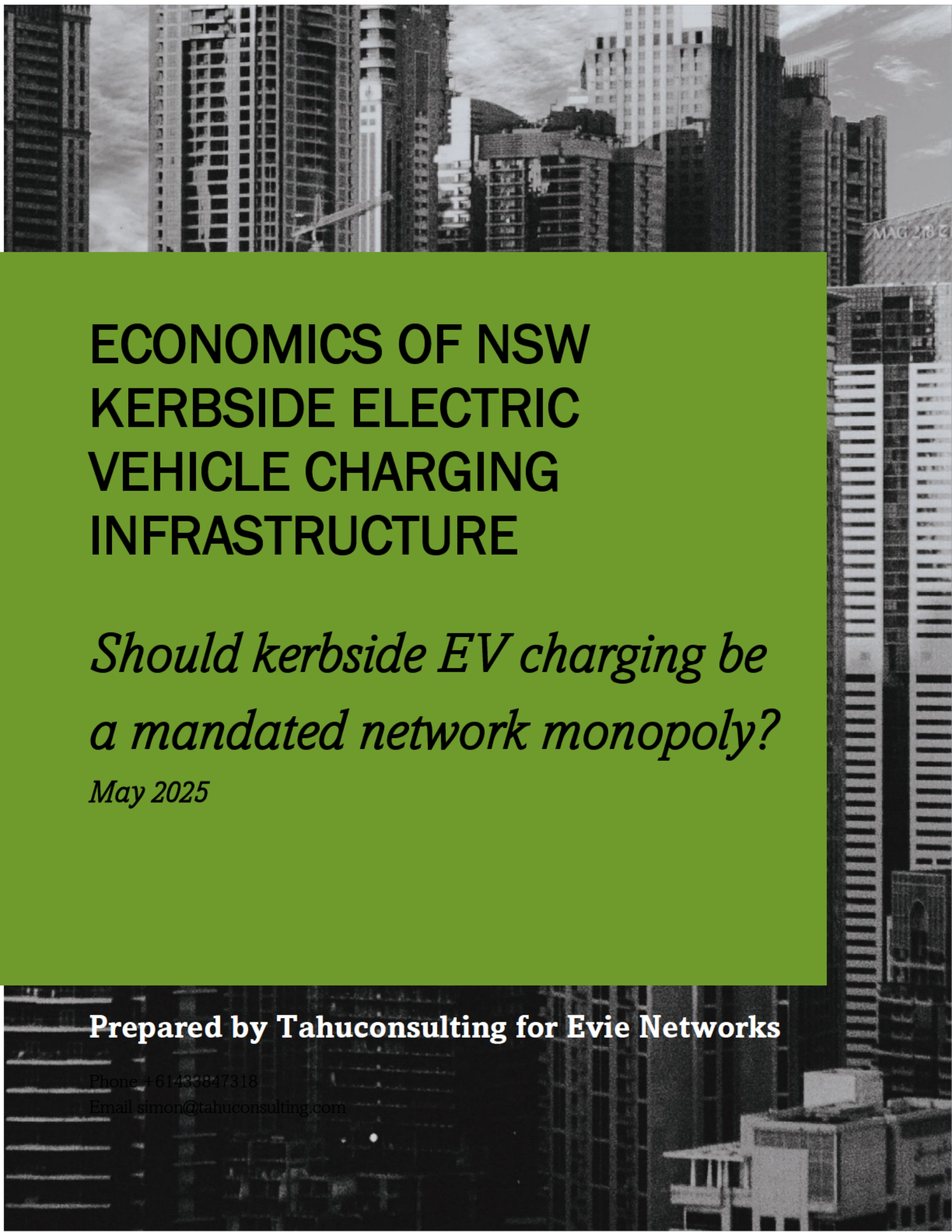

ECONOMICS OF NSW KERBSIDE ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

Should kerbside EV charging be a mandated network monopoly?

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Introduction

This report has been prepared by Tahuconsulting for Evie Networks, in response to the NSW Parliamentary enquiry into and report on infrastructure for electric and alternative energy source vehicles in NSW. Its focus is on terms of reference regarding *a) funding and location of electric vehicle charging infrastructure for other potential energy fuel sources* and *c) use of existing infrastructure to ensure a competitive market, including 'ring fencing' policies.*[1] For the purposes of this report, these two terms of reference have been divided into topics 1 and 2.

Topic 1: EV charging economics – KEVCI benefits, funding and location

Kerbside electric vehicle charging infrastructure (KEVCI), alongside other EVCI, is essential for the timely electrification and decarbonisation of four wheeled light transport. KEVCI is required because a significant portion of the population does not have dedicated off-street parking with access to EVCI, especially in densely populated urban areas.

Accelerated deployment kerbside (KEVCI) would bring forward community adoption of EVs. This would advance State and national electrification and decarbonisation objectives.

In public roads and public carparks, local governments typically make parking access decisions and enforce these decisions. This determines the extent ICE vehicles can block EV access to KEVCI in public roads and carparks.

Nationally, and across NSW, policy direction and guidance for local governments regarding support for transport electrification and KEVCI leave much to be desired. For example, mandatory national climate-related financial disclosure requirements, which commenced in January 2025, do not yet apply to local governments.[2] The absence of a national (or State) governance framework regarding climate-related decision-making results in inconsistencies between local governments, increasing the cost and delaying EVCI deployment. For example, in NSW it appears that some new NSW government part-funded KEVCI sites, without dedicated on site EV parking, may have low utilisation rates.[3] This is because ICE vehicles are typically occupying the KEVCI site most of the time.

DNSPs are materially delaying transport electrification. This appears to be a governance failure, since transport electrification is beneficial for DNSPs both in the short and long term.

EVCI deployment delays are caused by network connections frameworks and network tariff designs that ignore the demand profiles of EVCI and KEVCI. Outside locations with very high rates of new

[1] See https://www.parliament.nsw.gov.au/committees/inquiries/Pages/inquiry-details.aspx?pk=3095#tab-termsofreference
[2] See for example https://treasury.gov.au/sites/default/files/2024-01/c2024-466491-policy-state.pdf
[3] Observations by the author of multiple KEVCI sites in Sydney's eastern suburbs.

connections growth, EVCI and KEVCI are unlikely to increase network congestion and associated network capacity upgrades. However, connections policies and decisions by many DNSPs ignore this evidence. As a result, substantial network upgrades are typically required before connecting new EVCI. This delays and increases the cost of EVCI. Reform of electricity network connections and tariff design policies and frameworks is therefore necessary to support electrification and decarbonisation of light transport.

Topic 2: Review of proposals to DNSP KEVCI mandates

In April 2025, the Energy Networks Association (ENA) released a 'wish list' outlining six critical Commonwealth policy measures to ensure a reliable, affordable, and low emissions energy future. This includes '…Enable networks to install EV chargers on power poles for faster and cheaper kerbside charging.'[4] The proposal is detailed in an August 2024 report where KEVCI assets form part of monopoly distribution networks (DNSPs) assets under a DNSP mandate.[5]

A DNSP mandate is required under the proposed ENA model because DNSPs cannot own KEVCI, under ring-fencing rules. Ring-fencing supports the national electricity law (NEL) objective (NEO) by preventing cross subsidies from network customers and protecting competition in electricity connections markets, including KEVCI. DNSPs can only participate in KEVCI markets via related electricity services providers (RESPs). RESPs cannot be given preferential treatment by DNSPs, leverage DNSP branding, or be cross subsidised by DNSPs. DNSP ring-fencing operates under the NEL[6], which in NSW is NSW not Commonwealth law.

No evidence has yet been provided by ENA and others to establish that a DNSP KEVCI mandate is consistent with the long-term interests of customers (NEO).[7] A proper assessment of the proposed DNSP KEVCI mandate would find that alternatives to mandating DNSP KEVCI monopolies are preferable under both to the NEO and the objective of accelerating KEVCI with open access. The foremost concern is the retail bill impacts from DNSP cross subsidies, and the impacts on the cost and timeliness of the energy transition. If ring-fencing is removed or diluted, DNSPs can foreclose competition in the contestable energy services markets required to deliver the energy transition, which would naturally result in a slower transition and higher prices paid by all energy consumers.

Governments could implement accelerated KEVCI more quickly under alternatives to a DNSP mandate. This is because it would not need to seek a highly contentious expansion of DNSP monopolies and removal of ring-fencing rules in opposition to the NEO. Instead, accelerated KEVCI would be undertaken under existing customer protection rules using a contestable KEVCI procurement process. This requires establishing KEVCI site coordinators for sets of KEVCI installations in each area.

[4] See https://www.energynetworks.com.au/news/media-releases/energy-networks-election-wish-list-includes-calls-to-remove-tax-on-landholders/

[5] See slide 6 of *The Time is Now; Getting smarter with the grid,'* prepared by LEK for ENA

[6] Ring-fencing also applies in Western Australia, although it has not acceded to the NEL.

[7] Western Australia's WEM objective refers to encouraging competition in minimising long-term costs for customers.

Table 1 below compares KEVCI acceleration options with the status quo, using NEO (bills) and accelerated KEVCI (complexity and delay) as evaluation criteria. This indicates the likely outcome of any process required to mandate a monopoly KEVCI deployment, including for any new KEVCI innovation "sandboxing" or "waiver" from ring-fencing rules. Either would be a slippery slope toward a *de facto* DNSP KEVCI mandate.

Table 1 – Comparison of KEVCI acceleration options compared with base case

KEVCI outcomes	Base case	KEVCI site coordinator	DNSP KEVCI mandate
New network regulation required	NA	None	Extensive
KEVCI assets within mandate exclusive to DNSPs	NA	No	Yes
KEVCI site coordinator	No	Yes	No
KEVCI contestability	Yes	Yes	No
Implementation complexity & delay	NA	**Moderate**	**High**
KEVCI roaming	Possible	Yes	Yes
Utilization & EV customer accessibility	Lower	Higher	Higher
Installation & operating cost per EVCI connection	Higher	Lowest	Bloated
KEVCI revenue shortfall	High	Lowest	Higher than necessary
Increase in network costs and bills	NA	**Zero risk**	**High risk**

A contestable KEVCI model has been implemented by the NSW government under its EV destination charging grants program.[8] In the current NSW KEVCI rollout, local governments and other parties receive grants to undertake the KEVCI site coordinator and KEVCI procurement role. The available NSW government discussion papers relating to its EV charging grants program do **not** indicate that ring-fencing rules have been an impediment to the NSW KEVCI grants program. No evidence has been provided from which to conclude that the NSW government program for accelerated KEVCI contestable deployment has been unsuccessful. Nevertheless, the creation of a site coordinator role, improved governance of local governments regarding transport electrification, and the adoption of KEVCI roaming requirements would together substantially improve the economics of an accelerated KEVCI deployment.

It appears that existing DNSP ring-fencing guidelines have been breached in at least part of the NSW KEVCI program. We understand this reported to the regulator but so far, no explanation has been received or enforcement action taken. See Box 1 below.

[8] See https://www.energy.nsw.gov.au/sites/default/files/2022-08/2022_05_NSW_EVDestinationChargingGrants.pdf

Should kerbside electric vehicle charging be a network monopoly?

Introduction

This report has been prepared by Tahuconsulting for Evie Networks, in response to the NSW Parliamentary enquiry into and report on infrastructure for electric and alternative energy source vehicles in NSW. Its focus is on terms of reference regarding *a) funding and location of electric vehicle charging infrastructure for other potential energy fuel sources* and *c) use of existing infrastructure to ensure a competitive market, including 'ring fencing' policies.*[9] For the purposes of this report, these two terms of reference have been divided into Parts 1 and 2.

Part 1 considers the impacts of kerbside electric vehicle charging infrastructure (EVCI and KEVCI) – its benefits, funding and location. The report identifies the key role EVCI and KEVCI play in supporting and enabling government policy objectives to electrify and decarbonise light vehicle transport. It also identifies investment barriers to the early deployment of KEVCI. Aside from slow EV adoption rates, these include monopoly network pricing and connections policies, and the lack of national or State governance of this aspect of local government performance regarding regulation and enforcement of EV access to KEVCI.

Part 2 evaluates proposals by the Energy Networks Association for ring-fencing policies to be removed. It explains why removal of ring-fencing is not required for an accelerated deployment of KEVCI. It also explains why removal of ring-fencing via a DNSP mandate KEVCI is inferior to feasible alternatives, relative both to the national electricity objective (NEO) and to the electrification of light transport.

[9] See https://www.parliament.nsw.gov.au/committees/inquiries/Pages/inquiry-details.aspx?pk=3095#tab-termsofreference

Part 1: EV charging economics – KEVCI benefits, funding and location

Transport electrification and decarbonization requires KEVCI

An accelerated deployment of KEVCI is essential for the rapid electrification and decarbonisation of four wheeled light transport. This is because a significant portion of the population does not have dedicated off-street parking with access to EVCI, especially in densely populated urban areas. Slow deployment of KEVCI, and low KEVCI density, are barriers to faster EV adoption.

Transport electrification reduces carbon emissions. Electric vehicles are around three times more energy efficient than internal combustion engine (ICE) vehicles.[10] Emissions reduction is greatest when EV charging is from renewable energy, including from solar power during daylight hours.

Light passenger and commercial vehicles operate on a relatively slow replacement cycle. The average age of the Australian light vehicle fleet is just over 10 years.[11] This means that, even if EVs were 100% of new vehicle sales, it would take around half a decade for EVs to make up more than half the vehicle fleet.[12] At present, combined EV and PHEV sales are making up less than 11 percent of new vehicle sales.[13] Until this rate substantially increases, transport electrification and national decarbonisation objectives will be delayed.

Many would-be EV owners will not switch to EVs until they are confident they can access convenient and competitively priced EVCI. This is likely a key factor in the ongoing popularity of hybrid and PHEVs, despite their significantly higher operating costs and other drawbacks.[14] Faster KEVCI deployment and higher KEVCI density would therefore bring forward community adoption of EVs.

Benefits for electricity users and monopoly networks

Accelerated adoption of EVs would increase electricity distribution network (DNSP) asset utilisation, reducing network charges and retail electricity bills. Increased utilisation reduces unit prices for sunk DNSP regulated assets. Fixed and variable DNSP charges can be recovered from a greater volume of electricity supplied.

Transport electrification is clearly in the commercial interests of DNSPs. In the short term, this is because it increases utilisation of DNSP assets, while requiring little additional investment. This will

[10] The energy conversion efficiency of EVs (77%) is at least 2.5 times better than that of ICE vehicles (30%) and in real world conditions the differential is typically three (3) times. See EVs: Are they really more efficient?
[11] See https://www.abs.gov.au/statistics/industry/tourism-and-transport/motor-vehicle-census-australia/latest-release
[12] EVs currently make up around one (1) percent of the total light vehicle fleet.
[13] See Electric Vehicle Index - Australian Automobile Association
[14] Among other things, this reflects the need to buy, fuel and maintain an internal combustion engine and transmission system, even if it is seldom used.

translate into improvements in productivity, which may be rewarded via higher revenues and profits, under incentive regulation.

Over the long term, to the extent regulated asset bases (RABs) need to be expanded to supply the new EV demand, electrification increases the dollar value of DNSP profits. In the short term, EV adoption is unlikely to have adverse impacts on DNSP congestion and related costs, for the reasons explained below.

Where EVCI is highly utilised during periods of high rooftop solar output, it could substantially reduce requirements for DNSPs and others to invest in new assets to absorb this solar output, via investments in new DNSP export infrastructure, including DNSP owned battery electric storage systems (BESS).[15] To the extent EVCI contributes to increased demand during high solar output periods, it also reduces spillage of surplus solar output and increases wholesale prices during low or even negatively priced periods.

At the same time, EVCI, including KEVCI, is in most locations very unlikely to result in requirements for DNSPs to invest in increasing their network capacity to ensure reliable supply during rare maximum demand periods. These maximum demand periods are typically less than two percent of the time and mainly affect areas with high connections growth rates. This reflects substantial spare network capacity in NSW, except in areas with very high connections growth rates.[16]

Our understanding is that KEVCI typically has relatively low charging speeds, using alternating current (AC) and lower network capacity requirements. Its main value is locational, being close to where people live, work and shop. This is different from high-speed direct current (DC) public charging, where the main value is minimising charging times, especially on longer journeys and in holiday destinations. KEVCI is therefore more likely to increase utilisation of existing DNSP assets than require augmentation.

A recently adopted national vehicle to grid technical standard enables bi-directional charging.[17] It is likely that EVCI suppliers and charge point operators (CPO), potentially including KEVCI, might create incentives for EV owners to export energy back into the grid. If this occurs, it could ease periods of high network congestion in areas with high connections growth.

In addition, modern EVCI can readily limit EV charging rates during such periods. Variable KEVCI pricing can also contribute to minimising EV contributions to maximum network demand, or wholesale price spikes where prices can go up to a maximum of $20,300/MWh.[18]

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[15] These are sometimes described as 'community batteries', where privately owned. See https://www.dcceew.gov.au/energy/renewable/community-batteries#business-grants-hub-stream-1

[16] See *Review of Ausgrid's Revised Network Tariff Proposals and the Australian Energy Regulator's Draft NSW DNSPs' Tariff Determinations: Are They Reasonable? Report for Evie Networks;* 2 February 2024. https://www.aer.gov.au/system/files/2024-02/Evie%20Networks%20-%20%20Submission%20on%20the%20NSW%20revised%20proposals%20and%20draft%20decisions%202024-29%20-%20January%202024.pdf

[17] The latest version of AS-NZ 4777.

[18] See https://www.aemc.gov.au/news-centre/media-releases/aemc-updates-market-price-cap-2025-26

KEVCI using existing network assets, such as power poles and network connections for public lighting, would increase DNSP hosting fees. Like mobile telephony asset hosting, KEVCI hosting would marginally reduce revenues that need to be recovered from regulated network charges.

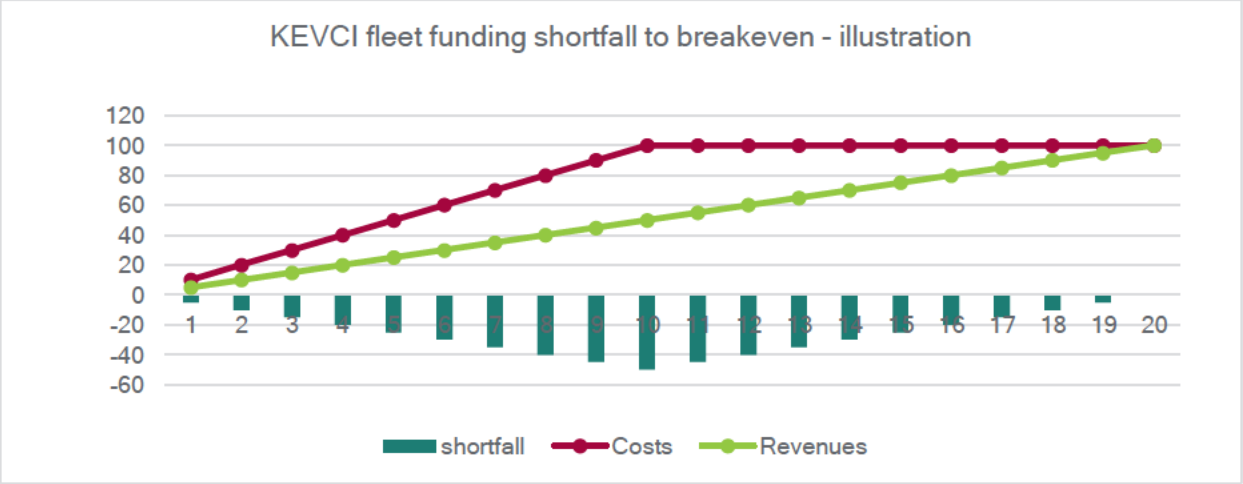
The financing barriers to accelerated KEVCI deployment

A key barrier to the timely deployment of KEVCI is that commercial returns to KEVCI investors are typically negative until the stock of EVs, as a proportion of the total stock of light vehicles, is much higher than now. As discussed above, this will likely take more than a decade due to the slow turnover of light vehicles and current modest EV new vehicle market penetration.

It is challenging for markets to finance the extended and uncertain funding gap until EV penetration rates are much higher. The current slow KEVCI deployment contributes to EV new vehicle market uptake outcomes that are inconsistent with government electrification policy objectives.

A subsidy for some KEVCI is therefore likely to be necessary because there is often a substantial shortfall between future revenue from the supply of KEVCI services and the full costs of financing, deploying, depreciating and operating a full set of KEVCI installations. The shortfall is illustrated in Figure 1 below.

Figure 1 – Need for funding of KEVCI revenue shortfall



The funding shortfall (downward bars) arises because KEVCI utilisation will almost always lag KEVCI deployment. The costs line will exceed the revenue line for an extended period, reflecting the relatively slow turnover of vehicles, compared with for example mobile phones. There is also uncertainty about the duration until revenue for a fleet of KEVCIs will be sufficient to fund both depreciation and operations, and the additional cost of financing the cumulative revenue shortfall.

This is not to assert that individual KEVCI installations may not be profitable from the outset, due to favourable locations and dedicated EV parking. However, across a region, there may be many KEVCI

installations that continue to make substantial losses that exceed profits from installations in favourable locations.

Local government barriers to accelerated KEVCI deployment

A key challenge for KEVCI is coordinating KEVCI location decisions and parking access decisions. In the transition to high levels of EV penetration, access to KEVCI may be limited where ICE vehicles can block EV access to KEVCI. Local governments typically make parking access decisions, and the extent ICE vehicles can block EV access to KEVCI.

Nationally, policy direction and guidance for local governments regarding support for KEVCI leaves much to be desired. For example, mandatory national climate-related financial disclosure requirements, which commenced in January 2025, do not apply to local governments.[19] Among other things, this means that local governments do not need to prepare annual sustainability reports, identify material climate-related financial risks and opportunities, or report progress on relevant metrics and targets, potentially including the deployment of EVCI and KEVCI within areas controlled by each local government.

The absence of a national (or State) governance framework regarding climate-related decision-making results in inconsistencies between local governments, increasing the cost and delaying EVCI deployment. For example, in NSW it appears that some new KEVCI sites, without dedicated on site EV parking, may have low utilisation rates.[20] This is because ICE vehicles are typically occupying parking bays at the KEVCI site most of the time.

A recent example in Queensland also highlights EVCI risks and costs relating to local governments. Following an eight-year process, in April 2025, a local government opposed an agreement to install the Capricorn Coast's first EV charger.[21] This contributed to a reported decision by Evie Networks to withdraw from the draft agreement with the council.

Network barriers to accelerated KEVCI deployment

DNSPs are materially delaying transport electrification. This appears to be a governance failure, since as discussed earlier transport electrification is beneficial for DNSPs both in the short and long term.

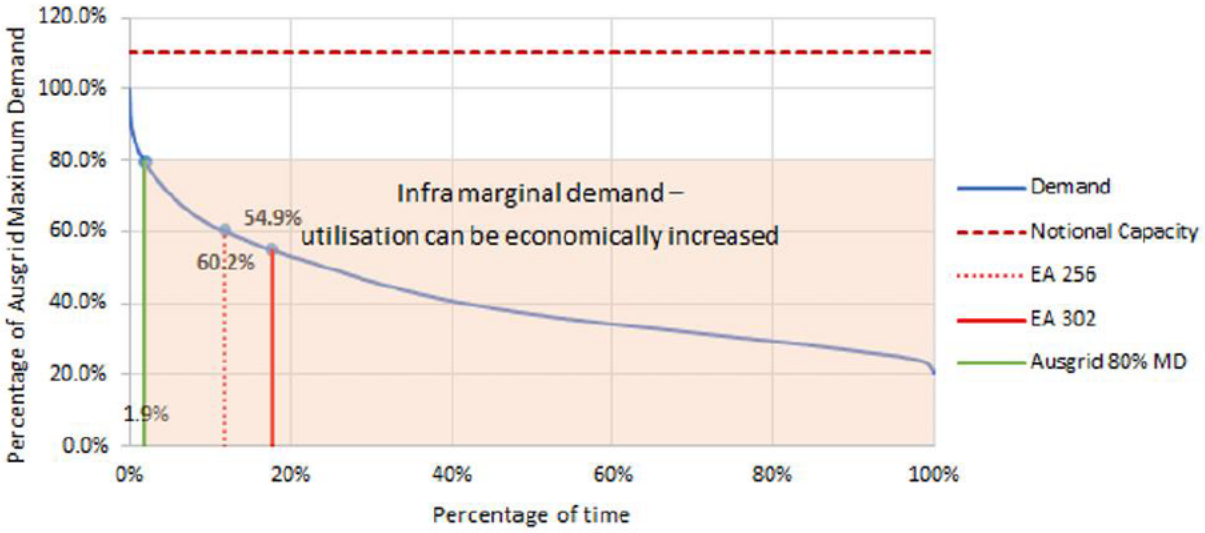
These EVCI delays are caused by network connections frameworks and network tariff designs that ignore the relationship between EVCI and KEVCI demand profiles and network congestion and related costs. As discussed above, outside locations with very high rates of new connections growth, EVCI and KEVCI are unlikely to increase network congestion and associated network capacity upgrades.

[19] See for example https://treasury.gov.au/sites/default/files/2024-01/c2024-466491-policy-state.pdf
[20] Observations by the author of multiple KEVCI sites in Sydney's eastern suburbs.
[21] See for example https://thedriven.io/2025/04/24/council-votes-again-to-dump-public-ev-fast-charging-station-after-tv-news-report/

However, connections policies and decisions by many DNSPs ignore this evidence. As a result, substantial network upgrades are typically required before new EVCI is connected. This both delays and increases the cost of EVCI.

Similarly, widespread regulated network tariff designs result in excessive network charges at locations and during periods where there is no network congestion.[22] This reflects the adoption of capacity and demand charges that apply outside locations and periods where there is network congestion. For Ausgrid, this is shown in Figure 2 below, in relation to two of Ausgrid's many business tariffs.[23]

Figure 2 – Ausgrid's premium tariff windows vs. network congestion



Source: AEMO Net System Load Profile, Ausgrid

In this example, network congestion is conservatively defined as 80 per cent of maximum annual demand and occurs less than 1.9% of the year.[24] However, congestion pricing denoted by the two vertical lines for different tariff "windows" is applied for 11.8% (EA 256) and 17.8% (EA 302) of the year, respectively. Note that EA 964 is considered by Evie to be an attractive tariff for CPO services. However, it is only available to a decreasing number of public charging sites with less than 160MWh of demand per annum. Congestion pricing is therefore being applied to infra-marginal demand (shared area) where utilisation can be increased without triggering any requirement to augment network capacity.

[22] See *Review of Ausgrid's Revised Network Tariff Proposals and the Australian Energy Regulator's Draft NSW DNSPs' Tariff Determinations: Are They Reasonable? Report for Evie Networks;* 2 February 2024. https://www.aer.gov.au/system/files/2024-02/Evie%20Networks%20-%20%20Submission%20on%20the%20NSW%20revised%20proposals%20and%20draft%20decisions%202024-29%20-%20January%202024.pdf

[23] See Ausgrid's current tariff list available at https://www.ausgrid.com.au/-/media/Documents/Regulation/Pricing/PList/Ausgrid-Network-Price-List-2024-25.pdf?rev=61699dd84f6d421785a6591885745c70

[24] Note that across the network elements shown, firm capacity is around 10 per cent above maximum coincident demand, suggesting that even the top 2 percent of demand intervals are unlikely to coincide with network congestion triggering augmentation expenditure.

Due to the current low penetration of EVs, EVCI currently has relatively low load factors (annual demand relative to maximum demand during each monthly billing period). As a result, under Ausgrid's network tariff designs EVCI typically experience network charges that are on average 50 per cent higher than otherwise similar business customers.[25]

The adverse impacts of these inefficient tariff designs are not limited to EVCI. They also arise for primary industries and other sectors with low annual demand and high maximum monthly demand, such as irrigation.[26] Inefficient network tariffs are then carried over to customer bills by retailers.[27] This further reinforces the need for reform of network tariff regulation.

[25] Ibid.
[26] See for example https://www.abc.net.au/news/rural/2017-02-15/rural-queensland-electricity-prices/8274010
[27] See for example Energy retailers' 'insidious' power pricing charges households based on highest point of use - ABC News

Part 2: Review of proposals for DNSP KEVCI mandate

DNSP proposals for KEVCI monopolies

The Energy Networks Association (ENA) recently released its 'wish list' outlining six critical Commonwealth policy measures to ensure a reliable, affordable, and low emissions energy future. This includes '…Enable networks to install EV chargers on power poles for faster and cheaper kerbside charging.'[28]

In August 2024 the ENA published a report by LEK Consulting *'The Time is Now; Getting smarter with the grid'*. The LEK report proposes among other things that networks should be mandated to deploy KEVCI as a monopoly service. KEVCI and other EV charging infrastructure would be reclassified from a contestable service to being a monopoly service. KEVCI assets would form part of the regulated asset bases of DNSPs and could be included in the setting of regulated network revenues affecting customer bills. Unless government subsidies for KEVCI fully match KEVCI revenue shortfalls over the transition to electrification, cross subsidies from DNSP customers (higher bills) to fund KEVCI are likely.

No evidence has yet been provided by ENA and others to establish that a DNSP KEVCI mandate is consistent with the long-term interests of customers.[29] No evidence has been provided from which to conclude that the NSW government program for accelerated KEVCI deployment with contestability is inferior to KEVCI deployment via a DNSP KEVCI mandate.

Existing customer and competitor protection

KEVCI – other than powered via a stand-alone power system (SAPS) – requires network connections. All network connections – both on the generation and demand sides and including all EVCI – are fully contestable in NSW. The Electricity Supply Act 1995 (NSW) gives customers the option to choose a supplier and contractor to perform customer connection services other than the licensed network, provided the other party is an Accredited Service Provider (ASP) scheme participant. The ASP scheme operates under the Electricity Supply (Safety and Network Management) Regulation 2014, specifically Part 3.[30]

A DNSP mandate is required under the ENA plan because DNSPs are prevented, by ring-fencing rules, alongside the ASP scheme, from deploying and owning KEVCI. Ring-fencing supports the NEL objective (NEO) by preventing cross subsidies from NEM customers and protecting competition in electricity connections markets, including KEVCI.

[28] See https://www.energynetworks.com.au/news/media-releases/energy-networks-election-wish-list-includes-calls-to-remove-tax-on-landholders/

[29] Western Australia's WEM objective refers to encouraging competition in minimising long-term costs for customers.

[30] See Electricity Supply (Safety and Network Management) Regulation 2014 - NSW Legislation

Box 1 – Apparent breach of DNSP ring-fencing rules in new KEVCI

In January 2025, an apparent breach of the DNSP ring-fencing rules was observed in Sydney's eastern suburbs. This has so far not been explained or rectified. A contestable KEVCI asset presumably owned by a related electricity service provider, Plus ES, in compliance with ring-fencing, has been branded "Ausgrid". There is also an Ausgrid branded sign at the top of pole at the KEVCI network connection. The same branding has been observed at multiple KEVCI sites in the area, all of which appear to be part of the NSW government KEVCI grants program.

On branding and cross promotion (4.2.3), the Australian Energy Regulator's (AER) DNSP ring-fencing guideline says that a DNSP must not advertise or promote its direct control services and its contestable electricity services that are not direct control services together (including by way of cross promotion). There is an exemption where the asset also provides direct control services, but this exemption does not apply to KEVCI assets. There is current no ring-fencing waiver. We understand the possible breach was reported to the AER ring-fencing team by early February. At the time of writing, it is understood no AER response or other public communication has been received.

In March 2025, AER announced it had granted a waiver to Plus ES from the metrology rules. However, this waiver refers to metrology and not to branding and cross promotion.

Source.[31]

DNSPs can only participate in KEVCI markets via related electricity services providers (RESPs). RESPs cannot be given preferential treatment by DNSPs, leverage DNSP branding, or be cross subsidised by DNSPs.

It appears that existing "sandboxing" exemptions from regulatory requirements cannot be applied to KEVCI. Any attempts to circumvent ring-fencing rules, including via the creation of new regulatory "sandboxes," or extend "waivers" from ring fencing rules, are a slippery slope toward a *de facto* DNSP KEVCI mandate.

Mandating KEVCI could be disallowable by NSW or another NEL Parliaments, or potentially otherwise blocked via legal challenges.[32] Ring-fencing rules operate under the NEL, which in NSW (and in other NEM jurisdictions) is NSW not Australian government law.

The application of consumer and competition protection objectives in the NEL and NER has been delegated to the AER. A complication from the perspective of the present enquiry is that the AER is not audited by the NSW Auditor General and submitted to the NSW Parliament. It is instead audited by the Australian National Audit Office.[33] This governance arrangement appears to diminish opportunities for

[31] See https://www.linkedin.com/posts/simon-orme-99a9486_is-this-kerbside-ev-charging-installation-activity-7313746822630387713-UjRG?utm_source=share&utm_medium=member_desktop&rcm=ACoAAAE1C4YBfrujp_J4DuxmiGVXy19GBN7Taik

[32] Note we are not qualified to offer legal advice.

[33] See https://www.anao.gov.au/work/performance-audit/regulation-the-national-energy-market

NSW Parliament to assess and where required take steps to improve AER performance, including regarding ring-fencing enforcement, network tariff reform and failure to constrain monopoly network pricing power.[34]

Is a DNSP KEVCI mandate the only alternative?

A contestable accelerated KEVCI and EVCI model has already been successfully applied by the NSW government under its EV destination charging grants program.[35] In the current NSW KEVCI rollout, local governments and other parties receive grants to undertake the KEVCI site coordinator and KEVCI procurement role. None of the available NSW government discussion papers relating to its EV charging grants program indicates that a DNSP mandate is preferable to a contestable KEVCI option.

A feasible alternative to a KEVCI mandate is available within the existing consumer protection rules – a KEVCI site coordinator. There are several similar models both in KEVCI and elsewhere as summarised in Box 2 below.

Box 2 – KEVCI contestability via site coordinators – LEVI and similar contestable models

Several KEVCI site coordinator models are available.

- NSW government's electric vehicle destination charging program.
- The UK's Local Electric Vehicle Infrastructure (LEVI) Fund provides a model for a contestable accelerated KEVCI deployment.[1]
- The creation of the metering coordinator role in the NEL rules to enable contestability in electricity metering services for mass market customers.
- Contestable transmission procurement for renewable energy hubs, and similar initiatives by NSW EnergyCo and in other NEM jurisdictions.

The KEVCI site coordinator role would be separate from one or more entities installing, owning and operating KEVCI. The KEVCI installation manager could be an LGA or private entities. A competitive procurement can then be implemented for the exclusive rights to deploy and operate KEVCI installations in each region. The regions could correspond to local government authority (LGA) areas or groups of LGAs. This would give local economies of scale in KEVCI installation and operations and leverage local synergies. No DNSP mandate is required under this type of option.

KEVCI roaming does not require a DNSP monopoly

[34] See for example the discussion on the performance of the AER in constraining DNSP monopoly pricing power, and shortcomings in Governance of AER in a 2023 report by the Institute for Energy Economics and Finance available at https://ieefa.org/resources/power-prices-can-be-fairer-and-more-affordable

[35] See https://www.energy.nsw.gov.au/sites/default/files/2022-08/2022_05_NSW_EVDestinationChargingGrants.pdf

No DNSP mandate is required to support open access or "roaming" for KEVCI. Roaming allows multiple CPOs and energy retailers to serve their EV customers regardless of which CPO happens to own and run a given set of KEVCI installations.

Roaming accelerates KEVCI deployment because it increases KEVCI utilisation and customer access. This in turn reduces the amount of capital required to finance the likely revenue shortfall before the installations are viable.

Under open access, technical open interoperability and other roaming rules need to be established. These rules need not be established in regulations but can instead be established in the funding arrangements. This is similar to software subscription requirements under the NSW government's EV destination charging grants.

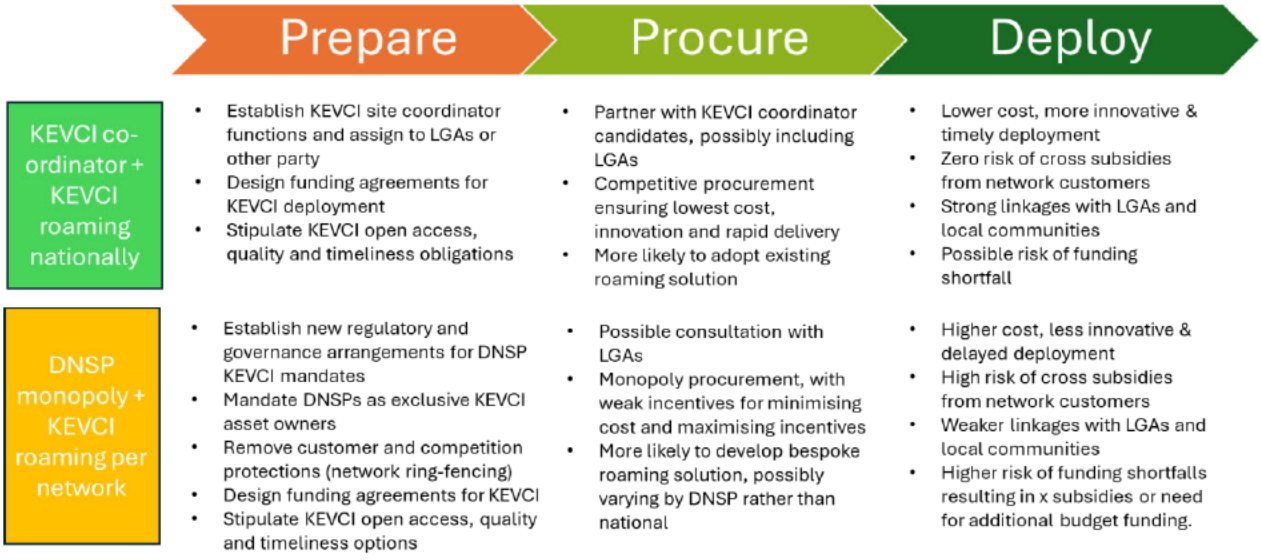
Contestable energy transition infrastructure procurement, with open access, is best practice. There are suitable existing access templates for designing KEVCI open access, both domestically and internationally. These include arrangements for the appointment of metering coordinators to support contestable metering deployment for small customers, outside Victoria

Accelerated KEVCI implementation speed and complexity

Under a DNSP monopoly, customer protections would no longer apply. As a result, implementation complexity and risk of delay is higher for a DNSP KEVCI monopoly option.

Figure 3 compares the speed and complexity of implementation. An accelerated KEVCI deployment with contestability could be designed and implemented more quickly than an accelerated KEVCI deployment under DNSP monopoly mandates.

Figure 3 – Comparing speed and complexity of implementation



This timing difference is because no changes to ring-fencing and other rules under the NEO, or the creation of new DNSP monopoly mandates for KEVCI, would be required. No new regulatory decisions on the recovery of DNSP KEVCI assets from higher regulated network charges, and increased customer bills, would be required.

Instead, the relevant jurisdiction could set out KEVCI roaming and other quality requirements under the terms of a contestable procurement process. The jurisdiction could establish the KEVCI site coordinator function, possibly in partnership with LGAs. This model has already been tested in NSW and Britain and lessons learnt from these cases can be applied in Australia. Any additional requirements including KEVCI roaming requirements could be defined within the funding arrangement without the need to change national electricity rules.

Similarly, Renewable Energy Zone (REZ) transmission reconciles open access and contestability, while retaining ring-fencing and avoiding automatic TNSP mandates. The Central West-Orana REZ transmission infrastructure was not mandated to the NSW transmission operator, Transgrid. The infrastructure is contestable and awarded to a new transmission supplier following a competitive process. Competitive KEVCI procurement is best practice in other sectors and internationally, including for example KEVCI deployment in Great Britain and elsewhere.

Even with open access regulation, accelerated KEVCI is likely to require one or more Budget appropriations to cover funding shortfalls in the transition to widespread EV use. Under this option, expenditure is market tested via a competitive procurement process. This stimulates higher levels of efficiency and innovation than would be the case under a DNSP mandate. There would be no impact at all on NEM retail customer bills because KEVCI would continue to be ring fenced from DNSP monopolies.

DNSPs would not be precluded from participating in contestable KEVCI, via their Related Electricity Service Providers (RESPs). See

Table 2 below. RESPs may be successful where they have a real comparative advantage.

Table 2 – NSW monopoly networks and their RESPs

Monopoly network	Related Electricity Service Provider (RESP)
Ausgrid	Plus ES
Endeavour Energy	Ausconnex
Essential Energy	Intium
TransGrid	Lumea Group

Technical inter-operability standards, network connections and vertical integration benefits

No evidence has so far been provided via a RIS/CBA, or an assessment against the NEO, to support assertions there are significant vertical integration benefits between DNSPs and KEVCI. Even if there were modest integration benefits, these are likely to be outweighed by the costs of extending network monopolies to KEVCI.

The revision to the NEO may be interpreted as supporting an accelerated KEVCI rollout, as this would have long term emissions reduction benefits. Even if network utilisation and climate benefits are included, cross subsidies to DNSPs for KEVCI would not be in the long-term interests of NEM customers once viable alternatives are considered.

A 2021 review for the NSW Treasury found network connections and other electricity services market contestability was beneficial and should potentially be expanded.[36] It also suggested contestable markets should be positively defined by the NSW government, rather than negatively defined by periodic decisions by the energy regulator. The NSW Electricity Infrastructure Investment Act 2020 retained and expanded contestability in transmission connections for renewable energy zones (REZ), instead of mandating REZ transmission to TransGrid.

Box 3: Opportunity for KEVCI innovation

Aside from open access, there may be a further opportunity to reduce KEVCI installation costs and accelerate their deployment. This is to consider changing the relevant technical standards, metering rules and NEM settlement arrangements. The changes would seek to integrate each KEVCI electricity meter (parent meter), and associated communications equipment used for market settlement, into the KEVCI CPO equipment which measures electricity withdrawn by each EV charger (child meter).

At present, it appears KEVCI grid withdrawals and settlement are being measured both at a parent meter and a separate child meter for each installation. It seems unlikely, however, that losses between the KEVCI meter and the KEVCI CPO meter vary between each KEVCI installation (normalised for relevant differences such as voltage, charging performance etc.). This suggests that standardised loss values could be used to estimate gross grid withdrawal volumes, avoiding current redundant KEVCI metering. Such an arrangement could be more accurate than the arrangements for estimating, without meters, the significant energy demand from public lighting installations.

[36] See https://www.energy.nsw.gov.au/sites/default/files/2023-03/ASP-Scheme-Review-Final-Report.PDF

Realising benefits from removing duplication of metering, metering communications and market settlement, does not require a DNSP mandate. The KEVCI coordinator would reconcile wholesale market settlement with charges to individual CPOs, under open access, and thence to end KEVCI customers.

The Energy Security Board and more recently the Australian Energy Market Commission (AEMC) have reviewed the governance of technical standards for distributed energy resources (DER), including EVs and EVCI. Inconsistencies in technical standards between DNSPs is one of the factors driving the development of new national governance arrangements for DER technical standards, including for EVCI. No serious consideration has been given to transferring governance of DER technical standards to individual DNSPs, because technical standards need to be nationally consistent rather than varying by DNSP.

New roaming rules may be considered desirable to constrain any potential for the benefits from open KEVCI access to be reduced by higher than efficient roaming charges or other barriers to roaming. If roaming rules are required, it appears likely they would equally be desirable whether roaming is via a DNSP KEVCI mandate or a KEVCI coordinator. Possible roaming rules could include requiring disclosure of roaming (inter change) fees to customers.

Accelerated KEVCI via DNSP mandate

Under a DNSP KEVCI mandate, with KEVCI assets within the scope[37] of the mandate owned exclusively by DNSPs, DNSPs would seek compensation for the shortfall between total KEVCI revenue from supplying EV customers, and total cost. This compensation and the associated regulatory and budget processes could be implemented under one of the following three (3) implementation paths.

1. Funding a DNSP KEVCI subsidy by increasing regulated network charges (DUOS) and retail bills. There are two sub-options. In both sub-options, ring-fencing rules would need to be waived, to support cross subsidies from NEM customers, and prevent KEVCI contestability, notwithstanding the NEO:
    - The jurisdictional Minister amends DNSP licences to reclassify KEVCI assets and services as DNSP monopolies. If the reopening threshold is exceeded, DNSPs may be able to reopen the revenue determination and seek to increase regulated charges. It is possible a KEVCI budget subsidy is not required because the KEVCI subsidy could be funded entirely by NEM consumers.
    - NEM Ministers (led by the Federal Energy and Climate Minister) issue a statement of policy principles under the NEL which instructs AEMC and AER to make changes to rules and guidelines to waive the ring-fencing rules, reclassify KEVCI as DNSP monopoly assets, and permit cross subsidies from NEM customers to KEVCI customers. The AER/AEMC then need to demonstrate the benefits outweigh the costs, relative to the NEO, and consider alternatives to DNSP KEVCI mandates.

2. A budget funded subsidy (Commonwealth, State or hybrid) is created for DNSP delivery of a 'community service obligation' (CSO). This requires an appropriation and associated review by

[37] Defining the scope of any DNSP KEVCI exclusive mandate is itself likely to be contentious and challenging.

the relevant Treasury department, accompanied by a RIS/CBA demonstrating a market failure requiring intervention and evidence the economic benefits exceed the costs. If the appropriation is approved by Parliament, part of the subsidy could be a capital contribution to KEVCI assets. There would be no impact on the regulated asset base (RAB) used to calculate DUOS or NUOS. Ring-fencing rules would nevertheless need to be waived, contrary to the NEO, because it would foreclose competition in KEVCI markets. The KEVCI assets would form part of DNSP monopoly assets and form part of the RAB funded from capital contributions and does not impact customer bills.

3. Funding a non-budget DNSP subsidy under a jurisdictional scheme, as with the costs of the NSW electricity infrastructure investment roadmap. This may not require a budget appropriation. Instead, the required annual subsidy is added to total network charges (NUOS) payable by electricity retailers and recouped from retail customers. Other things being equal, the new cross subsidies to DNSPs would increase reference retail bills determined by the Australian Energy Regulator (AER) under the DMO and VDO (ESCV in Victoria). This option is subject to pricing and bill impact scrutiny by both the AER and the jurisdictional regulator (IPART in NSW). There would be no short-term impact on regulated network charges (DUOS). Ring-fencing rules preventing cross subsidies from NEM customers would need to be waived, contrary to the NEO. This option may require legislation, similar to the NSW roadmap legislation.

In all three pathways above, there is no competitive process to drive efficiency and innovation in KEVCI design, installation, financing, and operations, such as integrating parent and child meters. Instead, within the scope of the KEVCI mandate, DNSPs are the only party that is permitted to own KEVCI assets. This means DNSPs are given further opportunities to inflate costs, prices and returns via 'gold plating'. All DNSP mandate implementation options involve complex and contentious ring-fencing waivers that are potentially disallowable in one or more NEM jurisdiction. Lead times for ring-fencing waivers/mandates, budget appropriations, increasing retail bills and possibly legislation, vary, but are likely to be 12 months at minimum and potentially more than two years.

A possible alternative DNSP mandate sub-option is for KEVCI to form a separate monopoly service with separate RAB and revenue caps. This sub-option may reduce adverse the risk of adverse DNSP customer bill impacts but does not address increased risk DNSPs could foreclose competition in contestable electricity services markets. A separate KEVCI RAB does not address the funding of shortfalls between KEVCI revenue and total KEVCI costs, including financing of possibly extensive periods where KEVCI portfolios have insufficient revenue to recover their costs.

A series of major regulated transmission upgrades are underway across the NEM. These are all experiencing substantial capital cost increases relative to estimates used when these upgrades were approved by the regulator ahead of alternative transmission and non-transmission alternatives. While capital costs are also rising for non-regulated capital projects, mandated monopoly transmission is evidently contributing to higher than necessary capital cost increases and commissioning delays.

Historical DNSP gold plating, and excessive NSW and Queensland reliability standards, resulted in substantial over-investment in network capacity and the current historically low total factor productivity of the entire DNSP sector. DNSPs (outside Victoria) were given an exclusive mandate to

deploy digital meters. While a similar mandate was delivered in Victoria, with doubtful net benefits, other NEL jurisdictions later withdrew the DNSP mandate, and digital metering is now fully contestable outside Victoria. Taken together, these examples reinforce the conclusion a DNSP mandate is highly contentious and subject to delay under any of the complex and challenging implementation processes identified above.

Overall findings

KEVCI economics – benefits, funding and location

An accelerated deployment of KEVCI is essential for the rapid electrification and decarbonisation of four wheeled light transport. This is because a significant portion of the population does not have dedicated off-street parking with access to EVCI, especially in densely populated urban areas. Slow deployment of KEVCI, and low KEVCI density, are barriers to faster EV adoption.

It is challenging for markets to finance the extended and uncertain funding gap until EV market penetration rates are much higher. The delay in KEVCI deployment contributes to EV new vehicle market uptake outcomes that are inconsistent with government electrification policy objectives.

A subsidy for some KEVCI is therefore likely to be necessary because there is often a substantial shortfall between future revenue from the supply of KEVCI services and the full costs of financing, deploying, depreciating and operating a full set of KEVCI installations.

In public roads and public carparks, local governments typically make parking access decisions and enforce these decisions. This determines the extent ICE vehicles can block EV access to KEVCI in public roads and carparks. Nationally, and across NSW, policy direction and guidance for local governments regarding support for KEVCI leaves much to be desired. For example, mandatory national climate-related financial disclosure requirements, which commenced in January 2025, do not apply to local governments.[38]

The absence of a national (or State) governance framework regarding climate-related decision-making results in inconsistencies between local governments, increasing the cost and delaying EVCI deployment. For example, in NSW it appears that some new KEVCI sites, without dedicated on site EV parking, may have low utilisation rates.[39] This is because ICE vehicles are typically occupying the KEVCI site most of the time.

DNSPs are materially delaying transport electrification. This appears to be a governance failure, since as discussed earlier transport electrification is beneficial for DNSPs both in the short and long term.

EVCI deployment delays are caused by network connections frameworks and network tariff designs that ignore the demand profiles of EVCI and KEVCI. Outside locations with very high rates of new connections growth, EVCI and KEVCI are unlikely to increase network congestion and associated network capacity upgrades. However, connections policies and decisions by many DNSPs appear to ignore this evidence. As a result, substantial network upgrades are typically required before connecting new EVCI. This delays and increases the cost of EVCI. Reform of electricity network connections and tariff design policies and frameworks is therefore necessary to support electrification and decarbonisation of light transport.

[38] See for example https://treasury.gov.au/sites/default/files/2024-01/c2024-466491-policy-state.pdf
[39] Observations by the author of multiple KEVCI sites in Sydney's eastern suburbs.

Should KEVCI be a network monopoly?

Removal of DNSP ring-fencing is neither a necessary nor sufficient condition for accelerating KEVCI, or any associated benefits for KEVCI and wider NEM customers. Under any assessment of a DNSP KEVCI mandate and ring-fencing waiver, an alternative counterfactual for an accelerated KEVCI deployment must be identified. Feasible alternatives to the DNSP KEVCI mandate were not identified in the LEK report for ENA.

A proper assessment of the proposed DNSP KEVCI mandate would conclude that alternatives to mandating DNSP KEVCI monopolies are preferable relative both to the NEO and the objectives of accelerating KEVCI with open access. There are likely to be strong objections to expanding DNSP monopolies for KEVCI. Foremost is the concern over retail bill impacts from cross subsidies, alongside the wider impacts on the cost and timeliness of the energy transition. If DNSPs can avoid ring-fencing, they can foreclose competition in the contestable energy services markets required for delivery of the energy transition.

Table 3 below compares KEVCI acceleration options with the status quo, using NEO (costs and bills) and accelerated KEVCI (implementation complexity and delay) as evaluation criteria. This indicates the likely outcome of a full regulatory impact assessment, as required for mandating a monopoly KEVCI deployment, including for any innovation "sandboxing" or ring-fencing waiver.

Table 3 – Summary of KEVCI acceleration options compared with base case

KEVCI outcomes	Base case	KEVCI site coordinator	DNSP KEVCI mandate
New regulation required	NA	None	Extensive
KEVCI assets within mandate exclusive to DNSPs	N A	No	Yes
KEVCI site coordinator	No	Yes	No
KEVCI contestability	Yes	Yes	No
Implementation complexity & delay	NA	**Moderate**	**High**
KEVCI roaming	Possible	Yes	Yes
Utilization & EV customer accessibility	Lower	Higher	Higher
Installation & operating cost per EVCI connection	Higher	Lowest	Bloated
KEVCI revenue shortfall	High	Lowest	Higher than necessary
Increase in network costs and bills	NA	**Zero risk**	**High risk**

KEVCI open access means any participating charge-point operator (CPO), or energy retailer, can supply their customers. Open access applies in telecommunications ("roaming") and point of sale

payments. Roaming reduces the size of the budget subsidy required for accelerated KEVCI. Even with government subsidies and roaming, under a DNSP monopoly, there is a high risk of cross subsidies from network customers to KEVCI customers.

A contestable KEVCI model has been implemented by the NSW government under its EV destination charging grants program.[40] In the current NSW KEVCI rollout, local governments and other parties receive grants to undertake the KEVCI site coordinator and KEVCI procurement role. The available NSW government discussion papers relating to its EV charging grants program do **not** indicate that ring-fencing rules have been an impediment to the NSW KEVCI grants program. No evidence has been provided from which to conclude that the NSW government program for accelerated KEVCI contestable deployment has been unsuccessful. Nevertheless, the creation of a site coordinator role, improved governance of local governments regarding transport electrification, and the adoption of KEVCI roaming requirements would together substantially improve the economics of an accelerated KEVCI deployment.

It appears that existing DNSP ring-fencing guidelines have been breached in at least part of the NSW KEVCI program. We understand this reported to the regulator but so far, no explanation has been received or enforcement action taken. See Box 1 above.

The second part of this report focuses on the ENA proposal to introduce DNSP mandates for KEVCI infrastructure. The methodology and critique above equally apply to the other proposals in the LEK report for ENA, including in relation to DNSP owned and controlled BESS, sub-transmission renewable energy hubs and national standards for distributed energy resources.

[40] See https://www.energy.nsw.gov.au/sites/default/files/2022-08/2022_05_NSW_EVDestinationChargingGrants.pdf

Acronyms & abbreviations

AC	Alternating current – typically used in KEVCI with slower EV charging speeds.
ACT	Australian Capital Territory
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
ASP	Accredited service provider (NSW connections contestability scheme)
BESS	Battery energy storage system
CAM	Cost allocation methodology
CBA	Cost-benefit analysis
CER	Consumer energy resources
CESM	Contestable electricity services market
CPO	Charge point operator
DC	Direct current – typically used for fast and ultra-fast charging KEVCI
DER	Distributed energy resources
DMO	Default market offer
DNSP	Distribution network service provider
DUOS	Distribution use of service charges (DNSP regulated monopoly charges)
EBSS	Efficiency benefits sharing scheme
ESCV	Essential Services Commission of Victoria
EV	Electric vehicle (battery), including plug in hybrid EVs (PHEVs)
EVCI	EV charging infrastructure
FCAS	Frequency control ancillary service
ICE	Internal combustion engine vehicle
IEEFA	Institute for energy economics and financial analysis
IPART	Independent Pricing and Regulatory Tribunal
LEVI	Local Electric Vehicle Infrastructure fund – partnerships with British Local Authorities
MVA	Megavolt amperes (incorporates power factor losses)
NECA	National Electricity and Communications Association
NEL	National Electricity Law
NEM	National Electricity Market
NEO	National Electricity Law Objective (as amended)
NER	National Electricity Rules
NSW	New South Wales
NUOS	Network use of service charges – including approved jurisdictional scheme amounts
Opex	Operating and maintenance expenditure
PHEV	Plug in hybrid electric vehicle
KEVCI	Kerbside EV charging infrastructure
RAB	Regulated asset base – any customer capital contributions for new connections form part of the RAB but do not incur depreciation or financing costs
RESP	Related electricity service provider
RERT	Reliability and Energy Reserve Trader
REZ	Renewable Energy Zone
RIS	Regulatory investment test – problem definition and cost benefit analysis
SAPS	Stand-alone power system
STPIS	Service Target Performance Incentive Scheme
TNSP	Transmission network service provider
VDO	Victorian default offer
ZS	Zone substation