



From the Electricity Networks Association

Submission on IM review: emerging technologies

Response to Pre-Workshop Paper and Emerging Technologies Workshop – Final

4 February 2016

The Electricity Networks Association makes this submission along with the explicit support of its members listed below.

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1. Introduction and Summary

1.1 Introduction

1. The Electricity Networks Association (ENA) appreciates the opportunity to comment on the Commerce Commission's (the Commission's) consultation paper "Input methodologies review: emerging technology pre-workshop paper" (the pre-workshop paper).
2. This submission responds to the pre-workshop paper and comments on the discussion at the emerging technology workshop on 14 December 2015 (workshop).
3. The ENA found the workshop to be a helpful form for discussing whether technology changes are likely to require amendments to the Input Methodologies (IMs). It was also useful for the Commission to provide a paper with scenarios in advance of the workshop, which assisted to clarify the areas of debate. However, we would have preferred that the workshop was open to all ENBs, given the materiality of the issues being debated. We support future workshops being open to all ENA members.
4. The ENA's contact person for this submission is:

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1.2 Summary of Recommendations

1.2.1 The current regulatory requirements

5. The ENA agrees with the Commission's interpretation of the definition of electricity lines services, as set out in the pre-workshop paper. We consider that this is the clear meaning of the definition.
6. We agree with the summary of the cost allocation IM provided in the pre-workshop paper and that there is currently no revenue allocation IM.

1.2.2 Investments and competition in emerging technology services

7. The ENA considers that concerns about ENBs competing in emerging technology markets are unfounded and misconstrue some of the regulatory requirements and commercial realities that apply to ENBs.
8. The current cost allocation IM is based on a set of principled arguments, is consistent with the requirements of the Act and the current materiality thresholds are appropriate. There is no evidence that the current IM, and established materiality limits, are not fit-for-purpose with the advent of emerging technologies.

9. We do not consider that a revenue allocation IM is necessary at this time. We consider that the cost allocation IM has the equivalent effect; i.e. that the costs are allocated out of the regulated business and thus must be covered by the unregulated revenues.
10. At the workshop it was suggested that ENB demand-management services should be formally ring-fenced¹ from the regulated business. Fundamentally we do not agree that the best way to promote competition in a new market, such as the battery storage and electric vehicle charging markets, is to use Part 4 regulation to restrict investment decisions by regulated firms in these markets.
11. It is not the Purpose of Part 4 regulation to impose structural regulation on ENBs through use of cost allocation and asset valuation IMs. If there are concerns about ENBs' involvement in related markets, then these issues should be addressed by policy-makers through, for example, the Electricity Industry Act 2010 (EIA).
12. The costs and opportunity costs of setting up a formal ring-fencing arrangement would be substantial and it is not clear what the scope of the ring-fenced service would be. ENBs have invested in demand management services for many years (e.g. through ripple control or mobile generators) and this is a legitimate part of network management. It seemed the suggestion at the workshop was to ring-fence all ENB demand management services, which would be impractical and impose additional costs for a service ENBs have been providing for years. Alternatively the intent may just have been to ring-fence battery technology, but regulation should not be technology specific. Prohibiting any particular model for procuring the services potentially provided by emerging technologies is likely to create inefficiency.
13. Much of the ENB investment in emerging technology to date has been to better understand and assess the likely impact of emerging technologies on their networks. The ENA strongly opposes any regulatory or legislative change that could impede ENBs undertaking this kind of research. Rather, the focus should be on ensuring the IMs support continued innovation and investment in new technology.
14. In conclusion, the ENA's view is that there is no need to make changes to the IMs to restrict ENB participation in emerging technology investments. The costs of imposing onerous ring-fencing requirements on all ENBs would be real and immediate. Potential benefits of restricting ENB investments in emerging technologies are unclear. In fact, it may be detrimental as the market may not emerge at all if ENBs are not active. A better approach is for the Commission and policy makers to continue to monitor technology and market developments and intervene only if necessary.

1.2.3 Comments on scenarios

15. The ENA broadly agrees with scenarios 1 and 2 of the pre-workshop paper, as described in terms of how the costs and revenues would be treated under Part 4, although we are not convinced that the costs and revenues from purchasing and selling electricity under scenario 1 would be regulated. We note that some of the commercial details of these scenarios may differ in reality.
16. For scenario 3, we do not consider the stated primary purpose of the battery 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. However, taking the scenario as described, we are not convinced that the stated primary use of the battery (reducing a consumer's

¹ This submission uses the term "ring-fenced" to describe regulated arm's-length arrangements that seek to separate business units of the same company, e.g. by requiring different Boards and Management teams to be in place for the different business units, limiting the flow of information between the business units and requiring transactions between the business units to reflect those that would take place between two unrelated entities.

overall energy bill) is part of the regulated service. As such, the payments from the consumer to the ENB for bill reduction services are likely to be unregulated, or at least partly unregulated.

2. The current regulatory requirements

2.1 Boundary of the regulated service

17. The pre-workshop paper summarises the Commission’s interpretation of the definition of electricity lines service and what can be considered to be within the scope of that regulated service. The Commission considers that the relevant questions are:²

“Is what the supplier doing part of a service, where the service:

*Is the conveyance of electricity by line in New Zealand (ie, on the distribution or transmission network);
and*

Is not excluded by any of the exceptions listed [in] s54C(2)?”

18. The pre-workshop paper discusses the definition of “line”, which is defined in the Electricity Act 1992 as ‘works’ (incorporating the broad concept of ‘fittings’) and with an exclusion for ‘any part of an electrical installation’. As discussed at the workshop, the defined terms are circular. However, the Commission’s view as expressed in the pre-workshop paper is that the key consideration is the **use** of the asset in question:³

“the phrase in s 54C, ‘conveyance of electricity by line’, combined with the exclusion of ‘electrical installations’ from the meaning of lines reflects the intention to include transmission and distribution network services”

“the definition of ‘line’ is relevant only to the extent that it describes the nature of the lines service (ie, what the network is) and not as an exclusion of particular types of assets from being considered as supporting the regulated service”

“the next test in determining what falls within the scope of the regulated service is whether an asset is “used to provide” or “used to supply” the regulated service (here the service of conveying electricity by line)”

“It is important to note that the test is whether the asset is used in providing (or the costs are attributable to) the service, not to whether they are themselves actually used (or incurred) in the physical conveyance of electricity.”

19. The ENA agrees with the Commission’s interpretation of the definition of electricity lines services, as set out in the pre-workshop paper and discussed at the workshop. We consider that this is the clear meaning of the definition. There are all sorts of assets that can be owned by an ENB (e.g. office furniture, billing systems, vehicles) that do not directly convey electricity by line, but are clearly used in the provision of the regulated electricity lines service. The argument that was presented at the workshop to exclude batteries from the regulated service⁴ would mean restricting the definition of “line” to core assets. This would not only exclude emerging technologies such as battery storage systems from being part of the network, but also potentially these other asset types that do not fall within the network footprint, which would clearly be a perverse and unsustainable result.
20. A relevant precedent is provided in the continuance of supply obligations in sections 105-108 of the EIA, which permits ENBs to supply electricity by alternative means where the consumer agrees. These alternative means of supply would most likely involve assets beyond the consumer’s meter,

² Pre-workshop paper, paragraph 57.

³ Pre-workshop paper, paragraphs 60, 62, 65 and 66.

⁴ Workshop transcript, for example page 61.

including battery storage, and yet it is clear that ownership of these assets by the ENB as part of the regulated service is envisaged by the EIA (see section 108(4), which requires the Commission to treat the costs of providing electricity, to a place covered by the obligation, by an alternative source as if the costs were the cost of providing electricity lines services). This supports the Commission's interpretation of the definition of electricity lines services.

2.2 Cost allocation and revenue allocation

21. The pre-workshop paper summarises the cost allocation IM and how it provides for:
 - a) Directly attributable costs and assets to be allocated fully to the service they are used to supply
 - b) Non-directly attributable costs and assets to be allocated in accordance with one of the cost allocation methodologies: Avoidable Cost Allocation Methodology (ACAM), Accounting-Based Allocation Approach (ABAA) and the Optional Variation to the ABAA (OVABAA).⁵
22. We agree with the summary of the cost allocation IM provided in the pre-workshop paper.
23. The pre-workshop paper and workshop also discussed the fact that there is no current IM that seeks to allocate revenues. This was because, at the time the IMs were developed, it was considered that revenues would be clearly associated with one service or another and it was unlikely they would be shared (i.e. costs would drive the allowable revenues and there would not be any confusion about what revenues were received for). We address this point, in the context of emerging technologies, later in this submission.

2.3 Recommendations

24. The ENA agrees with the Commission's interpretation of the definition of electricity lines services, as set out in the pre-workshop paper. We consider that this is the clear meaning of the definition.
25. We agree with the summary of the cost allocation IM provided in the pre-workshop paper and that there is currently no revenue allocation IM.

⁵ The pre-workshop paper summarises the requirements for applying these different methodologies.

3. Investments and competition in emerging technology services

3.1 Introduction

26. This section summarises our understanding of the concerns that have been raised regarding the current legislative and regulatory settings (as discussed above). It considers the extent to which those issues are material and the implications of suggested regulatory or legislative reforms to address them. We note that this consultation process is part of the IM review, and therefore our focus is on whether the existing IMs are fit for purpose given the emerging technology scenarios presented in the pre-workshop paper and discussed at the workshop.

3.2 Do ENBs have a competitive advantage?

27. At the workshop, representatives of various electricity generator-retailers raised concerns that consumer choice in emerging technology services could be restricted.⁶ This was due to a fear that ENB investments in emerging technologies risked locking other players out of the market because ENBs had structural advantages that other potential entrants could not compete with. These perceived advantages were suggested to be one or more of the following:
- a) ENBs can place the assets (or allocate a portion of the assets) into their regulated asset bases (RAB) and are thus guaranteed a return on the investment (or a portion of the investment)
 - b) ENBs can charge end-consumers less for products such as batteries because they can (either or both) place some of the asset value in the RAB and thus only need to recover some of the costs directly from the consumer purchasing the product or service; and ENBs gain other benefits from battery installation (i.e. deferring capex) which can be offset against the cost of the battery
 - c) ENBs know where network constraints are on their networks and what is needed to address them. This information is not available to other parties and thus anyone seeking to provide an ENB with a demand-management type service would be at a disadvantage to the ENB's own in-house demand-management business.
28. We agree that consumers should have as much choice as possible. However, restricting ENB access to the market would not increase consumer choice and would potentially inhibit market development in the first place. The ENA would also be concerned if parties were seeking regulatory intervention to remove ENBs as potential competitors from emerging technology services markets.
29. The ENA considers that concerns about the nature of ENB competition in emerging technology markets are unfounded. Reasons for this view are discussed below.

Competition law obligations

30. We note that under general competition law ENBs, like other businesses, have obligations to not abuse market power or act anti-competitively and there is no reason to expect these obligations will not be met.

⁶ Workshop transcript, for example pages 15-18.

Cost allocation IM

31. The cost allocation IM ensures ENBs can only place assets (or portions of assets) into their RABs where they are used to provide electricity distribution services. Thus ENBs are not able to earn a regulated return on assets that provide material unregulated services.
32. At the workshop there appeared to be some confusion that the cost allocation IM may apply to all costs incurred by an ENB. As the Commission will be aware, the cost allocation IM only applies to shared costs and asset values. The majority of costs and asset values are clearly directly attributable to just one service (regulated or unregulated). This enables managers and auditors to devote some time and scrutiny to the allocation of shared costs and asset values to ensure a reasonable and justifiable approach is taken.

Demand management services

33. While it is true that ENBs will generally have the best knowledge of where network constraints occur on their network, some relevant information is also provided in Asset Management Plans (AMPs) which are publicly available. Network development plans include the costs of conventional expenditure to address emerging security or capacity issues, as well as the ENB's assessments of the costs of alternatives. It would be open to a third party to approach an ENB to provide an alternative solution if they had some cheaper alternative. As battery storage costs decrease this may occur.
34. The ENA notes that a third party wishing to provide demand management services to an ENB will need to have contact with the ENB at some point, and could request additional information (if required) from the ENB. At present we are not aware of third parties making such an approach and we suggest it is preferable for parties to seek a commercial solution before asking for a regulatory intervention. Additionally, we note that if there is a material information asymmetry between the parties and this is affecting investment patterns, it would be more appropriate to address this through Information Disclosure Determination requirements for AMPs rather than more heavy handed forms of regulation.

Market entry

35. Competition in emerging technologies is likely to come from a broad range of interested parties, who will each have their own advantages over others. For example, retailers have direct contractual relationships with consumers that ENBs generally do not have. Large global players such as Google will have advantages of scale and brand. Regulating ENBs in such an environment is unlikely to deliver a "level playing field" for all potential market participants.

Commercial incentives

36. If a third party could offer a service to the ENB to provide the battery at a lower cost there is no obvious reason for the ENB to seek to supply the battery solution itself. Or an ENB could, for example, procure the network element of a battery solution, leaving a third-party to sell the energy market trading element, subject to meeting network needs, if this was a lower cost solution.
37. The challenge for an ENB seeking to procure a significant uptake of batteries in a particular constrained location where it can only deal with third parties is that it will have to deal with multiple retailers and/or load aggregators. Some of these may not be in the market for providing batteries, and there are likely to be coordination challenges as retailers/aggregators do not typically have people on the ground in most network regions that can service customers. Given the coordination challenges, there is a real likelihood that efficient demand management solutions are foregone unless a distributor can supply them directly to consumers.

3.3 Ring fencing

38. At the workshop it was suggested that ENB demand management services should be formally ring-fenced from the regulated business. This seemed to be a proposal for ring-fencing similar to the requirements in the EIA for providing arm's-length arrangements between distribution and generation and retail activities. These arm's-length arrangements include separate boards, separate management teams and restrictions on information provision between the different entities.⁷

3.3.1 Use of Part 4 to introduce ring-fencing

39. Fundamentally we do not agree that the best way to promote competition in a new market, such as the battery storage and electric vehicle charging markets, is to use Part 4 regulation to restrict investment decisions by regulated firms in these markets.
40. It is not the Purpose of Part 4 regulation to impose structural regulation on ENBs through use of cost allocation and asset valuation IMs. The Purpose of Part 4 is to ensure that long-term benefits to consumers of the regulated services are promoted, which in the ENA's view requires the Commission to ensure that ENBs are able to efficiently use emerging technologies, where these are cheaper (or better quality) than conventional network investments. If there are concerns about ENBs' involvement in related markets, then these issues should be addressed by policy-makers through, for example, the Electricity Industry Act, which sets limits on the extent of electricity retailing and generation by ENBs.
41. It was suggested at the workshop that many of the concerns being put forward went beyond the scope of the IM review and instead related to broader policy questions of what the Commerce Act, the Electricity Act and the Electricity Industry Act should require.⁸ We endorse that view and submit that any steps to restrict ENB activities in a particular competitive market would not fit well within Part 4. We note the proposal in the current consultation paper on the Targeted Review of the Commerce Act that the Commerce Commission be given formal market study or market monitoring powers.⁹ This may be an appropriate mechanism for the Commission to use to assess competition in the relevant battery storage markets.

3.3.2 Costs of ring fencing

42. The costs of setting up a formal ring-fencing arrangement would be substantial. Most obviously there would be the administrative costs of establishing the ring-fencing and then the audit and monitoring costs of demonstrating that the ring-fencing was being applied properly. These costs would be ongoing for every ENB that set up a demand-management services business.
43. Further, ENBs would incur costs associated with lost economies of scale where they are no longer able to share costs across activities and the total costs associated with supplying all services would increase.
44. Additionally, there would be the opportunity costs of ENBs deciding that the administrative arrangements were not worth the effort. Many ENBs may simply choose to not invest in demand-management and any benefits from such investments would be lost.

⁷ Workshop transcript, for example pages 57 and 76.

⁸ Workshop transcript, for example pages 5.

⁹ Ministry of Business, Innovation and Employment, Targeted Review of the Commerce Act 1986: Issues Paper, November 2015, section 4.

3.3.3 Scope of ring fencing

45. A further question is what the scope of the ring-fenced service would be. All ENBs currently provide demand management services – ring-fencing them would create new costs for all ENBs for activities they have been undertaking for many years. There would need to be very strong justification for this.
46. ENBs have invested in demand management services for many years (e.g. through hot water load control or mobile generators) and this is a legitimate part of network management. It seemed the suggestion at the workshop was to ring-fence all ENB demand management services, which would be impractical and impose additional costs for a service ENBs have been providing for years. Alternatively the intent may just have been to ring-fence battery technology, but regulation should not be technology specific.
47. In principle, it is not clear why ENB investments in batteries (and electric vehicle charging stations as discussed at the workshop) should be ring-fenced while ENB investments in ripple control, smart meters and mobile generators should not. Like batteries, mobile generators are transportable and discrete pieces of equipment that are able to be provided by third parties to ENBs. In addition, the roll-out of smart meters means that metering providers (or retailers) have the ability to offer a form of load control via the meter rather than a ripple control or pilot wire system.
48. Nobody yet fully understands how the range of technologies applicable to demand management services will change over the medium term and any ring fencing on a technology-specific basis is likely to create perverse outcomes as technologies emerge and evolve.
49. More broadly, it is important to recognise that many ENB activities are or are able to be outsourced. For example, an ENB can own its office buildings and furniture and vehicles or it can lease them. An ENB can provide maintenance services in-house or purchase the services from a third party field services provider.
50. Accordingly there are a range of business models adopted across the industry in terms of in-house provision or outsourcing various activities. Some of these activities can be used to support both regulated and unregulated activities. The current regulatory framework accommodates these different business models well, including the cost allocation IM and related party rules¹⁰. The ENA submits that the proposal to restrict ENB investments in emerging technologies is inconsistent with the in-house provision of other potentially contestable services that are necessary to provide the regulated service (e.g. asset maintenance). That there are many different business models, and ENBs often switch between in-sourcing and out-sourcing at different times due to different market dynamics, suggests that prohibiting any particular model for procuring the services potentially provided by emerging technologies is likely to create inefficiency.

3.4 Cost allocation IM

51. Concerns were raised at the workshop that the current cost allocation IM may permit too much of the cost of a shared asset to be allocated to the regulated ENB.¹¹ We think these concerns are not well founded. Under the ABAA method, causal or proxy cost allocators must be applied and these are subject to audit scrutiny and disclosure to the Commission. The ACAM approach only applies where materiality thresholds are not reached (i.e. where the unregulated activity is not material), and

¹⁰ Related party rules for capex form part of the asset valuation IMs, related party rules for revenue and opex are included in the Information Disclosure Determination.

¹¹ Workshop transcript, page 27.

involves allocations of shared costs between regulated and non-regulated services – contrary to the perception of some workshop participants that all costs/assets are allocated to regulated services.

52. We consider that the current cost allocation IM is consistent with the requirements of the Act. More stringent requirements regarding the allocation of costs and asset values would be likely to be contrary to section 52T(3), where the Commission is required to ensure that the cost allocation IM does not unduly deter investments by regulated suppliers in unregulated activities. This was drawn from, and is consistent with, the 2006 Government Policy Statement on Incentives of Regulated Businesses to Invest in Infrastructure.¹² Clause 6 of that Statement said:

It is in the long term interests of the economy in general and consumers in particular that regulated businesses, in common with non-regulated businesses, are able to utilise existing assets to reduce the cost of investing in new infrastructure and to take advantage of economies of scale and scope

53. This recognised that in a relatively small economy such as New Zealand it was necessary and economically desirable for all firms to be able to leverage their existing operations when investing in new infrastructure.
54. The materiality thresholds for applying ACAM (20% of revenues, 15% of operating costs or 10% of asset values) were set on the basis of reasonable assessments of what is material to a regulated firm. The Commission's analysis in 2010 demonstrated that applying ACAM rather than ABAA using these thresholds equated to changes in regulated revenues of approximately 1-2% at most. The 2010 analysis was based on 2009 information disclosure data and ENB Annual Reports. Our assessment of 2015 information disclosure data and ENB Annual Reports suggests there has not been a significant movement in the materiality of the ACAM thresholds relative to total regulated revenues.
55. 1-2% is a relatively small change in regulated revenues and we submit that ENBs are unlikely to be highly motivated to develop new business activities that will remain permanently within these thresholds – in other words, ENBs would expect that successful unregulated businesses would eventually exceed the thresholds and would not rely on an ACAM allocation to make the unregulated businesses viable for the long-run.
56. There is no objective evidence that the current IM, which is based on a set of principled arguments, and established materiality limits, are not fit-for-purpose with the advent of emerging technologies.

3.5 Revenue allocation IM

57. The pre-workshop paper queried whether regulation of revenue allocation is required.¹³ The scenario being considered appears to be one where an ENB bills a customer for a combined regulated and unregulated service and the revenues received then need to be allocated between the two activities.
58. It is conceivable that an ENB could provide a demand management service or product to a consumer that comprises both regulated and unregulated services to that consumer and the consumer pays a single bill directly to the ENB for that service. However, we consider that the cost allocation IM would be sufficient for that scenario; i.e. that the costs are allocated out of the regulated business and thus must be covered by the unregulated revenues.

¹² Statement to the Commerce Commission of Economic Policy of the Government: Incentives of Regulated Businesses to Invest in Infrastructure.

¹³ Pre-workshop paper, footnote 19 and Box 2 on page 22.

59. We note it is unlikely that an ENB could send a bundled bill to a consumer that included the standard lines charges (e.g. the c/kWh or c/day charges) unless the ENB has a direct billing relationship with the customer. At present only one ENB directly bills all of its consumers. For other ENBs, retailers can, and do, re-bundle the lines charges they receive from ENBs and the consumer then pays the re-bundled charge. Accordingly, on the basis that the current industry structure prevails, the ENA does not consider that bundling of lines charges and unregulated service charges is likely to be a material problem.
60. For the reasons outlined above we do not consider that a revenue allocation IM is necessary at this time.

3.6 Capital contributions and other regulated income

61. The pre-workshop paper and the workshop both discussed the treatment of capital contributions under the IMs and whether capital contributions were likely to capture all forms of payment received by ENBs for regulated services. The concern appears to be that ENBs may receive revenues that are not capital contributions or lines charge revenue and this may be hard to deal with under the regulatory regime.¹⁴
62. The pre-workshop paper seems to overlook other regulated income in this context. If an ENB receives a payment for a regulated activity that is not by way of lines charge revenue or capital contributions then that revenue would be treated as other regulated income. We do not consider that such revenues would be at risk of “falling outside the regime”¹⁵, and therefore there does not seem to be any problem with the current IMs in terms of ensuring that all revenues for regulated activities are captured.
63. The issue may be that other regulated income can be challenging for the Commission to predict when setting price paths. For DPP purposes the Commission has generally forecast this based on historical trends but rapid growth in emerging technology investments by ENBs with various charging arrangements could make it difficult to forecast revenues. However, this is just one facet of a broader problem – if ENBs are increasingly turning to emerging technologies to deliver services then forecasting opex, capex and revenues based on historical trends is likely to become more problematic.
64. At this time it is unclear whether this will in fact be a material problem or what changes to the current forecasting approaches may be appropriate. We note that these forecasting methods fall outside the scope of the DPP IMs.

3.7 Promoting least cost network services

65. The 29 ENBs reflect a variety of business models, organisational structures and business activities, and in addition, have a range of accounting systems and management reporting arrangements. The current principles-based approach to regulation within the IMs is well-suited to this diversity and accommodates the different approaches.
66. The current IMs are, appropriately, technology neutral and permit ENBs to choose the most cost effective means of delivering the regulated electricity lines service. The ENA considers that a more

¹⁴ Pre-workshop paper, paragraph 142. Workshop transcript, pages 65-66.

¹⁵ Workshop transcript, page 10.

prescriptive rules-based approach that sought to restrict the nature or form of ENB investments would create costs for all parties that would ultimately be borne by consumers.

67. The current regulatory framework provides incentives for ENBs to find least-cost means of delivering the required services provided that quality of supply is maintained. This incentive has been strengthened by recent improvements to the Incremental Rolling Incentive Scheme (IRIS). Where a battery or other emerging technology provides ENBs with a more cost-effective way of delivering a broadly similar quality of service, ENBs can be expected to choose that solution. This will deliver lower costs for consumers over time. More prescriptive restrictions, like ring-fencing, on ENB investments in emerging technologies will make it harder to choose the least-cost option.
68. Much of the ENB investment in emerging technology to date has been to better understand and assess the likely impact of emerging technologies on their networks. This is a valuable activity as ENBs need to understand the potential network impacts of technology change, irrespective of which party invests in the technology. The ENA strongly opposes any regulatory or legislative change that could impede ENBs undertaking this kind of research.
69. What is missing from the current regulatory settings are positive incentives for ENBs to undertake more research and development (R&D). Increased R&D would be likely to have positive benefits for consumers over time. One option would be to create an innovation fund, perhaps similar to Ofgem's Low Carbon Networks Fund, where ENBs could bid for funding for network-related research on the condition that, when complete, the research is made available publicly.

3.8 An appropriate way forward

70. The competing perspectives put forward at the workshop can be characterised as:
 - a) to continue giving ENBs the flexibility to innovate and invest and find ways to deliver the regulated service at lower cost; versus
 - b) possibly improving competition in nascent markets created by emerging technologies, by restricting ENB involvement in them.
71. The ENA's view is that there is no need to make changes to the IMs to restrict ENB participation in emerging technology. The costs of imposing onerous ring-fencing requirements on all ENBs would be real and immediate. Potential benefits of restricting ENB investments in emerging technologies are unclear. In fact, it may be detrimental as the market may not emerge at all if ENBs are not active. As such the case for change has not yet been made.
72. It is also worth noting that ENBs are developing their approaches to cost-reflective, or "service-based" pricing.¹⁶ In future, third-parties will be able to respond to network price signals with battery storage, which would give them access to one form of value-stream.
73. The ENA considers that a better approach is for the Commission and policy makers to continue to monitor technology and market developments and only intervene if necessary. The Commission has an existing process for providing guidance and explanations around regulatory interpretation (i.e. the Issues Register) which parties can utilise if they require clarification or advice.

¹⁶ The Electricity Authority has recently published a consultation paper on this topic and there is strong alignment between the Authority and the ENA's Distribution Pricing Working Group, which aims to lead, assist and co-ordinate distributor efforts to establish more durable and cost reflective pricing and to better meet the needs of consumers.

3.9 Recommendations

74. The ENA considers that concerns about ENBs competing in emerging technology markets are unfounded and misconstrue some of the regulatory requirements and commercial realities that apply to ENBs.
75. The current cost allocation IM is based on a set of principled arguments, is consistent with the requirements of the Act and the current materiality thresholds are appropriate. There is no evidence that the current IM, and established materiality limits, are not fit-for-purpose with the advent of emerging technologies.
76. We do not consider that a revenue allocation IM is necessary at this time. We consider that the cost allocation IM has the equivalent effect; i.e. that the costs are allocated out of the regulated business and thus must be covered by the unregulated revenues.
77. At the workshop it was suggested that ENB demand-management services should be formally ring-fenced from the regulated business. Fundamentally we do not agree that the best way to promote competition in a new market, such as the battery storage and electric vehicle charging markets, is to use Part 4 regulation to restrict investment decisions by regulated firms in these markets.
78. It is not the Purpose of Part 4 regulation to impose structural regulation on ENBs through use of cost allocation and asset valuation IMs. If there are concerns about ENBs' involvement in related markets, then these issues should be addressed by policy-makers through, for example, the EIA.
79. The costs and opportunity costs of setting up a formal ring-fencing arrangement would be substantial and it is not clear what the scope of the ring-fenced service would be. ENBs have invested in demand management services for many years (e.g. through ripple control or mobile generators) and this is a legitimate part of network management. It seemed the suggestion at the workshop was to ring-fence all ENB demand management services, which would be impractical and impose additional costs for a service ENBs have been providing for years. Alternatively the intent may just have been to ring-fence battery technology, but regulation should not be technology specific. Prohibiting any particular model for procuring the services potentially provided by emerging technologies is likely to create inefficiency.
80. Much of the ENB investment in emerging technology to date has been to better understand and assess the likely impact of emerging technologies on their networks. The ENA strongly opposes any regulatory or legislative change that could impede ENBs undertaking this kind of research. Rather the focus should be on ensuring the IMs support continued innovation and investment in new technology.
81. In conclusion, the ENA's view is that there is no need to make changes to the IMs to restrict ENB participation in emerging technology investments. The costs of imposing onerous ring-fencing requirements on all ENBs would be real and immediate. Potential benefits of restricting ENB investments in emerging technologies are unclear. In fact, it may be detrimental as the market may not emerge at all if ENBs are not active. A better approach is for the Commission and policy makers to continue to monitor technology and market developments and only intervene if necessary.

4. Comments on scenarios

4.1 Introduction

82. This section provides commentary on the scenarios put forward by the Commission in the pre-workshop paper and at the workshop on 14 December.¹⁷ The Commission's scenarios could be the basis for future guidance on how to apply the IMs to emerging technology investments and thus it is essential they are accurate.

4.2 Commerce Commission's scenarios

4.2.1 Comments on scenario 1

83. Under scenario 1 an ENB buys and installs a battery on its network (upstream of the meter; at a substation) as an alternative to a traditional network upgrade. The battery is metered and it buys and sells the electricity it stores and discharges. For this scenario the pre-workshop paper questioned whether the revenues from electricity trading should be taken into account (i.e. viewed as regulated income) when setting regulated price paths.
84. Our main comment on this scenario is that it is not necessarily the case that the battery would be metered. It is conceivable that the battery would not be metered and would not purchase or sell energy and any difference in timing between when the battery is charged and when it discharges would be reflected in reconciliation and Unaccounted for Electricity. As ENBs would be able to use the battery for network services whether or not the battery is metered, the costs and revenues from purchasing and selling electricity using the battery are not necessary for the network services to be provided. This suggests the costs and revenues related to purchasing and selling the electricity may be unregulated.
85. Also, treating costs and revenues from the sale and purchase of electricity as regulated would be challenging to achieve and may deter trading in the first place. More importantly, the cost allocation rules should have the equivalent affect that once unregulated revenues become material, the costs are allocated out of the regulated business, and naturally must be covered by the unregulated revenues.
86. Otherwise we broadly agree with this scenario, subject to the general comments below.

4.2.2 Comments on scenario 2

87. Under scenario 2 an ENB sells a battery to a consumer who then installs it on their property (behind the meter) and controls its usage.
88. We agree that under this scenario all costs and revenues associated with the battery are unregulated.

4.2.3 Comments on scenario 3

89. Under scenario 3 an ENB purchases and installs a battery behind the meter at a consumer's premises as an alternative to a traditional network upgrade. Within the scenario the primary use of the battery was to optimise the consumer's energy bills (it was assumed the consumer has a time-of-use tariff). Where it did not conflict with the primary use, the battery was also used for other purposes such as

¹⁷ Pre-workshop paper, pages 17-28.

deferral of network investments. The consumer made regular lease payments to the ENB for the battery and these payments would be treated as regulated revenue.

90. We do not consider 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.
91. Assuming the scenario does eventuate, we do not agree that the primary use of the battery (reducing a consumer's overall energy bill) is necessarily part of the regulated service. Where the ENB bills the consumer directly we agree this may be the case. However, where the ENB charge is bundled with the retail charge then it is not clear why reducing the overall bundled bill by optimising energy use against the *retailer's* time-of-use tariff is part of the conveyance of electricity by line. This is especially the case where the price signal being reflected in the time-of-use tariff is a price signal sent by the retailer. A service to reduce the overall bill is more akin to a competitive home energy management service than the provision of line function services. As such, the payments from the consumer to the ENB for bill reduction services are likely to be unregulated, or at least partly unregulated. As a corollary, the battery would be a shared asset and allocated in accordance with the cost allocation IM.

4.2.4 General comments for all scenarios

92. In each scenario the ENB receives revenues through improved quality performance as part of the quality incentive mechanism. These revenues are treated as regulated revenues. We agree any revenues received by this route would be regulated. However, quality of supply is only measured on the high voltage network so any battery at a consumer premises on the low voltage network would not affect incentive payments under the quality incentive mechanism. The battery is only likely to affect quality incentive payments in scenario 1 and where the battery is installed at a large consumer's premises in scenarios 2 and 3.
93. In each scenario the pre-workshop paper identifies one operating cost associated with the battery: the cost of purchasing energy from the wholesale market. There will also be maintenance costs associated with the batteries in each scenario. In addition, for scenario 3 there will be costs of arranging with the consumer to place the battery at the consumer's premises (i.e. marketing costs, legal costs associated with the contract) and most likely ongoing customer service costs.

4.3 Recommendations

94. The ENA broadly agrees with scenarios 1 and 2 of the pre-workshop paper, as described in terms of how the costs and revenues would be treated under Part 4. We note that some of the commercial details may differ in reality.
95. For scenario 3, we do not consider the stated primary purpose of the battery 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. However, taking the scenario as described, we are not convinced that the stated primary use of the battery (reducing a consumer's overall energy bill) is part of the regulated service. As such, the payments from the consumer to the ENB for bill reduction services are likely to be unregulated, or at least partly unregulated.