

Attention: Equipment Energy Efficiency Committee (E3)

CONSULTATION REGULATION IMPACT STATEMENT

Mandating 'Smart Appliance' Interfaces for Air Conditioners, Water Heaters and other Appliances

This submission is on behalf of Stop Smart Meters Australia Inc (SSMA), an organization which was formed in 2011, in response to concerns regarding Victoria's Advanced Metering Infrastructure program. The organization subsequently incorporated as an Association in 2013. SSMA's responsibilities include educating the wider community on the negative aspects of smart meters as well as lobbying in regards to the negative aspects of smart meters.

SSMA does not support the proposal to mandate compliance with AS/NZS 4755.

We recognize that Australia faces challenging decisions in respect of energy usage. However, we strongly believe that pursuing this particular avenue to address the problem will significantly increase overall costs for the Australian public, as well as exposing families to unacceptably high levels of risk.

Specifically, the RIS has made no mention of possible adverse health outcomes associated with introducing AS/NZS 4755 compliant appliances into households in the case where wireless connections are used to complete the communications pathway. The RIS fails to identify or quantify what the long-term health costs might be for the Australian public if additional wireless communications are enabled within homes. We believe this issue requires detailed analysis.

SSMA also believes that more detail needs to be provided in relation to the costs and potential for retrofitting cabled solutions. We believe this is a critical issue on two fronts; there is an expectation that there will be a growing number of individuals presenting with electro-hypersensitivity (EHS) symptoms as a result of exposure to wireless communications, who are therefore unable to take advantage of wireless technology and, in addition, future upgrade of the current Group 2B classification for wireless transmissions may curtail wireless being offered as a communications medium for household devices.

It is particularly concerning that Victorian consumers will *only* be able to participate via a wireless link from their smart meter to appliances. This also implies that there is underlying requirement for Victorian consumers' HANs to be activated in order for Victorian consumers to participate. This suggests that Victorians will not only be exposed to EMR from the communications to appliances during peak demand periods, but they will also be exposed 24/7 to the transmissions between *all* their HAN enabled devices. Assuming this is the case, SSMA believes that it is imperative that E3 considers the possible bioeffects on consumers and their pets as a result of the *overall* increased EMR exposure stemming from the HAN activation.

Escalating health costs associated with increasing radiofrequency (RF) levels

The World Health Organization classified 'radiofrequency electromagnetic fields (EMFs) as **possibly carcinogenic to humans (Group 2B)** in 2011 (IARC 2011). David Gee, Senior Advisor for Science, Policy, Emerging Issues, Integrated Environmental Assessment at the European Environmental Agency, points out that the World Health Organization's 2011 Group 2B rating set by the International Agency for Research on Cancer (IARC) for wireless transmissions is likely to be upgraded in the future. As he states '*it is worth noting that during over 30 years of classifying cancer risks, covering around 900 agents, IARC very rarely downgrades its judgements: in most cases tentative carcinogens become more certain carcinogens as time since first exposures and further research accumulates*' (Gee 2012, p. 1376).

Aside from implications for cancer, there are a very wide number of scientific studies pointing to other bioeffects from wireless communications. The authors of *Public Health Implications of Wireless Technologies* contend that '*there is credible evidence that RF exposures cause changes in cell membrane function, metabolism and cellular signal communication, as well as activation of proto-oncogenes and triggering of the production of stress proteins at exposure levels below current regulatory limits. There is also generation of reactive oxygen species, which cause DNA damage, chromosomal aberrations and nerve cell death. A number of different effects on the central nervous system have also been documented, including activation of the endogenous opioid systems, changes in brain function including memory loss, slowed learning, motor dysfunction and performance impairment in children, and increased frequency of headaches, fatigue and sleep disorders*' (Sage & Carpenter 2009, p. 234).

In conclusion, the paper states that '*the rapid deployment of new wireless technologies that chronically expose people to pulsed RF at levels reported to cause bioeffects, which in turn could reasonably be presumed to lead to serious health impacts, is a public health concern*' (Sage & Carpenter 2009, p. 241), calling for thresholds or guidelines that are substantially below current ICNIRP standards (which are the initial basis for Australia's standard for radiofrequencies) for whole-body exposure.

The Seletun Scientific Panel, comprising international experts on the biological effects of electromagnetic fields, went even further. The Seletun Scientific Statement, which was released in 2011, stated that '*new, biologically-based public exposure standards, taking into account long-term as well as non-thermal exposures, are **urgently needed to protect public health world-wide***' (Seletun Scientific Statement 2011, p. 1). It called for standards that are approximately **50,000 to 60,000 times lower** than the current ICNIRP standard on which Australia bases its standard.

Specifically, based on power density measurements, the Panel recommended in *Scientific Panel on Electromagnetic Field Health Risks: Consensus Points, Recommendations, and Rationales* a level of **0.017 microwatts per centimetre squared to replace the ICNIRP and other outdated public safety guidelines and limits in use around the world**. Even so, the Panel acknowledged that numeric limits derived here for new biologically-based public exposure standards are still a billion times higher than natural EMF levels at which all life evolved (Fragopoulou *et al.* 2010, p. 6).

Furthermore, the Panel specifically recommended '*against the use of cordless phones (DECT phones) and other wireless devices, toys and baby monitors, wireless internet, wireless security systems, and wireless power transmitters in SmartGrid-type connections that may produce unnecessary and potentially harmful EMF exposures*' (Fragopoulou et al. 2010, p. 7, emphasis added).

Conclusions reached in the BioInitiative 2012 Report, which reviewed over 1800 new studies since the original 2007 report, are even more alarming. The report says that the **evidence for risks to health has substantially increased since 2007** (BioInitiative Working Group 2012). Unfortunately, Australia's current standard for radiofrequencies (*Maximum Exposure Levels to Radiofrequency Fields – 3 kHz to 300 GHz*) does not even provide protection at the lowest levels reported by scientific studies, let alone allow for long-term exposure and exposure to vulnerable segments of the population, such as children and pregnant women. The current standard allows the Australian population to be irradiated with hundreds of thousands of times the radiofrequency levels recommended by the BioInitiative 2012 Report.

SSMA is particularly concerned that the introduction of mandatory compliance with AS/NZS 4755 will result in consumers *unknowingly* creating additional sources of RF inside their homes, without any awareness of the associated dangers.

The introduction of additional levels of radiofrequency sources within homes is particularly problematical due to the inherent properties of microwaves. Most consumers are not aware that certain surfaces, such as those commonly found within homes (for instance, metallic surfaces), may cause wave reflection, refraction and diffraction, which may lead to microwave 'hot spots'. This is of particular concern if the population, and in particular vulnerable segments of the population, such as children, the elderly and the infirm, are subject to exposure. It is also of great concern if the population is exposed to pulsed RF during sleeping hours. As this is the period in which the body repairs itself, any added stressors, such as pulsed RF radiation, will interfere with this process, which may result in a variety of adverse health outcomes. It has been reported by Building Biologists that there are increasing numbers of people showing signs of EHS who attribute their symptoms to the installation of wireless technology in their homes (Bijlsma 2012, p. 95).

The proliferation of pulsed RF in high-density housing is another major issue impacting the greater community. Akin to the belated recognition that inhaling second-hand smoke could lead to deleterious results, being subjected to exposure from one's neighbour's irradiating device is the modern-day equivalent. As an example, microwaves being transmitted to an air-conditioner mounted in near proximity to a neighbour's apartment are also going to travel into the neighbour's property. In the light of this basic law of physics, SSMA *strongly objects* to the introduction of AS/NZS 4755 compliant appliances into households in the case where wireless connections are used to complete the communications pathway.

Elsewhere in the world many authorities and institutions have taken a precautionary approach in regards to the use of wireless enabled devices. For instance, the French national library announced in 2007 that it was replacing all Wi-Fi connections with wired connections due to health issues (Bibliothèque Nationale de France 2008). The German government recommended in 2007 that wireless-supported systems should be avoided in homes and workplaces and preference should be

given to conventional wired solutions (German Federal Ministries for the Environment, Nature Protection and Reactor Safety 2007).

Children are regarded as being particularly vulnerable. Russia's peak radiation authority issued a statement in 2012 warning against the use of wireless broadband systems, including Wi-Fi, in kindergartens and schools (Russian National Committee on Non-Ionizing Radiation Protection 2012). Dr Herbert, of the Harvard Medical School, points out that radiofrequency fields from wireless communications can exert a disorganizing effect on the ability to learn and remember, and can also be destabilizing to immune and metabolic function (Herbert 2013).

Actively promoting wireless communications inside homes also appears to be particularly irresponsible as there is an expectation that the number of people who are electrically sensitive is likely to rise significantly, in line with increasing exposure levels to man-made electromagnetic radiation. Electrohypersensitivity is already fully recognized in Sweden as a functional impairment, entitling sufferers to annual government disability subsidies (Johansson 2011). Shielding is also provided in some instances (McLean 2011, p. 217). In addition, worryingly, *'over time, it appears that sensitivity is increased to smaller and smaller EMF/RFR exposures'* (Sage 2001). Others liken electrical hypersensitivity (EHS) to a peanut allergy: *'just as some vulnerable individuals with peanut allergy can experience life-threatening anaphylaxis from exposure to minuscule amounts of everyday peanuts, some EHS persons can develop debilitating responses to everyday levels of EMR'* (Genuis & Lipp 2011, p. 8). Adding yet another layer of radiation to the home environment, via the introduction of irradiating technology, will obviously increase the amount of radiation that the population is exposed to. Given the additive, and cumulative, effects of radiation this appears grossly unjustified in light of the potential benefits.

How much will it cost taxpayers if the Australian government also recognizes electrohypersensitivity as a disability? A speaker at the 2011 EMF Scientific Workshop in Melbourne estimated that 516,000 Australian adults would consider themselves to be electrically hypersensitive if a prevalence rate of 3% was assumed. European surveys have revealed significantly higher results. How many more will there be in ten years' time? (Some research, such as that by Hallberg, an independent researcher, and Oberfeld, a medical doctor from the Austrian Department of Public Health, has indicated that up to 50% of the population will be electrically sensitive in the near future...Hallberg & Oberfeld 2006). How will these people, and their associated households, cope with yet another ubiquitous source of radiation?

As an example of the seriousness of the impact of adding yet another layer of EMR to existing levels, there have been a number of reports in Victoria of people being severely affected by the far-field emissions from wireless smart meters, even when they themselves have not had a smart meter installed. SSMA is privy to many accounts from people who have been very badly affected as a result of the Victorian AMI program. Dr Lamech gives a graphic account of the harrowing bioeffects which can occur due to exposure to far-field smart meter emissions (Lamech 2012).

If these, seemingly vanishingly, small additions to the pulsed electromagnetic soup which we have immersed ourselves in, in very recent years, has such a deleterious effect on some individuals, what

will the effect be of introducing additional RF into buildings, where the effects might reasonably expect to be amplified?

Increased security risk as a result of providing communications between electricity utilities and household appliances

SSMA believes that E3 needs to consider the potential security vulnerabilities which are introduced as result of providing a direct line of communication between electricity utilities and household appliances. The new communications channel gives rise to the potential for hackers, terrorists and/or foreign powers to maliciously take control of consumers' appliances. Even simple human, or computer glitches, may result in unwanted events.

Other solutions – address harmonic pollution?

SSMA believes E3 needs to give consideration to other solutions for achieving its objective of coping with peak demand growth. This RIS refers to the potential to permanently offset 3 to 5 years of peak demand growth. We suggest that there are also other technical solutions which could significantly increase grid efficiency, and therefore lessen the pressure on power assets, which have significantly less risk attached to them. As an example, harmonic pollution of the grid is recognized as a growing problem (IEEE 2011). Harmonic pollution both takes up grid assets as well as leading to radiofrequency emissions (which may in turn be a problem for people with EHS). Air-conditioners (as well as other non-linear loads, including grid-connected solar inverters, compact fluorescent lights, smart meters and other electronic devices now commonly in use which deploy switched-mode power supplies) are a prime culprit.

Although outside of the scope of this RIS, why not instead place more pressure on manufacturers to design appliances that reduce the amount of harmonic frequencies introduced onto the grid? This measure alone, over time, could substantially reduce overall requirements for energy generation as old appliances are replaced with more energy efficient (in terms of their effect on the grid) devices. Such a measure would also have an added benefit in that it would be expected to result in longer service life of appliances, plus increased environmental safety. Both these benefits would be of immense benefit to consumers.

Summary

In conclusion, SSMA believes the analysis in this RIS is fundamentally flawed because it has confined itself to a narrow technical perspective, without taking into account real world considerations such as health or security considerations.

SSMA urges E3 to adopt the precautionary principle on this matter. Biological effects from pulsed RF are real. The medical costs of treating adverse medical outcomes, some of which are life-threatening, as a result of exposure to low-level chronic RF, are a potential minefield. SSMA believes it is entirely unjustified to expose the population to a preventable environmental hazard. The

economic and social costs flowing from this, as a result of mandating compliance with AS/NZS 4755, on these grounds alone, renders the recommendations unworkable.

*Prepared by Janobai Smith, BEc Monash, Cert. EMF Testing
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*Stop Smart Meters Australia Inc.
PO Box 460
Carnegie, VIC 3163*

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