AUSTRALIAN 5G INNOVATION INITIATIVE - ROUND ONE – DISCUSSION PAPER RESPONSE

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Introduction

Implementation of 5G, worldwide, is controversial. The following request is for the Minister to ensure that, as a minimum standard, health monitoring and research by independent, suitably qualified researchers and health experts, is included in the 'Australian 5G Innovation Initiative' (referred to as 'the Initiative' or the 'Innovation Initiative' here-after), to ensure the well-being of those partaking in 'the Initiative' and the wider community. Preferably, a separate health and safety initiative would be undertaken prior to the 'Innovation Initiative' commencing.

Background

According to the Department of Infrastructure, Transport, Regional Development and Communications, 5G (5th generation) is the "latest generation for wireless mobile and internet services."[1] First widely deployed in 2019 [2], 5G is considered to be "more efficient, uses less energy and provides more advanced capabilities than previous generations of mobile technology" providing faster downloads and a new range of applications including remote health services.[3]

Wireless communication devices, including mobile phone networks, emit radiofrequency (RF) electromagnetic energy (EME).[4] The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) is Australia's "primary authority on radiation protection on nuclear safety"[5]. ARPANSA sets standards, in accordance with the World Health Organization (WHO) and International Commission (ICNIRP), on Non-Ionising Radiation. These standards include 5G and limit RF EME exposure. ARPANSA considers that "these limits are set well below levels at which harm to people may occur". [6]

ARPANSA states that the 5G network will move from the use of current mobile phone network frequencies to higher frequencies (Ibid). It ascertains RF EME penetration into human tissue will be short and that the likely effects of the short penetration of RF EME into human tissues will include heating of the skin surface (Ibid). ARPANSA limits are set to "prevent excessive heating at the surface of the skin and the eye" (Ibid). ARPANSA notes that while "no health effects are expected from radio frequency exposures below the limits set in the ARPANSA standard", "it is important to continue the research in order to reassure the Australian population" (Ibid). ARPANSA made recommendations for further research into "frequencies above 6GHz and for emerging technologies that use them like 5G". This lead to the publication of the 'Radiofrequency Electromagnetic Energy and Health: Research Needs' ('RF EME and Health: Research Needs') (Ibid).

RF EME guidelines were published in 2002 in the 'Radiation Protection Standard Maximum Exposure Levels to Radiofrequency Fields – 3 kHz to 300 GHz' and reviewed in 2014 (Ibid). The standards were considered adequate to "provide a high degree of protection against the known health effects of RF EME" (Ibid). ARPANSA's 'RF EME and Health: Research Needs' report (referred to above) was

published in 2017 to "outline research needs into RF EME and health" in the frequency range of 100kHz to 300GHz . There were a number of observations (including the paucity of studies on the effects of mobile phone use on children) and recommendations with regard to new technology using millimetre waves, identifying additional areas of research. It stated, "considering the expected increase in use of THz technologies, more research focusing on the effects on skin (long-term, low-level exposure) and cornea (high intensity, short-term exposure) is recommended". [7]

Given the outstanding concerns identified above, before moving to "create a pipeline of trials demonstrating different 5G applications" as is stated in the 'Innovation Initiative', further research should be undertaken to ensure the health and safety of Australian citizens. The WHO's publication regarding the Precautionary Principle is an important reminder of the responsibility of due diligence. "When solid science is available, health can be protected effectively through preventive action. However, people must humbly acknowledge that science has limitations in dealing with the complexity of the real world […]. While people strive for better science, how can health be protected? In particular, how can people ensure that children and future generations will have the opportunity that many people have of reaping the benefits of progress and enjoying good health? This question is difficult. Irreparable mistakes must be avoided, such as those related to tobacco or asbestos, when people waited for definitive evidence far too long before springing to action. Further, irremediable chains of events leading to health damage must be prevented from being triggered."[8]

The 'precautionary principle' requires in part, that a wide range of alternatives be explored to avoid possibly harmful actions.[9] Inclusion of measures in the 'Innovation Initiative' to prevent harm is not possible without an understanding of what those harms might be, which is why the research identified above, needs to be undertaken prior to the further rollout of these technologies.

Objectives of the Initiative

"The objective of the Initiative is to…undertake rigorous, commercial, and replicable testing of technologies that make use of 5G." Missing from the objectives is a founding premise on whether 5G (or it's predecessors) is safe for use. Given the above findings from the Government's own advising body (ie. that further research needs to be undertaken), this is a fundamental cornerstone from which technological development should be founded.

Prior to the trials in the 'Innovation Initiative' "demonstrating different 5G applications", an Occupational and Public Exposure Health and Safety Initiative is required, inline with the Liberal Party of Australia's Federal Platform to:

- Enhance Security (for the economy, workforce and family and individual welfare), in part by "encouraging preventative measures";
- Provide prosperity for Australians, in part by "protecting consumers, the environment and the safety of employees".[10]

The following considerations should be taken into account when finalising the objectives:

- Why is the rollout of 5G technology being considered before research has been conducted to determine that exposure to 5G signals is safe?

- Has the potential impact of health care and legal costs in the event that exposed workers and members of the public develop health problems been factored into 5G's economic impacts (benefits/risks)?
- Incorporating measurements of exposure levels by independent experts before, during and after the trial;
- Incorporating surveys of workers' symptoms (medical diagnoses and self-reported) before and after the trial, to be devised and undertaken by independent researchers; and
- Health Risk/ benefit analysis.

Learnings and case studies from the Initiative will be shared

The Initiative aims to build **awareness** [emphasis added] of the capabilities and applications of 5G". Building awareness implies knowledge and understanding of a situation or subject, which requires the availability of all the evidence. The overall impact of this technology and its use by the applicants should therefore consider all related factors including, but not limited to, health impacts as well as the economic indicators already being considered.

"Case studies based on the information contained in the reporting from applicants….will be published". Recording and publishing the full impact of the use of this technology should include, but not be limited to, health and economic indicators, to (as stated in 'the Initiative) "provide a source of information for business on the types of 5G use cases that are available and the benefits that come from them." The associated risks should also be observed, recorded and published.

Smoking and asbestos exposure are examples of public health risks that were not widely identified before they became a significant health burden on society. "Technological development has often outpaced scientific knowledge related to the determinants of health" and the synergistic affects from an array of sources including environmental exposures is unknown.[11] Mobile phone users are already being alerted to 'Electromagnetic Energy, and tips to reduce exposure' from telecommunications companies.[12]

Recording and publishing health learnings from current technologies on an ongoing basis will provide evidence based information from which future policy makers, businesses and the public can make informed decisions.

Criterion

The criterion for the 'Innovation Initiative' includes "assessment of risk and mitigations". Whilst this is in relation to "Criterion 3 - The Ability to be delivered", this is a timely reminder to assess health risks and mitigation strategies. However, this cannot be achieved without studies that identify potential health risks.

Criterion 4 assesses the value for money against the objectives of the 'Innovation Initiative'. Inline with the suggestions above to update the objectives, Criterion 4 should include the assessment of health care and legal costs that might ensue from the application of these technologies without due diligence.

Next steps

Please establish a separate health and safety initiative to be undertaken prior to the ‘Innovation Initiative’ commencing. As a minimum standard, please include health monitoring by independent health researchers and health experts as part of the ‘Australian 5G Innovation Initiative’ to ensure the ongoing well-being of those partaking in ‘the Initiative’ and the wider community.

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