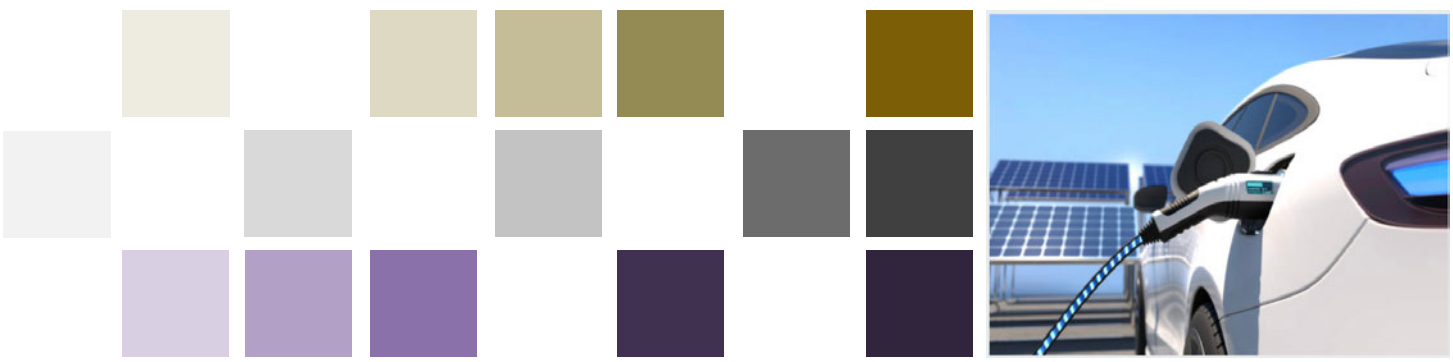
[CONFIDENTIALITY STATEMENT IF REQUIRED]

Review of the Electricity Authority's proposed amendments to Part 6

[redacted]

December 2024



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1.Summary of recommendations

Our general reflection on the Authority's proposals for improving the network connection process is that it lacks ambition. Despite the Authority outlining a bold ambition for Part 6, including a belief that its proposals will "increase the rate of upgrading existing connections and connecting new load, supporting New Zealand's energy transition and decarbonisation"[1], our concern is that it does little to signal to distributors that the regulator expects them to improve their performance across all aspects of the connection process. At worst, it potentially cements the status quo, at least in terms of timelines.

Table 1 summarises our assessment of the Authority's proposals against the principles for network access and pricing Sapere developed for Drive Electric[2]. However, we make a number of general comments:

- **Pre-application process absent**: Primarily, the Authority's analysis was limited to the application process. While one of the Authority's proposals sought to increase the amount of information available to load customers prior to making an application, the importance of the 'pre-application' part of the customer journey we developed in our previous work appears to be largely ignored. Particularly where customers have some flexibility in location (such as charge point operators), improving customers' ability to digitally search and trade off price and capacity, across different potential locations, would materially improve the efficiency of connection.
- **Price and capacity considered independently of each other**: As a more general comment, we continue to see the Authority's treatment of pricing issues occurring separately to access issues. From a customer's perspective, they are intimately connected, as made clear in our previous work. Releasing two separate consultations, developed by different parts of the Authority and with scant reference[3] to each other has failed to address this critical connection. It also appears that future work will also occur on different timelines[4]
- **Lack of clarity in the pricing proposals** – After carefully going through the Authority's distribution connection pricing proposal we are not clear on exactly what the Authority is proposing. We have also gone through the proposed Code amendments and have distilled what we think would be interpreted from those amendments on a 'plain English' basis. Our comments below on pricing are based on this interpretation. However, the proposed Code amendments are ambiguous. We have established our interpretation of the Code amendments, but others are possible, and we are unable to reconcile the Code wording to the Authority's proposal document. Our primary recommendations for the pricing proposal are:
    - that the Authority rewrite the proposal to be clearer on the exact fast track proposals,

[1] 5.151

[2] Batstone, Reeve and Stevenson (2024), "Achieving efficient investment in public EV charging infrastructure", report for Drive Electric, available here.

[3] The only material reference to any connection between price and capacity is para 5.156, which simply acknowledges that CPOs are interested in both capacity and price, but states that this is outside the scope of Part 6.

[4] See para 2.19 and footnote 12 in "Network Connections project: stage one consultation paper".

- edit the Code amendments so that they unambiguously describe what is intended, and
- reissue the consultation.

Table 1 - Sapere access and pricing principles with summary recommendations

Outcome	Principle/deliverable	Sapere recommendation
Clear and predictable commercial framework for access	Ability for connections to evaluate different price, location and capacity options through digital search infrastructure (4.2.1)	**Digital availability of price for different capacity options and location not materially improved by Authority's fast track proposals.** Authority's proposal re: capacity must be strengthened to require information in a digital and geospatial format. As a minimum, Authority to monitor and report improvement of network coverage of information for each EDB.
	Fast track process for applications that meet homogenous connection types (4.2.2)	**Not considered by the Authority's proposals.** Authority to require standards that are developed underpin a fast-track approval process. Connections meeting these requirements would move faster, and with fewer conditions, through Process 4 and Process 5.
	Mandatory maximum response times to provide available capacity and the accompanying pricing for all EDBs (4.2.3)	**Response times on pricing not considered by the Authority.** For access, unreasonable number of extensions with no check on the validity of EDBs' use of extensions. Only 1 extension should be allowed in each part of Process 4 and Process 5
A significant improvement in national consistency	Nationally consistent equipment standards, processes, contract forms and pricing including ability for connecting party to register their Standard Connection Requirements**;** (4.2.4)	Noting concerns about maximum timeframes, new standardised processes should improve national consistency. Connection applications meeting standard connection requirements need to access a faster track through Process 4 and Process 5. Authority pricing proposals move in the right direction **but remain substantially unaddressed.**
Reasonable contracting terms	Standard processes and contract forms to clearly delineate the point where capacity and price move from indicative to binding (4.2.5)	Significant concerns that a distributor can still impose conditions as part of the final application approval, that may not have been raise during earlier phases. **Only addressed by the Authority for access. Not addressed for pricing.**

	Effective avenue to appeal. (4.2.6)	Endorse Authority approach; We have a preference for the default contract model, but this must not remove the right for any load customer to allege a breach of the Code to the Authority.
Maximum use of competition	Ensure that mechanisms under the control of the Commerce Commission and Electricity Authority, which deal with competitive practices, appropriately apply to all connections including for EV charger access. (4.2.7)	Endorse arm's length provisions
	Standards and processes that enable contestability of contractors (4.2.8)	**Not considered by the Authority - Deferred to stage two**
Strong monitoring and oversight of performance	Performance monitoring and national reporting of connection timelines and costs, benchmarked against national or international standards (4.2.9)	**Insufficiently addressed for both timelines and costs.** Monitoring regime weak and unlikely to result in material improvement. For pricing, it is critically important for the Authority to recognise the correct definition of standalone cost for regulated pricing and that connection charges can be too high. Apply a method for monitoring prima facie standalone costs in connection charge reconciliation in the fast track proposal Reporting of timelines and costs needs to be routinely (annually) provided to the Authority. Authority to determine an acceptable benchmark and rate of improvement, and publicly report against this benchmark (similar to ITPs).
Pricing	Clear, transparent, cost reflective and subsidy-free pricing that does not unduly deter efficient investment in charging infrastructure (5.2.1)	Based on our interpretation, the fast track proposals don't meet this principle. Connection enhancement costs should only include network extensions and customer requested enhancements with all deep connection costs recovered only through published network capacity charges
	Access to clear and transparent capital contributions policies with plain-English guides (5.2.2)	Based on our interpretation the fast track proposals do not meet this principle. Implement pricing structures and features that promote consistency and predictability, i.e. the connection charge and network capacity charges described above

	EDBs to provide incentives for smart demand management, and/or lines services (5.2.3)	Accept this is an appropriate first step for the fast track proposal. Needs more focus for the longer term.
	Nationally standardised pricing structures and capital contributions policies (5.2.4)	Based on our interpretation the fast track proposals do not meet this principle. Move more quickly on the efficient pricing formulae, i.e. recommendations under Clear, transparent, cost reflective and subsidy-free pricing and Performance monitoring (standalone cost)
	Nationally consistent first-mover disadvantage framework (that balances hoarding and need for FID; and payment only for capacity requested) (5.2.5)	The pioneer scheme proposed meets the principle but only if the connection pricing is efficient, otherwise the inefficiencies are exacerbated. We recommend that the pioneer scheme is supported in principle but that it is considered unworkable in the short term until connection enhancement costs are limited to only network extensions and consumer selected enhancements

2.Scope

The purpose of this independent report is to:

- Assess the Authority's proposals in "Network connections project: stage one amendments" and "Distribution connection pricing proposed Code amendment" against the Network Access Principles described in "Principles for access: Developing principles for network connection and pricing" and "Achieving efficient investment in public EV charging infrastructure" delivered by Sapere Research Group for Drive Electric.
- Identify any gaps between the Network Access Principles and the Authority's proposals
- Make recommendations as to how the proposals should be amended to eliminate the 'gap'

3. Principles for network connection and pricing

Listed below are the principles, underpinning 5 outcomes, that we believe are needed to deliver a future state where the level and pace of investment in public EV chargers stands the best chance of delivering public EV charging infrastructure that would support, and not constrain, growth in the EV fleet. As shown in the table, some principles apply only to network connection, some only to network pricing, and some to both.

We acknowledge that some of achieving these principles and outcomes require changes to EDB practices (including investment). These will take time to implement. However, our intention is to describe a future state, rather than be constrained by what can practically be delivered today. Regulators should also be future focused, setting requirements that improve the efficiency of the industry rather than accommodating the weakest performers under the status quo.

Table 2 - Summary of Sapere "Principles for Access”

Outcome	Connection, Pricing or both?	Principle/deliverable
Clear and predictable commercial framework for access	Connection	Ability for connections to evaluate different price, location and capacity options through digital search infrastructure
	Pricing	Clear, transparent, cost reflective and subsidy-free pricing that does not unduly deter efficient investment in charging infrastructure. Access to clear and transparent capital contributions policies with plain-English guides, giving confidence that connection costs (including the split between capital contributions and use-of-system charges), have been developed based on a robust economic framework, are cost-reflective and do not unduly deter efficient investment in charging infrastructure. EDBs to provide incentives for smart demand management, and/or lines services.
	Both	Fast track process for applications that meet homogenous connection types
	Both	Mandatory maximum response times to provide available capacity and the accompanying pricing for all EDBs
A significant improvement in national consistency	Both	Nationally consistent equipment standards, processes, contract forms and pricing including ability for connecting party to register their Standard Connection Requirements**;** and regulatory monitoring of performance.
	Pricing	Nationally standardised pricing structures Nationally standardised capital contributions policies.
Reasonable contracting terms	Both	Standard processes and contract forms to clearly delineate the point where capacity and price move from indicative to binding
	Both	Effective avenue to appeal.
	Pricing	Nationally consistent first-mover disadvantage framework [that balances hoarding and need for FID; and payment only for capacity requested]
Maximum use of competition	Both	Ensure that mechanisms under the control of the Commerce Commission and Electricity Authority, which deal with competitive practices, appropriately apply to all connections including for EV charger access.
	Connection	Standards and processes that enable contestability of contractors

Strong monitoring and oversight of performance	Both	Performance monitoring of connection timelines and costs, benchmarked against national or international standards; National reporting, monitoring and independent benchmarking of connection costs

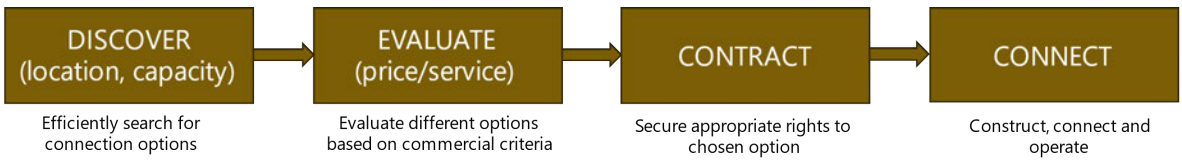
3.1. These outcomes are only being delivered sporadically today

We understand from CPO feedback that the outcomes are only sporadically being delivered today. Based on our previous work, we identified that:

- It is neither routine or easy for CPOs to have access to key network information in a digital format, which would allow them to focus on sites that would likely be favourable for EV chargers. In the absence of this, they must conduct their exploration of network connection options via bilateral discussions with EDBs. CPOs report that these bilateral discussions vary in terms of timeliness between different EDBs;[5]
- EDB connection applications processes vary across the country, and while response times are good in some networks, across the country response times to connection applications are highly variable. Of particular concern is that the final cost of connection is sometimes not finalised until very late in the negotiation process;
- CPOs have little confidence that connection prices are cost-reflective and take into account the risk of deterring efficient investment in charging infrastructure;
- The split between up-front capital contributions and ongoing use of system charges, and the underlying methodology, is often very difficult to understand, and is different for different EDBs;
- EDBs' access or pricing methodologies do not routinely provide clear and efficient commercial incentives to deploy smart charging management.
- EDB approaches to investment in network infrastructure often leaves CPOs with an unreasonable level of cost and risk associated with being a 'first mover';

3.2. The CPO customer journey

To identify the adequacy of the Authority's proposed connection access and pricing proposals, it is important to anchor the assessment around the 'customer journey' associated with a CPO seeking access to the network. A high-level customer journey is shown below.



[5] While we are very encouraged by the dynamic 11kV capacity maps produced by Powerco, we aren't aware of any other networks publishing these and, irrespective, lower than 11kV networks remain largely invisible.

From the perspective of the connecting party (in our case, a CPO), distribution access arrangements include the process by which the various options can be efficiently discovered, evaluated and the best option (from the perspective of the CPO) chosen. This can be thought of as the process by which the CPO establishes the 'business case' to invest in a charging location. Key inputs into such a business case are the potential connection locations in an area, the levels of network capacity that can be secured at those locations, the prices at which that capacity can be secured, and what that means for the customer (EV driver) experience.

While there is quite a lot of detail about EDB's various business processes, the impact of the proposed changes on customers is merely referenced to customers' 'investment decisions'. The reality is that the current state of network access and pricing arrangements effects different parts of the customer journey in different ways. In particular, the 'efficient discovery' part of the customer journey appears to have been ignored by the Authority's consultation paper – it is here that significant effort is currently expended by CPOs as they try to refine their potential options for connection down to the ones that provide the best price and access combination. No customer journey is described, and recommendations aren't anchored around which part of the customer journey is being addressed which risks a poor allocation of regulatory effort. The Authority indicates they want Part 6 to be "consumer centric"; we believe a concentrated effort on understanding the journey that CPOs (and other connecting customers) go through – from their perspective, not the EDB's - would help allocate regulatory effort to the aspects that are causing the greatest inefficiency.

4. Review of "Network connections project: stage one amendments"

4.1. Relevant principles

From Table 2, the relevant principles are:

Table 3 - Principles relevant to network connections

Outcome	Principle/deliverable
Clear and predictable commercial framework for access	Ability for connections to evaluate different price, location and capacity options through digital search infrastructure
	Fast track process for applications that meet homogenous connection types
	Mandatory maximum response times to provide available capacity and the accompanying pricing for all EDBs
A significant improvement in national consistency	Nationally consistent equipment standards, processes, contract forms and pricing including ability for connecting party to register their Standard Connection Requirements**;** and regulatory monitoring of performance.
Reasonable contracting terms	Standard processes and contract forms to clearly delineate the point where capacity and price move from indicative to binding
	Effective avenue to appeal.
Maximum use of competition	Ensure that mechanisms under the control of the Commerce Commission and Electricity Authority, which deal with competitive practices, appropriately apply to all connections including for EV charger access.
	Standards and processes that enable contestability of contractors
Strong monitoring and oversight of performance	Performance monitoring of connection timelines and costs, benchmarked against national or international standards; National reporting, monitoring and independent benchmarking of connection costs

4.2.Gap analysis and Recommendations

4.2.1.Ability for connections to evaluate different price, location and capacity options through digital search infrastructure

Authority problem definition

The Authority defines two problems with a customer's ability to assess capacity options at any given location in the network:

- "limited visibility of network capacity and applications seeking to connect to a network, which can compromise investment decisions."[6]
- "access seekers, such as charge point operators, seek available capacity to connect without having to pay for expensive network upgrades."[7]

Our understanding of connecting customers' needs is that, while avoiding the need for expensive upgrades is ideal, it is not necessarily the goal for all access seekers. Rather, as explained above, their objective is to discover the most efficient tradeoff between price and capacity. This distinction is important, because it underscores the importance of price transparency, rather than just where the cost of network upgrades is zero.

We note that, while the Authority acknowledges that "charge point operators, in particular, seek information on the indicative cost to connect EV chargers to locations on distribution networks. This would complement information on network capacity and enable CPOs to better target their applications, delivering efficiency gains for both CPOs and distributors"[8], it then suggests pricing for load connections is outside the scope of Part 6. While this is true of the current Part 6, the companion consultation paper "Distribution connection pricing – proposed Code amendment" contemplates a new Part 6B which would consider pricing for load connections.

Authority proposal

Proposal C: Require distributors to publish a network connections pipeline for large-capacity DG and load, and provide information on this pipeline to the Authority

Proposal D: Require distributors to provide more information on network capacity: Part 6:

> 6.3(2): Each distributor must publish....
>
> (de) a list, updated on the first business day of January, April, July and October and, where known, of the location and available capacity, including time of use capacity, of zone substation feeders; and
>
> (df) a list, updated on the first business day of January, April, July and October and, where known, of the location and available capacity, including time of use capacity, of low voltage transformers.

This is in addition to recent information disclosure amendments under Part 4, which require capacity and constraint information on zone substations to be disclose in a geospatial format on an annual basis.

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[6] 3.10(a)

[7] 5.222

[8] 5.156

Gap and Recommendation

The need to be able to efficiently search for options is key to the customer journey for a CPO, or any customer that may have some degree of flexibility about where it chooses to connect to a network. Unless a CPO can efficiently discover and evaluate price and capacity for any given location, the ability to make an efficient choice will be constrained the component that has to be discovered through bilateral discussions.

To meet our principle, both price and capacity needs to be digitally available. The Authority's proposed information requirements under Proposal D is an adequate list of information, but appears to contain no requirement for how the list is made available. There is no requirement, for example, that the additional information, while more granular, needs to integrate with the geospatial requirements of the Commerce Commission. Hence this information may be provided in a variety of formats – spreadsheets, pdf files, or word documents – with no national consistency. In fact, the Authority asks that the more granular information would be published "only where it is known"[9]. This provides no incentive for distributors to increase their knowledge of network capacity over and above their status quo efforts. While the Authority argues that these efforts are underway, it offers no evidence of how widespread this is, and appears to rely on the fact that "all distributors will need a thorough understanding of capacity and power quality on their networks if they are to be efficient".

There is a significant missed opportunity for the Authority to lay out its expectations regarding transparency of network information, insofar as it relates to the benefits to access seekers. There does not appear to be any analysis of the quantum of that benefit, and at what point the resulting costs faced by EDBs would be 'too onerous and costly'.

The recommendation should be strengthened to:

- Require that the more granular information be published in a accessible, digital format consistent with the geospatial requirements from the Commerce Commission; and
- The Authority should make it clear that its expectations are that the more granular information is materially improved every year, and monitor this improvement, and display the results on EMI.

4.2.2. Fast track process for applications that meet homogenous connection types

It appears that the development of standardised connection types may be considered as part of stage two of the network connections project. It is not clear to us whether this is what is intended by "connection and operation standards" in paragraph 2.19(c); or whether this is the work being undertaken by the EEA as part of their "Standardisation of technical requirements" (unnumbered figure in para 2.28 EEA: not clear).

Our intent for standardised connection requirements was these would underpin a fast route to connection. The Authority has not provided for a fast-track route in their amendments to Part 6 (Process 4 and 5, see Section 4.2.4 below).

Recommendation

Ensure that any work on developing connection standards includes an allowance for fast tracking connections that meet certain standards. This may require an additional process

[9] 5.227

to be included in Schedule 6.1, or exemptions granted to particular conditions, as explained below.

4.2.3. Mandatory maximum response times to provide available capacity and the accompanying pricing for all EDBs

Authority problem definition

Citing our previous work, the Authority observes that "CPOs face many of the same challenges as large-load consumers including, distributors being slow to engage, long approval times and distributor processes that vary by network. This slows New Zealand's transition to a clean energy future….[the] absence of specific Code requirements means applicants do not get baseline protections, such as **timeframes** for distributors to approve or decline an application, capped fees, the information they require from distributors and 'arm's length' provisions."[10]

Authority proposal

The Authority proposes to introduce new processes into Part 6 that apply to the application process for medium capacity (Process 4) and large capacity (Process 5) load connections.

As with distributed generation, the mandatory timelines consist of:

- Maximum timeframes for EDB responses to the initial application and final application (medium and large loads); and, for large capacity loads, an interm application; and
- The number of time extensions an EDB is allowed.

Summary of proposals A, B and C

	Process 2 DG (10kw to <300kW)	Process 3 DG (≥300kW)	Process 4 load (>69kVA to ≤300kVA)	Process 5 load (>300kVA)
Initial application				
Mandatory initial application fee		✓		
Business days for distributor to process application	40 (otherwise approved)	40 (otherwise approved)	40 (otherwise approved)	40 (otherwise approved)
Application can be resubmitted with conditions		✓		✓
Application entered into network connections pipeline		✓		✓
Interim application				
Maximum time to make interim application*		12 months after initial approval		12 months after initial approval
Business days for distributor to process application (<1MW/MVA) (1MW/MVA to <5MW) (≥ 5MW/MVA)		45, 60, 80 (otherwise approved)		45, 60, 80 (otherwise approved)
Time extensions if distributor reasonably requires (up to 40 business days each)		2		2
Time extensions if grid studies required (up to 40 business days each)		2		2
Application can be resubmitted at no cost		✓		✓
Application entered into network connections pipeline		✓		✓
Final application				
Maximum time to make final application*	12 months after initial approval	90 business days after interim approval/disputes resolution	12 months after initial approval	90 business days after interim approval/disputes resolution
External conditions proposed for final approval		✓		✓
Business days for distributor to process an application (for Processes 3 & 5 = <1MW, 1MW to <5MW, ≥ 5MW)	45 (otherwise approved)	20, 30, 40 (otherwise approved)	30 (otherwise approved)	20, 30, 40 (otherwise approved)
Time extensions if distributor reasonably requires (up to 40 business days each)	2	1	2	1
Time extensions if grid studies required (up to 40 business days each)	2		2	
Applications can be resubmitted with conditions		✓		✓
Distributor to encourage complementary applications		✓		✓
Projects must meet milestones to retain position in network connections pipeline		✓		✓
Application entered into network connections pipeline		✓		✓
*** Distributor has discretion to accept later applications**				

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The timeframes proposed for Process 4 and Process 5 appear to be mirrored from the existing Part 6 requiremens for distributed generation. This is based on the Authority's assessment that "the processing of DG and load applications is similar." We are unsure if

[10] 5.139, 5.147

the Authority undertook any assessment of whether the same timeframes made sense for load customers.

The Authority argue that the proposals are expected to "increase the rate of upgrading existing connections and connecting new load, supporting New Zealand's energy transition and decarbonisation"[11]. It is not clear on what basis the Authority makes this assessment: there does not appear to be any assessment of the existing rate of upgrading connections, or how the timeframes introduced for Process 4 and Process 5 will increase this rate.

Gap and Recommendation

While we do not dispute the load descriptions (69kVA - 300kVA for medium, and >300kVA for large), we are greatly concerned about the potential timeframes for connection, once potential extensions are taken into account:

a) For a medium connection, it could conceivably take 150 business days (7 months) just in distributor processing time, even when no grid studies are required (which we expect should be the case for a medium connection).

b) For a large connection (e.g., 2 or more fast DC chargers) the distributor processing time alone could reach 285 business days, or over a year.

Half of our calculation of potential time in a) and b) is an allowance for the EDB to make maximum use of allowed extensions. This strongly indicates that the process is too permissive to EDBs, or that the threshold between medium and large is too low, or both.

While this is a worst-case analysis, we observe that there is no discipline on extensions sought by the EDB. The processes outlined in Schedule 6.1 only require:

> "*If a distributor seeks an extension of time under subclauses (2) and (3) it must provide the applicant with a notice in writing specifying the reasons why the extension of time is sought*."[12]

There do not appear to be any tests on the reasonableness of the extension, or the time required. In the absence of any justification from the Authority for the need for these extensions, we recommend that only 1 extension of 40 business days should be permitted for:

- Process 4, final applications, if distributor reasonably requires
- Process 5, interim applications, if distributor reasonably requires

We accept that the timing of grid studies may be outside of the control of the distributor.

Further, we recommend restrictions on these extensions of time as part of our fast track proposal. We see no reason why distributors should have to need multiple extensions of timeframes for connections that already meet a set of technical standards. We expand on this in the next section.

[11] 5.151

[12] Appendix 5 cl 11(4)

4.2.4. Nationally consistent equipment standards, processes, contract forms and pricing including ability for connecting party to register their Standard Connection Requirements; and regulatory monitoring of performance

4.2.5. Standard processes and contract forms to clearly delineate the point where capacity and price move from indicative to binding

Authority problem definition

These principles essentially extend many of the earlier principles, but asserts that only when these standards, processes and contract forms are nationally consistent will efficiency be realised for CPOs who operate nationally.

The Authority acknowledge that "wide variation in distributors application processes, which can be challenging for applicants that operate across more than one region"[13] and that the EA wants a Part 6 that "encourages consistent practice by distributors and applicants"[14]. That said, it appears that the standard the EA seeks is "less variation", rather than consistency[15]. The Authority have concluded that "Code requirements are required to deliver a consistent approach for load applicants within a reasonable period of time."[16]

Authority proposal

As discussed above, the Authority has proposed to add application **processes** for medium and large capacity load connections (Proposal B).

The Authority has delegated the development of technical standards to the EEA (see Section 4.2.2)

Finally, the Authority has proposed to add regulated and prescribed terms for load applications to the Code and amend dispute resolution requirements (Proposal F). There are two sets of regulated terms, both of which only apply when applications are made through Process 4 (69kVA-300kVA) and Process 5 (>300kVA):

a) A new Schedule 6.2A which applies to load applicants that are participants under the Act; and

b) A new Schedule 6.2B which applies to load applicants that are not market participants. Schedule 6.2B is likely to apply to the majority of CPOs.

These regulated terms are open to applicants and are thus nationally consistent.

As an alternative to the two sets of regulated terms, the Authority has also considered developing a default contract for connection. This mirrors the existing arrangements for a default distributor agreement (DDA) (typically between a distributor and a retailer) and a default transmission agreement (DTA), between Transpower and a grid-connected party. This would avoid the need to have two sets of regulated terms (as outlined

[13] 3.10(c)

[14] 3.15(e)

[15] 2.27 (b)

[16] 5.153

above), but would rely on private dispute resolution terms rather than the regulated dispute resolution approach outlined below in Section 4.2.6.

Our understanding of Process 4 and Process 5 is that, under the regulated process, the commitment to capacity only becomes binding when the final application is approved (per clause 10 of Appendix 4 and 5 of Schedule 6.1). However, we note that, in giving the final application, the distributor is able to impose "conditions (or other measures) that are conditions of the approval...and what the applicant must do to comply with them...[and] detailed reasons for those conditions"[17]. It appears that these conditions may not be apparent during the interim application phase.

Gap and Recommendation

Noting our concerns about timeframes in Section 4.2.3, Proposal B should result in more national consistency in **processes** for load applications who require connections with a capacity greater than 69kVA.

We outline our concerns and recommendations regarding technical **standards** and a fast-track process in Section 4.2.2. Together with our concern about the ability for distributors to impose addtional conditions as part of their approval of the final application, we recommend that the Authority develop a set of standard connection requirements. If these standards are met:

- Large connections up to 1MW are able to use Process 4 (i.e., no interim application)
- Distributors cannot use any time extensions in Process 4 or Process 5;
- Distributors are unable to impose any conditions on their approval of the final application for either Process 4 or Process 5.

We believe the default contract approach is very worthy of consideration, as there is a number of years of experience in the industry for working with DTAs and DDAs. However, we note that this experience is not automatically available to CPOs who are not parties to DTAs or DDAs.

4.2.6.Effective avenue to appeal.

Authority problem definition

The Authority has noted that "dispute resolution processes could be improved for participants and non-participants"[18].

Authority proposal

As part of Proposal F (see Section 4.2.4), the Authority proposes to amend Schedule 6.3 of Part 6 to extend regulated dispute resolution processes to load customers who are market participants. Load applicants who are not market participants would only have recourse by reporting a breach of the Code through the Enforcement Regulations, or by making a complaint to Utility Disputes.

As outlined above, the Authority is considering, as an alternative to regulated terms, a default contract that would allow for private dispute resolution processes.

Gap and Recommendation

[17] Schedule 6.1, clause 10 (3).

[18] 4.3 (F)

We believe that CPOs will be more familiar with contracts and private dispute resolution processes. However, to make an informed view, we would need to understand the nature of the dispute resolution processes the Authority proposes to include in the default agreement. While it is likely to be more efficient to have a default agreement, it shouldn't remove a connecting party's right to allege a breach of the Code under the Enforcement Regulations 2010 or Utility Disputes.

4.2.7. Ensure that mechanisms under the control of the Commerce Commission and Electricity Authority, which deal with competitive practices, appropriately apply to all connections including for EV charger access.

Authority proposal

The Authority proposes to broaden the existing arm's length provisions of Part 6 (currently applying to distributed generation) to load connections. These provisions require EDBs to provide the same level of service to connecting parties regardless of whether the EDB itself has an ownership or beneficial interest in a related project or service.

Gap and Recommendation

We endorse this proposal by the Authority.

4.2.8. Standards and processes that enable contestability of contractors

The Authority has decided that this issue will be dealt with by stage two of the network connections project[19].

4.2.9. Performance monitoring of connection timelines and costs, benchmarked against national or international standards

Authority problem definition

The Authority outlines its vision for a new Part 6 in paragraph 3.15. One of the 17 characteristics of that vision is that the new Part 6 aspect is that it "enables sector performance to be monitored"[20]. It concludes that "increased scrutiny of distributor performance is required to ensure the sector is operating efficiently and the Code continues to be effective"[21].

Authority proposal

Proposal G: Increase requirements for distributors to keep records on:

> "(a) how long it took to approve or decline initial applications, interim applications and final applications:
>
> (b) the number of and time duration of each extension sought by the distributor:

[19] 2.19(f)

[20] 3.15(p)

[21] 4.3(G)

(c) the number of and time duration of each extension sought by the applicant:

(d) and justification for these outcomes."[22]

Gap and Recommendation

We are somewhat frustrated that the Authority's primary issue with the current arrangements relates to the pressure EDBs are facing to accommodate a higher number of new connections. Nowhere is it mentioned that connecting parties, such as CPOs, have absolutely no transparency over whether the timeframes, costs, and contractual arrangements are 'normal'. This introduces significant uncertainty into the decision making process. The motivation for performance monitoring should be as much about improving distributor performance than it is about obtaining information about the plight of distributors.

We are also disappointed that there is no requirement for EDBs to *routinely* disclose this to the Authority (e.g., annually), and neither does the Authority appears interested in determining whether the timeframes are acceptable relative to international standards, or what the Authority sees as 'good'. There does not appear to be any plan to publish the information so that the relative performance of EDBs can be assessed by connecting parties.

Our recommendation is that the Authority clearly establish expectations for these timeframes (e.g. via international benchmarks) and require that this information is disclosed to the Authority annually and displayed on EMI. This, and the development of benchmarks, could mirror the Authority's reporting of gentailers' internal transfer prices (ITPs).

[22] clause 6 of Schedule 6.1

5. Review of "Distribution connection pricing proposed Code amendment"

5.1. Pricing principles

Pricing principle
Clear, transparent, cost reflective and subsidy-free pricing that does not unduly deter efficient investment in charging infrastructure
Access to clear and transparent capital contributions policies with plain-English guides
EDBs to provide incentives for smart demand management, and/or lines services
Nationally consistent pricing structures and capital contributions policies
Nationally consistent first-mover disadvantage framework (that balances hoarding and need for FID; and payment only for capacity requested)
Strong monitoring and oversight of performance

5.2. Gap analysis and recommendations

5.2.1. Clear, transparent, cost reflective and subsidy-free pricing that does not unduly deter efficient investment in charging infrastructure.

Authority problem definition

The Authority notes that current distribution pricing settings have led to some connection pricing inefficiencies, including an overall trend toward higher connection charges, which risks deterring new connections and weakening distributor incentives to ensure costs are efficient. Where inefficiently high costs result in fewer connections, consumers miss out on the benefits of connection growth, both in terms of higher network cost per connection and less access to the services that growth provides – such as electrification, housing developments and new businesses and services. Weak distributor incentives can lead to more expensive designs and construction costs for network investments which also flow through to higher costs for consumers

The Authority believes there are instances of inefficiently low connection charges and that several distributors have extremely low charges. They note that low connection charges can result in:

i. subsidised connections, making existing customers worse off

ii. an absence of cost-reflective price signals for access seekers, leading to inefficient connection activity, including over-engineered connections, or connections that would not proceed if they had to cover their incremental cost

However, there was no analysis demonstrating that low connection charges are inefficient.

Authority proposal

The Authority is proposing a longer-term scheme that would make distribution pricing substantially formulaic. In the short term they are proposing a set of rules around connection enhancement costs (network extensions – shallow connection, and upstream capacity upgrades) and network capacity costs (costs for upstream capacity existing and new). They are also proposing some limit on costs through the minimum relevant scheme and some limitation on an EDBs ability to rely on capital contributions for development revenue.

The longer-term intentions of the Authority would meet the requirements assuming that the formulae are based on the formulae developed in the fast track proposal. However, the devil is in the detail, and we are concerned at the Authority's apparent bias towards concerns that some connection costs are too low, but none are too high. We think this could be due to misunderstanding the application of standalone costs to regulated networks. If this is the case, and the misunderstanding continues, then costs could still be too high for new connections in the longer term.

Gap analysis and recommendations

Standalone cost - the concept of standalone cost is critical to determining if prices are too high. The EA has used an extremely simplistic definition of standalone cost "the cost of that applicant establishing a dedicated connection to the transmission grid". This leads them to the conclusion "For smaller users, connected at the fringe of the network, the standalone cost is typically very high".

Network pricing for railfreight in the USA has many of the same natural monopoly features as electricity networks and has been debated for around 60 years. These debates have included regulatory policy economics, academic literature, and legal precedent. The fundamental policy position for standalone cost, as applied to regulated pricing, is that standalone cost cannot lock in price uplifts due to the monopoly characteristics of a network.

This means that standalone cost does not necessarily mean the cost associated with common assets or designs that must be practicable (as these would only be required due to the monopoly characteristics of the EDB).

The reason this matters is because the EA is assuming that standalone costs are "typically very high" and are, therefore, not applicable except in some few case. This infers that connection charges cannot be too high for most customers. This has meant that the Authority's short-term focus is on costs being too low. Our full recommendation on standalone cost is in section 5.2.6.

Connection enhancement costs - the fast-track proposal is intended to improve clarity and transparency and, overall, there should be a stronger focus on cost-reflective pricing. The intent is to ensure that costs aren't too low (must exceed incremental, i.e. be subsidy free). However, costs can still be too high. There could still be some inconsistency in individual EDB approaches due to learning curves and experience. Clarity and transparency has been negatively affected overall by confusing, and apparently contradictory, wording within the proposal and from the proposal to the proposed code amendments.

The wording is so confusing that we have had to change our view on what the proposal intends and what the code amendment states many times. Our final conclusion is that nothing changes with respect to what EDBs can charge for connection in the fast track proposal. The only limit comes from not allowing EDBs with capital contributions that are higher than the industry average, relative to capital expenditure, to increase capital

contributions further. However, the Authority expects, and pretty much encourages EDBs that have low capital contributions to increase them. The Authority intends that capital contributions will increase over the industry as a whole.

As the proposed code amendments make little attempt to control the upper limit on costs, we do not consider that the proposed connection enhancement will improve pricing efficiency. Despite the wording that any connection works must be the minimum relevant scheme cost, as the EDBs still determine what those connection works are and the minimum relevant scheme design is at their discretion, this is a meaningless addition.

Network capacity costs - the logical way to think of network capacity costs, based on the wording in the proposal and the description of the Australian scheme, is that the application of network capacity costs would replace any upgrade costs of connection enhancement. However, the Authority is going to allow EDBs to charge both. Our assessment is that the proposed code amendment would explicitly allow double costing, i.e. a new connection could pay for network upgrades though the network enhancement costs and then also pay network capacity charges, which include existing and new capacity. Despite the proposal saying "In effect, this means all connection applicants are charged on a consistent basis for the consumption of network capacity. This contrasts with a project-based approach where costs are only allocated to an applicant who triggers a capacity upgrade." This statement is incorrect and misleading. The Australian model is not able to be hybridised in this way. You either charge incremental network upgrades explicitly, or you charge network charges that includes the marginal cost of new capacity, you don't do both.

For all the confusing and exhaustive wording, the Authority has just endorsed the status quo of current connection charges. Even the reliance limits on capital contributions still allows every EDB to, at least, do what they currently do.

There is some positive progression in the fast-track proposals, although these measures make little short-term difference. They do potentially set EDBs on a path to formulaic and transparent connection pricing. The major problem is that there is no limit on overcharging new connections and EDBs with low capital contributions may increase them, raising capital contributions overall. However, how quickly this could be done is limited as EDBs need time to adjust other charges to avoid breaching their regulated revenue cap.

We recommend that the Authority immediately modify the connection enhancement cost and network capacity cost to a full implementation of the network capacity charging method only for deep connection (the Australian method).

There is little reason why the Australian method for connection could not be advanced quickly. Allowing for connection enhancement costs to only include network extensions and customer requested enhancements with all deep connection costs recovered through network capacity charges would lead to more efficient prices, far greater consistency, and more accurate pricing than the proposed connection enhancement cost in the fast track proposal.

Basing network capacity costs on historical data relating to actual increments of supply, common costs, and forecast level of capacity headroom down to the level of resolution proposed by the Authority will give more efficient connection charges overall. Identifying the correct balance (based on remaining capacity overhead) of average and marginal network costs with a reasonable allocation of common costs is highly likely to exceed incremental cost by a reasonable amount. This method is pragmatic and has the following significant advantages:

- Administratively cheaper,
- Lower search and transaction costs,
- Greater clarity and transparency,
- Truer network pricing rather than only costing,
- Greater measurability and, therefore, accountability, and
- Greater national consistency (assuming a national formulaic approach).

5.2.2. Access to clear and transparent capital contributions policies with plain-English guides.

Authority problem definition

There are large inconsistencies between distributors in how they set and communicate connection charges. This increases costs for connecting parties and discourages new connections and growth on the network which could have resulted in lower costs to all users. There is also inconsistent up-take of pricing structures and features that promote consistency and predictability.

Authority proposal

Arguably clear and transparent capital contribution policies are a long-term objective of the Authority. The long-term intent is to make all costs formulaic, which should then make it straightforward to have plain-English guides, but this is not an objective of the Authority.

The proposed fast track amendments don't really meet, or directly address, this criterion.

Gap analysis and recommendations

The proposal allows EDBs, at their discretion, to charge for incremental costs explicitly or through a combination of network extension costs and network capacity costs, or all of the above, although the code wording isn't clear on this point. The EDBs can also elect to have posted network extension costs.

Each connection enhancement cost (capital contribution – which can include network capacity upgrades) can be a bespoke design. Even though this design must be the minimum relevant design it could still make the capital contribution approaches of some EDBs non-transparent.

The obvious recommendation is for the Authority to move quickly to implement pricing structures and features that promote consistency and predictability. The best way to do this is the early adoption of the Australian method (see section 5.2.1). Network capacity prices will greatly improve transparency and consistency, and restricting capacity enhancement charges to only network extensions and consumer selected enhancements will make the minimum relevant scheme design more useful.

5.2.3. EDBs to provide incentives for smart demand management, and/or lines services.

The Authority hasn't explicitly considered this principle but does include the facility for an EDB to provide a flexible design where a new connection can potentially manage

capacity to get a cheaper connection. This is part of the minimum relevant scheme, where the new connection can potentially choose the minimum cost scheme that meets the flexible capacity requirement. However,

- it is up to the applicant to determine what they request in terms of flexible response
- the EDB decides whether this is feasible. If they do decide it's feasible it must be the minimum cost for the feasible design
- it is not clear that an agreed management approach to the new connection's peak demand would also flow through to the application of Network Capacity Rates.

This probably an appropriate first step for the fast track proposal. However, the Authority hasn't outlined any longer term objectives for this principle.

5.2.4. Nationally consistent pricing structures and capital contributions policies

The Authority has not explicitly considered these principles either in their fast track approach or the longer term plan. However, various initiatives throughout should improve consistency, e.g. minimum cost design for connection. There is a set pricing methodology for the connection charge reconciliation, set guidance on other aspects of the measures (e.g. pioneer schemes), and set parameters for pricing methodology inputs.

The longer term developments are intended to make pricing substantially formulaic and converge on the recognised approach to efficient pricing. While this isn't explicitly about making pricing and capital contributions nationally consistent it should facilitate that outcome.

5.2.5. Nationally consistent first-mover disadvantage framework (that balances hoarding and need for FID; and payment only for capacity requested)

Authority problem definition

For some reason this is not mentioned in the problem definition section even though the prioneer scheme proposal is one of the key fast track initiatives. Under the pioneer scheme proposal the Authority outlines that a pioneer scheme helps mitigate first-mover disadvantage – ie, the high-cost burden that the 'pioneer' connection applicant faces if their connection requires a costly network extension that could later be accessed by other connection applicants. If the first-mover, or 'pioneer', faces a much higher charge than later connection applicants, this can encourage the pioneer to delay their application until another party has funded the extension. This is an example of an applicant's 'position-in-queue' determining their charge, leading to coordination challenges that distort the timing or suppress the number of connections.

The Authority also considers that pioneer schemes are particularly relevant for networks that serve rural areas. In these areas, a new connection can require a network extension that, even when built to the minimum practical capacity, could accommodate additional connections in the future.

Authority proposal

The Authority is proposing a workable scheme that could compensate the first mover for network extension capacity, and subsequent connecting parties, so that if further connections do connect to that network extension, then the 'pioneers' get a rebate. There are cost limits that will be applied to restrict the size and participant in a pioneer scheme so that the pioneer schemes don't become inefficiently numerous and unwieldy.

While the pioneer scheme proposed is workable in practice, unfortunately, the term 'connection works' is used instead of 'network extension' which means that the pioneer schemes can include upstream capacity upgrades. This is a prime example of the Authority's confusing wording between various parts of the proposal and the proposed code amendment.

Gaps analysis and recommendations

The first-mover disadvantage framework is being called pioneer schemes in the proposal and proposed code amendment. The pioneer schemes proposed would meet the principle if, as we think should be the case, connection enhancement costs and pioneer schemes apply only to genuinely incremental investment. However, in our view the proposed code amendments don't limit connection enhancement costs, and so the first mover could easily be paying in excess of standalone cost.

As the connection enhancement costs, and pioneer schemes, could include costs on new connection that exceed incremental cost, and potentially also exceed standalone cost, the pioneer scheme doesn't achieve what is intended. It is important to note that this isn't because of the pioneer scheme concept proposed per se, but because of the lack of clear cost control on connection enhancement costs, and particularly in the proposed code wording.

We recommend that the pioneer scheme is supported in principle but that it is considered unworkable in the short term until connection enhancement costs are limited to only network extensions and consumer selected enhancements (see section 5.2.1).

5.2.6.Strong monitoring and oversight of performance

Authority problem definition

The Authority notes that there is difficulty resolving disputes as connection applicants encounter a range of practices and can find it difficult to understand whether quoted charges are reasonable. Applicants may not always have clear and complete requirements against which they can raise a dispute, and often do not have access to low cost dispute resolution outside bilateral negotiation with the distributor.

There is no explicit statement around monitoring in their problem definition, but monitoring is one of the Authority's fast track proposals.

Authority proposal

The Authority has two fast track proposals related to monitoring and oversight:

1. Pricing disputes
2. Connection charge reconciliation

Pricing disputes - there is going to be an opportunity to dispute an EDB's charges. The proposal is to modify Schedule 6.3 (the default dispute resolution process).

Connection charge reconciliation - the Authority is proposing to move a step forward with monitoring by requiring EDBs to produce connection charge reconciliations. These

reconciliations can be requested by the connecting applicant and the Authority can ask for aggregate reconciliations based on the Authority's chosen groupings.

There is also a formulaic assessment of future use of system charges and so the reconciliation does include an assessment of total cost of connection and ongoing cost. Although, the forecast period for assessing use of system charges might be limited to the remaining years in the current regulatory pricing period, this point isn't clear.

The point of the reconciliation is to establish the amount by which connection charges exceed net incremental costs (i.e. incremental costs less incremental revenue). The implication being that connection costs can have an extra allocation of network costs even though there are also network costs in use of system charges and in network capacity charges.

Gaps analysis and recommendations

Pricing disputes – adding connections to the Part 6 dispute process would, with the fast track proposals as they are, have the same problems distributed generators have with that dispute process. Customers of EDBs would lack the information to make an informed complaint and would not have the resources to make an informed complaint. There is also such broad use of terms that often overlap and are favourable to EDBs, that complaints are unlikely to be upheld.

Again, this isn't because the proposed disputes process is inherently unworkable but because there isn't enough control on EDB cost and potential improvements to transparency have been compromised. We would recommend the proposed dispute process if our recommendations are adopted.

Connection charge reconciliation - the calculation of the incremental costs, for the purpose of the connection charge reconciliation, strongly implies that only network extension costs and customer selected enhancements of the connection enhancement costs are incremental. Commensurately, the incremental cost formula also implies that network capacity costs are only incremental costs but, again, this is far from clear in other clauses. Our interpretation is that network capacity costs aren't strictly incremental costs, and so incremental costs will be overstated. However, a simplified and formulaic approach to the reconciliation is better for transparency and comparison. At least the derivation and composition of network capacity costs will be published.

The Authority has no controls on the costs to individual connections based, we think, on a flawed definition of standalone costs for regulated pricing, which is the theoretical upper limit on costs. The focus of the connection charge reconciliation is on ensuring connection charges aren't too low.

Therefore, the critically important recommendation is for the Authority to accept a better definition of standalone cost and that connection charges can be too high. We would also recommend that a method to apply a prima facie standalone cost test to the connection charge test can also be achieved in the fast track proposal.

Standalone cost definition

The most urgent thing the Authority should do is accept that its definition of standalone cost in its proposal paper is incorrect for regulated pricing purposes.

Mayo and Willig (2018) analyse the effectiveness of price regulation for US rail-freight.[23] Rail freight has many similarities to electric power systems that create monopoly

[23] Economic Foundations for 21st Century Freight Rail Rate Regulation, John W. Mayo and Robert D. Willig (November 2018).

characteristics. Rail freight also has the same challenges as other monopoly regulation in that regulated prices must achieve certain economic criteria such as ensuring revenue adequacy, maximising social net benefit, being free from subsidy, etc. Mayo and Willig (2018) states:

> The standard for regulatory "reasonable" rates that has the requisite economic properties is based on stand-alone cost - the cost that would be incurred by a hypothetical efficient de novo rail carrier to provide the service or services at issue. Formally, consider a customer or group of customers purchasing a set T of services with quantities given by the vector yT from among a possibly larger set of N services offered by the supplier in quantities given by the vector yN. The stand-alone cost of serving the customer (or group of customers) is the total cost that would be incurred by an efficient supplier of yT were it to produce only those services without simultaneously producing any other services or additional quantities of any services included in T. Under the standard for regulatory "reasonable" rates based on standalone cost, or the "stand-alone cost test," the prices a customer is asked to pay are "unreasonable" if the revenues they generate from the customer exceed the stand-alone costs of the services the customer is to be provided.

Mayo and Willig (2018) further clarify that:

> Properly calculated stand-alone costs are determined from a long-run, forward-looking perspective. This follows since they represent the costs that a new entrant into the relevant market would bear, with no preset rigidities and with the ability to choose the current best available technology and the most efficient inputs.

The 'no preset rigidities' is important here. Standalone cost is intended to exclude not reinforce monopoly characteristics. Therefore, practical barriers to alternative supply, such as resource consents, route access and easements, are not to be considered as barriers to a theoretical alternative supplier (although the reasonable cost for such access is included). The Authority has already accepted this premise in transmission pricing, from clause 134(2) of Part I of Schedule 12.4 of the Code (Transmission Pricing Methodology):

> The alternative project is technically feasible even if it is not feasible to obtain any or all of the necessary resource consents and property rights for the alternative project, provided that the alternative project is technically feasible in all other respects. In calculating the alternative project costs, Transpower must use estimates of the likely cost of obtaining any resource consents and property rights that are not feasible to obtain based on the cost of obtaining broadly equivalent resource consents and property rights for feasible activities in feasible locations.

Prima facie standalone test for connection charge reconciliation

This means there is a way of applying a prima facie standalone cost test consistent with the connection cost reconciliation method. If the Authority was to establish current rates of construction and operation of increments of lines capacity with the same categorisations as applied for the network capacity costs, then this prima facie standalone cost can also be included in the connection cost reconciliation reporting. While this standalone cost assessment isn't necessarily correct it will indicate if costs are approaching or potentially exceeding standalone cost. Investigating this should be a matter of urgency for the Authority.

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