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SUBMISSION ON EMERGING TECHNOLOGY AND THE IM REVIEW

- 1 Orion New Zealand Limited (**Orion**) welcomes the opportunity to comment on the Commerce Commission's (the **Commission**) consultation paper "Input methodologies review, Emerging technology pre-workshop paper" (the **Paper**). Orion also appreciated the opportunity to attend and participate in the workshop on emerging technologies and the Input Methodologies (the **IMs**) on 14 December 2015 (the **Workshop**); this submission also builds on and responds to the discussion at the Workshop.
- 2 Answers to specific questions asked in the Paper are at Appendix A.
- 3 We have reviewed and support the submission by the Electricity Networks Association (the **ENA**) on this topic.

Summary of submission

- 4 Emerging technologies present opportunities to deliver real and material benefits to consumers in terms of network safety, resilience, reliability and efficiency. For example, our analysis (as presented in our previous submission) shows that load profiles on our network could be smoothed by co-ordinated use of batteries, reducing peak load by 10-15%.
- 5 These advantages are best achieved through co-ordination of the technologies to ensure they are operated together to manage load across

a portion of a network. EDBs are well placed to undertake this co-ordination.

- 6 We understand that some retailers have raised concerns about their ability to compete with EDBs in the provision of services using emerging technologies, especially batteries.
- 7 We submit that it is far too early in the development of these technologies to even be confident there is a problem, let alone identify the optimal solution. Regulating now would create material costs for all EDBs without any clear benefit.
- 8 We are concerned that retailers seem to be proposing ring-fencing of all EDBs' load management activities. We, like other EDBs, have been operating load control systems for many years, providing similar services to those that could be provided by batteries. Ring-fencing these services would be costly and not sensible.
- 9 We are happy to work with retailers or third parties where this will assist in delivering positive outcomes for consumers.
- 10 Ring-fencing or unbundling of battery / demand-side management services from electricity lines services is a policy question. It would not be appropriate for the Commission to regulate for this outcome under Part 4.
- 11 We agree with the Commission's definition of electricity lines services. While the defined terms are complex and difficult to work through, we agree it is sensible to view assets and activities that are used to provide the regulated service as being part of the regulated service, even where they do not physically convey electricity by line.
- 12 We broadly agree with the descriptions of the scenarios provided by the Commission, except for some points of detail. However, we submit that it is dangerous to put too much reliance on abstract scenarios. It is unclear how emerging technology markets will develop and how the assets may be used by EDBs and others. Real-world examples may differ from the scenarios put forward and we should seek to avoid developing definitive positions on what is and is not regulated and unregulated at this time.

Opportunities presented by emerging technologies

- 13 Our 2016-2018 statement of intent clearly sets out our corporate objectives, current activities and key roles in the Christchurch rebuild. Our

activities that are relevant to the emerging technologies discussion include:¹

- 13.1 plan, construct and maintain a safe, resilient, reliable and efficient electricity distribution network in the Christchurch and central Canterbury region
 - 13.2 recover our prudent and efficient costs
 - 13.3 provide efficient processes that support competition among electricity retailers and generators.
- 14 We consider that our objectives are well aligned to the delivery of positive consumer outcomes from emerging technologies. We support all parties having the ability to utilise and invest in these technologies (although where a technology would impose costs on other users – e.g. solar PV creating voltage problems for networks – mechanisms will need to be in place to manage these effects).
 - 15 Our view is that emerging technologies present opportunities to deliver real and material benefits to consumers in terms of network resilience, reliability and efficiency. For example, our analysis (as presented in our previous submission) showed that load profiles could be smoothed by co-ordinated use of batteries, reducing peak load by 10-15%.
 - 16 These advantages are only likely to be achieved through co-ordination of the technologies to ensure they are operated together to manage load across a portion of a network. EDBs are well placed to undertake this co-ordination (perhaps through a distribution system operator role). While it is conceivable that third parties could take on this role, that would create increased transaction costs and it is not clear that potential third parties (e.g. retailers or load aggregators) are currently able to do it and it is too early to assume that this will occur. For example, any one retailer will only have relationships with and information about a portion of customers in a constrained area of a network and load aggregation services are not yet widely available.
 - 17 In order to realise these opportunities, we have been investing for research and development purposes in emerging technologies such as electric vehicles and EV chargers and are investigating investment in batteries and consumer load management systems. Our core aim is to better understand customer behaviour and the technologies' potential impacts on our network

¹ Orion New Zealand Limited, Statement of Intent For FY16, FY17 and FY18, 10 June 2015, Section B.

and the value of any mitigations or responses. This is an activity that would be expected from any responsible EDB and it is essential we remain able to undertake this kind of research; which means we will need to recover the costs associated with it (not just the cost of the assets, but also the operational costs including any marketing or legal costs necessary to place an asset at a consumer's premises).

- 18 Opportunities from emerging technologies are more likely to be realised if EDBs have positive incentives to invest in research and development, both for emerging technologies and other initiatives.² The example discussed at the workshop was a contestable fund for all EDBs to submit bids to, similar to Ofgem's Low Carbon Networks Fund. This would give EDBs a focus for R&D and also promote improved sharing of results across the industry.
- 19 Incentives for innovation and research could also be assisted by a specific exclusion from the IRIS mechanism for expenditure on these topics. This could provide that, any R&D or innovation expenditure by an EDB is excluded from the calculation of IRIS incentive amounts. Without this exclusion R & D would potential be an early casualty of cost control.

Regulation of emerging markets would increase costs and prevent opportunities from being realised

Problem definition

- 20 We understand that some retailers have raised concerns about their ability to compete with EDBs in the provision of services using batteries and similar technologies (although it is unclear whether these concerns relate to the sale, installation or dispatch of the technologies). The retailers have suggested that EDBs should either:
 - 20.1 not be permitted to directly invest in emerging technologies (but EDBs could purchase the services from third parties) or
 - 20.2 should only be permitted to make the investments through fully ring-fenced subsidiaries that would compete on a level playing field with other third parties.
- 21 The markets for services provided by emerging technologies are only just developing. As was evident at the Workshop, there was some confusion regarding which market or markets are potentially problematic. There was no consensus or clear evidence presented as to whether a problem exists.

² These incentives would be in addition to the standard incentives provided under price-quality regulation provides to find efficiencies in their delivery of electricity lines services.

22 We submit that it is far too early in the development of these technologies to even be confident there is a problem, let alone identify the optimal solution. It is hard to envisage how battery storage (or other emerging technology) services markets will develop, who the major players will be or whether there will be scope for the abuse of market power. Technology development is at an early stage and the number of batteries and electric vehicles sold in New Zealand are at low levels. It is unclear what commercial arrangements and product offerings will become popular. Introducing regulation at this stage is premature and risks stifling market growth or creating inefficiencies.

23 Importantly, the cost allocation IM applies where assets are used to provide regulated and unregulated services. Currently we do not provide any shared services. However, if we were to provide shared services using emerging technologies such as batteries we would be required to apply this IM to any shared costs or asset values. Meanwhile all direct costs and asset values will be fully allocated to the regulated or unregulated service (as the case may be).

Ring-fencing would be costly

24 Regulating now would create material costs for EDBs, and then consumers, without any clear benefit. Restricting or preventing EDBs from investing in these technologies is likely to push up the cost of delivering network services as EDBs will not be able to use certain technology types to deliver services even if those technologies are cheaper. It may also prevent the markets developing altogether if other parties are not sufficiently motivated to invest in emerging technologies or distributors are not sufficiently engaged with other parties to resolve the anticipated technical, commercial and coordination issues.

25 The Purpose of Part 4 focuses on the long-term benefit of consumers (of the regulated services). We do not believe consumers' interests would best be served by preventing EDBs from using the full suite of available technologies when delivering network services. EDBs should be able to use emerging technologies where they can deliver network services at a lower price or better quality.

26 While it is conceivable that EDBs could engage a third party to procure the assets which are used to undertake research or provide network services through a third party or ring-fenced subsidiary, restrictions that require this will add cost and complexity and make it less likely the research will be undertaken.

27 The ring-fencing requirements in the Electricity Industry Act 2010 relating to EDB investments in generation and retail are onerous and expensive,

requiring separate Boards, separate management teams, information-sharing restrictions and other barriers. To require Orion to apply this kind of ring-fencing arrangement would be a sufficient barrier to prevent many of the investments in new technologies we may contemplate.

Guidance may be helpful

- 28 We agree there is currently some confusion over whether investments in emerging technologies should be seen as regulated or unregulated. The ability to seek guidance from the Commission on this would be helpful.

The scope of the ring-fenced business is not clear

- 29 The focus on batteries and similar technologies also appears to be an unduly narrow perspective. Customers already benefit from the co-ordinated load management (predominantly hot water control) that distributors carry out, emerging technology will increase the amount of co-ordination required to avoid suboptimal outcomes and cost increases to customers.
- 30 Ring fencing may also lead to unforeseen impacts on existing load management and suboptimal outcomes as it is difficult to see how ring-fencing could be limited to activities relating to batteries and electric vehicles as this would imply technology-specific regulation, which is generally not good practice and would be likely to swiftly become out of date as technology change progresses.
- 31 We consider that there is a need for everyone to clearly understand the possible total costs that imposing such regulation might imply.

Orion is happy to work with third parties on demand-side solutions

- 32 One concern raised by retailers at the Workshop is that EDBs have information available on network constraints, and thus where it is most valuable to deploy batteries and similar assets. The concern was that this information is not available to potential competitors and thus gives EDBs an advantage.
- 33 As set out in our Statement of Intent, Orion's role in the wider recovery and rebuild includes:³

³ Orion New Zealand Limited, Statement of Intent For FY16, FY17 and FY18, 10 June 2015, Section C.

- 33.1 make it easy for generators to connect to our network – including on-site and distributed electricity generation such as solar power and wind generation
- 33.2 make it easy for consumers to adopt new technologies such as electric vehicles or battery storage.
- 34 We are therefore happy to work with retailers or third parties where this will assist in delivering positive outcomes for consumers.
- 35 Importantly, any advantage from this is typically limited in extent and time. Only around 5%-10% of Orion's network is facing constraints at any one time due to the amount of load control we currently operate. The shape of the load duration curve means that deferral initiatives tend to defer the need for network capex by around 3 years (although this may change with new load profiles), after which a network investment is made.
- 36 Also some of this information is in fact available in our Asset Management Plan. In the AMP Orion publishes a demand-side management table with a stated annual per kW cost of proposed network solutions where DSM could be used to defer the project.⁴ Our Asset Management Plan also lists our proposed 11kV reinforcement projects. We have had enquiries from third parties seeking information regarding constraints on our network and have directed people to it. To date this has not resulted in any offers of demand-side solutions on the basis of this information, but it is publicly available.⁵
- 37 We and other industry participants are looking at ways to provide additional information to our customers and emerging technology providers. For example, there is considerable discussion within the Green Grid⁶ team (incl the EA and industry participants) on the most appropriate way to make DG network congestion information available.
- 38 The driver for emerging technologies may in many situations be customer driven (independence, price security, etc) and the technologies are interlinked.

⁴ See pages 240-241 of Orion's 2015-2025 Asset Management Plan.

⁵ For clarity, Orion does not support the creation of onerous information disclosure requirements that all EDBs should now be required to publish information on network constraints. Necessary information can be provided through commercial arrangements between the parties.

⁶ A team led by the University of Canterbury Electric Power and Engineering Centre and supported by MBIE to research and provided industry guidance on the effects of renewable/emerging technologies

- 39 Constraints on the low voltage network are predominantly associated with new or upgraded connections which are typically short notice requests from customers and therefore cannot be reported or easily disclosed.
- 40 Emerging technologies, particularly PV and EVs have the potential to create new low voltage network constraints there is already a regulatory requirement for us to publish DG congestion. The Green Grid research team is undertaking modelling work to help but this is a complex and large scale piece of work – we have more than 10,000 low voltage feeders on our network alone.
- 41 There is significant policy, regulatory and market complexity involved in emerging technologies and it is our view that keeping the options open at this stage is wise.

Should regulation of emerging technologies be implemented?

- 42 In 2010 the Commission determined IMs that were flexible and left room for EDBs to determine whether an asset was used to provide the regulated service or not (subject to audit scrutiny). The current lack of certainty regarding how markets develop mean this flexibility remains appropriate – more detailed rules would be difficult to get right on currently available information.
- 43 Ring-fencing or unbundling of demand-side management services from electricity lines services is ultimately a policy question. It would not be appropriate for the Commission to regulate for this outcome.
- 44 The concern being raised appears to be that EDBs would be able to use their regulated monopoly status to compete against other potential suppliers of emerging technology services. This is not a Part 4 problem. Part 4 seeks to regulate services where there is little or no competition and little or no likelihood of a substantial increase in competition. Regulation under Part 4 should not be used to restrict EDBs from investing in emerging technologies that could be delivered in a competitive market. If that is the policy intent it should be delivered through changes to legislation (e.g. something similar to the restrictions in Part 3 of the Electricity Industry Act that separate distribution from generation and retail).
- 45 Orion also emphasises that the success of competition in the battery storage market is not just a matter of whether EDB activities in that market are regulated or not. There are multiple other factors that could be influenced by regulators and policy-makers such as the low-user fixed charge regulations, the Electricity Authority's pricing principles and the tariff structures implemented by retailers and distributors.

- 46 If ring-fencing was introduced, the related party rules in the IMs and Information Disclosure would apply. It would be necessary to consider if changes were required the related party rules to accommodate emerging technology ring-fencing.
- 47 In our view there is no need to make changes to the IMs to restrict EDB participation in emerging technology investments. We support the ENA's submission that a better approach is for the Commission and policy makers to continue to monitor technology and market developments and intervene only if necessary.

Technical interpretation questions

Definition of electricity lines services

- 48 In the Paper and in its presentation at the Workshop the Commission put forward its interpretation of what the regulated service is and how that service is regulated. The definition is derived from definitions in the Commerce Act 1986 (the **Commerce Act**) and the Electricity Act 1992 (the **Electricity Act**) and any changes to the definition would need to be made by Parliament, based on an identified policy requirement, rather than by the Commission.
- 49 Orion agrees with the Commission's definition of electricity lines services. While the defined terms are complex and difficult to work through, we agree it is sensible to view assets and activities that are used to provide the regulated service as being part of the regulated service, even where they do not physically convey electricity by line. This enables sensible outcomes to be achieved:
- 49.1 In principle, EDBs should be able to utilise any technology or activity where it means they can deliver a better quality and/or lower cost regulated service. If EDBs were not permitted to use assets beyond the point of supply to deliver the regulated service this would be likely to increase costs over time as only some of the potential technology solutions would be available.
- 49.2 Leaving aside technologies behind the meter, EDBs use various technologies and undertake numerous activities that are not within the physical network and do not convey electricity by line (e.g. office buildings, human resource management) but are essential for the necessary operating of the network. The Commission's interpretation enables such assets and activities to be included in the regulated business and recovered from regulated consumers, which is appropriate.

Revenue allocation IM

- 50 Orion notes that there is currently no revenue allocation IM nor do we consider it necessary. We consider that the existing cost allocation IM would have an equivalent effect.

Capital contributions

- 51 The Paper and the Workshop queried whether there is a need to change the definition of capital contributions. Orion does not believe there is any need to change. We think the current definition works well. We are not aware of any payments EDBs may receive for regulated services that could fall outside the regime (they are either lines charges, capital contributions or other regulated income). It may be helpful if the Commission could provide more explanation of its concerns in this area.

Comments on the Commission's scenarios

- 52 The Paper put forward three scenarios for discussion, all involving different ownership and/or locations of battery assets.
- 53 Orion broadly agrees with the descriptions of the scenarios, except for the points below. However, Orion submits that it is dangerous to put too much reliance on abstract scenarios. As noted above it is unclear how emerging technology markets will develop and how the assets may be used by EDBs and others. Real-world examples may differ from the scenarios put forward and we should seek to avoid developing definitive positions on what is and is not regulated and unregulated at this time.
- 54 Our comments on the scenarios are:
- 54.1 In scenario 1 the battery is metered and the EDB buys and sells electricity when it charges and discharges. The paper questions whether the revenues and costs associated with this are regulated or unregulated. Orion notes that it is possible for the battery to be operated unmetered by the EDB (although this may have negative effects on the electricity market through an increase in UFE). As such the sale and purchase of electricity is not essential to the provision of regulated services using the battery – it may therefore best be treated as unregulated.
- 54.2 In scenario 3, the primary purpose of the battery is to be used to optimise the consumer's bill (the consumer is on a time of use tariff). We question whether the stated primary purpose of the battery in this scenario is likely to be very common in practice. Batteries at consumers' premises that are owned and operated by an ENB are

likely to have network management as their primary purpose. Optimising the consumer's bill would likely be a secondary objective.

The key benefit to the customer would be in co-ordinating the control of the battery's with other demand management activities. Failing to recognise the value of the role of co-ordination at the distribution level will introduce new risks to reliable electricity supply (higher peaks and increased low voltage network investment) without realising the potential of the emerging technologies to defer expenditure.

The coordination of demand side management including emerging technologies is likely to include contractual or service level agreements/arrangements that enable a party to manage supply and load more holistically than a response to price.

54.3 The scenarios do not recognise the full range of operating costs that would be associated with owning and operating battery units (the cost of purchasing energy on the wholesale market is the only operating cost identified). There are likely to be maintenance costs and also legal costs associated with any contract relating to the battery.

54.4 The scenarios assume that EDBs will receive a benefit from the DPP quality incentive scheme through operating the battery. This will only happen if the EDB is subject to the DPP (it would not apply to Orion at present) and if the battery affects interruptions on the high-voltage network. As most consumers are located on the low-voltage network, placing batteries at their premises will generally not affect payments or charges under the quality incentive scheme.

Concluding remarks

55 In our previous submission⁷ we concluded that we were not yet convinced that the IMs need to change materially in response to emerging technologies. However, we supported further assessment of this topic as part of the IM review.

56 Having reviewed the Paper and the discussion at the Workshop, we continue to believe that there is no need to materially change the IMs to respond to emerging technologies *at this time*. We consider the benefits

⁷ Orion New Zealand Limited, Submission on the IM Review, 21 August 2015, paragraph 38.

from emerging technologies can be captured within the current Part 4 regulatory settings (changes to other legislative or regulatory settings such as the low-fixed charge regulations would be of benefit but are not within the scope of this review).

- 57 We also believe the changes proposed by retailers would have costly negative consequences. Regulating to limit EDB investments in emerging technologies could not be easily achieved within Part 4 and risks the market for the emerging technology not being created at all.
- 58 Thank you for the opportunity to make this submission. We do not consider that any part of this submission is confidential. If you have any questions please contact Dennis Jones (Industry Developments Manager), DDI 03 363 9526, email dennis.jones@oriongroup.co.nz.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Rob Jamieson', written in a cursive style.

Rob Jamieson
Chief Executive

APPENDIX A: ANSWERS TO SPECIFIC QUESTIONS

Question No.	Question	Response
Q1.	Do you think the current approach of relying on EDBs to determine if what they are doing is part of the electricity lines services is appropriate?	Yes. We consider that subject to audit an EDB is in the best position to determine if what they are doing is part of electricity lines services. In addition they are in the best position to determine where assets that may contribute to providing electricity lines services are located. (although work is being instigated to facilitate dissemination of this information to the wider industry) The guidance that the Commission has provided in relation to its interpretation of the IMs and the other associated legislation in the paper has also been useful.
Q2.	Do you think that the flexibility provided by the availability of three different cost allocation methodologies is appropriate?	Yes. We have not specifically discussed cost allocation in this submission however we endorse the ENA submission in this regard.
Q3.	Do you think that the materiality thresholds for determining which cost allocation methodology should be employed are appropriate?	Yes. We have not specifically discussed cost allocation in this submission however we endorse the ENA submission in this regard.
Q4.	Do you think that the rules and processes for determining the circumstance in which OVABAA can be employed are appropriate?	Yes. We have not specifically discussed cost allocation in this submission however we endorse the ENA submission in this regard.
Q5.	Do you think that the definition of capital contributions is appropriate?	Yes. As noted at paragraph 51 above the Paper and the Workshop queried whether there is a need to change the definition of capital contributions. Orion does not believe there is any need to change. We think the current definition works well. We are not aware of any payments EDBs may receive for regulated services that could fall outside the regime (they are either lines charges, capital

		contributions or other regulated income). It may be helpful if the Commission could provide more explanation of its concerns in this area.
Q6.	Are you aware of any revenues/costs that are currently treated as regulated (unregulated) when they may not and/or should not be?	No.
Q7.	Are you aware of any EDB prices that bundle charges for both regulated and unregulated services, or reasons why such bundled charges might be offered in future?	We are not aware of any current bundled charges.
Q8.	Are you aware of any arrangement where revenue from the supply of electricity lines services would be best treated as capital contributions?	It would be helpful if the Commission could provide more detail on the nature of its concerns in this area.
Q9.	Do you think that additional R&D or innovation incentives are needed? And if so, what?	Yes. We believe that emerging technologies if correctly co-ordinated have the potential to provide opportunities to defer expenditure while still providing a reliable electricity supply (reduce peaks and reduce low voltage network investment). In order to realise these opportunities, we have been investing for research and development purposes in emerging technologies such as electric vehicles and EV chargers and are investigating investment in batteries and consumer load management systems. Our core aim is to better understand customer behaviour and the technologies' potential impacts on our network and the value of any mitigations or responses. This is an activity that would be expected from any responsible EDB and it is essential we remain able to undertake this kind of research; which means we will need to recover the costs associated with it (not just the cost of the assets, but also the operational costs including any marketing or legal costs necessary to place an asset at a consumer's premises).

		<p>We consider that the Ofgem low-carbon network fund may be a useful example of additional R&D or innovation incentives that may be of assistance. Also, where an EDB has undertaken expenditure on R&D or innovation these expenditures could be excluded from the calculation of IRIS incentive amounts.</p>
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