Electricity Retailers' Association of New Zealand

(ERANZ)

Submission on Emerging Technologies - Workshop and Pre-workshop paper

4 February 2016

INTRODUCTORY COMMENTS

This submission is made by the Electricity Retailers' Association of New Zealand (ERANZ). ERANZ has engaged the expert assistance and input of Mr Allan Carvell in the preparation of this submission. Mr Carvell has extensive involvement with regulation under Part 4 of the Commerce Act (**the Act**).

As retailers ERANZ members want to ensure consumers get the best outcomes. We believe this is generally achieved through competitive markets and, only where competitive forces are not effective, through regulation. Accordingly, the treatment of emerging technologies In the Commerce Commissions' (**the Commission**) Input Methodology (**IM**) process must be considered in light of the boundary where services can be provided through competition and where that is not practicable. The incorrect classification of emerging technologies, in respect of regulation, is likely to result in consumers receiving less effective and/or less efficient services and potentially paying more than they otherwise should.

ERANZ members have appreciated the opportunity to submit on this issue, as it has potential to impact the entire sector as well as new entrants who are not currently in the market. We also appreciate the time taken and effort made by Commission staff to bring retailers up to speed on the IMs and the current review.

EXECUTIVE SUMMARY

The approach to emerging technologies that the Commission proposes in its pre-workshop paper is effectively re-defining the regulated service by seeking to include in that definition emerging technologies, such as batteries that would be situated beyond the point of supply. This unnecessarily increases the potential scale and scope of the regulated monopoly business by including assets and goods/services that can be provided by a competitive market.

Regulators in other jurisdictions have reviewed, or are reviewing, the regulatory treatment of emerging technologies (in some cases specifically focused on batteries). Ofgem commenced its "Flexibility Project" in January 2015.[1] AEMC have recently completed their review of the regulatory treatment of batteries.[2] The AEMC review seems particularly apt in relation to the Commission's consideration of emerging technology. A copy of the summary recommendations from the AEMC report is attached as appendix 1.

The characteristics or nature of emerging technologies is fundamentally different to the natural monopoly characteristics of traditional poles and wires networks. Different modes of operation and scale of implementation are expected to lead to changes in business models across the industry.

These changes are appearing in other jurisdictions and should be expected to manifest in New Zealand. Accordingly. the regulatory framework needs to be tuned to maximise the long term benefits to consumers that industry change and innovation are expected to bring about driven, as they are overseas, by a range of emerging technologies. Appropriate changes to the IMs need to be given full consideration now to ensure the regulatory framework is fit for purpose in its treatment of emerging technologies.

[1] Ofgem, "Open Letter launching the Flexibility Project", https://www.ofgem.gov.uk/sites/default/files/docs/2015/01/flexibility_project_open_letter_jan_2015_0.pdf

[2] AEMC, "Integration Of Energy Storage - Regulatory Implications: Final report", 3 December 2015, http://www.aemc.gov.au/Major-Pages/Technology-impacts/Documents/AEMC-Integration-of-energy-storage,-final-report.aspx

It is implicit in the Purpose of Part 4 that the Commission should promote a level playing field where assets or services can effectively be provided under workable competition. Section 52T(3) of the Act provides only limited constraints on this, i.e. only in respect of the impact of the cost allocation input methodology. However, this has resulted in the cost allocation IM having the potential to bestow undue competitive advantages to Electricity Distribution Businesses (**EDBs**) at the expense of otherwise willing third party participants, with the likely overall effect of reducing the welfare of consumers of the regulated service (and consumers in general).

If the Commission took a different approach to the definition of the regulated service it would be possible to promote a market and rely on a market price rather than a cost allocation to assign a value to the benefit an emerging technology delivers to the regulated service.

The Commission's exploration of the issues has indicated a formative view that batteries situated beyond the point of supply, but owned by the EDB, would form part of the Regulated Asset Base (**RAB**), subject to the allocation of value between different regulated activities and between regulated and unregulated activities. Similarly, operating costs associated with batteries beyond the point of supply could be allocated to the regulated service using the cost allocation IM.

ERANZ believes that a materially better approach is to require that domestic scale batteries are only included in the RAB if they meet certain criteria (see section 5.1 below) which confirm they are not likely to be provided in markets where competition might develop. To achieve this, our proposal is that if an EDB invests directly in domestic scale batteries and includes domestic scale batteries in the RAB then the "value of commissioned assets" should be required to be zero. EDBs would then be much better to make any such investments in domestic scale batteries beyond the point of supply through an arms-length related party, distinct from the regulated service. The EDB could then acquire those (battery generated) services that support the provision of the regulated services, on an arms-length and transparent basis. Alternatively The EDB could acquire the service from other entirely unrelated third party providers (in either case the cost would form a legitimate cost of the regulated service).

The proposed approach should be equally applicable to other current and future emerging technologies (e.g. grid scale batteries). The ERANZ proposal provides for the mechanisms to enable this. In so doing the proposal includes improved clarity and certainty as to the operation of the input methodologies through the provision of criteria for determining the regulatory treatment of emerging technologies.

The ERANZ proposal:

- promotes the Part 4 purpose more effectively;
- promotes the IM purpose in s 52R more effectively; and
- delivers these improved regulatory outcomes with minimal additional cost or complexity.

The proposal to amend the IMs is summarised below:

(i) amending clause 2.2.11(1) by adding an additional sub-clause which confirms, in respect of the "value of commissioned assets", the value of an asset:

"that is an asset, the service delivered from which is deemed to be, or capable of being, provided under workable competition and is included as such in Schedule H, shall be zero."

(ii) a new schedule H is added to the IMs . Schedule H will include:

(a) the Commission's criteria for assessing if an asset and/or the service benefits provided by the asset are or could be provided through workable competition,

(b) the process by which interested parties may propose additions or amendments to the list, and

(c) the current list of assets/services identified as meeting the requirements for having a "value of commissioned assets" of zero.

The issue of revenue from grid scale batteries has not been discussed either in the Commission's pre-workshop paper or at the 14 December 2015 workshop. ERANZ is concerned that this issue is complex.

ERANZ prefers the AEMC approach, treating the battery as (akin to) generation. As discussed in section 2.3, batteries do not fit within the definition of the regulated service and to nevertheless include them would be redefining, and extending the scale and scope of, the regulated service. Batteries are not 'lines' and do not 'convey' electricity. Grid scale batteries should be subject to the same presumption of exclusion and the same process for inclusion as any other emerging technology as set out in section 5.1.

If grid scale batteries were to be included in the RAB then there is a prima facie case for revenue from discharge to be offset against the EDBs allowed revenue (thus reducing line charges). However, additional knowledge transfer between industry participants is required to ensure the potential issues and incentives are well understood and ERANZ strongly urges the Commission to initiate a specific workshop for interested parties to discuss grid scale batteries further.

1. BACKGROUND

The Commerce Commission is completing the seven yearly review of the Input Methodologies ("IMs"), as required by statute.[3] The scope of the Commission's review is pragmatically limited to amending the existing IMs only where this can be justified by an existing or perceived problem. This has lead to the Commission undertaking a 'problem definition' exercise through consultation with interested parties.

One 'problem' identified through the consultation process is the regulatory treatment of emerging technologies under the IMs. The Commission has acknowledged that technological changes are occurring and has sought further clarification of the nature of the 'problem'. A workshop involving interested parties was held on 14 December 2015. This submission is in response to that workshop and the pre-workshop paper produced by the Commission.[4]

In the pre-workshop paper, the Commission provided some scenarios, based around battery technology sited either side of the point of supply. This submission generally relies on batteries beyond the point of supply to exemplify the issues, but the broader principles drawn from that example apply to all emerging technologies.

The structure of this submission:

- section 2 discusses the Commission's approach to the definition of the regulated service and ERANZ's preference for a purposive interpretation starting with the Part 4 purpose statement.

- section 3 identifies the nature of emerging technologies and how other jurisdictions are considering and responding to the same question - "the appropriate regulatory treatment of emerging technologies".

[3] Commerce Act 1986, s 52Y

[4] Commerce Commission, "Input methodologies review - Emerging technologies pre-workshop paper", 30 November 2015

- section 4 proposes that a market based approach would better suit some emerging technologies and these should not be grouped into the regulated service considers the direction the Commerce Commission is taking to the application of regulation to emerging technologies;

- section 5 proposes amendments to the Input Methodologies that would promote the development of markets for the provision of services from emerging technologies;

- section 6 addresses the treatment of revenue from the discharge of a grid scale battery, assuming the battery is included (in total or in part) within the regulated services (which conclusion ERANZ does not agree with).

2. SERVICE DEFINITION

The approach to emerging technologies that the Commission proposes in its pre-workshop paper is effectively re-defining the regulated service by seeking to include in that definition emerging technologies, such as batteries that would be situated beyond the point of supply. This unnecessarily increases the potential scale and scope of the regulated monopoly business by including assets and goods/services that can be provided by a competitive market.

2.1 Redefining the regulated service

The Commission's pre-workshop paper explores the definition of the regulated service, i.e. the "conveyance of electricity by line in New Zealand".[5] The discussion in the pre-workshop paper comes to a number of conclusions in respect of whether some or all of the service generated from emerging technologies should be treated as part of the regulated service.

The Commission's stated approach is to ask:[6]

i. Is what the supplier is doing part of the service, where the service:

   a. Is the conveyance of electricity by line; and

   b. Is not excluded by any of the exceptions in s54C(2)

and then ask:

ii. In relation to assets: is the asset used to provide the regulated service?

iii. In relation to activities: is the cost attributable to the regulated service?

In our submission the Commission's approach to the definition of electricity lines services would be a redefinition of the regulated service, as it is overly inclusive and effectively expands the scope and scale of regulated activities.

The Commission's approach treats all services provided by distribution network owners that are in some way related to the provision of the distribution network as prima facie part of the regulated service. The pre-workshop paper states the Commission considers the legislative intention is *"…to define the regulated services in a way that is understood to include…distribution network services…"*.[7] In addition, the Commission's approach treats all the related assets owned, or costs incurred, by an EDB as falling within the scope of the regulated service.

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[5] Commerce Act 1986, s 54C(1)
[6] Commerce Commission, "Input methodologies review - Emerging technologies pre-workshop paper", 30 November 2015, paras 57-67
[7] Commerce Commission, "Input methodologies review - Emerging technologies pre-workshop paper", 30 November 2015, Para 60

Services that are substitutes for, or functionally equivalent to, the conveyance of electricity by line are therefore included in the definition of the regulated service. This is key to the "problem" with the IMs which arises with the onset of emerging technologies.

In Australia AEMC found that: *"A key theme that emerged through the submissions to the consultation process is that the electricity market is changing and that the regulatory framework must continue to be fit-for purpose in the face of market developments. … storage technology, and distributed energy resources in general, present a challenge to the regulatory framework which was designed under the paradigm of large-scale, centralised generation, transmission and distribution assets connected to loads at the fringes of the system"*.[8]

The challenge for the Commission is that emerging technologies may not fit well into their analytical framework, because emerging technologies may:

- provide a service input "supporting provision of the regulated service" that is more efficiently provided through a competitive market; and/or

- provide a number of (unregulated) services in addition to "supporting provision of the regulated service".

The Commission's approach inevitably leads to services that are, or could be competitively provided, being within the scope of the regulated service. Such an approach means effective markets in those services are not likely to develop, due to the advantages bestowed on the EDB by regulation, and the benefits to consumers (including consumers of the regulated service) will not accrue. As a result, the Commission's approach, as outlined in the pre-workshop paper, is not consistent with the purpose of Part 4 of the Act.

2.2 Part 4 Purpose

A purposive approach to the definition of the regulated service provides an approach that is better able to accommodate emerging technologies that challenge the "old" paradigm.

The regulated service (the conveyance of electricity by line) is regulated because its provision cannot be economically replicated within a geographical region. This is because of the nature of the assets relied upon to provide the service (large and lumpy investments, long lived assets, economies of scale, little intrinsic value for assets outside of use in the network, benefits shared among many users of the assets, etc.). In the absence of competition for the service output regulation is imposed under Part 4.

In its 2008 paper, the Commission records that *"… competition authorities (and regulatory agencies) often use the* [workable competition] *standard to guide the promotion of competition in markets where competition is possible (or the implementation of economic regulation in markets where the promotion of actual competition is unlikely to be effective)."* [9] It follows that unless it is clear that workable competition cannot be expected (including, as the concept of workable competition does, the threat of competition), then regulation should not be applied. The challenge with emerging technologies is that they may break down the barriers to competition for services or service inputs at the margins of the essential facilities that form the natural monopoly.

[8] AEMC, "Integration Of Energy Storage - Regulatory Implications: Final report", 3 December 2015, http://www.aemc.gov.au/Major-Pages/Technology-impacts/Documents/AEMC-Integration-of-energy-storage,-final-report.aspx , (p26)

[9] Commerce Commission, "Regulatory Provisions of the Commerce Act 1986 - Discussion Paper", 19 December 2008, para 37

The appropriate starting point for analysing the regulatory treatment of a new technology is to determine where it sits relative to the purpose of Part 4. The scope and purpose of Part 4 is set out in sections 52 and 52A, in summary:

> *"The purpose of this Part is to promote the long-term benefit of consumers"* (from s 52A) … *"in markets where there is little or no competition and little or no likelihood of a substantial increase in competition"* (from s 52).

The regulatory treatment of emerging technologies should be consistent with the inherent nature of the products, services or activities being directly facilitated or produced by the technology. Above all, the key characteristic of the service or activity should be the extent to which it is, or may become, suitable for provision under workable competition. In effect, the Commission's approach to considering the regulatory treatment of emerging technologies should focus on whether it is likely to be more efficient (better promote the long term benefit of consumers) if the emerging technology service output was provided in, and acquired by the regulated service provider from, a competitive market or whether it is inherently more efficient for the regulated service provider to generate the service output itself within the regulated service. Taking a purposive approach, it would be perverse to consider that assets or services should be necessarily regulated because they are similar to, or a substitute for (i.e. could, in some way, compete with), the regulated service.

The presumption should be against inclusion of emerging technologies within the regulated service (i.e. widening the scale and scope of the regulated service) unless there is compelling evidence to support its inclusion. In considering whether a service falls within the scope of Part 4 (and subsequently within the definition of the regulated service), the Commission should seek evidence that there is likely to be *"little or no competition and little or no likelihood of a substantial increase in competition"* in the provision of those services or activities. In the absence of such evidence the Commission should treat the activity (technology or service) as falling outside the scope of regulation. It seems axiomatic that the Commission should only seek to extend the scale or scope of activities that are regulated as natural monopolies when there is strong evidence that to do otherwise would be economically inefficient.

The Commission would not have to undertake an assessment of the state of competition in the market the emerging technology(/ies) will operate in. By their nature as emergent, the market the technologies will operate in may not have formed. However, the Commission can make an assessment about the potential for competition based on general criteria relating to the nature of the assets and services. Possible criteria are proposed in section 5.1 below.

The Commission should favour reducing or constraining the scale and/or scope of the regulated service wherever possible. This is a consistent theme from economic regulators in other jurisdictions. The Ofgem strategy document notes that: *"Achieving the right balance between regulation and competition is a constant concern for independent economic regulators."* Accordingly, David Gray (Ofgem Chairman) points out that Ofgem will *"… look for opportunities to extend the benefits of competition to activities that are currently monopolies."*[10]

AEMC also favours exposing activities to competitive forces whenever practicable. In the context of their review into the regulatory treatment of energy storage, AEMC say:

> *"Market arrangements should promote consumer choice while providing a level playing field for market participants. Consumer choice based on clear price signals then drives innovation, with costs minimised by each service provider seeking to provide a compelling value proposition to*

[10] Ofgem, "Our Strategy", https://www.ofgem.gov.uk/sites/default/files/docs/2014/12/corporate_strategy_0.pdf

the consumer. Finally, it is only in instances where competitive forces cannot deliver these consumer benefits that economic regulation should be contemplated."[11]

Given the nature of domestic scale batteries it is clear that these are capable of being facilitated through competitive market mechanisms. As such, the Commission should explore how to ensure these activities are not included in the definition of the regulated activity if that would stifle such competition.

The broader principle that should be drawn from the example of residential scale batteries that the Commission should assess emerging technologies in terms of the services they provide and then assess those services in the context of the purpose of Part 4 to determine the appropriate regulatory treatment.

2.3 Redefining the regulated service to include batteries

In the pre-workshop paper, the Commission concludes that the combined effect of the definition of the regulated service (s 54C(1) of the Act) and the definition of "lines", "works" and "electrical installations" in the Electricity Act 1992 *"… provides a description of the network (i.e. [the network] ends at the 'point of supply' as described in electrical installation definition …)."*[12] However, in the Commission's view *"…the definition of 'line' is relevant only to the extent that it describes the nature of the lines service (i.e. what the network is) and not as an exclusion of particular types of assets from being considered as supporting the regulated service. Specifically, we do not think the effect of s 54C(4) is that assets that fall within the definition of 'electrical installation' are necessarily outside the scope of Part 4 regulation."*[13] On this basis the Commission suggests that batteries (both residential and grid scale) could be included within the regulated service.

It is submitted that, if the treatment of batteries is to be considered in light of the definition of the regulated service, the correct approach is to focus more closely and literally on the actual words used in the legislation.[14] The service regulated under Part 4 is "electricity lines services". The meaning of this is in section 54C. In the case of distributors it is confined to *"…the conveyance of electricity by line in New Zealand…"* [15,16] On the plain and ordinary meaning of the words *"…conveyance of electricity by line…*" it is hard to see how they could be understood as in some sense covering the small or large scale deployment of batteries by distributors. Batteries store energy and do not convey it. Nor are they, in any ordinary sense of the word, a 'line'. This means that to bring the deployment of batteries within the scope of the regulated service requires that a special, non-ordinary meaning of the words *"…conveyance of electricity by line…"* must be applied. To apply a special or non-ordinary meaning to words used in legislation there must be a mandate for this within the legislation itself and indeed, in the case of the word 'line' (actually 'lines') the definition in section 2(1) of the Electricity Act 1992 is incorporated. That definition in turn incorporates or requires cross-reference to the definitions of 'works', 'fittings', and 'electrical installation' in the Electricity Act 1992.

This means that when 'line' is defined as *"works used or intended to be used for the conveyance of electricity"* it is in turn necessary to look to the definition of works, i.e.*"means any fittings that are*

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[11] AEMC, "Integration Of Energy Storage - Regulatory Implications: Final report", 3 December 2015, http://www.aemc.gov.au/Major-Pages/Technology-impacts/Documents/AEMC-Integration-of-energy-storage,-final-report.aspx , (pii)

[12] Commerce Commission, "Input methodologies review - Emerging technologies pre-workshop paper", 30 November 2015, para 60

[13] ibid., para 62

[14] Analysing the place of batteries in the definition of the regulated service is, in any case, a very narrow view of emerging technologies as other current or future technologies may have character-istics that lend themselves to provision through competitive markets.

[15] The Commerce Act 1986, s 54C(1)(a)

[16] It is in fact even narrower than this as there are a number of exclusions in s 54C(2).

used, or designed or intended for use, in or in connection with the generation, conversion, transformation, or conveyance of electricity; but does not include any part of an electrical installation", the definition of fittings, i.e. *"everything used, or designed or intended for use in or in connection with the generation, conversion, transformation, conveyance or use of electricity"* and electrical installation which is defined to include *"fittings beyond the point of supply that form part of a system that is used to convey electricity to a point of consumption, or used to generate or store electricity"*.[17]

None of the definitions suggest that 'lines' is intended to include works or fittings that are used to store electricity, such as batteries. In addition, the functions or activities relevant to, and covered by, each definition are expressly listed in each definition (e.g. in the case of fittings these functions are generation, conversion, transformation or conveyance). The only place where 'store' appears is in the definition of electrical installation and electrical installations (including for the storage of electricity) are expressly excluded from being 'works' and therefore are excluded from being 'lines'. Furthermore, it does not seem appropriate that something is considered to 'support the regulated service' when the definition of the regulated service has been constructed in such a way as to exclude that thing. To do so would be to extend the scope of the regulated service in a manner clearly contrary to the words of the legislation.

It is the view of ERANZ members that the definition of 'line' is intended to set the boundary or scope of the regulated service. It seems clear that the definitions of 'lines', 'works' and 'electrical installations' in the Electricity Act 1992, that are relied upon by the Part 4 definition of the regulated lines services, seek to define the boundary of the assets, within which the conditions of providing services in markets where there is little or no competition prevail. The key question in relation to emerging technologies is whether their service outputs satisfy the critical competitive markets threshold in s 52 of the Act (as presented in section 2.2 above).

In any event, the Commission's discussion only grapples with part of the meaning ascribed to 'electricity lines services' in section 54C. The full definition is that electricity lines services means *"…the conveyance of electricity by line in New Zealand"*. The word 'conveyance' is not discussed in any detail in the Commission's analysis. In the Electricity Act definitions the word 'conveyance' is used in contradistinction to other functions or activities such as generation, conversion, transformation, use and storage. In our submission, to extend the scope of the regulated service (*"…conveyance of electricity by line…*) into activities that involve the storage of electricity stretches the meaning of 'conveyance' to breaking point.

The Commission's approach leads to the inclusion of batteries as part of the lines service on the basis that "*it helps to provide an electricity lines service"*.[18] Similar logic would seem to apply to smart meters, but this technology has been successfully rolled out without inclusion of any part of the capital cost in the regulated asset base. It would also apply to generation, particularly distributed generation, for example. In the case of distributed generation the regulated service provider compensates the distributed generator for the benefit derived in providing the regulated service but does not own the assets. It is difficult to see the defining features that are different between batteries and distributed generation.

Similarly, there are strong parallels between pumped hydro, which provides an example of the use of energy at times of low cost to produce a store of energy for use when prices are high, and batteries. Considered analogous to generation, where generation operates in a series of markets (including markets for the provision of support for the operation of the national grid), the proposition that services from batteries should also be amenable to provision through markets can been seen to make sense, whereas inclusion of batteries within the definition of lines service cannot.

[17] Electricity Act 1992, s 2

[18] Commerce Commission, "Input methodologies review - Emerging technologies pre-workshop paper", 30 November 2015, para 55

For these reasons we suggest the Commission should reconsider its approach to interpreting the scope of the regulated service.

3. EMERGING TECHNOLOGIES AND DEVELOPMENTS IN OTHER JURISDICTIONS

Regulators in other jurisdictions have reviewed, or are reviewing, the regulatory treatment of emerging technologies (in some cases specifically focused on batteries). Ofgem commenced its "Flexibility Project" in January 2015.[19] AEMC have recently completed their review of the regulatory treatment of batteries.[20] The AEMC review seems particularly apt in relation to the Commission's consideration of emerging technology. A copy of the summary recommendations from the AEMC report is attached as appendix 1.

The characteristics or nature of emerging technologies is fundamentally different to the natural monopoly characteristics of traditional poles and wires networks. Different modes of operation and scale of implementation are expected to lead to changes in business models across the industry.

These changes are appearing in other jurisdictions and should be expected to manifest in New Zealand. Accordingly. the regulatory framework needs to be tuned to maximise the long term benefits to consumers that industry change and innovation are expected to bring about driven, as they are overseas, by a range of emerging technologies. Appropriate changes to the IMs need to be given full consideration now to ensure the regulatory framework is fit for purpose in its treatment of emerging technologies.

3.1 Relevance of emerging technologies to economic regulation of monopoly providers

The Commission's review of the input methodologies is timely. The issue of technological change was barely given consideration by any of the parties involved during the development of the IMs five or six years ago.[21] Due to the rapid rate of technological development the impact of emerging technologies is now a significant issue facing the electricity utility sector.

Ofgem considers that *"The energy markets are on the cusp of a technological revolution …"*.[22] While the focus of Ofgem's comment is smart meters, they are also supporting specific work streams that relate to energy storage, in particular work stream six of the Smart Grid Forum.[23] The Flexibility Project is specifically focused on the impact of energy storage, along with distributed generation and demand side response.

Ofgem's position on emerging technologies can be summarised by the following:

> *"Distribution networks will have to change considerably to cope with increased levels of intermittent and distributed generation and low carbon technologies such as electric vehicles."*[24]

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[19] Ofgem, "Open Letter launching the Flexibility Project", https://www.ofgem.gov.uk/sites/default/files/docs/2015/01/flexibility_project_open_letter_jan_2015_0.pdf

[20] AEMC, "Integration Of Energy Storage - Regulatory Implications: Final report", 3 December 2015, http://www.aemc.gov.au/Major-Pages/Technology-impacts/Documents/AEMC-Integration-of-energy-storage,-final-report.aspx

[21] The IMs were originally developed during 2009 and 2010.

[22] Ofgem, "Forward Work Programme 2015-16", https://www.ofgem.gov.uk/sites/default/files/docs/2015/03/forward_work_programme_2015-16_25march2015_0.pdf

[23] Smart Grid Forum, "The customer-focused smart grid: Next steps for regulatory policy and commercial issues in GB - Report of Workstream Six of the Smart Grid Forum", 2015, https://www.ofgem.gov.uk/sites/default/files/docs/ws6_final_report.pdf

[24] Ofgem, "Forward Work Programme 2015-16", https://www.ofgem.gov.uk/sites/default/files/docs/2015/03/forward_work_programme_2015-16_25march2015_0.pdf, (p23)

"Non-traditional business models are likely to play a larger role in the energy sector. This could be the case, for example, for aggregators or storage providers."[25]

Ofgem also notes that:

"The opportunities from flexibility and the challenges to enable it are not unique to Great Britain. They are being considered across the world …"[26]

For example, the Australian Energy Markets Commission (AEMC) has undertaken a specific review of how batteries should be treated within the Australian regulatory framework.[27] AEMC state that the purpose of the review is: *"… to gain a clearer understanding of whether the existing regulatory framework is sufficiently flexible to support the integration of storage technologies, or whether regulatory change is necessary".*[28]

It is therefore important that the Commission takes appropriate action to address this issue now. The Commission needs to set a framework for change that will facilitate, not inhibit, the most effective mechanisms for the development of industry changes and innovation in business models that other economic regulators are currently addressing.

3.2 The different nature of batteries/emerging technology

Taking the case of residential scale batteries, as an example, it is clear that many emerging technologies may have characteristics that mean they (and their service outputs) could be provided under competitive market conditions. While some of their service outputs may be useful inputs into the delivery of the regulated service, the technologies are fundamentally different in character from the assets, and therefore the basis of provision, of the regulated service.

The capability of the emerging technologies - the service or service bundles it can deliver, the scale at which these can be delivered and its affordability (the scale of investment required to deliver them) - is fundamentally different to the existing technology. It is indeed a different paradigm and these differences provide opportunity for different business models to develop. Electricity storage (i.e. battery) technology is an example, especially in conjunction with solar PV generation technology.

The Commission's pre-workshop paper points to a number of services that a battery may be expected to provide.[29] It may be that the value of the services that are unregulated is (much) greater than the value contributed to the regulated service. The investment in a single domestic scale battery is small, relative to the lumpy nature of investment in poles and wires assets.[30] Ownership of a domestic scale battery does not need to rest with the utility. Battery units are small and can be relocated with relative ease.

Essentially, in terms of the range or bundles of service, ownership, investment scale and ability to relocate, the nature of the technology is quite different from those which assets which are subject

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[25] ibid., (p23)
[26] ibid., (p6)
[27] AEMC, "Integration Of Energy Storage - Regulatory Implications: Final report", 3 December 2015, http://www.aemc.gov.au/Major-Pages/Technology-impacts/Documents/AEMC-Integration-of-energy-storage,-final-report.aspx
[28] ibid., (p1)
[29] Commerce Commission, "Input methodologies review - Emerging technologies pre-workshop paper", 30 November 2015, e.g. paras 77-80, 93-96,108-112
[30] It is an implicit assumption in the Commission's scenarios, that batteries pass an efficiency test, i.e. the level of investment in batteries to satisfy the needs of (and allocated to) the regulated service is less than the equivalent investment in the poles and wires solution to deliver the same benefit. This is assumption may be useful but is untested. Exposing the decision to invest in batteries to a degree of transparency and investor-based decision making would be helpful.

to regulation (as a natural monopoly). That is, some emerging technologies may be amenable to development and operation through competitive market conditions.

AEMC has come to this conclusion in relation to its review of the treatment of energy storage devices:

> *"Parties could use storage capability, either individually or in aggregate, to participate in competitive markets in a number of ways, including by buying and selling electricity on the wholesale market or by providing ancillary services or demand management services.*
>
> *Participation in the wholesale market by a storage facility can be motivated in numerous ways, including:*
> *• time shifting to arbitrage prices or to manage the differences between available generation and demand over the course of a day;*
> *• managing the intermittency of renewable generation; or*
> *• providing ancillary services.*
>
> *The small generation aggregator business model is attractive because it attempts to capture the value of multiple value streams that can be provided by an electricity storage system."*[31]

AEMC places considerable value of the benefits of a competitive market and consumer choice as the mechanisms to implement batteries:

> *"Utilising the competitive market frameworks currently in place will allow consumer preferences to drive how the sector develops. New business models will be tested and those that offer value to consumers will thrive while those that do not will vanish. The way consumers value storage and associated services will determine the deployment of this technology and competition between providers will keep costs low."*[32]

In submitting on the AEMC discussion paper (prior to the Final Report being issued) the Australian Energy Networks Association (ENA) promoted a competitive, market-led process for managing storage investment and operation:

> *"ENA considers that a fundamental principle of technology agnosticism or neutrality should inform AEMC's considerations on energy storage. In ENA's view, this is consistent with the National Electricity Objective, and flowing from that objective the goal should be to ensure the treatment of storage by the economic regulatory framework does not result in incentives for inefficient technology choices for any party. … ENA considers that to effectively deliver on the economic efficiency objective … the Commission should broaden its recommendation to not supporting any policy decisions to actively encourage deployment of storage on any basis other than a market-led rollout."*[33]

The Smart Grid Forum in the UK has taken a similar view in its report from work stream six:

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[31] AEMC, "Integration Of Energy Storage - Regulatory Implications: Final report", 3 December 2015, http://www.aemc.gov.au/Major-Pages/Technology-impacts/Documents/AEMC-Integration-of-energy-storage,-final-report.aspx , (p20)

[32] ibid., (pii)

[33] ENA, "Integration of Energy Storage: regulatory implications - Response to AEMC Discussion Paper", 5 November 2015, https://www.google.co.nz/url?sa=t&rct=j&q=&esrc=s&source=web&cd=12&ved=0ahUKEwi4kZ7YhPvJAhWhJ6YKHSeXAmY4ChAWCB8wAQ&url=http%3A%2F%2Fwww.aemc.gov.au%2FMajor-Pages%2FTechnology-impacts%2FDocuments%2FENA.aspx&usg=AFQjCNHEptMz-ZU5X7EEtRn98Q19T_BSyg&sig2=f8tedAS58iTtt_cprOKfSg&bvm=bv.110151844,d.dGY

"Multiple parties may benefit from demand side response (DSR) actions, but we recommend actions to enable value from DSR and facilitate commercial arrangements. … As DNOs take a more active role in local network management we recommend actions to enable a market for services and visibility of requirements by location. … We recommend changes to industry arrangements to enable third parties to take a more active role in flexibility markets."[34]

Ofgem's Flexibility Project is looking to deliver on these recommendations.[35]

Emerging technologies may be transformative, not just in the technical delivery of energy requirements but also, with impact across the electricity value chain and in the manner in which services are packaged and provided to consumers. This very capability raises questions about the appropriateness of exposing these technologies (or the services they generate) to regulatory frameworks. Paradoxically, the wrong regulatory treatment could inhibit the developments and innovations that would yield the greatest improvement in the long term benefit of consumers of the regulated service.

3.3 Action is required

It is imperative that the Commission addresses the input methodologies as part of this review to ensure an appropriate treatment of emerging technologies. Waiting a further seven years for the next review is untenable, given the rate at which technological change is occurring and is being adopted. Furthermore, the prospect of the Commission not addressing the problem now, but relying on its ability to reconsider an IM at anytime (i.e. prior to the next seven yearly review) is also unappealing as the circumstances that would promote such a review would likely indicate that by that time significant damage may have been done to consumer welfare and to the potential for effective markets to develop.

It is easy for some submitters to dismiss the concerns expressed by regulators and participants in other jurisdictions as being less relevant or less immediate in the New Zealand context.[36] These jurisdictions have invoked subsidies to promote the large-scale uptake of intermittent renewable generation. They have done this because much of their centralised generation is environmentally damaging. The same drivers do not exist in New Zealand as we do not have incentives for uptake of distributed renewables, largely because our generation sources are already largely renewable (hydro, geothermal, wind) and there is a declining level of thermal generation in the system.

However, to dismiss the issue in the New Zealand context is to miss two important points:

- The level of ongoing research to improve the technologies and the increasing scale of production occurring overseas will drive the cost of these technologies down to the point that they are competitive with grid energy without the need for any subsidy; and

- The behaviour of consumers, empowered by technology in many aspects of their daily lives, is changing. Consumers are placing increasing value on non-economic factors, such as the environment, convenience and independence, which may draw them towards these new technologies and towards different business models.

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[34] Smart Grid Forum, "The customer-focused smart grid: Next steps for regulatory policy and commercial issues in GB - Report of Workstream Six of the Smart Grid Forum", 2015, https://www.ofgem.gov.uk/sites/default/files/docs/ws6_final_report.pdf

[35] Ofgem, "Open Letter launching the Flexibility Project", https://www.ofgem.gov.uk/sites/default/files/docs/2015/01/flexibility_project_open_letter_jan_2015_0.pdf

[36] for example, Orion*" …[we] are not yet convinced that the IMs need to change materially in response to emerging technologies."* ; Powerco *"… the Commission cannot be confident that it will be able to reach a well-supported and robust decision in relation to these issues in the course of this review."*

The imperative to consider how emerging technologies might be treated under regulatory regimes is widely recognised internationally but is also compelling within the New Zealand regulatory context. While the Commission is not in a position to make all the changes that may be necessary to enable networks (and other participants) to move towards emerging business models, it is important that the Commission fully engages with the issue now.

If the Commission ensures that its rules deliver clear and appropriate regulatory treatments of various emerging technologies, then other agencies (such as the Electricity Authority and the Ministry of Business, Innovation and Employment) will be able to amend their regimes to ensure regulatory consistency. It was encouraging to see that the Commission included representatives from the Electricity Authority and the Ministry of Business, Innovation and Employment in the workshop process. ERANZ is hopeful that all the relevant regulatory bodies are equally cognisant of the consumer welfare issues that may be at risk and that New Zealand should not be an outlier in terms of regulatory response.

If the right decisions are not made as part of this review of the IMs then the opportunity for nascent markets to develop and adapt to consumer needs may be lost. Bearing in mind the speed with which emerging technologies have become a pressing issue (relative to the original determination of the IMs at the end of 2010), the prospect the next review might be completed as late 2024 (as required under statute) is concerning.

4. A MARKET-BASED APPROACH WOULD BE BETTER FOR CONSUMERS

It is implicit in the Purpose of Part 4 that the Commission should promote a level playing field where assets or services can effectively be provided under workable competition. Section 52T(3) of the Act provides only limited constraints on this, i.e. only in respect of the impact of the cost allocation input methodology. However, this has resulted in the cost allocation IM having the potential to bestow undue competitive advantages to EDBs at the expense of otherwise willing third party participants, with the likely overall effect of reducing the welfare of consumers of the regulated service (and consumers in general).

If the Commission took a different approach to the definition of the regulated service it would be possible to promote a market and rely on a market price rather than a cost allocation to assign a value to the benefit an emerging technology delivers to the regulated service.

4.1 The IMs do not support a level playing field

Consistent with the approaches taken by Ofgem and AEMC, ERANZ favours the promotion of competitive markets where this is compatible with the nature of the assets and service(s). As stated earlier, the onus should be on demonstrating that regulation is necessary (because of the nature of the assets or services) rather than having a default setting to include more and more assets and services within the regulated service.

The primary concern is with the effectiveness of the allocation methodologies within the cost allocation IM. Under the approach the Commission has used in the pre-workshop paper the capital and operating costs of emerging technologies, that (to a greater or lesser extent, in terms of one or more of their service outputs) contribute to the delivery of the regulated service, are attributed or allocated to the regulated business.

As ERANZ understands the functioning of these allocation methodologies, where the emerging technology provides services to more than one purpose (e.g. to the regulated service and to an unregulated service) to a greater or lesser extent all the allocation methodologies are:

- likely to result in the majority (and perhaps a disproportionate share) of the costs being allocated to the regulated service, which;

- disadvantages the consumers of the regulated service; and
- advantages the EDB in the provision of the unregulated service; and

- are subject to the discretion of the regulated service provider in terms of the basis of allocation (i.e. identification of cost drivers or proxy drivers).

These factors might be expected to play out as follows:

- the regulated supplier will allocate all or nearly all of the costs (capital and operating) to the regulated service. While this is almost certain under ACAM it is also highly probable under ABAA;[37]
  - this may exceed the value of the service to the network - consumers of the regulated service may pay more, as a result of higher lines charges, than they would if the service was provided through a competitive market;
- the regulated service provider will recover the costs attributed to the regulated service, by way of lines charges from the consumers of the regulated service, with virtual certainty - this is an advantage not available to a third party provider;[38,39]
- the potential for markets for the provision of the services delivered by the emerging technology will be severely impaired because of the excessive advantages afforded to regulated suppliers (as described in the preceding points)
- consumers will be deprived of control and choice; regulated service providers may impose technologies and terms onto consumers - the views of overseas regulators on the benefits of markets are quoted above. AEMC have also been explicit about their concerns for consumers:

> *"We are wary of proposals that seek to impose solutions or particular technologies on consumers at the expense of competition, especially where they result in consumers bearing the risks of the technology deployment."*[40]

[37] ACAM = Avoidable Cost Allocation Methodology; ABAA = Accounting-Based Allocation Approach

[38] Within a regulatory (five year) price set period the regulated supplier can make investments in accordance with assumed levels of capital and operating expenditure and so can substitute expenditure on emerging technologies to receive a virtually assured revenue stream on the investment (return of and on capital). Where aggregate expenditure is beyond the levels assumed when the regulator "set prices" the regulated service provider may face a shortfall in return on the additional expenditure over the balance of the regulatory price set period. However, from the commencement of the next price set period the costs (capital and operating) will be reflected in the assumptions for all future price resets. The short term period of "loss" may be acceptable to the regulated supplier because other non-regulated revenue streams derived from the emerging technology provide additional compensation to the business or because of the perceived strategic advantage of implementing the technologies at scale (and foreclosing the market) may be considered worthwhile.

[39] It is also possible that the regulated supplier may be able to access additional 'rewards' to the extent cost profile of the emerging technology alternative is lower than the traditional-type investments that may be included in its revenue setting forecasts and to the extent the investments deliver improvements in service equality where this is subject to a regulatory incentive scheme.

[40] AEMC, "Integration Of Energy Storage - Regulatory Implications: Final report", 3 December 2015, http://www.aemc.gov.au/Major-Pages/Technology-impacts/Documents/AEMC-Integration-of-energy-storage,-final-report.aspx , (pii)

The cost allocation methodologies in the cost allocation IM are not capable of preventing these outcomes. Instead, they promote them. The cost allocation mechanisms are relatively blunt instruments that do not work well at the margins of burgeoning markets. While there may be (or may have been) some benefit in "assisting" regulated suppliers to invest in areas where investment might otherwise not be forthcoming (e.g. due to the scale of investment required, as for a fibre optic cable roll-out) the cost allocation methodologies also provide significant but unnecessary benefit to the regulated supplier in areas where that supplier might be competing with other parties.[41]

Refinement to the cost allocation methodologies (as might be implemented through amendment to the cost allocation IM) are likely to be challenging and have uncertain outcomes. However, with a workably competitive market, appropriate pricing of the network benefit received as a result of investment in batteries achieves the required outcome (an appropriate cost imposition on consumers of the regulated service) in a far more reliable manner.

By contrast to the possible outcomes above, if a market was facilitated (e.g. by means of regulatory treatments proposed below):

- the regulated service provider would be prepared to pay for the benefits delivered to the regulated service up to the level of the next best alternative investment (say, investment in traditional (poles and wires) technologies);[42]

- the emerging technology service provider will want to charge the regulated service provider an amount that at least compensates for the investment and operating costs of the battery investment, less the benefit of revenue streams received from other services the technology may provide (e.g. provision of ancillary services, energy arbitrage benefits to the consumer).

- while the emerging technology service provider will want to charge more than this amount, if there are competing providers (which may include an arms length associate of the regulated service provider) then there will be downwards pressure on the price of the network benefit.

- competing emerging technology service providers will deliver innovative service offerings and terms that best suit consumer's needs.

- an EDB can signal where on its network batteries would be most beneficial by posting differing prices by feeder (say). Where capacity expansion investment is required in the near term a higher network benefit price is offered, where capacity expansion investment is not needed for many year the posted price will be low. The price can signal information about the network that is either held closely within the EDB or may be difficult to ascertain from published material such as the Asset Management Plan.

The harm done in the absence of a competitive market and consumer choice is higher costs to consumers of the regulated service, less favourable terms and conditions for consumers of services provided using the emerging technology and less progressive innovation, as outlined by AEMC (see section 3.2 above).

It is unlikely that a market for the provision of batteries (and associated services) will develop if the costs of residential scale batteries are included in the regulated service using the cost allocation IM.

In that market, providers would compete to locate batteries on private properties and to provide services to the residents/occupiers of those properties. Assuming the market model is a lease-type model, a third party provider will determine a level of lease payments to be charged to the

[41] It was acknowledged at the workshop that s 52T(3) was drafted in contemplation of EDBs participating in the fibre optic cable roll-out bid process.

[42] In some cases it may be the benefit of deferring that alternative investment for a period of time.

resident/occupier that will cover that portion of the investment and operating costs not recovered through other revenue streams (e.g. selling services to the regulated service provider, providing ancillary services, etc.).

The regulated service provider will be able to compete in the provision of the services to the resident/occupier from an advantageous position. The regulated supplier will be able to offer a low reward to the third party provider for services that would support the provision of the regulated service, thus forcing the third party to increase the lease charge to the resident/occupier. The regulated service provider can then offer the resident/occupier a relatively low lease charge (potentially down to zero) on the basis that it is allocating the capital and operating costs of the battery to the regulated service and recovering these through lines charges from across its entire customer base.

If the regulated service provider is to compete in the market for provision of batteries and related services, it should have to do so on an arms-length basis from the regulated service. Ideally, prices should be transparent, with symmetry of information, so it is clear that related parties and third parties are treated equally and pricing (e.g. lease charges) to the resident/occupier from a third party provider or from a related party of the regulated service provider are determined from a similar starting point.

The AEMC review determined that:

> *"Network businesses should only be allowed to own storage behind the meter through an effectively ring-fenced affiliate that separates this activity from the provision of regulated network services. There are however a range of options available to them, through commercial arrangements with other service providers, to leverage the benefits of storage."*[43]
>
> and
>
> *"More onerous ring-fencing may be warranted where the benefits that the network business may earn through contestable services are significant, since this may strengthen incentives to exploit any advantages arising from the regulated business."*[44]

The issues with the cost allocation methodologies, in the context of nascent markets, can be avoided if definition of the regulated service is not unduly redefined. If the regulated service provider is required to acquire the service (from a third party participant in the market or from a related party, but on an arms-length and transparent manner) then the cost of acquiring the service (which would be specific to the provision of the regulated service) would be 'directly attributable' to the regulated service. 'Directly attributable' costs do not need to be subjected to cost allocation.[45]

4.2 The wider principles can be applied to all emerging technologies

The principles argued in respect of batteries located beyond the point of supply should be applied to all emerging technologies. To achieve the most efficient outcome a clear and consistent framework for assessing the appropriate treatment of emerging technologies needs to be developed. It is plausible that some emerging technologies are best suited to being part of the regulated service but that needs to be considered and demonstrated on a case by case basis. It is

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[43] ibid., (pii)

[44] ibid., (pv)

[45] Commerce Commission, Electricity Distribution Services Input Methodology Determination 2012, cl 1.1.4(2)

> *"directly attributable means, in relation to-*
>
> *. (a) operating costs, wholly and solely incurred by the EDB in or in relation to its supply of one regulated service; and*
>
> *. (b) regulated service asset values, wholly and solely related to an asset used by the EDB in or in relation to its supply of one regulated service"*

clearly preferable to default to a position that ensures markets are free to develop where this is possible and only opt for outcomes that might provide an "advantaged" position to entities that provide regulated services when there is clear evidence this is economically justified.

Accordingly, while much of the debate to date, and much of this submission, has focused on batteries located beyond the point of supply, similar assessments should also be made in respect of grid scale batteries as well as the myriad of other new appliances and equipment that have or are emerging in the market.[46]

5. REVIEWING THE IMS

The Commission's exploration of the issues has indicated a formative view that batteries situated beyond the point of supply, but owned by the EDB, would form part of the RAB, subject to the allocation of value between different regulated activities and between regulated and unregulated activities. Similarly, operating costs associated with batteries beyond the point of supply could be allocated to the regulated service using the cost allocation IM.

ERANZ believes that a materially better approach is to require that domestic scale batteries are only included in the RAB if they meet certain criteria (see section 5.1 below) which confirm they are not likely to be provided in markets where competition might develop. To achieve this, our proposal is that if an EDB invests directly in domestic scale batteries and includes domestic scale batteries in the RAB then the "value of commissioned assets" should be required to be zero. EDBs would then be much better to make any such investments in domestic scale batteries beyond the point of supply through an arms-length related party, distinct from the regulated service. The EDB could then acquire those (battery generated) services that support the provision of the regulated services, on an arms-length and transparent basis. Alternatively the EDB could acquire the service from other entirely unrelated third party providers (in either case the cost would form a legitimate cost of the regulated service).

5.1 Proposed amendments to IMs to treat emerging technologies appropriately

The proposed approach should be equally applicable to other current and future emerging technologies (e.g. grid scale batteries). The ERANZ proposal provides for the mechanisms to enable this. In so doing the proposal includes improved clarity and certainty as to the operation of the input methodologies through the provision of criteria for determining the regulatory treatment of emerging technologies.

The ERANZ proposal:

- promotes the Part 4 purpose more effectively;
- promotes the IM purpose in s 52R more effectively; and
- delivers these improved regulatory outcomes with minimal additional cost or complexity.

In order for the regulation under Part 4 to operate in a manner that is consistent with the purpose of Part 4, the definition of the regulated (electricity lines) service needs to be given greater clarity. It is fundamentally important that regulation is applied to those activities where competition does not exist and is unlikely to develop. It is equally important that regulation is not applied and the scale and scope of monopoly activities not extended, where competition exists or is likely to develop.

[46] There is along list of technologies, many of which have similar benefits to the regulated service as batteries; such as efficient lighting, water heating/storage, home insulation, solar PV, smart meters, energy management systems, smart appliance, learning home control systems, EV charging points etc.

The approach proposed below aligns with the Commission's observation in the pre-workshop paper:

> *"The emergence of non-traditional technologies mean it is less straight-forward to determine which EDB prices may be regulated, and which costs may or should legitimately be recovered by the EDB in regulated prices. Even if no changes to the IMs are found to be necessary, it may still be worth providing a greater level of guidance than is currently the case."*[47]

However, due to the shortcomings in the Commission's approach, the draft guidance provided in the context of the example scenarios should not be relied upon.

How activities fit with the regulated service needs to be more clearly defined. For example what evidence should be relied upon to confirm whether an activity (or the assets that facilitate that activity) should be owned and controlled by the regulated service provider as part of the regulated service. For example, criteria that indicate whether or not services/assets should be included within the regulated services might include indicators of the potential for workable or effective competition, such as;

- Is it likely to be easy for interested parties (other than the regulated service provider) to acquire and operate the technology to enter the market for the services provided by the technology?;
- Are there likely to be significant sunk costs involved with acquiring the new technology?;
- Are there likely to be any other material barriers to entry into the market for non-'regulated service provider' parties?;
- Is the new technology likely to provide a service or an input into the essential facility for the provision of the regulated service output?;
- Is the new technology likely to be a substitute for all or part of the regulated service?;
- Could the essential facility/regulated service provider acquire the service or input through contract?;
- Is the new technology likely to have value beyond the regulated service?;
- Could the new technology provide services in addition to those provide to the regulated service provider?;
- Are the additional services likely to be relatively significant, relative to the value provided to the regulated service provider?;
- Is it likely to be easy for a provider to exit the market?;
- Could the new technology assets be relatively easily relocated to an alternative site?;
- Is there likely to be a valuable resale market for the new technology assets during their economic life?;
- Is there evidence of material economies of scope between the regulated service and services provided by the new technology?;

[47] Commerce Commission, "Input methodologies review - Emerging technologies pre-workshop paper", 30 November 2015, para 42

- Are the consumers of the non-regulated service related outputs likely to be able to negotiate and exercise choice over accepting the services and associate terms and conditions?;

- Is there likely to be a high degree of homogeneity of the services provided to consumers other than the regulated service provider?.

It is recommended that, to achieve a materially better regulatory treatment of emerging technologies, clarification of which activities need to be regulated and which do not need to be regulated should be reflected in the IMs. The criteria for excluding an emerging technology (and its associated service outputs) as part of the regulated service should be included in a new schedule to the IMs (schedule H). Schedule H should also include the process by which technologies/services can be considered for inclusion or removal from the schedule as well a list of the current excluded technologies. In addition, clause 2.2.11(1) of the IMs should be amended to provide that the value at which any assets listed on schedule H are commissioned into the regulated asset base is 'zero'.

The proposal to amend the IMs is summarised below:

(i) amending clause 2.2.11(1) by adding an additional sub-clause which confirms, in respect of the "value of commissioned assets", the value of an asset:

"that is an asset, the service delivered from which is deemed to be, or capable of being, provided under workable competition and is included as such in Schedule H, shall be zero."

(ii) a new schedule H is added to the IMs . Schedule H will include:

(a) the Commission's criteria for assessing if an asset and/or the service benefits provided by the asset are or could be provided through workable competition,

(b) the process by which interested parties may propose additions or amendments to the list, and

(c) the current list of assets/services identified as meeting the requirements for having a "value of commissioned assets" of zero.

This approach avoids inclusion in the regulated asset base of assets which could be provided competitively (unless the value for inclusion is zero). The regulated service provider is incentivised to have these provided on a basis at arms length from the regulated service. It also does not preclude the regulated service provider acquiring the services that benefit delivery of the regulated service, from either an arms length related party or from a third party, and including those costs as operating costs of providing the regulated service.

5.2 EDBs are not "precluded"

This approach does not preclude an EDB (that provides the regulated service) from also investing in the emerging technology and participating in the competitive market. However, the provision of services from the emerging technology to the regulated service will represent an ams-length, related party transaction. This should occur in a transparent and pro-competitive manner, with symmetry of information for all parties. It is noted that transactions between a regulated service provider and related parties are subject to some disclosure under the Information Disclosure Requirements. These requirements probably are not sufficient to enable a competitive market to

flourish and appropriate market rules and additional disclosure requirements may need to be developed.[48]

Absent from the current discussion is a clear articulation of what the negative impact on the EDB or the regulated service would be if EDBs were required to own batteries in an arms-length related party and provide services to the regulated service within a competitive market. There is no evidence that the EDB has any fundamental advantage in the ownership and operation of batteries that would outweigh the benefits of provision through an efficient market. This is clearly where regulators such as Ofgem and AEMC have landed following their own thorough consideration of the issues.

5.3 Unduly deterring investment

The amendments to the IMs proposed above do not create any issues in the context of s 52T(3) of the Act and that section's requirement that *"Any methodology [for the allocation of common costs, including between activities, businesses, consumer classes, and geographic areas] must not unduly deter investment by a supplier of regulated goods or services in the provision of other goods or services"*. This is because:

- the proposed amendments relate to the asset valuation IM (not the cost allocation IM which is the subject of s 52T(3));

- s 52T(3) does not contemplate that the investment must be made as part of the regulated service, but rather addresses investment by a "*supplier of regulated goods or services* " in *"the provision of other goods or services"* - the proposal does not prevent investment by the EDB in emerging technologies; and

- no case has been established that the "unduly deter" threshold would be met. It would seem difficult to put such a case where there is a competitive market in action, particularly where investors in the emerging technologies are rewarded for the benefits provided to the regulated service and the level of that reward is set by the regulated service provider.

6 REVENUE FROM GRID SCALE BATTERIES

The issue of revenue from grid scale batteries has not been discussed either in the Commission's pre-workshop paper or at the 14 December 2015 workshop. ERANZ is concerned that this issue is complex.

ERANZ prefers the AEMC approach, treating the battery as (akin to) generation. As discussed in section 2.3, batteries do not fit within the definition of the regulated service and to nevertheless include them would be redefining, and extending the scale and scope of, the regulated service. Batteries are not 'lines' and do not 'convey' electricity. Grid scale batteries should be subject to the same presumption of exclusion and the same process for inclusion as any other emerging technology as set out in section 5.1.

If grid scale batteries were to be included in the RAB then there is a prima facie case for revenue from discharge to be offset against the EDBs allowed revenue (thus reducing line charges). However, additional knowledge transfer between industry participants is required to ensure the potential issues and incentives are well understood and ERANZ strongly urges the Commission to initiate a specific workshop for interested parties to discuss grid scale batteries further.

[48] The development of these rules is likely beyond the scope of the IM review and may also extend beyond the ambit of the Commerce Commission generally. The Electricity Authority and the Ministry of Business, Innovation and Employment may also have to take action to promote a functioning market.

6.1 Context

The Commission proposed a scenario where an EDB installed a grid scale battery at one of the zone substations in its network (scenario 1 in the pre-workshop paper). The Commission considered that the battery provided benefits to the network in terms of avoiding/deferring capital expenditure, improving reliability and reducing transmission charges. In addition there was potential for the battery to earn unregulated income.[49]

The Commission considered the activities of deferring capital expenditure, improving reliability and avoiding transmission charges can all be considered part of the regulated service.[50] In terms of costs and revenues, the Commission considered that:

- The capital cost would be included in the unallocated RAB but allocated to the adjusted RAB because the battery was also used to generate unregulated income. The allocation methodology would be ACAM assuming the EDB was within the 'thresholds' and in which case all the non-avoidable capital costs would be treated as relating to the regulated service.

- Similarly, the operating costs would be attributable to the regulated service, again using the cost allocation because the costs relate, in part, to provision of an unregulated service. And again, subject to thresholds, the ACAM methodology could be used and all non-avoidable operating costs would be allocated to the regulated service. The operations costs are the wholesale energy purchases to charge the battery.

- Revenue was considered to come from several sources. Revenue from unregulated services is not attributable to the regulated service. Revenue arising from regulatory incentives payments, due to improvements in reliability are attributable to the regulate service. The Commission noted that the capital and operating costs would impact on the EDBs allowed revenue, which would be recovered through line charges. In addition, however, the EDB would potentially receive income from the discharge of the battery. The treatment of this revenue was not resolved in the pre-workshop paper (nor subsequently at the workshop).

6.2 Treatment of revenue from discharging the battery

ERANZ is not comfortable with the Commission's analysis of the capital and operating costs. ERANZ considers that the assessment of a grid scale battery should be subject to the service definition approach proposed above and it is therefore possible that the battery could be regarded as capable of provision through a competitive market. The discussion in section 2.3 above applies to grid scale batteries as well.

As AEMC have concluded, batteries are very similar to generation. In fact, AEMC define batteries as generation. A battery simply allows for the time shifting of the effects of generation. Pumped storage schemes are similar.

Notwithstanding the reservations about the Commission's analysis of batteries, if the battery is considered to be performing regulated services then revenue earned in the performance of those services should also be treated as regulated. Noting that allowed revenue is inflated due to the impact of capital and operating costs on the building block analysis, it would be appropriate for an assessment of wholesale energy revenue from discharging the batteries (for regulated service purposes) should be deducted in the allowable revenue calculation. This would ensure that consumers of the regulated service did not pay twice.[51]

[49] ibid., paras 77-80
[50] ibid., para 85
[51] It is assumed that if someone pays the EDB (as part of the settlement in the wholesale market) this will ultimately flow to consumers as a cost. In some ways this is analogous to energy losses.

Unregulated services that a battery may provide, such as ancillary services, may be capable of discrete identification. Ancillary services are provided on the instruction of the system operator. In principle, the revenue arising from ancillary service related discharges should be determinable (price at the time x quantity). However, it is not clear that all the unregulated services a battery may provide now or in the future will be as discrete. For example, the EDB may simply arbitrage the energy price. Energy discharge would occur at peak time, because that is when the price is likely to be high, but there are no mechanisms that reveal whether the discharge avoided a peak the system could not handle (it is peaks that the system cannot handle that provide capital expenditure deferral benefits to the network).[52] It would be similar if a price spike occurred off peak and the battery was discharged.

The outstanding question of revenue from a grid scale battery was not covered at the 14 December 2015 workshop. ERANZ considers that there is far from a complete picture as how batteries would be integrated into the network. The requirement for further knowledge sharing is evident and we strongly urge the Commission to initiate a specific workshop for interested parties to discuss grid scale batteries further.

[52] An EDB considers network capacity expansion investment when it expects its system may not be able to handle peak loads but often the peaks that the system will not be able to handle are for only a few hours a year, say the evening peak on a limited number (perhaps two or three, perhaps 10) days a year. It is easy to envisage that a full battery could be discharged every day and then recharged, with most of those discharges proving no capital expenditure deferral benefit at all.

APPENDIX ONE – AEMC SUMMARY OF RECOMMENDATIONS

Box 1 Summary of recommendations

1. The AEMC recommends that services provided by DNSPs behind the meter be treated as contestable services that should therefore be unclassified. Network businesses should not provide such services except through a ring-fenced business.

   Where storage behind the meter would be useful for providing network support, these services must be contracted from a third party or ring-fenced business. Storage used to provide services on the network would be subject to the AER's usual service classification.

   The AEMC recommends that the COAG Energy Council task the AEMC with reviewing the NER and identifying the necessary amendments to give effect to this recommendation. This could include:

   - clarifying the boundaries of services that can be provided by a DNSP in its capacity as a regulated entity;
   - clarifying service classification definitions; and
   - if necessary, imposing cross-ownership restrictions on network businesses.

   Consideration should also be given to how services provided by TNSPs behind generators' or transmission customers' meters are treated.

   The AEMC recommends that the COAG Energy Council task the AEMC with reviewing what cross-ownership restrictions should apply as part of the delineation of regulated and unregulated services (eg, the percentage of total revenue that can be derived from a related, unregulated activity).

2. The AEMC recommends that the AER, as part of its development of ring-fencing guidelines, consider the following factors when determining the appropriate form of ring-fencing to apply in different circumstances:

   (a) The ability of a network business to obtain access to the contestable services efficiently through alternative means, such as contracting the provision of services from third parties:

      (i) Where the network business has the ability to obtain the service effectively on a contestable basis, then this may support consideration of greater restrictions on the network business providing the service through an affiliate at all.

   (b) The extent to which an activity might generally be expected to be used to provide regulated network services compared with its use to provide contestable services.

(i) Where the primary benefits of an activity stem from its ability to support the efficient provision of regulated network services rather than from the provision of contestable services, then threats to the efficient provision of contestable services stemming from network business investment in or use of that activity may be lower, because strategic advantages in other markets are less likely to drive decision-making.

(ii) More onerous ring-fencing may be warranted where the benefits that the network business may earn through contestable services are significant, since this may strengthen incentives to exploit any advantages arising from the regulated business.

(c) The degree to which it is expected that a network business would have the ability to impact competition in the contestable market through leveraging an advantage from its regulated activities. The perceived advantages which a regulated network business may seek to leverage in providing contestable services should be clearly articulated and evaluated. This may include consideration of:

(i) The extent and nature of the advantage that is expected to result from the network business also having a regulated business, and whether this is an artificial advantage arising from its regulated status. The more significant the benefit, the more onerous ring-fencing requirements may need to be.

(ii) The nature of the other competitors in the contestable sector. Where other competitors are also regulated network businesses, it may be possible to adopt less extensive ring-fencing requirements, as all competitors would have similar advantages. The main concern in this circumstance would be to ensure that contestable activities are not subsidised by regulated activities.

(d) The extent and nature of other benefits that the network business may have in operating in the contestable market, separate from those arising from its regulated status.

(i) Where there does not appear to be substantial advantage to the network business from its regulated status, for example, but there is the risk of a distortion of competition, then ring-fencing may still be appropriate. This is because the potential costs of ring-fencing in terms of forgone benefits from additional competition are lower than in other circumstances.

(e) The ability of other elements of the regulatory framework to adequately address concerns about the interaction between regulated

and non-regulated activities.

(i) If existing elements of the regulatory framework (such as the cost allocation requirements) already provide (or can be expected to provide) a sufficient degree of protection from concerns, there may be less need for more onerous ring-fencing restrictions.

3. The AEMC recommends that the incentives on network businesses to substitute opex for capex would benefit from review. The AER is the appropriate body to do this. The review could encompass:

   - the strength of the EBSS and CESS;
   - whether expenditure on storage services through opex would qualify for the EBSS; and
   - whether further incentives are needed on network businesses to consider opportunities to substitute opex for capex, noting the ineligibility of TNSPs for the DMIA and DMIS.

4. The AEMC will review the lead times in the planning process to test whether they are appropriate in the face of changing technologies and more distributed energy resources. The review should also consider whether thresholds in the planning process (eg, for the RIT-T and RIT-D) remain appropriate in the face of changing technologies and more distributed energy resources, and whether any other information resources are necessary.

5. In order to address any perceived ambiguity regarding the use of the word 'generator' within the definition of 'generating unit' (and the related definitions that utilise 'generating unit'), the AEMC recommends that any interested party may submit a rule change request to the AEMC for consideration.

6. The AEMC recommends that AEMO conduct a review of the existing registration category of small generator aggregator to determine whether the ensuing rights and obligations are suited to parties seeking to utilise the combined capability of disaggregated storage behind the meter for participation in the NEM.

7. The AEMC recommends that AEMO conduct an assessment of whether there are any technical limitations to small generation aggregators offering FCAS, for example by aggregating the combined capability of a number of storage devices behind the meter.

8. The AEMC recommends that the AER, as part of its ongoing compliance work in this area, review existing DNSP basic connection services offerings for micro-embedded generation to ensure they clearly articulate their

applicability to the connection of a storage system intending to export electricity to the grid.

9. The AEMC will conduct a review of the technical standards contained in the NER to assess their applicability for connection of storage assets, as either a generating system or a load, by registered participants, including:

   (a) whether the performance standards/technical requirements set out in the rules are appropriate or even applicable for a storage device that is connecting as a standalone generating system or as a generating unit within a generating system;

   (b) whether the existing standards for connection of load (set out in schedules to the NER) are appropriate or even applicable to storage devices;

   (c) whether the negotiation process is suitable for determining standards as they relate to storage; and

   (d) whether the time frames allowed for in the negotiation process are sufficient for the connection of storage capability.

   The AEMC will seek advice from the Reliability Panel on items (a) and (b) where necessary.

10. The AEMC will conduct a review of the technical requirements that apply to the connection of micro-embedded generation. Such a review would assess:

   (a) the appropriateness of these technical requirements, and whether there is potential for standardisation of technical assessment across network businesses; and

   (b) how these technical requirements, including AS 4777, affect a DNSP's ability to control what is connected to its network, both in terms of

      (i) the specification of the equipment to be used and its technical performance; and

      (ii) remote control of the system.

   The AEMC will seek advice from the Reliability Panel where necessary.