



STOP SMART METERS AUSTRALIA INC

Reg. No. A0059190N ABN 14 717 028 504

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Attn: Energy Division
Essential Services Commission
Level 37, 2 Lonsdale Street
Melbourne VIC 3000
Submitted via electronic lodgment

To Whom It May Concern

Electricity Distribution Code Review: Issues Paper, 13 August 2019

Thank you for the opportunity to submit feedback to the above review.

Stop Smart Meters Australia (SSMA) is a volunteer-based consumer advocacy group which incorporated as an Association in April 2013 in response to widespread community objection to the Victorian State Government mandated rollout of electricity smart meters. Paramount within our legal purposes is providing support to Australians who have had their health adversely impacted by pulsed emissions from wireless smart meters. A significant portion of this cohort is also now sensitised to extremely low frequencies from distribution lines, substations and building wiring.

It appears that smart meters may have unique characteristics that have lowered people's threshold for the symptom development of electromagnetic hypersensitivity syndrome (Lamech 2014, p. 1). A number of our 600+ members and 6000+ website followers experience distressing symptoms following exposure to harmonics, high frequency voltage transients and magnetic fields radiating from electrical infrastructure, including distribution lines and building wiring.

In light of the growing prevalence of electromagnetic hypersensitivity (EHS) within the community, our submission focuses on good asset management and quality of supply, such that the distribution of electricity in Victoria occurs in a safe manner.

Estimations of the number of people who are electrically sensitive vary. According to analysis published in the Journal of Environment and Health Science, between about 5.0 and 30 per cent of the general population have a mild form of this condition. Moderate cases represent between 1.5 and 5.0 per cent of the population with a prevalence of less than 1.5 per cent for severe cases (Bevington 2019, p. 1).

Unintentional electromagnetic fields from transmission lines, distribution lines and electrical equipment are also implicated in serious long-term health outcomes. A report by Electrosensitivity UK references a wide body of scientific studies giving evidence of adverse biological outcomes in connection with proximity to power lines (Bevington 2018, pp. 9-10, 25-27).

It is essential that the Electricity Distribution Code is strengthened in order to protect the community from harmful effects of extremely low frequencies (ELF) and radiofrequencies (RF).

Definition of safe required in Code

Common dictionary definitions of 'safe' include '[not likely to be harmed](#)' or '[secure from the threat of harm](#)'. However, the Code itself lacks clarity on whether it seeks to protect the health of consumers. In some instances, the Code refers to the 'health' or 'safety' of any person. SSMA considers that a definition of safety, which is inclusive of health, should be provided in the Code.

Code should seek to minimise exposure to electric and magnetic fields

The code should include the requirement that the creation, maintenance and operation of distribution system assets does not unnecessarily expose customers and other members of the public to electric and magnetic fields (EMF). Community expectations are often not being met in this regard. Embedding the principle of prudent avoidance (taking reasonable efforts to minimise potential health risks from power frequency EMF) in the Code might be an initial step.

The decision reached in *Energex Ltd v Logan City Council & Ors*, in relation to a proposed substation next to a predominantly residential area, stipulated a public protection limit for feeder lines to the substation that are a fraction of the limits for exposure to magnetic fields that are endorsed by the Australian Radiation Protection and Nuclear Safety Agency (Planning and Environment Court of Queensland 2002, pp. 19-20). It is apparent that mitigation measures are required for new builds, in order to address community concerns.

It is all the more important that the Commission gives credence to ELF exposure minimisation as it is patently obvious that industry-funded studies are seeking to promote a false paradigm. There is a scientifically robust association between power lines and childhood leukaemia; however, industry interests have sought to downplay this connection.

A new paper from Professor David O. Carpenter shows that, over the last 20 years, findings on the link between power line EMFs and childhood leukaemia have been heavily influenced by their source of funding. His research shows that **almost all government or independent**

studies find either a statistically significant association between magnetic field exposure and childhood leukaemia, or an elevated risk, while almost all industry supported studies fail to find any significant or even suggestive association. The report also reveals that there is strong evidence that excessive exposure to magnetic fields increases risk of adult leukaemia, male and female breast cancer and brain cancer (Carpenter 2019).

Deployment of ripple control systems, medium-frequency and radiofrequency power-line carrier systems (Electricity Distribution Code, version 9A, clause 4.2.5)

SSMA strongly objects to distribution lines being used to convey frequencies other than 50 Hz. Deployment of higher frequencies results in household wiring, as well as distribution lines in people's neighbourhoods, being turned into antennas and broadcasting unwanted radiation. Ground wave propagation may also occur. It is concerning that the intensity of currents induced in the human body by exposure to magnetic fields increases with frequency (Vignati & Giuliani, 1997).

As of 25 August, 2019, 250 EMF scientists from 42 nations had signed an International EMF Scientist Appeal calling for greater health protection from electromagnetic field exposure (International EMF Scientist Appeal 2019). Electric devices and infrastructure used in the delivery of electricity that generate extremely low frequency electromagnetic fields (ELF EMF) receive specific mention.

The Appeal requests that "utilities responsible for the generation, transmission, distribution, and monitoring of electricity maintain adequate power quality and ensure proper electrical wiring to minimize harmful ground current".

The Appeal states that:

"Numerous recent scientific publications have shown that EMF affects living organisms at levels well below most international and national guidelines. Effects include increased cancer risk, cellular stress, increase in harmful free radicals, genetic damages, structural and functional changes of the reproductive system, learning and memory deficits, neurological disorders, and negative impacts on general well-being in humans. Damage goes well beyond the human race, as there is growing evidence of harmful effects to both plant and animal life."

Harmonics and high frequency voltage transients

SSMA does not support any relaxing of the Code in respect of harmonics. Harmonics cause not only poor power quality but also impact on people's wellbeing and the environment.

The Institute of Electrical and Electronic Engineers (IEEE) stated in 2011 that it was developing standards that would [limit the injection of harmonics](#) into the grid. Its [press release](#) said "Harmonic pollution is a growing problem caused by the widespread use of

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power supplies and other non-linear loads. It can result in power loss and equipment damage and it may also be related to environmental safety issues".

The current Code does not provide for sufficient oversight and control of the growing prevalence of harmonics. It is also unclear as to whether power distributors have the necessary equipment to adequately assess harmonic distortion. For instance, only testing up to the 50th harmonic (2.5 kHz) would appear to be wholly inadequate.

SSMA recommends that the Commission, or an independent body appointed by the Commission, has the responsibility to regularly verify power quality. The Code should consider pollution caused both by harmonic distortion and by high frequency voltage transients.

A number of SSMA's members and website followers attribute adverse health effects to the prevalence of 'dirty electricity' (harmonics and high frequency transients). In addition to causing effects such as brain fog and fatigue, other more serious outcomes such as diabetes (Havas 2008) and cancer (Milham & Morgan 2008) are implicated.

In a bid to prevent dirty electricity from the grid entering homes some Victorians are outlaying thousands and, in some instances, tens of thousands of dollars, in mitigation measures (installing filters, installing demand switches in order to turn off electricity to circuits when not in use, shielding wiring etc.). Given that distributors have an obligation to use their best endeavours to create and maintain distribution systems assets in a way which minimises costs to customers (clause 3.1), the costs being incurred by customers should be taken into consideration in the assessment of good asset management.

Future transition of grid to DC?

Although outside the scope of this review, SSMA would like to flag the benefits that transitioning the grid from AC to DC might bring.

According to the text for a course taught by Dr Paul Héroux, Associate Professor at McGill University, Canada, a DC grid would accommodate our growing reliance on electronics, virtually all of which require DC, as well as accommodating renewables such as solar, which generate a DC waveform. Dr Héroux, who commenced his career involved in the design of high-voltage power lines prior to following his research interests into the effect of EMF on health, asserts that this could lead to an outcome where there is a reduction in global energy consumption of twenty percent.

Dr Héroux contends that the health effects on living systems as a result of AC EMFs, which cause molecular, biologically significant oscillation (Héroux 2019, p. 5-17), could be eliminated by a transition to DC transmission, distribution and consumption of electric power (Héroux 2019, p. 1-24).

"A dc grid deployment in the future may reduce global energy consumption by 20%. As dc sources are easily paralleled, a dc network would allow easier compatibility of electrical network of all sizes: between power utilities, eliminating *stability* problems, and between utilities and small distributed suppliers of wind and solar energy. This would make the power grid more democratic, reliable and green. It would allow people with electric cars to easily use them in case of grid power failures.

The capacity of present power lines would increase without cost by 30% due to the fact that voltage is maximum 100% of the time on a dc network and to the elimination of the *skin effect*. "

Héroux 2019, *Health Effects of Electromagnetism*, McGill Course OCCH-605, p. 1-24.

Concluding remarks

We hope that the Commission will take on board our feedback to this review. SSMA considers that a much stronger focus on protecting Victorians from unintentional irradiation from transmission lines, distribution lines and electrical equipment is required. This is particularly relevant as EMF pollutants from the grid are also entering homes, and being broadcast from household wiring.

Yours sincerely



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REFERENCES

- Bevington, M. 2019, The Prevalence of People with Restricted Access to Work in Manmade Electromagnetic Environments, (2019) *J Environ Health Sci* 5(1): 1-12, Available: https://www.omegaonline.org/download.php?download_file=articles/publishimages/16093-The-%20Prevalence-%20of-%20People-%20With-%20Restricted%20Access-%20to-%20Work.pdf
- Bevington, M. 2018, *Selected Studies on Electrosensitivity (Es) and Electromagnetic Hyper-Sensitivity (EHS)*, 4th edn, Electrosensitivity UK, Available: <http://www.es-uk.info/wp-content/uploads/2018/05/Selected%20ES%20and%20EHS%20studies.pdf>
- Carpenter, D. 2019, Extremely low frequency electromagnetic fields and cancer: How source of funding affects results, *Environ Res.* 2019 Aug 24;178:108688, Available: <https://www.sciencedirect.com/science/article/pii/S0013935119304852>
- Havas, M. 2008, Dirty electricity elevates blood sugar among electrically sensitive diabetics and may explain brittle diabetes, *Electromagn Biol Med.* 2008 Jun; 27(2): 135–146, Available: <https://www.ncbi.nlm.nih.gov/pubmed/18568931>
- Héroux, P. 2019, 'Electric Power Systems' and 'Health Effects of Radio-Frequencies and Micro Waves' in *Health effects of electromagnetism*, McGill University Course OCCH-605, Available (6 MB): <http://www.invitroplus.mcgill.ca/Health%20Effects%20of%20ElectroMagnetism%202019.pdf>
- International EMF Scientist Appeal 2019, *International Appeal: Scientists call for Protection from Non-ionizing Electromagnetic Field Exposure*, Available: <http://emfscientist.org/index.php/emf-scientist-appeal>. See <https://emfscientist.org/> for information about the appeal.
- Lamech, F. 2014, Self-reporting of Symptom Development from Exposure to Radiofrequency Fields of Wireless Smart Meters in Victoria, Australia: A Case Series, *Altern Ther Health Med.* 2014 Nov;20(6):28-39, Available: <http://www.ncbi.nlm.nih.gov/pubmed/25478801>
- Milham, S. and L. L. Morgan 2008, A new electromagnetic exposure metric: high frequency voltage transients associated with increased cancer incidence in teachers in a California school, *American Journal of Industrial Medicine* 59, 2008, Available: <https://www.ncbi.nlm.nih.gov/pubmed/18512243>
- Planning and Environment Court of Queensland 2002, *Energex Ltd v Logan City Council & Ors* [2002] QPEC 001, Available: <http://archive.sclqld.org.au/qjudgment/2002/QPEC02-001.pdf>
- Vignati, M. and Giuliani, L. 1997, Radiofrequency Exposure Near High-Voltage Lines, *Environmental Health Perspectives*, 1997, 105 (Suppl 6), 1569–1573, Available: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1469914/pdf/envhper00331-0183.pdf>