



**RES Forty Mile Wind GP Corp.**

**Forty Mile Wind Power Project Amendments**

**June 9, 2023**

**Alberta Utilities Commission**

Decision 27561-D01-2023

RES Forty Mile Wind GP Corp.

Forty Mile Wind Power Project Amendments

Proceeding 27561

Applications 27561-A001 to 27561-A003

June 9, 2023

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## Contents

<b>1</b>	<b>Decision summary</b> .....	<b>1</b>
<b>2</b>	<b>Introduction</b> .....	<b>1</b>
	2.1 Application details .....	1
	2.2 Interveners.....	5
<b>3</b>	<b>Commission’s consideration of the applications</b> .....	<b>5</b>
	3.1 The public interest assessment.....	5
	3.2 Consideration of non-incremental effects with respect to aeronautics .....	7
	3.3 Bifurcation of the approval .....	8
<b>4</b>	<b>Discussion and findings</b> .....	<b>9</b>
	4.1 Noise .....	9
	4.1.1 Incremental noise impacts.....	10
	4.1.2 Low frequency noise.....	10
	4.1.3 Infrasound, low frequency noise and health effects.....	11
	4.1.4 Thresholds from World Health Organization and Health Canada.....	12
	4.1.5 Post-construction noise monitoring .....	14
	4.2 Shadow flicker .....	15
	4.3 Agricultural impacts.....	16
	4.4 Other concerns .....	17
	4.5 Environment.....	19
	4.5.1 Environmental impacts .....	19
	4.5.2 Post-construction monitoring and cumulative effects.....	21
<b>5</b>	<b>Conclusion</b> .....	<b>22</b>
<b>6</b>	<b>Decision</b> .....	<b>24</b>
	<b>Appendix A – Proceeding participants</b> .....	<b>25</b>
	<b>Appendix B – Oral hearing – registered appearances</b> .....	<b>26</b>
	<b>Appendix C – Summary of Commission conditions of approval in the decision</b> .....	<b>27</b>

**List of figures**

**Figure 1. Proposed location of the amended project..... 3**

**List of tables**

**Table 1. Approved turbines ..... 1**

**Table 2. Project updates..... 2**

**Table 3. Unaffected Turbines ..... 8**

**Table 4. Predicted cumulative sound levels at A. Jenkins’s residence ..... 10**

## 1 Decision summary

1. In this decision, the Alberta Utilities Commission partially approves applications from RES Forty Mile Wind GP Corp. to amend, construct and operate a wind power plant designated as the Forty Mile Wind Power Project and the Forty Mile 516S Substation, located in the Bow Island area. The balance of turbines not approved are within five nautical miles (9.26 kilometres) of the Bow Island Airport and will be discussed in a subsequent decision. The approved turbines are listed in the table below:

Table 1. Approved turbines

Phase	Turbines
Phase 1	T11, T12, T13, T24, T25, T26, T27, T28, T31, T32, T33, T34, T35, T36, T37, T38, T39, T40, T41, T42, T43, T44, T45, T46, T47, T48, T49
Phase 2	T104, T112, T113, T115, T116, T127, T128, T129, T59, T78, T81, T83, T85, T86, T87, T88, T90, T91, T92, T95, T96

## 2 Introduction

### 2.1 Application details

2. Pursuant to Approval 26910-D02-2021<sup>1</sup> and Permit and Licence 26910-D03-2021,<sup>2</sup> RES Forty Mile Wind GP Corp. (RES) has approval to construct and operate a 398.5-megawatt (MW) wind power plant designated as the Forty Mile Wind Power Project and the Forty Mile 516S Substation. The project is located within the County of Forty Mile No. 8, approximately five kilometres east of Bow Island, Alberta.

3. The project was initially approved in Decision 22966-D01-2018<sup>3</sup> (the approved project) Since the initial approval, two additional proceedings for the project have been approved. These proceedings were both applications for approval transfers and time extensions.<sup>4</sup>

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<sup>1</sup> Power Plant Approval 26910-D02-2021, Proceeding 26910, Application 26910-A001, November 3, 2021.

<sup>2</sup> Substation Permit and Licence 26910-D03-2021, Application 26910-A002, November 3, 2021.

<sup>3</sup> Decision 22966-D01-2018: BHEC-RES AB Renewables GP Corp. – Forty Mile Wind Power Project, Proceeding 22966, Application 22966-A001, April 30, 2018.

<sup>4</sup> Decision 25915-D01-2020: BHEC-RES AB Renewables GP Corp. – Forty Mile Wind Power Project Ownership Transfer and Time Extension, Proceeding 25915, Applications 25915-A001 and 25915-A002, October 26, 2020; Decision 26910-D01-2021, RES Forty Mile Wind GP Corp. – Forty Mile Wind Power Project Ownership Transfer and Time Extension, Proceeding 26910, Applications 26910-A001 and 26910-A002, November 3, 2021.

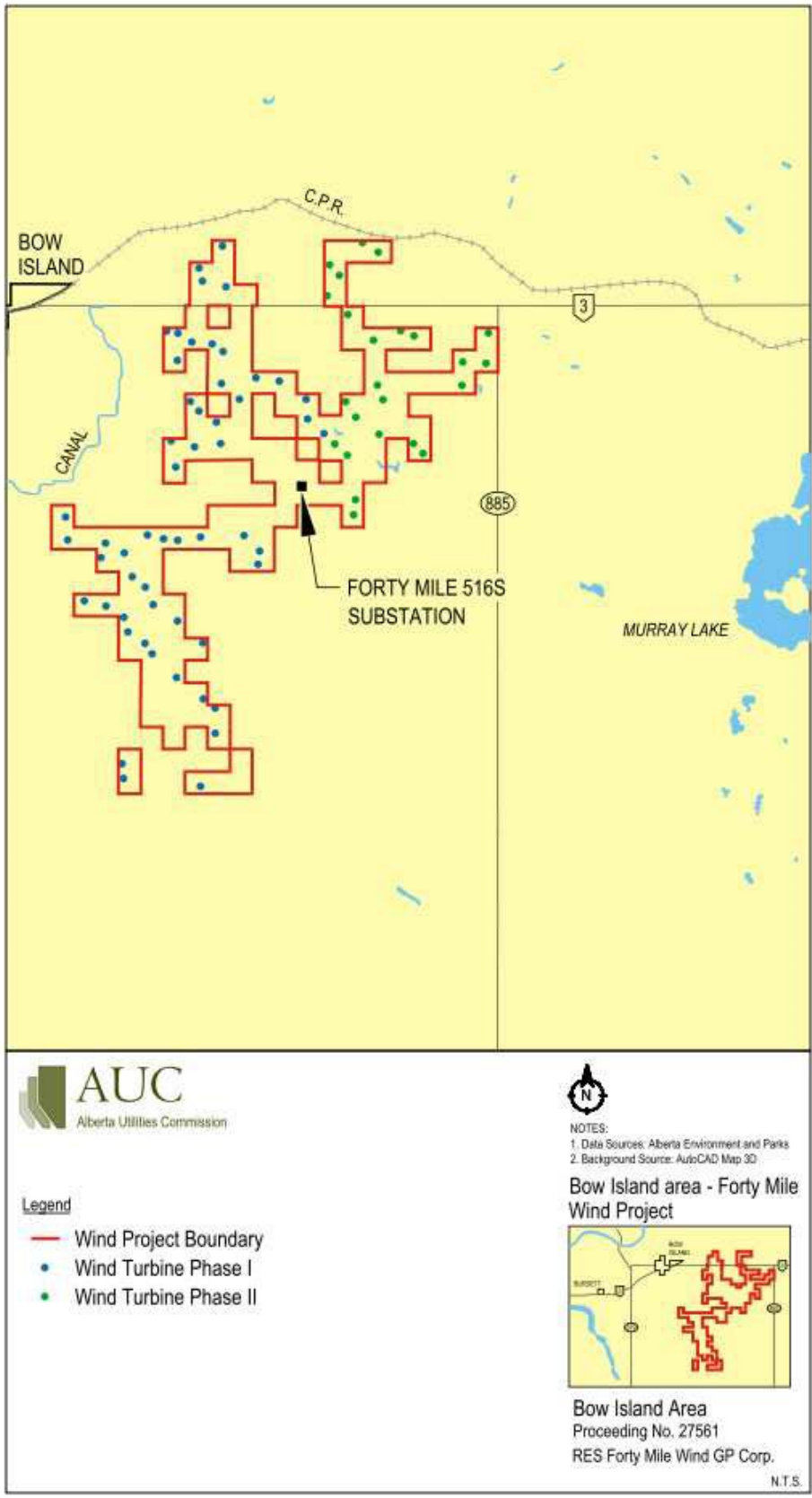
4. On July 29, 2022, RES applied to the Commission to amend the approved project by filing a letter of enquiry. The amendments include a change of turbine model and a reduction in turbine quantity as outlined in the following table:

**Table 2. Project updates**

	<b>Approved project</b>	<b>Amended project</b>
<b>Turbine model</b>	3.46-MW Gamesa G132	5.7-MW Nordex N155
<b>Turbine quantity</b>	115	70
<b>Maximum capability</b>	398.475 MW	399 MW
<b>Hub height</b>	101.5 metres	108 metres
<b>Rotor diameter</b>	132 metres	155 metres
<b>Total tip height</b>	167.5 metres	185.5 metres
<b>Permanent project footprint</b>	63.66 hectares	32.77 hectares

5. Further, access roads, collector lines and the operations and maintenance building locations were revised. The Forty Mile 516S Substation would also be modified by increasing the transformer rating from 90/120/150 megavolt amperes (MVA) to 94/125/156 MVA and by removing one circuit breaker and one disconnect switch. Finally, the power plant would now be split into two phases, with Phase 1 consisting of 49 proposed turbines and Phase 2 consisting of 21 proposed turbines (collectively, these amendments will be referred to as the amended project). The map below shows the proposed location of the amended project:

Figure 1. Proposed location of the amended project



6. RES's applications, reply evidence and undertaking responses included the following:
- A letter of enquiry application document that contained RES's explanation for the amendment request<sup>5</sup> and a final project update letter outlining additional refinements to the amended project.<sup>6</sup>
  - A participant involvement program report that summarized consultation with stakeholders regarding the amended project.<sup>7</sup>
  - A noise impact assessment (NIA) for the amended project, prepared by WSP Canada Inc.<sup>8</sup> (WSP),<sup>9</sup> and additional NIA analysis as a result of the final project update and intervenor evidence.<sup>10</sup>
  - A report prepared by Ollson Environmental Health Management regarding potential project impacts of the amended project on human health.<sup>11</sup>
  - A shadow flicker assessment for the amended project, prepared by WSP.<sup>12</sup>
  - A memorandum completed by WSP and sent to Alberta Environment and Protected Areas (AEPA)<sup>13</sup> to outline the environmental impacts of the amendments to the approved project.<sup>14</sup> This resulted in correspondence from AEPA advising that the approved project's renewable energy referral report has no expiry date, and therefore no extension was required from AEPA.<sup>15</sup>
  - Other documents on the amended project's environmental impacts, including a technical memorandum outlining the environmental impacts as a result of the amendments,<sup>16</sup> a report prepared by WSP detailing the final project update and its impacts to the environmental analysis,<sup>17</sup> a baseline wildlife survey update prepared by WSP and wetland

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<sup>5</sup> Exhibit 27561-X0001, Forty Mile LOE July 2022.

<sup>6</sup> Exhibit 27561-X0065, Forty Mile Project Update Letter Final.

<sup>7</sup> Exhibit 27561-X0008, Attachment G – Updated PIP Summary.

<sup>8</sup> Golder Associates Limited was retained by RES to complete various studies on the amend project's impacts. Golder Associates Limited was later acquired by WSP Canada Inc. During the hearing, witnesses from WSP Canada Inc., and formerly of Golder Associates Limited, confirmed the relevant documents that were prepared under their knowledge and control, and adopted them as their evidence. As a result, this decision will only refer to WSP Canada Inc. when referring to reports prepared by either company.

<sup>9</sup> Exhibit 27561-X0006, Attachment E – Updated NIA.

<sup>10</sup> Exhibit 27561-X0066, A. WSP Golder Review of November 2022 Project Update; and Exhibit 27561-X0193, Appendix B - Expert Report and Curriculum Vitae of Andrew Faszler of WSP Canada Inc.

<sup>11</sup> Exhibit 27561-X0194, Appendix C - Expert Report and Curriculum Vitae of Dr. Christopher A. Ollson of Ollson Environmental.

<sup>12</sup> Exhibit 27561-X0007, Attachment F – Updated Shadow Flicker Assessment.

<sup>13</sup> On October 24, 2022, the Ministry of Environment and Parks was renamed the Ministry of Environment and Protected Areas. Any references to AEP in Rule 033: Post-approval monitoring requirements for wind and solar power plants and elsewhere that relate to forward-looking obligations or commitments between the applicant and AEP should be interpreted as meaning Alberta Environment and Protected Areas.

<sup>14</sup> Exhibit 27561-X0011, Attachment H – Alberta Environment and Parks Consultation.

<sup>15</sup> Exhibit 27561-X0027.01, IRs round 1\_RES Responses, PDF pages 9-11.

<sup>16</sup> Exhibit 27561-X0012.01, Attachment I – 2022 Evaluation of Change.

<sup>17</sup> Exhibit 27561-X0066, A. WSP Golder Review of November 2022 Project Update.



field data,<sup>18</sup> and a report prepared by WSP with additional environmental analysis in response to intervenor evidence.<sup>19</sup>

- A list of commitments that RES made over the course of the proceeding.<sup>20</sup>

7. The scheduled completion date for the amended project is December 31, 2024, for the Forty Mile Wind Power Project Phase 1, and December 31, 2025, for the Forty Mile Wind Power Project Phase 2 and the Forty Mile 516S Substation.

## 2.2 Interveners

8. The Commission issued a notice of applications, in accordance with Rule 001: *Rules of Practice*. Anita Jenkins and Nathan Hofmann filed statements of intent to participate opposing the amended project and were granted standing in the proceeding.<sup>21</sup>

9. A. Jenkins owns and occupies lands within 800 metres of the amended project, in the southwest quarter of Section 8, Township 11, Range 9, west of the Fourth Meridian. She requested that the amended project be denied, or alternatively, that the turbines closest to her residence (T112, T113, T115 and T116) be moved at least two kilometres from her residence. A. Jenkins submitted evidence and argument on noise, infrasound, health effects, shadow flicker, agricultural impacts, visual impacts, and environmental impacts.

10. N. Hofmann owns and operates Top Crop Applicators (Top Crop) and stated that Top Crop owns land at the Bow Island Airport that Top Crop operates from. N. Hofmann's evidence and argument included submissions on aviation impacts, safety impacts at the Bow Island Airport, the impact of wind turbines around aerodromes specifically related to aerial spraying aircrafts, and the challenges aerial sprayers face when flying in and around wind turbines.

11. As a result of these statements of intent to participate, the Commission held an oral hearing to consider the amended project.

## 3 Commission's consideration of the applications

### 3.1 The public interest assessment

12. The Commission's proceedings are conducted to determine an outcome that meets the public interest mandate set out in its enabling legislation. When the Commission receives an application to construct and operate a power plant, Section 17(1) of the *Alberta Utilities Commission Act* is engaged. This provision states that, in addition to any other matters it may or must consider, the Commission must give consideration to whether the proposed project is in the public interest, having regard to the social and economic effects of the project and its effects on the environment.

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<sup>18</sup> Exhibit 27561-X0215, Attachment U2 - RES Forty Mile Wildlife Baseline Update\_RevBand, and Exhibit 27561-X0216, Attachment U3 & U4 - Proceeding27561\_RES\_Forty Mile\_Undertaking\_Wetlands\_Rev0.

<sup>19</sup> Exhibit 27561-X0195.01, Appendix D - Expert Report and Curriculum Vitae of Kristine Sare and Trevor Cuthbert of WSP Canada.

<sup>20</sup> Exhibit 27561-X0224, Attachment U8 - RES\_Forty\_Mile\_Wind\_GP\_Corp\_Commitment\_List.

<sup>21</sup> Exhibit 27561-X0052, AUC ruling on standing and process schedule.

13. The Commission must also take into consideration the purposes of the *Hydro and Electric Energy Act* and the *Electric Utilities Act*. These statutes provide the framework for a competitive generation market, where decisions about whether and where to generate electricity are left to the private sector. Under this framework, any proponent can provide electricity to the Alberta power pool if it can demonstrate that the construction and operation of its power plant meets the public interest. The proponent is responsible for assessing the economic viability of a power plant, including whether there is a market demand for the electricity it will provide, and the proponent assumes the associated economic risks.

14. Conducting a public interest assessment requires the Commission to assess and balance the competing elements of the public interest in the context of each specific application before it. Part of this exercise is an analysis of the nature of the impacts associated with a particular project, and the degree to which the applicant has addressed these impacts. Balanced against this is an assessment of the project's potential public benefits. The assessment includes the positive and adverse impacts of the project on those nearby, such as landowners. The Commission assesses impacts such as shadow flicker, noise and agricultural impacts on landowners as it balances the public interest considerations.

15. The Commission has previously affirmed that the public interest will be largely met if an application complies with existing regulatory standards, and the project's public benefits outweigh its negative impacts.<sup>22</sup> As a starting point, a power plant application filed with the Commission must contain all the information required in Rule 007: *Applications for Power Plants, Substations, Transmission Lines, Industrial System Designations, Hydro Developments and Gas Utility Pipelines*<sup>23</sup> and Rule 012: *Noise Control*.<sup>24</sup>

16. In amendment applications such as the ones before the Commission in this proceeding, where the applicant seeks to amend its previously approved project, the Commission's public interest assessment generally focuses on the incremental effects associated with the proposed amendments. In the ordinary course, an amendment application does not reopen consideration of the project as a whole. Accordingly, for the majority of the issues in this proceeding, the Commission has restricted its assessment of the project to the incremental effects resulting from the change in turbine models and locations, and other changes such as the project layout, the collector system, and the substation.

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<sup>22</sup> Alberta Energy and Utilities Board Decision 2001-111: EPCOR Generation Inc. and EPCOR Power Development Corporation - 490-MW Coal-Fired Power Plant, Application 2001173, December 21, 2001, PDF page 12.

<sup>23</sup> Rule 007: *Applications for Power Plants, Substations, Transmission Lines, Industrial System Designations and Hydro Developments*, effective August 1, 2019. Because the applications were submitted on July 14, 2021, the version of Rule 007 effective August 1, 2019, applies to this project.

<sup>24</sup> Rule 012: *Noise Control*, effective March 5, 2021.

### 3.2 Consideration of non-incremental effects with respect to aeronautics

17. The reason that the Commission generally does not reopen consideration of the project as a whole, is that to do so could permit collateral attacks on the original decision and undermine the principle of finality.<sup>25</sup> Among other reasons, this is because it is in the public interest for parties to be able to rely on the finality of decisions and relitigating decided issues may undermine confidence in regulatory processes and cause the unnecessary expenditure of resources.<sup>26</sup> However, the Commission has the statutory authority to review any decision or order made by it, and the authority to reconsider issues decided by other decision-makers or panels is discretionary in nature.<sup>27</sup>

18. In considering an application for a power plant, the Commission must “determine whether the purposes of [the *Hydro and Electric Energy Act*] will be achieved.”<sup>28</sup> These purposes include “to secure the observance of safe and efficient practices in the public interest in the development of hydro energy and in the generation, transmission and distribution of electric energy in Alberta.”<sup>29</sup>

19. During the hearing, issues were raised with respect to aviation safety. The federal Minister of Transport, through Transport Canada, regulates aviation matters in Canada, pursuant to the *Aeronautics Act*, the *Canadian Aviation Regulations*, and related enactments and documents. The *Aeronautics Act* defines an aerodrome as including any area of land that is set apart for use either in whole or in part for the arrival, departure, movement or servicing of aircraft.<sup>30</sup> Transport Canada recognizes three categories of aerodromes. These three categories are:

- Aerodromes (small airstrips located on private property that are neither registered nor certified).
- Registered aerodromes.
- Certified aerodromes, referred to as airports.<sup>31</sup>

20. The Bow Island Airport is a registered aerodrome. It is municipally owned and used by aircraft operators during day and night hours in favourable weather conditions.<sup>32</sup> One of the issues in this proceeding was whether the construction of turbines within five nautical miles (9.26 kilometres) of the Bow Island Airport complied with the federal aviation regulatory regime, and relatedly, whether there were additional aviation safety concerns the Commission should consider even if the turbines complied with that regime.

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<sup>25</sup> Decision 25296-D01-2021, Aura Power Renewables Ltd. – Fox Coulee Solar Project Amendment, Proceeding 25296, Application 25296-A001, February 11, 2021, paragraphs 24-25.

<sup>26</sup> See *British Columbia (Workers' Compensation Board) v Figliola*, 2011 SCC 52, paragraph 34.

<sup>27</sup> *Alberta Utilities Commission Act*, sections 8(2), 10; *TransAlta Corporation v Alberta (Utilities Commission)*, 2022 ABCA 37, paragraphs 59, 99.

<sup>28</sup> *Hydro and Electric Energy Act*, Section 3(1).

<sup>29</sup> *Hydro and Electric Energy Act*, Section 2(b).

<sup>30</sup> *Aeronautics Act*, Section 3(1) “aerodrome.”

<sup>31</sup> *Aeronautics Act*; *Canadian Aviation Regulations*; also see e.g. Transport Canada, Chapter 6 - Airports, online: [https://www.tc.gc.ca/eng/civilaviation/publications/tp13549-chapter6-406.htm#aerodrome\\_or\\_airport,%20aerodrome%20categories](https://www.tc.gc.ca/eng/civilaviation/publications/tp13549-chapter6-406.htm#aerodrome_or_airport,%20aerodrome%20categories).

<sup>32</sup> Exhibit 27561-X0052, Tetra Tech - 2018 FMWPP Aerodrome and Aviation Analysis, PDF pages 2-3.

21. The Commission reviewed the evidence on the record of the proceeding and, in a letter issued to parties on March 28, 2023, concluded that it required additional evidence in respect of certain aviation safety matters before making a final decision on the amendments.<sup>33</sup> Specifically, the Commission was concerned with safety for aerial application flight operations in relation to proposed wind turbines to be located within five nautical miles of the Bow Island Airport. As a result, the Commission decided to initiate further process, including steps for additional evidence, information requests, and an additional virtual oral hearing related to the additional evidence.

### 3.3 Bifurcation of the approval

22. In response to the further process, RES submitted that due to its ongoing business commitments, the Commission should bifurcate its decision in respect of Proceeding 27561. RES submitted that in the interests of regulatory efficiency and its business commitments, the Commission should bifurcate the proceeding so that it could proceed with construction activities associated with turbines located outside five nautical miles of the Bow Island Airport (the Unaffected Turbines).<sup>34</sup> The Unaffected Turbines are as follows:

**Table 3. Unaffected Turbines**

Phase	Turbines
Phase 1	T11, T12, T13, T24, T25, T26, T27, T28, T31, T32, T33, T34, T35, T36, T37, T38, T39, T40, T41, T42, T43, T44, T45, T46, T47, T48, T49
Phase 2	T104, T112, T113, T115, T116, T127, T128, T129, T59, T78, T81, T83, T85, T86, T87, T88, T90, T91, T92, T95, T96

23. The Commission ruled that it would bifurcate its decision on the amended project, but emphasized that any approval of the Unaffected Turbines, and any steps taken in reliance on those approvals, would not be considered in making the decision pertaining to the turbines within five nautical miles of the Bow Island Airport. The Commission also explained that:

The Commission's final decision related to the turbines identified in RES's letter, will be reserved until the resolution of the further process set out in the Commission's previous letter, and the issuance of a decision (the Affected Turbines, and the Affected Turbine Decision). The remainder of the decision pertaining to all other turbines for which approval was sought in RES's application, will be addressed in a separate decision (the Unaffected Turbines, and the Unaffected Turbine Decision). The Unaffected Turbine Decision will also address non-aerodrome related considerations in respect of the Affected Turbines.<sup>35</sup>

24. In accordance with this ruling, this decision considers the incremental effects of the amended project as a whole, with the exception of issues associated with aeronautic safety at the Bow Island Airport that will be addressed in a separate decision. Further, since there is no dispute that turbines outside five nautical miles of the Bow Island Airport comply with the

<sup>33</sup> Exhibit 27561-X0227, AUC letter - Additional information requests and updated process schedule.

<sup>34</sup> Exhibit 27651-X0228, RES Letter to AUC re Updated Process Schedule - March 31, 2023.

<sup>35</sup> Exhibit 27651-X0231, AUC letter - Procedural ruling.

applicable federal aviation regulatory regime, issues of regulatory compliance will also be addressed in the separate decision.

## 4 Discussion and findings

25. In this section of the decision, the Commission first addresses the impacts of the amended project on A. Jenkins by discussing issues related to noise, shadow flicker, agricultural impacts, and other concerns. The Commission then addresses the impacts of the amended project on the environment. As mentioned in Section 3, the Commission will not be discussing issues associated with aeronautic safety at the Bow Island Airport because that will be addressed in a separate decision.

### 4.1 Noise

26. A. Jenkins expressed concerns about potential incremental noise from the amended project as well as low frequency noise (LFN), infrasound and associated health impacts.<sup>36</sup> A. Jenkins retained Dr. Mariana Alves-Pereira to provide evidence on potential infrasound from the project and associated health effects.<sup>37</sup>

27. RES retained Andrew Faszer of WSP and Dr. Christopher Ollson of Ollson Environmental Health Management to review evidence from A. Jenkins and Dr. Alves-Pereira, and to provide reply evidence on potential noise impacts from the project and associated health issues.<sup>38</sup>

28. Noise, including LFN and infrasound, was a major topic discussed in depth during the approved project's hearing in Proceeding 22966. In this decision, the Commission will not repeat noise issues that have already been discussed and concluded on in the original project's decision, Decision 22966-D01-2018;<sup>39</sup> instead, the Commission will focus on the following noise issues and evidence raised in the current proceeding with respect to the amended project:

- Incremental noise impacts from the amended project.
- LFN.
- Infrasound and health effects.
- Thresholds from the World Health Organization (WHO) and Health Canada (HC).
- Post-construction noise monitoring.

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<sup>36</sup> Exhibit 27561-X0097, 2023-01-03 Master Submissions (A. Jenkins); Exhibit 27561-X0098, Appendix A - Landowner Noise Study Map; and Exhibit 27561-X0099, Appendix B - Landowner Submissions (A. Jenkins).

<sup>37</sup> Exhibit 27561-X0100, Appendix C - Evidence of Dr. Mariana Alves-Pereira, December 2022 (with Annexes).

<sup>38</sup> Exhibit 27561-X0193, Appendix B - Expert Report and Curriculum Vitae of Andrew Faszer of WSP Canada. Exhibit 27561-X0194, Appendix C - Expert Report and Curriculum Vitae of Dr. Christopher A. Ollson.

<sup>39</sup> Decision 22966-D01-2018: BHEC-RES Alberta G.P. Inc. – Forty Mile Wind Power Project, Proceeding 22966, Application 22966-A001, August 30, 2018.

#### 4.1.1 Incremental noise impacts

29. A. Jenkins noted that the project would use a turbine model that has higher hub height and larger blades, and was concerned about incremental noise levels from the amended project and associated health effects, annoyance and nuisance.<sup>40</sup>

30. A. Faszler and Dr. Ollson stated that cumulative sound levels from the amended project are predicted to be compliant with permissible sound levels (PSLs) at all receptors, including A. Jenkins's dwelling, during the daytime and nighttime periods,<sup>41</sup> and emphasized that cumulative noise levels from the amended project at A. Jenkins's dwelling would be lower than those approved by the Commission in original Proceeding 22966.<sup>42</sup> Further, A. Faszler pointed out that predicted cumulative sound levels at A. Jenkins's dwelling (R32) has decreased, largely because the closest turbine (T111) associated with the approved project has been removed.<sup>43</sup> The table below compares predicted cumulative sound levels at A. Jenkins's dwelling from the approved project and from the amended project.

**Table 4. Predicted cumulative sound levels at A. Jenkins's residence**

Period	Cumulative sound level (dBA)			Permissible sound level (dBA)
	Approved project	Amended project	Updated - Approved	
Daytime	45.5	45.3	-0.2	50
Nighttime	38.0	37.5	-0.5	40

31. The Commission has reviewed the amended project's NIA and finds that it meets the requirements of Rule 012 and accepts that noise from the amended project is expected to comply with PSLs set out in that rule. The Commission also finds that the proposed amendment would result in a decrease in predicted cumulative sound levels at A. Jenkins's dwelling.

#### 4.1.2 Low frequency noise

32. In Decision 2014-040, the Commission explained LFN and infrasound as follows:

Frequencies below 250 Hz are commonly referred to as low frequency sound.  
Frequencies below 20 Hz are commonly referred to as infrasound. There is some overlap between these frequency ranges and the cut-offs are not firm.<sup>44</sup>

33. This section will discuss concerns raised related to the amended project with respect to low frequency sound.

<sup>40</sup> Exhibit 27561-X0100, Appendix C – Evidence of Dr. Mariana Alves-Pereira, December 2022 (with Annexes), PDF page 2.

<sup>41</sup> Rule 012 defines daytime as the hours from 7 a.m. to 10 p.m. and nighttime as the hours from 10 p.m. to 7 a.m.

<sup>42</sup> Exhibit 27561-X0193, Appendix B - Expert Report and Curriculum Vitae of Andrew Faszler of WSP Canada, PDF page 3; and Exhibit 27561-X0194, Appendix C - Expert Report and Curriculum Vitae of Dr. Christopher A. Ollson, PDF page 12.

<sup>43</sup> Exhibit 27561-X0193, Appendix B - Expert Report and Curriculum Vitae of Andrew Faszler of WSP Canada, PDF page 10.

<sup>44</sup> Decision 2014-040 (Errata): 1646658 Alberta Ltd. – Bull Creek Wind Project, Proceeding 1955, Application 1608556, March 10, 2014, PDF page 31, paragraph 103.

34. A. Jenkins referenced a paper titled *Incorporating Low Frequency Noise Legislation for the Energy Industry in Alberta* completed by David DeGagne and Stephanie Lapka in 2008 (the DeGagne paper).<sup>45</sup> Based on this paper, A. Jenkins noted that health and annoyance effects stemming from LFN is a concern to the residents of rural Alberta, and also noted that assessing noise effects using dBA does not appropriately capture potential LFN effects.<sup>46</sup>

35. A. Faszler clarified that the DeGagne paper referenced by A. Jenkins recommended a two-part test for assessing potential LFN conditions. A. Faszler emphasized that Rule 012 used the same LFN test as the DeGagne paper.<sup>47</sup> Rule 012 states that if the difference between the C-weighted sound level (dBC) and the A-weighted sound level (dBA) exceeds 20 dB, and there is a tonal component at or below 250 hertz (Hz), then an LFN issue exists.<sup>48</sup>

36. A. Faszler submitted that the NIA followed the requirements of Rule 012 for the LFN test, which again is the same as the test recommended in the DeGagne paper, and concluded there is no potential for LFN issues at any receptors, including A. Jenkins's dwelling. A. Faszler further submitted that dBC-dBA at A. Jenkins's dwelling is predicted to be smaller for the amended project than for the approved project and this suggests the potential for LFN issues at A. Jenkins's dwelling has been reduced as a result of the proposed amendment.<sup>49</sup>

37. The Commission finds the LFN analysis in the amended project's NIA was conducted in accordance with Rule 012, and accepts its conclusions that noise from the amended project is unlikely to have LFN issues at any receptors, including A. Jenkins's dwelling; and the potential for LFN issues at A. Jenkins's dwelling has been reduced as a result of the proposed amendment.

#### 4.1.3 Infrasound, low frequency noise and health effects

38. Dr. Alves-Pereira testified that A. Jenkins's dwelling would be exposed to excessive levels of infrasound and LFN from the project.<sup>50</sup> Dr. Alves-Pereira referenced a paper titled *Infrasound and Low Frequency Noise Guidelines: Antiquated and Irrelevant for Protecting Populations*, published by Dr. Alves-Pereira et al. in 2019.<sup>51</sup> That paper presented results of a case study, which suggested that infrasound and LFN from wind turbines would cause health effects.

39. A. Faszler submitted that the case study presented in the Dr. Alves-Pereira paper is not representative of conditions that would exist at A. Jenkins's dwelling following development of the amended project, and therefore any conclusions about infrasound and health effects that may be drawn from that paper are not relevant to the current proceeding.<sup>52</sup> Similarly, Dr. Ollson

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<sup>45</sup> Exhibit 27561-X0099, Appendix B - Landowner Submissions (A. Jenkins), PDF pages 39-60.

<sup>46</sup> Exhibit 27561-X0099, Appendix B - Landowner Submissions (A. Jenkins), PDF page 6.

<sup>47</sup> Exhibit 27561-X0193, Appendix B - Expert Report and Curriculum Vitae of Andrew Faszler of WSP Canada, PDF page 7.

<sup>48</sup> Rule 012: *Noise Control*, PDF page 22.

<sup>49</sup> Exhibit 27561-X0193, Appendix B - Expert Report and Curriculum Vitae of Andrew Faszler of WSP Canada, PDF page 8.

<sup>50</sup> Exhibit 27561-X0100, Appendix C - Evidence of Dr. Mariana Alves-Pereira, December 2022 (with Annexes), PDF page 17.

<sup>51</sup> Alves-Pereira M, Krough C, Bakker HHC, Summers R, Rapley B, *Infrasound and low frequency noise guidelines – Antiquated and irrelevant for protecting populations*. Proceedings of the 26th International Congress on Sound & Vibration, Montreal, Canada, July 7-11, 2019.

<sup>52</sup> Exhibit 27561-X0193, Appendix B - Expert Report and Curriculum Vitae of Andrew Faszler of WSP Canada, PDF page 12.

doubted the relevance of the case study in the Dr. Alves-Pereira paper, because it presented anecdotal evidence from a single family and a single morning. As such, Dr. Ollson submitted that one cannot draw any scientific hypothesis or conclusion from this case study.<sup>53</sup>

40. The Commission finds Dr. Ollson and A. Faszler's analysis of the Dr. Alves-Pereira paper is reasonable, and notes that Dr. Alves-Pereira did not provide any satisfactory quantitative analysis of how the conditions present in the scenario the paper was based on, compare to sound levels from the turbines in this proceeding at A. Jenkins's dwelling. Furthermore, during the hearing, Dr. Alves-Pereira stated that she did not review A. Faszler's NIA and was not prepared to provide comments on it,<sup>54</sup> indicating a lack of familiarity with the specific noise impacts of the proposed project. Accordingly, the Commission finds the case study and conclusions from that paper do not displace the conclusion in the NIA and the evidence from Dr. Ollson and A. Faszler that there is no potential for project-related infrasound and LFN issues from the amended project, which is predicted to comply with Rule 012.

41. Overall, the Commission finds there is insufficient evidence in this proceeding to establish that infrasound or LFN from the project is likely to have adverse health effects on residents at A. Jenkins's residence. This conclusion is consistent with the Commission's decision about infrasound and LFN in Decision 22966-D01-2018 and the evidence in this proceeding.<sup>55</sup>

#### 4.1.4 Thresholds from World Health Organization and Health Canada

42. In Proceeding 22966, A. Jenkins, Dr. Alves-Pereira and RES discussed a 46-dBA threshold for adverse effects to human health from a HC document titled *Wind Turbine Noise and Health Study*.<sup>56</sup> In Decision 22966-D01-2018, the Commission found that:

The evidence before the Commission, as adduced in Dr. Alves-Pereira's testimony, is that even if low frequency noise were measured at Ms. Jenkins' residence, using the methodology described by Dr. Alves-Pereira, there is no scientifically established threshold of exposure to low frequency noise at which adverse impacts to human health are likely to result. Absent such evidence, and in consideration of the evidence given by Dr. Knopper that the Health Canada study results indicated no adverse effects to human health below the threshold of 46 dBA, the Commission cannot reasonably conclude that the requirements of Rule 012 are inadequate to protect human health.<sup>57</sup>

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<sup>53</sup> Exhibit 27561-X0194, Appendix C - Expert Report and Curriculum Vitae of Dr. Christopher A. Ollson., PDF pages 33-35.

<sup>54</sup> Proceeding 27561, Transcript Volume 2, PDF page s135-136.

<sup>55</sup> Decision 22966-D01-2019: BHEC-RES AB Renewables GP Corp. – Forty Mile Wind Power Project, Proceeding 22966, Application 22966-A001, April 30, 2018, PDF page 57.

<sup>56</sup> Wind Turbine Noise and Health Study, Health Canada, 2014.

<sup>57</sup> Decision 22966-D01-2019: BHEC-RES AB Renewables GP Corp. – Forty Mile Wind Power Project, Proceeding 22966, Application 22966-A001, April 30, 2018, PDF page 57.



43. In the current proceeding, A. Jenkins raised further concerns with several noise thresholds from WHO and HC that were not addressed by the Commission in Decision 22966-D01-2018 and asserted that predicted noise levels at her residence would exceed those thresholds.<sup>58</sup> The noise thresholds referenced by A. Jenkins included:

- A threshold of 30 dBA for sleep disturbance in WHO document *Guidelines for Community Noise*.<sup>59</sup>
- A threshold of 45 dBA for wind turbine noise in WHO document *Environmental Noise Guidelines for the European Region*.<sup>60</sup>
- A threshold of 35 dBA for statistically significant increase in annoyance in HC document *Wind Turbine Noise and Health Study*.<sup>61</sup>

44. A. Faszler responded to A. Jenkins's statements about the WHO and HC noise thresholds. A. Faszler submitted that A. Jenkins appeared to misinterpret noise thresholds set out in WHO and HC documents. Specifically, A. Faszler explained that:

- The WHO threshold of 30 dBA should be compared with indoor sound levels, but A. Jenkins mistakenly compared this threshold with predicted outdoor sound levels.
- The WHO threshold of 45 dBA and the HC threshold of 35 dBA should be compared with noise levels from project turbines in isolation from other sources, but A. Jenkins mistakenly compared these thresholds with predicted cumulative sound levels, which include turbine noise and ambient sound levels.

45. After comparing predicted sound levels from the amended project at A. Jenkins's residence to the corresponding thresholds from WHO and HC, A. Faszler concluded that noise from the amended project at A. Jenkins's residence will be below these thresholds.<sup>62</sup>

46. The Commission has considered these documents and finds that A. Faszler's interpretation of the thresholds from WHO and HC is correct, and accepts the conclusion that noise from the amended project at A. Jenkins's residence will be below these thresholds. As these thresholds are associated with noise impacts to human health, the Commission maintains the findings in Decision 22966-D01-2018 that the project would be unlikely to have adverse health effects to nearby residents.

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<sup>58</sup> Exhibit 27561-X0098, appendix A – Landowner Noise Study Map, PDF page 9.

<sup>59</sup> *Guidelines for Community Noise*, World Health Organization, 1999.

<sup>60</sup> *Environmental Noise Guidelines for the European Region*, World Health Organization Regional Office for Europe, 2018.

<sup>61</sup> *Wind Turbine Noise and Health Study*, Health Canada, 2014.

<sup>62</sup> Exhibit 27561-X0193, Appendix B - Expert Report and Curriculum Vitae of Andrew Faszler of WSP Canada, PDF pages 5-7.

#### 4.1.5 Post-construction noise monitoring

47. Dr. Alves-Pereira suggested continuous noise monitoring at A. Jenkins's residence be conducted to determine project compliance with Rule 012.<sup>63</sup>

48. RES committed to conduct a post-construction comprehensive sound level (CSL) survey to verify project compliance with Rule 012<sup>64</sup> and recommended Receptor R87 as an appropriate monitoring location for the CSL survey.<sup>65</sup>

49. The Commission notes that Condition 5j of Approval 26910-D02-2021<sup>66</sup> requires RES to conduct a post-construction CSL survey at receptors R53, R73 and R32 (A. Jenkins's residence) as follows:

- j. RES shall conduct post-construction comprehensive noise studies and an evaluation of low frequency noise at receptors 53, 73, and 32 under representative operating conditions, and in accordance with Rule 012: *Noise Control*. RES 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. RES shall simultaneously provide Ms. Jenkins with the results of its post-construction noise survey and low frequency noise evaluation for her residence and provide written confirmation to the Commission when it has done so.

50. Although the amended project is predicted to comply with Rule 012 PSLs at all receptors, given the fact that predicted cumulative sound levels from the amended project are close to or slightly above the nighttime PSL at a number of receptors, the Commission will continue to require that RES complete a post-construction CSL survey to verify project compliance with Rule 012.

51. The Commission clarifies that it does not require RES to conduct a continuous noise monitoring program, as suggested by Dr. Alves-Pereira, for these reasons: (i) continuous noise monitoring is unnecessary, because Rule 012 requires a CSL survey to capture periods when maximum noise impacts from the project at a given receptor are expected (i.e., maximum noise emissions from nearby turbines and downwind propagation); and (ii) continuous noise monitoring is unlikely to produce helpful information because, without careful manual analysis to identify invalid periods and/or abnormal noise sources, data collected from continuous noise monitoring cannot be evaluated against Rule 012 PSLs.

52. The Commission notes that because the project layout has changed, receptors R53 and R73 are no longer the most affected receptors, and as a result, no longer suitable monitoring locations for the CSL survey. The Commission considers receptors R62, R87 and R88 as suitable monitoring locations, because these receptors are predicted to be the most affected receptors associated with the amended project. More specifically, these receptors would be most affected by the Forty Mile Wind Power Project Phase 2.

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<sup>63</sup> Exhibit 27561-X0100, Appendix C - Evidence of Dr. Mariana Alves-Pereira, December 2022 (with Annexes). PDF page 10.

<sup>64</sup> Exhibit 27561-X0224, Attachment U8 - RES\_Forty\_Mile\_Wind\_GP\_Corp\_Commitment\_List, PDF page 4.

<sup>65</sup> Exhibit 27561-X0027.01, IRs round 1\_RES Responses, PDF pages 2-3.

<sup>66</sup> Power Plant Approval 26910-D02-2021, Proceeding 26910, Application 26910-A001, November 3, 2021.

53. The Commission notes that A. Jenkins's residence (R32) is predicted to have a compliance margin of 2.5 dBA for the nighttime, which suggests that the cumulative sound levels will likely be below the nighttime PSL at this residence. However, the Commission notes that R32 was originally ordered for the CSL survey due to A. Jenkins's concerns about noise and RES's commitment. Given the specific concerns of A. Jenkins about noise in the current proceeding, the Commission finds it reasonable to continue including Receptor R32 in the CSL survey. Receptor R32 would be most affected by the Forty Mile Wind Power Project Phase 2.

54. Based on the foregoing, the Commission imposes the following condition of approval for the Forty Mile Wind Power Project Phase 2, which replaces Condition 5j of Approval 26910-D02-2021:

- a. RES shall conduct a post-construction comprehensive sound level survey, including an evaluation of low frequency noise, at receptors R62, R87, R88 and R32. The post-construction comprehensive sound level survey must be conducted under representative conditions and in accordance with Rule 012: *Noise Control*. Within one year after the project commences operations, RES shall file a report with the Commission presenting measurements and summarizing results of the post-construction comprehensive sound level survey. RES shall simultaneously provide Ms. Jenkins with the results of its post-construction noise survey and low frequency noise evaluation for her residence and provide written confirmation to the Commission when it has done so.

#### 4.2 Shadow flicker

55. A. Jenkins was concerned about incremental shadow flicker when comparing the approved project to the amended project, and whether mitigation measures would be implemented to reduce shadow flicker.

56. RES retained WSP to complete a shadow flicker assessment for the amended project, and retained Dr. Ollson to provide reply evidence on issues related to shadow flicker.

57. Dr. Ollson submitted that predicted shadow flicker has increased from 6.53 hours per year for the approved project to 7.82 hour per year for the amended project. Dr. Ollson explained that an increase of 1.29 hours per year is expected to be minor with no adverse health implications.<sup>67</sup>

58. The Commission accepts Dr. Ollson's explanation that an increase of 1.29 hours of shadow flicker per year is expected to be minor, and has decided to maintain its finding in the original Decision 22966-D01-2018 that shadow flicker impacts produced by the project are likely to be low.<sup>68</sup>

59. In addition, the Commission notes that in Proceeding 22966, RES committed to adjust the locations of turbines T111 and T112 to reduce shadow flicker at A. Jenkins's residence. The Commission is satisfied that RES has undertaken its commitment and removed Turbine T111, which was the closest turbine associated with the approved project to A. Jenkins's residence. The Commission also recognizes that in the current proceeding, RES committed to implement further mitigation if deemed necessary. RES particularly stated that potential mitigation measures to

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<sup>67</sup> Exhibit 27561-X0194, Appendix C - Expert Report and Curriculum Vitae of Dr. Christopher A. Ollson, PDF page 13.

<sup>68</sup> Decision 22966-D01-2018: BHEC-RES Alberta G.P. Inc. – Forty Mile Wind Power Project, Proceeding 22966, Application 22966-A001, August 30, 2018, PDF page 62.

reduce shadow flicker could include installation of window coverings and temporary curtailment of closest turbines T112 and T113.<sup>69</sup>

60. There are no existing provincial or federal regulations imposing a criterion for shadow flicker impacts in Alberta. Rather, the Commission requires project applicants to promptly address complaints or concerns from residents regarding shadow flicker from the project at the post-construction stage, if the applicants receive any. Therefore, the Commission imposes the following condition of approval for the Forty Mile Wind Power Project:

- b. RES shall file a report with the Commission detailing any complaints or concerns it receives from local landowners regarding shadow flicker from the project during its first year of operation, as well as RES's response to the complaints or concerns. If RES implements mitigation to reduce shadow flicker impacts, the report shall detail the mitigation measures and associated stakeholders' feedback regarding the mitigation. RES shall file this report no later than 13 months after the project becomes operational.

### 4.3 Agricultural impacts

61. A. Jenkins submitted concerns regarding the amended project's impacts to her farming business practices due to the increase in turbine height and blade length potentially impacting aerial spraying application on her property. N. Hofmann submitted concerns about the proximity of wind turbines to irrigated land or irrigation infrastructure and that wind turbines positioned too close to irrigated land could make it impossible for those bordering irrigated quarters to benefit from aerial spraying.

62. In the following section, the Commission addresses concerns raised about agricultural impacts. This will not include discussion on aviation safety regarding aerial application aircraft operations at the Bow Island Airport since an additional process has been laid out by the Commission on the topic as discussed in Section 3.

63. A. Jenkins expressed concerns that the amended project would impact aerial spraying activities on her lands, preventing her from accessing the service which would impact her business operations. A. Jenkins stated that she has diversified her farming practices and recently seeded different crop varieties requiring aerial spraying, otherwise significant crop losses may occur.<sup>70</sup>

64. RES stated that several of the turbines in proximity to A. Jenkins's property have been removed as part of the amended project, and the closest turbine to her residence has shifted farther from her lands. RES noted that A. Jenkins indicated that she did not previously employ aerial spraying on her lands.

65. N. Hofmann stated that other aerial applicators draw lines around wind farms and do not spray in and around them. He indicated that for now, in order to serve his customers, he continues to look for ways to service areas around wind farms where possible.<sup>71</sup> This included creation of a standard operating procedure for spraying fields proximate to wind turbines.<sup>72</sup>

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<sup>69</sup> Exhibit 27561-X0076, RES Response to Jenkins IRs, PDF page 16.

<sup>70</sup> Transcript, Volume 3, page 450, lines 14-25.

<sup>71</sup> Transcript, Volume 3, pages 51-53.

<sup>72</sup> Exhibit 27561-X0109, Stand Operating Procedure.

66. In response to concerns about turbines interfering with aerial spraying in the project vicinity, RES stated that it was willing to commit to a turbine shut-off protocol to mitigate the risks associated with the motion and direction of turbine blades.

67. N. Hofmann stated that the communication on turbine shut-off protocol must be done quickly, since pilots react to changes in the weather. Due to this dependence on weather conditions, N. Hofmann suggested that 24-hour notice may be unrealistic in most cases and that six to 12 hours would be more reasonable.

68. The Commission recognizes that in some cases, the presence of turbines precludes the ability to aerial spray a field and in other cases, aerial spraying is still possible but may be complicated by the presence of turbines. There is insufficient evidence in this proceeding that landowners in the project area frequently engage in aerial spraying. As the Commission has recognized in past decisions, there may be negative economic impacts to landowners to the extent that the construction of turbines imposes limitations on their ability to use aerial spraying, including A. Jenkins. However, where the use of aerial spraying is relatively infrequent, the risk of agricultural impacts to landowners is generally low.<sup>73</sup> Moreover, the approved project was likely to impose similar risks, and the agricultural impacts of the project are incremental in nature for both the approved project and the amendments.

69. Despite the relatively low risk of agricultural impacts, the Commission finds that imposing a condition requiring RES to implement a turbine shut-off protocol may help mitigate impacts to agricultural operations intending to aerially spray in the amended project area and is reasonable in the circumstances. Therefore, the Commission imposes the following condition of approval to the Forty Mile Wind Power Project:

- c. RES shall implement a turbine shut-off protocol to be followed when it receives a request at least 24 hours in advance of impacted aerial spraying operations. The protocol will include the direct phone number for the site supervisor and the remote operations control centre, a step-by-step process to identify which turbines should be curtailed, halted and/or yawed, a confirmation of dates and times for planned aerial spraying activities, a process to ensure the site is safe and secure for spraying to occur, and a process to ensure that RES is notified when spraying is completed. RES shall comply with the protocol, and shall also use reasonable efforts to satisfy the requirements of the protocol promptly when a request is made less than 24 hours in advance due to exigent circumstances.

#### 4.4 Other concerns

70. A. Jenkins raised concerns about the amended project's visual impacts and RES's consultation. These concerns are discussed further below.

71. A. Jenkins stated that the erection of turbines that are taller as a result of the amendments will result in adverse incremental visual impacts since the turbines have increased in both height and blade length. A. Jenkins suggested that the mitigation measures suggested by RES such as window coverings and vegetation screening, would be insufficient because it could take 30 years or more for vegetation to grow tall enough to provide appropriate screening.

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<sup>73</sup> See Decision 26677-D01-2022: Enel Alberta Wind Inc. – Grizzly Bear Creek Wind Power Project, Proceeding 26677, Applications 26677-A001 and 26677-A002, May 5, 2022, paragraphs 86-91.

72. In response to A. Jenkins's submission on visual impacts, RES stated that the amended project's reduction of turbines from 115 to 70 would reduce its visual impacts. RES provided a revised visual simulation at A. Jenkins's property;<sup>74</sup> however, A. Jenkins suggested that the increased height of the turbines would cause an incremental increase in negative visual impacts. The Commission understands that visual simulations are not a perfect tool for predicting the visual impacts of a project. However, the Commission generally finds visual simulations to be helpful, but emphasizes that they cannot be relied upon as being absolutely accurate depictions of a future project.

73. The Commission is satisfied that RES has considered the visual impacts of the amended project, and that the amended project's visual impacts will generally be reduced when compared to the approved project. Further, any negative visual impacts of the project are outweighed by the positive effects of the project as a whole.

74. A. Jenkins asserted that RES's consultation was insufficient. A. Jenkins stated that she wrote to RES on August 8, 2022, requesting it relocate turbines T112 and T113 to alternate locations. A. Jenkins stated that she sent another letter on August 24, 2022, and received no written response from RES for either letter. A. Jenkins stated that RES was late in informing her about the proposed project amendments<sup>75</sup> and that RES was withholding information and not provided sufficient information to her information requests during this proceeding. Similarly, N. Hofmann submitted that RES did not conduct adequate consultation to address his concerns.

75. In response, RES submitted that it carried out its participant involvement program in accordance with applicable Rule 007 requirements, with respect to stakeholder identification and timing.<sup>76</sup> RES added that it made adjustments to the project in response to stakeholder feedback, including a reduction of turbines directly adjacent to A. Jenkins's lands from six to two. RES stated that it made attempts to contact A. Jenkins by phone after receiving her request to relocate turbines T112 and T113, and that attempts to contact her by phone were unsuccessful. RES further stated that it provided A. Jenkins a written and confidential response with the purpose of reaching a settlement.

76. Regarding the consultation concerns described by A. Jenkins and N. Hofmann, the Commission reiterates the following from Decision 2011-436:

283. The Commission also finds that the individual concerns raised by interveners do not necessarily mean that the applicants failed to meet the prescribed public consultation requirements provided in AUC Rule 007. To some degree, consultation is an extension and enhancement of the requirement to notify parties that may be directly and adversely affected by the Commission's decision on an application. 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.

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<sup>74</sup> Exhibit 27561-X0076, RES Response to Jenkins IRs, PDF page 52.

<sup>75</sup> Exhibit 27561-X0097, 2023-01-03 Master Submissions (A. Jenkins).

<sup>76</sup> Exhibit 27561-X0191, RES Reply Evidence.

284. The Commission acknowledges that even a very effective consultation program may not resolve all intervenor concerns. This is not the fault of the applicant or the intervenor; it merely reflects the fact that the parties do not agree. With this in mind, the Commission will consider a consultation program to be effective if it meets AUC Rule 007 requirements and has allowed intervenors to understand the project and its implications for them, and to meaningfully convey to the applicant their legitimate concerns about the project.<sup>77</sup>

77. While RES was unable to resolve all outstanding concerns, the Commission is satisfied, based on the consultation records and the evidence in this proceeding, that RES's participant involvement program generally achieved the purpose of consultation. That is, through RES's participant involvement program, the public were given sufficient information to understand the nature of the project, identify areas of concern and engage in dialogue with RES with the goal of eliminating or minimizing those concerns.

#### **4.5 Environment**

78. RES submitted reports on the amended project's environmental impacts prepared by WSP and correspondence from AEPA advising that the approved project's renewable energy referral report has no expiry date, and therefore no extension was required from AEPA.<sup>78</sup>

79. A. Jenkins retained Cliff Wallis of Cottonwood Consulting Ltd. who also prepared a report on environmental impacts associated with the amended project. C. Wallis raised concerns surrounding the new turbine heights, a lack of survey effort for wetlands, impacts to wetlands, potential impacts to amphibians, and cumulative effects.

80. In this section, the Commission discusses the amended project's environmental impacts, and RES's post-construction monitoring and the amended project's cumulative environmental effects. Overall, the Commission accepts that the environmental impacts of the amended project are likely an improvement relative to the approved project.

##### **4.5.1 Environmental impacts**

81. This section will first provide an overview of the amended project's environmental impacts. It will then focus on the amended project's environmental impacts that increase, namely temporary wetland impacts and native grassland impacts. Finally, it will discuss the amended project's environmental impacts as a whole.

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<sup>77</sup> Decision 2011-436: AltaLink Management Ltd. and EPCOR Distribution & Transmission Inc. – Heartland Transmission Project, Proceeding 457, Application 1606609, November 1, 2011, PDF page 65.

<sup>78</sup> Exhibit 27561-X0027.01, IRs round 1\_RES Responses, PDF pages 9-11.

82. RES stated that when compared to the approved project, the amended project would result in:

- A 424.99 hectare to 385.61 hectare reduction in total project footprint.
- A 15,180 square metres (m<sup>2</sup>) to 10,850 m<sup>2</sup> reduction in total rotor swept area.
- No infringements on nest, den or lek setbacks recommended in the *Wildlife Directive for Wind Energy Projects*<sup>79</sup> (Directive), as shown in wildlife surveys updated in 2021.
- A 12.96 hectare to 11.17 hectare reduction to infringements on Directive recommended 100-metre coulee setbacks.
- A 0.31 hectare to 0.14 hectare reduction in permanent wetland impacts.
- A 1.97 hectare to 2.54 hectare increase in temporary wetland impacts.
- A 1.5 hectare to 1.7 hectare increase in native grassland impacts primarily associated to road upgrades.

83. With respect to wetland impacts, though the amended project resulted in an overall reduction in permanent wetland impacts (0.31 hectares to 0.14 hectares), the increased temporary impacts (1.97 hectares to 2.54 hectares) created a combined permanent and temporary increase in total wetland impacts. C. Wallis raised concerns surrounding these impacts as they relate to wildlife habitat and adherence to the Directive. In addition, he raised concerns specifically surrounding potential impacts to amphibians due to a lack of survey effort.<sup>80</sup> The Commission accepts that the overall reduction to permanent wetland impacts from the amended project is likely to result in less significant wetland impacts. However, the Commission is concerned about the still outstanding amphibian surveys and will discuss this below.

84. RES committed to non-intrusive amphibian surveys prior to construction<sup>81</sup> for any areas where project infrastructure infringes upon Class III or greater 100-metre wetland setbacks as recommended in the Directive. This commitment included newly impacted wetlands occurring as a result of the siting of the amended project.<sup>82</sup> The Commission expects that RES adheres to amphibian commitments discussed in Decision 22966-D01-2018, including road access curtailment during major rainfall events, appropriate survey efforts for high-potential amphibian breeding habitats, notifications to AEPA if amphibians are discovered during surveys, and appropriate development of a mitigation plan in consultation with AEPA if amphibians are discovered during surveys.<sup>83</sup> Given the above, the Commission still requires RES to adhere to Condition 5f of Approval 26910-D02-2021, which relates to amphibian surveys and mitigation.

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<sup>79</sup> *Wildlife Directive for Alberta Solar Energy Projects*, Alberta Environmental and Parks, effective October 4, 2017.

<sup>80</sup> Exhibit 27561-X0102, Appendix E - Evidence of Cliff Wallis, December 2022, PDF pages 2 to 5.

<sup>81</sup> Exhibit 27561-X0192.02, Appendix A - RES Responses to Interveners' Proposed Conditions, PDF page 2.

<sup>82</sup> Exhibit 27561-X0192.02, Appendix A - RES Responses to Interveners' Proposed Conditions, PDF page 2.

<sup>83</sup> Decision 22966-D01-2018: BHEC-RES Alberta G.P. Inc. – Forty Mile Wind Power Project, Proceeding 22966, Application 22966-A001, August 30, 2018, PDF page 25.



85. With respect to native grassland impacts, the Commission understands that the 0.2 hectare increase in native grassland impacts is relatively small in nature and is primarily associated to upgrades of linear features. Therefore, the Commission finds that the amended project is unlikely to create significant adverse environmental impacts relative to the approved project.

86. Overall, despite C. Wallis's concerns with the amended project, there was overall agreement with WSP's conclusion that the reduction to the project footprint was positive from an environmental standpoint.

87. Based on the *AEP[A] Consultation and Notification Report*<sup>84</sup> submitted to AEPA by WSP, the Commission is satisfied that the potential environmental effects associated with the amended project are likely to create an overall decrease in environmental impacts relative to the approved project.

88. C. Wallis included a list of recommendations for the amended project, if approved, including that "AUC conditions from the previous project approval continue."<sup>85</sup> RES and the Commission agree with this recommendation. The Commission will therefore transfer the environmental conditions from Approval 26910-D02-2021 to approvals for the Forty Mile Wind Power Project.

#### 4.5.2 Post-construction monitoring and cumulative effects

89. C. Wallis raised concerns surrounding long-term impacts to bats and birds from the cumulative effects associated to wind energy growth in the region and recommended a region-wide approach to bat monitoring, strict protocols for wind energy operation during bat migration periods, and enhanced post-construction monitoring periods. C. Wallis recommended that the "Alberta Utilities Commission work with Alberta Environment and Protected Areas to help lay the groundwork for how a regional cumulative effects study and regional approaches to monitoring should be undertaken."<sup>86</sup>

90. In regard to bats and birds, Rule 033: *Post-approval Monitoring Requirements for Wind and Solar Power Plants* was approved on June 12, 2019, with an effective date of July 1, 2019. Rule 033 requires approval holders to submit to AEPA and the Commission annual post-construction monitoring survey reports, and Condition 5e of Approval 26910-D02-2021, was imposed to enforce this. In order to prescribe more guidance on when post-construction monitoring survey reports shall be completed due to the project phases, the Commission will replace Condition 5e of Approval 26910-D02-2021 with the following:

- d. RES shall submit an annual post-construction monitoring survey report, first for Phase 1, which can be later combined with Phase 2 once Phase 2 becomes operational. The reports are to be submitted to Alberta Environment and Protected Areas (AEPA) and the Commission no later than January 31 of the year following the mortality monitoring period, and on or before the same date every subsequent year for which AEPA requires surveys pursuant to subsection 3(3) of Rule 033: *Post-approval Monitoring Requirements*

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<sup>84</sup> Exhibit 27561-X0011, Attachment H – Alberta Environment and Parks Consultation, PDF page 6.

<sup>85</sup> Exhibit 27561-X0102, Appendix E - Evidence of Cliff Wallis, December 2022, PDF page 3.

<sup>86</sup> Exhibit 27561-X0102, Appendix E - Evidence of Cliff Wallis, December 2022, PDF pages 2 to 5.

*for Wind and Solar Power Plants* and Section 4.0 of the Post-Construction Survey Protocols for Wind and Solar Energy Projects.

91. The Commission notes that while the stated mitigation measures proposed by RES may reduce impacts to birds and bats, if post-construction monitoring reveals that wildlife mortalities exceed acceptable levels (as determined by AEPA), RES is required to implement additional mitigation measures in consultation with AEPA.

92. In addition, due to the increased regional development of wind farms and the close scale and proximity of adjacent projects to the amended project, RES will be required to abide by any current and future requirements, recommendations and directions provided by AEPA as they relate to cumulative impacts. This includes participation in a working group and the future implementation of any additional monitoring and mitigation that AEPA considers necessary to address cumulative effects occurring from two or more projects within the local area, as defined by AEPA.

## **5 Conclusion**

93. Pursuant to the Commission's typical practice in amendment applications, the Commission has considered the incremental impacts of the amended project to determine if the amendment applications are in the public interest. The only exception to the Commission's adherence to this practice is the Commission's decision to consider the aeronautical safety impacts related to aerodrome use in respect of turbines within five nautical miles of the Bow Island Airport. As discussed in Section 3, the Commission will assess these impacts through the further processes in this proceeding and issue its decision on the approval of the affected turbines within five nautical miles of the Bow Island Airport in a subsequent decision. For this reason, throughout the following section of the decision, the Commission's reasons refer to the incremental impacts of the amended project, but do not consider aeronautical safety impacts related to aerodrome use in respect of turbines within five nautical miles of the Bow Island Airport.

94. The Commission has determined that many of the negative impacts associated with the amended project are minimal in nature and have been adequately addressed through mitigation. Further, the Commission has determined that many of the project amendments do not result in any negative incremental impacts, and largely reduce the negative impacts associated with the approved project, including reductions of overall environmental impacts as a result of the decreased project footprint and of visual impacts as a result of the reduced number of turbines.

95. The Commission is satisfied that noise from the amended project will comply with the requirements set out in Rule 012. The Commission finds that the project amendments will result in a decrease in sound levels at A. Jenkins's dwelling, as compared to the approved project. The Commission also finds there is insufficient evidence in this proceeding to establish that noise from the project is likely to have adverse health effects on residents at A. Jenkins's residence. The Commission will continue to require that RES complete a post-construction CSL survey to verify project compliance with Rule 012.

96. The Commission is satisfied that while there will be a small incremental increase in shadow flicker from the amended project, the shadow flicker impacts produced by the project are likely to be low. The Commission will require RES to file a report with the Commission after its first year of operation outlining any shadow flicker complaints or concerns, and its response to those complaints or concerns.

97. The Commission also finds that there may be some minor impacts associated with aerial spraying operations near the turbines in the amended project, but that these impacts are low and will be adequately mitigated by the turbine shut-off protocol that RES will be required to implement. The Commission is satisfied that the potential environmental effects associated with the amended project are likely to create an overall decrease in environmental impacts relative to the approved project. The Commission is satisfied that other impacts, including visual impacts, will generally be reduced and that there is therefore no incremental impact associated with the project amendments.

98. The benefits of the amended project include that it would allow RES to generate more renewable energy from an approximate 40 per cent reduction in wind turbines, thereby reducing the permanent project footprint by almost half. Similar to the approved project, RES also explained that the amended project would create over 300 jobs during construction and 15-20 permanent jobs during its operational life of more than 20 years. It would also contribute millions of dollars annually to the County of Forty Mile by way of property taxes and provide \$2 million in annual land payments and royalties.

99. Overall, for the reasons outlined in this decision and subject to the conditions in Appendix C, the Commission finds that RES has satisfied the requirements of Rule 007 and Rule 012, and that the negative impacts of the amended project can be mitigated to an acceptable degree and are outweighed by the benefits of the project.

100. The Commission finds that approval of the Unaffected Turbines, the Forty Mile 516S Substation and the requested time extensions are in the public interest. Since the Forty Mile Wind Power Project Phase 2 includes only Unaffected Turbines, the Commission finds that approval of the entirety of this phase of the project is in the public interest. Since the Forty Mile Wind Power Project Phase 1 includes both Unaffected Turbines and turbines within five nautical miles of the Bow Island Airport, the Commission finds that approval of only the Unaffected Turbines in that phase of the project is in the public interest at this time. The Commission's final decision related to the remainder of the turbines that RES is seeking approval of will be reserved until the resolution of the additional process and the issuance of the Commission's subsequent decision. Should the Commission also approve those turbines, the partial approval of Forty Mile Wind Power Project Phase 1 in this decision may be amended to include those turbines.

## 6 Decision

101. Pursuant to sections 11, 14, 15 and 19 of the *Hydro and Electric Energy Act*, the Commission approves the Unaffected Turbines and the Forty Mile 516S Substation and grants RES Forty Mile Wind GP Corp. the following approvals:

- Appendix 1 – Power Plant Approval 27561-D02-2023 to construct and operate the Unaffected Turbines for the Forty Mile Wind Power Project Phase 1.
- Appendix 2 – Power Plant Approval 27561-D03-2023 to construct and operate Forty Mile Wind Power Project Phase 2.
- Appendix 3 – Permit and Licence 27561-D04-2023 to construct and operate the Forty Mile 516S Substation.

102. The appendices will be distributed separately.

Dated on June 9, 2023.

### Alberta Utilities Commission

*(original signed by)*

Douglas A. Larder, KC  
Vice-Chair

*(original signed by)*

Matthew Oliver, CD  
Commission Member

**Appendix A – Proceeding participants**

<b>Name of organization (abbreviation) Company name of counsel or representative</b>
RES Forty Mile Wind GP Corp. (RES) Terri-Lee Oleniuk Matt Hammer
Anita Jenkins Heather Beyko Selina Sahota
Nathan Hofmann
Alberta Utilities Commission  Commission panel Douglas A. Larder, KC, Vice-Chair Matthew Oliver, CD, Commission Member  Commission staff Patrick Schembri (Commission counsel) Fatiha Rezwan Allan Anderson Joan Yu Glenn Harasym

**Appendix B – Oral hearing – registered appearances**

<b>Name of organization (abbreviation) Name of counsel or representative</b>	<b>Witnesses</b>
RES Forty Mile Wind GP Corp. Terri-Lee Oleniuk Matt Hammer	Peter Clibbon Rebecca Crump Andrew Faszler Trevor Cuthbert Kristine Sare Shawn Sutherland Christopher Ollson
Anita Jenkins Heather Beyko Selina Sahota	Mariana Alves-Pereira Cliff Wallis
Nathan Hofmann	

<p>Alberta Utilities Commission</p> <p>Commission panel Douglas A. Larder, KC, Vice-Chair Matthew Oliver, CD, Commission Member</p> <p>Commission staff Patrick Schembri (Commission counsel) Fatiha Rezwan Allan Anderson Joan Yu Glenn Harasym</p>
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## Appendix C – Summary of Commission conditions of approval in the decision

This section is intended to provide a summary of all conditions of approval specified in the decision for the convenience of readers. Conditions that require subsequent filings with the Commission will be tracked as directions in the AUC's eFiling System. In the event of any difference between the conditions in this section and those in the main body of the decision, the wording in the main body of the decision shall prevail.

The following are conditions of Decision 27561-D01-2023 that require subsequent filings with the Commission and will be included as conditions of Power Plant Approval 27561-D02-2023:

- RES shall submit an annual post-construction monitoring survey report, first for Phase 1, which can be later combined with Phase 2 once Phase 2 becomes operational. The reports are to be submitted to Alberta Environment and Protected Areas (AEPA) and the Commission no later than January 31 of the year following the mortality monitoring period, and on or before the same date every subsequent year for which AEPA requires surveys pursuant to subsection 3(3) of Rule 033: *Post-approval Monitoring Requirements for Wind and Solar Power Plants* and Section 4.0 of the Post-Construction Survey Protocols for Wind and Solar Energy Projects.

The following are conditions of Decision 27561-D01-2023 that require subsequent filings with the Commission and will be included as conditions of Power Plant Approval 27561-D03-2023:

- RES shall conduct a post-construction comprehensive sound level survey, including an evaluation of low frequency noise, at receptors R62, R87, R88 and R32. The post-construction comprehensive sound level survey must be conducted under representative conditions and in accordance with Rule 012: *Noise Control*. Within one year after the project commences operations, RES shall file a report with the Commission presenting measurements and summarizing results of the post-construction comprehensive sound level survey. RES shall simultaneously provide Ms. Jenkins with the results of its post-construction noise survey and low frequency noise evaluation for her residence and provide written confirmation to the Commission when it has done so.
- RES shall submit an annual post-construction monitoring survey report, first for Phase 1, which can be later combined with Phase 2 once Phase 2 becomes operational. The reports are to be submitted to Alberta Environment and Protected Areas (AEPA) and the Commission no later than January 31 of the year following the mortality monitoring period, and on or before the same date every subsequent year for which AEPA requires surveys pursuant to subsection 3(3) of Rule 033: *Post-approval Monitoring Requirements for Wind and Solar Power Plants* and Section 4.0 of the Post-Construction Survey Protocols for Wind and Solar Energy Projects.

The following are conditions of Decision 27561-D01-2023 that may or do not require a subsequent filing with the Commission:

- RES shall file a report with the Commission detailing any complaints or concerns it receives from local landowners regarding shadow flicker from the project during its first year of operation, as well as RES's response to the complaints or concerns. If RES implements mitigation to reduce shadow flicker impacts, the report shall detail the mitigation measures and associated stakeholders' feedback regarding the mitigation. RES shall file this report no later than 13 months after the project becomes operational.
- RES shall implement a turbine shut-off protocol to be followed when it receives a request at least 24 hours in advance of impacted aerial spraying operations. The protocol will include the direct phone number for the site supervisor and the remote operations control centre, a step-by-step process to identify which turbines should be curtailed, halted and/or yawed, a confirmation of dates and times for planned aerial spraying activities, a process to ensure the site is safe and secure for spraying to occur, and a process to ensure that RES is notified when spraying is completed. RES shall comply with the protocol, and shall also use reasonable efforts to satisfy the requirements of the protocol promptly when a request is made less than 24 hours in advance due to exigent circumstances.