



# Regulatory Settings that Maximise the Value of Emerging Technologies for Consumers

26 January 2016

## 1 Introduction and Summary

The Commerce Commission (the Commission) is reviewing the input methodologies (IMs) that apply to regulated suppliers of electricity lines services in New Zealand. One of the workstreams in the review examines what emerging technologies mean for the regulatory settings that apply to lines businesses. The review specifically considers whether the current IMs need to change to ensure that the objectives of Part 4 of the Commerce Act 1986—investment, innovation, efficiency, shared with consumers through reasonable prices (section 52A of the Commerce Act)—are being met.

Contact Energy has asked Castalia to explore how best to regulate electricity distribution businesses (EDBs) given the emergence of new technologies in the electricity industry. Technologies for the storage of energy (batteries) are used in this paper as an example of technologies that can be used to deliver regulated and unregulated energy services (which we refer to as “emerging technologies” in this report). The list of emerging technologies is much wider than just batteries, and will change over time. Current technologies falling into this definition would also include load control devices and systems, solar PV and other forms of distributed generation, and electric vehicle charging infrastructure.

### **We disagree with the Commission’s preliminary conclusion that the IMs are fit for purpose**

The Commission has released a report indicating that it does not see the need for regulatory change to promote the efficient adoption of emerging technologies. We strongly disagree with that conclusion on the grounds that:

- **There is no need for the services provided by emerging technologies to be regulated under Part 4 because they are subject to competition.** Investments in emerging technologies fall beyond the scope of regulated monopoly services to convey electricity using fixed infrastructure that is inefficient to duplicate. As a result, these investments should be disciplined by providers competing with each other on cost and quality. This process will deliver the benefits and efficiency that the Commission is looking for under Part 4, but could actually be undermined if regulation allows some providers to recover costs from regulated customers.
- **Current regulatory settings risk distorting investment in unregulated markets.** The current IMs set out an approach to allocating costs between regulated and unregulated businesses. The rules are permissive and flexible, and

appear to reflect a low level of concern about the risks of distorting investment in unregulated markets. This may have been appropriate when the IMs were determined in 2010, but is unlikely to efficiently enable the widespread adoption of emerging technologies over coming years.

**Stronger approaches (such as ring-fencing) are now appropriate to deal with these risks**

The ability of emerging technologies to provide a mix of regulated and unregulated services suggests that more robust regulatory approaches are needed than are found in the current IMs. The spectrum of possible regulatory approaches is quite broad—from strengthening the current rules through to prohibiting regulated firms investing in competitive markets.

Our view is that assets providing a mix of regulated and unregulated services should be ring-fenced from regulated businesses. This solution allows regulated businesses to invest where they are best placed, but also promotes a level playing field for other parties wanting to compete to supply consumers directly and compete for contracts with regulated firms. This approach fits with the low-cost philosophy of New Zealand’s regulatory regime under Part 4, supplementing existing regulatory processes and decisions, such as Default Price-quality Paths (DPPs), where particular concerns arise.

**Structure of this report**

The remainder of this report analyses how regulatory settings can promote the desired outcomes from investments in emerging technologies.

- Section 2 describes what services can be provided by battery storage technologies and considers whether competition or regulation provides the best framework for ensuring efficient investment
- Section 3 summarises the current regulatory settings under Part 4
- Section 4 evaluates whether the current regulatory settings provide a level playing field that is consistent with achieving the desired outcomes
- Section 5 concludes by considering options for ensuring a level playing field for investments in emerging technologies.

## 2 Framework for Analysis

The Commission’s IMs review adopts the view that emerging technologies should be subject to economic regulation under Part 4 if they are connected to the conveyance of electricity by line. This narrow focus has serious limitations and is unlikely to deliver the best outcomes for consumers. In essence, our view is that Part 4 of Commerce Act should not be applied to assets or investments where competition exists or is able to emerge.

We recommend that the Commission adopts a broader analytical frame of reference for these issues by first asking whether investments in emerging technologies (such as battery storage) are competitive, or whether they are natural monopolies that require regulation. This is consistent both with the overarching purpose of the Commerce Act to promote competition in markets for the long term benefit of consumers, and with the purpose of Part 4 to promote the outcomes produced in competitive markets.

### 2.1 Services Provided by Emerging Technologies

Emerging technologies, such as battery storage devices, can provide benefits to consumers in both regulated and unregulated (competitive) markets. These benefits are summarised in Table 2.1.

Network support, and the quality and reliability of supply, affect the services provided by networks that are regulated under Part 4. By deferring capital investment in fixed infrastructure, regulated customers may be better off paying for battery storage. In contrast, energy trading and ancillary services fall outside the scope of Part 4. Benefits from these services are provided to consumers through competition between energy service providers and electricity generators/retailers to meet consumers’ energy needs at the lowest cost.

**Table 2.1: Possible Benefits of Battery Storage**

Regulated	Unregulated (competitive)
<p><b>Network support:</b> batteries can defer conventional network upgrades in places where the network is constrained, or is soon to reach capacity. This is achieved by storing energy in batteries during periods of low demand and discharging that energy during peak demand events</p>	<p><b>Energy trading:</b> batteries can be used to buy and store electricity from the grid when it is cheap and sell back into the grid when prices are high, and provide risk management products for wholesale electricity market participants</p>
<p><b>Quality and reliability of supply:</b> batteries can help manage voltage imbalance, power factor correction, and other power quality functions. This helps EDBs meet targets of system average interruption frequency index (SAIFI) and system average interruption duration index (SAIDI)</p>	<p><b>Ancillary services:</b> batteries can help to enhance the safety, reliability, and security of the power system. For example, batteries can provide system reserves and help with frequency control</p>

Source: Adapted from Australian Energy Market Commission “Integration of Energy Storage: Regulatory Implications”, 3 December 2015.

Battery storage is not the only technology that provides a mix of benefits across regulated and unregulated markets. Other examples include smart meters and load control relays, which can be used to manage load for network or energy purposes.

## **2.2 Approach to Ensuring Efficiency in Emerging Technologies**

Assets that can be used to provide benefits to both regulated and unregulated customers provide particular challenges to regulators: should regulation focus on “getting out of the way” of investment in competitive markets, or should regulation focus on promoting the best outcomes in regulated markets? Is there a way to achieve both of these outcomes?

### **What outcomes should regulatory settings promote?**

Regulatory settings should encourage regulated services to be provided efficiently, without distorting competitive markets. This requires a level playing field in unregulated, competitive markets, so that regulated businesses do not have an advantage over third parties that distorts competitive outcomes. In its recent discussion paper on regulating the integration of battery storage, the Australian Energy Market Commission (AEMC) defines this challenge as “promoting consumer choice, while creating a level playing field for market participants”.<sup>1</sup>

More specifically, the regulatory objectives for adopting emerging technologies have both dynamic and allocative components:

- To promote efficient investment—right time, right type, right place. This helps to ensure dynamic efficiency.
- To maximise the value from using the technology across a range of possible applications and markets (regulated and unregulated). Once investments are made, ensuring that they are used to maximise benefits.

### **Competition is better than regulation at achieving desired outcomes**

The Commission’s pre-workshop paper states that the purpose of the IMs review is to consider whether the objectives in Part 4 could be better met (paragraph 5). This is consistent with the decision-making framework for the IMs review to consider possible changes across three levels: consumer impacts (section 52A), certainty (section 52R), and compliance costs. In essence, the Commission wants to ensure an environment where regulated suppliers invest, innovate, are efficient, and share gains with consumers over time through reasonable prices.

It is widely acknowledged that competition is the best way to promote investment, innovation, and efficiency. Regulation is a second-best solution that is only desirable in industries where competitive forces fail to discipline suppliers. This position is reflected in the architecture of the Commerce Act—only industries that are not competitive are subject to Part 4 regulation.

It also seems uncontroversial to say that many (perhaps most) emerging technologies that are relevant to the provision of regulated services are supplied in markets that are fundamentally competitive. Energy companies like AGL are actively competing in the market for household battery storage in Australia.<sup>2</sup> There may also be examples where new technologies are only relevant for regulated suppliers—such as network healing

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<sup>1</sup> Australian Energy Market Commission, “Integration of Energy Storage – Regulatory Implications”, October 2015.

<sup>2</sup> See for example: <http://reneweconomy.com.au/2015/agl-offering-7-2kwh-battery-storage-at-under-10000-10000>

technologies. The impacts of those technologies in unregulated markets will be less concerning because the prospect for market distortions is lower.

### **This analytical framework has recently been adopted for battery storage in Australia**

The recent AEMC report on battery storage found that for the purposes of network regulation, storage should be considered a contestable (or competitive) service. In reaching this decision, the AEMC referred to a number of supporting principles:<sup>3</sup>

- Market arrangements should promote consumer choice, while providing a level playing field for market participants
- Consumer choice based on clear price signals drives innovation
- Service providers seeking to provide an attractive value proposition to consumers will minimise costs.

The AEMC concluded that regulation should only be considered where competitive forces cannot deliver these benefits to consumers.

### **This framework has been applied in New Zealand in other situations**

There are examples in New Zealand where (like the AMEC) lawmakers and regulators have decided that certain markets must be open to competition, and free from the distortions that can be introduced by regulation.

The strongest example is Part 3 of the Electricity Industry Act 2010, which directly responds to the adverse impacts that investment by regulated networks can have in competitive generation and retail markets. That legislation places strong cross-ownership prohibitions and conditions on EDBs investing in electricity generation and retailing in order to promote competition in the electricity industry (section 72).

The market for smart meters in New Zealand is another example where competition has consciously been used, rather than regulation, to discipline investments that provide both regulated and unregulated benefits. In that market, the Electricity Authority (the Authority) was initially concerned that retailers and metering service providers could have incentives to restrict access to the benefits that smart meters could provide to regulated networks. However, the Authority accepted that the metering market was competitive, and as a result decided that regulating access to smart meter information was not required or beneficial. In essence, the Authority was comfortable that competition achieved the desired regulatory outcomes. Metering companies had strong incentives to unlock the value of their investments, lower their costs to serve, and gain market share by providing access to advanced metering functionality to regulated networks.<sup>4</sup>

### **The Commission has historically adopted a more narrow framework under Part 4**

To date, the Commission's approach under Part 4 appears to depart from the logic set out above that competition is preferable to regulation in driving efficient behaviour.

The regulatory treatment of ripple control relays under Part 4 provides an example of the reasoning that has been applied by the Commission in the past. The provision of load control is a competitive activity. However, the IMs explicitly state that EDBs are allowed to include assets used for load control, such as ripple injection plants and load control

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<sup>3</sup> See Australian Energy Market Commission, "Integration of Energy Storage – Regulatory Implications", October 2015.

<sup>4</sup> See <https://www.ea.govt.nz/development/work-programme/retail/part-10/>

relays, in the Regulatory Asset Base (RAB).<sup>5</sup> As a result, under the IMs the costs of one form of load control can be recovered through regulated prices—while other forms of load control cannot. Like energy storage, load control can be used for either network load management or energy trading. The result of the Commission’s decision is therefore that regulated businesses may have an advantage when competing for contracts to control load (such as under Transpower’s demand response programme)—unless regulatory rules are put in place to mitigate this advantage.

The scenarios presented in the Commission’s emerging technology pre-workshop paper apply the same reasoning. Instead of assessing whether investments in battery storage could be determined by competitive forces, the Commission’s paper focuses on how regulation would treat costs and revenues.

We consider that the different conclusions drawn by Commission’s work on the IMs review to date and the conclusions drawn by the AEMC result directly from the questions being asked. We also consider that because competition is better than regulation at achieving the desired outcomes, the Commission should change its approach to first assess whether competition is possible and, if it is, assess how best to facilitate competitive outcomes.

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<sup>5</sup> See 2010 Input Methodologies Reasons Paper available at <http://www.comcom.govt.nz/regulated-industries/input-methodologies-2/electricity-distribution/>

### 3 Current Approach to Creating a Level Playing Field

When services span both regulated and unregulated markets, a level playing field between regulated and unregulated suppliers requires:

- **Economies of scope to be shared between regulated and unregulated customers.** In competitive markets, suppliers are free to determine how economies of scope are shared across different groups of consumers (typically according to relative elasticity of demand). In regulated markets, the sharing of economies of scope needs to be prescribed in rules.
- **An ability for third parties to contract with regulated suppliers.** Where an investment provides a mix of regulated and unregulated benefits, regulated businesses must be willing and incentivised to contract with third parties (where this is efficient), who in turn need to be able to identify contracting opportunities.

This section describes how the IMs endeavour to ensure that these outcomes are achieved.

#### **Regulated businesses have financial incentives to shift costs**

Allowing regulated businesses to compete in unregulated markets creates a well-known risk that some of the costs of unregulated activities are shifted onto regulated customers.<sup>6</sup> This is a profit maximising strategy by regulated businesses that harms customers in regulated markets (who do not benefit from economies of scope), and unregulated customers (who have less choice/competition and fewer assurances on value for money).

The commercial rationale for a cost shifting strategy is summarised in the following passage from the United States Federal Trade Commission (FTC, 2000):<sup>7</sup>

*[A] cross subsidization or cost shifting strategy involves inputs used for both regulated and unregulated products. Costs of the shared inputs, which in the electric power industry might include scheduling and general overhead, are assigned to the regulated business to justify higher cost-based rates there. This shifting distorts competition and produces inefficiencies in the unregulated business as well. Controlling the discrimination and cost-shifting strategies with monitoring and regulation is difficult.*

#### **The cost allocation IM is the primary regulatory tool to address this incentive**

The cost allocation IM attempts to solve this problem. In essence, this IM specifies a general rule requiring costs to be shared between regulated and unregulated activities according to causal factors (known as the accounting based allocation approach (ABAA)). There are some important exceptions to this general rule (which are discussed in Section 4). The key policy outcome sought from this rule is that unregulated suppliers should be able to compete with regulated businesses to provide unregulated services because an appropriate share of costs is allocated to regulated consumers (who cannot avoid those costs).

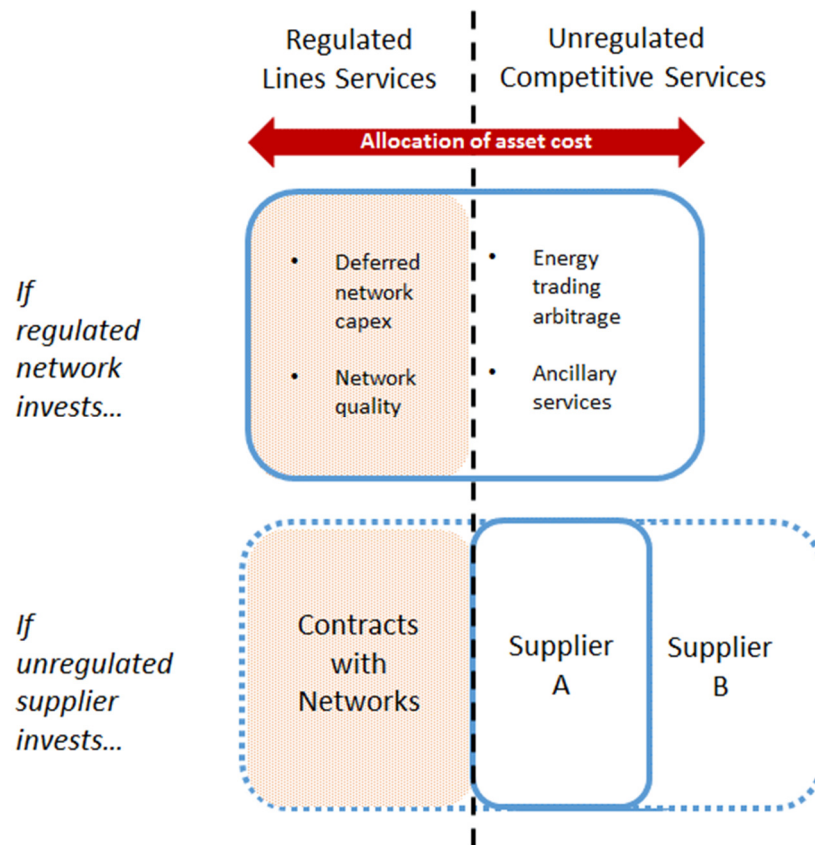
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<sup>6</sup> These risks are covered in Brennan (1987). “Why Regulated Firms Should be Kept Out of Unregulated Markets: Understanding the Divestiture in United States v AT&T.” The Antitrust Bulletin, Fall 1987.

<sup>7</sup> FTC (2000). “Staff Report: Competition and Consumer Protection Perspectives on Electric Power Regulatory Reform.” Available at [https://www.ftc.gov/sites/default/files/documents/advocacy\\_documents/ftc-staff-report-competition-and-consumer-protection-perspectives-electric-power-regulatory-reform/v000009.pdf](https://www.ftc.gov/sites/default/files/documents/advocacy_documents/ftc-staff-report-competition-and-consumer-protection-perspectives-electric-power-regulatory-reform/v000009.pdf).

The conceptual model underpinning the cost allocation IM is illustrated in Figure 3.1. This illustration considers an asset that provides benefits in regulated and unregulated markets, and assumes for presentational purposes that costs are allocated equally to access those benefits. To promote efficient outcomes, the allocation of costs should enable the most efficient supplier to provide the service (regardless of regulation). In this illustration, Supplier A is more efficient than the regulated network, while Supplier B is less efficient than the regulated network. These suppliers also need to be able to contract with regulated networks to compete. Given the stylised facts in this example, the best outcome would be for Supplier A to invest and provide services under contract to regulated networks.

**Figure 3.1: Conceptual Model of Cost Allocation with Shared Assets**



**The cost allocation IM is supported by information transparency rules**

To ensure that third parties can contract with regulated suppliers, they need to be able to identify and target opportunities to provide services in a cost-effective way. For example, third parties need to be able to assess where batteries would prove most valuable for regulated networks to ensure that they invest where batteries provide the greatest benefit. There is little reason for regulated businesses to voluntarily disclose this information (particularly if regulated businesses plan to invest themselves), so regulation is required to increase transparency.

Part 4 of the Commerce Act subjects EDBs to information disclosure regulation. This increases the transparency of EDBs’ operations and allows stakeholders to scrutinise the investment decisions and contracting approaches applied by EDBs.

When setting the IMs, the Commission highlighted the importance of information disclosure as a way to ensure that the flexibility afforded to regulated suppliers in allocating costs is used appropriately. The Commission stated that “the transparency provided



through cost allocation disclosure and monitoring requirements will provide interested persons with information about how regulated suppliers are allocating their costs”.<sup>8</sup>

Information disclosure can also provide an indication on where unregulated suppliers may be able to invest to efficiently defer network expenditure. The determinations set out by the Commission require EDBs to complete an asset management plan (AMP) before the start of each disclosure year that must provide sufficient information for interested persons to assess whether:

- Assets are being managed for the long term
- The required level of performance is being achieved
- Costs are efficient and performance efficiencies are being achieved

AMPs should also be easily understood by stakeholders and provide a sound basis for the ongoing assessment of asset-related risks.

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<sup>8</sup> IMs Reasons Paper at para 3.3.21, available at <http://www.comcom.govt.nz/regulated-industries/input-methodologies-2/electricity-distribution/>

## 4 Practical Limitations of the Current Approach

Section 3 summarised the ways the IMs and information disclosure requirements try to create a level playing field. In practice, this outcome is very difficult to achieve through regulation. This section describes five reasons that the desired outcomes are unlikely to be achieved under the current regulatory settings:

- If no cost allocation occurs (the total investment value is recovered from regulated customers) and an asset is used solely for regulated purposes, regulated businesses will not maximise the value that can be earned in unregulated markets
- Even if an asset is utilised for unregulated purposes, if it can be justified solely on the basis that it is the best way to provide a regulated service, it appears no cost allocation is required and unregulated revenue earned is retained and increase shareholder returns
- If the investment falls under the *de minimus* threshold in the cost allocation IM, an avoided cost allocation approach allows regulated businesses to shift costs onto regulated customers
- If an accounting based allocation is used, regulated businesses have considerable discretion and flexibility on the causal factors used to allocate costs. This is problematic given the natural incentive to shift costs
- Even if the above issues can be overcome, there are practical difficulties in contracting with regulated businesses that need to be resolved.

### **It is unclear whether the cost allocation rules need to be applied at all**

As summarised in Section 2, some investments can provide a mix of regulated and unregulated benefits. If regulated businesses use such assets solely to provide a regulated service (for example, to improve the quality of regulated services), then our understanding is that the entire cost of the asset can be allocated to the RAB and the cost allocation IM does not need to be applied.

This regulatory treatment risks not maximising the value of using technology across a range of possible applications and markets. If regulated businesses do not have any commercial incentives to expand the uses of assets that they control due to the need to share the costs and revenues of the investment, then they may choose to simply invest on the basis of regulated returns and limit the way the assets are used. This will restrict the benefits of batteries and other technologies flowing through to consumers.

### **Cost allocation rules don't always apply to assets used for unregulated purposes**

If an investment by a regulated business is justified solely on the basis that it is the best way to provide a regulated service, then it appears that the cost allocation IM does not need to be applied. This appears to be the case with many existing EDB ripple control systems, where no cost allocation is applied, yet the assets are used in unregulated to provide interruptible load and demand response.

In this case, EDBs earn a normal regulatory return on the full value of the assets, and any unregulated revenue earned is retained by the EDB. This distorts unregulated markets by tilting the playing field away from non-regulated competitors, and restricts any benefits from flowing through to regulated customers.

### **The *de minimus* threshold provides scope for significant market entry**

If the cost allocation IM is applied, it is weakened by the *de minimus* threshold for applying the ABAA. As long as investments in battery technology do not breach *de minimus* thresholds, EDBs are allowed to apply an avoided cost allocation methodology (ACAM) that allocates all costs to the RAB (depending on whether any costs would be avoided if the unregulated activity did not exist).

The current threshold appears to allow regulated businesses to establish a considerable market presence before having to account for any of the costs of operating in unregulated markets. For example, Powerco's regulated revenues from lines charges for the 2014/15 year were \$367 million.<sup>9</sup> The *de minimus* threshold of 20 percent of this revenue is therefore \$73.4 million. Assuming revenues of \$5,000 per year from a battery (for illustrative purposes only) and no other unregulated revenue, Powerco could invest in more than 14,500 batteries on its networks before applying the ABAA. This clearly provides scope to establish a substantial market presence using ACAM.

The ability to shift costs into the RAB by using ACAM provides a material advantage to regulated businesses. The avoided cost approach risks tilting the playing field in favour of regulated businesses, which can compete in unregulated markets on the basis of marginal costs (while unregulated competitors must bear the full costs). The optional variation (OVABAA) provides another avenue to shift costs—although we understand that regulated businesses are not currently taking advantage of this option.

### **Selecting causal factors for the ABAA is difficult and subjective**

Eliminating or increasing the *de minimus* threshold would not overcome other difficulties in applying the cost allocation IM.

Even if the ABAA is required, it seems difficult to decide on the right causal factors to use to allocate costs. It would have been very useful for the Commission to give some concrete examples of what factors could be used in the case of battery storage in its pre-workshop paper (and we encourage such examples in the draft decision on the IMs review). Possible causal factors could include revenue (although this has a circularity problem when allocating costs), or some measure of the underlying value of different uses (such as the value of network capital deferred and the value of time shifting energy). Conceptually, causal factors would also need to be reviewed and adjusted over time as markets and technologies change, driving cost into the regulatory system.

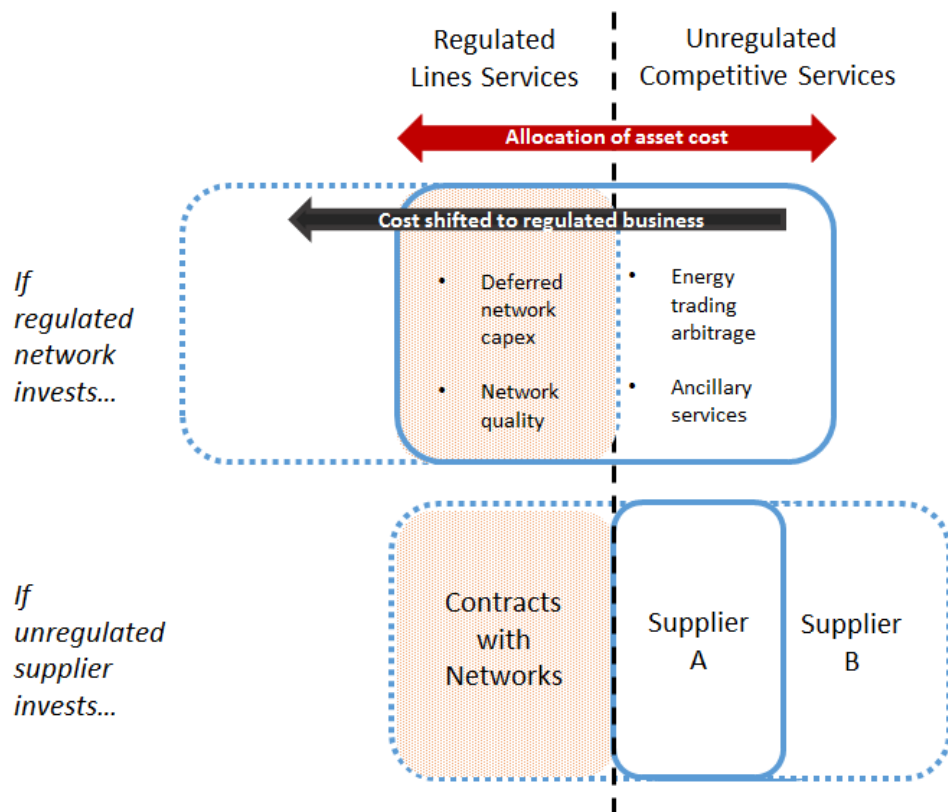
The choice of causal factors therefore seems challenging, and is open to selective interpretation to tilt the playing field (given regulated businesses' commercial incentives to shift costs onto regulated consumers). This subjectivity is concerning because regulated businesses have considerable discretion and flexibility when selecting causal factors.

The effect of the differences between regulatory intent and practical reality is illustrated in Figure 4.1. By allocating a greater proportion of costs to the regulated business, regulated networks can sustain a competitive advantage in unregulated markets. In this case, the most efficient supplier (Supplier A) would not be able to compete with the regulated business, even if it could negotiate for networks to pay for the benefits of deferred network capital expenditure (capex) and network quality improvements. This is because the price offered by networks in the unregulated market could be set (using ACAM or ABAA) to be more attractive than the price offered by Supplier A.

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<sup>9</sup> See Powerco's Annual Report available at [http://www.powerco.co.nz/uploaded\\_files/Publications-and-Disclosures/New/Annual-and-Interim-reports/2015-Annual-Report-Interactive.pdf](http://www.powerco.co.nz/uploaded_files/Publications-and-Disclosures/New/Annual-and-Interim-reports/2015-Annual-Report-Interactive.pdf)

Figure 4.1: Practical Risks of Cost Allocation with Shared Assets



### There are other barriers to achieving a level playing field

The discussion above assumes that unregulated suppliers are able to efficiently contract with regulated networks to monetise the network benefits of technologies like battery storage.

In practice, such contracts are difficult to negotiate without explicit regulatory rules that encourage such agreements. This is due to a range of factors, including:

- **Natural monopoly problems.** Contracting with regulated suppliers is difficult because monopolies can afford to adopt “take it or leave it” positions that are not informed by commercial trade-offs. This has been evidenced through the cases identified by the Electricity Authority where EDBs were perceived to have exerted negotiating power as local monopolies to obtain better terms in Use of System Agreements with retailers.<sup>10</sup>
- **Information asymmetries.** Contracting with regulated networks requires unregulated suppliers to know where the value to networks would lie in investing in assets that provide benefits across both regulated and unregulated markets. EDBs have a clear information advantage in this respect. While the disclosure of AMPs helps, it does not completely overcome this imbalance in information. EDBs are not required to publically disclose Schedules 5F and 5G, which means that other parties cannot see reports supporting cost and asset

<sup>10</sup> See “More Standardisation of Use-of-Systems-Agreements”. Electricity Authority consultation paper available at <https://www.ea.govt.nz/development/work-programme/retail/more-standardisation-of-use-of-system-agreements/consultation/#c12201>

allocation decisions (Section 2.3.2 of the Information Disclosure Determination). The level of regulatory scrutiny of capex forecasts is also relatively low under the DPP—giving regulated suppliers a much greater level of flexibility to favour investments that suit their commercial interests in unregulated markets. This differs from the regulatory regimes applied to Transpower and all lines businesses in Australia, where large investments are specifically reviewed and need to be tested against alternative (non-wires) solutions.

- **Organisational culture and the benefits of control.** Without a push, regulated networks would need to be convinced that contracting for the provision of storage to defer capex was better than owning the storage itself. We would expect most networks to perceive the contracting option as less reliable than ownership—even if it was cheaper.

Transpower’s demand response programme provides one example where a network contracts with alternative suppliers to defer its capex. However, this initiative seems to have succeeded because Transpower is not interested in investing in alternatives itself, and because the Commission has actively supported its development.

Transpower’s programme has demonstrated that contracting for demand response provides a reliable, efficient alternative to capex in poles and wires, and removes any requirement for regulated businesses to invest in battery storage in order to be able to capture the benefits of storage for consumers. The programme provides a model which could be used by all EDBs in New Zealand.

### **Transparency does not correct these distortions**

As noted above, when setting the IMs the Commission considered that transparency promoted through information disclosure should hold regulated businesses to account for how costs are allocated. In addition, AMPs should enable third parties to identify where and when batteries are most valuable in a network.

In practice, it is difficult to see real value in this transparency. The information barriers faced by third parties pose a considerable hurdle that these companies would need to overcome before they could confidently invest in storage. Information would need to be readily and clearly available on areas such as:

- Unregulated revenues earned by EDBs from the use of regulated assets
- The different uses EDBs make of shared assets
- The value of conventional investments that EDBs could defer by investing in storage
- Causal or proxy factors that would be used to allocate costs for storage.

In practice, AMPs can be cumbersome documents that are not easy to interpret. Although they provide an overview of asset planning decisions, AMPs are unlikely to correct problems of information asymmetry. Analysing information disclosures and AMPs takes time and resources, and the insights a third party might derive from them will never compare to the knowledge held by regulated businesses on their cost allocation and asset planning.

## How does this compare with regulatory decisions made in Australia?

The AEMC recently released on final report on the regulatory implications of energy storage in Australia<sup>11</sup>. In this report, the AEMC concluded that to promote consumer choice and a level playing field for investment, regulated lines businesses should be prevented from battery storage ownership “behind the meter”, but regulation was sufficiently robust to facilitate regulated lines businesses owning storage “in front of the meter” without having materially adverse impacts on either regulated or unregulated markets.

We broadly agree with the philosophy applied by the AEMC, but we acknowledge that any solution needs to reflect the specifics of the regulatory system. Appendix A of this report presents a table that summarises the regulatory conditions in both Australia and New Zealand that affect a decision on how to deal with emerging technologies like battery storage—including how shared costs between regulated and unregulated businesses are treated, and how much transparency is achieved and scrutiny is applied to regulated disclosures.

The comparison in Appendix A clearly suggests that the regulatory conditions in New Zealand favour a stronger demarcation between regulated and unregulated businesses wherever investments are made. In particular, other elements of the Australian regulatory system ensure that:

- Unregulated revenues earned from the use of regulated assets are offset against regulatory allowances
- Consistent cost allocation rules are applied to all transactions and investments
- Proposed investments are efficient and have been tested against alternatives, including the ability to contract for services (through a process more akin to requirements under the Transpower Capex Input Methodology)
- Ring-fencing provisions separate prescribed distribution services from related contestable business.

New Zealand has a lighter regulatory touch than Australia across all of these aspects of regulatory design. This is understandable as a way to manage regulatory costs—but means that concerns about potential competitive market distortions need to be taken seriously.

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<sup>11</sup> AEMC, Integration of Energy Storage: Regulatory Implications, Final Report, 3 December 2015

## 5 Evaluation of Possible Solutions

The failure to ensure a level playing field means that consumers of the regulated business will end up paying higher prices for emerging technologies, without sharing in the benefits that they provide. There will also be a lack of choice and competition in unregulated markets, potentially resulting in the wrong investment decisions being underwritten by regulated customers.

These impacts mean that this is an important question for the Commission to resolve to ensure that Part 4 is fit for purpose over the next 10 years. While the current rules may have been less important to date, it appears that mixed-use assets are likely to become more relevant over the next 5 to 10 years—creating an imperative to resolve these issues in the current IMs review.

While there are a number of possible ways to address these issues, we consider that assets providing a mix of regulated and unregulated services should be ring-fenced from regulated businesses. This solution balances a desire to allow regulated businesses to invest with the need to ensure effective competition in unregulated markets.

### **What are the possible options to create a level playing field through Part 4?**

We see a number of possible ways to create a level playing field for providers of storage services (and other emerging technologies):

- **Develop existing regulation sufficiently to ensure a level playing field for storage investments.** This would require the cost allocation IMs to ensure that EDBs allocate costs in proportion to causal or proxy factors to be determined, with *de minimus* thresholds eliminated. It would also require significant change to EDB capex approval and disclosure requirements to overcome the information asymmetry faced by competing storage providers. We do not see this as an attractive solution because proportionate cost sharing will always be somewhat arbitrary and will be unlikely to negate the benefit of partial or full use of avoided costs. It will therefore be very difficult to provide confidence that the right outcomes are being achieved. Information asymmetry will also be very difficult to achieve in practice without strict ring-fencing arrangements.
- **Specify standard terms for third parties to contract with networks to provide storage services (akin to Model or Default Use of System Agreements).** Again, we are not convinced that this is the best way forward. Any model contract will be difficult to define and enforce. Any contract for these services will likely be time and location specific, making standardised arrangements (like Avoided Cost of Transmission payments) an ill-suited solution. Individual EDB demand response programs are likely to be a more efficient solution, and would be effective within all of the options presented in this section of the report.
- **Require ring-fencing or arms-length dealing for business units that operate in competitive markets.** This would include adequate information provisions, more akin to Clause 11 of Schedule 3 of the Electricity Industry Act. We see this option as striking the right balance between encouraging investment by regulated businesses, while safeguarding competition in unregulated markets.
- **Prohibit network companies from offering services in competitive markets.** If there are significant concerns about the ability for regulated businesses to distort the playing field for these services, then structural solutions such as prohibition from competitive investments could be considered.

### **Solving these problems requires new ring-fencing rules**

We consider that the right solution to the problems presented in this paper emerges from framing the issues in the right way. The right framework is that battery storage is fundamentally a competitive activity, and the dynamics of competitive markets will therefore deliver the best outcomes for consumers. This approach lends itself more to the ring-fencing and arms-length dealing requirements found in the Electricity Industry Act than the cost allocation approaches found in the IMs.

We think that the IMs can be amended to include the required rules. Rather than specifying an approach to allocating costs, the IMs could instead require ring-fencing and arms-length dealing—directly ensuring a level playing field. Such an approach would add new requirements for investments in emerging technology by regulated businesses, but we consider that these requirements would be justified by avoiding distortions in unregulated markets. This will allow other providers of the same services (such as electricity generators and demand response providers) to compete on a level playing field.

This solution will require regulated businesses to contract for network benefits of storage through agreements with battery owners—which could be an EDB affiliate or third party. This will require provisions within the ring-fencing requirements to overcome any information asymmetry between EDB affiliates and other providers of emerging technologies. This solution will leave the owner free to maximise the benefits of batteries in unregulated markets, providing strong incentives for the right technology choices to be made at a time when the investments are justified.



## Appendix A: Comparison of Regulatory Treatment in New Zealand and Australia

Element of regulation	New Zealand	Australia
<b>Focus of regulation</b>	<ul style="list-style-type: none"> <li>▪ “Electricity lines services”<sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>▪ “Direct control network services”<sup>2</sup></li> </ul>
<b>Strength of separation provisions</b>	<ul style="list-style-type: none"> <li>▪ Distributor relationships with generators and retailers restricted to arm’s length to ensure competition<sup>3</sup></li> <li>▪ No ring-fencing or arm’s length provisions in IMs</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ring-fencing. At a minimum, requiring physical/functional separation between prescribed distribution/other services and limit information flows<sup>4</sup></li> </ul>
<b>Treatment of revenue from regulated assets</b>	<ul style="list-style-type: none"> <li>▪ No requirement to offset unregulated revenue from regulated assets against regulated revenue allowances, meaning customers don’t share benefits of regulated investment (as per s52A(1)(c) of the Commerce Act)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Revenue earned from unregulated services using shared assets reduce a Distribution Network Service Provider’s (DNSP’s) regulated revenues by 10% of the value of the DNSP’s expected unregulated revenues (if these revenues are greater than 1% of annual smoothed revenues)</li> </ul>
<b>Application of cost allocation rules</b>	<ul style="list-style-type: none"> <li>▪ <i>De minimus</i> thresholds for ABAA allow costs to be shifted to regulated activities</li> <li>▪ Difficulties applying or verifying ABAA and ACAM in practice allow costs to be shifted to regulated activities</li> </ul>	<ul style="list-style-type: none"> <li>▪ DNSPs must propose a Cost Allocation Methodology (CAM), but the Australian Energy Regulator (AER) approves the end CAM and DNSPs must apply this in forecasts of required capex and operating expenditure (opex). Costs allocated on substance of a transaction based on a causal allocator, consistent with ring-fencing guidelines</li> </ul>
<b>Overall level of regulatory scrutiny on capex / opex</b>	<ul style="list-style-type: none"> <li>▪ Low cost by design (DPPs)</li> <li>▪ No scrutiny of AMPs</li> <li>▪ No Grid Investment Test requirement to assess alternative options, or monitoring of options analysis</li> </ul>	<ul style="list-style-type: none"> <li>▪ Regulatory arrangements more akin to Customised Price-quality Path process</li> <li>▪ DNSPs must apply the Regulatory Investment Test for Distribution (RIT-D) before undertaking network augmentation</li> <li>▪ DNSPs must publish a non-network options report with information to assist providers wishing to present alternative options</li> <li>▪ AER must consider whether opex and capex forecasts are efficient</li> </ul>
<b>Preferred solution (NZ: this report, Australia: AEMC)</b>	<ul style="list-style-type: none"> <li>▪ Establishing ring-fencing or arm’s length rules to support: <ul style="list-style-type: none"> <li>– Part 3 of the EIA</li> <li>– A level playing field</li> <li>– Consumers sharing in benefits</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Ring-fencing and cost allocation provisions as well as offsets for regulated revenue to ensure consumers share benefits</li> <li>▪ Requirement to consider non-network options and make information available to others to propose alternatives</li> <li>▪ Regulatory approval of forecast allowances and cost allocation</li> </ul>

Sources: <sup>1</sup> Section 54C of the Commerce Act 1986; <sup>2</sup> Section 2B of the National Electricity Law; <sup>3</sup> Part 3 of Electricity Industry Act 1992 (EIA); <sup>4</sup> Australian Energy Market Commission, “Integration of Energy Storage – Regulatory Implications”, October 2015.