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Australian Government
Australian Radiation Protection and Nuclear Safety Agency

ARPANSA Forum on ELF Standard:

The Regulatory Impact Statement

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27 February 2008

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RIS: Consultative Draft

- **Option One — status quo — this entails doing nothing and leaving the Interim Guidelines on Limits of Exposure to 50/60 Hz Electric and Magnetic Fields in place**
- **Option Two — regulatory adoption of the Standard — this option entails re-writing the guidelines, updating it to be consistent with international guidelines and standards, and taking into account more recent literature. The proposed Standard would provide a set of requirements to be adopted by State/Territory regulators as part of their regulatory frameworks**
- **Option Three — publishing the Standard without incorporating it into regulation — this option entails re-writing the guidelines, updating it to be consistent with international guidelines and standards, and taking into account more recent literature. State/Territory regulators and industry would use the Standard as an advisory document.**

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RIS: Consultative draft

The benefits of Options Two and Three have been assessed in comparison to the *status quo* (i.e. Option One). Given the inherent uncertainty regarding many of the assumptions used in the analysis the results are presented in terms of probabilistic ranges as summarised in the table below.

	Option Two	Option Three
Mean net present value	Negative $360.9 million	Positive $4.0 million
Likelihood that net present value is positive	Less than 2%	Greater than 99%
90% chance that result is within the range	Low: Negative $694.8 million High: Negative $30.4 million	Low: Positive $1.4 million High: Positive $6.7 million

The analysis indicates that there is little chance of a positive net present value from adopting the Standard in legislation. Option Three, on the other hand, is likely to result in a net benefit, and so is the preferred option. The difference between Options Two and Three is largely driven by the likelihood that capital investments worth over $1 billion that the electricity industry perceives would be required under Option Two would not be undertaken under Option Three.

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RIS related submissions

IARC has classified 50 Hz magnetic fields as a possible carcinogen based on two meta-analyses of many epidemiological studies with regard to childhood leukaemia.

This classification poses a public health dilemma as to how a possible but severe risk may be managed.

Disgracefully ARPANSA now proposes to manage the risk by "publishing the standard without incorporating it into regulation". This effectively abrogates responsibility by regulators for protecting public and occupational health.

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RIS related submissions

The basis for this abrogation is the dubious cost-benefit analysis of the costs of introduction of the standard.

The costs to industry are based on the highest exposures permitted (1000mG, 10kV/m to the public) whereas the costs to the public are based on much lower exposures (4 microtesla, 4mG).

Calculations which are based on different exposures are an asymmetrical assessment of the costs and benefits of the levels to be permitted by the standard.

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RIS related submissions

The costs to industry of $1bn are based on the costs incurred to control maximum exposures from power lines and certain equipment (Table 4.2), even though these public and occupational exposures are already meant to be controlled under the 1989 NHMRC ELF standard.

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RIS related submissions

Benefits to the public are based on "the numbers of children identified by the epidemiological studies to be at elevated risk is about one person every one to two years". It is assumed this refers to the many epidemiological studies which show an increased risk of childhood leukaemia at exposure levels over 4 mG. It is further assumed that the possible savings are calculated based on exposures to children not exceeding 4 mG thus avoiding leukaemia. This results in a cost saving based on the value of a life over the next 10 years of $11.3 m in 2006 values. However the standard will permit public exposures of 1000 mG which would increase exposures and hence risk by 250 times the level at 4 mG. To be comparable to the calculation of costs to industry the highest value of exposure permitted to the public should also be used. Therefore exposures of 1000 mG will result in costs of $11m x 250 = $2.7 billion due to increased childhood leukaemia. This alters the net present value calculation at Table 4.3 from a negative value of $780m to a positive of $2b. This cost shows why public exposure must be minimized by prudent avoidance.

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RIS related submissions

We do not think it is rational to base an assessment of the cost impact of precautionary measures on childhood leukaemia alone, when most of the hypothesised mechanisms and their supporting evidence relates to biological systems involved in many diseases, rather than exclusively to childhood leukaemia.

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RIS related submissions

The RIS states that the strongest evidence for harm comes from studies of ELF in the home. The IARC has classified ELF magnetic fields as possibly carcinogenic to humans.

The RIS appears to be too concerned with arguing the evidence down and this may be counterproductive and lead to the idea that the government is trying to dismiss the issue and the concerns

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RIS related submissions

[the concept of prudent avoidance] *has not been applied to require modification of existing facilities, which is generally very expensive.'* This does nothing to address the risk and appears to dismiss it. It may have been better to include some advice on low-cost measures at this point.

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RIS related submissions

Procedural. **This deals with the central issue of the Standard and RIS, that of the costs of implementing measures to reduce the field strengths of the electric and magnetic fields associated with high voltage electrical power transmission lines.**

This section acknowledges that the new draft Standard sets more rigorous exposure limits for occupational and public categories of exposure than the limits in the older NH&MRC Code.

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RIS: Where to?

- **Costings for the two options will be reassessed based on a more comprehensive evaluation of the implied costs under Option 1 (NHMRC – *status quo*)**
- **Discussions will take place with the OBPR on the real difference in cost of a regulated and unregulated standard**
- **RIS will be re-drafted**
- **Timelines?**

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