

Distribution Network Access for Public EV Chargers – Overview and Options

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1. This note was prepared by Concept Consulting for Drive Electric and its members. It provides an overview of the regulatory context for access to distribution networks and high-level thoughts on regulatory or government interventions that could improve access. It is intended to support engagement by Drive Electric with its stakeholders and government, including by helping to identify areas to explore for future solutions.

Summary

2. Key points are:
 - a. decarbonisation is driving a step-change in activity for the electricity sector after years of relative stability. Rapidly expanding public charging point coverage and capacity is a key enabler for transport electrification and distribution network access is an essential input. Adapting to this dramatic intensification of demand will likely require changes in regulation, business practices, and resourcing for most distributors.
 - b. distributors can choose what portion of connection costs they recover through up-front payments (capital contributions). The balance is pooled with the distributor's other costs and recovered over time through use of system charges.
 - c. requiring higher capital contributions:
 - i. places a higher cost burden on access seekers (versus other customers)
 - ii. reduces a distributor's cost recovery risk (if price controlled)
 - iii. weakens a distributor's direct incentive to ensure connection costs are efficient.
 - d. the IM review process currently underway could adjust settings to reduce the cost recovery risk. The Commerce Commission could also have a view on overly aggressive capital contribution policies, because they shift costs outside of regulatory control
 - e. otherwise, the Electricity Authority oversees pricing arrangements (including capital contribution policies). The Authority recently signalled an intent to review capital contribution practices.¹ So far, the Authority has opted to *influence* pricing (through letters, principles, practice notes and scorecards) rather than regulate
 - f. the Authority also oversees network access arrangements. These include a regulated access regime for distributed generation (DG), with a more hands-off approach for other access seekers. The Authority recently signalled an intent to review this approach²
 - g. an access regime could cover matters such as the network information available to access seekers, application process requirements, processing timeframes, application fees, dispute resolution, etc. This would improve national consistency and could make access quicker and easier
 - h. an access regime could also ensure distributors do not overly restrict who can carry out connection work. Improving contestability for connection work could reduce costs and lead times. The Commerce Commission may also have an interest in this issue

¹ Electricity Authority, 19 September 2019, *Open Letter to Distributors*. Refer focus area two. [Letter-to-distributors-re-pricing-September-2022_w2bVZa1.pdf \(ea.govt.nz\)](#)

² Electricity Authority, December 2022, *Issues paper: Updating the regulatory settings for distribution networks*. Refer Part 8 (DER Standards). [Long-form report \(ea.govt.nz\)](#)

- i. monthly ‘use of system’ charges recover a distributor’s regulated revenues, which include cost recovery for the portion (if any) of connection costs not recovered through capital contributions. All costs are pooled, then allocated to consumer groups and to tariff components
- j. distributors typically treat charging installations as part of a ‘general’ non-residential consumer group. Distributors could create a consumer group for charging installations, which would allow cross-subsidy issues to be addressed at an aggregate level and would enable ‘smart’ tariffs that reward flexible demand. This could result in lower costs for charging providers and other electricity users.

Background context

3. The Commerce Commission is the economic regulator for monopolies, including electricity distributors (and Transpower). Their regulation covers matters such as:
 - a. revenue caps that aim to ensure distributors recover no more than their efficient investment and operating costs
 - b. efficiency incentives that encourage distributors to out-perform regulatory allowances, and also share cost overrun risk with consumers
 - c. associated network quality standards that aim to ensure efficiency gains are not at the expense of compromised reliability
 - d. annual information disclosures that require expenditure, profitability, and asset management information to be made publicly available in a standardised form.
4. Certain consumer-owned distributors are exempt from the first three items, and only subject to information disclosure. The rationale is that owner and end user incentives should be well aligned for those businesses. The exempt distributors are shown below, and there are 17 businesses subject to full “price-quality” regulation.

Consumer-owned electricity distribution businesses (EDBs)

The following EDBs meet the criteria in the Commerce Act to be considered as ‘consumer-owned’ and are exempt from price-quality regulation:

Buller Electricity Limited	Northpower Limited
Centralines Limited	Scanpower Limited
Counties Energy Limited	The Power Company Limited
Electra Limited	Waipa Networks Limited
Mainpower New Zealand Limited	WEL Networks Limited
Marlborough Lines Limited	Westpower Limited
Network Waitaki Limited	

Source: [Commerce Commission - Consumer owned electricity distribution businesses](#)

5. The Commerce Commission is also the economy-wide regulator overseeing competition issues (market power and collusion) and consumer issues (for example, fair trading).
6. The Electricity Authority is the electricity sector regulator. It oversees the wholesale market, system operation, retail, small consumer protection, and aspects of network regulation not covered by the Commerce Commission. The areas of network regulation that it oversees include:
 - a. pricing – while the Commission regulates the ‘size of the pie’, the Authority oversees how target revenue is allocated between consumer groups and how prices are structured (for example, between capital contributions, fixed charges, and usage charges)

- b. network access – for example, any rules governing connection processes and commercial terms for access seekers or retailers.
7. Both regulators are Independent Crown Entities – meaning their decision making is independent of ministers and government departments. However, both agencies interact with government regarding their funding and wider policy matters.

Capital contributions reduce recovery risk for distributors

8. Forecast connection costs are an input to revenue caps for revenue-controlled distributors. Connection costs are difficult to predict, so distributors risk under recovering their costs if their forecasts are too low.³ Regulated connection costs are net of capital contributions, so requiring capital contributions reduces this cost recovery risk.
9. Distributors are required (by the Commerce Commission) to publish capital contribution policies, and to forecast connection costs consistent with their policies. However, they can adjust their policies at any time and policies can provide case-by-case discretion. While most distributors do publish capital contribution policies, many do not provide all the information needed to fully comply with their obligations.
10. Expenditure incentives reward a distributor for under-spending forecast expenditure. The current incentive rate is 24% so that, for example, if a distributor can reduce its costs by \$100⁴ then it will get a one-off \$24 (before tax) improvement in its profit.⁵ This can reward distributors for shifting cost recovery toward capital contributions (and away from their regulated expenditure).
11. More fundamentally, expenditure incentives are symmetric and help reduce cost recovery risk – i.e., a distributor bears 24% of any cost overrun and passes through 76% under current settings.
12. Capital contributions can also mitigate prudential risk for distributors. If a connected party fails to pay its annual charges, then under-recovery can (up to a limit) be ‘washed-up’ into future years and allocated across customers – substantially mitigating prudential risk. However, if a customer exits and the distributor’s assets become stranded, then the distributor risks not recovering the full cost of those assets.⁶ Payment of a capital contribution also provides a distributor with comfort that the access seeker is committed and has a stake in seeing their project through to completion.
13. Exempt distributors have more flexibility to adjust their target revenue, so cost recovery and prudential risks are less of a driver. However, exempt distributors will usually set revenues with reference to the methodologies used by controlled distributors.

Capital contribution policies vary in the burden they place on access seekers

14. Typical capital contribution policies are summarised below. The first two options are the most common:
- a. **100%** – the connecting party pays full cost up front. This eliminates financial risk to a distributor of under-forecasting connection costs (i.e., because regulated cost is zero). However, it shifts the financing burden and cost uncertainty to the connecting party. This policy also denies the distributor any return on the assets but may be acceptable to a risk-averse lines business that is focussed on mitigating downside risk. This policy also

³ Or over-recovering if the Commerce Commission approves a forecast that is too high.

⁴ For example, by increasing the share of a project’s costs that are recovered through capital contributions.

⁵ Distributors vary in their preferences regarding this outcome (effectively a higher return against smaller investment) versus gaining a lower (but stable) return on a bigger asset base.

⁶ This risk is less acute for reusable assets (such as transformers).

removes any direct financial incentive on distributors to ensure connection costs are efficient, because they become in effect a ‘pass-through cost’. Under this policy, the connecting party still pays distribution tariffs (that contribute to common asset and operating costs), so they may in some circumstances end up cross-subsidising other customers.⁷

- b. **maximum investment value** – the distributor sets a limit on costs it will cover, above which a capital contribution is required. The distributor’s per-connection forecasting risk is capped, leaving them exposed to volume risk only.⁸ Under this model, both customer and distributor share in financing the connection and share cost uncertainty (to some degree). There is less likelihood of the connecting party cross-subsidising other customers.
- c. **standard charges** – here the distributor sets a fixed charge for common types of connection. This provides certainty to connecting parties. The financing burden is shared between the customer and distributor, with the distributor carrying the risk for cost overruns (and hence having a strong incentive to ensure costs are efficient). Standard charges are typically used for routine, high-volume connection types (such as a standard house connection).
- d. **formula-driven** – the distributor sets capital contributions case-by-case using a prescribed calculation methodology. Calculations will usually consider upfront and ongoing costs, then offset these with forecast use of system charges. This approach provides transparency and balances risk and incentives but can be complex and difficult to predict.

2023 is a key year

15. The Commerce Commission is currently reviewing its distribution sector input methodologies (IMs). IMs prescribe asset valuation, cost allocation, risk allocation (between supplier and customers) and financial return settings. The review started in 2022 and a final decision is due in December 2023. The last IM review was in 2016, so decarbonisation is a hot topic for the current review.⁹
16. Decarbonisation both increases forecast uncertainty for distributors and increases the economic consequences of settings that expose distributors to under-recovery risk – i.e., because under-funded distributors are less able to accommodate rapid transport and process heat electrification. Two options that have been discussed as part of the review process are:
 - a. lowering the incentive rate for connections – this weakens the reward for outperforming forecasts (including through efficiency gains) but also reduces the cost recovery risk should connections outpace forecast. This would soften a key driver for aggressive capital contribution policies
 - b. connection cost reopener – alternatively, the Commission could provide for connection allowances to be reopened if connection demand is stronger than forecast. This is a more administrative and ‘by exception’ way to address cost recovery risk.

⁷ Technically, cross subsidy occurs in this situation if a connecting party pays more than it would cost if they had a standalone connection to the national grid. While this outcome is unlikely, 100% policies can nonetheless place a disproportionate cost burden on access seekers.

⁸ In other words, a distributor may under-recover if the number of new connections is higher than forecast but not if the per-connection cost is higher than forecast.

⁹ The Commerce Commission must review IMs at least every seven years. Any changes do not take effect until the next control period. For distributors, then next control period starts in 2025.

17. Similar options could also work for system growth expenditure, which is investment to increase network capacity (including due to growing connections, and growing demand per connection).
18. All distributors forecast capital and operating expenditure in their annually updated asset management plans (AMPs). For controlled distributors, AMP forecasts set the baseline for regulated expenditure, which feeds into revenue cap calculations. AMPs published in 2024 will inform the 2025 to 2030 default price-quality paths (known as DPP5).
19. The Commerce Commission is also reviewing information disclosure requirements for distributors. The Commission completed the first part of this work in 2022 and has introduced requirements for distributors to describe their “practices for connecting consumers,” “approach to planning and management” of new connections, “approach to planning and managing communication with consumers” about new connections, and “commonly encountered issues, delays, and potential timeframes for different connection types.”¹⁰ The Commission is working on a second phase that focusses on how distributors are preparing for decarbonisation.

The Electricity Authority also has a key role

20. While the Commerce Commission sets revenue caps and ID requirements, the Electricity Authority oversees pricing methodologies and network access arrangements.
21. Connection costs that are not recovered through capital contributions are recovered through use of system charges (i.e., annual tariffs). Typically, these costs are pooled and allocated across all customers. To date, the Authority’s oversight of distribution pricing has focussed on use of system charges rather than capital contribution policies.

Capital contribution policies have incentive effects

22. Capital contributions can have a role in incentivising connecting parties to size their connections efficiently, and in reducing the risk of cross-subsidy.
23. Cross-subsidy occurs when a connecting customer pays less than the costs they individually add to the network – noting that any such assessment should consider both up-front capital contributions and ongoing use of system charges.
24. New connections typically involve building new dedicated connection assets and can involve upgrading shared assets deeper in the network. Distributors vary in how aggressively they allocate shared asset upgrade costs to access seekers.
25. Fully allocating shared asset upgrade costs to access seekers can result in unpredictable (and very high) capital contributions that may dissuade new connections. As with direct connection costs, this type of “exacerbator pays” policy eliminates cost recovery risk for distributors and can remove incentives for distributors to ensure upgrades are efficient. This approach also shields existing customers but risks imposing cross-subsidy (or disproportionate cost allocation) on access seekers.
26. We understand that some distributors have started adding a system growth surcharge to their capital contributions. This approach transfers even more cost burden to access seekers, while further de-risking regulated recovery. A transition to this type of approach could also enhance profits temporarily (as incentive settings reward outperformance against historical forecasts that assumed a less aggressive policy).

¹⁰ [Commerce Commission - Targeted information disclosure review for electricity distribution businesses \(comcom.govt.nz\)](https://www.comcom.govt.nz)

27. At the other extreme, fully shielding access seekers from upgrade costs means costs are recovered as regulated revenues via use of system charges. This can expose distributors to cost recovery risk (because upgrade costs are difficult to forecast)¹¹ and leaves access seekers with no financial incentive to connect in locations that won't trigger upgrades.¹²
28. Some distributors' policies partially rebate capital contributions made by 'first movers' if another party subsequently connects within a set period.¹³ This type of 'reassignment' policy mitigates a source of 'first-mover disadvantage' by ensuring the benefits of efficient asset use are shared with the first mover, rather than being enjoyed only by subsequent movers.
29. The Electricity Authority recently revised Transpower's pricing arrangements to mitigate first mover disadvantage issues in the transmission pricing arena and has indicated it is currently assessing first mover disadvantage issues for customers connecting to distribution networks.¹⁴

Smart tariffs can help optimise costs

30. Tariffs allow distributors to recover revenues for the shared network, as well as any connection asset costs not recovered through capital contributions. Distributors pool their revenue requirements and assign them to network users by class – residential, commercial, generation, etc. In other words, outside of capital contributions connection asset costs are not ring-fenced and are not allocated directly to the connected party.
31. Traditionally, tariff design has focussed on allocating target revenue to customers using broad-based allocators aligned to network usage – mainly flat \$/kWh charges with some \$/kW rates (typically for commercial users) and fixed charges – with the primary goal of fairly allocating the cost burden across users.
32. The Electricity Authority's distribution pricing principles¹⁵ now encourage distributors to price more 'cost-reflectively' meaning that prices should encourage efficient use of the network, typically by signalling the potential costs of future network upgrades. In response, distributors are increasingly moving to pricing that encourages consumers to move usage away from peak periods (for example, time-of-use tariffs).¹⁶
33. Some distributors have developed tariffs tailored to suit consumer groups that do not fit well within more generic pricing categories – for example, irrigators. We understand that distributors have not yet pursued this option for public charging installations.
34. If distributors did create (one or more) consumer groups for public charging installations, they could:
 - a. design 'smart' tariffs that reward providers for designing and operating their installations in a way that reduces pressure on the network
 - b. deal with cross-subsidy at an aggregate level, being more tolerant of overs and under at an individual installation level
 - c. manage tariffs in a way that improves predictability for charge point investors.

¹¹ Noting that costs must be forecast many years in advance. For example, distributors will be forecasting these costs later this year for revenue paths that will apply until 2030.

¹² Noting access seekers may still prefer to avoid the lead time involved in upgrade projects.

¹³ Periods of five or 10 years are common, with one distributor providing 15 years.

¹⁴ [Letter-to-distributors-re-pricing-September-2022.pdf \(ea.govt.nz\)](#)

¹⁵ [Distribution pricing – Electricity Authority \(ea.govt.nz\)](#)

¹⁶ [Distribution Pricing Scorecards 2021 \(ea.govt.nz\)](#)

An access regime could improve pace and consistency

35. The Electricity Authority also oversees distribution network access rules, but these only apply to distributed generation (DG) at present. The DG access rules were developed to address similar challenges to those experienced by public charging operators now.
36. The DG access rules cover matters such as:¹⁷
 - a. application processes and timeframes
 - b. access terms and dispute resolution
 - c. application fee limits
 - d. a requirement to charge at the lower end of the subsidy-free range.
37. Compliance with DG access rules is also enforceable, including through access seekers being able to allege a breach of the Electricity Industry Participation Code.¹⁸ Breach allegations are managed by the Electricity Authority and a dedicated Rulings Panel.
38. For other access seekers, distributors are free to develop their own access regimes, but are required to publish their requirements. As mentioned above, the Commerce Commission has recently decided to expand the information that distributors must disclose about their practices.
39. The Electricity Authority recently consulted on whether it should expand network access rules to cover what it terms ‘distributed energy resources’, which can include controllable electric vehicle chargers.¹⁹ There could be a case to instead treat public chargers as a distinct user class with its own access rules given its unique characteristics and role in decarbonisation.
40. Other matters that access rules could potentially cover include the information the distributors make available to assist access seekers, and the restrictions distributors place on who can carry out connection work (or what equipment can be used).
41. Access rules would not ‘magic away’ the resource constraints and other challenges that distributors face, but they would set a new bar for the sector to move toward. However, there are statutory arrangements that allow the Authority to request the Commission to consider reopening price paths to allow recovery of costs imposed through new regulatory requirements.²⁰

Better information would assist access seekers

42. Distributors vary in how proactively they assist access seekers to find the best locations to connect. Two things that can significantly assist access seekers would be:
 - a. geographic information – understanding where transformers and cables are located, and their key attributes,²¹ can help access seekers find locations that won’t require

¹⁷ The rules have a two-tier approach, with quicker and lower-cost access for very small (<10kW) distributed generation.

¹⁸ For example, a wind generator has recently alleged that Counties Power breached certain access rules relating to network availability and pricing: https://www.ea.govt.nz/assets/dms-assets/31/Notice-of-investigation-2006CPOW1_2006CPOW21391005.5.pdf

¹⁹ See Part 8 of *Issues Paper – Updating the regulatory settings for distribution networks*.

²⁰ Commerce Act 1986, s54V. [Commerce Act 1986 No 5 \(as at 05 April 2023\)](#), [Public Act 54V Impact of certain decisions made under Electricity Industry Act 2010 – New Zealand Legislation](#)

²¹ For example, cable type, transformer size, and number of connection points.

costly cable runs. The most helpful approach is for distributors to make geographic information system (GIS) data available²²

- b. capacity information – understanding where network capacity is limited can help access seekers find locations that won't trigger upgrades. The most helpful approach is for distributors to make network 'heatmaps' available, though more limited information can also assist.
43. Of the two measures, opening access to GIS data is more straightforward though heavily dependent on the quality of each distributor's GIS systems and data. Developing useful capacity information can be a much more challenging task, especially at the lower voltages (e.g., sub-11kVA) relevant to charging installations.
 44. A reactive approach to identifying capacity constraints and upgrade requirements may have been fit for purpose for low volumes of long lead-time connection requests. A more proactive approach would be more fit for purpose for the high-volumes of short lead-time requests involved in decarbonising transport – but transitioning is a non-trivial task for distributors. Access seekers can also help by approaching their distributor early in their own process.
 45. Information provision is of interest to the Commission and the Authority. The Commission has made some progress through its information disclosure regime, while the Authority could build information requirements into its network access regulations.

Improved contestability could reduce costs and delays

46. Distributors vary in how much (and how) they control who can conduct connection work. Distributors have a legitimate interest in ensuring connection work does not disrupt network operation, and that built works are of suitable quality. However, meeting these objectives through an overly restrictive approach to who can do connection work, and in what way, can hinder access.
47. Where distributors adopt less restrictive practices, this improves contestability and should lead to:
 - a. more choice for access seekers
 - b. competitive discipline on the cost of connection works
 - c. competitive discipline on timeliness and customer experience
 - d. greater flexibility to match delivery to access seeker preferences (e.g., more bespoke versus more standardised)
 - e. new opportunities for electrical services contractors to grow and optimise their use of scarce contracting resources.
48. Note that 'less restrictive' does not imply uncontrolled and it remains important that work is carried out by capable parties with suitable equipment and safety practices. These outcomes are reinforced through a range of regulatory and roading authority requirements.
49. Both regulators arguably have an interest in this matter:
 - a. for the Electricity Authority, contestability could be considered within the sphere of access arrangements

²² For example, Transpower makes comprehensive GIS data readily available online: [Maps and GIS Data | Transpower](#)

- b. for the Commerce Commission, contestability can further their objectives of ensuring services are efficient and well matched to consumer preferences.

Sector change and pressures are also relevant

- 50. Electrification is driving a step change in the sector after years of very low demand growth and a focus from regulators on driving down costs. There is now a pivot underway to ramping up resourcing, and adapting regulatory settings to respond to growth pressures and technology changes. This is straining capacity within the regulators, and in the sector itself.
- 51. The sector is juggling competing priorities that include:
 - a. accommodating electrification demand
 - b. adding generation to meet the new demand (and replace fossil generation)
 - c. adapting wholesale market and system operation arrangements to suit an evolving demand and generation mix
 - d. leveraging new technologies to reduce the cost of meeting new demand
 - e. managing cost impacts on end consumers.
- 52. Distributors have multiple parts to play in this change, and many also have large renewal programmes to plan and develop over coming decades as post-war assets near end of life. At the same time, it is a difficult international and domestic environment for attracting and retaining skilled staff and contractors.
- 53. The Electricity Networks Association has historically helped with sharing good practice across the distribution sector and could have a role in helping to speed the learning process across the sector.
- 54. A period of change also opens up new questions as to which activities distributors should get involved in themselves. Distributors operate 'bottleneck infrastructure' so they can have a significant impact on related markets if they have their own interests in those markets.
- 55. In 2018, the Commerce Commission clarified that distributors cannot invest in charging installations as part of their regulated business. This reduces the risks around distributor involvement in charging infrastructure but doesn't eliminate the risk that distributors could exercise their discretion in ways that favour their own (or affiliated) charging interests.

Options for improving arrangements

- 56. Encourage the Commerce Commission to reduce the recovery risk associated with forecasting uncertain connection and system growth demand – for example, through dialled-back efficiency incentives or reopener provisions.
- 57. Ask the Commerce Commission and Electricity Authority to deter the practice of distributors adding general growth charge into capital contributions. This overly deters access seekers and shifts expenditure outside of regulatory oversight.
- 58. Ask the Electricity Authority to prioritise considering whether public charging infrastructure should have:
 - a. a dedicated access regime, similar to distributed generation
 - b. capital contribution policies that improve predictability and avoid overly deterring new connections, for example through standard connection charges (even if only for lower capacity installations)

- c. a dedicated tariff category that rewards load management and efficient connection sizing, and addresses subsidy²³ at a consumer group level (not individual sites).
59. Ask the Electricity Authority and the Commerce Commission to work together on:
- a. ensuring distributors do not have overly restrictive requirements for who can do connection work (including design) or what equipment can be used
 - b. requiring distributors to make network location information readily available to access seekers, for example through open GIS
 - c. requiring distributors to make network capacity information available proactively, to further assist access seekers to select suitable locations.
60. Encourage (or fund) the Electricity Networks Association (the ENA) to help speed up the learning process and share good engineering practice regarding public charging infrastructure across distributors.
61. Contribute information to inform the forecasts that distributors include in their 2024 asset management plans (AMPs) for public charger connections. These forecasts will feed into the next regulatory control period.

²³ The Electricity Authority's distribution pricing principles encourage distributors to ensure prices are within the 'subsidy-free range'. The Authority's practice note recommends this assessment is most meaningful at a consumer group level rather than a per-connection level.