Submission for:

Renewable Energy (Electricity) Amendment (Excessive Noise from Wind Farms) Bill 2012

I welcome any initiative to reduce noise output from Wind Turbines.

1 Subsection 5(1)

Insert:

creates excessive noise: for when a wind farm ***creates excessive noise***, see subsection 14(6).

I agree with this proposal

This makes note of the fact that excessive noise is a problem with wind farms World Health Organisation (WHO) documents, wind turbine manufacturer Vestas and the official publications that were put forward by the Department of Health for Industrial Noise control, are documents aimed at making sure noise is conducive to protecting sleep, health and well-being, from both audible and low-frequency noise.

http://www.health.gov.au/internet/main/Publishing.nsf/Content/33165540CB3C78CBCA256F1900042E72/$File/env_noise.pdf

3 After paragraph 14(2)(a)

Insert:

(aa) if the power station is a wind farm—the Regulator is satisfied that the wind farm does not, and will not, create excessive noise (see subsection (6)); and

I agree with this proposal

The WHO recognised

*" environmental **noise as harmful pollution**, with adverse psychosocial and physiological effects on public health. The Long-term exposure to noise which can have serious health consequences could increase the risks of heart attack and high blood pressure".*

The WHO notes that

"Measurable effects of noise on sleep begin at LAeq levels of about 30 dB. ...the equivalent sound pressure level should not exceed 30 dB(A) if negative effects on sleep are to be avoided.

*'it should be noted that a large proportion of low frequency components in a noise may increase considerably the adverse effects on health, and a **still lower guideline value is recommended.'***

'the evidence on low-frequency noise is sufficiently strong to warrant immediate concern'.

"an increase in noise is itself disruptive and can cause sleep loss and stress, especially in rural areas where there is an expectation of quiet."

WHO also found a link between Sleep Disturbance and Onset type 2 Diabetes

4 At the end of section 14

Add:

(6) For the purposes of this Act, a wind farm ***creates excessive noise*** if the level of noise that is attributable to the wind farm exceeds background noise by 10 dB(A) or more when measured within 30 metres of any premises:

(a) that is used for residential purposes; or

(b) that is a person's primary place of work; or

(c) where persons habitually congregate.

I do not believe this amendment is adequate to protect the community from excessive noise, there has been no upper limit applied. It could also allow for greater noise along the coast where background noise can be higher because of the ocean waves.
I would propose a new standard **background noise + 5dB(A) or 30dB(A)** whichever is the **LESSER** will be applied, and not what is proposed "background noise by 10dB(A)"

We know that the WHO recommends noise should not exceed 30db for sleeping, but they also recommend that noise should not exceed background noise + 5db during the day and background noise + 3 during the night.

Senators **Please carefully note** the meaning/definition of **Relative noise limits** as set down by turbine manufacturer Vestas, in their documentation.
Relative noise Limits: *turbine noise emission* ***must not exceed the level of background*** *noise, such limits are often supplemented with a* ***low absolute*** *maximum noise limit to cover those situations in which turbines are located in areas of very low background noise;*
Vestas recommends relative noise limits *that take into account local background noise levels. Vestas believes this type of regulation is the most effective and flexible, in that it ensures minimal noise disturbance for wind turbine neighbours while allowing turbines to be located in relatively noisy areas (areas with industry or roads, for example) that are rich in wind resources. Such areas are also often close to existing electrical grids, which can minimise the cost of connecting wind turbines to the grid. Vestas also recommends* ***that governments*** *supplement relative noise limits* ***with a low absolute maximum*** *limit in areas of very low background noise* ***(e.g. quiet countryside****), which ensures minimal noise disturbance for turbine neighbours also in these places.*
As we live in a quiet rural area with low background noise, particularly at night, from the above Vestas standard the level of noise permitted from a wind farm where I live should be a maximum of 25dB.

Low-frequency noise has not been addressed.
It has been established that audible noise and low-frequency noise causes multiple. I would like to make note of the fact that Low-frequency noise/infra sound has been documented by NASA-Langley, 1989, and their documented findings state
"NASA showed Upwind Turbines Could Generate Low Frequency Impulsive Noise from Wind Gradients and that Modern Wind farms can produce Impulsive Infrasonic Noise"

Ivan Buxton's low-frequency noise studies found.
Infra sound studies have also been conducted as laboratory experiments upon rats and guinea pigs with some ***rather disturbing results****. Exposure at quite low Hz levels and moderately high intensity caused significant changes to vital organs.*

Infra sound Toxicological Summary (USA), November 2001 stated
– *"When male volunteers were exposed to simulated* ***industrial infra sound*** *feelings of fatigue, apathy and depression, pressure in the ears, loss of concentration, drowsiness and vibration of internal organs were reported. In addition effects were found in the central nervous system, the cardiovascular system and the respiratory system."*

Why are industrial Wind Farms allowed to operate at 40dB , when evidence suggests noise should not exceed 30dB to be conducive to health. From Vestas information, Wind farms should be operating at background noise, which in a rural area is an approx average of 26 dB in the daytime and less than 20 dB at night. Many companies that produce industrial noise are required to follow stricter noise guidelines, and willing do so.

I have found many responsible companies that clearly take noise seriously.
Stanmore Coal Qld, is a responsible company. In their noise planning process, Twelve (12) locations were selected to represent potentially affected residences in a rural area.
Background noise monitoring was undertaken with the following results.
Daytime noise recorded was, 26, 23, 25, 26, 21, 24, 19, 26, 19, 27, 25, 24 dB
Night time noise was 23, 14, 15, 18, 15, 24, 15, 14, 14, 14, 15, 15 dB
The company set their target levels for noise at these receptors as background + 3.
They also reviewed equipment to determine if any would emit low-frequency noise which they considered would also be a health risk at the same receptors.
They followed guidelines set down by The Queensland Environmental Protection (Noise) Policy 2008 (EPP (Noise)) which identifies the environmental values to be enhanced or protected within the state of Queensland as:
**the qualities of the acoustic environment that are conducive to protecting the health and biodiversity of ecosystems*
** the qualities of the acoustic environment that are conducive to human health and well-being, ensuring a suitable acoustic environment for individuals to sleep, study or learn,*

Noise impacts are raised in the document The Health Effects of Environmental Noise - Other Than Hearing Loss published by the enHealth Council, 2004. These matters relate to sleep disturbance, noise at sensitive places (e.g. places of learning) and mental and physical health impacts of noise; which are addressed in the setting of noise objectives and in meeting the requirements of the EPP Noise and the Guideline.

Under current pollution reduction programs incorporated into licenses in New South Wales, the following facilities have managed significant noise reductions:

- TRW Forging has achieved noise levels **below background**, at a cost of $3.8 million
- Visy Paper has spent $1.375 million to reduce noise
- CSR Hume has achieved noise levels **below background**
- Bega Cooperative has achieved a **9 dB**(A) reduction in noise levels, at a cost of $100 000.

20AB Wind farms—publishing on internet information about noise, wind speed and direction, weather conditions and power output

(1) The nominated person for an accredited power station that is a
(2) wind farm must ensure that information prescribed by the regulations relating to the following is published on the internet:
(a) noise attributable to the wind farm;
(b) wind speed and direction at the wind farm;
(c) weather conditions at the wind farm;
(d) power output of individual turbines at the wind farm.
(2) The information must be published on the internet in accordance with any requirements prescribed by the regulations for the purposes of this subsection.

I agree with this proposal
At present noise complaints are not addressed quickly enough. The wind farm companies are not accountable for noise until after one years noise monitoring has been completed. On nights when the wind farm is particularly loud the pulsating swoosh swoosh of the blades keeps me awake. Some mornings I wake with a sense of lethargy , the inability to think clearly and a vibrating sensation through my chest and body . Other mornings I wake with a tight chest and vibrations. Headaches can be a feeling of wearing a tight bathing cap that you take off and your head needs to recover, but it never does.

*"**Noise** stimulates the brain's reticular activating system. Neural impulses spread from the reticular system to the higher cortex and throughout the central nervous system. **Noise** can, therefore, **influence perceptual, motor, and cognitive behaviour**, and also trigger **glandular, cardiovascular, and gastrointestinal** changes by means of the autonomic nervous system"* (Suter, 1991)

8 After subsection 30E(4)

Insert:

Wind farms—excessive noise

(4A) The Regulator must, by written notice, suspend the accreditation of an accredited power station that is a wind farm if the Regulator believes on reasonable grounds that the wind farm is creating excessive noise (see subsection 14(6)).

(4B) The accreditation is suspended until the Regulator believes on reasonable grounds that the wind farm is not creating excessive noise. The notice must include a statement to that effect.

(4C) The Regulator must, by written notice, suspend the accreditation of an accredited power station that is a wind farm if the Regulator believes on reasonable grounds that the information referred to in section 20AB has not been published on the internet in accordance with that section.

(4D) The accreditation is suspended until the Regulator believes on reasonable grounds that the information has been published in accordance with that section. The notice must include a statement to that effect.

I agree with this proposal. This gives the regulator the ability to suspend a wind farm operation sooner rather than later, and not allow the noise to continue for extended length of time.

After being exposed to noise since 2009 new symptoms are arising, and I have developed a bad sleeping pattern, where I now wake on most nights. I have had a cough for more than a year which shows no sign of infection. I have also developed digestive problems, which cause me to choke in the middle of sleeping. My doctor feels that these symptoms are typical of people exposed to noise including low-frequency noise. I feel the effects of noise when the winds are from the southerly directions SE, S and SW. I sleep better when the turbines are off for a number of days or if they are turning slowly and there is no noise, the noise can be a lot louder on nights when the air is still at ground level but the turbines are running noisily, making it impossible to fall asleep. My blood pressure rises at different times and co-insides with rising noise levels.

A report published by Dept Health states that **noise** should be of concern to **all** government agencies. *"Noise annoyance is clearly a reflection of impaired quality of life." ....."Given the prevalence of cardiovascular disease and its associated cost to society further research appears prudent to examine **noise** as a risk factor"*

Thank you for considering the enclosed information and for the opportunity to present it to you.

If you need any more information please do not hesitate to contact me.

Kind regards Robyn Brew

References:
*World Health Organisation: The Burden of Disease from Environmental Noise, 2011 *www.euro.who.int/__data/assets/pdf_file/0008/.../e94888.pdf*
*World Health Organisation: Night noise guidelines for Europe, Copenhagen 2009
*World Health Organisation: WHO Expert Committee on Diabetes Mellitus,(Tech. Rep. Ser., no. 646)

Suter, AH 1991 'Noise and its Effects', Administrative Conference of the United States, <www.nonoise.org/library/suter/suter.htm#> effects of noise on sleep.

http://www.health.gov.au/internet/main/Publishing.nsf/Content/33165540CB3C78CBCA256F1900042E72/$File/env_noise.pdf

http://www.noiseandhealth.org/article.aspissn=14631741;year=2010;volume=12;issue=47;spage=70;epage=76;aulast=Hume

* Ivan Buxton- Low-frequency noise and infra sound (I have a downloaded copy if needed its 87 pages)
*American Journal of Preventive Medicine Oct 2012
*The Purcell Room, London
*Radiation of Aerodynamic Sound from Large Wind Turbine Generators F. W. Grosveld K.P Shepherd (Head of Structural Acoustics Branch, NASA-Langley Research Center), & H. H. Hubbard Inter-Noise 82, 17-19 May 1982

*Low Frequency Acoustic Emissions from Large Horizontal Wind Turbines, H . H. Hubbard & K. P. Shepherd Inter-Noise 89, 4-6 December 1989
*Acoustical Criteria Applicable to Large Wind Turbine Generators K. P .Shepherd & D.G. Stevens Inter-Noise 82, 17-19 May 1982
*Effects of the Wind Profile at Night on Wind Turbine Sound. J. Sound & Vibration, G. P. Van den Berg Volume 277, Issue 4-5, p. 955-970, 2004