project, Mr. Haley's literature review indicated that the expected vibrations caused by operating the project would be significantly below the generally accepted threshold at which vibration may cause the soil to shift and become more dense, referred to as densification, that could impact groundwater quality and quantity.<sup>58</sup> The memorandum noted that the "probability of aquifer densification from vibrations from operating wind turbines is infinitesimally small."<sup>59</sup>

78. In response to the specific concerns raised by Gerald Borgel and Brenda Anderson respecting their water diversion licenses, Mr. Haley assessed their water diversion structures and determined that the operation of the wind turbines would be inconsequential for their licensed impoundment structure as project activities would not impact the essential nature of the hydrological system. Access roads and other project infrastructure would be designed to minimize how surface water is routed through the project area, and would not materially change the relative proportion of precipitation that infiltrates the groundwater system. Approximately the same amount of surface water should be available to supply the water diversion structures.<sup>60</sup>

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<sup>53</sup> Exhibit 22563-X0184, Final Argument of Capital Power, PDF page 13, paragraph 45.

<sup>54</sup> Exhibit 22563-X0126, Appendix E to the Reply of Capital Power, PDF page 4.

<sup>55</sup> Exhibit 22563-X0126, Appendix E to the Reply of Capital Power, PDF page 5.

<sup>56</sup> Exhibit 22563-X0013, Environmental Evaluation report.

<sup>57</sup> Exhibit 22563-X0026, Attachment G Environmental Evaluation, PDF page 72; Transcript Volume 1, pages 33-35.

<sup>58</sup> Exhibit 22563-X0126, Appendix E to the Reply of Capital Power, PDF page 3.

<sup>59</sup> Exhibit 22563-X0126, Appendix E to the Reply of Capital Power, PDF page 3.

<sup>60</sup> Exhibit 22563-X0126, Appendix E to the Reply of Capital Power, PDF page 6.

79. Capital Power argued that based on the technical evidence presented to the Commission, there is no reasonable evidence that the operation of the wind turbines would have any adverse effect on existing groundwater wells or surface water impoundment facilities.<sup>61</sup>

80. Capital Power committed to test groundwater quality and level at all residential and stock wells within 500 metres of a wind turbine location:

Testing would be conducted prior to the construction of the turbine foundation to establish baseline conditions, and then conducted one year after cessation of ground disturbances. Groundwater quality testing will analyze parameters listed in the Level C Diagnostic Groundwater Suite as described in *Water Quality Testing: Drinking Water* issued by Alberta Agriculture and Forestry.<sup>62</sup>

81. Capital Power submitted that the above approach was a reasonable commitment, based on the evidence before the Commission. In the unlikely event there were to be impacts to groundwater wells due to construction and/or operations related to the project, Capital Power committed to working with impacted landowners to implement appropriate mitigation on a case-by-case basis.<sup>63</sup>

### **6.3 Views of the interveners**

82. A number of BRG members have shallow water wells on their lands. In addition, Mr. Borgel and Ms. Anderson have water diversion licenses to store surface water originating from upstream of their property for the purpose of stock watering.

83. Mr. Clissold expressed concerns with groundwater scarcity in the project area. It was noted that one in every three holes drilled in the project area resulted in a dry hole, and that water well yields in the area were expected to be less than five cubic metres per day.<sup>64</sup>

84. Anecdotal information, such as experiences with the North Kent wind development, supported concerns of adverse groundwater impacts from wind turbines. The fact that the pile driving technique used in the North Kent wind development would not be used to construct the project did not alleviate the BRG's concerns about adverse impacts to water wells in the project area. In addition, the study done for the North Kent wind development did not arrive at definitive conclusions as to causes and impacts.<sup>65</sup>

85. The BRG found that Golder's groundwater assessment prepared by Corey De La Mare<sup>66</sup> was inadequate, citing that only 80 water wells were listed but Mr. Clissold's water well records indicate that 106 water wells are located in the project area. Golder did not conduct any field studies to confirm the locations of the water wells and the distances from the wind turbines to each water well, nor did it obtain data related to site-specific conditions before arriving at its conclusions.<sup>67</sup> The BRG stated that Mr. De La Mare provided baseline information regarding groundwater impacts but declined to answer any questions, even basic questions, related to the

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<sup>61</sup> Exhibit 22563-X0192, Reply Argument of Capital Power, PDF page 17, paragraph 59.

<sup>62</sup> Exhibit 22563-X0184, Final Argument of Capital Power, PDF page 14, paragraph 48.

<sup>63</sup> Exhibit 22563-X0178, Undertaking Responses 8, PDF page 3.

<sup>64</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 55.

<sup>65</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 56.

<sup>66</sup> Exhibit 22563-X0026, Attachment G Environmental Evaluation, PDF pages 56-59.

<sup>67</sup> Exhibit 22563-X0187, BRG Final Argument, PDF pages 57 and 58.

information he provided.<sup>68</sup> The BRG submitted that the groundwater report should be discredited and given no weight due to the refusal by Mr. De La Mare to speak to it.

86. The BRG requested that, if approved, Capital Power should be required to obtain accurate baseline data before construction and to conduct a thorough investigation of any changes to water wells that occur in the future as a condition of approval.<sup>69</sup> The BRG's position was that Capital Power's proposed testing is qualitatively and quantitatively inadequate. The BRG submitted that Capital Power should be required to conduct more stringent water quality testing than it committed to obtaining, and that instead of its commitment to test water wells within 500 metres of a wind turbine location, baseline data should be conducted by testing all water wells within one kilometre of project infrastructure.<sup>70</sup>

87. Mr. Clissold testified that the type of baseline information Capital Power committed to obtaining is inadequate. Specifically, the Level C Diagnostic Groundwater Suite, as prescribed in *Water Quality Testing: Drinking Water*, tests only the quality of the groundwater and would not be sufficient. Instead, the BRG submitted that water well testing should be conducted using the procedure in Alberta Energy Regulator (AER) Directive 035: *Baseline Water Well Testing Requirement for Coalbed Methane Wells Completed Above the Base of Groundwater Protection*. Directive 035 references the Alberta Environment and Parks (AEP) standard for baseline water well testing for coalbed methane, natural gas, and coal operations.<sup>71</sup>

88. Mr. Borgel and Ms. Anderson noted that they have water well diversion licenses to permit two dams on their property and expressed concerns that the placement of wind turbines and the placement of underground lines near their property would negatively affect the dams.<sup>72</sup>

#### **6.4 Commission findings**

89. The Commission notes that Mr. Clissold and Mr. Haley agreed that there is groundwater scarcity in the project area.<sup>73</sup> What the Commission must consider, in this context, are the potential impacts of project construction and operation on groundwater resources in the area, and whether the commitments proposed by Capital Power would be sufficient to mitigate those potential impacts.

90. The Commission is not satisfied that Mr. Clissold provided sufficient evidence to substantiate his concern that the possible vibration from construction or operation activities would impact water wells, particularly in light of Mr. Haley's literature review which indicated that the probability of harm to groundwater from those activities would be extremely low. With respect to the potential effects from construction activities, the Commission will not afford significant weight to the anecdotal evidence from the North Kent wind development because it used different construction techniques.

91. The Commission does not consider that AER Directive 035 should apply to wind power projects. AER Directive 035 is mandatory for companies wanting to drill a new well or complete or recomplete wells for the purpose of producing coalbed methane. The drilling of a well to

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<sup>68</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 59.

<sup>69</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 56.

<sup>70</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 56.

<sup>71</sup> Transcript Volume 2, page 423.

<sup>72</sup> Exhibit 22563-X0110, B1-Landowner Submissions, PDF pages 270 and 271.

<sup>73</sup> Transcript Volume 1, page 31.

capture methane presents its own unique challenges and requirements that do not translate to wind power project construction and operations. The Commission notes that Capital Power has committed to testing parameters in accordance with the Level C Diagnostic Groundwater Suite of *Water Quality Testing: Drinking Water* issued by Alberta Agriculture and Forestry.<sup>74</sup>

92. The Commission accepts Capital Power's assessment that the water diversion structures on Mr. Borgel's and Ms. Anderson's lands would not be impacted by the project, as the project would not impact the essential nature of the hydrological system through the project activities.

93. The Commission acknowledges the BRG's concerns with the potential impacts to groundwater resources, particularly given the scarcity of groundwater in the project area. The Commission also notes the BRG's argument that baseline data should be collected regardless of the industry and that Capital Power should be required, as a condition of approval, to obtain accurate baseline data prior to project construction, as well as conduct a thorough investigation of any changes to water wells that occur in the future.<sup>75</sup>

94. The Commission finds that Capital Power's commitment to test groundwater quality and level at all residential and stock wells within 500 metres of a wind turbine location is sufficient in the circumstances. Although the BRG submitted that testing within 500 metres was inadequate, the Commission is not satisfied that Mr. Clissold and the BRG provided any evidence to support the view that a larger radius, such as one kilometre, should be required. In contrast, Mr. Clissold indicated, in testimony, that 500 metres may or may not be a reasonable distance to conduct baseline testing:

I would think that certainly within 1 kilometre would be adequate. I think 500 metres might be okay, but one of the difficulties you might have is that you may not have enough for good baseline information from 500 metres.<sup>76</sup>

95. The Commission considers that Mr. Clissold provided no evidence to support a conclusion that a radius of more than 500 metres was required, beyond a vague indication that insufficient baseline information may be collected at that distance. Further, given the low level of vibrations that is expected to occur based on available scientific literature, the Commission finds that it is highly unlikely that the project will be detrimental to groundwater resources in the area. Accordingly, the Commission is satisfied that the baseline testing proposed by Capital Power is sufficient.

96. The Commission is also satisfied that, should impacts to groundwater wells arise due to the construction or operation of the project, Capital Power has committed to working with impacted landowners to implement appropriate mitigation on a case-by-case basis.

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<sup>74</sup> *Water Quality Testing: Drinking Water, Level C Diagnostic Groundwater Suite, Alberta Agriculture and Forestry*, online: [http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/wqe11082](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/wqe11082).

<sup>75</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 57.

<sup>76</sup> Transcript Volume 3, page 549, lines 19-23.

97. The Commission finds that, if the project is approved, the following condition is warranted:

- Capital Power shall test groundwater quality and level at all residential and stock wells within 500 metres of a wind turbine location. Testing will be conducted prior to the construction of the wind turbine foundation to establish baseline conditions, and then conducted one year after cessation of ground disturbance. Groundwater quality testing will analyze parameters listed in the Level C Diagnostic Groundwater Suite as described in *Water Quality Testing: Drinking Water* issued by Alberta Agriculture and Forestry. If there are impacts to groundwater wells due to construction and/or operations related to the project, Capital Power will work with impacted landowners to implement appropriate mitigation on a case-by-case basis.

## 7 Residential area, visual impact and property value

### 7.1 Views of the applicant

98. Citing Rule 012, Capital Power characterized the project area as being low density. Table 1 of Rule 012 identifies the lowest density per section of land as representing one to eight dwellings, which is applicable to the project area.<sup>77</sup>

99. Capital Power considered alternate locations prior to identifying the project area based on availability of wind resources, interconnection to the transmission system, available transmission capability and being able to balance the competing constraints imposed by environmental and wildlife requirements, municipal setbacks, landowner preferences, and Rule 012.<sup>78</sup>

100. Capital Power did not identify any information that would suggest that the project would have an impact on property values. According to Capital Power, this conclusion was consistent with the Commission's finding on property value for the Bull Creek Wind Project:

The Commission has not been presented with sufficient cogent evidence in this proceeding to suggest that the project will result in an adverse impact on property values of parcels adjacent to the project and finds that any limitations on subdivision potential is too speculative.<sup>79</sup>

101. Capital Power stated that no expert evidence was presented to provide a substantive basis for assessing any impact to property value from the project.<sup>80</sup>

102. To mitigate the project's visual impacts, Capital Power stated that it would ensure that the minimum permissible number of navigation lights would be used and the duration and synchronization of the flashes would be kept to a minimum.<sup>81</sup>

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<sup>77</sup> Exhibit 22563-X0184, Final Argument of Capital Power, PDF page 20, paragraph 72.

<sup>78</sup> Exhibit 22563-X0184, Final Argument of Capital Power, PDF page 19, paragraph 71.

<sup>79</sup> Decision 2014-040 (Errata): 1646658 Alberta Ltd. – Bull Creel Wind Project, Proceeding 1955, Application 1608556, March 10, 2014, paragraph 533.

<sup>80</sup> Exhibit 22563-X0192, Reply Argument of Capital Power, PDF page 19, paragraph 69.

<sup>81</sup> Exhibit 22563-X0178, Undertaking Response 8, PDF page 2.

103. Capital Power retained Golder to conduct an assessment of shadow flicker resulting from the project and submitted the assessment report as evidence.<sup>82</sup> The report explained that shadow flicker occurs when the spinning blade of a wind turbine is located between the sun and a receptor point. As the wind turbine blades alternately block sunlight and allow sunlight to shine through, the shadow at the receptor point may be observed to flicker under certain environmental conditions. For shadow flicker to occur a number of conditions must be met such as the sun must be shining, the sun must be low enough in the sky, the blades must be spinning, and the wind turbine must be oriented such that the blades are not parallel to the line joining the sun and the receptor point.

104. Golder's assessment modelled the predicted shadow flicker effects expected under two different assessment cases representing two different sets of environmental conditions. Assessment Case A assumed unrealistic and highly conservative conditions. Assessment Case B used more realistic environmental conditions but was still conservative because it assumed that the wind turbine blades were always spinning. The results indicated that 43 of the 59 receptors would experience some shadow flicker. Under Assessment Case A, the predicted total hours at the most impacted receptor would be 74 hours a year and under one hour per day. Assessment Case B stated that the most impacted dwelling would experience 25 hours of shadow flicker a year.

105. Capital Power stated that modelling indicated that there would be a very low probability of shadow flicker from the project visually affecting any of the landowners. Capital Power committed to investigate any concerns raised by landowners with respect to shadow flicker and to work directly with landowners to not only understand the issue but to implement appropriate mitigation.<sup>83</sup>

## **7.2 Views of the interveners**

106. The BRG submitted that in comparison to other wind power projects, including the Grizzly Bear Creek Wind Power Project, the Bull Creek Wind Power Project and Halkirk 1, the project has the highest concentration of residences.<sup>84</sup>

107. The BRG stated that there were other viable locations where the project could have been sited which would have less human and environmental impacts.<sup>85</sup>

108. The BRG noted the rural characteristics of the area, the beauty of the landscape, and the openness of the project area in contrast to the industrial nature of the wind turbines. The BRG was concerned that adding large and highly visible infrastructure would decrease property values.<sup>86</sup>

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<sup>82</sup> Exhibit 22563-X0128, Appendix C of Reply Evidence of Capital Power, PDF pages 11-19.

<sup>83</sup> Exhibit 22563-X0184, Final Argument of Capital Power, PDF page 20, paragraph 75.

<sup>84</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 69, paragraph 213.

<sup>85</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 69, paragraph 214.

<sup>86</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 53, paragraphs 149 and 150.

109. Brian Perreault expressed his concern that the project would decrease his property value and prevent him from future development.

Well, if you put that tower right up on that edge, you're taking away that opportunity for me to sell in the future at a higher number. You're lowering the value of my land. I don't think that's fair. While Capital Power makes money off of that tower, I'm losing money.

It also takes away the chance of me to ever build on that coulee on top. Since they have it up right in that corner, both ways is completely killed for me from building a house on there. I don't think that should be their right. If people want towers on their place, put them where they don't affect other people.<sup>87</sup>

110. The BRG noted that 38 of the 74 wind turbines would have steadily blinking red navigation lights situated on top of them, which would be an unwanted intrusion to the rural lifestyle and aesthetics of the project area.<sup>88</sup>

111. A number of BRG members expressed concerns with the potential visual impacts of shadow flicker caused by the project.

### **7.3 Commission findings**

112. The Commission is satisfied that Capital Power adequately sited the project given the constraints.

113. The assessment of visual impacts is subjective in nature; however, the Commission recognizes that the wind turbines are large and will change the landscape of the project area. For the reasons explained below, the Commission considers that the project's visual impacts have been mitigated as much as possible including by:

- locating the collector lines underground
- minimizing the number of lights required on the wind turbines
- using the minimum number of synchronized flashes per minute and flash duration

114. The Commission finds that the use of Assessment Case B for this project is reasonable and accepts that the shadow flicker assessment is conservative because multiple environmental and operational conditions must exist together in order for shadow flicker to result. The Commission notes that Assessment Case B indicated that the most impacted receptor may experience shadow flicker effects for a total of 25 hours over one year. The Commission finds that the visual impact resulting from shadow flicker produced by the project will be low.

115. The Commission expects Capital Power to uphold its commitment to investigate all participating and non-participating landowner concerns related to shadow flicker, and work directly with landowners to understand the issue and implement appropriate mitigation.<sup>89</sup> The Commission notes that appropriate mitigation may require, in some circumstances, wind turbine shutdown at specific hours in order to reduce shadow flicker.

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<sup>87</sup> Transcript Volume 3, page 617, lines 13-24.

<sup>88</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 60, paragraphs 170 and 171.

<sup>89</sup> Exhibit 22563-X0178, Undertaking Response 8, PDF page 1.

116. With regard to visual impacts stemming from the lights associated with the project, the Commission notes that Capital Power must adhere to applicable Transport Canada requirements with respect to navigation lights. The Commission further notes that the applicant committed to use the minimum number of lights required by Transport Canada on the wind turbines, along with the minimum number of synchronized flashes per minute and flash duration.

117. The Commission finds that there was insufficient evidence presented to show that land use would be impacted by the project, particularly given that no components of the project will be sited on non-participating landowners' property. With respect to the project's potential impact on property values, the Commission was not presented with sufficient evidence in this proceeding to suggest that the project will result in an adverse impact on property values of parcels adjacent to the project.

118. With respect to the future development of Mr. Perreault and other BRG members' land, the weight the Commission places on such plans varies with the circumstances. In Decision 21030-D02-2017,<sup>90</sup> the Commission commented on its consideration of future development plans:

...Consistent with past decisions, the Commission considers that future developments and residences that are at the conceptual or idea stage are not certain and may change depending upon the economy, changes in circumstances of the potential developer, amendments to municipal by-laws on development, or inability to secure municipal approval. In the Commission's view, there is a great deal of uncertainty as to whether such projects would ever proceed and if so, the timing and the potential impacts; consequently, such projects are speculative.<sup>91</sup>

119. The Commission finds that the evidence brought before it indicates that the future development is speculative. With respect to the future development plans referenced by Mr. Perreault, the Commission finds that there is no evidence before it that those plans are beyond the conceptual stage.<sup>92</sup> As a result, the Commission is not persuaded that the potential future impacts of the project on future development should weigh significantly in its decision.

## 8 Noise

120. Capital Power retained Golder to prepare a noise impact assessment (NIA) for the project which was submitted in support of Capital Power's application to the Commission.<sup>93</sup> Golder also completed a subsequent report, which was filed as a part of Capital Power's reply evidence.<sup>94</sup> Andrew Faszer testified on behalf of Golder at the hearing.

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<sup>90</sup> Decision 21030-D02-2017: Alberta PowerLine General Partner Ltd. – Fort McMurray West 500-Kilovolt Transmission Project, Proceeding 21030, Applications 21030-A001 to 21030-A015, February 10, 2017.

<sup>91</sup> Decision 21030-D02-2017, paragraph 517.

<sup>92</sup> Exhibit 22563-X0110, Appendix B1 Landowners submissions, PDF page 401; Transcript Volume 3, pages 610-626.

<sup>93</sup> Exhibit 22563-X0023, Attachment E Noise Impact Assessment.

<sup>94</sup> Exhibit 22563-X0128, Appendix C to the Reply of Capital Power Generation Services Inc. Golder Reply Evidence.

121. The BRG retained FDI Acoustics Inc. (FDI) to review the NIA and related noise documents. FDI filed a report analyzing the NIA and other noise-related evidence.<sup>95</sup> James Farquharson testified on behalf of FDI at the hearing.

122. In this section, the Commission makes findings about the likely noise impact that the wind turbines and associated infrastructure will generate at nearby residences. Noise emissions with respect to health-related issues will be considered in the health section of this decision.

### **8.1 Rule 012: Noise Control**

123. Rule 012 applies to noise from the construction and operation of electric and natural gas utility facilities, including wind turbines. Rule 007 requires an applicant to provide a NIA as part of a new power plant application.

124. Rule 012 is designed to ensure that the noise from a proposed facility, measured cumulatively with noise from other nearby energy-related facilities, will not exceed permissible sound levels (PSL). The PSL is the maximum daytime or nighttime sound level, measured at a point 15 metres from a dwelling(s), in the direction of the facility. For this project, the PSL values determined in accordance with Rule 012 are 50 dBA  $L_{eq}$ <sup>96</sup> daytime and 40 dBA  $L_{eq}$  nighttime for the dwellings (or receptors) evaluated in this study. The daytime period is defined as the hours from 7 a.m. to 10 p.m. and the nighttime period is defined as the hours from 10 p.m. to 7 a.m.

125. The cumulative sound level, which is compared to the PSL for compliance determination, includes the assumed or measured ambient sound level, any existing and approved, but not yet constructed energy-related facilities, and the predicted sound level from Capital Power's proposed facility.

126. Rule 012 sets out the requirements for preparing a NIA in Section 3. Section 3.3 specifies additional NIA requirements for wind turbines and Section 3.2(5) specifies the factors that must be considered and included in the NIA report, including:

- meteorological parameters
- noise source identification
- sound power level and/or sound pressure level spectral data
- type of noise propagation model used
- standards followed
- ground conditions and ground attenuation factor

127. Rule 012 requires the use of models that meet accepted protocols and international standards for predicting a project's cumulative sound level. Rule 012 identifies the CONCAWE<sup>97</sup> protocol and the International Organization for Standardization (ISO) 9613 standard as an

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<sup>95</sup> Exhibit 22563-X0111, Appendix D-Evidence of James Farquharson.

<sup>96</sup> The A-weighted decibel scale approximates the way the human ear hears different frequencies and is represented by the symbol dBA. The  $L_{eq}$  is the average weighted sound level over a specified period of time. For further details on sound level descriptors, refer to Appendix 2 of Rule 012.

<sup>97</sup> Conservation of Clean Air and Water in Europe.

example of an accepted protocol and international standard. These standards were utilized in the noise model for this project.

128. Typically, most people hear sounds at frequencies between 20 hertz (Hz) to 20,000 Hz; however, there is variation between people in their ability to hear sound. Frequencies below 250 Hz are commonly referred to as low frequency sound. Lower frequency sounds can be characterized as a hum (low pitch), while higher frequency sounds can be characterized as a whine (high pitch). Rule 012 defines the low frequency noise range to be from 20 Hz to 250 Hz. If a project's C-weighted sound pressure value (dBC) is available, the Commission requires the applicant to calculate the dBC sound pressure value minus the dBA sound pressure value to identify the potential for a low frequency noise condition. In accordance with Rule 012, a low frequency noise condition may exist when the dBC minus dBA value is equal to or greater than 20 decibels (dB) and a clear tonal component exists between the frequencies of 20 to 250 Hz.

## **8.2 Views of the applicant**

129. Golder stated that the NIA met the requirements contained in Rule 012. Specifically, the NIA assessed the maximum noise emitted when the wind turbines operate under the planned maximum operating conditions.

130. The study area for the NIA encompassed all project lands for which Capital Power obtained an option to lease as well as a two-kilometre buffer surrounding those lands. The NIA identified 59 receptor locations within the study area which included a dwelling that may be developed in the future, a cabin with unknown occupancy and a campground. The PSL for all 59 receptors was determined to be 50 dBA  $L_{eq}$  daytime and 40 dBA  $L_{eq}$  nighttime.

### **8.2.1 Noise modelling and standards**

131. The noise modelling for the NIA was performed using the CadnaA model, version 4.6.155 software package, which uses the methodology in the ISO 9613-2 technical standard.<sup>98</sup>

132. Golder described the environmental noise inputs for the computer noise model which included geometric divergence, atmospheric absorption, ground absorption and screening by barriers.

133. Mr. Faszter testified that the accuracy of the ISO 9613 standard algorithm used in the model is  $\pm$  three dB for distances between source and receptor up to one kilometre and the accuracy of the noise emission inputs is often  $\pm$  two dB. The overall accuracy of the noise level predictions presented in the NIA was expected to be  $\pm$  four dB.<sup>99</sup>

134. In Golder's view there are several conservative assumptions used in the noise modelling to account for the level of uncertainty inherent in the noise level predictions. These include:

- Each receptor was assumed to be downwind from each source 100 per cent of the time.
- The computer model used a substantially more reflective ground factor of 0.5 rather than a ground attenuation factor of 1.0, which is considered less absorptive.

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<sup>98</sup> Exhibit 22563-X0023, Attachment E Noise Impact Assessment, PDF page 16.

<sup>99</sup> Transcript Volume 1, page 174, lines 1-9.

- The noise contribution from third-party oil and gas facilities was calculated in a conservative manner, which likely overestimates noise levels at receptors.
- The wind turbines were modelled with the maximum [planned] noise emissions, noting that the project noise sources will often operate with less than [planned] maximum noise emissions.

135. In Golder's view, the above modelling approach is conservative and likely overestimates the noise impact of the project.<sup>100</sup>

136. In response to a cross-examination question by the BRG's counsel on the use of noise source data being reported to one decimal, given that the results were reported to a whole number, Mr. Faszler stated that "...my opinion on that, as specified in my reply evidence, is [that] presenting results in whole number is consistent with AUC Rule 12 because the permissible sound levels are presented at whole-number precision in AUC Rule 12."<sup>101</sup> Upon further questioning, Mr. Faszler stated that he had reported results in the past to one decimal point and that "many times numbers are presented at one decimal precision, and both are acceptable."<sup>102</sup> Mr. Faszler further stated that "...presenting the results at whole number is consistent with the precision of the uncertainty [in the model] and is consistent with AUC Rule 12, but there is nothing to say you can't show another decimal place if so wanted..."<sup>103</sup>

137. In response to Mr. Farquharson's comments that the cumulative sound level should be reported to the first decimal point instead of a whole number, given that many receptors would be at or near the PSL, Mr. Faszler stated that this was unnecessary because conservative assumptions were used in the model. In addition, Mr. Faszler stated that in the unlikely event that noise levels are found to be non-compliant, the wind turbines would be placed in a reduced operating mode to lower their noise emissions.

### **8.2.2 Noise impact assessment results and noise control measures**

138. In the NIA, Golder concluded that under the planned maximum operating scheme the predicted sound levels comply with applicable PSL limits for all receptors at all operating wind speeds.

139. The project's wind turbines, Vestas model V110 2.0-MW, will have blades with serrated trailing edges (STE). This is a noise control feature to reduce trailing edge noise as compared to standard blades.<sup>104</sup> Each wind turbine also has two noise-reduced operating modes (Mode 1 and Mode 2). At the hearing, Mr. Faszler testified that the different operating modes reduce sound levels by deloading the blade to generate less noise.<sup>105</sup>

140. To meet the nighttime PSL, most wind turbines would have to operate in noise reduced operating modes. Depending on the time of day, the wind turbines will operate under the planned maximum operating conditions in one of three different operating modes available for this type

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<sup>100</sup> Exhibit 22563-X0128, Appendix C to the Reply of Capital Power Generation Services Inc. Golder Reply Evidence, PDF page 6, Section 3.4.

<sup>101</sup> Transcript Volume 1, page 172, lines 6-10.

<sup>102</sup> Transcript Volume 1, page 174, lines 14-15.

<sup>103</sup> Transcript Volume 1, page 175, lines 16-20.

<sup>104</sup> Exhibit 22563-X0023, Attachment E Noise Impact Assessment, PDF page 5.

<sup>105</sup> Transcript Volume 1, page 135, line 22 to page 136, line 12.

of wind turbine. Each wind turbine will have its operating mode configured to match the planned operating scheme. The operating modes would automatically be changed remotely from the Vestas Online Business server which is used for operating and managing the wind power plant.<sup>106</sup>

141. The planned operating scheme was described in Section 2.0 of the NIA. During the daytime period (as defined in Rule 012) all 74 wind turbines would operate in the unrestricted Mode 0 STE, each with a sound power level of 106 dBA. During the nighttime period (as defined in Rule 012) wind turbines T001B and T143 would operate in Mode 0 STE; wind turbines T106 and T140 would operate in Mode 2 STE, which will reduce their sound power levels to 100.6 dBA; and the remaining 70 wind turbines would operate in Mode 1 STE, which will reduce their sound power levels to 103.8 dBA each.

142. Further noise control measures include curtailing the wind turbine(s) cut-out wind speed and insulating the nacelle to minimize mechanical drivetrain noise.<sup>107</sup>

143. In response to a question from the BRG's counsel on the options available to reduce noise if sound levels exceed the nighttime PSL, Mr. Faszter stated that the most effective way to reduce the noise level at a particular receptor would be to reduce the noise emission of the dominant wind turbines. In this case, 72 of the wind turbines could be operated in Mode 2 which would further reduce those wind turbines' noise emissions.<sup>108</sup> In the event that the PSL is exceeded, Capital Power committed to investigating and implementing noise mitigation measures to ensure compliance. Specifically:

...we will actively consult with the Commission, as well as the landowner impacted, to develop an appropriate mitigation and work towards resolution of the issue.<sup>109</sup>

144. To further ensure that the project meets noise emissions standards, Mr. Faszter stated that it is standard practice to seek a [sound power level] guarantee.<sup>110</sup> Capital Power testified that it would work with Vestas, the wind turbine manufacturer, to ensure that it guarantees the wind turbine model's noise emissions values.<sup>111</sup> Capital Power also confirmed that it would share the vendor data that it was contractually allowed to share with the BRG members while reiterating that Capital Power would ensure that the project was compliant at all receptors.<sup>112</sup>

145. In its reply evidence, Golder agreed with Mr. Farquharson that an appropriately designed and suitably representative post-construction noise monitoring survey should be completed to test the project's compliance with the PSL. However, Golder disagreed with Mr. Farquharson's recommendation to measure sound levels for the wind turbines associated with the three operational modes and calculated sound power levels.<sup>113</sup> Mr. Faszter testified that Rule 012 requires noise compliance at receptors; it does not set limits on noise emissions from individual

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<sup>106</sup> Exhibit 22563-X0051, Responses to AUC Round 1 IR, Capital Power-AUC-2017MAY18-008, PDF page 10.

<sup>107</sup> Exhibit 22563-X0090, Responses to AUC Round 2 IR, Capital Power-AUC-2017SEPT06-001, PDF page 1.

<sup>108</sup> Transcript Volume 1, page 194, line 17 to page 195, line 8.

<sup>109</sup> Transcript Volume 1, page 197, lines 10-15.

<sup>110</sup> Transcript Volume 1, page 212, lines 14-17.

<sup>111</sup> Transcript Volume 1, page 211, lines 14-17.

<sup>112</sup> Transcript Volume 2, page 286, lines 20-24.

<sup>113</sup> Exhibit 22563-X0111, Appendix D – Evidence of James Farquharson, PDF page 4.

sources.<sup>114</sup> In summary, Golder was of the opinion that post-construction noise measurements at potentially impacted dwellings is sufficient to test project compliance with the PSL.

146. Capital Power committed to operating the wind turbines in accordance with the planned operating scheme described in the NIA. Capital Power also committed to conduct a comprehensive post-construction noise monitoring study including an evaluation of low frequency noise, at receptors R019, R033 and R070 under representative conditions, in accordance with Rule 012 and file all studies and reports relating to the post-construction comprehensive noise study with the Commission. Capital Power also committed to rerun the NIA model to include Dwayne Felzien's planned residence for which he holds a building permit.<sup>115</sup>

### 8.2.3 Sound source identification

147. The NIA identified the project's primary noise sources as the 74 wind turbines. The wind turbines were Vestas model V110 2.0-MW turbines with hub heights of 95 metres, a rotor diameter of 110 metres and STE blades. The sound data for the wind turbines was provided by Vestas.<sup>116</sup>

148. The NIA also included the project substation. The major noise source associated with the substation was the electrical transformer. Maximum octave band sound power levels<sup>117</sup> for the electrical transformer would occur when it operates in Oil Natural Air Forced 2nd-Stage Cooling (ONAF2) mode.<sup>118</sup>

149. The NIA identified and considered the sound level contributions of 147 existing and approved third-party energy-related facilities with the potential to influence the cumulative noise levels at the 59 receptor locations. The third-party noise sources were classified under the following four categories; oil and gas facilities, oil and gas wells, electrical facilities and the Paintearth coal mine.<sup>119</sup>

150. Golder conducted a search of the IHS Inc. database and identified 285 existing and approved oil and gas facilities and 790 existing and approved oil and gas wells in the study area. Golder conducted a three-day baseline field program from April 14, 2016, to April 16, 2016, to capture noise emissions from existing oil and gas facilities and oil and gas wells. Since it was not practical to visit and measure all potentially relevant existing facilities, Golder identified and targeted a sub-sample of 19 oil and gas facilities and 13 oil and gas wells to measure during the field program that were representative of the larger data set.<sup>120</sup>

151. The noise measurements were conducted using a Type 1 sound level meter that was field calibrated before and after the measurements were taken. The sound level meter and calibrator were calibrated by the manufacturer less than one year prior to the field program in accordance

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<sup>114</sup> Transcript Volume 2, page 288, line 12 to page 289, line 6.

<sup>115</sup> Exhibit 22563-X0178, Undertaking Response 8, PDF page 1.

<sup>116</sup> Exhibit 22563-X0023, Attachment E Noise Impact Assessment, Appendix B V110-2.0-MW Third Octave Noise Emission (DMS 0051 -2907\_04), PDF pages 91-102.

<sup>117</sup> Exhibit 22563-X0051, Responses to AUC Round 1 IR, Capital Power-AUC-2017MAY18-01, PDF page 17.

<sup>118</sup> Exhibit 22563-X0023, Attachment E Noise Impact Assessment, PDF pages 5 and 33.

<sup>119</sup> Exhibit 22563-X0023, Attachment E Noise Impact Assessment, PDF page 18 to PDF page 31 and Appendix A, PDF page 69.

<sup>120</sup> Exhibit 22563-X0023, Attachment E Noise Impact Assessment, PDF page 71.

with the requirements of Rule 012. During the baseline field program, many of the targeted oil and gas facilities had no operating noise emitting equipment or were inaccessible. As a result, Golder measured the noise emissions from six oil and gas facilities and two oil and gas wells.<sup>121</sup> From this data and through the use of modelling, Golder calculated the sound power levels of the 70 oil and gas facilities and 74 oil and gas wells in the study area.<sup>122</sup> In response to criticism from the BRG that this sample was insufficient, Golder replied that the methods used to quantify noise emissions from third-party oil and gas facilities were conservative.

152. The third-party electrical facilities considered in the NIA included the ATCO Electric Battle River Power Plant, the ATCO Electric Battle River Substation, the ATCO Electric Cordell Substation, the ATCO Electric Tinchebray Substation, and the ATCO Electric Bigfoot Substation.

153. Golder explained that noise emissions from the Battle River Power Plant and the Battle River Substation were estimated from noise source data from the noise assessment conducted for the Battle River Substation (BR substation NIA)<sup>123</sup>. The NIA also considered the Paintearth coal mine NIA (mine NIA)<sup>124</sup> which included noise data for the Battle River Power Plant (BR power plant). Golder pointed out that information about the BR power plant presented in the BR substation NIA was more up-to-date than comparable information presented in the mine NIA.<sup>125</sup> Golder stated that while the total sound power level for the BR power plant was approximately four dBA lower in the mine NIA, the data from the BR substation NIA was more conservative due to the low frequency content in the spectrum from the BR substation NIA.<sup>126</sup>

154. Golder determined that the noise from the Bigfoot, Cordell and Tinchebray substations was not significant and these facilities were eliminated from the NIA.

#### **8.2.4 Low frequency noise**

155. Golder explained that Rule 012 requires a separate assessment of potential low frequency noise impacts. Rule 012 indicates that a low frequency noise issue exists if the following two conditions are met: the value of the cumulative noise level, expressed in dBC, minus the value of the cumulative noise level, expressed in dBA, is greater than or equal to a difference of 20 dB; and a clear tone is present in a one-third octave-band at or below 250 Hz.<sup>127</sup>

156. The results of the dBC minus dBA calculation exceed the criterion level of 20 dB at 57 receptor locations during the daytime; however, Golder stated that the absence of a clear tone

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<sup>121</sup> Exhibit 22563-X0023, Attachment E Noise Impact Assessment, Appendix A Noise Measurements and Emissions Calculations for Baseline Facilities, PDF page 84; Exhibit 22563-X0051 Responses to AUC Round 1 IR, Capital Power-AUC-2017MAY18-014 (a) and (b), PDF pages 18-26.

<sup>122</sup> Exhibit 22563-X0023, Attachment E Noise Impact Assessment, Appendix A Noise Measurements and Emissions Calculations for Baseline Facilities, PDF pages 88 and 89.

<sup>123</sup> Exhibit 22563-X0023, Attachment E Noise Impact Assessment, Appendix C Battle River Substation Noise Assessment, PDF page 103.

<sup>124</sup> Exhibit 22563-X0023, Attachment E Noise Impact Assessment, Appendix E Paintearth Coal Mine Noise Assessment, PDF page 130.

<sup>125</sup> Exhibit 22563-X0128, Appendix C to the Reply of Capital Power Generation Services Inc. Golder Reply Evidence, PDF pages 4 and 5.

<sup>126</sup> *Ibid.*

<sup>127</sup> Exhibit 22563-X0023, Attachment E Noise Impact Assessment, PDF page 16.

associated in the noise emissions spectra of the wind turbines precludes the presence of a project-related low frequency noise issue.<sup>128</sup>

### 8.3 Views of the interveners

157. Several members of the BRG expressed concerns with noise from the project, including Terry and Peggy Vockeroth, Don and Eileen Blumhagen and Ms. Anderson and Mr. Borgel.

#### 8.3.1 Sound source identification

158. Mr. Farquharson expressed concern with how the results of the noise modelling were presented in the NIA. While the input data for the noise model was reported to one decimal point, the results were reported as whole numbers. This was particularly concerning to him given that the predicted cumulative sound level was estimated to be at the PSL of 40 dBA at 13 of the receptors.<sup>129</sup> In support of his view that reporting the modelling results to one decimal place should be adopted, Mr. Farquharson pointed out that the wind turbine noise emission data provided by the wind turbine manufacturer Vestas was reported to one decimal point.<sup>130</sup>

159. Mr. Farquharson generally agreed with Golder's approach to identify and evaluating third-party noise sources; however, he opined that the sound levels for these facilities might be underestimated. Mr. Farquharson stated that the "field measurement program needs to cover a large enough sample with the results of the measurements averaged to produce a more exacting quantification of the noise emission for each site where the data is imposed."<sup>131</sup> Mr. Farquharson further criticized Golder's response to an information request<sup>132</sup> where it was stated that the single "best" measurement was selected by Golder field staff and used to calculate the sound power levels in the model. Mr. Farquharson commented "the statement was a [bit] disturbing in the sense that, did they just use one measurement to quantify it and then apply that to others...?"<sup>133</sup>

160. Mr. Farquharson criticized Golder's selection of the input data used for the BR power plant. As explained above, Golder used the sound levels from the BR substation NIA rather than using the sound levels from the mine NIA because the former was more recent. Mr. Farquharson disagreed with this approach because the sound power level for the BR power plant in the BR substation NIA was four dB lower than the value derived from the mine NIA. Mr. Farquharson also questioned why Golder did not conduct baseline monitoring to determine the BR power plant's noise levels.<sup>134</sup>

161. With respect to the oil and gas wells, Mr. Farquharson acknowledged that while noise data from other facilities is commonly used he considered that the subset of data used to be too small.<sup>135</sup>

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<sup>128</sup> Exhibit 22563-X0023, Attachment E Noise Impact Assessment, PDF page 64.

<sup>129</sup> Exhibit 22563-X0111, Appendix D-Evidence of James Farquharson, PDF page 3.

<sup>130</sup> Exhibit 22563-X0111, Appendix D-Evidence of James Farquharson, PDF page 3.

<sup>131</sup> Exhibit 22563-X0111, Appendix D-Evidence of James Farquharson, PDF page 2.

<sup>132</sup> Exhibit 22563-X0051, Responses to AUC Round 1 IR, Capital Power-AUC-2017MAY18--014(b), PDF page 23.

<sup>133</sup> Transcript Volume 2, page 451, lines 20-23.

<sup>134</sup> Transcript Volume 2, page 452, lines 5-15.

<sup>135</sup> Exhibit 22563-X0111, Appendix D-Evidence of James Farquharson, PDF page 2.

162. Mr. Farquharson also expressed concern over whether the ground attenuation factor of 0.5 was hard enough to accurately account for the ground surface in the project area. A hard ground surface tends to enhance noise propagation between the project and receptors and, consequently, too soft of a ground factor may underestimate the project's noise impacts.

163. FDI put forward a number of recommendations<sup>136</sup> which included the following:

- There should be fewer wind turbines and/or a greater setback distance between the wind turbines and residences given the project's small margin of compliance with the PSL and the uncertainties inherent in the NIA.
- Capital Power should complete a post-construction sound level survey at residences within the noise study area in accordance with Rule 012 and provide the results to the community and the AUC. The post-construction sound level survey report should include a comparison and discussion of the predicted results from the NIA to those measured during the sound monitoring survey.
- Sound measurements should be taken from the wind turbines in all three operational modes. Should these measurements indicate that individual wind turbines are emitting more noise than the sound power level provided by the manufacturer, operational limits should be placed on these wind turbines where the cumulative sound level exceeds the PSL.

164. The BRG also argued that Capital Power should be required to conduct a pre-construction baseline noise survey at all residences located in the northwest corner of the project area. The baseline noise survey in this area would serve to document the impacts from the BR power plant.<sup>137</sup>

#### **8.4 Commission findings**

165. The purpose of an NIA is to provide reasonable predictions of the project's noise that may be experienced at nearby residences. In this section, the Commission assesses the degree to which that objective was achieved.

166. In making its finding on noise, the Commission has accepted Capital Power's commitment that the wind turbines will only operate in accordance with the operating scheme described in the NIA, namely: during the daytime period all 74 wind turbines are planned to operate in the unrestricted Mode 0 STE and during the nighttime period two wind turbines will operate in Mode 0 STE (T001B and T143), 70 wind turbines will operate in Mode 1 STE and two wind turbines will operate in Mode 2 STE (T106 and T140).

167. The Commission observes that Capital Power systematically categorized and evaluated the noise from the third-party energy-related facilities in the study area including the oil and gas facilities, oil and gas wells, electrical facilities and the Paintearth coal mine.

168. With respect to oil and gas facilities, Mr. Farquharson agreed that Golder's approach of measuring a representative subset of third-party facilities and using these measurements to characterize noise from other facilities is an accepted practice. However, the Commission does

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<sup>136</sup> Exhibit 22563-X0111, Appendix D-Evidence of James Farquharson, PDF page 4.

<sup>137</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 33.

not agree with Mr. Farquharson that the evidence suggests that a larger sample should have been taken given that the overall contribution of these facilities to the PSL is relatively minor. The Commission finds that Golder followed reasonable steps and used reasonable judgment to obtain sufficient data to categorize the noise emissions for the oil and gas facilities and oil and gas wells in the study area and accepts these results.

169. The Commission finds the equipment used to conduct the field noise measurements, along with the three calibration dates of this equipment, meets the requirements of Rule 012.

170. The Commission agrees with Golder's view that the source used to determine the sound power level of the Battle River Power Plant for inclusion in the project NIA was appropriate because it had the most recent data and it showed more noise in the low frequency octave bands. Since low frequency noise propagates out to much greater distances than high frequency noise, low frequency content is more relevant for distant receptors than high frequency content or total emissions.

171. The Commission notes Capital Power's commitment to rerun the NIA model to include a new residence, proposed by Mr. Felzien, in the northeast quarter of Section 6, Township 40, Range 14, west of the Fourth Meridian (the new Felzien residence), if the residence is constructed prior to construction of the project.

172. The Commission finds that the new Felzien residence shall be treated as a dwelling given that Mr. Felzien has a building permit for it. As long as Mr. Felzien holds a building permit for the new Felzien residence, the NIA model must be rerun with the new residence included as a receptor and the results shared with Mr. Felzien.

173. The project, if approved, shall comply with the currently applicable daytime and nighttime PSL at this new receptor location.

174. The Commission finds that the acoustical model (CadnaA) and the model input data used to predict the cumulative sound levels at the receptors in the NIA satisfy the requirements of Rule 012.

175. Whether the predicted noise level should be reported to a single decimal point was the subject of much debate in the hearing. Rule 012 contains no express requirement to report modelling results to a decimal point rather than a whole number. Given that the noise model has an accuracy of  $\pm$  four dB and that compliance is determined based on the averaged sound level over a nine-hour period and not the absolute sound level of 40 dBA, the Commission will not require Capital Power to report its noise results to a single decimal point. The Commission notes that the evidence on the record of this proceeding indicates that many receptors may experience noise levels at or very close to the PSL. The Commission considers that compliance with the PSL is of paramount importance. However, compliance may be achieved in accordance with generally accepted principles of rounding.

176. The Commission also acknowledges there is an additional noise control mode (Mode 2) that the wind turbines can be operated in, if the need arises, to lower the sound level of the project.

177. Due to the importance of the noise mitigation measures to ensure the project's compliance with the PSL, the Commission finds that should it approve the project, it would place the following conditions on the project's approval:

- During the daytime period Capital Power will be allowed to operate all 74 wind turbines in Mode 0 STE within compliance with the permissible daytime sound level.
- During the nighttime period two wind turbines will be allowed to operate in Mode 0 STE (T001B and T143), 70 wind turbines will be allowed to operate in Mode 1 STE and two wind turbines will be allowed to operate in Mode 2 STE (T106 and T140), within compliance with the permissible nighttime sound level.

178. In the Commission's view, the dBC minus dBA test is a useful method for identifying the potential for a low frequency noise condition. Although the results of the dBC minus dBA test exceed the threshold level of 20 dB at 57 receptor locations during the daytime, there was no clear tone in the wind turbine's one-third octave band noise emissions spectra. The Commission accepts Golder's evidence that under the planned operating scheme for both the daytime and nighttime periods, no project-related low frequency noise issues are expected at any receptors. The Commission considers that there is another mechanism available to it to consider if the project creates low frequency noise at a later date. Specifically, if the Commission receives a complaint alleging that low frequency noise arises from the project, the Commission will investigate this allegation in accordance with the noise complaint investigation process outlined in Rule 012.

179. As previously stated, Capital Power's compliance with the PSL is of paramount importance to the Commission. Even if the modelling proves to be inaccurate, the project must still comply with the PSL, which could be determined by a post-construction comprehensive sound level survey.

180. While all noise models have a level of uncertainty, Rule 012 does not require an applicant to take this into account in its predicted cumulative sound levels and in determining whether the project meets the PSL. The Commission finds that Mr. Farquharson's recommendation to measure noise emissions for the wind turbines in its three operational modes is unnecessary to test project compliance with Rule 012.

181. The Commission acknowledges Capital Power's commitment to conduct post-construction noise monitoring. The Commission accepts that the locations proposed by Capital Power for post-construction noise monitoring are appropriate to verify compliance and are in the vicinity of members of the BRG where the nighttime sound levels are predicted at maximum cumulative noise levels of 40 dBA  $L_{eq}$ . In addition, the Commission notes that receptor R051 is also a suitable receptor location to conduct a post-construction noise survey as the predicted nighttime maximum cumulative noise levels is 40 dBA  $L_{eq}$  and it is located in a general downwind direction from several wind turbines. The Commission finds that should it approve the project, it would place the following conditions on the project's approval:

- Capital Power shall conduct post-construction comprehensive noise studies and an evaluation of low frequency noise at receptors R019, R033, R070 and R051, under representative operating conditions, and in accordance with Rule 012. Capital Power shall file all studies and reports relating to the post-construction noise survey and low

frequency noise evaluation with the Commission within one year of connecting the project to the Alberta Interconnected Electric System.

182. Having regard to the foregoing, the Commission accepts that the noise from the project, with the implementation of the planned operating scheme, is expected to meet the daytime and nighttime PSL and all requirements of Rule 012.

## **9 Health**

### **9.1 Introduction**

183. The BRG asserted that evidence of negative impacts from large industrial wind turbine projects is mounting in Alberta. BRG members specifically raised concerns related to the human health impacts both inside and outside the project area that could result from blinking lights, noise, shadow flicker, air pressure changes, and annoyance caused by the project.

184. In response to concerns raised by landowners, Capital Power retained Dr. Christopher Ollson to provide reply evidence on the potential impacts of the project on human health. Dr. Ollson had twice appeared before the Commission and provided expert reports and testimony in Proceeding 1955 for the Bull Creek Wind Project<sup>138</sup> and Proceeding 3329 for the Grizzly Bear Creek Wind Project.<sup>139</sup>

185. Dr. Ollson prepared a report that was meant to be an update on the information provided to the Commission in the prior proceedings (the Ollson report).<sup>140</sup>

### **9.2 Views of the applicant**

186. Capital Power argued that the BRG did not provide evidence that proved negative impacts from large wind projects are mounting. It noted that wind projects have been in operation for over 20 years in Alberta and are sited in proximity to rural populations. Capital Power expressed that adherence of the project to Rule 012 and the County of Paintearth's setback distance of 750 metres from non-participating landowner residences ensured the health of residents would be protected.

187. The portion of the Ollson report on potential effects of the project on human health was written with respect to the specific issues raised by the BRG's members. The report noted that the shortest distance from a BRG member to the nearest wind turbine is 759 metres. The report also noted that the cumulative nighttime noise levels for BRG landowners ranged from 35 dBA to 40 dBA, which was compliant with the PSL in Rule 012.

188. The Ollson report explained that Dr. Ollson conducted a review of scientific literature to ascertain if any of the pre-existing health conditions of BRG members have been reported to be affected by wind turbine sound or living around wind projects. The report stated that the most comprehensive study into perceptual responses (annoyance and quality of life) and those of self-reported health effects by participants living in proximity to wind turbines was the

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<sup>138</sup> Proceeding 1955: Exhibit 0202.05.1646658A-1955 Expert Report COLLson.

<sup>139</sup> Proceeding 3329: Exhibit 3329-X0115, ECRC Reply Evidence\_Appendix F\_Part 1\_Expert Report and Curriculum Vitae of Christopher Ollson.

<sup>140</sup> Exhibit 22563-X0125, Appendix F to Capital Power's reply evidence.

Health Canada Wind Turbine Noise and Health Study (Health Canada study). The report asserted that the Health Canada study results are consistent with the previous decade of research in the field. These findings indicated that health concerns identified by BRG members would not be worsened or exacerbated by living in proximity to the project, if it is operated in accordance with Rule 012.

189. The Ollson report indicated that there have been a number of additional scientific peer-reviewed articles since the Grizzly Bear Creek Wind Project hearing in the spring of 2016. Dr. Ollson stated that these new publications remain consistent with his previous reports and testimony to the AUC on this topic. The Ollson report specifically noted three new Health Canada papers that addressed health, annoyance, and stress related to wind turbine noise and a 2016 Health Canada study on the potential for sleep disturbances. The conclusions of these papers<sup>141</sup> were included in the Ollson report and indicated that:

- a) The results did not show any statistically significant increase in the self-reported prevalence of chronic pain, blood pressure issues, breathing difficulties, heart disease, migraines/headaches, dizziness, or tinnitus in relation to wind turbine noise exposure up to 46 dB.
- b) A complex relationship exists between community annoyance and noise and that any efforts aimed at mitigating the community response to wind turbine noise would profit from considering other factors associated with annoyance. These other factors included, but were not limited to, personal benefit, noise sensitivity, physical safety concerns, and property ownership.
- c) There was no evidence that self-reported or objectively measured stress reactions were significantly influenced by exposure to increasing levels of wind turbine noise up to 46 dB.
- d) The factors that influence sleep quality (e.g., age, body mass index, caffeine, health conditions) were related to one or more self-reported and objective measures of sleep and wind turbine noise levels up to 46 dB(A) had no statistically significant effect on any measure of sleep quality.

190. The Ollson report concluded that the science continues to demonstrate that the project's adherence to Rule 012 and a nighttime PSL of 40 dBA  $L_{eq}$  would protect nearby residents from sleep disturbances and other health effects.

191. With respect to the specific health concern about shadow flicker, the Ollson report cited a study on the relationship between photo-induced seizures (i.e., photosensitive epilepsy) and wind turbine blade flicker (also known as shadow flicker). The study suggested that flicker at a certain frequency posed a potential risk of inducing seizures in 1.7 people per 100,000 of the photosensitive population. The rotational speed of the project's Vestas V110 2.0-MW wind turbines was 15.2 rpm, which was four times lower than the level that would be expected to trigger seizures.

192. The rotational speed of the wind turbines and the results of the shadow flicker analysis for the project were similar to those found in the Grizzly Bear Creek Wind Project proceeding.

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<sup>141</sup> Exhibit 22563-X0125, PDF pages 11 and 12.

Therefore, the report concluded that shadow flicker from the project would not result in an increased health risk to BRG members or the community.

193. With respect to Doug and Lynne Potters' concern about this issue, the Ollson report referred to the shadow flicker assessment report prepared by Golder. The assessment predicted that the amount of shadow flicker at the Potters' house would be 15 hours a year. The research indicated that their adult son, who visits their home, would not be at risk of a seizure being triggered by shadow flicker on their property.

194. Capital Power asserted that there are no prescribed regulatory or provincial standards with respect to shadow flicker. Nevertheless, Capital Power committed to investigating any situations of shadow flicker that may arise and implementing appropriate mitigations<sup>142</sup> which could include installation of blinds or landscape features such as trees.<sup>143</sup>

195. With respect to the health concerns regarding the impact of blinking lights, the Ollson report explained that obstruction lighting on wind turbines is a requirement of Transport Canada for aviation safety. Obstruction lighting on wind turbines is not an identified health issue in the scientific literature. It has not been found to be cause for concern for headaches, seizures or any other health issue. However, it is acknowledged that such lighting can annoy local residents living in proximity to wind turbines. To minimize such annoyance the project would use medium intensity red lights, with the minimum required flash rate (20 flashes per minute) and minimum flash cycle duration (1,500 milliseconds) permissible by Transport Canada.

196. The Ollson report stated that there is no evidence to suggest that livestock would be adversely impacted by the operation of the project.

197. With respect to the 2013 article submitted by Ms. Fuller and Adam Fuller, the Ollson report stated that since the article was published, numerous scientific articles have been published<sup>144</sup> which do not support the claims in the commentary. Dr. Ollson testified that the article was an opinion piece and was not the result of a study.

198. The Ollson report concluded that:

I believe that my previous reports and testimony to the AUC on this topic remain consistent with, and if anything, are more strongly supported by, recent published peer-reviewed scientific papers in the field. Therefore, on the weight of evidence of the material that I have reviewed, I do not believe that the Project as proposed, and compliant with AUC Rule 012, will adversely impact the health of residents and communities living in proximity to the Halkirk 2 Wind Power Project.<sup>145</sup>

199. In response to the BRG's assertion that there is an association between annoyance and increasing levels of wind turbine noise, Capital Power argued that Dr. Ollson reaffirmed that

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<sup>142</sup> Exhibit 22563-X0138, PDF page 5, lines 12-14.

<sup>143</sup> Transcript Volume 2, page 295, lines 2-5.

<sup>144</sup> Including, but not limited to, "Exposure to wind turbine noise: Perceptual responses and reported health effects." J Acoust Soc Am. 2016, "Personal and situational variables associated with wind turbine noise annoyance." J Acoust Soc Am. 2016, "Self-reported and measured stress related responses associated with exposure to wind turbine noise." J Acoust Soc Am. 2016, and "Effects of Wind Turbine Noise on Self-Reported and Objective Measures of Sleep." Sleep 2016.

<sup>145</sup> Exhibit 22563-X0125, PDF page 15.

“annoyance” associated with living in proximity to wind turbines is not a health effect and that the AUC accepted that proposition in Decision 3329-D01-2016<sup>146</sup> for the Grizzly Bear Creek Wind Project. Dr. Ollson also confirmed, under cross-examination, that “annoyance” is not a factor in the aggravation of pre-existing conditions such as anxiety.

200. Dr. Ollson also testified that when you look at the overall weight of the scientific evidence, there are very few peer-reviewed or government papers that would conflict with the findings of the Health Canada papers. Capital Power argued that any assertion that Dr. Ollson did not provide a balanced view of potential health impacts is inaccurate because he discussed the contradictory studies in both previous AUC proceedings and provided rationale for why he asserts that the weight of scientific evidence supports a finding that Rule 012 is protective of health.

201. Capital Power argued that Dr. Ollson’s evidence was not contradicted and that the BRG did not engage a health expert to provide the AUC with contrary evidence. Capital Power concluded that the project would not adversely affect the health of those living nearby.

### **9.3 Views of the interveners**

202. Members of the BRG expressed concerns about the adverse health effects of the wind turbines on themselves, their children, and livestock due to noise, shadow flicker, and light pollution. Their concerns included stress and anxiety, mental health, sleep disturbances, and annoyance, as well as impacts on pre-existing medical conditions.

203. A number of BRG members were concerned that the noise and blinking lights would cause sleep disturbances. Mr. Felzien testified at the hearing that he was concerned about his children’s ability to sleep at night. Mr. Fuller was concerned about the project’s effect on his insomnia. Geraldine Coulthard was concerned sleep disruption would worsen her migraines.

204. Mr. and Ms. Potter, who reside 765 metres from the closest wind turbine, were concerned about the health impacts on them and their sons who have existing health conditions. Specifically, they were concerned that the noise, shadow flicker, and blinking lights on the wind turbines may cause sleep difficulties and seizures or other harmful effects on the brain. They stated that Capital Power could not prove that the wind turbines would not cause such effects and thus asserted that it was a risk that should not be taken. They noted that when outdoors during the daytime hours they would be closer to the noise sources.

205. BRG members were also concerned that the wind turbines would effect the air pressure around the community, which could exacerbate Mr. Perreault’s tinnitus and cause Mr. Felzien to experience pressure headaches. Members were also concerned that the noise produced by the wind turbines could cause headaches.

206. Stress and anxiety caused by driving by the wind turbines and lights on the wind turbines were a concern for BRG members Ms. Fuller and Mr. and Ms. Vockeroth, respectively. Mr. Fuller also stated that driving through the Halkirk 1 project area exacerbates the motion sickness he has developed over the past few years.

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<sup>146</sup> Decision 3329-D01-2016: E.ON Climate & Renewables Canada Ltd. – Grizzly Bear Creek Wind Power Project, Proceeding 3329, Applications 1610717-1 and 1610717-2, May 19, 2016.

207. Mr. and Ms. Fuller submitted an article titled “Adverse health effects of industrial wind turbines.”<sup>147</sup> The header and footer indicated it was from the commentary section of volume 59 of the Canadian Family Physician magazine issued in May 2013. Ms. Coulthard and Mr. Coulthard stated they were aware of reports confirming health risks from wind turbine noise and vibrations and submitted copies of printed webpages that referred to such reports.

208. The BRG argued that the Health Canada study that was cited in the Ollson report did not acknowledge the following key finding that Health Canada included in a brochure about the study:

It is important to note that results from this study do not provide definitive answers on their own and should be considered along with the other research available on the impacts of wind turbine noise on health. Results may also not be applied to other communities as the wind turbine locations in this study were not randomly selected from all possible sites operating in Canada.<sup>148</sup>

209. The BRG further argued that the Health Canada study recognized an association between annoyance and increasing levels of wind turbine noise and quoted from one of Dr. Ollson’s referenced articles which stated:

Irrespective of WTN [wind turbine noise] levels (or the proximity between the dwelling and the wind turbines) WTN annoyance was found to be statistically related to several self-reported health effects including, but not limited to, blood pressure, migraines, tinnitus, dizziness, scores on the PSQI, and perceived stress. WTN annoyance was also found to be statistically related to measured hair cortisol, systolic and diastolic blood pressure.<sup>149</sup>

210. The BRG also argued that Health Canada considered annoyance to be a health effect. To support this assertion, the BRG quoted from the same article as in paragraph 206 above:

The overall conclusion to emerge from the study findings is that the study found no evidence of an association between exposure to WTN [wind turbine noise] and the prevalence of self-reported or measured health effects beyond annoyance. Collectively, the findings related to annoyance suggest that health and well-being effects may be partially related to activities that influence community annoyance, over and above exposure to WTN. Therefore, efforts that aim to identify and mitigate high levels of annoyance with wind turbines may have benefits that go beyond annoyance.”<sup>150</sup>

211. The BRG also quoted from another of Dr. Ollson’s referenced articles which stated:

In a review of literature related to the health effects of WTN [wind turbine noise], the Council of Canadian Academies (2015) concluded that the only health effect with sufficient evidence for a causal association with exposure to WTN was long term annoyance. Among the Council’s key findings was an acknowledgement that there was a paucity of epidemiological studies to draw upon and those that did exist suffered from methodological problems that included, but were not limited to weak statistical power,

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<sup>147</sup> Exhibit 22563-X0110, PDF pages 26-28.

<sup>148</sup> Exhibit 22563-X0176.

<sup>149</sup> Exhibit 22563-X0175, PDF page 14.

<sup>150</sup> Exhibit 22563-X0175, PDF page 18.

bias, and lack of controls. Other reviews by researchers and government agencies have reached similar conclusions.<sup>151</sup>

212. Contrary to Capital Power's final argument, the BRG asserted that the AUC did not accept that annoyance is not a health effect in Decision 3329-D01-2016 and quoted paragraph 248 from the decision, which stated:

The evidence before the Commission was that audible noise from wind turbines at a certain sound level and distance from a residence can be associated with sleep disturbance and annoyance, both of which can lead to other health effects including those symptoms described above.

213. The BRG asserted the Dr. Ollson did not present a balanced view of potential health impacts because he did not present any research or literature that was contrary to his position. The BRG argued that in the absence of conclusive research and a balanced view of health impacts from wind turbines, a precautionary approach is warranted in view of the evidence presented by members of the BRG regarding potential health consequences from the project.

214. The members of the BRG were also concerned about potential adverse health effects on their livestock.

#### **9.4 Commission findings**

215. The Commission notes that the BRG's argument was that the project could cause negative health impacts, exacerbate existing health conditions, and result in annoyance which could negatively impact health. The BRG submitted articles that they claim support their views but did not retain the authors of these reports or anyone with expertise in human health.

216. In response to these concerns, Capital Power submitted a report from Dr. Ollson whose expertise in this field was outlined in his resume. In Decision 3329-D01-2016, the Commission found that Dr. Ollson demonstrated considerable knowledge of wind turbine-related health issues. The Commission maintains this opinion as a result of the evidence and testimony of Dr. Ollson in the current proceeding.

217. Understanding and interpreting the numerous studies and literature that have considered the health effects of wind turbines requires considerable knowledge, skill and expertise. The Commission cannot give much weight to opinion evidence about the health effects of noise or shadow flicker from lay witnesses on these complex topics. The Commission finds the evidence provided by the BRG members regarding their existing medical diagnoses to be credible. Therefore, what the Commission can take from the evidence provided by the BRG members is that some have pre-existing conditions and there is deep-seated concern regarding health-related impacts from the wind turbines and that this concern has caused significant stress for many area residents.

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<sup>151</sup> Exhibit 22563-X0177, PDF page 2.

218. In Decision 2014-040,<sup>152</sup> the Commission found:

387. Having regard to the health-related evidence on the record, the Commission finds that the most comprehensive report regarding the effects of noise on sleep disturbance filed in the proceeding was the WHO [World Health Organization] 2009 guidelines. In those guidelines, the WHO found that 40 dB  $L_{\text{night, outside}}$  is equivalent to the lowest observed adverse effect level for night noise. It also found that there is no sufficient evidence that the biological effects observed at the level below 40 dB  $L_{\text{night, outside}}$  are harmful to human health. The WHO concluded:

For the primary prevention of subclinical adverse health effects related to night noise in the population, it is recommended that the population should not be exposed to night noise levels greater than 40 dB  $L_{\text{night, outside}}$  during the part of the night when most people are in bed. The LOAEL [lowest observed adverse effect level] of night noise, 40 dB  $L_{\text{night, outside}}$ , can be considered a health-based limit value of the night noise guidelines (NNG) necessary to protect the public, including most of the vulnerable groups such as children, the chronically ill and the elderly, from the adverse health effects of night noise.  
(Emphasis added)

388. The Commission finds that the 40 dBA  $L_{\text{eq}}$  nighttime PSL for the project is the practical equivalent to the WHO's 40 dB  $L_{\text{night, outside}}$  limit in the 2009 guidelines.<sup>153</sup>

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397. Notwithstanding the variations between these limits, the Commission finds that the nighttime noise limits in other jurisdictions at or near the 40 dBA level [are] generally consistent with the WHO's 40 dB  $L_{\text{night, outside}}$  nighttime noise limit. This uniformity suggests to the Commission that a number of other jurisdictions have considered what nighttime noise limits are appropriate for wind turbines and have determined that a limit in the range of 40 dBA would be protective of human health.<sup>154</sup>

219. In-line with the approach taken in Decision 3329-D01-2016, the Commission finds the Health Canada study, which was published after Decision 2014-040 was issued, to be the most persuasive evidence relating to the potential health impacts from wind turbine noise. The Commission considers that the Health Canada study largely supports the quotation from the World Health Organization cited in Decision 2014-040.

220. Dr. Ollson was also of the view that many of the symptoms reported by persons living near wind turbines were caused by stress or annoyance. Dr. Ollson acknowledged that noise from wind turbines can be annoying and associated with some health effects, especially at sound levels greater than 40 dBA.<sup>155</sup> However, he proposed that the annoyance experienced by some people was more strongly related to visual cues and attitude than it was to the noise.<sup>156</sup>

<sup>152</sup> Decision 2014-040 (Errata): 1646658 Alberta Ltd. – Bull Creel Wind Project, Proceeding 1955, Application 1608556, March 10, 2014.

<sup>153</sup> Decision 2014-040, paragraphs 387 and 388.

<sup>154</sup> Decision 2014-040, paragraph 397.

<sup>155</sup> Transcript Volume 2, pages 232-233.

<sup>156</sup> Transcript Volume 1, page 232, lines 13-15.

221. With respect to annoyance, the Commission notes that paragraph 278 of Decision 3329-D01-2016 stated that “[b]ased on the above, the Commission is not persuaded that noise annoyance is in and of itself a health effect.” The evidence filed by Dr. Ollson in this proceeding referenced the same studies and reports filed in Proceeding 3329. No evidence contrary to the evidence provided in Proceeding 3329 was submitted in this proceeding. For this reason, the Commission is not persuaded that noise annoyance is in and of itself a health effect.

222. With respect to whether noise from the project will annoy residents the Commission notes that while annoyance is subjective, the following represents typical sound levels:

Table 1. Typical noise levels<sup>157</sup>

Noise source	dBa
pneumatic chipper at one metre	115
hand-held circular saw at one metre	115
textile room	103
newspaper press	95
power lawn mower at one metre	92
diesel truck 50 km per hour at 20 metres	85
passenger car 60 km per hour at 20 metres	65
conversation at one metre	55
quiet room	40

223. The Commission is of the view that Rule 012 is designed to minimize noise and noise related impacts while allowing development in the public interest to proceed.

224. One of the issues raised by the BRG was the impact of shadow flicker. Golder prepared a shadow flicker report<sup>158</sup> which modelled the shadow flicker that may arise from the wind turbines. The shadow flicker report predicted that there would be a total of 25 hours of shadow flicker a year at the most impacted receptor assuming realistic and conservative environmental conditions. The Ollson report explained the findings from a seminal study on shadow flicker and seizures and concluded that the speed of rotation of the wind turbine blades for the project is too slow to produce seizures. As stated above, no contrary evidence was provided by the BRG. The Commission accepts that the short duration of shadow flicker produced by the project and the slow rotation rate of the wind turbine blades will not result in an increased health risk.

225. The Commission also accepts Dr. Ollson’s conclusions with respect to the blinking lights.

226. Based on the above, the Commission finds that there is no persuasive evidence that the project, operating as proposed in the application, is likely to result in adverse health effects for nearby residents.

<sup>157</sup> Canadian Centre for Occupational Health and Safety, Noise - Basic Information, Table 2 Typical Noise Levels, [http://www.ccohs.ca/oshanswers/phys\\_agents/noise\\_basic.html](http://www.ccohs.ca/oshanswers/phys_agents/noise_basic.html).

<sup>158</sup> Exhibit 22563-X0128, Appendix C of Reply Evidence of Capital Power, PDF pages 11-19.

## 10 Environmental impacts

### 10.1 Introduction

227. Capital Power retained Golder to prepare an environmental evaluation report (EE report)<sup>159</sup> for the project and an addendum to the EE report.<sup>160</sup> Golder also completed a subsequent report, which was filed as part of Capital Power's reply evidence.<sup>161</sup> Mr. De La Mare testified on behalf of Golder at the hearing. Capital Power also provided the *Renewable Energy Referral Report* issued by AEP Wildlife Management for the project (AEP Referral Report) as part of its application.<sup>162</sup>

228. The BRG retained Mr. Cliff Wallis, a professional biologist with Cottonwood Consultants Ltd., to file evidence (the Wallis report)<sup>163</sup> and testify on behalf of the BRG.

### 10.2 General environmental effects

#### 10.2.1 Views of the applicant

229. The project area consists of privately owned land that is primarily cultivated or pasture. Fourteen per cent, 23 per cent, and two per cent is wetland, native prairie, and wooded land cover, respectively. The project footprint (the area to be disturbed by project components) during the construction phase would be approximately 274 hectares, a small portion being wetland and wooded land cover.<sup>164</sup> During operation, the permanent project footprint would be 45.9 hectares, with a small portion being wetland and wooded lands.<sup>165</sup>

230. The project area overlaps portions of provincially and County of Paintearth classified Environmentally Significant Areas (ESAs). These ESAs are associated with the Paintearth Creek and the Battle River valley and coulee areas located along the south and north borders of the project area. Some of the project infrastructure, namely eight wind turbines, the substation, and access roads, for a total footprint of 5.85 hectares, were sited within these ESAs.<sup>166</sup> Golder stated that to reduce the project's overall impacts, wind turbines should be sited on cultivated lands where they would intersect these ESAs and be at least 168 metres from the edge of the Paintearth Creek and the Battle River. Capital Power emphasized that ESAs identified in provincial databases (i.e., not those in municipal development plans) do not represent government policy or designate legal land protection.<sup>167</sup>

231. Capital Power considered environmental impacts when selecting the project area, such as choosing a location that would minimize additional transmission lines and away from

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<sup>159</sup> Exhibit 22563-X0013, Environmental Evaluation report.

<sup>160</sup> Exhibit 22563-X0018, Environmental Evaluation report addendum.

<sup>161</sup> Exhibit 22563-X0127, Appendix D to the Reply of Capital Power Generation Services Inc. Golder Reply Evidence.

<sup>162</sup> Exhibit 22563-X0019, Alberta Environment and Parks Referral Letter, April 13, 2017.

<sup>163</sup> Exhibit 22563-X0103, Proposed Capital Power Halkirk 2 Wind Power Project: Evidence of Cliff Wallis, October 2017.

<sup>164</sup> 2.2 hectares wetland, and 1.1 hectares wooded lands as per Exhibit 22563-X0013, Environmental Evaluation report, PDF page 40, Table 3.1-2.

<sup>165</sup> 0.3 hectares wetland and 0.4 hectares wooded lands as per Exhibit 22563-X0013, Environmental Evaluation report, PDF page 40, Table 3.1-2.

<sup>166</sup> Exhibit 22563-X0018, Environmental Evaluation report addendum; Transcript Volume 2, page 367.

<sup>167</sup> Exhibit 22563-X0013, Environmental Evaluation report, PDF page 44.

Sullivan Lake due to its high avian activity levels.<sup>168</sup> The EE report predicted that, with implementation of the proposed mitigation measures, the importance of the predicted residual effects is “minimal” or “low” for all the components, with the exception of the loss or alteration to wetlands, which is predicted to be of “medium” importance.

232. Golder identified 1,329 wetlands in the project area, with 810 of them classified as one of the higher habitat value Class III (seasonal, dry early/mid-summer), Class IV (semi-permanent (dry late summer), or Class V (permanent) wetlands.<sup>169</sup> Golder stated that 24 wetlands and 0.8 hectares of wetland area may be temporarily affected from construction-related activities, such as installation of collector lines, 17 of which are classified as Class III, IV, or V. During operation, 15 wetlands may be affected, 10 of which are classified as Class III, IV, or V.<sup>170</sup> Golder later clarified that project infrastructure is expected to result in the permanent loss of only 0.2 hectares of wetland area.<sup>171</sup>

233. Capital Power explained that none of the proposed wind turbines are located within AEP’s recommended 100-metre setback from wetlands. However, portions of other project components are located within the 100-metre setback (e.g., 23 wetlands occur within 20 metres of permanent access roads).<sup>172</sup> To address indirect effects from such, Capital Power followed provincial best management practices.<sup>173</sup> Proposed mitigation to minimize project impacts on the wetlands include constructing during dry ground conditions, employing rig matting, vegetated buffer zones, silt and safety fencing, erosion and spill control measures, and revegetation.<sup>174</sup> Capital Power confirmed it will obtain any applicable *Water Act* and *Public Lands Act* approvals.

234. Golder found 12 per cent of the project area contained native prairie vegetation patches, and one per cent contained scattered native wooded patches, as most of the native vegetation had been modified or removed by agricultural activity.<sup>175</sup> No provincially or federally listed plant species or ecological communities were recorded during surveys.<sup>176</sup>

235. Capital Power explained the project will involve 33 watercourse crossings, with eight of the crossings involving mapped Class C watercourses. It explained that mitigation measures proposed to minimize effects to surface water and aquatic habitat during construction include installing collector lines underneath watercourses using horizontal drilling, constructing outside the April 16 to June 30 Class C Restricted Activity Period if flowing water is present, monitoring

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<sup>168</sup> Exhibit 22563-X0131, Reply Evidence of Capital Power, PDF page 7.

<sup>169</sup> Exhibit 22563-X0013, Environmental Evaluation report, Section 3.7.2.2, PDF pages 75-77.

<sup>170</sup> Exhibit 22563-X0013, Environmental Evaluation report, Section 3.7.4.1 and Table 3.7-4, PDF pages 76 and 77.

<sup>171</sup> Exhibit 22563-X0018, EE Report Addendum Letter, PDF page 2.

<sup>172</sup> Transcript Volume 1, page 86, lines 10-20; Exhibit X0018, EE Report Addendum, PDF pages 1-3 and Table 2.

<sup>173</sup> Exhibit 22563-X0184, Final Argument of Capital Power Generation Services Inc., PDF page 16, referring to *Stepping Back from the Water: A Beneficial Management Practices Guide for New Development Near Water Bodies in Alberta’s Settled Region*, Alberta Government, 2012.

<sup>174</sup> Exhibit 22563-X0013, Environmental Evaluation report, sections 3.7.1, 3.7.4.2 and 3.7.5, PDF pages 72, 77 and 78.

<sup>175</sup> Exhibit 22563-X0013, Environmental Evaluation report, sections 3.4.1 and 3.4.3.1, PDF pages 56, and 58-59.

<sup>176</sup> Exhibit 22563-X0013, Environmental Evaluation report, Section 3.4.3.2, PDF page 60.

sediment concentrations when water is present, sediment and erosion control measures, and following best management practices.<sup>177</sup>

236. Capital Power stated that, prior to the start of construction, a project-specific Environmental Protection Plan will be developed to ensure that the mitigation measures identified in the AUC application materials, environmental reports and field surveys, and any other government approvals received for the project are communicated to the construction contractor and incorporated into construction and operation of the project.<sup>178</sup>

### 10.2.2 Views of the interveners

237. The BRG stated that the project should not be sited on ESAs. In support of their position, the BRG members stated that the county's bylaw supports their position. That bylaw states that wind turbine projects:

Should not be sited near Environmentally Significant Areas (ESA), as identified by the County, or near non-ESA labelled waterways where a proliferation of migratory waterfowl exist.<sup>179</sup>

238. The other evidence submitted by the interveners was focused on the project's potential effects to wildlife species and wildlife habitat, which is discussed in Section 10.3.

### 10.2.3 Commission findings

239. One of the primary environmental concerns associated with siting wind generation projects is the impact on native prairie. As the Commission understands it there is an inability to re-create some types of native prairie which may lead to permanent habitat loss which in turn impacts wildlife. In its past decisions, the Commission has encouraged applicants to seek ways to minimize impacts on native prairie. The Commission finds the siting of all wind turbines, the substation, collector system and access roads on cultivated lands and not on native grasslands or native pasture significantly mitigates the project's potential adverse effects on native vegetation.

240. In the Commission's view, AEP's Referral Report suggests that the impact of the project on wetlands was acceptable from its perspective, and AEP would have been aware of the justifications for relaxing the wetland setbacks from access roads when issuing its Referral Report. With regard to the foregoing, the Commission concludes that Capital Power's approach to siting access roads and collector lines was reasonable in the circumstances.

241. The Commission acknowledges Capital Power's commitment to prepare a project-specific Environmental Protection Plan prior to the start of construction.<sup>180</sup> The Commission expects Capital Power to uphold all of its commitments and to monitor the effectiveness of its mitigation measures during the construction phase. If mitigation measures are less successful

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<sup>177</sup> Described in described in the Alberta *Water Act* Codes of Practice, the *Alberta Transportation Fish Habitat Manual*, and Fisheries and Oceans Canada's *Measures to Avoid Causing Harm to Fish* Exhibit 22563-X0013, Environmental Evaluation report, Section 3.5.4.2, PDF page 64.

<sup>178</sup> Exhibit 22563-X0051, Responses to AUC Round 1 IR, Capital Power-AUC-2017May18-003(b), PDF pages 4-5.

<sup>179</sup> County of Paintearth Bylaw 649-17 Schedule A, online: <http://www.countypaintearth.ca/images/stories/pdf/policiesandbylaws/649-17%20-%20Schedule%20A.pdf>.

<sup>180</sup> Exhibit 22563-X0051, First Round of IR Responses from Capital Power, Response to IR Capital Power-AUC-2017May18-003(b), PDF page 4.

than predicted, the Commission expects Capital Power to develop and implement additional mitigation to minimize adverse effects on the environment.

242. The Commission concludes that the project's effects on wetlands, soils, surface water, environmentally sensitive areas, and vegetation can be mitigated to an acceptable degree using Capital Power's proposed mitigation measures.

### **10.3 Wildlife effects**

#### **10.3.1 Views of the applicant**

243. Capital Power described the project area is bordered to the north by the Battle River and to the south by the Paintearth Creek. The Battle River and Paintearth Creek valley and coulee landscape features are considered to be higher potential habitat for birds and bats,<sup>181</sup> and tend to concentrate migratory birds.<sup>182</sup> Overall, the project area has high bird and bat use.<sup>183</sup>

244. Capital Power identified raptor species at risk historically recorded in the project area as bald eagle, golden eagle, osprey, peregrine falcon, and prairie falcon.<sup>184</sup> Additionally, the project area is within the range of ferruginous hawk.<sup>185</sup>

245. The EE report identified and described the project's potential effects on wildlife, including: direct habitat loss and fragmentation; habitat avoidance due to sensory disturbance (e.g., noise, traffic, and human activity); and increased wildlife mortalities resulting from a variety of project activities including bird and bat collisions with wind turbines.<sup>186</sup>

246. Golder found that the project area did not contain any provincially or federally designated parks or protected areas, Important Bird Areas, Key Wildlife and Biodiversity Zones, or Special Access Zones.

247. Golder prepared a Wildlife Baseline Report describing the methods and results of the pre-construction wildlife surveys.<sup>187</sup> Wildlife survey types were determined using desktop wildlife habitat information, provincial database information and guidelines, and direct consultation with the AEP wildlife biologist.<sup>188</sup>

248. The surveys Golder conducted in 2016 included: winter bird; sharp-tailed grouse; Richardson's ground squirrel; raptor nest; breeding bird; spring and fall migration avian use studies, and spring and fall bat activity.<sup>189</sup> Incidental wildlife observations were also recorded during the various field surveys. Several species at risk and protected habitat features were observed in the project area during the various pre-construction wildlife surveys, which are listed

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<sup>181</sup> Exhibit 22563-X0013, Environmental Evaluation report, Section 3.8.5, PDF page 92.

<sup>182</sup> Exhibit 22563-X0013, Environmental Evaluation report, Section 3.8.4.2, PDF page 88.

<sup>183</sup> Transcript Volume 1, page 101, lines 3-15, referencing AEP's Renewable Energy Referral Report.

<sup>184</sup> Exhibit 22563-X0013, Wildlife Baseline Report, Appendix A "Historical and Incidental Wildlife Observations"

<sup>185</sup> Exhibit 22563-X0013, Wildlife Baseline Report, Section 3.5.

<sup>186</sup> Exhibit 22563-X0013, Environmental Evaluation report, Section 3.8.4.1, PDF page 84.

<sup>187</sup> Exhibit 22563-X0013, Wildlife Baseline Report.

<sup>188</sup> Exhibit 22563-X0013, Environmental Evaluation report, Section 3.8.2.1, PDF page 79; Exhibit 22563-X0127, Golder's reply evidence response to Cliff Wallis Report; Exhibit 22563-X0184, Final Argument of Capital Power Generation Services Inc., PDF page 16.

<sup>189</sup> Exhibit 22563-X0013, Environmental Evaluation report, sections 3.8.3.1 and 3.8.3.9, PDF pages 80 and 83.

in Table 3.8-1 of the EE report.<sup>190</sup> Richardson's ground squirrel, not itself a species at risk but an important prey base of some raptor species at risk, were also observed in the project area.

249. Golder testified that, although some sensitive water bird species were incidentally observed during the project's wildlife surveys, there are no known nesting sites for these species in the project area.<sup>191</sup>

250. Golder completed bat activity acoustic surveys in the spring and fall of 2016, which followed the *Bats and Wind Turbines - Pre-Siting and Pre-Construction Survey Protocols*.<sup>192</sup>

251. During the spring 2016 bat surveys, an average of 1.89 bat passes per detector night were recorded with bat activity greatest during May. The average number of recorded bat passes per detector night ranged from 0.79 to 4.16 depending on the detector location.<sup>193</sup> The highest number of passes per detector night were recorded at two detectors (nearest to wind turbines T051 and T066).<sup>194</sup> During the fall 2016 bat surveys, an average of 3.66 bat passes per detector night were recorded with bat activity greatest during mid to late July. The average number of recorded bat passes per detector night ranged from 1.00 to 7.16.<sup>195</sup> The highest number of passes per detector night were recorded at two detectors (nearest to wind turbines T034 and T051).<sup>196</sup>

252. The 2016 fall bat surveys indicated that Wind Turbine T051 is located near the bat detector that recorded the highest number of migratory bat passes per detector night. Wind Turbine T051 was identified by Golder and Alberta Environment and Parks Wildlife Management (AEP WM) as a higher risk wind turbine for bat fatalities due to its proximity to the Paintearth Creek. Golder testified that implementation of bat mitigation at Wind Turbine T051 similar to that implemented for Halkirk 1 would help alleviate the bat mortality risk from this wind turbine.<sup>197</sup>

253. The Wildlife Baseline Report stated that migratory bat species such as hoary, silver-haired and red bats experience the greatest fatalities from wind power projects in Alberta.<sup>198</sup> Silver-haired and red bats are both provincial "sensitive" status species. Hoary bat was previously classified as a provincial "sensitive" species, but its status was changed by AEP in 2015 to "secure" but vulnerable to wind energy projects.<sup>199</sup> All bat species were detected in either the spring or fall activity period.

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<sup>190</sup> Exhibit 22563-X0013, Environmental Evaluation report, Section 3.8.3.10, Table 3.8-1. PDF pages 83-84.

<sup>191</sup> Includes pied-billed grebe, black tern, sora, and lesser scaup: Transcript Volume 1, pages 84-85, page 98, lines 18-23.

<sup>192</sup> Exhibit 22563-X0013, Wildlife Baseline Report, Section 3.4.1, PDF page 167.

<sup>193</sup> Exhibit 22563-X0013, Environmental Evaluation report, Appendix E Wildlife Baseline Report, PDF page 180, extrapolated from Table 7 and Section 4.5.3.

<sup>194</sup> Exhibit 22563-X0013, Environmental Evaluation report, Appendix E Wildlife Baseline Report, Figure 6. PDF page 180.

<sup>195</sup> Exhibit 22563-X0013, Environmental Evaluation report, Appendix E Wildlife Baseline Report, PDF pages 188-189, extrapolated from Table 9 and Section 4.6.3.

<sup>196</sup> Exhibit 22563-X0013, Environmental Evaluation report, Appendix E Wildlife Baseline Report, Figure 10. PDF page 189.

<sup>197</sup> Exhibit 22563-X0013, Wildlife Baseline Report, tables 7 and 9 and Figure 10. PDF pages 180, 189, and 190; Transcript Volume 2, pages 372-373.

<sup>198</sup> Exhibit 22563-X0013, Environmental Evaluation report, Appendix E Wildlife Baseline Report, PDF page 179, Section 4.5.2.

<sup>199</sup> Transcript Volume 2, pages 378 and 379.

254. The AEP's Referral Report for the project found that the project posed a "medium" risk level for bat mortality and bird mortality during operation,<sup>200</sup> and an overall "medium" risk to wildlife and wildlife habitat.<sup>201</sup> AEP's Referral Report for the project itemized several mitigation and monitoring measures.

255. Capital Power stated that it would employ the ploughing method outside of the primary wildlife breeding periods to install most of the collector lines, reducing the project's impacts to wildlife and wildlife habitat.<sup>202</sup>

256. Capital Power's project mitigation techniques to minimize effects on wildlife and wildlife habitat included:<sup>203</sup>

- a) Siting wind turbines at least 360 metres apart and in rows to avoid acting as a barrier to bird and bat movement.
- b) Siting wind turbines a minimum of 168 metres from the edges of the Paintearth Creek and the Battle River features.
- c) Siting wind turbines at least 160 metres from Class III to V wetlands.
- d) Siting wind turbines at least 260 metres from known Swainson's hawk and red-tailed hawk nests, and at least 500 metres from known sharp-tailed grouse leks.
- e) Clearing vegetation outside of the April 17 to August 28 migratory bird nesting period, and conducting a pre-construction nest search if construction occurs within this period. Golder clarified in testimony that the pre-construction nest search survey would include looking for the nests of all species of birds, including migratory birds, raptors, ground nesting species, and water shore nesting species.<sup>204</sup>
- f) Developing a project-specific Breeding Bird and Nest Management Plan.
- g) Conducting an amphibian breeding habitat survey prior to any construction activities occurring within 100 metres of Class III to V wetlands, and implementing species-specific mitigation if amphibians are found.<sup>205</sup>
- h) Developing and implementing post-construction wildlife monitoring and mitigation plan (PCWMM), in consultation with AEP, to evaluate the need for additional bird and bat mitigation during operation consistent with AEPWM policy and the *Wildlife Directive for Alberta Wind Energy Projects*. The PCWMM included repeating the avian use, breeding bird, and bat acoustic pre-construction surveys during the first two years of operation, conducting at least three years of bat and bird carcass surveys, preparing an annual report describing the results of the monitoring program, and implementing operational mitigation if the estimated rate of bat and/or bird fatalities exceed an acceptable level.

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<sup>200</sup> Exhibit 22563-X0019, Renewable Energy Referral Report for the Halkirk 2 Wind Power Project, April 13, 2017, PDF page 8.

<sup>201</sup> Exhibit 22563-X0019, Renewable Energy Referral Report for the Halkirk 2 Wind Power Project, April 13, 2017, PDF page 2.

<sup>202</sup> Exhibit 22563-X0051, Responses to AUC Round 1 IR, Capital Power-AUC-2017May18-003(a), PDF page 4.

<sup>203</sup> Exhibit 22563-X0013, Environmental Evaluation report, PDF pages 88-90.

<sup>204</sup> Transcript Volume 2, page 380, lines 6-15.

<sup>205</sup> Transcript Volume 1, page 105, lines 2-5.

257. Capital Power indicated that if amphibian species at risk are identified during the pre-construction amphibian surveys at wetlands within 100 metres of project components, then construction activities will occur outside the amphibian breeding season or an environmental monitor will be deployed on-site.<sup>206</sup> Golder also testified that it has committed to conducting pre-construction amphibian surveys at all Class III to V wetlands that are within 100 metres of both permanent and temporary project infrastructure.<sup>207</sup>

258. Golder stated that there are no known snake hibernacula in the project area. However, given that sensitive snakes have been observed in the project area, should the presence of many snakes be observed during construction, then Capital Power would discuss with AEP WM whether a snake hibernacula survey is required.<sup>208,209,210</sup>

259. Capital Power stated that if bat mitigation is necessary it will consider implementing mitigation options outlined in the *Bat Mitigation Framework for Wind Power Development*, including but not limited to: increased cut-in speeds, altering pitch angle of the wind turbine blades, and lowering the required generator speed.<sup>211</sup> The selected wind turbine technology allows for individual wind turbine curtailment when certain weather conditions (e.g., wind speed, wind direction, air temperature, barometric pressure) that increase the risk of bat mortalities are present.<sup>212</sup> Capital Power also stated that bat mitigation during operation has been effectively applied to its Halkirk 1.<sup>213</sup>

260. Capital Power also made a commitment to submit to the Commission annually a copy of the project's post-construction bird and bat monitoring report along with correspondence from AEP WM summarizing its views on the results of that report.<sup>214</sup>

### 10.3.2 Views of the interveners

261. BRG members raised concerns about the project's potential impacts on wildlife, particularly migratory birds, bats, and species at risk, as the project is located in an area that is home to a large number of wildlife species.<sup>215</sup> Mr. Vockeroth of the BRG testified that the project area is a natural wildlife corridor for birds and ungulates. Mr. Vockeroth also stated that he has seen blue herons fly over his property between the Paintearth Creek and Battle River valleys and that there is a blue heron nesting colony in one of these valleys.<sup>216</sup>

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<sup>206</sup> Exhibit 22563-X0051, Responses to AUC Round 1 IR, Capital Power-AUC-2017May18-004(b), PDF page 6.

<sup>207</sup> Transcript Volume 1, page 89, lines 20-24; Transcript Volume 2, page 375, lines 1-15.

<sup>208</sup> Transcript Volume 1, page 98, lines 16-17.

<sup>209</sup> Transcript Volume 1, page 84, line 1 and page 85, lines 2-6.

<sup>210</sup> Transcript Volume 2, page 374, lines 11-24.

<sup>211</sup> Exhibit 22563-X0051, Responses to AUC Round 1 IR, Capital Power-AUC-2017May18-005(a), PDF page 7.

<sup>212</sup> Transcript Volume 2, page 382, lines 10-20.

<sup>213</sup> Exhibit 22563-X0184, Final Argument of Capital Power Generation Services Inc., PDF page 15.

<sup>214</sup> Transcript Volume 2, page 377, lines 17-25; Exhibit 22563-X0178, Undertaking Response 8, commitment number 4(c).

<sup>215</sup> Exhibit 22563-X0187, Final Argument of Battle River Group, PDF page 50, paragraph 139;

Exhibit 22563-X0108, Submissions of the Battle River Group, PDF page 10, paragraph 26.

<sup>216</sup> Transcript Volume 3, page 630, lines 11-21.

262. Mr. and Ms. Fuller also expressed concerns about wildlife and submitted copies of the 2013, 2014 and 2015 wildlife monitoring (e.g., bird and bat carcass search and mortality estimate) reports for Halkirk 1, which found, in summary:<sup>217</sup>

Birds:

- The bird mortality rate estimates for Halkirk 1 were above the Alberta average, but less than a national estimate, and below the Ontario threshold that triggers mitigation. The estimates were not considered high enough by AEP WM to trigger more bird mitigation for the project.

Bats:

- In 2013, the bat mortality estimate was 7.5 bat fatalities per wind turbine per year, which was considered high enough by AEP WM to trigger more bat mitigation.
- Additional bat mitigation consisting of a seven-day maintenance shutdown of the wind turbines during the period of highest migratory bat activity recorded (August 8 to 15) was implemented for Halkirk 1 in 2014. The bat mortality estimate in 2014 dropped to 1.5 bat fatalities per wind turbine per year, indicating that the wind turbine shutdown was effective.
- The mitigation implemented in 2015 involved having wind turbine blades “pitched to place the turbines into a paused state” when the following four conditions occurred: 1) within the main bat migration period of July 15 to September 15; 2) during the dusk to dawn period; 3) when temperatures were greater than 10 degrees Celsius; and 4) when wind speeds were lower than 4.0 metres per second. The bat mortality estimate in 2015 was 2.26 bat fatalities per wind turbine per year, suggesting this mitigation was effective.

263. Members of the BRG and Mr. Wallis argued that the Commission should apply the “precautionary principle”, which “recognizes that since there are inherent limits in being able to determine and predict environmental impacts with scientific certainty, environmental policies must anticipate and prevent environmental degradation.”<sup>218</sup>

264. Mr. Wallis stated that portions of the project infrastructure may have residual adverse impacts on wildlife given the presence of ESAs within and adjacent to the project area.<sup>219</sup>

265. Mr. Wallis was of the view that wind turbines require greater setbacks from the edges of the valley and coulee breaks to protect wildlife. He suggested that there is no justifiable basis for the 168-metre minimum wind turbine setback from valley and coulee breaks employed by the

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<sup>217</sup> Exhibit 22563-X0110, Appendix B “Landowner Submissions” of the Submissions of the Battle River Group, Written submission of Rhonda and Adam Fuller, October 25, 2017, Halkirk 1 Wildlife Monitoring Reports from 2013, 2014, and 2015, PDF pages 177-259.

<sup>218</sup> Exhibit 22563-X0187, Final Argument of Battle River Group, PDF page 51, paragraphs 141-143; Transcript Volume 3, page 564, lines 6-14.

<sup>219</sup> Exhibit 22563-X0103, Proposed Capital Power Halkirk 2 Wind Power Project: Evidence of Cliff Wallis, October 2017, PDF page 2; Exhibit X0187, Final Argument of Battle River Group, PDF pages 44-49 (paragraph 130); Transcript Volume 2, pages 429-431.

project and this setback is not satisfactory.<sup>220</sup> Mr. Wallis suggested that, while Golder invoked the 100-metre setback identified in the 2011 Land Use Guidelines document,<sup>221</sup> this document was written with oil and gas projects in mind before wind energy projects were becoming a major factor on the landscape.<sup>222</sup> In contrast, the government of Saskatchewan, in its 2017 wildlife siting guidelines for wind projects, is now recommending a five-kilometre setback from river valleys in the grassland and parkland regions.<sup>223,224</sup>

266. Mr. Wallis stated that portions of the project may have residual adverse impacts on sensitive wildlife species (e.g., water birds, breeding birds) and that Golder's determination of low residual impacts on passerines and migratory waterfowl cannot be supported by the evidence and the current peer-reviewed literature.<sup>225</sup>

267. With respect to Golder's surveys, Mr. Wallis expressed the following concerns:

- Appropriate wildlife surveys for the detection of several sensitive species were not completed within AEP's recommended minimum setbacks from project infrastructure.<sup>226</sup> If adequate surveys for sensitive species are not conducted, then Capital Power cannot claim those species are not present and that they have complied with AEP's recommended minimum setbacks.<sup>227</sup>
- Nocturnal migrant bird surveys were not conducted, and Golder was unaware of methods available and used across the world for surveying nocturnal migrants.<sup>228</sup>
- Non-compliance with standards 100.1.1 and 100.2.2 of the AEP's 2017 *Wildlife Directive for Wind Energy Projects*; this is evidenced by the number of wind turbines sited near valley and coulee breaks and in ESAs and by the significant percentage of wetlands within 100 metres of project infrastructure that were not surveyed for the presence of sensitive species.<sup>229</sup>

<sup>220</sup> Exhibit 22563-X0187, Final Argument of Battle River Group, paragraphs 130(n) and 130(q), PDF pages 47 and 48; Transcript Volume 2, page 430, lines 23-25; and page 431, line 1; Transcript Volume 2, page 439, lines 23-25; Transcript Volume 2, page 442, lines 18-19; Transcript Volume 3, page 555, lines 10-15.

<sup>221</sup> Recommended Land Use Guidelines for Protection of Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions of Alberta, April 28, 2011, Government of Alberta.

<sup>222</sup> Exhibit 22563-X0187, Final Argument of Battle River Group, paragraph 130(n), PDF page 47; Transcript Volume 2, page 440, lines 1-7.

<sup>223</sup> Exhibit 22563-X0165, *Wildlife Siting Guidelines for Saskatchewan Wind Energy Projects*, May 2017, Saskatchewan Ministry of Environment; Transcript Volume 2, page 440, lines 8-11; page 442, lines 20-25; and page 443, lines 1-2.

<sup>224</sup> Exhibit 22563-X0187, Final Argument of Battle River Group, paragraph 130(n), PDF page 47; Transcript Volume 3, page 555, lines 21-23.

<sup>225</sup> Exhibit 22563-X0103, Proposed Capital Power Halkirk 2 Wind Power Project: Evidence of Cliff Wallis, October 2017, PDF page 38.

<sup>226</sup> Exhibit 22563-X0187, Final Argument of Battle River Group, paragraphs 130(i), 130(j), 130(k), 130(l), and 130(m), PDF pages 46 to 47; Transcript Volume 2, page 436, lines 5-25 and page 437, lines 1-25.

<sup>227</sup> Transcript Volume 3, page 553, lines 14-17.

<sup>228</sup> Exhibit 22563-X0103, Proposed Capital Power Halkirk 2 Wind Power Project: Evidence of Cliff Wallis, October 2017, PDF page 33; Transcript Volume 2, page 431, lines 9 to 10; Transcript Volume 2, page 432, lines 9-18 and lines 22-25 and page 433, lines 1-9.

<sup>229</sup> Exhibit 22563-X0187, Final Argument of Battle River Group, PDF page 46, paragraph 130(h); Transcript Volume 2, page 433, lines 10-25, page 434, lines 1-25 and page 435, lines 1-18.

268. Mr. Wallis recommended that additional wildlife field data should be collected within AEP's recommended minimum setback zones from infrastructure.<sup>230</sup> Should significant interactions with the project be found, then alterations to the operation of the project should be required as a condition of approval.<sup>231</sup>

269. Mr. Wallis expressed concern with the lack of adherence to AEP's recommended 100-metre minimum wetland setback from project infrastructure, particularly permanent operational access roads.<sup>232</sup> He also stated that an insufficient amount of wildlife field data has been collected on the use of wetlands located near project infrastructure, particularly wetlands within 100 metres of permanent operational access roads.<sup>233</sup> For example, less than four per cent of the 100-metre buffer zone between wetlands and new access roads were surveyed for breeding birds.<sup>234</sup>

270. In the Wallis report and during testimony, Mr. Wallis discussed several specific concerns about the project's potential mortality impacts on migratory bats, including that:

- The *Bat Mitigation Framework* indicates that the cumulative impacts from the operation of wind projects in an area should also be considered when assessing a project's risk to migratory bats and an acceptable level of migratory bat fatalities.<sup>235</sup>
- Even with mitigation, Halkirk 1 is still experiencing mortalities of migratory bats including hoary and silver-haired bats, and the Halkirk 2 project area poses a higher bat mortality risk.<sup>236</sup>

271. Mr. Wallis made several recommendations for the project including:

- Given his view that the project area represents a high-risk category for bats and the use of riparian corridors by migrating songbirds, some of the wind turbines should be sited outside of and further away from the environmentally significant areas of the adjacent Battle River and Paintearth Creek valley and coulee habitat, including, at a minimum, wind turbines T051, T066, T067B, T085A, T088, T089C, T100, T103 and T116.<sup>237</sup>

<sup>230</sup> Exhibit 22563-X0103, Proposed Capital Power Halkirk 2 Wind Power Project: Evidence of Cliff Wallis, October 2017, PDF page 39; Exhibit 22563-X0167, Cliff Wallis Conditions for Capital Power Halkirk 2, November 28, 2017; Transcript Volume 2, page 439, lines 5-22.

<sup>231</sup> Exhibit 22563-X0103, Proposed Capital Power Halkirk 2 Wind Power Project: Evidence of Cliff Wallis, October 2017, PDF page 39; Exhibit 22563-X0167, Cliff Wallis Conditions for Capital Power Halkirk 2, November 28, 2017.

<sup>232</sup> Exhibit 22563-X0103, Proposed Capital Power Halkirk 2 Wind Power Project: Evidence of Cliff Wallis, October 2017, PDF page 38; Transcript Volume 2, page 428, lines 3-6.

<sup>233</sup> Exhibit 22563-X0103, Proposed Capital Power Halkirk 2 Wind Power Project: Evidence of Cliff Wallis, October 2017, PDF page 38; Transcript Volume 2, page 428, lines 1-3; Transcript Volume 2, page 430, lines 1-10; Transcript Volume 2, page 431, lines 6-9; Transcript Volume 2, pages 437, lines 19-25 and page 438, line 1.

<sup>234</sup> Transcript Volume 2, page 437, lines 19-25 and page 438, line 1.

<sup>235</sup> Transcript Volume 2, page 441, lines 17-24.

<sup>236</sup> Exhibit X0187, Final Argument of Battle River Group, PDF page 48, paragraph 130(r); Transcript Volume 2, page 443, lines 3-6; Transcript Volume 3, page 558, lines 20-25 and page 559, lines 1-5.

<sup>237</sup> Exhibit 22563-X0103, Proposed Capital Power Halkirk 2 Wind Power Project: Evidence of Cliff Wallis, October 2017, PDF pages 39-40; Exhibit 22563-X0167, Cliff Wallis Conditions for Capital Power Halkirk 2, November 28, 2017.

- Wind turbines in close proximity to valley edges within ESAs may also require greater setback distances, including wind turbines T007, T014A, T018B, T033C, T053B, T084C and T086B.<sup>238</sup>
- Although Mr. Wallis acknowledged that the operational bat mitigation implemented for Halkirk 1 has been effective at reducing bat mortality,<sup>239</sup> he testified that these mitigation measures are less effective mitigation than increases to the cut-in speed or wind turbine curtailment during migratory season.<sup>240</sup> Mr. Wallis identified multiple potential bat mitigation measures that he recommended be listed as part of the project's conditions of approval.<sup>241</sup> These measures, broadly stated, include: (i) operational measures relating to pitch angle and cut-in speeds, as well as curtailment or shutdown under certain conditions; (ii) integration of acoustic deterrent and detection technology; (iii) post-construction monitoring and reporting, including greater monitoring around all wind turbines located within one kilometre of valley and coulee edges; and (iv) compensation for mortalities.<sup>242</sup>

### 10.3.3 Commission findings

#### 10.3.3.1 General wildlife

272. The project's proximity to the provincial and municipal ESAs was the subject of much debate at the hearing. The Commission notes that the location of the ESAs in relation to the project is not in all circumstances as important a factor as other criteria used to assess environmental effects, such as presence of native vegetation and the quality of wildlife habitat. While the ESAs suggest proximity to important wildlife habitat such as the Paintearth Creek and Battle River features, the ESAs do not restrict the development of wind turbines on private lands.

273. The Commission disagrees that the number of pre-construction surveys filed in support of Capital Power's application was insufficient. The number of surveys completed is comparable to other wind power projects and the surveys were reviewed and accepted by AEP. The Commission is satisfied that the pre-construction wildlife surveys were reasonable in the circumstances. However, given the concerns of the BRG, the Commission supports the additional pre-construction surveys described below.

274. The Commission accepts that Capital Power has committed to conducting an amphibian breeding habitat survey prior to any construction activities occurring within 100 metres of Class III to V wetlands, and implementing species-specific mitigation if amphibians are found. The reason for implementing this further pre-construction survey is that a portion of the project's collector lines and access roads will be located within this 100-metre setback and, therefore, the project may adversely affect amphibians and their habitat. If the project is approved, the Commission will make this a condition of the approval.

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<sup>238</sup> Exhibit 22563-X0103, Proposed Capital Power Halkirk 2 Wind Power Project: Evidence of Cliff Wallis, October 2017, PDF page 40; Exhibit 22563-X0167, Cliff Wallis Conditions for Capital Power Halkirk 2, November 28, 2017.

<sup>239</sup> Transcript Volume 3, page 513, lines 1-7.

<sup>240</sup> Transcript Volume 3, page 559, lines 6-25 and page 560, lines 1-3.

<sup>241</sup> Exhibit X0103, Proposed Capital Power Halkirk 2 Wind Power Project: Evidence of Cliff Wallis, October 2017, PDF page 40; Exhibit 22563-X0167, Cliff Wallis Conditions for Capital Power Halkirk 2, November 28, 2017; Transcript Volume 2, page 444, lines 15-25 and page 445, lines 1-2.

<sup>242</sup> This could potentially include setting up a conservation easement to offset mortalities.

275. The Commission accepts that Capital Power has committed to conduct a pre-construction nest search survey to identify nests if the project is approved. The survey area boundary for this pre-construction nest search survey should be extensive enough to cover AEP's recommended setbacks for the nests of species at risk with the potential to nest within or near the project area, and as confirmed by Golder in testimony, should include looking for nests of all species of birds.

276. Mr. Wallis indicated that the government of Saskatchewan has moved towards a five-kilometre buffer around designated ESAs including riparian and river valley habitat systems. However, the Commission observes that the Battle River valley which extends from the project area into Saskatchewan is not listed as an avoidance zone. The Commission was not persuaded by the evidence presented that the project site is not suitable on the grounds that a similar five-kilometre buffer should also be in place.

277. The Commission notes that several of Mr. Wallis' proposed conditions are either itemized in the AEP Referral Report, are mitigation measures that Capital Power has included in its application or are standard conditions of approval the Commission has recently been including in its approvals for wind power plants.

### 10.3.3.2 Bats

278. The Commission notes that AEP WM evaluated the project as having a "medium" risk<sup>243</sup> because there is still uncertainty that siting alone will be adequate to reduce mortalities given the high number of bats and birds that migrate through the project area.<sup>244</sup>

279. The *Bat Mitigation Framework for Wind Power Development* identifies a project area as a potentially "high risk" site for bat fatalities if the pre-construction bat surveys exceed an average of 2.0 migratory bat passes per detector night.<sup>245</sup> There were 3.05 migratory bat passes per detector night in the fall 2016 surveys but AEP noted that, with the exception of wind Turbine T051, the wind turbines were sited away from the Battle River and Paintearth Creek areas that demonstrated the higher level of migratory bat activity.<sup>246</sup> The Commission also notes that the *Bat Mitigation Framework for Wind Power Developments* indicates that the cumulative impacts on migratory bats from the operation of several wind projects in an area should be considered.<sup>247</sup> In this case, the only other wind project in the vicinity of the project is Halkirk 1.

280. The Commission made the following findings with respect to mitigation on bats in Decision 2011-329, which approved the Wild Rose 2 Wind Power Plant:

98. Further, the Commission considers that impacts on bats, birds and other wildlife in the [Wild Rose 2 Wind Power Plant (WR2)] area may be mitigated. Mitigation is mainly achieved by the location of turbines such as avoiding landscape features that attract or "funnel" birds and bats. ASRD [now Alberta Environment and Parks] indicated that additional site-specific mitigation for species at risk have been employed where necessary. As noted above, a mitigation plan was accepted by ASRD to offset the impacts

<sup>243</sup> Exhibit 22563-X0019, April 13, 2017 *Renewable Energy Referral Report* for the project. Emily Herdman of AEP WM, PDF page 2.

<sup>244</sup> Exhibit 22563-X0019, April 13, 2017 *Renewable Energy Referral Report* for the project. Emily Herdman of AEP WM, PDF page 2.

<sup>245</sup> *Bat Mitigation Framework for Wind Power Development*, Alberta Government, June 19, 2013 version, page 3.

<sup>246</sup> Exhibit 22563-X0006, Alberta Environment and Parks Referral Letter, PDF page 8.

<sup>247</sup> *Bat Mitigation Framework for Wind Power Development*, Alberta Government, June 19, 2013 version, page 5.

of the placement of 17 turbines on native grasslands. The observance of the 100-metre buffer between the turbine blade tip and the edge of a wetland is another measure protective of bats, birds and other wildlife. Furthermore, NaturEner testified that nine kilometres of overhead interconnection line was necessary to connect parts of the proposed WR2 because of the distance between two parts, project costs, and to avoid disturbance to the wetland in the area. However, the overhead interconnection line would parallel an existing road allowance to avoid habitat fragmentation within the adjacent native grasslands areas. Also, perch arrestors are proposed on the poles to avoid strikes or electrocution of birds. The construction of this line is expected to occur in the fall, outside of the breeding season.

99. It appears to the Commission from the evidence that altering the cut-in speed of the wind turbines or shutting down operation of all or some wind turbines at night during bat migration periods are effective methods to mitigate bat mortality. However, the Commission considers that at this time, it has only predictions of bat mortality in WR2 and a number of unknowns exist regarding the effect of the placement of turbines within the proposed WR2, and the topography in the area where WR2 is to be located.

100. The Commission also considers important the evidence regarding the voiding of the wind turbine warranties if operated at higher cut-in speeds.

101. In addition, the post-construction monitoring plan will be developed and implemented as noted above, and the results will provide actual numbers of bat fatalities at the site of WR2. As a result, at this time, should approval be granted for the project, a condition to impose an increase in the cut-in speed of the wind turbines or imposing a shut down in operation at night during the fall bat migration period would be premature.

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103. As provided in the ASRD sign-off letter, if post-construction monitoring indicates unacceptable fatalities, NaturEner may be required to employ additional mitigation by implementing adaptive techniques such as amending turbine operation.<sup>248</sup>

281. In-line with the above approach, the Commission finds that compliance with the standards of another regulatory agency, in this case AEP, is persuasive evidence that approval of the project is in the public interest.<sup>249</sup>

282. The Commission understands, given development constraints in the project area and the number of wind turbines proposed, that 168 metres was the farthest distance wind turbines could be set back from the valley/coulee features. However, many of the bat detectors located more than 500 metres from the edge of a valley/coulee break recorded greater than 2.0 bat passes per detector a night.<sup>250</sup> In determining conditions that would be appropriate for the project if the project is approved, the Commission has taken into account that Golder testified that there are no

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<sup>248</sup> Decision 2011-329: NaturEner Energy Canada Inc. 162-MW Wild Rose 2 Wind Power Plant and Associated Eagle Butte Substation, Proceeding 625, Application 1606143, August 2, 2011.

<sup>249</sup> Exhibit 22563-X0051, First Round of IR Responses from Capital Power. Response to IR Capital Power-AUC-2017May18-005(a), PDF page 7; Transcript Volume 1, page 110, line 1.

<sup>250</sup> Transcript Volume 1, pages 121-123; Transcript Volume 2, page 442, lines 14-17.

wildlife studies that support selection of this 168-metre setback<sup>251</sup> and that the sufficiency of the setback should be determined by the results of post-construction monitoring.<sup>252</sup>

283. A key factor in deciding what mitigation measures to protect bats, if any, should be placed on the project's approval is the results of the nearby Halkirk 1 bat surveys. This is because it gives the Commission valuable information regarding cumulative effects and provides an estimate of the project's impact on bats. At Halkirk 1, hoary bats were being killed at a disproportionately high rate compared to other bat species.<sup>253</sup> It appears to the Commission from the evidence that the mitigation measures such as altering the cut-in speed of the wind turbines or shutting down operation of all or some wind turbines at night during bat migration periods are effective methods to mitigate bat mortality. However, the Commission considers that at this time, it has only predictions of bat mortality and finds that a number of unknowns exist regarding the effect of the placement of wind turbines within the project area.

284. In deciding if the mitigation measures proposed by Capital Power will adequately protect the environment, the Commission has also taken into account whether the bat species observed during Golder's surveys are listed as sensitive. The evidence presented is that silver-haired bats, which have a provincial "sensitive" status, and hoary bats which are described as "sensitive to mortality at current and potentially future wind energy projects"<sup>254</sup> were among the most common species detected. The presence of these bats weighs in favour of imposing robust mitigation measures.

### 10.3.3.3 Conclusion on wildlife effects

285. Based on the evidence on the record, including the environmental setting of the project, the commitments made by Capital Power, the results of the Halkirk 1 post-construction wildlife monitoring, and the requirements/recommendations contained in the AEP Referral Report, the Commission determines that, should it approve the project, it would impose the following conditions:

- Capital Power shall complete amphibian surveys, following AEP survey protocols, prior to construction where ground disturbance may occur within 100 metres of Class III to V wetlands. Capital Power will communicate the results to AEP and implement any mitigation measures recommended by AEP.
- Capital Power shall keep the project's wildlife data current until the project is commissioned by updating the pre-construction wildlife field surveys as required.
- Capital Power shall abide by any requirements and commitments outlined in the AEP Referral Report and in the Post-Construction Monitoring and Mitigation Plan developed for the project. As necessary, Capital Power must continue to consult with AEP WM throughout construction and operation of the project; for example, consultation should occur if habitat features of sensitive wildlife species are discovered during future surveys or monitoring. Should Capital Power not implement any additional mitigation measures recommended by AEP, Capital Power shall file a letter outlining the reasons why it

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<sup>251</sup> Transcript Volume 1, page 102, lines 16-19.

<sup>252</sup> Transcript Volume 1, page 102, lines 1-15.

<sup>253</sup> Transcript Volume 1, page 127, lines 3-9.

believes such mitigation measures should not be required and the Commission will implement further process, if necessary.

- If any changes are made to the siting of the wind turbines<sup>255</sup>, access roads, collector lines, other infrastructure associated with the project, the construction schedule, or the proposed wildlife mitigation measures, Capital Power shall submit these changes to AEP WM for its further review and approval.
- Capital Power shall complete a minimum of three years of post-construction wildlife monitoring, and submit a report annually to AEP WM. If further mitigation is required or recommended by AEP, Capital Power shall file a copy of the post-construction wildlife monitoring with the Commission along with AEP's views. The Commission will then determine if further process is necessary.
- Capital Power shall monitor all of the wind turbines located within one kilometre of valley and coulee edges for bat mortalities, in consultation with AEP WM.
- For Wind Turbine T051, given the likelihood of migratory bat fatalities in the project area from the operation of the wind turbines without mitigation measures, the Commission directs Capital Power, in consultation with AEP WM, to implement any and all mitigation measures suggested by AEP prior to operation. The Commission understands that mitigation measures for bat mortalities could include:
  - increasing the wind turbine blade cut-in speed or rotor start-up wind speed;
  - stopping blades from idling during low wind speeds not conducive to electricity generation;
  - “feathering” or altering the angle of the wind turbine blades;
  - temporarily curtailing wind turbines, particularly the more problematic wind turbines located at higher bat fatality risk locations, during certain periods of the year (e.g., mid-summer to late fall), weather conditions (e.g., air temperature, dew-point, wind speed, wind direction, barometric pressure), and time of day (e.g., dusk to dawn) in which migratory bats are more active or vulnerable to wind turbine-related mortalities;
  - implementing, as necessary, any other bat mortality methods or technologies that are, or may become, available and are economically achievable (e.g., acoustic deterrents or using radar/infrared photography to detect bats).
- If the post-construction wildlife surveys indicate levels of bat mortalities in the vicinity of any of the wind turbines that exceed the *Bat Mitigation Framework for Wind Power Development* guidelines, Capital Power shall work with AEP to develop mitigation measures.

286. The Commission concludes that with diligent application of the conditions outlined above, the potential adverse wildlife effects from construction and operation of the project can be adequately mitigated.

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<sup>255</sup> Outside the 50 metres allowed in Rule 007.

## 11 Safety

### 11.1 Views of the applicant

287. With respect to traffic access concerns, Capital Power adjusted access roads and moved towers to accommodate large equipment, lessening adverse effects.<sup>256</sup> Capital Power stated that it would enter into a road utilization and development agreement with the County of Paintearth, prior to commencing construction, in order to work with the stakeholders to develop a traffic management plan to minimize the impact to the community.<sup>257</sup> Capital Power stated that upon selection of a Balance of Plant contractor, a detailed traffic management plan would be developed in consultation with landowners in order to minimize the impacts of dust, runoff and noise from vehicles delivering concrete and the operations of a concrete batch plant in the area.<sup>258</sup> In response to questions surrounding potential blockages to Township Road 400, Capital Power testified that it would work with the community to ensure that temporary blockages to traffic flow would be minimized and that “if there are shipments or anything that need to go through at a given time, we will work with the landowners at that time.”<sup>259</sup> Capital Power confirmed that the finalized traffic management plan would be shared with local residents and would be filed with the Commission.<sup>260</sup>

288. With respect to emergency response procedures, Capital Power stated that in advance of construction, its engineering, procurement and construction contractor would be in contact with local emergency responders to ensure that emergency preparedness would be addressed.<sup>261</sup> Capital Power stated that this process culminates in the development of a site-specific emergency response plan (SSERP) for the project. In testimony, Capital Power stated that it would develop this plan in consultation with stakeholders and emergency responders. Capital Power confirmed that it would “welcome any input that the BRG members have for the emergency response plan” and incorporate it where possible.<sup>262</sup> Capital Power also committed to providing the finalized SSERP to local landowners, residents and local emergency responders.<sup>263</sup>

289. Emergency response matters respecting fire mitigation would be covered in the SSERP, but Capital Power stated that each wind turbine has fire monitoring systems designed to suspend operations and alert the site manager in the event of a fire.<sup>264</sup> Capital Power stated that modern wind turbine design mitigates ice throw risk, and that the design includes a break system to stop the blade rotation in the event of ice build-up.<sup>265</sup>

290. Capital Power responded to security concerns stating that it would work with local law enforcement should any issues arise<sup>266</sup> and that residents could contact the plant manager with

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<sup>256</sup> Exhibit 22563-X0192, Reply Argument of Capital Power, PDF page 4, paragraph 7.

<sup>257</sup> Transcript Volume 2, PDF page 275, line 7.

<sup>258</sup> Transcript Volume 2, PDF page 366, line 8.

<sup>259</sup> Transcript Volume 2, PDF page 278, lines 14-17.

<sup>260</sup> Exhibit 22563-X0178, Undertaking Response 8, PDF page 3, number 10.

<sup>261</sup> Exhibit 22563-X0131, Reply Evidence of Capital Power, PDF page 11, paragraph 41.

<sup>262</sup> Transcript Volume 2, PDF page 297, lines 14-22.

<sup>263</sup> Exhibit 22563-X0184, Capital Power Final Argument, PDF page 26, paragraph 4.

<sup>264</sup> Exhibit 22563-X0184, Capital Power Final Argument, PDF page 21, Paragraph 4.

<sup>265</sup> Exhibit 22563-X0184, Capital Power Final Argument, PDF page 22, paragraph 1.

<sup>266</sup> Exhibit 22563-X0184, Capital Power Final Argument, PDF page 22, paragraph 2.

security concerns.<sup>267</sup> Capital Power stated that it was unaware of any increase in criminal activity associated with other wind projects and did not expect any increase associated with the project.<sup>268</sup>

291. Capital Power would also employ water trucks or other methods to control dust during the construction phase of the project.<sup>269</sup>

## 11.2 Views of the interveners

292. Members of the BRG raised several concerns about safety throughout the review process, including potential blockage of access roads during construction and the lack of fully developed and shared emergency response plans. The BRG members expressed concerns about noise, traffic and dust issues resulting from the project's construction, operation and maintenance. Some members of the BRG have experienced issues with increased traffic due to the passage of heavy equipment and trucks that were involved with previous projects, and the group also noted that access to roads in the area is already limited at times for large farm equipment.<sup>270</sup>

293. The BRG raised concerns with respect to access to Township Road 400 during the project's construction. The BRG stated that Township Road 400 is the lifeline of the community, and if this roadway was blocked, residential and emergency access to hospitals, schools and communities would be severely limited. Mr. Borgel and Ms. Anderson submitted that they had concerns regarding road closures as they believed it would make it extremely difficult for emergency responders to respond within the project area.<sup>271</sup>

294. The BRG also raised concerns about the emergency response and public safety issues associated with the project including fire emergency response, and ice throw. In regard to fire emergency response, the BRG stated that the nearest local fire responder department is relatively small and staffed by volunteers. Given that Capital Power has yet to develop a SSERP, BRG members have not had an opportunity to review any proposed plans, provide feedback or be engaged in the process of developing the SSERP. The BRG stated that a hazard and risk assessment had not been prepared by Capital Power and thus had not been made available to them.<sup>272</sup>

295. The BRG acknowledged Capital Power's commitments regarding managing roads, traffic and dust. The BRG further stated that "as long as Capital Power limits the extent of road blockages, provides alternate access routes to their residences, and consults with the members regarding traffic management, this commitment is acceptable to the BRG", in reference to Capital Power's list of commitments provided as an undertaking during the hearing.<sup>273</sup>

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<sup>267</sup> Transcript Volume 2, page 343, lines 1-2.

<sup>268</sup> Exhibit 22563-X0184, Capital Power Final Argument, PDF page 22, paragraph 2.

<sup>269</sup> Exhibit 22563-X0178, Undertaking Response 8, PDF page 3, number 10.

<sup>270</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 66, paragraph 2.

<sup>271</sup> Exhibit 22563-X0112, B2 Landowner Submissions, PDF page 26, paragraph 3 and PDF page 275, paragraph 1; Exhibit 22563-X0109, BRG Letters of Support, PDF page 18, paragraph 4.

<sup>272</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 62, paragraphs 2-4.

<sup>273</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 66, paragraph 198; Exhibit 22563-X0178, Capital Power Undertaking Response 8, PDF page 2, paragraph 6.

296. Ms. Anderson testified that she was concerned about the spread of fly ash from the local fly ash dump near her residence. Ms. Anderson submitted that she believed that the fly ash would interfere with wind turbine operation and electronic instrumentation in the area.<sup>274</sup> Members of the BRG also raised a concern during the hearing that if access roads are unsecured it could lead to trespassing and other criminal activity.<sup>275</sup>

### 11.3 Commission findings

297. The Commission has considered the safety concerns raised by the BRG and, for the reasons that follow, considers that the commitments made by Capital Power sufficiently mitigate the project's potential safety and security impacts.

298. The Commission finds that the commitments that Capital Power has made regarding the development of the SSERP are acceptable. The BRG had several concerns regarding fire mitigation and emergency response, and Capital Power has committed to developing a SSERP in consultation with stakeholders and emergency responders in the project area. Capital Power has also committed to sharing the finalized SSERP with stakeholders and emergency responders.<sup>276</sup>

299. The BRG also requested that the Commission require Capital Power to provide landowners and residents the opportunity to comment on the finalized SSERP, and allow for future revisions of the SSERP as needed.<sup>277</sup> The Commission does not consider that a subsequent opportunity to revise the finalized SSERP is necessary, given Capital Power's commitments to which the BRG has already accepted which include development of the SSERP through a consultative process.

300. The BRG was concerned with blockages of important roadways, which could prevent residents and emergency services from accessing sections of the community. Capital Power has committed that before commencing construction it will enter into a Road Utilization and Development Agreement and work with stakeholders, emergency responders and the County of Paintearth to develop a traffic management plan. Capital Power stated that it would submit the finalized traffic management plan to the Commission before commencing construction, as well as share the plan with stakeholders.<sup>278</sup>

301. The Commission accepts Capital Power's commitments and, if the project is approved, expects Capital Power to uphold its commitments.<sup>279</sup>

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<sup>274</sup> Exhibit 22563-X0110, B1 Landowner Submissions, PDF page 278, paragraph 5.

<sup>275</sup> Transcript Volume 2, page 342, line 14.

<sup>276</sup> Exhibit 22563-X0178, Undertaking Response 8, PDF page 2, number 6.

<sup>277</sup> Exhibit 22563-X0187, BRG Final Argument, PDF page 62, paragraph 4.

<sup>278</sup> Exhibit 22563-X0178, Undertaking Response 8, PDF page 3, number 10.

<sup>279</sup> Exhibit 22563-X0178, Undertaking Response 8, PDF pages 2 and 3, numbers 6 and 10.

## 12 Project decommissioning and reclamation

### 12.1 Views of the applicant

302. With respect to decommissioning and reclamation activities, Capital Power made the following commitments:

- Capital Power would perform pre-construction soil surveys of participating landowners' land to develop soil conservation and handling plans for each project access road and wind turbine pad.
- Using information obtained in pre-construction soil surveys, Capital Power would, in consultation with its Balance of Plant contractor, develop a Conservation and Reclamation Plan as part of the Project Specific Environmental Management Plan for the project.
- Capital Power would conserve both topsoil and upper subsoil layers during construction.
- Capital Power would reclaim lands to an "equivalent land capability" that existed prior to disturbance.
- Should the decision be made to decommission the project, Capital Power would reclaim soil to a depth of approximately one metre.
- Capital Power would comply with current applicable reclamation standards at the time of decommissioning. If no legislative requirements pertaining to reclamation are in place at the time of decommissioning, Capital Power would submit a reclamation plan to the Commission for approval.<sup>280</sup>

303. In response to concerns from the BRG regarding Capital Power's ability to reclaim the project at its end-of-life, Capital Power noted that none of the wind turbines would be located on lands owned by members of the BRG. Capital Power confirmed in testimony that it would perform pre-construction surveys of all participating landowners' land, rather than solely upon request.<sup>281</sup>

304. Capital Power submitted that the costs of reclaiming the project are largely addressed by the project's "inherent value" in the form of steel and copper, which renders salvage highly valuable. Capital Power differentiated oil and gas facilities "where there is zero value when companies walk away", stating that in this case there is salvage value associated with the facilities which would roughly equal the costs of reclamation.<sup>282</sup> Capital Power further argued that there is intrinsic value associated with the site, as it has the potential to be repowered. That is, even after the wind turbines have reached their end-of-life, the project would still have existing useful infrastructure such as collector lines and it could be possible to replace the wind turbines and repower the site rather than creating an entirely new project.

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<sup>280</sup> Exhibit 22563-X0178, Undertaking Response 8, PDF pages 2-3.

<sup>281</sup> Transcript Volume 2, page 325, lines 6-19.

<sup>282</sup> Transcript Volume 2, page 269, lines 8-18; Transcript Volume 2, page 394, lines 15-24.

305. Capital Power confirmed in testimony that although Capital Power Corporation, its parent company, would not hold the approval for the project, it is nonetheless Capital Power Corporation which would backstop the commitments to reclaim the project.<sup>283</sup>

## 12.2 Views of the interveners

306. The BRG acknowledged Capital Power's listed commitments with respect to reclamation activities, but submitted that Capital Power should commit to set aside funds to cover the costs of decommissioning to help defray such costs should Capital Power become insolvent in the future.

307. The BRG questioned whether the salvage value of steel and copper from the project would be sufficient to cover reclamation costs at the project's end-of-life, estimated at around 30 years. The BRG noted that in Capital Power's testimony, it was acknowledged that the salvage value is based on assumptions of projected market values of steel and copper in the future. The BRG submitted that there is no certainty that those values will be sufficient to cover end-of-life costs.

308. Further, the BRG argued that Capital Power's claim that the project has "inherent value" through the possibility of repowering the site is merely speculative, and noted that there is currently no plan developed in that regard.

## 12.3 Commission findings

309. With respect to the reclamation concerns raised in this proceeding, the Commission reiterates its views stated in Decision 22296-D01-2017 and Decision 22447-D01-2017:<sup>284</sup>

27. ...the Commission observes that the reclamation obligations for certain power generation facilities in Alberta, including solar power generating facilities, are set out in the *Environmental Protection and Enhancement Act*, which is administered and enforced by Alberta Environment and Parks.

28. Under the *Environmental Protection and Enhancement Act*, an operator carrying out an "activity" (as defined in the act and/or its regulations) has a duty to reclaim specified land and obtain a reclamation certificate from Alberta Environment and Parks. To obtain a reclamation certificate an operator must reclaim the land in accordance with the standards set out in the *Environmental Protection and Enhancement Act* or as otherwise directed by Alberta Environment and Parks.

...

32. The Commission expects that the applicant will comply with all applicable requirements for conservation and reclamation of the project site under the *Environmental Protection and Enhancement Act* at the end of the project's life, including the requirement to obtain a reclamation certificate. However, if for any reason, at the time of decommissioning, there are no statutory reclamation requirements in place for solar electric power generating facilities, the applicant will be required to submit a reclamation plan to the Commission for its review and approval.

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<sup>283</sup> Transcript Volume 2, page 397, lines 14-19.

<sup>284</sup> Decision 22447-D01-2017, C&B Alberta Solar Development ULC – Vauxhall Solar Power Plant, July 4, 2017, paragraphs 28-29, citing Decision 22296-D01-2017, C&B Alberta Solar Development ULC – Hays Solar Power Plant, Proceeding 22296, Application 22296-A001, June 7, 2017, paragraphs 27-32.

310. The Commission finds that the commitments provided by Capital Power reasonably address the concerns raised with respect to the project's decommissioning and reclamation.<sup>285</sup>

311. With respect to concerns raised regarding the applicant's ability to cover reclamation costs at the project's end-of-life, the Commission considers that Capital Power has provided reasonable certainty that reclamation activities would be conducted in the future in accordance with its current obligations to do so. The Commission considers that the project's "intrinsic value", that is, the possibility that the site would be repowered in the future after decommissioning, is speculative. However, the Commission considers it reasonable to expect that at least some portion of reclamation costs will be covered by the project's salvage value. Further, the Commission finds that Capital Power's assurance that its parent corporation is ultimately financially responsible for such obligations provides reasonable certainty that project reclamation will be adequately fulfilled at the project's end-of-life, should those costs not be covered by the project's salvage value.

312. The Commission finds that should it approve this project, it expects Capital Power to adhere to its commitments outlined above, and that the following condition of approval is warranted:

- The applicant shall comply with current applicable reclamation standards at the time of decommissioning. If no legislative requirements pertaining to reclamation are in place at the time of decommissioning, the applicant will submit a reclamation plan to the Commission for approval.

### **13 Summary of findings**

313. In Section 3 of this decision, the Commission explained the legislative scheme in place for the consideration and approval of power plants in Alberta. In this section, the Commission applies that legislative scheme in light of the findings it has made above.

314. The Commission finds that the applications meet the informational and other requirements set out in Rule 007. The Commission also finds that the applicant's PIP and consultation meet the regulatory requirements of Rule 007.

315. In accordance with Section 17 of the *Alberta Utilities Commission Act*, the Commission must decide whether approval of the project is in the public interest having regard to its social and economic effects and its effects on the environment.

316. Regarding the social effects of the project, the Commission finds that the construction and operation of the project will not affect the health of nearby residents and livestock. With regard to potential land use impacts, agricultural impacts, ground and surface water impacts, property value impacts and safety concerns, the Commission is not convinced that the project will result in the adverse impacts advanced by the BRG.

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<sup>285</sup> Exhibit 22563-X0178, Undertaking Response, PDF pages 2-3.

317. The Commission is satisfied that the applicant's estimated daytime and nighttime predicted cumulative sound levels for the project meet the requirements of Rule 012. The Commission concludes that compliance with daytime and nighttime PSL for the project, which is mandatory, will protect nearby residents from noise related health effects, including those residents with pre-existing medical conditions. The Commission will impose conditions on its approval of the project to ensure the project strictly complies with Rule 012 and its permissible sound levels.

318. Regarding the environmental effects of the project, an important consideration for the Commission was the applicant's compliance with various AEP guidelines applicable to the project. The Commission regards compliance with the existing regulatory requirements administered by other public or government departments or agencies to be an important element when deciding if potential adverse impacts are acceptable. Accordingly, the AEP's decision to provide its *Renewable Energy Referral Report* on the project which included the measures proposed by Capital Power to mitigate its environmental effects is compelling evidence that the project's potential environmental impacts fall within the range of acceptability.

319. Having regard to the foregoing, the Commission finds that the negative effects of the project, which include visual impacts, noise, annoyance and impacts to the environment, can be mitigated to an acceptable degree. The Commission is hopeful that with further consultation with the Fetazes, Capital Power will be able to site Wind Turbine T051 such that it does not affect the safe operation of his airstrip. The Commission further finds that, with this mitigation, the positive benefits of the project outweigh its negative impacts.

320. The Commission is satisfied that approval of the project is consistent with the purposes of both the *Hydro and Electric Energy Act* and the *Electric Utilities Act* in that it will result in the safe, economic, orderly and efficient development of a new generation facility that will contribute to an efficient electricity market based on fair and open competition.

321. For the reasons discussed, the Commission finds that approval of the project is in the public interest, in accordance with Section 17 of the *Alberta Utilities Commission Act*.

322. The Commission's decision to approve the project is subject to the following conditions:

- (a) Capital Power shall engage with the Fetazes to locate Wind Turbine T051 in a manner which minimizes the effects of the wind turbine on the safe operation of the airstrip, to the extent possible within 50 metres of the applied-for coordinates. Prior to construction, and no later than two years from the date of this decision, Capital Power will advise the Commission of the results. The Commission will then decide if further process is necessary. [paragraph 71]
- (b) Capital Power shall test groundwater quality and level at all residential and stock wells within 500 metres of a wind turbine location. Testing will be conducted prior to the construction of the wind turbine foundation to establish baseline conditions, and then conducted one year after cessation of ground disturbance. Groundwater quality testing will analyze parameters listed in the Level C Diagnostic Groundwater Suite as described in *Water Quality Testing: Drinking Water issued by Alberta Agriculture and Forestry*. In the event there are impacts to groundwater wells due to construction and/or operations

related to the project, Capital Power will work with impacted landowners to implement appropriate mitigation on a case-by-case basis. [paragraph 97]

- (c) During the daytime period Capital Power will be allowed to operate all 74 wind turbines in Mode 0 STE within compliance with the permissible daytime sound level. [paragraph 177]
- (d) During the nighttime period two wind turbines will be allowed to operate in Mode 0 STE (T001B and T143), 70 wind turbines will be allowed to operate in Mode 1 STE and two wind turbines will be allowed to operate in Mode 2 STE (T106 and T140), within compliance with the permissible nighttime sound level. [paragraph 177]
- (e) Capital Power shall conduct post-construction comprehensive noise studies and an evaluation of low frequency noise at receptors R019, R033, R070 and R051, under representative operating conditions, and in accordance with Rule 012. Capital Power shall file all studies and reports relating to the post-construction noise survey and low frequency noise evaluation with the Commission within one year of connecting the power plant to the Alberta Interconnected Electric System. [paragraph 181]
- (f) Capital Power shall complete amphibian surveys, following Alberta Environment and Parks survey protocols, prior to construction where ground disturbance may occur within 100 metres of Class III to V wetlands. Capital Power will communicate the results to Alberta Environment and Parks and implement any mitigation measures recommended by Alberta Environment and Parks. [paragraph 285]
- (g) Capital Power shall keep the project's wildlife data current until the project is commissioned by updating the pre-construction wildlife field surveys as required. [paragraph 285]
- (h) Capital Power shall abide by any requirements and commitments outlined in the Alberta Environment and Parks Referral Report and in the Post-Construction Monitoring and Mitigation Plan developed for the project. As necessary, Capital Power must continue to consult with Alberta Environment and Parks Wildlife Management throughout construction and operation of the project; for example, consultation should occur if habitat features of sensitive wildlife species are discovered during future surveys or monitoring. Should Capital Power not implement any additional mitigation measures recommended by Alberta Environment and Parks, Capital Power shall file a letter outlining the reasons why it believes such mitigation measures should not be required and the Commission will implement further process, if necessary. [paragraph 285]
- (i) If any changes are made to the siting of the wind turbines, access roads, collector lines, and other infrastructure associated with the project, the construction schedule, or the proposed wildlife mitigation measures, Capital Power shall submit these changes to Alberta Environment and Parks Wildlife Management for its further review and approval. [paragraph 285]
- (j) For Wind Turbine T051, given the likelihood of migratory bat fatalities in the project area from the operation of the wind turbines without mitigation measures, the Commission directs Capital Power, in consultation with Alberta Environment and Parks Wildlife Management, to implement any and all mitigation measures suggested by

Alberta Environment and Parks prior to operation. The Commission understands that mitigation measures for bat mortalities could include:

- increasing the wind turbine blade cut-in speed or rotor start-up wind speed;
  - stopping blades from idling during low wind speeds not conducive to electricity generation;
  - “feathering” or altering the angle of the wind turbine blades;
  - temporarily curtailing wind turbines, particularly the more problematic wind turbines located at higher bat fatality risk locations, during certain periods of the year (e.g., mid-summer to late fall), weather conditions (e.g., air temperature, dew-point, wind speed, wind direction, barometric pressure), and time of day (e.g., dusk to dawn) in which migratory bats are more active or vulnerable to wind turbine-related mortalities;
  - implementing, as necessary, any other bat mortality methods or technologies that are, or may become, available and are economically achievable (e.g., acoustic deterrents or using radar/infrared photography to detect bats). [paragraph 285]
- (k) Capital Power shall complete a minimum of three years of post-construction wildlife monitoring, and submit a report annually to Alberta Environment and Parks Wildlife Management. If further mitigation is required or recommended by Alberta Environment and Parks, Capital Power shall file a copy of the post-construction wildlife monitoring with the Commission along with Alberta Environment and Parks’ views. The Commission will then determine if further process is necessary. [paragraph 285]
- (l) Capital Power shall monitor all of the wind turbines located within one kilometre of valley and coulee edges for bat mortalities, in consultation with Alberta Environment and Parks Wildlife Management. [paragraph 285]
- (m) If the post-construction wildlife surveys indicate levels of bat mortalities in the vicinity of any of the wind turbines that exceed the *Bat Mitigation Framework for Wind Power Development* guidelines, Capital Power shall work with Alberta Environment and Parks to develop mitigation measures. [paragraph 285]
- (n) The applicant shall comply with current applicable reclamation standards at the time of decommissioning. If no legislative requirements pertaining to reclamation are in place at the time of decommissioning, the applicant will submit a reclamation plan to the Commission for approval. [paragraph 312]

323. In approving the project the Commission has considered and relied upon the commitments made by Capital Power in relation to the project. The Commission expects Capital Power to follow through on all commitments made during this proceeding. These commitments include, but are not limited to, all of the commitments listed in Undertaking Response 8 and attached as Appendix B to this decision. Should the Commission receive a complaint that Capital Power has not adhered to its commitments, the Commission may initiate a review in accordance with Rule 016: *Review of a Commission Decision*.

## 14 Decision

324. Pursuant to sections 11 and 19 of the *Hydro and Electric Energy Act*, the Commission approves the power plant application and grants Capital Power the approval set out in Appendix 1 – Approval 22563-D02-2018 to construct and operate the Halkirk 2 Wind Power Project.

325. Pursuant to sections 14, 15 and 19 of the *Hydro and Electric Energy Act*, the Commission approves the substation application and grants Capital Power the permit and licence set out in Appendix 2 – Permit and Licence 22563-D03-2018 to construct and operate the Goldeye 620S Substation.

326. The appendices will be distributed separately.

Dated on April 11, 2018.

### Alberta Utilities Commission

*(original signed by)*

Neil Jamieson  
Panel Chair

*(original signed by)*

Tracee Collins  
Commission Member

*(original signed by)*

Joanne Phillips  
Commission Member

## Appendix A – Standing ruling



Appendix B -  
StandingRuling.pdf

(consists of 3 pages)

**Appendix B – Table of commitments**

No.	Category	Commitments
1.	Noise	<p>a) Capital Power will conduct a post-construction comprehensive noise monitoring, including an evaluation of low frequency noise, at receptors R019, R033, and R070 under representative conditions, in accordance with Alberta Utilities Commission (“AUC”) Rule 012: Noise Control. Capital Power will file all studies and reports relating to the post-construction comprehensive noise study with the Commission.</p> <p>b) Capital Power will remodel its Project Noise Impact Assessment (“NIA”), according to AUC Rule 012, to include a new residence at NE6-40-14-W4 proposed by Mr. Dwayne Felzien, should the residence be constructed prior to construction of the Project.</p> <p>c) Capital Power will operate facility turbines in modes as described in the NIA.</p>
2.	Shadow Flicker	<p>a) Capital Power will investigate all participating and non-participating landowner concerns related to facility shadow flicker, work directly with landowners to understand the issue and implement appropriate mitigation.</p>
3.	Groundwater	<p>a) Capital Power will test groundwater quality and level at all residential and stock wells within 500 metres of a turbine location. Testing will be conducted prior to the construction of the turbine foundation to establish baseline conditions, and then conducted one year after cessation of ground disturbance. Groundwater quality testing will analyze parameters listed in the Level C Diagnostic Groundwater Suite as described in <i>Water Quality Testing: Drinking Water</i> issued by Alberta Agriculture and Forestry.</p> <p>b) In the unlikely event there are impacts to groundwater wells due to construction and/or operations related to the facility, Capital Power will work with impacted landowners to implement appropriate mitigation on a case-by-case basis.</p>
4.	Wildlife Monitoring	<p>a) Capital Power will conduct pre- and post-construction wildlife monitoring as per the Renewable Energy Referral Report issued by Alberta Environment and Parks (“AEP”) on April 13, 2017.</p> <p>b) Capital Power will consult with the AEP Wildlife Management biologist to develop acceptable alternative mitigation if the nests of any species-at-risk are discovered during the pre-construction nest search survey, and if the AEP recommended minimum setbacks cannot be met.</p>

No.	Category	Commitments
		c) Capital Power will submit a copy of post-construction bird and bat monitoring results to the AUC that excludes the raw data, along with correspondence from AEP on their views on the surveys.
5.	Turbine Lighting	a) Capital Power will ensure the minimum permissible number of navigation lights is used throughout the facility and the duration and synchronization of flashes are kept to a minimum per minute.
6.	Safety and Emergency Response	<p>a) Capital Power will work with local landowners, residents, emergency responders and the County to ensure there are no risks to personal safety or emergency response access during construction.</p> <p>b) Prior to commencing construction, Capital Power will require its Balance of Plant contractor to develop a Site Specific Emergency Response Plan ("SSERP") in consultation with local landowners, residents and local emergency responders. Once finalized, Capital Power will communicate and share the SSERP with local landowners, residents and local emergency responders.</p> <p>c) Prior to commencing operations, Capital Power will develop a SSERP in consultation with local landowners, residents and local emergency responders. Once finalized, Capital Power will communicate and share the SSERP with local landowners, residents and local emergency responders.</p>
7.	Aerial Spraying	<p>a) Capital Power will develop a contact list of all known aerial spraying companies/individuals in near proximity to the Project Area, and provide each with contact information and a protocol for spraying near the Project turbines.</p> <p>b) Capital Power will work with pilots operating near the Project to minimize impacts to aerial spraying operations. If spraying is anticipated within 150 metres of a turbine, the turbine may be suspended from operating during that period.</p>
8.	Agricultural Impacts	a) Capital Power will work with landowners hosting Project infrastructure to minimize general agricultural impacts. No construction activities will occur on non-participating landowner land. To the extent impacts arise, Capital Power will work with affected parties to find reasonable mitigation.
9.	Reclamation/Decommissioning	<p>a) Capital Power will perform pre-construction soil surveys of participating landowner's land to develop soil conservation and handling plans for each Project access road and turbine pad.</p> <p>b) Using information obtained in pre-construction soil surveys, Capital Power will, in consultation with its Balance of Plant contractor, develop a Conservation and Reclamation Plan as</p>

No.	Category	Commitments
		<p>part of the Project Specific Environmental Management Plan (“PSEMP”) for the Project.</p> <p>c) Capital Power commits to conserve both topsoil and upper subsoil layers during construction.</p> <p>d) Capital Power will reclaim lands to an “equivalent land capability” that existed prior to disturbance.</p> <p>e) Should the decision be made to decommission the Project, Capital Power will reclaim soil to a depth of approximately 1 metre.</p> <p>f) Capital Power will comply with current applicable reclamation standards at the time of decommissioning. If no legislative requirements pertaining to reclamation are in place at the time of decommissioning, Capital Power will submit a reclamation plan to the AUC for approval.</p>
10.	Roads, Traffic, and Dust	<p>a) Capital Power will enter into a Road Utilization and Development Agreement (“RUDA”) with the County of Paintearth prior to commencing construction (Condition 5 of Municipal Development Permit).</p> <p>b) Once Capital Power selects a Balance of Plant contractor and turbine supplier, a detailed Traffic Management Plan (“TMP”) will be developed for the Project in consultation with landowners and local residents.</p> <p>c) Capital Power will share the Project TMP with local landowners and residents, and will file the TMP with the AUC.</p> <p>d) Capital Power will use water trucks or other methods to control dust during the construction phase of the Project.</p>

**Appendix C – Summary of Commission directions with required deliverables**

This section is provided for the convenience of readers. In the event of any difference between the directions in this section and those in the main body of the decision, the wording in the main body of the decision shall prevail.

1. Capital Power shall engage with the Fetazes to locate Wind Turbine T051 in a manner which minimizes the effects of the wind turbine on the safe operation of the airstrip, to the extent possible within 50 metres of the applied-for coordinates. Prior to construction, and no later than two years from the date of this decision, Capital Power will advise the Commission of the results. The Commission will then decide if further process is necessary. This direction will be a condition of Power Plant Approval 22563-D02-2018.
2. Capital Power shall conduct post-construction comprehensive noise studies and an evaluation of low frequency noise at receptors R019, R033, R070 and R051, under representative operating conditions, and in accordance with Rule 012. Capital Power shall file all studies and reports relating to the post-construction noise survey and low frequency noise evaluation with the Commission within one year of connecting the power plant to the Alberta Interconnected Electric System. This direction will be a condition of Power Plant Approval 22563-D02-2018.

August 23, 2017

To: Parties currently registered on Proceeding 22563

**Capital Power Corporation  
Halkirk 2 Wind Power Project  
Proceeding 22563  
Applications 22563-A001 to 22563-A002**

**Ruling on standing**

1. In this ruling, the Alberta Utilities Commission decides whether to hold a public hearing to consider applications by Capital Power Corporation for approval to construct and operate a 148-megawatt wind power plant and a 240-kilovolt substation, collectively to be designated as the Halkirk 2 Wind Power Project (the proposed project), in the County of Paintearth, Alberta.
2. The Commission must hold a public hearing if persons who have filed a statement of intent to participate in Proceeding 22563 have demonstrated that they have rights that may be “directly and adversely affected” by the Commission’s decision. Such a person may participate fully in the hearing, including giving evidence, questioning of witnesses, and providing argument. This permission to participate is referred to as standing.
3. The Commission issued a notice of applications for Proceeding 22563 on June 9, 2017. In response to the notice, the Commission received 13 statements of intent to participate from individuals, families and interested parties expressing their concerns or support for the proposed project.
4. The Commission has authorized me to communicate its decision on standing.

**Ruling**

5. The Commission is satisfied that the individuals and families listed in Schedule A to this ruling have demonstrated that they have legal rights that may be directly and adversely affected by the Commission’s decision on the applications. The persons listed in Schedule A all own land in close proximity to the proposed project and have demonstrated that the Commission’s decision on the applications has the potential to result in a direct and adverse effect on them. The potential effects described by these individuals and families include proximity of the proposed project, decreased property values, visual effects, increased noise, interference with agricultural operations, negative health effects and effects on the environment.
6. Circle Square Ranch filed a statement of intent to participate objecting to the proposed project’s approval where it indicated that it is a public facility for youth. Its facility is located approximately six kilometres from the proposed project’s site. Circle Square Ranch’s concerns related to the proposed project’s visibility which it stated would affect its country setting. While proximity to a project is not the only factor that the Commission will consider when reviewing an

application for standing, it is an important one. Given Circle Square Ranch's proximity to the proposed project, the Commission finds there to be an insufficient connection between the proposed project's visual impacts and Circle Square Ranch's lands to meet the standing test. Accordingly, standing is denied. Circle Square Ranch has two options to participate in the hearing. Firstly, it may provide a brief statement to the Commission that describes its views on the applications at the public hearing. However, if all persons with standing withdraw their objections, the Commission may cancel the hearing even if parties without standing (such as Circle Square Ranch) have expressed a desire to participate in that hearing. Secondly, it may create or join a landowner group with one or more parties with standing.

7. Should you have any questions, please contact the undersigned at 403-592-4499 or by email at [shanelle.h.sinclair@auc.ab.ca](mailto:shanelle.h.sinclair@auc.ab.ca).

Yours truly,

Shanelle Sinclair  
Commission Counsel

Attachment

**Schedule A - Persons with standing in Proceeding 22563**

<b>Name</b>
Jackson, Barry
Felzien, Dwayne
Felzien, Jason
Vockeroth, Peggy and Terry
Brown, Thomas and Doreen
Coulthard, Donald and Geraldine
Fuller, Adam and Rhonda
Anderson, Brenda and Borgel, Gerald
Perreault, Brian
Fuller, Kelly
Fuller, Alden
Borgel, Carl and Sharon
Banbury, Dan and Charlene
Perrault, Alan