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Efficient pricing of distribution network connections

Electricity Networks Aotearoa | 18 December 2024

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1.1 Introduction

The Electricity Authority (Authority) has released two consultations with the intention to reform the approach to network connections in New Zealand. One focuses on process changes while the other addresses how connections are priced.[1] Electricity Networks Aotearoa (ENA) has asked Frontier Economics to consider a number of the proposals that the Authority has put forward in relation to pricing network connections.

For pricing, the Authority has proposed both 'fast track measures' as well as potential 'full reform' measures. The fast track measures are scheduled to be implemented from 1 April 2026 with the full reform to be completed by April 2027.

The specific topics that ENA has asked us to consider in relation to the Authority's proposal include:

- Defining the efficient price point for a network connection, and whether the Authority's proposals are aligned with economic efficiency
- The approach to reliance limits
- Advice on approaches to efficient costing of network capacity given the recommendation for standardised pricing
- Advice on whether aspects of the proposals are anti-competitive
- Our views on the economic equivalency to customers of the different approaches to terms such as capital contributions, vested assets and infrastructure development contributions
- The influence of transaction costs on the merits of various Authority proposals
- An assessment of the pros and cons of the Pioneer Scheme, and
- The treatment of transmission costs in the proposed reconciliation reporting.

1.2 Summary of our assessment

We broadly support the Authority's initiative to establish a more robust and consistent approach to connection charging. If well-implemented, this reform can enhance confidence among connecting parties that they are paying charges reflective of the efficient costs of connection. At a minimum, it will increase the transparency regarding what customers can expect to pay when connecting to the network, leading to better informed connection decisions. Additionally, greater regulatory certainty around connection pricing will provide distributors with improved clarity and predictability regarding the costs and revenues associated with new connections.

In the context of the anticipated increased electrification of the economy, fostering greater efficiency in network connections has the potential to deliver substantial welfare benefits.

The key findings made in this report are set out below.

[1] See: https://www.ea.govt.nz/projects/all/network-connections/

Economically efficient network connections

- Network connections are economically efficient where the right number of connections are performed at their lowest efficient cost, and this continues to occur over time as consumer preferences and technology changes. Efficiency is promoted when network prices, including upfront connection charges and ongoing costs, reflect the costs of supply.
- Customers should connect only when the benefits of electricity use exceed the costs of connection and ongoing supply. Efficient pricing signals the incremental costs of connections. These costs include any additional capacity needed at times of peak demand. For ongoing distribution charges, prices should signal the long-run marginal costs of supply with any residual costs that are not recovered in this way recovered with minimal disruption to the signals for efficient network use.
    - Incremental connection costs depend on location, including proximity to the shared network and available spare capacity at that location.
- Upfront payments for these costs are more efficient than recovery through ongoing charges, as they provide clearer signals before costs become irreversible, enabling informed customer decisions, and also when incremental revenue is taken into account ensure there is no cross-subsidy paid by existing customers.

Efficiency of the Authority's proposed charging approach

- The Authority has identified three reference points for connection prices. The neutral point, a balance point, and a bypass point. Broadly, we agree with much of the Authority's economic assessment of the reference points.
- However, we consider that the Authority's economic assessment is inconsistent with our economic assessment in a number of key aspects, these are:
    - We disagree that prices between the neutral and balance points do not penalise connection applications. Pricing above the neutral point would mean connecting parties would pay more than the incremental costs of their connection, which might distort network connection decisions away from the efficient level.
    - Having newcomers make a larger contribution to existing sunk costs[2] will not improve the efficient use of the network by existing customers where prices are structured efficiently. Even where prices are not structured efficiently, the impact on efficient consumption is unlikely to be material given the relative inelasticity of demand for electricity. However, encouraging new efficient connections will mean existing customer charges will fall given more customers means average costs per customer will also fall.
    - There is no economic rationale for setting connection charges to reflect the average contribution of existing users. Doing so will only mean that actual charges will either be inefficiently high or inefficiently low for new connections.
- We note also, for the sake of completeness, while this may not be explicitly stated in the Authority's Consultant Paper, capital contributions should only be required to remove cross-subsidy, that is where incremental cost exceeds incremental revenue. However, where incremental revenue exceeds incremental cost this does not imply there is an economic justification for a payment from the distributor to the connecting customer.

[2] Sunk costs refer to costs that have already been incurred, cannot be changed, and have no alternative use.

Network capacity costing

- The Authority has proposed introducing standardised unit rates for determining the costs of increasing capacity on the shared network. We consider that this proposal can deliver efficiency benefits in certain circumstances. This is when the administrative burden of determining the actual incremental costs for a connection is likely to outweigh the efficiency benefits of providing user-pays signals. This is the case for smaller connections or where connections do not involve substantial unique costs (e.g., connections over difficult terrain).
- It is our view that standardised rates should only ever be adopted where it is determined that a connection triggers an augmentation in the shared network. Whether this is the case is ambiguous in the Authority's Consultation Paper. To charge customers a standardised rate when their connection does not actually trigger an augmentation to the network may discourage otherwise efficient connections from proceeding.
- Standardised rates should be set in a way so that the price paid is sufficiently close to what would be paid if costs were determined on a project-basis. We consider it is possible to determine such charges using either historical costs or through independent engineering assessments.
    - We note, however, that standardised rates should only be adopted where it can be shown that there is not significant variability in costs for customers within the same customer class.

Competition impacts of the Authority's proposals

- **Standardised pricing** – based on our understanding that shared network augmentations are not contestable in New Zealand, this proposal should not impact on competition given standardised charges only apply to shared network costs.
- **Reliance limits** – reliance limits may reduce competition if the limit binds, resulting in distributors socialising some or all of the connection costs through the RAB. In this case existing customers would be subsidising part of the connection cost, which is an option not available to third-party providers.
- **Connection enhancement cost requirements** – the requirement to design and cost the least cost technically acceptable solution is likely to enhance competition. This is because the added transparency would make it easier for third-parties to present lower cost or improved connection options.

Reliance limits methodology

- It is our view that the proposal to cap the amount of connection costs that can be recovered upfront through reliance limits is not supported by the evidence or sound economic principles. As noted above, this proposal would mean that existing customers would be subsidising new connections when the limit was reached, with the potential that it motivates inefficient connection decisions.

Reconciliation reporting

- While we support the introduction of reconciliation reporting in circumstances where this is requested by connecting parties, in implementing the proposal we recommend that:
    - Reconciliation reports focus solely on incremental costs and revenues. Identifying 'network costs' separately is unnecessary as these are costs that are funded through standard network charges.

- There is consistent treatment of transmission charges in the reconciliation framework. Specifically:
  - If incremental transmission costs are included in the incremental cost calculation, they should also be reflected in the incremental revenue calculation, and
  - If incremental transmission costs are excluded, the corresponding revenues should also be omitted.

Pioneer scheme

- We agree with the Authority that a pioneer scheme can address first-mover disadvantages which may distort investment and impede development of the electricity network. We recommend in implementing the scheme the Authority considers measures to minimise the administrative burden on distributors who will have a key role in facilitating any refunds. This can be achieved through a well-defined and mechanistic approach to the scheme. Relatedly, we recommend also that distributors be permitted to deduct a reasonable administration fee from the refund to cover their costs, noting Australia provides a precedent for such a fee.

Accounting treatment of customer contributions

- From both a customer and distributor perspective, the classification of connection assets—whether as a capital contribution, a vested asset, or an Infrastructure Development Contribution (IDC)—is immaterial. So long as the amount the customer has paid reflects the incremental costs of the connection, the regulatory classification is irrelevant.
- Given this, it is necessary for the Authority to treat each of them consistently when comparing the volume and scale of connection costs across distribution areas. That is, a higher reliance on vested assets in one area does not imply that connections in that area are inherently lower cost, or that there are less upfront connection charges in total, than in areas where capital contributions are used more—and as such more visible in the Authority's data. Taking this into account will, therefore, permit a better comparison of the state of play across distribution areas.[3]

1.3 Structure of this report

The remainder of this report is structured as follows:

- Section 2 addresses the economic efficiency considerations for network connections, including an assessment of the Authority's proposals against our framework for economically efficient network connections.
- Section 3 considers the proposal for standardised network capacity costing.
- Section 4 addresses the competition impacts of the Authority's proposals.
- Section 5 addresses the remaining issues from the ENA scope of work, specifically:
  - The reliance limits methodology
  - Reconciliation reporting
  - The pioneer scheme, and

[3] We note, that the ability to compare different treatments of upfront costs will depend on the extent that there is quality information available to both the distributor and the regulator in relation to costs that have not been incurred by the distributor but by the customer or its third party service provider.

- The accounting treatment of capital contributions.

2 Economic efficiency considerations for network connections

2.1 Introduction

The Authority has sought to define three reference points that it considers are relevant to the approach to connection charging, namely:

- A **neutral point**: where the connection charge is equal to the net incremental cost of connection, which is the incremental cost of a connection less the present value of the incremental revenue the connection will generate over its lifetime.[4]
- A **balance point**: which is where the contribution a connection applicant will make to network costs over the life of their connection is commensurate with other users from the same consumer group.[5]
- A **bypass point**: where payments made by a connecting party over the life of the connection are higher than the standalone cost for that connection.[6]

The ENA has requested an assessment of how efficiency in the context of connection pricing is defined having regard to good economic practice. Taking this definition into account, we are to consider if the Authority's proposals, and its reference points, align with this efficiency definition.[7] The ENA has also recognised that the Authority's problem definition is not solely about efficiency. Therefore, it has asked that we also take this into account when considering the effect of the Authority's proposals on connecting pricing outcomes.

To address this issue, we will first consider the meaning of economic efficiency. We will then consider what economic efficiency implies in the context of network connections. Taking this view of what economic efficiency implies for pricing network connections, we will then provide our perspective on how the Authority's views on the respective reference points align with economic efficiency.

2.2 The meaning of economic efficiency

The term economic efficiency holds special meaning in economics. To define the concept, it is typical in economics to identify three distinct conditions that promote the achievement of economic efficiency, namely:

- **Allocative efficiency**, which requires that the amount of goods or services supplied creates the maximum benefit to households given the relative costs of producing those goods or services
- **Productive efficiency**, which means that any mix of goods or services are produced at their lowest cost, and

4 Authority Consultation paper, para. 7.57-7.58.

5 Authority Consultation paper, para. 7.61.

6 Authority Consultation paper, para 7.62.

7 The ENA has also recognised that the Authority's problem definition is not solely about efficiency.

- **Dynamic efficiency**, which requires that the outcomes above continue to be maintained over time given changing customer preferences and technologies.[8]

Prices play a key role in promoting economic efficiency in the economy by bringing about equilibrium in demand and supply. This is because they influence the production decisions of firms and the consumption decisions of consumers. Prices play this role through their ability to communicate information that is beneficial to coordinating transactions.

Consumers rely on prices to provide information about the cost of a good or service, enabling them to make efficient decisions. Specifically, this information helps them determine whether they value consumption more than the cost of production, noting efficient consumption occurs only in cases where its value exceeds the cost of production. For producers, price guides decisions about whether to remain in business, and if so, how much of a good or service to produce. When prices are higher relative to cost, the incentive is to produce more of a good or service and vice versus when prices are low, recognising it is through prices that businesses earn revenue to cover the costs of investment.

When prices are efficient, and so cost reflective, they maximise social welfare. This is because economic efficiency is achieved when the marginal benefit obtained by consuming a good or service is equal to the marginal cost of production.[9] The economic outcome is allocative efficiency that was described above. If the production of an additional unit cost more than the value customers paid for that unit, that additional production would be wasteful and should not proceed. Similarly, if the value created by producing an additional unit is greater than its cost, then not producing that unit would mean the loss of an increase in economic benefit.

2.3 Efficient pricing of network services

In simple terms, the conditions of economic efficiency identified above, when applied to network connections, mean that the right number of connections are performed at their lowest efficient cost, and this continues to occur over time as consumer preferences and technology changes. Similarly, economic efficiency is promoted when the price of network services reflects its cost. Even though the focus here is on prices for network connection, what might be paid for upfront for a connection impacts on ongoing network prices for both the connecting party and also existing network users. Therefore, it is necessary to consider both in combination.

The majority of the cost associated with an electricity network is building the network with enough capacity to ensure that all the electricity that consumers demand can be delivered at the time that consumers demand it.[10] In effect, this means networks are built to meet peak demand with the implication being that network investment is contemplated in circumstances where

[8] When considering economic efficiency, it is relevant to understand that it is agnostic to distributional impacts. This is relevant because often practical limitations mean there is more than one candidate for an efficient pricing solution. As such, economic efficiency on its own may not always provide the complete set of guidance needed to choose between different options. This can be particularly relevant where there are concerns about serving vulnerable customers for essential services such as electricity. In considering efficient pricing further we will only focus on distributional impacts to the extent that is relevant and does not harm the achievement of economic efficiency.

[9] The term marginal in economics refers to outcomes from the consumption or production of one additional unit of a good or service. Therefore, it is distinct from terms such as average or total, which are broader concepts. As such, the marginal cost, for instance, is the additional cost that is triggered to produce the final unit of a good or service, rather than the cost of producing all of the units supplied or produced.

[10] The cost of building a network to ensure that 100% of electricity demanded is met 100% of the time would be prohibitive. Therefore, planning standards for networks are set below this level such that networks are able to withstand certain events that are reasonably possible to occur, albeit with an expectation that at normal times peak demand should be met.

there is expected to be an increase in peak demand requirements.[11] Importantly, the assessment of peak demand requirements is location specific. The implication being that what matters is peak demand for specific network elements rather than a customer's own peak demand.

The dimension of cost that matters for network pricing given meeting peak demand is the primary driver of costs is marginal cost. Marginal costs can be observed over a short run or long run time horizon. In the short run it is not possible to expand capacity. Over this time horizon if there is excess capacity on the network the marginal cost can be near zero, but very high once the network becomes constrained given this will typically be the cost of paying other customers to curtail demand. Over the long run it is possible to expand capacity. Therefore, at any time the long run marginal cost of supply is expected to be higher than short run marginal costs given the cost of additional augmentations can be factored into costs. Notably, the long run marginal cost is the cost of bringing forward the next augmentation due to an increase in peak demand. That is, if peak demand is increasing, there will be a need to augment the network earlier than previously thought, which in turn means an increase in the long run marginal costs of supply.[12]

In addition to marginal costs, a further factor that is relevant for efficient pricing is stand-alone cost. The relevance of stand-alone cost is that pricing below stand-alone cost ensures that a customer is not inefficiently discouraged from connecting to the network and seeking an alternative means of supply even where supply through the network would be the lowest cost option. Stand-alone costs become particularly relevant in the context of allocating residual costs that arise when pricing based on long run marginal costs; which are discussed further below.

In the following sections we consider how this framework for efficient pricing is applied to both usage charges and connection charges.

2.3.1 Efficient prices for network use

Given the discussion above, it is apparent that a cost reflective price for use of the network should reflect the long run marginal cost of supply. A price based on long run marginal costs would see customers charged based on their use at the time of actual peak demand at their location. Recognising that this charge would reflect the customer's contribution to peak demand at this time, and so its contribution to the timing of the next augmentation of the network. That is, the extent the customer's own behaviour caused the need to bring forward a network augmentation.[13]

When customers face prices that reflect the long run marginal cost of supply, their incentive should be to only consume additional electricity at times of peak demand when they value that consumption more than the cost of bringing forward the next augmentation. At all other times the marginal cost of supply will be very low, or near zero. While the cost of consumption at these times is very low, it may also be inconvenient to use electricity at these times. This could be because it is overnight when people are sleeping, or because people are at work at these low-cost times.

[11] The peak demand that is relevant for network planning is the highest expected demand at any single point in time. For instance, in New Zealand this has typically been some time during a winter day as people wake up or come home from work and turn on heating. Therefore, the 'peak' demand that occurs on every other day of the year has very limited impact over whether new network investment is contemplated or not.

[12] For the sake of providing additional clarity, the long run marginal cost that should be signalled to customers is not the total cost of augmentation. Instead, it is the *change* in costs that occurs through increased consumption. In the case of electricity networks this is the cost of undertaking an augmentation earlier than otherwise.

[13] We note that suitable metering technology is required to determine the coincident peak demand of a particular customer.

Electricity networks exhibit natural monopoly traits. This is because economies of scale mean a single provider is more efficient than two or more.[14] However, these economies of scale also mean that prices set to signal long run marginal costs will not permit network businesses to recover all their costs. This happens because long run marginal costs are lower than the average cost of the network when economies of scale exist. As a result, pricing based only on these marginal costs will lead to the business not making enough money to cover its total costs.

Economics suggests that the residual costs that arise from pricing based on long run marginal cost are best recovered in a manner that has the least impact on the efficient use of the network. That is, the form of cost recovery should limit distortions to price signals for efficient consumption. A commonly accepted method for achieving this is for the residual costs to be recovered in charges that have no relationship to usage, such as daily fixed charges. We note that given the substantial fixed and sunk costs associated with electricity networks (which then form the regulatory asset base), that these residual costs can make up a large portion of the total charge faced by consumers.

2.3.2 Efficient price for network connection

The initial connection of a customer will cause certain costs to be incurred. These costs will include those required to physically connect the customer to the shared network. However, the customer's connection may also cause costs to be incurred in relation to the shared network. For instance, where additional capacity needs to be built in order to accommodate the expected contribution to peak demand from the newly connected customer. These are the incremental costs of connection, and differ from the marginal cost concept described above.[15] Rather than focusing only on consumption at peak times, this incremental cost incorporates both the costs caused by connecting and the cost of providing ongoing supply for a sustained period.

The price signal that is desirable from connection charges is that customers should only seek to connect to the network, and continue to be supplied by the network, where they expect to derive more benefit from the use of electricity than the cost of connecting and providing ongoing supply.

Similar to usage charges above, there is also a locational component to network connection charging. The locational component will be driven by how far from the shared network the customer is located, as well as the amount of spare capacity that exists on the network where the customer wishes to connect at the time of connection.

Where the customer is further from the network more network will be required to connect, and so a higher cost can be expected. By implication, cost reflective pricing should motivate the customer to seek to locate its connection as close as is possible to the existing shared network. In addition, locating on parts of the network with spare capacity is less likely to trigger the bringing forward of a network augmentation compared to connection at parts of the network that are close to their capacity limit. In this context, an efficient price signal would be expected to encourage customers to locate on those parts of the network with spare capacity first, noting if the value a customer derives from locating at a congested part of the network exceeds the cost, this would also be efficient from the perspective of society.

[14] Economies of scale exist when costs decrease as a company produces more of a good or service. This is typically driven by high fixed costs being spread across more units.

[15] We note that incremental cost and marginal costs are very similar concepts in economics, and so are sometimes used interchangeably. Incremental costs can be considered as the additional cost that is incurred when expanding to provide an additional service, or in this case, serve an additional customer. As such, it would be appropriate to consider this cost the marginal cost incurred from the decision to be connected and served by the shared network in the first place.

Having a price signal that includes the full incremental cost associated with their connection is referred to as a 'deep connection' approach. This approach contrasts with what is referred to as a 'shallow connection' approach. Under a shallow connection approach the customer may only pay for the cost of assets between its premises and the network, with any augmentation costs related to the shared distribution network shared between all customers. While this approach is not consistent with providing an efficient price signal to new connections, there may be other non-economic justifications for the approach. For example, to motivate new connections. The exception to this might be very small connections, where the cost of calculating the full incremental cost of connection might outweigh the benefits of doing so. That is, in this case it may be more cost efficient to provide customers with only a shallow connection charge rather than calculate the actual deep connection cost.

Role of upfront customer payments for connections

It is likely to be more economically efficient for customers to make an upfront payment related to the incremental costs of connecting to the network rather than for those costs to be recovered through ongoing charges. Noting that such payments would still operate alongside ongoing distribution charges.

Recognising that there are efficiency benefits from having customers pay a price that reflects the incremental costs of connection, the first question is whether this cost would be recovered from ongoing distribution charges. Particularly for large connections, such as for new real estate developments or large commercial connections, it is unlikely that ongoing distribution charges will be sufficient to recover the full incremental costs of connection given it is set to recover costs that have already been incurred or the marginal costs of supply expected before the connection arrives.

Nevertheless, signalling the incremental cost of connection upfront, rather than through ongoing distribution charges, offers additional economic efficiency benefits. For example, since these costs become irreversible once the customer connects, it is more effective to communicate them at the time the customer is deciding whether to proceed with the connection. This approach ensures that connection costs can still be varied or avoided during the decision-making stage.

While, in theory, it would be possible to adjust ongoing charges to provide this signal to customers, this would introduce substantial administrative difficulties. This is because it would require every customer, or small group of customers, to have an individual tariff maintained specifically for them over the life of the connection.

Requiring newly connecting customers to incur the incremental cost of their connection upfront eliminates the risk of cross-subsidisation between new and existing customers. A subsidy arises if a customer pays either less than the incremental cost or more than the stand-alone cost of their connection. For instance, if new customers pay less than the incremental cost, ongoing charges to existing customers would be used to cover the shortfall, leaving existing customers worse off than if those new customers had not connected. By implication, an upfront charge that covers the incremental cost of connection avoids this outcome for existing customers.

In considering subsidies, it is notable that a service is in receipt of a cross-subsidy where the revenue generated in providing the service is less than its incremental cost. Factoring in the incremental revenue associated with a network connection, therefore, can provide increased assurance that existing customers are not incurring a cross-subsidy related to new connections. The implication being that, if incremental cost exceeds incremental revenue for a connection, to avoid a cross-subsidy, the connecting party must pay the difference between incremental revenue and incremental cost.

The avoidance of cross-subsidy was the Australian Energy Regulator's (AER) justification for its incremental cost and incremental revenue test (the cost-revenue-test) when implementing its

approach to connection charging. Specifically, it stated the following in its initial Consultation Paper on its approach to connection charging:[16]

> *To ensure that a customer pays at least the incremental cost it imposes on the network, it is necessary to test the incremental revenue that a customer will provide against the incremental cost of connecting that customer. Implementing a cost-revenue-test requires estimates of all the costs that a DNSP will incur by connecting the customer and all the revenue that a DNSP will receive from that customer. The AER's preliminary position is that all costs incurred by the DNSP, including direct connection, extension, shared network augmentation and an allowance for the additional operating and maintenance costs should be compared against the anticipated DUoS* [distribution use of system] *revenue from the customer. An upfront capital contribution would only be required to the extent that the customer's DUoS payment is less than their incremental cost.*
>
> *A connecting customer's costs will be recovered as a combination of ongoing DUoS payments and upfront capital contribution, if required.*

The use of a cost-revenue-test, as implemented by the AER, and which the Authority has based its approach, raises a question of what should occur when incremental revenue exceeds incremental cost. That is, should the distributor be required to pay this difference back to the connecting customer. It is our view that no payment should be required. On this matter we agree with the perspective of the AER. Here, the AER noted that not returning the excess to customers would be unlikely to see prices rise above stand alone cost, and so maintain connection charges to within the subsidy free range. Importantly, it also noted that ongoing distribution charges, referred to as DUoS (or distribution use of system charges), can include a contribution to costs that are upstream from the connection, and so all customers of the same connection and load characteristic should pay the same distribution charge given this represents the average real cost of providing the network service to that customer class. Specifically, it stated:[17]

> *Where there is a revenue shortfall from an individual customer, then the DNSP will levy a capital contribution. Alternatively, where the incremental revenue is in excess of the incremental cost, then the customer would not be required to make a capital contribution to the network. The AER is not proposing that any excess incremental revenue be returned to the customer. The AER considers this would still be consistent with the limit cross-subsidisation purpose of the guideline because it is unlikely these customers will be paying in excess of their stand alone cost.*
>
> *Where the incremental connection cost is less than the incremental revenue, it does not mean that the particular customer should be paying less than the DUoS for the same class of customers. This is because the DUoS charges also includes cost recovery of the upstream assets for supplying the customer. All customers of the same connection and load characteristic should pay the same DUoS rate because this network charge represents the average real cost of providing the network service.*

[16] AER, 'Consultation Paper, Issues and AER's preliminary positions Connection charge guidelines: for accessing the electricity distribution network' 10 June 2011, p. 14.

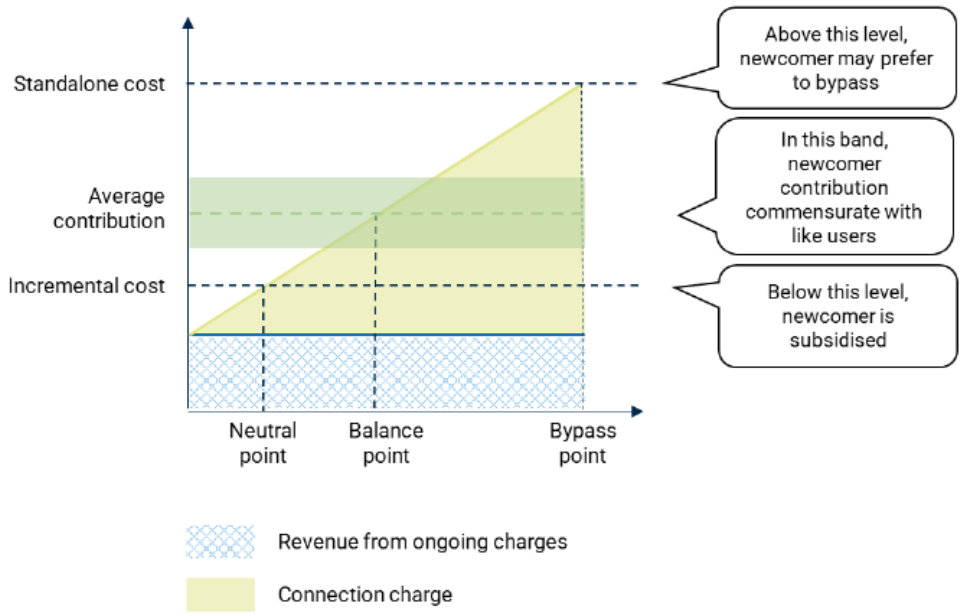
[17] AER, 'Consultation Paper, Issues and AER's preliminary positions Connection charge guidelines: for accessing the electricity distribution network' 10 June 2011, p. 15.

2.4 Assessment of EA proposals

2.4.1 Authority proposal

As indicated above, the Authority identified three reference points as relevant for connection prices. These are a neutral point, a balance point and a bypass point. The Authority included the following figure to summarise each of the points in a diagram.

Figure 1: The Authority's illustration of neutral, bypass and balance points



Source: Electricity Authority, Distribution connection pricing proposed Code amendment Consultation paper, Figure 7.1

The Authority made the following conclusions about the economic efficiency of each of the reference points:[18]

> *The Authority considers:*
>
> *(a) connection charges below a connection's neutral point are inefficient, because existing users are subsidising the new connection.*
>
> *(b) connection charges above a connection's bypass point are inefficient, because the connection applicant would be better off inefficiently bypassing the network.*
>
> *(c) connection charges between the neutral and bypass points are within the subsidy-free range for that connection.*
>
> *(d) connection charges above the balance point can be inefficient as they allocate connection applicants a higher lifetime cost than existing users from the same consumer group. This may in turn suppress connection growth.*
>
> *(e) connection charges between the neutral and balance point are beneficial to existing users, without inefficiently penalising connection applicants.*

[18] Authority Consultation Paper, para 7.63.

The Authority also stated that the neutral point would be optimal except that it involved newcomers avoiding or underpaying some costs that are paid for by existing users, stating:[19]

> *In theory, pricing at the neutral point would be optimal if it minimised adverse effects on connection demand, and without supressing demand from existing users. However, this involves newcomers avoiding costs or underpaying for costs that are covered by existing users, which may be unpopular and unsustainable.*

2.5 Our assessment

Broadly, we agree with much of the Authority's economic assessment of the reference points for connection pricing. However, there are some key areas where we diverge from their conclusions. These differences are derived on the basis of the economic framework for efficient connection pricing that we have set out in the preceding sections.

We agree with the Authority that:

- Connection prices above the bypass point, which is the stand-alone cost of supply, would distort efficient outcomes. In this case it would encourage potential connections to seek alternative, but higher cost, supply options.
- Prices below the neutral point (which are the net incremental costs, and so are incremental costs minus incremental revenues) are inefficient given they would imply a cross-subsidy exists. That is, existing customers would need to make up the difference between the connection charge and the incremental cost of the connection.

2.5.1 Connection prices between the neutral and balance points

As identified above, the Authority suggests that connection prices set between the neutral and balance points do not penalise connection applicants. It notes further that if new connections pay only prices at the neutral point it would see them avoiding costs or underpaying costs that are covered by existing users. We disagree with these positions.

The Authority notes that pricing at the neutral point would be optimal if it minimised adverse effects on connection demand. It is our view that this is precisely what a price at the neutral point achieves. As indicated above, a connection price that signals the net incremental cost of connection – which is the Authority's neutral point – can be expected to encourage the economically efficient volume of network connections. This is because a customer can decide if it values connection more than the incremental costs that its connection imposes. Noting this decision will factor in both any upfront connection charge plus expected ongoing electricity charges over the life of the connection.

As indicated above, economic efficiency can be promoted by setting charges in a way that is least likely to distort efficient decision making; recognising that economic efficiency is concerned with the future rather than past sunk decisions. While the balance point is below stand-alone cost, and so there is no cross-subsidy involved, it is our view that a price above the neutral point up to the balance point, risks discouraging efficient connections proceeding. This is because the price would be above the costs directly caused by the connection, which are the incremental costs, and so contribute to sunk cost recovery. However, as previously noted, there is no efficiency benefit to be gained from signalling a sunk cost.

Whether a price above the neutral point but below the balance point would actually cause a distortion to connection demand away from efficient levels is an empirical question. It would depend on the extent that customers value their connection above the charge they face for

[19] Authority Consultation Paper, para 7.64.

connection and so the elasticity of demand for new network connections. However, because the costs above incremental costs but below stand-alone costs are already sunk costs, signalling these costs to customers when they connect will not advance efficient decision making, but instead create the potential for adverse connection decisions.

We note in the context of setting developer charges for the urban water sector, the Australian Productivity Commission expressed views very similar to those expressed here. Specifically, that charges should relate directly to the costs that can be attributed to that location and not the sunk cost of common shared infrastructure, stating:[20]

> *Efficient charging regimes for infrastructure development were discussed at length in the Commission's 2004 inquiry into First Home Ownership and are discussed further in PC (2011c). Broadly, the appropriate allocation of capital costs hinges on the extent to which infrastructure provides services to those in a particular location, relative to the community more widely. Key findings of the 2004 inquiry report include that developer charges should:*
>
> *• relate specifically to the directly attributable costs being incurred at that location, and not the sunk costs of common shared infrastructure*
>
> *• be itemised by service type (such as water, wastewater or drainage) and infrastructure type (such as transmission or distribution system)*
>
> *• avoid over recovery of the efficient costs incurred by the service provider, to avoid 'gold-plating' infrastructure and double charging for infrastructure through both developer charges and recurrent charges.*

2.5.2 Concerns about avoiding cost recovery

Pricing at the neutral point ensures there is no cross-subsidy between existing and new customers, ensuring that new customers fully fund the incremental cost of their connection.

From an economics perspective, ensuring that incremental costs are funded is an economically efficient outcome. In this context it is worth drawing on the views of one of the more prominent commentators of the incremental cost test, upon which the neutral point is based, Gerald Faulhaber. At the commencement of his 1975 paper on cross-subsidisation the following example is provided to demonstrate that a cost-revenue test (incremental cost minus incremental revenues) promotes efficient outcomes, avoids cross-subsidisation and has the potential to reduces prices for existing customers:[21]

> *A paradigm best serves to illustrate the problem: a profit regulated railroad which interconnects two large cities also provides rail service to a smaller town located on the route between the two cities. The fares charged for passage from the small town are sufficient to generate revenues in excess of the additional cost of servicing it, such as ticketing and station costs, but not sufficient to cover an equal proportionate (however defined) share of the common costs, such as trackage, signalling, and trainyard costs. Since the small town is not paying its "fair share" of common costs, is it not being subsidized by the larger cities? Do not the railroad tariffs favour the town at the expense of the cities?*
>
> ***Provided the revenues realized from providing rail services to the town exceed the added costs, the answer must be in the negative**. In fact, the provision of the*

[20] Productivity Commission, 'Australia's Urban Water Sector, Productivity Commission Inquiry Report Volume 1,' No. 55, 31 August 2011, p.152.

[21] Faulhaber, G.R., 'Cross-Subsidization: Pricing in Public Enterprises', The American Economic Review, Vol. 65, No. 5, December 1975, p. 966.

> *service under these circumstances (assuming the road's profits remain constant) may actually lead to lower fares for the two cities compared to the alternative of no service from the town at all.* [Emphasis added]

We note that when a customer is not required to pay a capital contribution—i.e., when net incremental revenues exceed net incremental costs—it is possible that existing customers may not benefit from the new connection as suggested in the quote above. This occurs because the incremental revenue calculation proposed by the Authority does include a contribution to the costs of existing network assets, and so sunk cost recovery (recognising that existing distribution charges used for calculating incremental revenues contribute to recovering the cost of existing network assets). Although this outcome does not raise obvious economic efficiency concerns, it suggests the new customer contributes less to the cost of existing assets (sunk costs), as their incremental revenue (including amounts that would ordinarily be used for sunk cost recovery) is allocated primarily to cover their incremental costs of the connection. We agree with the Authority, therefore, that this outcome may be unpopular or perceived as unfair.

2.5.3 Impact on efficient consumption

Efficiently structured ongoing distribution charges, where the usage component recovers only the long-run marginal cost of supply, mean that pricing new connections above the neutral point will not improve the efficiency of consumption for existing network users. Instead, any additional contributions would serve only to reduce the contribution made to the recovery of residual component of prices. As indicated above, under an efficient tariff structure the residual component should be recovered in a way that has the least impact on signals for efficient consumption of the service.

In practice, however, electricity tariffs are not structured ideally and so often include some recovery of sunk costs within the usage component. In this case the effect would be to reduce the price paid down to something closer to the long run marginal cost of supply. This is because part of the residual cost would be removed from the usage charge and instead paid for by new connecting customers. As such, it is possible that the reduced usage charge improves signals for efficient electricity consumption. However, similar to the discussion above, whether having new customers make an additional contribution to the recovery of sunk costs improves the efficiency of consumption for existing users, and in a way that is greater than any distortion that might arise for connection signals, is an empirical question. Given the relative inelasticity of electricity demand, there is good reason to think that the effect is not material.

We note, in any event, that merely adding new connections to the network will have the effect of reducing standard ongoing network charges to existing customers. This is because as new customers contribute to cost recovery the average cost for all customers reduces. This is a benefit that would be lost if pricing above the incremental cost of supply meant that new connections are discouraged from connecting to the network in the first place.

Finally, we note that the Authority has not provided any evidence that existing customers are disconnecting from the network or consuming electricity below efficient levels to suggest that there is a problem that needs solving. If the Authority is concerned about the efficiency of electricity consumption we consider the first thing it should do is investigate what improvements can be made to the structure of tariffs. Specifically, considering the extent that current tariffs properly signal the long run marginal cost of supply.

2.5.4 Focus on the average contribution of connecting customers

It is not clear to us that there is an economic rationale for setting connection charges at a level that reflects the average contribution of existing users. Such an approach would only align with the incremental cost for a specific connection by accident. Conversely:

- If the actual incremental cost exceeds the average contribution, it may encourage connection when it is not efficient, or connection at inefficient locations, or
- If the actual incremental cost is below the average, higher connection charges to reflect the average contribution may discourage otherwise efficient connections.

As identified above, such distortions are avoided if connections are priced to reflect the actual incremental cost of the connection, putting aside the prospect that the effort required to calculate the incremental cost for some smaller connections may exceed the signalling benefit.

2.5.5 Circumstances where a capital contribution should be paid

Given the Authority's current Consultation Paper does not appear to explicitly state when a capital contribution should be paid, for the avoidance of doubt, it is our view that:

- Capital contributions should only be required to remove cross-subsidies between new and existing customers. This is in circumstances where incremental cost is greater than incremental revenue.
- Connecting customers should not receive a payment if incremental revenue exceeds incremental cost. In this case connection charges would remain within the subsidy free zone, with the likelihood that the additional amount accounted for in the revenue calculation relates to a cost that is appropriately allocated to all customers in the same class as the connecting customer, and so it should also pay that cost when connected to the network.

3 Network capacity costing

3.1 Introduction

The Authority has proposed introducing network capacity costing requirements so that there is a standardised rate for determining the costs of increasing capacity on the shared network. This compares to an approach where the costs are project-based and so determined specifically for each project. In this section we assess the specifics of the Authority's proposal and how it aligns with the economic efficiency framework we set out above for network connections.

3.2 The Authority's proposal

The Authority has proposed that distributors who recover network capacity costs through connection charges will need to set these charges using published rates.[22] These published rates must reflect the average cost of adding capacity at certain network tiers, namely:

- sub-transmission
- zone substation
- high voltage feeder
- distribution substation, and
- low voltage mains.

The rates only apply to shared network elements and are charged regardless of whether a given connection directly prompts, or alters the timing of, a capacity upgrade project.[23]

The Authority also proposes that:

- A distributor may adopt a zero rate for one or more network tiers if they do not foresee any need to increase capacity at that tier within their network planning horizon.
- For HV feeder and above, distributors may allocate actual project costs if the capacity consumed by the project is more than 80% of the nominal capacity increment for the tier.
- Distributors may apply a modified rate if the costs for an upgrade project which are needed to accommodate a connection are more than 150% of the published rate.

3.3 Our assessment

The Authority's proposal raises two questions:

- when should a distributor use standardised pricing to determine how much a connecting customer should contribute towards the cost of augmenting the shared network that arises from that connection, and
- in circumstances where it is appropriate to use standardised pricing, how should those prices be determined by the distributor?

We consider each question in turn below.

22 Authority Consultation Paper, para 7.21.

23 Authority Consultation Paper, para 7.21.

3.3.1 When should a distributor use standardised pricing for shared network augmentations?

It is our view that the Authority's proposal for standardised pricing for shared networks can deliver efficiency benefits in certain circumstances. This is when the administrative burden of determining the actual incremental costs for a connection is likely to outweigh the efficiency benefits of providing user-pays signals. This is more likely to arise for small customers, such as residential and small commercial customers, for whom shared network augmentation costs that arise from a connection are likely to be minimal. However, it is our view that standardised rates should only ever be adopted where it determined that a connection triggers an augmentation in the shared network.

A standardised unit rate for a connection would mean that the amount a customer pays depends on the unit rate and the amount of the unit the customer requires. For instance, in Australia distributors will adopt a unit rate based on a measure of the capacity of the connection, that is its MVA. This means that the connection charge is the unit rate multiplied by the MVA to peak coincidental demand.

As discussed in the proceeding section, customers face decisions about the location of their connection, and whether to connect to the network at all. A shared network augmentation charge that signals the incremental cost of connection will contribute to:

- allocative efficiency, by ensuring that customers only connect to the network when the incremental benefit they receive from that connection is greater than the incremental cost and
- productive efficiency, by ensuring that customers connect to the network where their load would result in the smallest need to augment the shared network.

Whether standardised charging can deliver these efficiency outcomes depends on the extent that the actual unit rates used reflect the likely cost of the connection if it was to be determined on a project-basis. We consider that if it can be demonstrated that standardised unit rates are robust to most situations that using such rates will provide certainty and predictability for connecting customers. We discuss the approach to determining standardised charges in the following section.

We also agree with the Authority that for a certain threshold of customer, there are likely to be benefits in connection charges being based on project specific costs. We consider that project-based charges would be beneficial where the connection is particularly large or where there are certain features of the connection that are unusual and so would substantially add to costs (e.g., the connection is located over difficult terrain). Having these customers pay a project-based connection charge ensures that they face a connection price that better reflects the incremental costs their connection incurs. It also ensures that existing customers are not left to subsidise large or costly connections. We also support the Authority's proposal that distributors can set the threshold for when project-based cost is adopted.

We note that the Authority identifies that the distributor would be required to multiply its unit rates by the applicable demand design for the connection.[24] This reflects our view on how best to apply standardised charging given it ensures it scales with the size of the connection and so the costs it will impose on the shared network. Elsewhere, however, the Authority states that standardised charging would mean connection applications are charged on a consistent basis and removes the 'position-in-queue' lottery.[25] It is our view that this perspective is inconsistent

[24] Authority Consultation paper, para. 7.25.

[25] Authority Consultation paper, para 7.20.

with how standardised charging should operate and also with the promotion of economic efficiency.

It is our view that standardised charging should only apply in circumstances where the demand requirements for a connection trigger a need to augment the network.[26] The standardised rates merely assists in determining the size of the charge. The Authority's reference to removing a 'position-in-queue' lottery suggests that all connections pay irrespective of whether their connection triggers a network augmentation or not. If this is the case, for the reasons we stated in the previous section on efficient connection charging, we consider that this would not present appropriate signals for connections making efficient decisions about whether, and where, to connect on the network.

Finally, even though unit rates will be set for the asset types identified by the Authority, with the implication that a connection will incur augmentation rates for all components that are upstream from its connection, where it is found that no augmentation is required for a network component no augmentation charge should apply with respect to that component.

3.3.2 How should standardised prices be determined?

The objective for determining standardised rates should be that the rates sufficiently closely reflect the expected cost to the connecting party should the cost have been determined on a project-basis.

The Authority states that cost estimates for setting standardised rates should be based on a sample of historical capacity upgrade projects or, in the absence of sufficient project data, through an independent engineer's report. We consider that this approach is appropriate for the purposes of determining standardised rates for those classes of customers where it can be shown that there is not a wide variation between the costs of connections for customers within a customer class. Where it is found that there is high variability in costs within a customer class, it is our view that this would be justification for project-based charging.

[26] We understand that the augmentation in this respect may be maintaining existing headroom that is built into the network to accommodate growth.

4 Competition impacts of the Authority's proposals

4.1 Introduction

We have been asked to consider whether the Authority's proposals are anti-competitive. Anti-competitive refers to practices or behaviours that prevent, restrict or distort competition in a market.

We have not, for the purposes of this report, undertaken a detailed competition analysis of each of the Authority's proposals. However, we provide below some high level views on the likely impact of the Authority's proposals on competition between distributors and third parties that provide connection works. For the purposes of this analysis, we assume that there is a national market for the provision of electricity network connection services.

4.2 Our analysis

4.2.1 Standardised pricing for shared network augmentations

The Authority's proposal for standardised pricing only applies to shared network augmentations. In circumstances where there is contestability for the provision off shared network augmentation this policy could have anti-competitive implications. For instance, it would see an obligation on one competitor to offer fixed pricing while all other competitors would not face a similar obligation. This could mean that:

- Where the actual cost of augmentation is higher than the standardised cost, the incumbent distributor has a price advantage over competing suppliers, or
- Where the actual cost of augmentation is lower than the standardised cost, the incumbent distributor is a price disadvantage to competing suppliers, which would, in effect, remove one potential competitor from the market.

It is our understanding, however, that augmentations of the shared network are not contestable. As such, this proposal will not have an impact on competition between distributors and third parties for these services. However, given the potential competition implications of standardised charges, we would caution against such charges being adopted also for connection works outside the boundary of the existing network.

4.2.2 Reliance limits

As noted previously, reliance limits cap how much of a distributor's connection and system growth investment is funded through connection charges to 47%, or the distributor's actual 2024 reliance level, whichever is higher for each distributor.

In theory, reliance limits may reduce competition if the limit binds, resulting in distributors socialising some or all of the incremental connection costs through the RAB. In this scenario, the Authority's proposal would prevent the distributor from charging the connection applicant the actual incremental cost of their connection. Third parties would be unable to match the price charged by the distributor due to the absence of a RAB through which to recover any residual connection costs.

In practice, the Authority's proposal places no obligation on distributors with respect to whether, or how much, network cost contribution they allocate to connecting customers. This means that the outcome described above can arise with or without the Authority's proposal. That is, even without the Authority's proposal, it is open for distributors to levy connection charges that are below the actual incremental costs of a connection. Given this, to the extent that this proposal may impose competition issues, these are issues that could have emerged under the existing approach in any event. The Authority's proposal, increases the prospects of competition concerns, however, where a distributor is pricing efficiently.

4.2.3 Connection enhancement cost requirements

Under this proposal, distributors would be required to design and cost the least cost technically acceptable solution for connecting each customer. In our view, greater transparency on the distributor's least cost scheme would be expected to enhance competition by making it easier for third parties to present lower cost or improved connection options.

A better understanding of demand opportunities and market prices will help market participants to make more informed decisions about expanding their production and supply processes in order to win more clients or supply opportunities. This may allow businesses to compete more vigorously for supply contracts or may encourage businesses to expand into supplying to geographic areas that had previously been served by other businesses (and thereby increasing the extent to which they compete against those incumbent firms).

5 Other issues

5.1 Introduction

The purpose of this section is to address several disparate aspects of the Authority's proposals. Specifically, in this section we consider:

- Reliance limits
- Reconciliation reporting
- The pioneer scheme, and
- The accounting treatment of upfront customer costs.

5.2 Reliance limits methodology

5.2.1 Introduction

The ENA has requested our assessment of the Authority's proposal to adopt reliance limits. These are limits on the extent distributors can rely on capital contributions for growth capital expenditure.

5.2.2 Authority proposal

The Authority has proposed that distributors will be required to ensure their reliance on upfront contributions does not exceed what it has referred to as 'reliance limits'. The Authority has proposed two thresholds for the reliance limit, namely:[27]

- An **individual threshold** for distributor's whose reliance on upfront contributions in 2024 was above 47% of their growth capital expenditure. These distributors must ensure their connection pricing methodologies are unlikely to result in reliance on upfront contributions exceeding their 2024 level in a typical year.
- A **sector threshold** that applies to all other distributors. All other distributors are required to ensure their connection pricing methodologies are unlikely to result in reliance exceeding 47% in a typical year.

The 47% sector-wide threshold limit appears to have been based on the sector average reliance on capital contributions of 47% of growth capital expenditure over the past four years.[28] This value excludes capital contributions not related to connections and the value of vested assets.[29]

The Authority justifies the proposal on the basis that it will prevent distributors from continuing the historical trend of increasing connection charges.[30] More specifically, the Authority states that the proposal *"Guards against worsening pricing efficiency".*[31] In terms of the efficiency benefits of the proposal, the Authority considers reduced upfront charges are beneficial, while permitting those with low reliance limits to increase their up-front charges. Specifically, it stated:

27 Authority Consultation paper, para 7.88.

28 Authority Consultation paper, para 7.87.

29 Authority Consultation paper, Table 7.1 , page 35.

30 Authority Consultation paper, para 7.80

31 Authority Consultation paper, Table 7.1 , page 35.

> *The reliance limits prevent worsening of efficiency in the near term by preventing distributors with high reliance levels from further increasing their reliance on up-front charges. This will have a number of benefits for connection applicants and consumers including:*
>
> *(a) reduction in up-front charges on networks that had otherwise planned to exceed the applicable reliance limit (including potentially to increase charges to inefficient levels)*
>
> *(b) preserving scope for increases in up-front charges on networks with low reliance levels, to the benefit of existing users. This may be efficiency enhancing for those networks.*

The Authority articulated what it considers are the drivers for the trend in increasing connection charges as follows:[32]

> *We expect the drivers that contribute to this trend will continue in the foreseeable future. These drivers include:*
>
> *(a) growing capital expenditure programmes, including due to connection growth, organic (demand per connection) growth, and asset renewal cycles*
>
> *(b) elevated real and nominal financing costs*
>
> *(c) revenue paths profiled to limit year-on-year movement in consumer bills*
>
> *(d) regulatory incentives to under-spend assumed capital expenditure envelopes*
>
> *(e) exposure to connection volume risk.*

The Authority then goes on to say that there is a risk that distributors manage these pressures by inefficiently increasing connection charges, with the reliance limits mitigating against this risk.[33]

5.2.3 Our Assessment

It is our view that the Authority's proposal to introduce a reliance limit, caping the amount recoverable through upfront capital contributions, is not supported by the evidence provided and is not aligned with sound economic principles.

As noted above, the Authority has expressed concerns that connection charges are too high, having regard to their proportion of growth-related expenditure, and that this proportion may increase into the future. However, no evidence has been presented that demonstrates that capital contributions are indeed set above efficient costs, it has merely asserted that this is the case. Specifically, it has not identified connection charges that are outside the boundaries of the subsidy-free range.

Drivers for increasing capital contributions

There are a range of factors that can cause an increase in the value of capital contributions that are entirely consistent with efficient and appropriate cost recovery. These factors include:

- Increased connection activity
- Higher construction costs

[32] Authority Consultation paper, para 7.81

[33] Authority Consultation paper, para 7.82

- Elevated financing costs, and
- Expanded service obligations.

Notably, the Authority itself has identified connection growth and higher financing costs as key drivers of the observed increases. To the extent these factors are driving higher capital contributions it is not correct to suggest that capital contributions are too high. These are factors that reflect economic realities rather than inefficiencies.

The Authority, however, has suggested that other incentives may be driving an over-reliance on upfront charges. Specifically, it has referred to:

- A desire for distributors to limit year-on-year fluctuations in consumer bills, with the implication being that costs that should be funded by the broader customer base are instead funded by newcomers.
- Regulatory incentives to under-spend assumed capital expenditure envelopes. Again, the implication being that distributors are earning windfall gains through incentive schemes by shifting costs that should be allocated to existing customers to new customers.

It is worth noting that minimising capital expenditure and limiting year-on-year fluctuations in prices are generally considered desirable outcomes under economic regulation. Therefore, to the extent these outcomes are occurring, it is necessary to determine if distributors are responding inefficiently to the incentives they face or not. As indicated above, the Authority has not provided any evidence in its consultation paper indicating that distributors are setting inefficient connection charges in response to these incentives. Therefore, we are unable to comment on whether this is the case or not.

Even if existing incentives encourage distributors to set inefficient connection charges, the appropriate response to this is refining either the incentive regime or providing increased guidance on the approach to connection charging. The latter of these responses is the focus of the Authority's current consultation. Conversely, imposing an arbitrary limit on the total value of capital contributions that distributors can recover is not a solution that is accurately targeted to the problem. The implication being that it has the potential to lead to unintended consequences that are worse than the problem it is aiming to solve.

Benefits of increased transparency on connection charging

Recongising that the Authority is aiming to develop fast-tracked solutions prior to setting in place more substantial policy solutions, we consider that the focus on increased transparency for connection pricing should go a long way in providing confidence that distributors are setting economically efficient connection charges. This is because enhanced transparency obligations would require distributors to demonstrate that their connection charging methodology aligns with economic efficiency objectives that the Authority has set out.

Where distributors refine their charging methodology for connections, and they can identify how they are consistent with promoting economically efficient connections, the Authority should be unconcerned about the actual proportion of capital contributions to growth capital expenditure. If the charging method can be justified as supporting economic efficiency, subject to the level of expenditure also being efficient, economic efficiency will be promoted.

Efficiency implications from the reliance limit

We also note that the Authority's proposal would require connection costs exceeding the reliance limit to be included in the Regulatory Asset Base to ensure cost recovery is maintained. This means these costs would be recovered from the entire customer base. This outcome is inconsistent with economic principles and has several concerning implications:

- Existing customers would effectively subsidise new connections, leading to:
  - Inefficient Price Signals: Electricity prices for existing customers would increase without reflecting the costs they directly impose on the network, distorting signals for efficient network usage.
  - Equity Concerns: Requiring existing customers to bear costs unrelated to their usage raises fairness issues.
- New connections would no longer face charges that reflect the incremental cost of their connection, potentially resulting in:
  - Excessive or Inefficient Connections: Customers might connect even when it is inefficient to do so.
  - Inefficient Location Choices: Customers might choose higher-cost connection locations that they would otherwise avoid if required to pay the actual incremental costs.

This approach undermines both economic efficiency and equity, highlighting significant concerns with the proposal.

5.3 Reconciliation Reporting

5.3.1 Introduction

The ENA has requested our assessment of the Authority's proposed reconciliation reporting framework, particularly its treatment of transmission charges in the revenue calculations. Specifically, we have been asked to evaluate whether the Authority's approach to incorporating transmission charges aligns with the intended purpose of reconciliation reporting.

5.3.2 Authority proposal

The Authority proposes that distributors prepare reconciliation reports detailing incremental cost, incremental revenue, and 'network cost' components of a quoted connection charge. These reports are to be provided only upon request by a connection applicant. Distributors must use standardised methodologies to calculate incremental costs and revenues.

For transmission networks, the Authority suggests:

- **Incremental costs**: Transmission costs are included only for large connections, assuming most connections will not impact transmission costs.
- **Incremental revenues**: Transmission charges are excluded, as connection charges typically do not include a transmission component. However, where a distributor's connection methodology allocates transmission charges, these should appear as part of the 'network cost' component in the reconciliation report.

The Authority defines 'network cost' as a balancing item, representing charges beyond or below a neutral level, intended to reflect contributions to:

- Operating expenditure, other than incremental maintenance costs
- The cost of having established network coverage and capacity
- The cost of renewing network assets, and
- Transmission charges.

5.3.3 Our Assessment

Role for reconciliation reporting

We support the Authority's proposal to require distributors to provide the reconciliation information to connecting customers on request. Requiring distributors to provide this information will motivate them to ensure their connection charging methodology promotes economic efficiency given the scrutiny that customers can place on it with respect to their specific connection. Limiting the obligation to on-request reporting also helps to manage the administrative costs that are imposed on distributors to meet this obligation.

Purpose of 'network cost' element

The inclusion of a 'network cost' element in the reconciliation calculation appears to assume that connection charges will exceed the costs directly attributable to the connection. Specifically, the Authority identifies that this component if for costs that are not caused by the connection, stating:[34]

> *In the reconciliation, 'network cost' is a balancing item representing the amount an applicant is charged beyond, or below, their neutral charge. Conceptually, this represents the applicant's contribution to* ***costs that are unaltered by their connection****, such as:* [list omitted] [emphasis added]

By implication, the Authority is acknowledging that charges beyond the neutral charge are in excess of the costs cost caused by connection, and so will be above what we have identified as an efficient price signal for a new connection.

While this approach appears to be to account for additional charges customers might pay above the neutral point, these are costs that customers contribute to merely by being connected to the network and using electricity on an ongoing basis. It cannot, therefore, represent the contribution above the neutral point. Instead, any payment above the neutral point serves to reduce the ongoing distribution charge for existing customers.

Based on our view that economic efficiency is promoted through customers paying for the incremental costs of their connection, it is our view that it is only the incremental revenue and incremental costs that should form part of the reconciliation and that there is no need or benefit in identifying 'network costs' that should be funded by standard ongoing network charges.

From an economic efficiency perspective, we recommend that reconciliation reports focus solely on incremental costs and revenues. Recognising that these are relevant for an economically efficient signal for network connections. Identifying 'network costs' separately is unnecessary, as these should be funded through standard network charges, not connection-specific charges.

Treatment of transmission costs and revenues

We recommend consistent treatment of transmission charges in the reconciliation framework. Specifically:

- If incremental transmission costs are included in the incremental cost calculation, they should also be reflected in the incremental revenue calculation, and
- If incremental transmission costs are excluded, the corresponding revenues should also be omitted.

[34] Authority Consultation paper, para 2.70.

The current proposal appears inconsistent, as it allows for the inclusion of incremental transmission costs in certain cases without explicitly requiring these to be matched in the revenue calculation. Furthermore, categorising transmission costs under 'network costs' conflates costs attributable to the connection with those recovered through ongoing distribution charges.

A consistent approach ensures clarity and aligns with economic efficiency principles, where connection charges reflect only the incremental costs caused by the connection. Revenues used to recover broader network costs should remain part of ongoing distribution charges paid by all customers.

5.4 Pioneer scheme

5.4.1 Introduction

The ENA has asked us to consider the advantages and disadvantages of mandating a Pioneer Scheme.

5.4.2 Authority Proposal

The Authority proposes requiring all distributors to have a pioneer scheme in place by 1 April 2026. The scheme would require distributors to transfer contributions from connection applications to earlier funders of network connections. These transfers would occur when a connecting party utilises assets that are funded by an earlier connection. While distributors would administer the refunds, they would be financed by the later connecting parties.

Under the proposed scheme a refund would apply if:

- The subsequent connection occurs within 10-years of the original capital contribution
- The original contribution exceeds $30,000 in 2025 dollars,[35] and
- The refund amount is greater than $1,000 in 2025 dollars.

The intent of a pioneer scheme is to mitigate first-mover disadvantages. If a connection requires a costly network extension, the applicant may hesitate to bear the substantial upfront costs of the connection if the extension could later be accessed by other connection applicants without sharing the cost. Since the 'first-mover' would face a much higher charge than later connection applicants, it would encourage the party to delay its application until another party has funded the extension. A pioneer scheme overcomes this issue by ensuring that the first mover is reimbursed by subsequent connecting parties so they it is no worse off than if it had delayed its connection until another party initiated the infrastructure.

5.4.3 Our Assessment

We agree with the Authority that a pioneer scheme can address first-mover disadvantages which may distort investment and impede development of the electricity network. A pioneer scheme ensures that the first connecting party is not left exposed to the full cost of its connection where subsequent connections are anticipated. It ensures that all customers connecting to a new area contribute equitably to the costs of extending the electricity network, which in turn encourages timely and efficient network connections.

[35] Subsequent connecting parties can be treated as a 'pioneer' under the scheme where there pioneer scheme contribution exceeds $10,000.

Additionally, the scheme prevents subsequent connections from free-riding on infrastructure funded by the initial connecting party. This ensures that all connecting parties face appropriate cost signals, including subsequent connecting parties, thereby promoting efficient decisions about the timing and location of connections.

The disadvantages of a pioneer scheme are that it will impose additional administrative costs on distributors that do not already administer a pioneer scheme on their network. The costs involved in the pioneer scheme would be to maintain a database of connection assets, check a new customer's connection against the information held in the database to determine whether the scheme is applicable, determine the size of the rebate if the scheme applies, and facilitate the transfer from the new customer to the pioneer.

The Authority should consider measures to minimise the administrative burden on distributors, who will play a key role in facilitating these refunds. A well-defined and mechanistic approach to the scheme would reduce complexity and ensure smooth implementation.

The Authority has proposed to address the impact on administrative cost of setting *de minimis* requirements below which a refund is not payable. The Authority has also proposed a maximum duration of 10 years for the scheme. These thresholds will reduce the number of customers that would be entitled to receive a rebate under the scheme. It would mean that the pioneer scheme is unlikely to apply to residential and small commercial customers in urban areas but may apply to large commercial customers and industrial customers, and rural connections requiring longer network extensions. In our view, these thresholds will help to manage the administrative burden on distributors.

We also recommend allowing distributors to deduct a reasonable administrative fee from the refund to cover the costs of administering the process. Precedent for such fees exists, including in the Pioneer Scheme implemented in Australia.[36]

5.5 Accounting treatment of upfront customer costs

5.5.1 Introduction

The ENA has asked us to consider the various accounting treatments, or classifications, that can be adopted for the upfront costs that are incurred by customers with respect to a connection. Specifically, it has asked us to consider, in the context of the Authority's methodologies and data reliance, the extent different accounting treatments, or classifications, have for customers.

With respect to connections, there are several ways that the upfront costs of a connection can be accounted for, these include:

- Capital contributions, which are where the distributor undertakes the work or incurs the initial cost and the customer pays for those costs upfront
- Vested assets, which is where a customer relies on a third party to construct the relevant connection assets and then these assets are gifted to the distributor to form part of its network, and
- Infrastructure development contributions (IDC), which are typically where a residential developer undertakes all the works related to a new sub-division. Similar to a vested asset, these assets would then be gifted to the distribution business to form part of the network.

[36] See, for example, Essential Energy, 'Company Procedure: Pioneer Scheme CEOP8020', 18 May 2023, p.4.

5.5.2 Our assessment

The Authority has observed significant variations in capital contributions across distribution networks, with some distributors reporting substantially lower capital contributions than others. One explanation, as acknowledged by the Authority, is that lower connection charges for certain distributors may be attributed to their greater reliance on vested assets. However, it appears that this factor has not been fully accounted for in the Authority's analysis of the status quo and the differences between distributors.

From a customer's perspective, the classification of connection assets—whether as a capital contribution, a vested asset, or an IDC—is immaterial. In all cases, the customer pays an upfront charge related to the costs of their connection. As long as the amount the customer has paid reflects the incremental cost of connection, the regulatory classification is irrelevant. The distinction merely reflects whether the asset was constructed by the distributor or another party. Ultimately, the customer is still bearing the cost of their connection.

Similarly, from a regulatory standpoint, distributors are indifferent to how these upfront connection costs are classified. Whether classified as a capital contribution or a vested asset, such costs are excluded from the RAB because they are already paid for by the customer. This exclusion ensures there is no double recovery of costs. That is, the distributor cannot earn a return on, or a return of, assets funded directly by customers. Likewise, existing customers are not required to contribute to these costs, preventing overpayment and ensuring that distributors do not earn windfall gains.

Given that capital contributions, vested assets, and IDCs are equivalent from both customer and distributor perspectives, it is necessary to treat them consistently when comparing the volume and scale of connection costs across distribution areas. A higher reliance on vested assets in one area does not imply that connections in that area are inherently lower cost, or that there are less upfront connection charges in total, than in areas where capital contributions are used more—and as such more visible in the Authority's data. In fact, the opposite may be true. In an area where a distributor has a lower reported reliance on capital contributions customers it may be that there is a higher amount of cost attributed to upfront connection cost. It is not possible to know this without looking at the facts of the matter.

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