Mr. Yanke and Mr. Huebner Noise Complaints

Oldman 2 Wind Farm

July 20, 2015

Alberta Utilities Commission
Decision 3521-D01-2015
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1 Introduction

On November 13, 2014, Mr. JesseYanke filed a noise complaint to the Alberta Utilities Commission under Rule 012: *Noise Control* regarding the noise at his residence from the Oldman 2 wind farm.[1] On the same day, Mr. David Huebner also filed a noise complaint under Rule 012 regarding the noise at his residence from the Oldman 2 windfarm.[2] Mr. Yanke's residence is located at SE 14-7-29-W4M and located southwest of the nearest wind turbine (T-20) of the Oldman 2 wind farm. Mr. Huebner's residence is located at SE 14-7-29-W4M, across the road from Mr. Yanke's residence approximately 100 metres away. This residence is also located southwest of the nearest wind turbine (T-20) of the Oldman 2 wind farm.

1. Mr. Yanke also filed a Rule 012 noise complaint investigation form Part 2 - event log,[3] which documented noise events between September 29, 2014 and October 21, 2014. Mr. Yanke described the noise emissions at issue as blades whooshing, whipping and pulsating, gear box grinding noise and a high pitch from the generator. In addition, Mr. Yanke expressed concerns with the red blinking lights and the potential for ice throw from the turbine blades during the wintertime period. Mr. Huebner stated that he was in complete agreement with the letter submitted by Mr. Yanke in support of his complaint and that his residence was equally affected by the Oldman 2 wind farm.

2. Both noise complaints were registered in the AUC's eFiling System under Proceeding 3521.

2 Background

3. On September 24, 2010, in Decision 2010-461,[4] the Commission approved an application from Oldman 2 Wind Farm Limited (Oldman 2), a wholly-owned subsidiary of Luxembourg Mainstream Renewable Power S.A.R.L., and Alberta Wind Energy Corporation to construct and operate a 46-megawatt (MW) wind farm, designated as the Oldman 2 Wind Farm power plant. The wind farm would consist of 20 Siemens SWT-2.3-93 wind turbines each rated at 2.3 MW. Each wind-powered turbine generator would be mounted on top of an 80-metre tower and have a rotor diameter of 93 metres. The proposed wind-powered turbines would be located on 712 hectares of privately owned lands, more specifically, sections 14, 15, 21, 22, 26 and 27 of Township 7, Range 29, west of the Fourth Meridian. The project site is approximately

[1] Exhibit 0001.01.Yanke-3521 Yanke Application Email.
[2] Exhibit 0003.01.HUE-3521 Huebner Statement of Intent to Participate.
[3] Exhibit 0002.00.YANKE-3521 YANKE Event log.
[4] Decision 2010-461: Oldman 2 Wind Farm Limited – Oldman 2 Wind Farm Project, Proceeding 293, Application 1605398, September 24, 2010.

10 kilometres northeast of Pincher Creek, Alberta, and adjacent to Highway 785 within the Municipal District of Pincher Creek No. 9. The specific proposed locations of the wind-powered turbines are set out in Section 4.4 of the original application. The wind farm facility map filed as part of the original application indicates that wind turbine T-20 would be located in Section 14 of Township 7, Range 29, west of the Fourth Meridian.[5] As a result of this decision, Approval U2010-324[6] was issued, which directs that the wind farm power plant shall be located in sections 14, 15, 21, 22, 26 and 27 of Township 7, Range 29, west of the Fourth Meridian. It further states that if the supporting structure of any wind turbine has to be located more than 50 metres from the specified coordinates, Oldman 2 must apply to the Commission for an amendment to Approval U2010-324 prior to construction and that construction of the wind farm shall be completed by March 31, 2012, unless the Commission directs otherwise.

4. Subsequently, in Approval U2012-80,[7] the Commission granted Oldman 2 a time extension for completion of the construction of the wind farm power plant to October 31, 2013, and this approval replaced the previous approval. Decision 2012-062[8] for the time extension states that Oldman 2 had not begun construction of the Oldman 2 wind farm because it was not able to complete its financing for the reasons stated in that decision. In addition, in Decision DA2012-122,[9] the Commission granted Oldman 2 approval to utilize a 101-metre rotor diameter in place of the originally approved 93-metre rotor diameter for the wind turbines. Oldman 2 indicated that the originally approved turbines are no longer available from the manufacturer. That change is reflected in the model name change for the 20 approved wind turbines to a Siemens SWT-2.3-93-101 wind trubine. Other than the change of the completion date, and the length of the wind turbine blades, the terms of the approval remained the same.

5. In Decision 2013-184,[10] dated May 15, 2013,[11] the Commission granted a further time extension to October 31, 2014, for completion of the wind farm power plant because Oldman 2 had to secure project financing prior to commencing construction. Approval U2013-260[12] was issued and replaced Approval U2012-80. Other than the change in date for completing construction of the wind farm power plant, the approval remained unchanged.

6. The Oldman 2 wind farm was constructed over the summer of 2014 and was commissioned in late August 2014.

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5 Exhibit 0006.00.OLDMAN 2-293.

6 Power Plant Approval U2010-324, Proceeding 293, Application 1605398, September 28, 2010. Errata issued on September 28, 2010.

7 Power Plant Approval U2012-80, Proceeding 1712, Application 1608152, February 29, 2012. Approval U2012-80 was issued pursuant to Decision 2012-062 dated February 29, 2012.

8 Decision 2012-062: Oldman 2 Wind Farm Limited – Time Extension to Construct 46-MW Oldman 2 Wind Farm, Proceeding 1712, Application 1608152, February 29, 2012.

9 Decision DA2012-122: Oldman 2 Wind Farm Limited – Wind Turbine Rotor Size Revision, Proceeding 1806, Application 1608303, May 9, 2012. Errata issued on May 15, 2012.

10 Decision 2013-184: Oldman 2 Wind Farm Limited – Time Extension to Construct 46-MW Wind Farm and Wind Point 112S Substation, Proceeding 2572, Applications 1609509 and 1609510, May 15, 2013.

11 Decision 2013-184: Oldman 2 Wind Farm Limited – Time Extension to Construct 46-MW Oldman 2 Wind Farm and Windy Point 112S Substation, Applications No. 1609509 and No. 1609510, Proceeding ID No. 2572, May 15, 2013.

12 Power Plant Approval U2013-260, Proceeding 2572, Application 1609509, May 15, 2013.

7. On September 29, 2014, Oldman 2 applied to change the coordinates of wind turbine T-14 because this turbine was constructed 68 metres from its permitted coordinates. The Commission granted the change for the reasons given in Decision DA2014-229.[13] The approval was not amended.

8. In his noise complaint, Mr. Yanke stated that he purchased his property in March 2012 and began to develop that property at that time. In a subsequent letter dated May 12, 2015, from Mr. Huebner, it stated that Mr. Yanke's house was built in the spring and summer of 2013.[14] In his noise complaint, Mr. Huebner stated that he purchased his property in December 2012 and the house and shop were complete by the fall of 2013 before the construction of the Oldman 2 wind farm. Mr. Huebner added in his letter of May 12, 2015, that his home was built to lock up stage in the summer of 2013 and that clearly both homes were built before wind turbine T-20 was built.

3 Process

9. On November 21, 2014, the Commission issued a letter to Mainstream Renewable Power Ltd. (Mainstream),[15] the operator of the Oldman 2 wind farm, requesting information in regard to the operations of the Oldman 2 wind farm and the steps Mainstream has taken to resolve the concerns of the complainants.

10. On December 3, 2014, Mainstream responded to the Commission's letter outlining the steps it had taken to address the noise complaints and its position in addressing the noise concerns.[16] The letter outlined Mainstream's communications and meetings with Mr. Yanke and Mr. Huebner to better understand their concerns. Mainstream maintained that Oldman 2 believes the project is currently operating within permissible sound levels. In that respect, Mainstream referred to Section 2.4 of Rule 012:

> Where a person builds a dwelling or receives a building permit within 1.5 km from the boundary of an existing or approved facility, or a wind turbine or substation in a wind project, the permissible sound level at the new dwelling, will be the greater of the cumulative sound level existing at the time of construction of the new dwelling, or the permissible sound level as determined in Section 2 of this rule.

11. On December 22, 2014, the Commission directed Mainstream to conduct a comprehensive sound level survey to determine whether the Oldman 2 wind farm is in compliance with Rule 012 and to submit a report in that respect by no later than March 31, 2015. Mainstream was directed to consult with Mr. Yanke and Mr. Huebner regarding the comprehensive sound level survey at their respective residences.[17]

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[13] Decision DA2014-229: Oldman 2 Wind Farm Limited – Turbine 14 Location Amendment, Proceeding 3444, Application 1610885, October 10, 2014.
[14] Exhibit 3521-X0005.
[15] Exhibit 0004.01.AUC-3521, AUC Letter to Parties re Oldman 2 Wind Farm Noise Complaint.
[16] Exhibit 0005.01.AUC-3521, Oldman 2 response to AUC letter 2014-12-03.
[17] Exhibit 0006.01.AUC-3521, AUC letter to Mainstream re Conducting Comprehensive Sound Level Survey.

12. On March 31, 2015, Mainstream submitted a comprehensive sound level survey[18] entitled Oldman 2 Wind Farm Post-Construction Sound Survey at Yanke & Huebner Locations, March 2015 (the sound survey). SLR Consulting (Canada) Ltd. (SLR) prepared the sound survey for Oldman 2.

13. On May 1, 2015, the Commission issued information requests to Oldman 2[19] with respect to the noise measurement methodology, and the results of the comprehensive sound survey. Oldman 2 responded to those information requests on May 22, 2015.[20]

14. On May 12, 2015, Mr. Huebner filed a letter in which he acknowledged that his initial complaint was for the excessive noise, but he was now also questioning how wind turbine T-20 was allowed to be built in the first place. He took issue with validity of the development permit for wind turbines T-19 and T-20.

15. In a letter dated June 30, 2015, Mainstream responded to the points raised in Mr. Huebner's letter of May 12, 2015, regarding the development permit for the wind farm and in particular, turbine T-20. Mr. Huebner responded to Mainstream's letter of June 30, 2015. In this decision on the noise complaints, the Commission has not considered the issue of the development permits for the Oldman 2 wind farm or turbine T-20. This matter is best addressed by the Municipal District of Pincher Creek No. 9 as it relates to the development permit issued by it and its bylaws.

16. In reaching the determinations set out within this decision, the Commission has considered all relevant materials filed in this proceeding. Accordingly, references in this decision to specific parts of the record are intended to assist the reader in understanding the Commission's reasoning relating to a particular matter and should not be taken as an indication that the Commission did not consider all relevant portions of the record with respect to a particular matter.

4 The sound survey

17. SLR conducted the comprehensive sound survey over a 48-hour monitoring period from 1300 hours on March 4, 2015, to 1300 hours on March 6, 2015, concurrently at the Yanke and Huebner residences to determine compliance with the permissible sound level as determined in accordance with Rule 012.

18. Larson Davis Model 824 Type 1 sound level meters fitted with Brüel & Kjaer UA0237 wind screens were used for noise monitoring. Audio recording at each residence was conducted using Marantz Professional PMD 620 MP3 recorders. The microphone at the Yanke residence was located 25 metres east-northeast of the residence at a distance of 315 metres south-southwest of the nearest wind turbine (T-20). The microphone at the Huebner residence was located 15 metres northeast of the residence and at a distance of 475 metres south-southwest of the nearest wind turbine (T-20). Both microphones were mounted on tripods at an approximate height of 1.5 metres.

[18] Exhibit 3521-X0002 Post-Construction Sound Survey at Yanke & Huebner Locations.
[19] Exhibit 3521-X0003 Information request Mainstream-AUC-2015MAY01-001 to 009.
[20] Exhibit 3521-X0004 Oldman 2 Response to AUC Information Request.

19. The sound level meters were field calibrated before the start and at the end of the monitoring period using a Brüel & Kjaer model 4231 calibrator. Sound level data were collected in one-minute intervals, which included broadband L_{eq}, L_{min} and L_{max} values. The one-minute L_{eq} values were then used to calculate the daytime and nighttime sound levels.

20. SLR set up a portable meteorological station at a height of two metres at the Huebner residence to gather five-minute average values of temperature, wind speed, wind direction and relative humidity. In addition, 10-minute averaged wind speed and wind direction data were collected from the Oldman 2 meteorological tower during the monitoring period. SLR stated that the wind speeds at the portable meteorological station and the meteorological tower do not match because of the difference of the height of the sensors (i.e., the portable meteorological station sensor is at a height of two metres whereas the SLR meteorological station sensor is at a height of 60 metres for the meteorological tower).

21. Based on discussions with Mr. Yanke and Mr. Huebner, SLR determined that the worst combination with respect to noise emissions at the residences were when the upper winds were strong enough to spin the wind turbines near maximum capacity, yet the ground level winds were low enough that excessive wind masking was not occurring. Both Mr. Yanke and Mr. Huebner did not agree on the required wind direction but both believed that different ground cover conditions did not have a significant effect on the sound levels.[21]

22. SLR stated that in their opinion the sound survey captured representative conditions of typical weather conditions with the wind farm operating near capacity during most of the survey. The winds were from the prevailing wind direction (west-southwest at the meteorological tower) and strong enough to spin the wind turbines near maximum capacity. SLR commented that it is very difficult to predict when there would be enough wind shear such that the ground level winds would be low enough to avoid excessive wind masking while the upper level winds were strong enough to spin the wind turbines near their maximum output. Mr. Yanke commented that during the study the noise was at a medium level with some portions of the survey period being more appropriate. Mr. Huebner was not present during the sound survey to provide a comment.

23. SLR stated that the overall electrical energy output from the Oldman 2 wind farm ranged from 22.96 MW to 45.48 MW (or 49.9 per cent to 98.9 per cent with the energy output being over 90 per cent of capacity 91.7 per cent of the time). Also, it added that Mainstream confirmed that all wind turbines were operating normally during the sound survey.

24. SLR conducted isolation analyses of the nighttime sound level data collected during the monitoring period at the two residences to determine the wind turbines' contribution to the measured sound levels. SLR stated that isolation analysis is usually only completed for the nighttime period as this is the period of greatest concern to residences. The isolation analysis process typically involves the removal of individual one-minute periods where sounds other than the industrial facility (in this case the wind turbines) are dominant, leaving periods where the industrial facility is dominant. However, due to the high ground level winds, the main audible sound was wind noise at both residences. Due to overlapping sound spectrum shapes of both the wind noise and the wind turbines, SLR stated it was not possible to perform an isolation analysis that completely isolated the contribution of the wind turbines from the wind noise. Isolation analysis attempted to remove the dominant wind noise (both ambient or background wind noise

[21] Exhibit 3521-X0002 PDF page 13.

and wind-induced noise or self-noise). In so doing, SLR stated that it obtained improved results[22] with the goal to obtain data that is representative of the sound energy of wind turbines. SLR observed that the nearest wind turbine (T-20) to the Yanke residence was usually audible whenever SLR checked on the measurement equipment; however, wind noise was the dominant contributor to the overall sound during both the daytime and nighttime periods. In SLR's professional opinion, the major noise contributor to the isolated nighttime sound levels remains wind noise at the Huebner residence rather than the Oldman 2 wind farm.

25. SLR determined that the valid nighttime data collected at the Yanke residence was 67 minutes (1.1 hours) for the nighttime period of March 4 to 5, 2015, and 12 minutes (0.2 hours) for the nighttime period of March 5 to 6, 2015. At the Huebner residence, the valid nighttime data collected was 59 minutes (one hour) for the nighttime period of March 4 to 5, 2015, and 28 minutes (0.5 hours) for the nighttime period of March 5 to 6, 2015.

26. Given the difficulties associated with obtaining three hours' worth of valid data, SLR used the statistical approach to evaluate whether there were sufficient samples using Section 4.1(4)(b) and Appendix 9 of Rule 012. This assessment was completed for nighttime periods for each monitoring location, following completion of the isolation analysis. SLR stated that the number of valid samples met the validity requirements for each nighttime period for all four data sets. The measurement data for the daytime period was not evaluated for the study.

27. Mainstream acknowledged that the amount of valid data remaining after nighttime isolation analysis was less than three hours at both residences. Nevertheless, Mainstream relied on SLR's professional opinion that sufficient valid data was collected to accurately assess the sound levels at the Yanke and Huebner residences.[23]

28. Since the isolation analysis did not conclusively establish the sound level contribution of the wind turbines at the residences, SLR stated that it made a reasonable assumption, based on observations, that the sound contributions from the wind turbines and the wind noise were approximately equal in magnitude and that the sound contribution from either the wind noise alone or wind turbines alone would be three dBA lower than their combined contributions. Based on this assumption, SLR determined the sound level contribution of the wind turbine(s) at the Yanke residence to be 42.7 dBA L_{eq} nighttime and at the Huebner residence the sound level contribution of the wind turbines to be 40 dBA L_{eq} nighttime.

29. SLR considered that the most appropriate method to determine the permissible sound level for the Yanke and Huebner residences would be based upon the noise modelling completed for the application to approve the Oldman 2 wind farm, and if those predicted sound levels are greater than the permissible sound level determined in Section 2.1 of Rule 012 (e.g., 40 dBA L_{eq} nighttime) then the modelled combined sound level contributions would set the permissible sound level.

30. SLR modelled combined nighttime sound levels which included the cumulative effects of the existing and approved, but not yet constructed facilities at 43.0 dBA L_{eq} nighttime for the Yanke residence and 41.0 dBA L_{eq} nighttime for the Huebner residence. SLR stated that as these sound levels are greater than the nighttime permissible sound level that would be determined

[22] Exhibit 3521-X0006 OM2 Information response PDF page 8.
[23] Exhibit 3521-X0006 OM2 Information response PDF page 11.

using Section 2.1 of Rule 012 (40 dBA L_{eq} nighttime), the modelled combined sound level contributions have been set as the nighttime permissible sound level for these two residences. The daytime modelled combined sound levels are below the daytime permissible sound level that would be determined using Section 2.1 of Rule 012 (50 dBA L_{eq} daytime). Therefore, the typical daytime permissible sound level of 50 dBA L_{eq} was used for these two residences.

31. SLR conducted a two part evaluation for the potential for low frequency noise in accordance with Rule 012. In the first part of the analysis, SLR determined the difference between the dBC minus dBA for the isolated nighttime values, and found that for one night the difference remained below 20 dB at the Yanke residence and above 20 dB for the following night at both the Yanke and Huebner residences. Subsequently, for those nights where the dBC minus dBA were above 20 dB, SLR completed the second part of the test to determine if there were any clear tonal components below 250 Hz and found that there was no clear tonal component below 250 Hz and concluded that a low frequency noise problem is not expected to occur at either of the residences.

32. The results of the sound survey are set out in the following two tables.

Summary of comprehensive daytime, nighttime and islolated nighttime sound levels (March 4 to 5, 2015)

March 4-5, 2015	Yanke Residence			Huebner Residence		
Time Start Hour	Measured Sound Level (dBA L_{eq})	Isolated Nighttime Sound Level (dBA L_{eq})	Valid Number of Minutes	Measured Sound Level (dBA L_{eq})	Isolated Nighttime Sound Level (dBA L_{eq})	Valid Number of Minutes
13:00	53.4			51.1		
14:00	52.0			53.4		
15:00	54.6			60.1		
16:00	56.1			61.2		
17:00	54.4			59.8		
18:00	56.1			59.5		
19:00	51.0			55.2		
20:00	55.9			59.6		
21:00	55.3			59.7		
22:00	56.5		0	62.6		0
23:00	54.0		0	60.2		0
0:00	46.9	42.9	8	49.2	42.4	5
1:00	51.7		0	54.9		0
2:00	47.3	42.4	29	50.5	42.0	34
3:00	48.6	42.3	27	52.8	41.5	20
4:00	52.2		0	56.0		0
5:00	49.9	43.4	3	53.0		0
6:00	51.0		0	51.9		0
7:00	53.5			57.1		
8:00	53.9			58.0		
9:00	58.0			62.6		
10:00	58.7			63.6		
11:00	56.4			60.7		
12:00	52.1			56.2		
15 hour daytime L_{eq}	55.3			59.6		
9 hour nighttime L_{eq}	52.0			56.8		
Isolated nighttime L_{eq}		42.5	67 minutes		41.8	59 minutes

Note: Nighttime permissible sound level set to modelled combined sound level from all existing and approved wind farms.

Summary of comprehensive daytime, nighttime and isolated nighttime sound levels (March 5 to 6, 2015)

March 5-6, 2015	Yanke Residence			Huebner Residence		
Time Start Hour	Measured Sound Level (dBA L_{eq})	Isolated Nighttime Sound Level (dBA L_{eq})	Valid Number of Minutes	Measured Sound Level (dBA L_{eq})	Isolated nighttime Sound Level (dBA L_{eq})	Valid Number of Minutes
13:00	57.6			56.7		
14:00	48.1			48.4		
15:00	43.1			41.1		
16:00	47.3			45.2		
17:00	47.8			46.5		
18:00	52.7			60.5		
19:00	49.7			53.8		
20:00	49.5			51.1		
21:00	56.5			53.5		
22:00	58.7	44.6	2	59.2	43.9	1
23:00	61.5		0	63.2		0
0:00	60.5		0	60.2		0
1:00	58.1	45.9	10	60.7	43.1	11
2:00	62.6		0	63.5		0
3:00	62.5		0	62.0		0
4:00	60.8		0	60.1		0
5:00	57.5		0	56.2	43.0	14
6:00	55.1		0	55.7	41.8	2
7:00	65.7			67.7		
8:00	61.5			63.3		
9:00	59.9			61.4		
10:00	60.4			62.8		
11:00	59.1			60.8		
12:00	54.1			56.4		
15 hour daytime L_{eq}	58.2			60.1		
9 hour nighttime L_{eq}	60.3			60.8		
isolated nighttime L_{eq}		45.7	(12 minutes)		43.0	28 minutes

Note: Nighttime permissible sound level set to modelled combined sound level from all existing and approved wind farms.

33. SLR concluded that based on the determined wind turbine sound level contributions at both the Yanke and Huebner residences, the nighttime permissible sound levels are met for both nights and therefore, the Oldman 2 wind farm is in compliance with Rule 012.

34. Mainstream responded to additional information requested by the Commission, which included the predicted cumulative sound level with all existing and approved, but not yet built, facilities at all receptor locations in the study area with the addition of the Yanke and Huebner residences for both the summertime and wintertime period, as well as the predicted cumulative wintertime and summertime sound levels of the Oldman 2 wind farm alone to facilitate a comparison to the comprehensive sound level survey.

35. In the responses to the information requests, Mainstream submitted that if the permissible sound level for both the residences was established as 40 dBA L_{eq} nighttime, then the Oldman 2 wind farm would not be compliant. If the permissible sound level for both residences was established as 43 dBA L_{eq} nighttime, taking into account the noise contributions of all approved, but not yet built wind turbines (including the Windy Point and Welsch wind farms), then the

Oldman 2 wind farm would be compliant with respect to the Huebner residence. As for the Yanke residence, the Oldman 2 wind farm would be marginally (0.1 dBA L_{eq}) over the permissible sound level. That being said, Mainstream submitted that if modelled noise contributions from the Windy Point and Welsch wind farms are relevant to the AUC's determination of whether the Oldman 2 wind farm is compliant with applicable permissible sound levels, the AUC should then set the nighttime permissible sound levels for the Yanke and Huebner residences at 43.1 dBA L_{eq} and 41.1 dBA L_{eq}, respectively, since the AUC had approved these projects before the Yanke and Huebner residences were constructed.

36. Further, SLR presented some common potential noise control measures for an operating wind farm which included a limit on the operation of the wind turbines (often at night) to a total shutdown of the wind turbine during critical periods and if gear noise from the nacelle is determined to be a significant sound contributor, additional acoustic insulation to reduce sound emanating from the nacelle could be added.

37. However, Mainstream submitted that:

> As noted in Exhibit 3521-X001, Mainstream understands that the Landowners received permits to construct their homes after the AUC approved the Project. Mainstream received no notice or other information regarding the Landowners' building permits or intention to build in proximity to the Project until after the Project was constructed. For these reasons—i.e. because the Landowners received building permits and built residences within 1.5 km from the boundary of an existing or approved facility, or a wind turbine—Mainstream submits that the PSLs [permissible sound levels] that apply to the Landowners' residences must be set in accordance with section 2.4 of AUC Rule 012. That is, the applicable PSLs are the greater of the cumulative sound level existing at the time of construction of the new dwelling, or the permissible sound level as determined in section 2 of AUC Rule 012.
>
> The cumulative sound existing at the time of construction of the Landowners' residences cannot be measured; therefore, Mainstream submits that the permissible sound levels for the Landowners' residences should be based on the March 2012 NIA (the **"2012 NIA")** (to the extent those predicted sound levels result in permissible sound levels that are higher than the permissible sound level that would be determined using section 2.1 of AUC Rule 012). Given that the 2012 NIA was prepared before the Landowners constructed their residences, Mainstream submits that basing the permissible sound levels for the Landowners' residences on the 2012 NIA results in lower (or more conservative) permissible sound levels than would otherwise be applicable.[24] (footnotes omitted)

5 Findings

38. The Commission accepts that the sound survey was conducted in consultation with Mr. Yanke and Mr. Huebner and that microphone locations were in a direct line-of-sight with the nearest wind turbine.

[24] Exhibit 3521-X00006 Information Responses PDF page 5.

39. In addition, the sound level meters and calibrators used in the noise study meet the minimum requirements and were factory calibrated within the specified period in accordance with the requirements of Rule 012 and all sound level meters were field calibrated both before and after the measurement period at each receptor location in accordance with the rule.

40. The Commission finds that the wind and weather monitoring at the Huebner residence and meteorological data collected from the meteorological tower and the ground level monitoring stations meet the requirements of Rule 012. The Commission accepts that the wind speed and direction between the meteorological tower and the portable meteorological station would be different because of the height to the meteorological tower and the topography of the surrounding land.

41. Based on the statement from Mainstream that electrical output ranged from 22.96 MW to 45.48 MW (or 49.9 per cent to 98.9 per cent with the energy output being over 90 per cent of capacity 91.7 per cent of the time), the Commission considers that the wind turbines were operating normally, and that data was only used when representative conditions existed. However, specific operation conditions of the nearest wind turbine (i.e., T-20) would have provided the Commission with more information. The Commission accepts that the representative conditions of the complaints were present including generally, wind from the west south-west direction. However, the Commission considers that the worst case condition may not have been captured noting that the wind direction from the most dominant wind turbine (T-20) towards the residences was not captured.

42. Further, the Commission observes that the 48-hour noise study did not capture the minimum amount of three-hours of daytime and three-hours of nighttime representative data after isolation analysis was conducted. Moreover, with only the nighttime periods of March 4 to 5, 2015 and March 5 to 6, 2015 being analysed, the amount of data considered representative for March 4 to 5 was 67 minutes and 59 minutes at the Yanke and Huebner residences respectively. The amount of data considered representative for March 5 to 6 was 12 minutes and 28 minutes at the Yanke and Huebner residences, respectively. The Commission finds that the amount of representative valid measurement time does not meet the minimum amount of three-hour of nighttime and daytime hours of data as specified in Section 4.1 4(a) of Rule 012 where it states: "in the case of a noise complaint or where compliance at a dwelling is in question, at least three cumulative hours of valid data in each nighttime sampling period (10 p.m. to 7 a.m.) and three cumulative hours in each daytime sampling period (7 a.m. to 10 p.m.) under representative conditions are obtained."

43. Furthermore, the Commission considers that SLR should not have used the statistical approach in the circumstances of the complaints because the statistical approach applies to noise studies conducted where the noise monitoring is done to verify modelling predictions and after isolation analysis has been conducted.

44. Although the sound survey does not meet all of the requirements of Rule 012 as noted above, the Commission has determined that the sound survey provides enough information on which to base its findings on the noise levels at the Yanke and Huebner residences.

45. Section 2.4(1) of Rule 012 states:

> the permissible sound level at the new dwelling, will be the greater of the cumulative sound level existing at the time of construction of the new dwelling, or the permissible sound level as determined in Section 2 of this rule.

46. The Commission notes SLR's explanation on how the permissible sound level is to be determined at both the Yanke and Huebner residences under Section 2.4 of Rule 012. The Commission finds that SLR's interpretation of that section is incorrect because the permissible sound levels at new residences are not based on predicted modelling results of the cumulative sound levels of the existing and approved wind farms which are not yet built. The test set out in Rule 012 is that the permissible sound level at a new residence is the greater of the cumulative sound level existing at the time of construction of the new residence or the permissible sound level as determined in Section 2 of Rule 012. It is undisputed that the Yanke and Huebner residences were constructed prior to the construction of the Oldman 2 wind farm and it appears that Mr. Yanke and Mr. Huebner were not made aware that Oldman 2 was to be constructed. The Commission finds that at the time of the construction of the residences, the permissible sound level at these two dwellings was to be determined without the noise contribution of the Oldman 2 wind farm in accordance with the test set out in Rule 012, therefore, the permissible sound level at the Yanke and Huebner residences is 40 dBA L_{eq} nighttime and 50 dBA L_{eq} daytime. As a result, the Commission rejects the submissions of Mainstream regarding the permissible sound level at the Yanke and Huebner residences. Although the Oldman 2 wind farm was approved in 2010, construction did not begin until after the residences in question were built in 2013. The Commission is of the view that it is the responsibility of the approval holder to be aware of activities in its affected area and ensure that compliance is achieved.

47. The results of the sound survey indicate that the isolated nighttime sound level for the Yanke residence was 42.5 dBA L_{eq} for the monitoring period of March 4 to 5, 2015, and 45.7 dBA L_{eq} for the monitoring period of March 5 to 6, 2015. At the Huebner residence, the results of the sound survey indicate that the isolated nighttime sound level was 41.8 dBA L_{eq} for the monitoring period of March 4 to 5, 2015, and 43.0 dBA L_{eq} for the monitoring period of March 5 to 6, 2015. The results of the sound survey indicate that at both residences, the isolated nighttime sound level for both monitoring periods exceeds the permissible sound level of 40 dBA L_{eq} nighttime.

48. For these reasons, the Commission finds that the Oldman 2 wind farm is not in compliance with Rule 012.

6 Decision

49. Based on the above findings, the Commission orders Oldman 2 Wind Farm Limited and Mainstream Renewable Power Ltd.

(1) to immediately restrict operations of the wind turbines of the Oldman 2 wind farm contributing to the non-compliance with the permissible sound levels at the Yanke and Huebner residences including the nearest wind turbine T-20 until such time as the Commission orders otherwise;

(2) to file with the Commission by August 5, 2015, a letter confirming that operations at Oldman 2 wind farm are restricted and detailing the measures taken to achieve compliance with the daytime and nighttime permissible sound levels at the Yanke and Huebner residence of 40 dBA L_{eq} nighttime and 50 dBA L_{eq} daytime; and

(3) if a request to rescind the restricted operations is filed, it must be accompanied by a new comprehensive sound level survey at the Yanke and Huebner residences conducted in accordance with Rule 012.

Dated on July 20, 2015.

Alberta Utilities Commission

(original signed by)

Neil Jamieson
Commission Member