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Radio Spectrum Policy and Planning
Ministry of Business, Innovation and Employment
WELLINGTON 6011

By email: radiospectrum@med.govt.nz

Submission on the Draft Radio Spectrum Five Year Outlook, 2012 - 2016

INTRODUCTION

1. Vector Limited ("Vector") welcomes the opportunity to make this submission on the Ministry of Business, Innovation and Employment's ("the Ministry") draft *Radio Spectrum Five Year Outlook, 2012 - 2016* ("the Five Year Outlook"), released for consultation on 13 August 2012.

2. Vector appreciates the Ministry's engagement with stakeholders in the development of the Five Year Outlook, to meet its objectives of "efficiently and effectively managing the radio spectrum, including allocating rights for the use of the spectrum, and enforcing compliance".

3. No part of this submission is confidential and Vector is happy for it to be made publicly available.

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SCOPE OF THE FIVE YEAR OUTLOOK

5. The radio spectrum is a critical enabler in the introduction of new and innovative technologies and services, which drive efficiency and productivity improvements across the economy. It is expected that interest in this resource would heighten in

the next few years, not only from incumbent licensees and right holders but also from new and potential users.

6. It is Vector's view that the Five Year Outlook does not adequately reflect the emerging requirements of New Zealand spectrum users and consumers. In its current form, the Five Year Outlook is narrowly focused on telecommunications and broadcasting services and does not go far enough to highlight the importance of spectrum for other sectors, e.g. energy, transport and critical infrastructure. The pervasive nature of wireless technologies makes it imperative that a document of a strategic nature anticipate the multiple uses of spectrum, to the extent foreseeable.

7. To make the Five Year Outlook more relevant to stakeholders and consumers, Vector suggests widening its scope to reflect the needs of multiple spectrum users, including utilities that provide services to ensure public safety and security of energy supply. Work undertaken by overseas jurisdictions on this matter would usefully inform the Ministry's consideration of spectrum for critical infrastructure services.

8. Vector supports a review of the Radiocommunications Act 1989 to take into account emerging technologies and market competition issues. Given the increasing convergence of technologies and markets, Vector encourages the Ministry to take a holistic approach in undertaking this review by considering the interrelationships of the Radiocommunications Act with other relevant legislation. This would ensure alignment across regulatory regimes, so that overlaps and unnecessary compliance costs are minimised, if not avoided.

9. Vector further supports the Ministry's proposals to make the delivery of its services more efficient, reducing licence fees and compliance costs for spectrum users, which are often ultimately borne by consumers.

SPECTRUM FOR UTILITIES

10. In the energy sector, spectrum will increasingly be used to transmit information to and from electricity network devices within a smart network[1] or a smart grid. Smart networks enable network operators to better respond to increasing electricity demand or manage peak demand by more effectively spreading the use of electricity.[2] Increased automation and flexibility, as well as the ability to rapidly

[1] A "smart network" is an electricity network that can intelligently integrate the behaviour and actions of all users connected to it – generators, consumers and those that do both – in order to efficiently deliver sustainable, economic and secure electricity supplies, https://www.transpower.co.nz/resources/transmission-tomorrow, page 28.

[2] http://www.vector.co.nz/sites/vector.co.nz/files/Vector%20Submission%20-%20Digital%20Dividend.pdf, paragraph 11

pinpoint faults, enhances network reliability and utilities' ability to manage network losses and optimise existing assets.[3]

11. The capability of smart networks to combine two-way communications system with infrastructure provides a better means for signalling prices, enabling consumers to make more efficient energy consumption decisions.[4] This could facilitate reductions in carbon emissions, which support the Government's climate change and Energy Strategy objectives.

Electric vehicles

12. Smart networks have the capability to integrate distributed and renewable energy sources into the electricity distribution network, including electric vehicles.[5] The Organisation for Economic Cooperation and Development ("OECD") estimates that:

> …The number of connected devices could grow by orders of magnitude if projections for annual sales of electric vehicles (7 million worldwide in 2020) and mandated smart meter installations are realised (around 180 million in Europe in 2018). Utilities, grid operators and 3rd party intermediaries will depend on efficient network infrastructures to control the charging (grid-to-vehicle) and discharging (vehicle-to-grid, vehicle-to-home) of electric vehicles.[6]

13. Electric vehicles are expected to become available in the New Zealand market from 2013, with an exponential increase in uptake over the next 15 years.[7] It is estimated that 40% of electric vehicle charging will be conducted using a public charging network,[8] similar to that shown in Figure 1.

[3] http://www.vector.co.nz/sites/vector.co.nz/files/Vector%20Submission%20-%20Digital%20Dividend.pdf, paragraph 11
[4] Ibid., paragraph 12
[5] Ibid., paragraph 13
[6] http://www.oecd-ilibrary.org/science-and-technology/ict-applications-for-the-smart-grid_5k9h2q8v9bln-en;jsessionid=3t0jcds1dki5b.delta, page 34
[7] http://www.vector.co.nz/sites/vector.co.nz/files/Vector%20Submission%20-%20Digital%20Dividend.pdf, paragraph 19
[8] Ibid., paragraph 21

Figure 1. An electric vehicle charging station in Wellington

14. The charging of batteries for electric vehicles during peak periods will place significant increased demand on the energy network.[9] Charging management that moves as much charging as possible to off-peak periods could be a desirable alternative to network investment.[10] Future electric vehicle developments will likely include the ability to feed back into the network from the car batteries, which will require the appropriate communication and control systems.[11]

Spectrum for smart networks

15. Whilst many smart network applications will operate satisfactorily on public radiocommunications networks, there are applications with requirements that are not able to be met by these networks at present or in the foreseeable future.

16. Similarly, there are applications that would operate satisfactorily on public radiocommunications networks during normal network conditions but in times of critical need (e.g. during natural disasters) are unlikely to continue to operate due to overloading or failure of these networks.

17. Consider a scenario where a car-versus-pole accident occurs in an area where a percentage of homes are generating their own energy and feeding surplus energy back into the grid. Today, the electricity distribution company would manually switch electricity away from the incident. In the future, electricity distribution companies will need to "switch off" not only the normal distribution supply but also the supply of every household that is potentially feeding electricity back into the grid. In this scenario, the communications infrastructure to make this happen

[9] http://www.vector.co.nz/sites/vector.co.nz/files/Vector%20Submission%20-%20Digital%20Dividend.pdf, paragraph 21
[10] Ibid.
[11] Ibid.

must be 100% reliable to ensure that emergency crews attending to the incident are not at risk. This would require access to suitable spectrum.

Overseas developments

18. A 2012 study by the OECD on ICT applications for smart grids emphasised that:

> Communication channels need to be available across the economy to all electricity users to maximise the potential benefits of smart grids. Ensuring communication channels are available universally across the economy will remain a key goal of policy makers and there are significant potential synergies that could be exploited between communication and electrical distribution companies (*e.g.* utility pole or duct sharing). Increased reliance on communication networks in the electricity sector will put to test existing infrastructures…fast response times are…necessary to simultaneously send control signals to virtual power plants that can comprise hundreds, or even thousands of individual entities…**there are possible needs for more spectrum for wireless data exchange**.[12] [emphasis added]

19. A paper published by the Australian Communications and Media Authority ("ACMA") in 2011 on spectrum for smart grids[13] observed that:

    a. Private internal networks provide the reliability that utilities need.

    b. Wireless is a key component of private internal networks.

    c. Utilities' spectrum needs are increasing.

    d. Utilities lack access to suitable spectrum to support smart grid in existing bands.

    e. Spectrum auctions and unlicensed spectrum do not represent alternatives for utilities to acquire suitable spectrum to support all smart grid applications.

20. ACMA's *Five-year spectrum outlook, 2011-2015*[14] concluded that:

> ...Smart infrastructure is recognised as a major development that will modernise the transport, resource, mining, electricity, gas and water sectors over the coming decades.
>
> ...Due to the anticipated ubiquitous nature and high mobility of smart devices in the future, wireless communication will likely be a major component of the effective and

[12] http://www.oecd-ilibrary.org/science-and-technology/ict-applications-for-the-smart-grid_5k9h2q8v9bln-en;jsessionid=3t0jcds1dki5b.delta, page 34
[13] http://www.acma.gov.au/webwr/_assets/main/lib311973/ena_attch4_ifc34-2010.pdf
[14] http://www.acma.gov.au/webwr/_assets/main/lib312061/fyso-2011-2015.doc, page 113

efficient operation of smart infrastructure systems. Therefore, **radiofrequency spectrum will be required to facilitate area-wide…smart infrastructure networks**.

In the electricity industry, some providers have already gained access to spectrum for smart metering and smart grids. For example, some energy providers have gained access to the 2.3 GHz band via either trading or third party access, with others using the 900 MHz SM band for smart meter devices. Therefore, different providers are choosing different technology platforms, and spectrum, to facilitate their networks.

The ACMA believes that the greatest spectrum efficiency and overall public benefit is likely to be achieved by a **nationally harmonised approach to spectrum for smart infrastructure**. In order to determine the spectrum needs for smart infrastructure and promote a nationally harmonised approach, **the ACMA has established a smart infrastructure project team**. The role of this team is to **work with infrastructure sectors to identify the spectrum needs of various smart infrastructure projects**. These projects include, smart grids, intelligent transport systems, and monitoring of water resources...

[emphasis added]

21. The Utilities Telecom Council, a global trade association headquartered in the U.S.A., argued that:[15]

> Today's utility must design and implement communications networks to meet ever-changing service expectations. Networks must provide coverage, availability, capacity and functionality. In addition to needing access to wireless communications, utilities have a separate requirement: control over the communications system. For a number of reasons, utilities have found that this **control can be satisfied only through the use of private radio systems**. The transmission and distribution of gas and electricity pose challenging problems. These two commodities, delivered to customers on demand, can be extremely volatile and require "real-time" control to be administered effectively…Therefore, **while commercial communications systems may meet some of a utility's communications needs, utilities will continue to need internal private systems for the foreseeable future**. [emphasis added]

22. In 2008, Industry Canada announced it would allocate the 1.8 GHz to 1.83 GHz band for radio systems carrying traffic exclusively for maintenance and management of the electrical grid.[16]

[15] http://www.utc.org/utc/utility-spectrum-crisis-critical-need-enable-smart-grids, link to *The Utility Spectrum Crisis: A Critical Need to Enable Smart Grids*, section VI, Conclusion
[16] http://www.ic.gc.ca/eic/site/028.nsf/eng/00382.html

23. In 2012, the European Commission released a consultation document on the use of spectrum for smart grids and smart metering.[17]

24. Vector's submission on the Ministry's consultation on digital dividend opportunities, dated 6 October 2011, noted that Australia's Energy Networks Association released a paper that identifies spectrum most likely to be suitable for the functional and technological requirements of smart networks in the Australian context. These are frequencies in the 700 MHz, 900 MHz, 1.7 to 1.8 GHz, 2.3 GHz, and 2.5 to 2.6 GHz bands.[18]

Critical infrastructure requirements

25. In addition to the efficiency gains and commercial opportunities smart networks provide, they minimise imbalances on the network (and therefore the impact of any outage) and allow supply to be restored more quickly.[19] This has implications for public safety and security of supply, making utilities highly integral components of New Zealand's critical infrastructure.

26. There is a synergy between public safety and utilities,[20] as "all elements of the critical national infrastructure have a dependence on electricity".[21] Public safety depends on utilities being able to respond as quickly as fire, police or ambulance personnel. The availability of spectrum for smart networks would support the requirement to respond to emergencies in a timely manner.

27. A 2012 report on behalf of the European Utilities Telecommunications Council ("EUTC"),[22] mainly based on work undertaken in the U.K. and the U.S.A., concluded that:

> ...there is a clear socio-economic argument for the wider application of currently available wireless-based communications systems into utility networks...

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17 http://ec.europa.eu/information_society/policy/ecomm/radio_spectrum/_document_storage/consultations/2012_energy_efficiency/energy_efficiency_public_consultation.pdf

18 http://www.acma.gov.au/webwr/_assets/main/lib312084/ifc13-2011_energy_networks_assoc-response-2.pdf

19 https://docs.google.com/viewer?a=v&q=cache:tsIOMnObMJgJ:eutc.org/fileshare/files/375/EUTC_Spectrum_Group_-_Meeting_Documents/Socio-economic_value_of_Spectrum_used_by_utilities.pdf+EUTC+socio+economic+value+of+spectrum&hl=en&gl=nz&pid=bl&srcid=ADGEESiTqiEAF9o5IMDeOcVjRag3qv1AaDet2I9igCfGXV1nLEf0WNjtONRRwBGQvoACJnMJOPBUwJwPajO7Eh1_MaQwvMmAYzfVyhKOmkf_5_R5wlh1UddAvsnjDrlEJgdyxToe1LxM&sig=AHIEtbR4yoRfgj_1_JAQ8wYs2WUk9r-t5A, paragraph 4.5.5

20 http://www.acma.gov.au/webwr/_assets/main/lib311973/ena_attch4_ifc34-2010.pdf, page 581

21 https://docs.google.com/viewer?a=v&q=cache:tsIOMnObMJgJ:eutc.org/fileshare/files/375/EUTC_Spectrum_Group_-_Meeting_Documents/Socio-economic_value_of_Spectrum_used_by_utilities.pdf+EUTC+socio+economic+value+of+spectrum&hl=en&gl=nz&pid=bl&srcid=ADGEESiTqiEAF9o5IMDeOcVjRag3qv1AaDet2I9igCfGXV1nLEf0WNjtONRRwBGQvoACJnMJOPBUwJwPajO7Eh1_MaQwvMmAYzfVyhKOmkf_5_R5wlh1UddAvsnjDrlEJgdyxToe1LxM&sig=AHIEtbR4yoRfgj_1_JAQ8wYs2WUk9r-t5A, paragraph 1.0.12

22 Ibid., paragraphs 6.0.1-6.0.2

> ...there are even greater socio-economic benefits to be had from the introduction of next generation infrastructure using business radio communication systems as part of a smart grid, but their economic characteristics as a quasi-public good means that providers will be unwilling to invest as the private benefit is not sufficient.

28. The EUTC report[23] further concluded that:

> In addition to the economic arguments...there are also great daily **environmental, efficiency and safety benefits** to be had from the implementation of advanced radio systems as well as their contribution to avoiding outages and the associated economic damage...
>
> [there is a]...need for government to provide tailored support to Critical National Infrastructure sectors to enable the realisation of potential Pareto improvements in the economy.
>
> All industries face risks in a competitive climate, but government must provide a degree of certainty where substantial social benefit is involved...
>
> ...**the socio-economic value of reliable electricity supplies which business radio systems support can be said to have a minimum range of values between 50 – 150 times the retail price of the electricity supplied**.
>
> Nevertheless, business radio communications systems can be justified on economic grounds to provide resilience.
>
> [emphasis added]

29. While critical infrastructure services are not entirely public goods because they are "partially excludable", they are considered "quasi-public goods" because it is not possible for all social benefits to be excluded.[24]

30. Allocating spectrum suitable for critical infrastructure that can deliver substantial "spill-over benefits" to the public through traditional market mechanisms (e.g. through auction, which is based on the assumption that all the benefits are accrued privately) would be a misallocation of resources from their most efficient use and a failure "to provide what society actually demands".[25] This is a market failure that would require new or innovative approaches of allocating spectrum to ensure the substantial 'residual' benefits to the public are taken into account.

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[23] https://docs.google.com/viewer?a=v&q=cache:tsIOMnObMJgJ:eutc.org/fileshare/files/375/EUTC_Spectrum_Group_-_Meeting_Documents/Socio-economic_value_of_Spectrum_used_by_utilities.pdf+EUTC+socio+economic+value+of+spectrum&hl=en&gl=nz&pid=bl&srcid=ADGEESiTqiEAF9o5IMDeOcVjRag3qv1AaDet2I9iqCfGXV1nLEf0WNjtONRRwBGQvoACJnMJOPBUwJwPajO7Eh1_MaQwvMmAYzfVyhKOmkf_5_R5wlh1UddAvsnjDrlEJgdyxToe1LxM&sig=AHIEtbR4yoRfgj_1_JAQ8wYs2WUk9r-t5A, paragraphs 6.0.3-6.0.4, 6.0.6-6.0.8

[24] Ibid., paragraph 2.2.9

[25] Ibid., paragraph 1.4.4

31. Vector agrees with the view that "when looking at the socio-economic value of Business Radio, it is the use to which it is put and how that increases benefits to society that should be evaluated rather than the spectrum itself".[26]

New Zealand initiatives

32. Clearly, the deployment of smart networks will increasingly become a significant driver of spectrum demand during the Five Year Outlook period. Greater clarity from the Ministry regarding spectrum allocation for smart networks will provide certainty for network planning and, importantly, ensure grid stability and therefore public safety and security of supply.

33. Vector notes that the Electricity Networks Association ("ENA")[27] is establishing a working group to look into suitable spectrum for smart networks. Vector supports this ENA initiative and encourages the Ministry to engage with the ENA on this matter, as well as with utilities deploying or intending to deploy smart networks.

34. Vector itself will continue to monitor energy demand trends, such as the increased use of electric vehicles, which is likely to have a significant impact on electricity demand.

35. Vector **strongly recommends** that the Ministry include in the Five Year Outlook, as a matter of high priority, a work stream that would identify frequency bands that could be suitable for the development of smart networks in New Zealand.

36. Vector further **recommends** that the Ministry, in undertaking the above recommended work stream and/or in conjunction with its key project "Spectrum for emergency services" (page 35 of the Five Year Outlook), take into account the spectrum needs of utilities that provide critical infrastructure services and the spill-over benefits these services provide to the public. This work would be supportive of the Government's National Infrastructure Plan 2011,[28] which puts emphasis on "considering how to build greater resilience". Relevant work by overseas jurisdictions and organisations could usefully inform the Ministry's consideration of this matter.

37. Vector notes that electricity distribution and gas transmission and distribution businesses are subject to price and quality regulation under Part 4 of the Commerce Act. A key requirement for these regulated businesses is to respond to

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[26] https://docs.google.com/viewer?a=v&q=cache:tsIOMnObMJgJ:eutc.org/fileshare/files/375/EUTC_Spectrum_Group_-_Meeting_Documents/Socio-economic_value_of_Spectrum_used_by_utilities.pdf+EUTC+socio+economic+value+of+spectrum&hl=en&gl=nz&pid=bl&srcid=ADGEESiTqiEAF9o5IMDeOcVjRag3qv1AaDet2I9iqCfGXV1nLEf0WNjtONRRwBGQvoACJnMJOPBUwJwPajO7Eh1_MaQwvMmAYzfVyhKOmkf_5_R5wlh1UddAvsnjDrlEJgdyxToe1LxM&sig=AHIEtbR4yoRfgj_1_JAQ8wYs2WUk9r-t5A, paragraph 2.2.9

[27] http://www.ena.org.nz/

[28] http://www.infrastructure.govt.nz/plan/2011/01.htm

emergency callouts according to specified timeframes. The availability of spectrum for critical infrastructure services will help ensure the delivery of these time-critical services.

FUTURE SPECTRUM ALLOCATIONS

38. Vector supports the Ministry's "flexible approach to spectrum allocation that tracks potential scenarios...[as] the best way for a "fast technology follower" approach to provide economic growth".

39. To reinforce a flexible approach, the allocation of spectrum should be technology neutral (i.e. not just focusing on technologies for the telecommunications and broadcasting sectors), to the extent possible. In this regard, Vector **recommends** that the Ministry refrain from totally locking in frequencies for specific technologies, to ensure access for parties who wish to deploy new and innovative technologies in future years.

Regional allocation of spectrum rights

40. In principle, the allocation of regional spectrum rights proposed by the Ministry would be conducive to market competition, and could better meet the Ministry's efficiency objective. This would enable access to spectrum by more than a single right holder in any region.

41. This proposed arrangement, however, could be problematic in practice. While this could be straightforward to implement in rural or less populated regions, where incumbent national right holders may be willing to forego their use of spectrum in those regions, the same right holders may not be inclined to do so in the more commercially attractive Auckland region. Some of these management rights do not expire until many years beyond the Five Year Outlook period.

42. The regional allocation of spectrum also brings into question the desirability of this approach for a country the size of New Zealand, i.e. the transactions costs could outweigh the benefits of implementing this proposal.

43. Technical problems could also arise, such as interference across artificially-constructed regional boundaries. This could require more active interference management by the Ministry, the affected parties, or an independent entity, which is not costless.

44. Furthermore, artificially constructed regional boundaries almost certainly will not align with the commercial or operational boundaries of parties potentially interested in utilising regionally allocated spectrum. For example, the 29 regional electricity distribution businesses have well defined boundaries that are unlikely to align with the regions specified for the allocation of regional spectrum rights.

These businesses sometimes operate embedded networks in other electricity distribution areas, which would add to the complexity of allocating spectrum rights by region.

45. Vector **recommends** that the Ministry assess the costs and benefits of allocating spectrum rights on a regional basis before implementing this proposal, e.g. who benefits, who loses, can it be applied consistently across regions, would a consistent application produce different outcomes, etc. Importantly, such assessment could consider whether this proposal would stunt the development of a more liquid secondary market.

Secondary spectrum market

46. The Five Year Outlook does not describe the state of the secondary spectrum market in New Zealand or how the Ministry could facilitate the evolution of a more liquid secondary market.

47. With the increasing interest in the use of spectrum by telecommunications operators, broadcasters and 'non-traditional' parties, it is not unreasonable to expect the secondary market to become a 'burgeoning' rather than a 'thinning' market. The Ministry could consider reducing the duration of management rights, which are currently granted for a period of up to 20 years, to reflect the shortening of technological lifecycles. This could also encourage trading.

48. Vector **recommends** that the Ministry commission a study to identify the reasons for the lack of trading in the secondary spectrum market and make recommendations on how trading may be facilitated.[29]

Legislative review

49. The Ministry's proposal to review the Radiocommunications Act, to take into consideration new technologies and competition issues, is most welcome. Vector reiterates that a desirable outcome of this review is a spectrum allocation regime that ensures the price and availability of spectrum do not become barriers to market entry and the deployment of new and innovative technologies in the future.[30]

Convergence of technologies

50. Given the rapid developments in wireless technologies, and their increasing convergence with and disruption by other technologies, Vector **recommends** that the Ministry refrain from totally locking in spectrum for specific technologies, to

[29] Vector also made this recommendation in its submission on the Ministry's consultation paper on digital dividend opportunities, http://www.vector.co.nz/sites/vector.co.nz/files/Vector%20Submission%20-%20Digital%20Dividend.pdf, paragraph 39.
[30] Ibid., paragraph 41

ensure flexibility in the allocation regime and access for other interested parties in the future.[31]

51. As indicated above, Vector supports a technology-neutral policy for spectrum allocation, to the extent possible. This could be considered as one of the guiding principles for the review of the Radiocommunications Act.

52. In order for the Five Year Outlook to reflect market and regulatory developments in a timely manner, Vector **recommends** that the Ministry review it on a regular basis, say every two to three years.

Competition issues

53. The Radiocommunications Act is silent on competition in the spectrum market, leading the Ministry and spectrum users to rely on general competition policy, i.e. the Commerce Act. The purpose of the Commerce Act is "to promote competition in markets for the long-term benefit of consumers in New Zealand".

54. In reviewing the Radiocommunications Act, the Ministry could consider establishing ex-ante measures that are likely to support innovation, market competition, and the efficient use of spectrum. These could include, for example, a technology-neutral approach to spectrum allocation, shorter and flexible duration for management rights, and service and coverage requirements for holders of management rights ("use-it-or-lose-it" or "use-it-or-sell-it" policy).

55. As a matter of principle, Vector supports the efficient operation of markets, which ensure the right prices and incentives to invest are being signalled. This would include investigating market failures, as in the case of critical infrastructure services, and implementing mechanisms to more accurately reflect the cost and benefits to various parties, enabling the market to operate more efficiently.

56. The Commerce Commission has provided guidance in setting regulatory priorities. The Commission has indicated that:

> ...where a tension exists between short-term allocative efficiency and long-term dynamic efficiency, the Commission will give greater weight to the promotion of the latter...**Ongoing innovation and efficient investment over time can deliver significant long-term benefits to end-users, and the adverse consequences of deterring or delaying such investment may be substantial**.[32] [emphasis added]

[31] Vector also made this recommendation in its submission on the Ministry's consultation paper on digital dividend opportunities, http://www.vector.co.nz/sites/vector.co.nz/files/Vector%20Submission%20-%20Digital%20Dividend.pdf, paragraph 37

[32] http://www.comcom.govt.nz/assets/Imported-from-old-site/industryregulation/Telecommunications/Guidelines/ContentFiles/Documents/A-guide-to-Regulatory-Decision-Making-by-the-Commerce-Commission-for-the-Telecommunications-sector---July-2009.pdf, paragraph 135

57. Vector continues to support this view.[33]

Alignment of regulatory frameworks

58. The convergence of technologies and associated services would make the definition of markets for regulatory purposes more challenging in the future.

59. In its June 2012 submission on the Commerce Commission's broadband demand study, Vector raised the desirability of cross-sector assessment and alignment of regulatory regimes for telecommunications, broadcasting and digital content, including the possibility of a "single communications regulator". Given that this is a long-term proposition, the next best thing would be to ensure the alignment of regulatory frameworks so that overlaps, confusion, and unnecessary compliance costs are minimised, if not avoided.

60. Vector **recommends** that the Ministry adopt a holistic approach in reviewing the Radiocommunications Act, taking into account existing and potential interrelationships with the Broadcasting Act, the Telecommunications Act, the Commerce Act and other relevant legislation. As a first step towards the alignment of regulatory regimes, the Ministry's Radio Spectrum Group should coordinate closely with the Energy Markets Group in the further development of the Five Year Outlook.

61. Vector further **recommends** that the Ministry undertake cost-benefit assessment(s) and meaningful stakeholder consultation(s) before proposing any substantial amendments to the Radiocommunications Act and associated changes in other legislation.

REGULATORY COMPLIANCE

62. Vector commends and strongly supports the Ministry's proposal to provide more web-based services, which would maximise operational efficiency, reducing licence fees and compliance costs for current and future spectrum users.

63. Vector particularly supports the wider use of the regulatory compliance mark (below) throughout New Zealand and Australia.

64. This mark can be used to replace compliance marks such as the C-tick used for electromagnetic compatibility and the various approval numbers used for electrical safety labelling. Vector agrees that the use of a single, standard mark (and

[33] http://www.vector.co.nz/sites/vector.co.nz/files/Vector%20Submission%20-%20Digital%20Dividend.pdf, paragraph 28

register) is expected to "reduce compliance costs for manufacturers and suppliers and improve consumer recognition of compliant products".

65. Vector would support future reviews by the Ministry to "improve the efficiency and effectiveness of radio spectrum licensing and compliance", including:

    a. improving the ability of the compliance team to deal with interference to radiocommunications from electrical equipment;

    b. dealing with the importation of prohibited and non-compliant equipment; and

    c. aligning end-user certification with international standards.

CLOSING COMMENTS

66. Vector appreciates the inclusive approach adopted by the Ministry in the development of its Five Year Outlook, and wishes to see this approach being adopted for future spectrum allocations.

67. To recap, Vector **recommends** that the Ministry:

    a. include in the Five Year Outlook, as a matter of high priority, a work stream that would identify frequency bands that could be suitable for the development of smart networks in New Zealand;

    b. take into account the spectrum needs of utilities that provide critical infrastructure services in undertaking the above work stream and/or in conjunction with its key project "Spectrum for emergency services". Relevant work by overseas jurisdictions and organisations could usefully inform the Ministry's consideration of this matter;

    c. assess the costs and benefits of allocating regional spectrum rights before implementing this proposal, including whether it would stunt the development of a more liquid secondary market;

    d. commission a study to identify the reasons for the lack of trading in the secondary spectrum market and make recommendations on how trading may be facilitated;

    e. refrain from totally locking in frequencies for specific technologies to ensure access for parties who wish to deploy new and innovative technologies in future years;

f. review the Five Year Outlook on a regular basis, say every two years, to reflect developments in the technological, commercial and regulatory environments;

g. adopt a holistic approach in reviewing the Radiocommunications Act, taking into account existing and potential interrelationships with the Broadcasting Act, the Telecommunications Act, the Commerce Act and other relevant legislation. This would ensure the alignment of regulatory frameworks so that overlaps, confusion, and unnecessary compliance costs are minimised, if not avoided; and

h. undertake cost-benefit assessment(s) and meaningful stakeholder consultation(s) before proposing any substantial amendments to the Radiocommunications Act and associated changes in other legislation.

68. Vector would be happy to discuss any of the above recommendations with the Ministry, and share its insights and experience with smart networks, the provision of critical infrastructure services, and the deployment of technologies that use the radio spectrum.

Yours sincerely

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