PRODUCING NEW AND UPDATED GUIDANCE FOR THE NOISE ASSESSMENT OF RENEWABLE ENERGY SOURCES

R Perkins Mott MacDonald Ltd
M Cand Hoare Lea LLP
J Singleton TNEI Ltd

1 INTRODUCTION

This paper describes the formation of a new IOA working group by special resolution of IOA Council, tasked with reviewing and producing up to date guidance and thought leadership in the area of renewable energy sources. It goes on to highlight a summary of current activities and challenges, and a call for further assistance from experienced professionals.

2 RENEWABLE ENERGY WORKING GROUP

2.1 Terms of Reference

The Renewable Energy Working Group (REWG) has been set up with membership from a wide variety of backgrounds including environmental health practitioners, consultants, developers and operators, manufacturers and industry bodies. There is an oversight group, under which three sub work groups have been convened to date. The aims of the REWG are to act as a focal point for the exchange of information and as a contact point for those having specialist interests within the general science of acoustics, but more specifically, all noise and vibration issues relating to renewable energy sources, including but not limited to: wind turbines, water turbines, hydro-electric, fusion energy, air source heat pumps, ground source heat pumps, solar panels & associated control systems, and battery storage.

Currently the following subgroups are active:

- Air source heat pumps
- Wind Turbines
- Solar & battery storage
- Fusion energy

2.2 Air Source Heat pumps

This subgroup was very active at the beginning of the year responding to Government consultations[1], responses for which were published on the IOA website[2]. The group is keeping an active role lobbying Government to assist with updates to published guidance.

2.3 Wind Turbines

The IOA produced good practice guidance (IOAGPG) in 2013[3] to supplement the use of ETSU-R-97 (Government guidance), and then six supplementary guidance notes (SGN1-6) in 2014[4], which is endorsed in UK guidance for use in the planning system. This guidance provides assistance in how to apply the principles of ETSU-R-97 in a consistent manner.

Since the group's activities were started earlier in the year, the Government has let a research contract[5] aimed at updating ETSU-R-97, which is due to be completed in Spring 2025. At this stage,

this does not affect the work of the subgroup which has already begun collecting the evidence for a refresh of the IOAGPG. The following issues, which are not exhaustive or final, have been identified so far for further analysis and discussion:

1. Baseline Data collection – can any improvements be made to the process?
2. Turbine noise data – the available data has evolved, for example manufacturers seem less keen to share test reports, so should the guidance be updated to meet current practice?
3. Noise propagation – the recent publication of BS ISO 9613-2: 2024[6] includes a section on wind farm noise – the IOAGPG is consistent with the new guidance, but is there an opportunity to refresh to reflect this and any other relevant publications?
4. Amplitude modulation – the IOA published a metric to define it in 2016[7], and several research papers have been published in recent years. An initial review of planning permissions in Scotland reveals some uptake of noise conditions to control amplitude modulation, such as the one published in the IOA bulletin in Nov/Dec 2017[8], so it should be possible to reflect on good practice in this area.
5. Cumulative Conditions – as local authorities see more and more applications for onshore turbines, the need for cumulative conditions has increased substantially. Again, a review of recent decisions with cumulative aspects can be undertaken for examples of good practice.
6. Post completion monitoring – inconsistencies of approach to compliance monitoring will be reviewed to see if further guidance can be provided, particularly when limits are close to ambient levels, or cumulative turbine noise is involved.
7. Offshore wind – originally left out of the IOAGPG, it is felt that there is enough established practice and research out there for an update to SGN6[9].

Given the timing of the ETSU-R-97 review, the IOA REWG will work closely with the Government and the appointed main research contractor (Noise Consultants Ltd) to ensure that the IOAGPG is consistent with any future change in Government policy.

2.4 Solar and Battery Storage

In the absence of sector specific guidance in this area, the IOA has teamed up with the ANC with support from environmental health professionals to produce a guidance note for the impact assessment of noise from solar and battery storage installations.

As a relatively new noise source, it suffers from similar problems to wind turbines in the early days, namely a lack of understanding of how the equipment operates, and a lack of good quality data from the manufacturers and suppliers.

A review is currently underway of recent projects to answer such questions as:

1. What noise making equipment is present?
2. Is the noise output the same between charging and discharging?
3. Are there seasonal variations in operation that need to be taken into account?
4. Is 100% duty a safe assumption? Many operate at 60% or less.
5. Should the noise making equipment be modelled as a point or an area source?
6. Are you confident in the quality of the manufacturers data? How can they be encouraged to provide better and more consistent data?
7. Are all sources continuous when operating, or are they intermittent?
8. Will they exhibit tonal properties like a substation?

It is intended that a guidance note will be produced to set out for all stakeholders what information is considered good practice to be used, and what assumptions should be made in the absence of key information.

2.5 Fusion Energy

The Government has begun to pave the way for future fusion energy proposals and consulted back in June 2024 on a new National Policy Statement (NPS) for Fusion Energy[10]. The IOA provided a response[11] on acoustic aspects to the proposed new NPS.

2.6 Call for Evidence

There is always room for more authors to help with drafting the guidance notes discussed in this paper and looks great on your CV or for your Chartership application. Anyone interested should contact Allan Chesney at Allan.Chesney@ioa.org.uk.

3 REFERENCES

1. https://mcscertified.com/consultation-mcs-020-planning-standard-for-permitted-development-installations-of-air-source-heat-pumps/
2. https://www.ioa.org.uk/sites/default/files/ioa_response_mcs020_pdinstallations_airsourceheatpumps.pdf
3. https://www.ioa.org.uk/sites/default/files/IOA%20Good%20Practice%20Guide%20on%20Wind%20Turbine%20Noise%20-%20May%202013.pdf
4. Wind Turbine Noise | Institute of Acoustics (ioa.org.uk)
5. Update to ETSU-R-97 Onshore Wind Noise Guidance [Award] (bidstats.uk)
6. https://standardsdevelopment.bsigroup.com/projects/2022-00047#/section
7. https://www.ioa.org.uk/sites/default/files/AMWG%20Final%20Report-09-08-2016_1.pdf
8. https://www.dpea.scotland.gov.uk/LibraryDocument.aspx?id=109
9. https://www.ioa.org.uk/sites/default/files/IOA%20GPG%20SGN%20No%206%20Final%20July%202014.pdf
10. https://www.gov.uk/government/consultations/fusion-energy-facilities-new-national-policy-statement-and-proposals-on-siting
11. https://www.ioa.org.uk/sites/default/files/IOA_response_England_Fusion_Energy_NPS_1.pdf