Tenco

Electricity Authority
By email: network.pricing@ea.govt.nz

7 August 2023

Dear Sir/ Madam

Consultation Paper - Benchmark agreement and SRAM related Code changes.

The Embedded Network Company Ltd (t/a Tenco) is the largest provider of private utility network solutions in New Zealand. We have been serving the property industry since 1998 and manage over 300 secondary networks operating as both embedded and customer networks. These Embedded Networks include Multi-Tenanted Commercial Properties, Apartments Buildings, Retirement Villages, Airports and Industrial Parks.

SRAM problem definition is incorrect
The Benchmark agreement and SRAM related Code change consultation (SRAM consultation) states that SRAM payments give embedded network owners a competitive advantage relative to local networks and proposes changes in the SRAM methodology that local networks give effect to in respect of embedded networks.

The problem defined in the SRAM consultation is incorrect. This is because SRAM payments are ultimately made to Retailers, not the owner of the embedded network. If embedded network owners don't automatically receive SRAM payments those payments can't provide them a competitive advantage.

Local networks have a competitive advantage relative to secondary network owners
Furthermore local networks have discretion to set ICP specific pricing for connection of a secondary network to the local network. This means they have ultimate control of the economics of operating secondary network configured as an embedded or customer network. This means embedded networks have no competitive advantage relative to local networks. Also that local networks are in a position where they could set connection costs to encourage inefficient investment in local network extensions.

Embedded networks can't incentivise inefficient investment
Because embedded networks can't compete with local networks and don't receive SRAM payments there is no opportunity to encourage inefficient investment in embedded networks through unfair competition with local networks.

We are not aware of any instances where an embedded network was established that was economically inefficient (relative to operation as a local network extension) and note that the consultation doesn't provide any examples where this has happened.

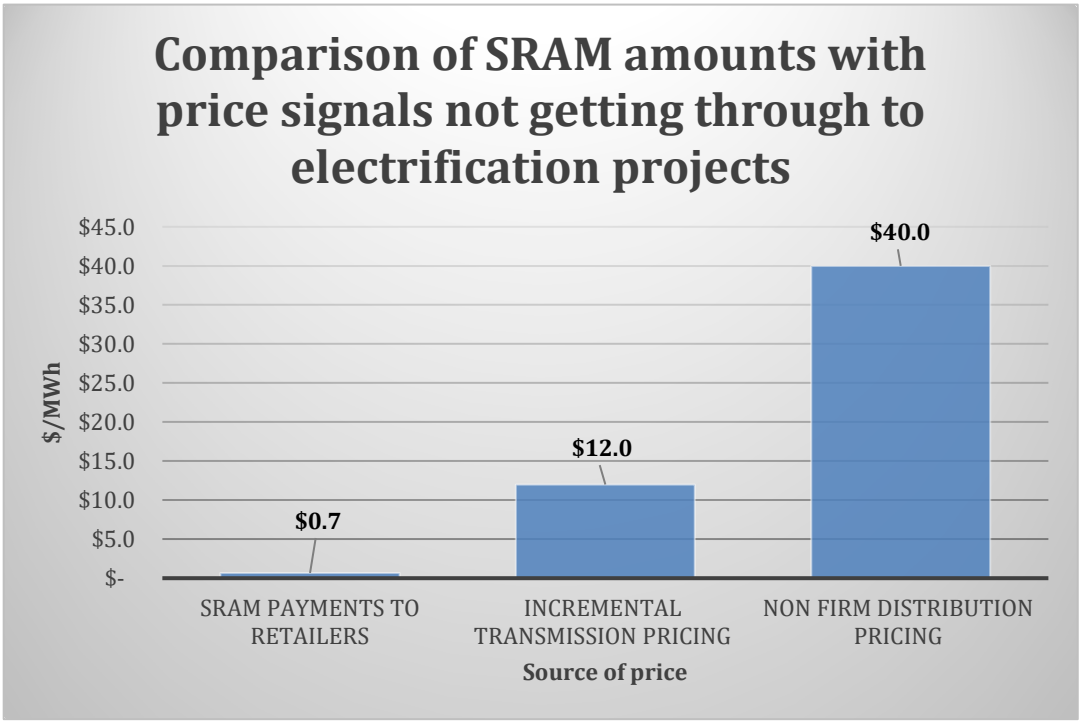
Conversely we note that local networks could encourage inefficient investment in local network extensions and we are aware of several instances where this has occurred.

Embedded networks can create advantages for end consumers

Secondary networks configured as embedded networks can reduce network capital amounts and capital cost, lower end user operating costs, provide a better balance between operating and capital costs and can encourage higher utilisation of network assets. As such, ensuring their ability to compete on an even-handed basis with local network extensions would further the Authority's statutory objectives of creating competition and efficiency for the long term benefit of consumers.

Network competition and efficiency issues outside of SRAM

We think it is important that end consumers and secondary network owners have clear and competitive price signals that support efficient investment. In particular there are opportunities to reduce prices of delivered electricity for large decarbonisation projects as illustrated in the following figure.



Accordingly we would encourage the Authority to prioritise high value, low cost opportunities including:

- Adopting the proposed no-change option on SRAM payments
- Implement minor changes as part of the SRAM consultation to enable end consumers to access incremental pricing in line with Authority guidance to networks with ~ $12/MWh benefit to decarbonisation projects
- As part of the Authority's distribution pricing work
    - Develop a balanced process for networks and end consumers to connect new load and use existing spare network capacity at marginal cost on a non-firm basis, and
    - Address potential competition issues that might result in over investment in local network extensions vs. embedded networks.

Yours Sincerely
Nick Price

Nick Price

Managing Director
The Embedded Network Company Ltd

Context that supports our responses to questions

Embedded networks are just one type of secondary network

Secondary networks are networks that are indirectly connected to the grid. There are three operating configurations of secondary networks, namely embedded networks, customer networks, and network extensions (of the local network).

Appendix A of this submission provides a comprehensive explanation of these network types.

Factors influencing selection of secondary network operating configuration

A secondary network owner has the option to operate the network as a customer network, embedded network or network extension.

Some of the factors that feed into the operational configuration decision are summarised in the following table with the benefit or disadvantage to the secondary network owner or end consumers highlighted relative to a local network (extension).

Comparison of networks configurations relative to a local network

Factors influencing operating configuration	**Local network extension**	**Embedded network**	**Customer network**
Balance sheet impact	Assets are typically gifted to the local network for use and local networks receive the revenue but maintained and owned by the Secondary Network owner	Assets remain on secondary network owner balance sheet and can be depreciated.	
Easement establishment cost	As required by local network.	No easement costs	
Cost of operation and maintenance of the secondary network	Operated by local network. Maintenance subject to agreement with local network. Usually network extensions are owned maintained by Secondary Network owner e.g. commercial building, apartments building etc	Operated and maintained by Secondary network owner Revenue that would otherwise have been paid to the local network can be captured by secondary network owner.	
Metering configuration	Revenue grade market compliant metering and ICP configuration	Revenue grade market compliant metering and ICP configuration Residual ICPs to capture difficult/ expensive to meter load e.g. common area lights or can offer ways to reconcile solar or backup generation into the property	Metering and ICPs not subject to code compliance
End consumer choice of retailer?	Yes	Yes	No
Pricing	Typically standard pricing as per local network. Prices increase at CPI.	Determined by Secondary network owner (with a direct interest in connected customer relationship). Usually follow local network pricing where possible. Customer specific and innovative pricing schemes are possible – especially for larger connections and flexible load.	
Loss Factors (energy cost)	Standard as per local network	Can be set to represent actual losses within the network reducing consumer costs.	Standard as per local network

Peer to Peer Energy trading & carbon emissions	Local generators must retail through transmission and distribution system.	Generation inside network can be used within the network reducing net imports and scope 2 emissions.
Asset efficiency and capital cost	Subject to standard network design and regulatory pricing structure	Load flexibility and diversity across customers can be used to make better use of network assets and reduce capital costs.
SRAM payments	Paid to Retailer	Paid to Retailer

This table highlights:

- The multiple factors that a secondary network owner needs to consider in making a decision on how to configure their network for themselves and their end customers, of which SRAM payments is one.
- That there are many advantages for an embedded network configuration relative to a local network extension. These are particularly material for end consumers that are trying to electrify large fossil fuel use loads where capital and energy losses are material. This means it is important not to make it artificially harder for embedded networks to compete with local networks such that a different network configuration is chosen that reduces benefits to end consumers.
- While customer network configurations can have benefits relative to local network extensions, they prevent end consumers from choosing their own retailer. Increasing barriers to the use of embedded networks will encourage customer networks and would conflict with the Authority's statutory objectives.
- While local network typically use standard pricing methodologies they are able to set any price they choose at the secondary network connection which means they ultimately control the economic feasibility of any given secondary network's operating configuration.

Appendix E: Questions to assist submitters.

E.1 You are welcome to comment on any matter relevant to the Authority's proposal.

E.2 We have posed questions throughout the consultation paper to help prompt responses to specific aspects of the proposal. These are repeated here.

E.3 Please do not feel that you need to limit your responses to the consultation questions or that you need to answer them all. Please explain your answers in terms consistent with the Authority's statutory objective in section 15 of the Electricity Industry Act 2010.

Questions

Chapter 4 Embedded Networks

Do you have comments on the options for addressing the embedded network issue?

1) The Consultation paper sets out a problem definition (sections 4.2 to 4.7) that is incorrect. The problem definition can summarised as

Because embedded networks do not have to pass on settlement residuals (SRAM payments) to their customers there is potential for embedded networks to have a competitive advantage over grid-connected distribution networks that could encourage inefficient investment in embedded networks.

The problem definition is incorrect because:

a. Embedded networks don't get SRAM payments. The Retailers, that are the local network's customer and provide retail services to the embedded network, receive settlement residuals.

b. We note that an embedded network may be able to negotiate with their Retailer for a pass through of the SRAM payments but so too can any other customer of a Retailer.

c. This means in respect of settlement residual payments that embedded networks don't have a competitive advantage over local networks that could encourage inefficient investment in embedded networks and the problem as stated does not arise.

2) Furthermore

a. The paper doesn't provide (and we aren't aware of) any evidence that shows any inefficient investment in embedded network configuration as-compared to local network (extensions).

b. Because local networks control the cost of connecting the secondary network to the local network there is a potential for local networks to have a competitive advantage over embedded networks that could encourage inefficient investment in local network extensions. We are aware of instances where local networks have used their ability to set

ICP specific pricing to encourage secondary network owners to operate as local network extensions.

Which option best promotes the Authority's statutory objective? Please provide your reasons.

3) The Authority's statutory objectives is

"To promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers."

The following table sets out the options proposed, the impact these options will have on competition and efficiency and the option's alignment with the Authority's statutory objectives.

Embedded network SRAM pass through options proposed and alignment with the Authority's statutory objectives.

Options proposed	Impact on competition and efficiency	Option alignment with Statutory Objective
No change to the SRAM pass through	This options maintains even handed treatment of local networks and embedded networks supporting competition.	Best promotes the Authority's statutory objectives
Expanded pass through	This isn't a feasible option as set out in the consultation paper because embedded networks don't receive settlement residuals – their Retailers do – so embedded networks aren't in a position to pass on settlement residuals on. To be implemented, regulation would need to set out how Retailers (not embedded networks) pass through settlement residuals to their customers. To avoid creating distortionary costs this regulation would need to apply equally to all retail customers whether within an embedded network or not. We anticipate that this approach will have significant complexity and be challenging for many retailers.	Not aligned. Not feasible unless Retailers are regulated to pass through residual amounts to their customers (end consumers). We note that the Authority's "New Settlement Residual Allocation Methodology Decision paper 15 Nov 2022", section 3.21 set out that the Authority does not agree that distributors should be able to pass settlement residual rebates directly to end consumers.
Exclude embedded networks	Creates long-term disadvantages to consumers on embedded networks as settlement residuals aren't available to their retailers. Puts embedded networks at a commercial disadvantage to local networks that could encourage inefficient investment in local networks extensions or customers networks.	Not aligned Creates an outcome that is adverse to the Authority's Statutory objective.

We have included an assessment of the options vs the Authority's statutory objectives as part of addressing the questions posed in Chapter 5.

What costs would embedded network services providers expect to incur in implementing the "expanded pass-through option" (including any significant additional system or assurance-related costs, if any)? Please quantify any significant costs.

4) Embedded networks don't receive residual payments; their Retailers do. An expanded pass through option would therefore require regulating the way Retailers pass through settlement residuals to all their customers.

    a. Presumably the mechanism would follow the principals of allocating the net of residual payments less transaction cost in proportion to the transmission charge paid by each customer.

    b. This would means that each Retailer's customer would need to have the transmission charge associated with their retail bill provided by the networks and calculated by Retailers so that it can be used to allocated the prior month's settlement residual to their invoice.

    c. Because of the timing of invoices and wholesale market revisions there would need to be a process for managing washups. This type of washup is not well supported in most retailing billing systems.

    d. Reconciliation between amounts received from networks and amounts paid by Retailers would need to be established, variances investigated and managed.

    e. We think a reasonable estimate for the cost of modifying Retailer systems would be comparable to Transpower's estimate of $1M multiplied by the number of retailers e.g. ~ $10M for set up costs and then ongoing administration and reconciliation expenses.

    f. We note that this mechanism would be inconsistent with the Authority's decision set out "New Settlement Residual Allocation Methodology Decision paper – November 2022" section 3.21 that states "The Authority does not agree that distributors should be able to pass settlement residual rebates directly to end consumers."

Would the "expanded pass-through option" be able to be implemented effectively and in a cost-effective manner?

5) We don't believe an expanded pass through option would be cost-effective to implement

    a. Because we estimate a $10M modification cost to Retailer systems and the cost of ongoing administration are high when compared to the total SRAM payment amounts of less than $1/MWh of $5 per customer per year, and

    b. Noting that at least part of the SRAM payment amounts are already factored into electricity pricing through competition by Retailers for electricity supply and benefiting customers.

Chapter 5 Regulatory Statement for the proposed amendment

We note that the Consultation Paper only requests feedback on related to recovering costs of Transpower implementing systems to run SRAM settlements. However for completeness we have included an assessment of the proposed changes in the treatment of SRAM payments to embedded networks.

6) The changes proposed for modifying the SRAM payments to embedded networks do not meet the Authority's statutory objectives

The Authority's statutory objective is set out in Section 15 of the Electricity Industry Act 2010 "The objective of the Authority is to promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers."

We consider that the proposal does not meet the competition or efficiency limbs of the statutory objective, and therefore should not be proceeded with. The areas we consider that the proposal fails the statutory objective are as follows:

a. The expanded pass through change fails the efficiency test because the calculation methodology for passthrough results in a relatively small average benefit for customers, the complex invoicing process involving retailers and distributors complicates direct payment of line charges, and implementing monthly customer credits would be inefficient and expensive for both distributors and retailers. In more detail:

    i. Calculation methodology for passthrough: The proposed payment to customers, which is determined based on the proportion of transmission charges paid by each customer, would result in an average benefit of approximately $4.10 per year for an average domestic customer. According to the available information, this calculation averages to around $0.57 per megawatt-hour (0.057 cents per kWh).

    ii. The majority of customers do not receive invoices directly from distributors; instead, distributors consolidate their invoices and send them to retailers who are not considered customers of the distributor. In most cases, customers do not directly pay distributors for line charges. Instead, these charges are managed through an interposed arrangement, where the retailer invoices each customer individually and subsequently pays the distributor based on an aggregated invoice provided by the distributor. Additionally, certain networks utilise GXP pricing, which involves distributors determining line charges based on aggregated reconciliation information from the reconciliation manager and do not receive individual customer consumption information. For GXP pricing networks, costs would be significant to develop distributor payments of SRAM to customers.

    iii. Mandating distributors to independently establish systems for monthly customer credit, even for a relatively small amount, is an

inefficient and costly approach. On the other hand, if distributors were to request retailers to provide a custom variable credit for each customer on a monthly basis, this would also involve significant development and operational costs.

b. The proposal to exclude pass through of SRAM to embedded networks fails the competition test as the amendment will exacerbate competition issues between local network extensions and embedded networks

    i. No ability for Retailers to access SRAM payments could lead to higher electricity prices for embedded network end consumers relative to those connected to local networks or customer networks

    ii. Alternatively to maintain Retailer access to SRAM payments developers may favour a move to customer networks, where end consumers do not have choice of retailer or pricing plan.

c. Local networks generally prefer not to own significant sections of networks within private properties due to the complexities associated with obtaining easements and establishing operational arrangements.

d. Owners of embedded networks or customer networks have the flexibility to operate them as microgrids. This approach can defer the need for additional parent network investment, reduces connection costs and losses, allows for local utilisation of available renewable electricity generation, and subsequently reduces costs for customers. In contrast, local networks cannot offer the same level of service, as the current physical and financial settlement processes are conducted across their entire network

The proposed changes do not serve the long-term benefit of consumers adequately. As such, the amendment does not fulfil the Authority's statutory objective.

Accurate price signals are important in the context of $100B of network investment

According to "The future is electric", a report published by the Boston Consulting Group[1],

a. $8 billion needs to be invested in transmission in the 2020s, $10 billion in the 2030s and $11 billion in the 2040s. This would only cover the grid.

b. In addition, there would have to be $22 billion invested by local networks in the 2020s, $25 billion in the 2030s and $24 billion in the 2040s.

c. Actual generation of electricity would have to rise by 79% and total generating capacity would have to increase by a still larger amount to provide a buffer for reserves, dry years etc.

1 https://www.bcg.com/publications/2022/climate-change-in-new-zealand

Projected Network Investment $B

	2020s	2030s	2040s	Total
Transmission	8	10	11	29
Distribution	22	25	24	71
Total network	**30**	**35**	**35**	**100**

Source: The future is electric - Boston Consulting Group

In the context of $100B of capital investment efficient price signals could create many billions of dollars of capital savings. While Part 6 of the Code offers a balanced process for networks and generators to connect distributed generation and specifies marginal costs to develop the connection, there is currently no corresponding Code guidance for networks or customers with load connections and pricing that incentives better use of existing assets e.g. like the new TPM.

We believe that targeted regulatory intervention that provides a balanced process for networks and end consumers to connect including marginal pricing for existing spare network capacity is arguably the most important enabler of de-carbonisation projects in New Zealand.

Appendix A – definitions of secondary networks

Since April 1, 1999, secondary networks have played a crucial role in the deregulated electricity market. In general, they have not created competition issues with local networks, except in cases where the pricing for local network connection has been unreasonably high, or in other words, they have enhanced competition on local networks.

Note that secondary networks are not regulated by the Commerce Commission as local networks are.

The term "secondary network" encompasses three distinct types of networks that benefit from transmission connections, as they are indirectly linked to the grid in the following ways:[2]

a) **Customer network** – This refers to a network that distributes electricity to customers in locations such as malls, shopping centres, retirement villages, apartment blocks, high-rise buildings, commercial or industrial estates, and so on. Customer points of connection do not have ICP (Installation Control Point) identifiers, although the network connection to the parent network will possess an ICP identifier. Since customers lack ICP identifiers, they have no choice but to procure electricity and network connections from the customer network.

   The exact number of customers connected to customer networks is unknown, as this information is not contained in market systems. However, estimates suggest that the number of customers connected to customer networks ranges from 50,000 to 100,000, representing approximately 2% to 4% of New Zealand customers. This figure is 2 to 4 times higher than the number of customers connected to embedded networks.

b) **Network extension** – This refers to a secondary network utilised by the parent network as an extension of its own network, connecting two or more customers via electricity reticulation within private property. The parent network does not own or operate the network extension but assigns ICP identifiers to customer points of connection and treats those points of connection as if they were customers connected to the parent network.
   The Code requires all customer points of connection to have ICP identifiers, and this provides the option for customers connected to network extensions to choose their electricity retailer. However, they do not have the choice of network provider without fulfilling extensive requirements.
   The exact number of customers connected to network extensions is unknown, as this detail is not included in market systems.

c) **Embedded network** - This refers to a network that distributes electricity to customers in locations such as malls, shopping centres, retirement villages, apartment blocks, high-rise buildings, commercial or industrial estates, etc.
   The embedded network owner assigns ICP identifiers to some (but not necessarily all) customer points of connection. The connection between the embedded network and the parent network is referred to as a network supply point (NSP). As such, the embedded network is treated as an entirely separate network within the reconciliation engine. Customers with ICP identifiers may choose their electricity

[2] These network types are also set out in the Secondary Network Guidelines at https://www.ea.govt.nz/documents/2939/Guidelines_for_metering_reconciliation_and_registry_arrangments_for_secondary_networks.pdf

retailer, but they do not have the choice of network provider without fulfilling extensive requirements.

Embedded networks can be designed as renewable energy microgrids, present considerable advantages in terms of connection, operational costs, and network efficiency. Well-designed microgrids can effectively reduce grid and network loads, as well as decrease the reliance on grid-connected generation, exerting downward pressure on electricity costs.

There are approximately 24,000 ICPs, which accounts for 1% of installation control points (ICPs) in New Zealand.