



DESAUTEL LAW

MEMO

To: Jeff Willis, CRMC Executive Director
From: Desautel Law, on behalf of the FAB
Date: 12/8/22
Re: Revolution Wind – EMF Studies

The following reports indicate that, even at lower frequencies, offshore wind farm cables may have an effect on fisheries, and additional study is needed. Copies of the cited reports are attached to this Memorandum.

“The Interaction Between Resource Species and Electromagnetic Fields Associated with Electricity Production by Offshore Wind Farms”; Zoe L. Hutchinson, David H. Seor, and Andrew Gill; *Oceanography*; Vol. 33, No. 4. (“Hutchinson”).

“Electromagnetic Field Effects on Marine Life”; SEER // U.S. Offshore Wind Synthesis of Environmental Effects Research; Summer 2022. (“SEER”).

“The Potential Ecological Effects of Electromagnetic Fields Posed by Offshore Wind Farms”; The North Sea Foundation; February 2022. (“North Sea Foundation”)

Hutchinson:

“Subsea power cables (hereafter cables) present many potential environmental effects (Taormina et al., 2018). The most topical within the fishing community are the lack of access to fishing grounds due to entanglement risks and the effects of electromagnetic fields (EMFs) on target species.” (Id. at 97).

“... a reduction in EMF intensity may bring the electric and/or magnetic fields into ranges more perceivable by receptive species (Formicki et al., 2019; Newton et al., 2019).” (Id. at 99).

SEER:

“...the physical interactions between cable-induced EMFs and naturally occurring EMFs are not well-understood, EMFs ... may disguise or distort natural EMF cues that animals use for important life functions.” (SEER at 5).

“Overall, the intensity of EMFs does not directly correlate to potential environmental effects in which higher intensity means more likely effects. Instead, lower-intensity EMFs that are within the frequency detection range of marine organisms may be more likely to elicit a response.” (SEER at 8).

“Continued research and monitoring are required to understand the ecological context within which short-term effects are observed and if species experience long-term or cumulative effects resulting from underwater exposure to EMFs.” (SEER at 9).

“Overall, the effects of EMFs have been considered minor-to-negligible ...however, confidence in this assessment remains low.” (SEER at 12).

North Sea Foundation:

“Recent measurements of EMF values in the vicinity of AC export cables of three Dutch offshore wind farms (OWFs) during relatively low wind speeds, show increases of 0.004 - 0.039 μT , compared to a background level of $\pm 0.032 \mu\text{T}$ (Snoek et al., 2020). They also showed that the field is measurable up to 25 meters distance from the cables.” (North Sea Foundation at 2).

“..depending on the sensitivity of the species and cable characteristics, the detection range varies from zero to several hundreds of meters.” (North Sea Foundation at 2).

“[F]our main effects of EMFs on marine life:

- Disturbance of behavioural responses and movement: attraction/avoidance;
- Disturbance of navigation and migratory behaviour;
- Disturbance of predator/prey interactions and distribution of prey;
- Disturbance of physiology, embryonic and cellular development.

(North Sea Foundation at 3, citing Snoek et al. (2016)).

“Many species of fish are known to detect magnetic signals, however it is generally unknown if they can detect the levels used in anthropogenic fields.” (North Sea Foundation at 4).

“Some commercially interesting fish species including cod, plaice and European eel showed behavioural changes, with some species also showing anatomical or physiological changes such as slowing down of the heartbeat for eels.” (North Sea Foundation at 4, citing Snoek et al., 2016).

“There is enough evidence to conclude that individual marine animals could be affected by certain values of anthropogenic EMFs, caused by subsea power cables. However, the effect on animal populations cannot be assessed due to a lack of data.” (North Sea Foundation at 5).