



Heritage Wind Farm Development Inc.

Heritage Wind Farm Power Plant

June 2, 2011



The Alberta Utilities Commission

Decision 2011-239: Heritage Wind Farm Development Inc.

Heritage Wind Farm Power Plant

Application No. 1480111

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1 Introduction

1. Benign Energy Canada Inc. (Benign) filed Application No. 1480111 (the application) with the Alberta Energy and Utilities Board in September 2006 seeking approval to construct and operate the Heritage Wind Farm Power Plant (wind farm) in the Pincher Creek area.
2. Benign took no steps to pursue the application and, in January 2008, informed the Alberta Utilities Commission (AUC or the Commission) that it had transferred its interest in the proposed wind farm to Heritage Wind Farm Development Inc. (Heritage).
3. On September 25, 2009, Heritage reactivated the application by filing an update to reflect conditions of the municipal approval, a new public involvement program, noise impact assessment (NIA) and other information to complete the application. The Commission requested further additional information on March 10, June 29 and July 15, 2010. These information requests were responded to on May 13, July 8 and July 16, 2010, respectively.
4. The proposed wind farm consists of 97 Vestas V90 wind turbines; each rated at three megawatts (MW) for a total installed capacity of 291 MW. Each wind turbine will be mounted atop an 80 metre tall tower. The turbine's rotor will have three blades, each 45 metres in length.
5. The wind turbines would be located in an area approximately five kilometres northeast of Pincher Creek in the Municipal District (MD) of Pincher Creek No. 9, at the following land locations:
 - sections 1, 5, 8 and 10 of Township 8, Range 29, west of the Fourth Meridian
 - sections 13, 22, 23, 24, 26, 27, 32 and 36 of Township 7, Range 29, west of the Fourth Meridian
 - sections 18, 19, 20 and 21 of Township 7, Range 28, west of the Fourth Meridian
6. The application also provides the latitude and longitude coordinates of each proposed wind turbine.
7. A 34.5-kilovolt (kV) gathering system, consisting of underground power lines is also proposed in the application for the purpose of collecting and sending the electric power from each wind turbine to a substation, where the wind plant would be connected to the Alberta Interconnected Electric System (AIES). However, the substation and other facilities for the interconnection to the AIES will be the subject of separate applications.

Therefore, this decision considers only the wind farm pursuant to Section 11 of the *Hydro and Electric Energy Act*.

8. On July 21, 2010, the Commission issued a notice of application to all interested parties and landholders within two kilometres of the proposed wind farm. The notice was also published in the Pincher Creek Echo, the Macleod Gazette and the Lethbridge Herald.

2 Submissions and resulting application amendments

9. The following parties filed submissions in response to the Commission's notice:
 - Marilyn and Harry Welsch, owners of M & H Ranch and Feedlot Inc., and Gertrude Welsch (Welsches) on August 12, 2010
 - TransAlta Corporation (TransAlta) on August 13, 2010
 - FortisAlberta Inc. (FortisAlberta) on March 3, 2011
10. TransAlta objected to the locations of four of Heritage's wind turbines on the grounds that they were proposed in close proximity to TransAlta's existing wind turbines. It explained that the turbulence that would be created by four proposed Heritage turbines would cause wear and tear, increased maintenance, and lead to reduced life expectancy of its turbines. However, after a period of negotiations, TransAlta and Heritage reached agreement and, as a result, TransAlta withdrew its objection to the application on November 22, 2010.
11. The Welsches' concerns were in respect to noise, the location of the gathering system and impact on wildlife. They stated that one residence in their property was not included as a sound receptor in the NIA. They also objected to the location of a portion of the gathering system on their land and raised a concern about one of the proposed wind turbine's proximity to a nesting site of ferruginous hawks. Heritage was also successful in resolving the Welsches' concerns, who withdrew their objection in February 8, 2011. However, as a result of the agreement with the Welsches, Heritage relocated a portion of the gathering system from the Welsches' land to the road allowance of Highway No. 510. Details of the location of the gathering system on the road allowance, and off the Welsches' land, are shown in the maps attached to Exhibit 32.01.
12. The relocation of part of the gathering system within road allowances prompted FortisAlberta to object on the grounds that its customers will be negatively impacted in the event that future electric distribution infrastructure additions are required to be built along the same public road allowance. However, on April 18, 2011, FortisAlberta indicated that it reached a resolution with Heritage and withdrew its objection to the application.

3 Discussion

3.1 Public consultation program

13. Heritage stated that it had notified all occupants, residents and landholders within two kilometres of the proposed wind farm as well as First Nations located east of the

wind farm. Heritage's public consultation program consisted of a letter of introduction, a project information package and a public open house held at the Heritage Inn Pincher Creek.

3.2 Noise

14. Although the original application filed in 2006 contains some noise related information, and additional noise-related information was filed during the application's review process, an up-to-date NIA conforming to the requirements of AUC Rule 012: *Noise Control* (AUC Rule 012) was not filed by Heritage until May 13, 2010. Therefore, the following discussion about noise deals exclusively with the sound predictions presented in this latest NIA, which is registered as Exhibit 3.18 to this proceeding.
15. The NIA presents the cumulative sound predictions including the proposed Heritage Wind Farm, the recently approved Oldman 2 Wind Farm and the existing wind turbines in the area, namely the Oldman River Wind Farm (2 turbines), the Summerview Phase I (39 turbines), and the Summerview Phase II (23 turbines) Wind Farms. Sounds from the associated substations, proposed and existing, are also included in the NIA.
16. The NIA established a permissible sound level (PSL) of 50 dBA L_{eq} daytime and 40 dBA L_{eq} nighttime at 32 affected receptor locations in the area.¹
17. The proposed Vestas V90 wind turbines can be programmed to operate in one of three operating modes. Mode 0 is the loudest of the operating modes with a hub wind speed of eight metres per second (m/s) whereas modes 1 and 2 are sequentially the quieter operating modes. Modes 1 and 2 can be programmed to operate when noise level reduction is required, but at the expense of a reduced output power.
18. Heritage submitted that noise predictions presented in the NIA indicate that, with all its wind turbines operating at full output power in mode 0, the PSL of 50 dBA L_{eq} daytime will not be exceeded. However, the PSL of 40 dBA L_{eq} nighttime would be exceeded at 22 receptors. Therefore, Heritage proposed sound mitigation measures to insure compliance with the PSL during the nighttime period.
19. The sound mitigation measures entail the shutting down of a number of the proposed wind turbines and the programming of other proposed wind turbines to operate in mode 1 or mode 2, as required. In particular, Heritage proposes to shut down 57 wind turbines, to program five wind turbines to operate in mode 1, and to program 33 wind turbines to operate in mode 2 during the nighttime hours, i.e. from 10 p.m. to 7 a.m.
20. Heritage stated that, with the mitigation measures implemented as described above, the predicted sound levels will comply with the nighttime PSL of 40 dBA L_{eq} at the majority of the receptors. However, there are four receptors (namely receptors 38, 39, 6 and 32) where sound levels are predicted to exceed the nighttime PSL by 0.3 to 0.9 decibels.
21. Accordingly, Heritage confirmed, in response to information request AUC-Heritage-25(a), that it would implement the sound mitigation measures² described

¹ Exhibit 3.18 contains the location coordinates of all receptors. Receptors have been labeled with numbers ranging from 4 to 41. Exhibit 30 includes an additional receptor labeled Receptor 42.

² More particularly, as specified in Table 8 of Exhibit 3.18.

above to ensure compliance with the nighttime PSL initially when the turbines are commissioned and committed to conduct actual sound measurements to test compliance with the PSLs. However, Heritage requested that, should actual sound measurements show that sound levels exceed the PSL at a receptor location, it be given a period of time to bring the sound level into compliance with AUC Rule 012. If compliance cannot be achieved after this period of time, Heritage agreed to make adjustments to the turbine's operational modes so that the sound level at the receptors does not exceed the PSL. Heritage also requested that, if the actual sound measurements show that the sound levels at the receptors are significantly below the PSL, Heritage be permitted to reprogram the wind turbines to increase power output and a corresponding increase in sound levels, but not exceed the PSL.

3.3 Environmental impacts

22. In its application, Heritage also provided an evaluation of historical resources, a discussion of potential siting and land-use issues, and an evaluation of potential visual impacts.
23. The environmental aspects of the application were also the subject of a review and sign off from Alberta Sustainable Resource Development - Fish and Wildlife Division (ASRD-FWD). On May 5, 2010, by letter (Exhibit 3.03), ASRD-FWD advised:

The project Heritage Wind Farm was reviewed by the Regional Wildlife Contact (Appendix 1-Wind Energy Wildlife Contact map). ASRD-FWD has reviewed the proposal (including turbine locations) and is satisfied with the monitoring and mitigation of impacts to wildlife and their associated habitats, including Species at risk. ASRD-FWD has reviewed the proposed location, proposed mitigation strategies, including associated infrastructure and construction plans, and post construction monitoring program, as detailed below.

The Heritage Wind energy wildlife mitigation plan for Heritage Wind Farm meets with the recommended mitigation strategy developed by ASRD-FWD.

24. ASRD-FWD also made recommendations relating to site selection and outlined mitigation measures to reduce impact on wildlife, including a wildlife monitoring program.
25. In particular, with respect to site location ASRD-FWD recommended that the project minimize disturbance of native grasslands, and if areas of native grasslands are disturbed, that they be reseeded with appropriate native seed mixture.
26. With respect to impact on wildlife, ASRD-FWD recommended observance of all required setback distances, construction activities outside breeding season for species of concern in the area, avoidance of all known grouse leks with a minimum 500-metre buffer zone, and maintaining a 100-metre buffer zone from water bodies.³

³ Recommended Land Use Guidelines for Protection of Selected Wildlife Species and Habitat Within Grassland and Parkland Natural Regions of Alberta.

27. ASRD-FWD also requested a two year post-construction monitoring program of bird and bat carcasses and stated that, if there is an unexpected high level of bat fatalities, the developer, in consultation with ASRD, will implement operational mitigation measures, such as increasing the cut-in speed of wind turbines. Heritage committed to all ASRD-FWD's recommended post-construction assessments (Exhibit 3.02 – information response AUC-Heritage-1).
28. Heritage also filed an archaeological Historic Resources Impact Assessment with Alberta Culture and Community Spirit and received *Historical Resources Act* clearance approval from that agency.

3.4 Wind farm gathering system

29. The proposed wind farm includes a gathering system (or collector system). The system consists of 34.5-kV underground power lines to collect the power generated by each turbine and to bring it to a future substation. Heritage provided a map of the location of these lines and a cross-sectional drawing where the collector lines run parallel to existing rights-of-way. This map also shows Heritage's preferred location for the future substation. However, the final location of the substation will depend on the locations of future transmission facilities, yet to be determined by the Alberta Electric System Operator, which will be required for the connection of the wind farm to the AIES, and will be the subject of future applications.

3.5 Other approvals

30. Heritage received approvals from Transport Canada, NAV Canada, and Alberta Transportation. Heritage had received a development permit from the MD of Pincher Creek No. 9, but the MD advised the Commission in a letter, dated October 14, 2010, that the Permit for the Heritage Wind Farm Power Plant within the MD of Pincher Creek No. 9 had expired and was no longer valid. On March 14, 2011, Heritage advised the Commission that it was working with the MD to resolve the concerns regarding its development permit. On March 21, 2011, the MD wrote to the Commission and stated that it was awaiting a new development permit application from Heritage.

4 Findings

31. Pursuant to AUC Rule 007: *Rules Respecting Applications for Power Plants, Substations, Transmission Lines, and Industrial System Designations* (AUC Rule 007), the Commission has reviewed the project, including Heritage's participant involvement program, environmental, visual and noise impacts, and gathering system routing.
32. The Commission considers that Heritage's public consultation complied with the AUC's participant involvement program and notification requirements outlined in AUC Rule 007. The Commission finds that Heritage's consultation steps were adequate given the nature and scope of the project.
33. The Commission also notes that Heritage has successfully addressed and resolved the concerns expressed by the parties that filed submissions in response to the Commission's notice of application. All these parties, namely the Welsches, TransAlta and FortisAlberta, withdrew their objections to this application.

34. The Commission took into account the May 5, 2010 letter from ASRD-FWD, filed as Exhibit 3.03 in this proceeding, where ASRD-FWD indicates that it is satisfied with the monitoring and mitigation of impacts to wildlife and their associated habitats, including species at risk. The Commission finds that ASRD-FWD's recommendations relating to site selection, mitigations measures to reduce impact on wildlife, and the required wildlife mortality surveys will ensure that any environmental effects are addressed.
35. The Commission accepts the noise predictions presented in the NIA study indicating that the daytime PSL of 50 dBA L_{eq} will not be exceeded with the addition of the proposed wind farm and all of its wind turbines operating at full output power in the mode 0 configuration. However, the Commission finds that the proposed wind farm would not meet the nighttime PSL of 40 dBA L_{eq} without noise mitigation measures. Therefore, the Commission considered the noise mitigation measures included in the application. The measures proposed by Heritage consist of the shutting down of 57 wind turbines, the programming of five wind turbines to operate in mode 1 and the programming of 33 wind turbines to operate in mode 2 during the nighttime hours.
36. The Commission understands that, with the implementation of the above noise mitigation measures, predicted sound levels will be below the nighttime PSL of 40 dBA L_{eq} at the majority of the sound receptors. However, at receptors 6, 32, 38 and 39, the predicted sound levels range between 40.3 dBA to 40.9 dBA, i.e. slightly above the nighttime PSL. The Commission is aware that the cumulative predicted noise levels were calculated using noise source data from several manufacturers and information from other wind turbine operators in the study area. Acoustical computer models may overstate the noise predictions because of the standards used and may vary based on the assumptions and input data entered, i.e. a ground attenuation factor of 0.8 applied globally and no consideration of noise source directivity.
37. Therefore, the Commission accepts that, with the implementation of the noise mitigation measures committed to by Heritage, the proposed wind farm is likely to comply with the nighttime PSL. To ensure that the Wind Farm complies with AUC Rule 012 when operating, the Commission orders the implementation of these sound mitigations measures. Furthermore, the Commission directs Heritage to conduct a post-construction comprehensive noise study under AUC Rule 012's "representative conditions" to verify that Heritage complies with the rule at the following receptor locations where noise is predicted to be close to or above 39 decibels: 3, 4, 6, 7, 13, 21, 26, 28, 32, 33, 36, 38, 39, 40 and 42.
38. The Commission further notes that Heritage requested that, should sound measurements show that sound levels exceeds the PSL at a receptor location, Heritage be given a period of time to bring the sound level into compliance. In this respect, the Commission finds that, should actual sound measurements exceed the PSL at any receptor, the noise mitigation measures Heritage committed to must be implemented immediately. If additional mitigative measures are required to ensure compliance with the PSL at all receptors then Heritage will bring forth these measures to the Commission as soon as possible so that these additional measures can be implemented.
39. Regarding Heritage's request to reprogram the turbines to increase power output, if post-construction sound measurements show that the sound levels at receptors are significantly

below the PSL, the Commission directs that, before any turbine reprogramming to increase output is undertaken, Heritage files an application for AUC approval to implement any operational changes to the wind turbines.

40. The connection of the proposed wind farm to the AIES will be the subject of future applications for the necessary transmission facilities, pursuant to sections 14, 15 and 18 of the *Hydro and Electric Energy Act*. These future applications will determine the final location of the proposed wind farm's substation, to which all the underground 34.5 kV collection lines will be routed. If the final location of the wind farm's substation is the same as or very near the location assumed by Heritage in this application, the underground collection lines will not need to be moved from the locations that Heritage presented in this application. However, if the final location of the wind farm's substation is significantly different than the location assumed in this application, the Commission requires Heritage to file an application for these changes to the wind farm.
41. The Commission is satisfied that, with the conditions stated above, approval of the application is in the public interest and that the wind farm complies with all regulatory requirements. Regarding the issue of its municipal development permit, the Commission expects Heritage to continue to work with the MD of Pincher Creek to resolve any outstanding concerns.

5 Decision

42. Pursuant to Section 11 of the *Hydro and Electric Energy Act*, the Commission approves the application and grants the approval set out in Appendix 1 – Power Plant – Approval No. U2011-210 – June 2, 2011, to Heritage Wind Development Inc. to construct and operate the Heritage Wind Farm Power Plant (the appendix will be distributed separately).

Dated June 2, 2011.

The Alberta Utilities Commission

(original signed by)

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