



Ref: 20210604AS:CB

10 June 2021

Dr Kerry Schott
Post 2025 Market Design Review
Energy Security Board

By email: info@esb.org.au

Essential Energy submission – Post 2025 Market Design Options Paper

Essential Energy welcomes the opportunity to provide a submission in response to the Energy Security Board's (ESB's) Post 2025 Market Design Options Paper (the options paper). The electricity supply chain is currently undergoing a fundamental transformation - such is the pace of this change, that traditional roles and responsibilities for services provided are often no longer clearly defined by the rules.

The earlier that appropriate regulatory reforms can be integrated across the National Energy Market (NEM), the more optimal the benefits of increased customer choice can be applied to all consumers. To that end, we support the wholistic approach taken within the options paper which reflects the other major regulatory reforms currently underway and how the Post 2025 project intersects with these reforms.

Essential Energy supports the integration of Distributed Energy Resources (DER) and demand side participation frameworks as a positive opportunity to facilitate changes to allow customers to realise the full value of their supply and demand. However, we would encourage the ESB to support the transition of Distribution Network Service Providers (DNSPs) to a greater DSO role and underscore the important role that distribution networks will play in the transition generally. While there are a range of distribution-related issues in the paper a clearer articulation of the importance of well utilised distribution networks, that are able to efficiently invest in a wide range of new technology including battery storage, to deliver better customer outcomes is required,

In terms of specific reforms there does appear to be a case to further explore expediting smart meter penetration to support customer outcomes and improved integration of DER. We also support ESB's proposed maturity plan as a method of ensuring customer net benefit analysis is undertaken to ensure overall economic efficiency is being maximised. We would however encourage the ESB to complete this work quickly as it had been hoped that the Options Paper itself would articulate some of this analysis.

Finally, in relation to Renewable Energy Zones (REZ's) we support the whole of system approach advocated by the ESB, which can be complemented by State jurisdictions. We understand an interim REZ framework paper will be submitted to Energy Ministers in the near term and Essential Energy looks forward to engaging in that process. However, we again reiterate the need for consideration of the distribution level in REZ policy development. Essential Energy is currently working with the NSW Government on a framework for how the effective utilisation of distribution assets can be incorporated within the REZ scheme.

These issues and our response to other specific discussion topics raised in the options paper are provided below. If you have any questions in relation to this submission, please contact me directly, or Mr Anders Sangkuhl, Regulatory Strategy Manager at anders.sangkuhl@essentialenergy.com.au or via phone 0409 968 326.

Yours sincerely,

A handwritten signature in black ink that reads "Chantelle Bramley". The signature is written in a cursive, flowing style.

Chantelle Bramley

General Manager, Strategy, Regulation and Corporate Affairs

Essential Energy submission to the ESB post 2025 market design options paper

Integration of DER and Demand Side Participation

Export Services

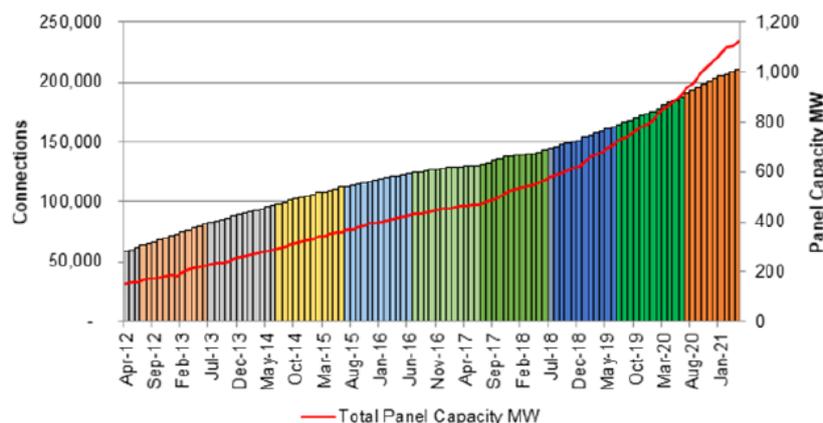
The rapidly growing prevalence of rooftop solar, batteries, and the emergence of new participants such as aggregators providing demand response capabilities, is transforming the role of the distribution network of the future to one based on bi-directional flows and real time communications. This rapid technological growth represents a unique opportunity for networks to positively assist consumers in delivering societal and environmental benefits whilst also maximising their economic welfare. Increased DER penetration also strategically aligns with wider environmental policy objectives such as emissions reductions activities and increased network resilience.

The achievement of these objectives poses challenges to the existing regulatory framework. In this context, it is worth noting Essential Energy's support for the recent Australia Energy Market Commission (AEMC) Distributed Energy Resources Integration rule change, which recognises export services as part of the 'distribution service' provided by DNSPs to customers as well as the removal of the National Electricity Rules clause 6.1.4, which explicitly prohibits the charging of export tariffs.

These changes are critically important to ensure that future expenditure on export capacity is cost-effective, and that customers are incentivised to operate DER resources in a manner which maximises economic utility for all stakeholders. These issues are particularly relevant for Essential Energy, because we are at the forefront of the energy transition having:

- over 800 megawatts (MW) of large-scale renewable generation connected to our network and over 2,300MW in the pipeline between the connection enquiry and construction; and
- 1,102 MW of small-scale renewable generation – 24% of Essential Energy's customers (25% of residential and 11% of small business), have small-scale renewable energy generation systems, mainly solar, connected to our network.

Putting these numbers into perspective, Essential Energy's all time maximum demand is around 2,600MW, with average demand approximately 1,400MW.



It is worth flagging this reform as a high priority area for Essential Energy to enable the infrastructure that facilitates DER bi-directional flows. Wherever possible we would encourage the ESB to support the AEMC's work in this area, as it fundamentally underpins several other key post-2025 workstreams.

Smart Meter Penetration

As noted within the options paper, managing the high penetration of DER across distribution networks both now and in the future depends in large part on the network visibility functionality that smart meter installations are able to provide. The falling costs of DER installation and the greater uptake of new technologies, such as batteries or even electric vehicles is accentuating the requirement for greater understanding of the operating environment of the low voltage network.

Nonetheless, at present Essential Energy has a smart meter penetration of only 20% across our regional network. The slow roll out of smart meters in NSW (and other NEM jurisdictions) is a key barrier to improved customer outcomes which include:

- Improved restoration times for customers through faster detection of outages and faults – Smart meters notify DNSPs in real-time if a premises' power is out. These outage alerts can speed up power reconnection because the source of the problem can be pinpointed instantly, allowing repair crews to be prioritised appropriately and start repairs sooner.
- Improved price signals - Improved tariff incentives and reforms which maximise the effective utilisation of the network (and wholesale markets).
- Lower costs to consumers through improved network operation efficiency – Faster response times improves DNSP efficiency, in many instances this allows for reduced labour and restoration costs.
- Improved public safety – Smart meters provide DNSPs with the tools for immediate detection of faults and network disturbances and can implement safety measures more quickly.
- Ability to move to a more automated network connection approvals process and ability to provide dynamic connections through real time feedback on network conditions/constraints from smart meters.

Given the relatively low smart meter penetration across the NEM, Essential Energy is of the view that the ESB should be actively exploring the case for introducing tangible recommendations which expedite the pace of smart meter roll outs under the following circumstances:

- **Life support customers** - Smart meters allow for more accurate detection of localised outages impacting life support customers. Having visibility of the real-time situation allows Essential Energy to better estimate restoration timelines, so life support customers can understand whether to stay in their homes or seek other accommodation. Providing smart meters to all life support customers contains a number of other benefits: faster response times during general unplanned outages, eliminating the need for meter reading visits to medically vulnerable customers, improved understanding of voltage across the low voltage network, improved ability to confidently forecast energy interruptions to life support customers, and self-report potential National Energy Customer Framework (NECF) breaches, in addition to empowering customers with a mobile application for communications and usage data.
- **Bushfire prone areas** - Essential Energy has approximately 57,000 customers within priority 1 bushfire prone areas. Due to the low penetration and slow rollout of smart meters in regional NSW, in the event of an emergency, network operators have limited ability to identify which parts of the distribution network remain energised, and which parts have been damaged due to fire. Smart meters would provide almost real time information on which houses, and businesses are impacted by a power outage. During the 2019-20 bushfires, one of the key issues Essential Energy identified was constrained access to accurate information available to both our field crews and external stakeholders about the number of households and businesses impacted by power outages. During the south coast bushfires, Essential Energy crews had to physically travel from house to house to assess the status of each premise, diverting resources from restoration efforts and slowing down the overall speed of our response.

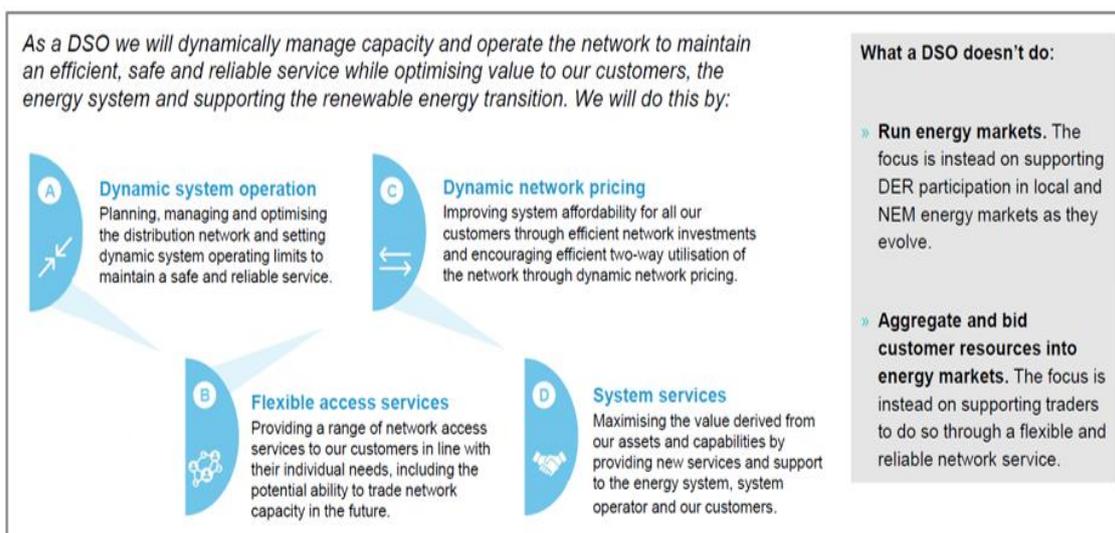
Whilst noting that these issues are in part being contemplated by the *AEMC's Review of the Regulatory Framework for Metering Services* we believe significant benefits exist in the ESB making

tangible recommendations for expediting a greater smart meter roll out under the criteria listed above. As a first step, Essential Energy would encourage the ESB to work closely with the AEMC in recommending a thorough examination of the costs and benefits in the circumstances identified above.

Distribution system operator

DNSP's are currently actively considering how they can adequately transition to a DSO role and assist in the delivery of a range of future services to customers and new market participants such as aggregators and demand response service providers.

As part of this work, several DNSPs under the umbrella of the ENA are currently co-developing a joint industry approach or "DSO Vision" to assess what their future role in the electricity industry could be. Some of the key roles and vision articulated to date includes:



Each DNSP is facing unique circumstances on their individual networks due to visibility, geography and DER penetration differences. As such, there is unlikely to be a one size fits all approach, and industry will seek to draw upon lessons from DNSPs that are progressing up the DSO curve first.

However, all DNSPs are united in their commitment to managing physical capacity of the distribution network in a way that serves and improves customers long-term interests. In undertaking this role, DNSPs are uniquely placed to understand the opportunities and challenges in managing network capacity across their area of operations, unlike other local market participants who operate in specific sub sections of these areas.

With this viewpoint, it is important for the ESB to consider how DNSPs could offer customers least-cost options by procuring services from other market participants – including as part of a transition from current to more sophisticated market arrangements and/or investing in technology directly that can lower overall cost to serve. This underpins the benefit of further considering existing competitive waiver arrangements so DNSPs can potentially provide local energy service options in the short to medium term to demonstrate net benefit under transparent competition guidelines – but also prioritising how DNSPs can enable other parties access to local energy service value stacks so it is clear that the development of future markets are not impeded and is in the long term interest of customers.

Essential Energy would encourage the ESB to continue supporting the transition of DNSPs to a greater DSO role. We would refer to the ENA submission for further detailed information supporting the DSO vision.

Customer protections are central to DER reforms

With multiple existing and proposed DER integration workstreams currently underfoot, it is worth noting that increased customer protections and preferences are central to all DER workstreams as

outlined in the options paper. In previous submissions, Essential Energy made the point that an evolved customer protection framework is a pre-requisite step under all reform scenarios.

Given this, we are supportive of the ESB's proposed risk assessment tool, that is designed to help assess whether customer protections are needed, with the expansion of new forms of energy services, opportunities to streamline and increase easy customer participation, appropriate technical standards, and other arrangements.

This risk assessment tool is important in providing regulatory justification which balances customer protections as well as the delivery between limited-service offerings and those options which consider the full suite of DER service offerings. It is worth noting that any new tools should not be in any way be perceived as being a substitute to existing regulatory protections through NECF or otherwise. Our comments below on flexible trading arrangements, connection point models and schedule-lite models should be viewed in this context.

Flexible trading arrangements

In principle, Essential Energy sees value in arrangements which encourage the separation of controllable from uncontrollable resources so customers can be rewarded for their flexible demand and generation whilst not requiring a significant behavioural change. In theory customers could even be able to establish additional connection points through new meters as a method of engaging with multiple service providers.

Nonetheless, as stated in the options paper, flexible trading arrangements can also involve considerable complexity, connection costs and multiple network tariffs leading to new risks for consumers, especially for those who are vulnerable. It is worthwhile noting that many customers will not have the ability or motivation to engage in flexible trading arrangements in any meaningful way. In addition, many future flexible trading arrangements and aggregation schemes being discussed in the market still appear relatively nebulous, with multiple differing business models potentially available.

We believe the ESB should explicitly recognise that future customer products may not involve the use of a trader to manage DER or load at all. This implies a flexible approach is needed which ensures customer protections remain in place regardless of the level of interaction customers take going forward. We also think the ESB should consider existing interactions customers currently undertake in their response to DNSP network tariffs such as solar sponges and controlled load. Whilst these reforms are less high profile than flexible trading arrangements, they are also designed to incentivise the efficient utilisation of the network for all customers.

Given the above, Essential Energy's supports model 1 as it exists today, building upon the small generation aggregator framework. Model number 2 which is similar to the subtractive metering model requires a thorough examination of the identified costs and a demonstration of tangible net benefits before being progressed. At the next stage of recommendations, we would encourage the ESB to present this analysis in conjunction with any proposed flexible trading arrangements recommendations.

Schedule-lite models

Visibility of both DER and load on the distribution network is important for Essential Energy's real time network management tasks. To that end, greater visibility provided through AEMO's scheduling systems is a positive development and broadly speaking we support visibility over dispatchability as the least-cost incremental reform for the current market scheduling arrangements.

Nonetheless, scheduling or "scheduling-lite" for DER devices such as aggregators and VPPs must be balanced with the costs and complexity which scheduling entails. These costs are recovered both from participants, who are participating in scheduling as well as the market operator. AEMO has previously indicated that the costs of scheduling aggregated small-scale DER may outweigh any visibility benefits which may be gained.

In this context it is worth noting that a greater penetration of smart meter or other network devices could potentially deliver the significant visibility advantages that DNSP system operators require to

successfully operate the distribution network at low cost. Given the other various benefits smart meters also provide to customers, this reform pathway may be the lowest cost reform pathway for visibility requirements.

The ESB should consider schedule-lite models in this context and we would encourage further consideration of the associated implementation costs for scheduled lite participants. We also support further collaboration with AEMO on the data they require to provide support for local energy service options, where distribution networks manage network capacity.

Data Requirements

Essential Energy supports the principles as outlined under the interoperability and communications chapter, including that “consumers should be able to share data with service providers”. In practice this would allow for data portability and sharing between consumer, aggregators, network and other market operators.

As previously raised in our response to the ESB’s data strategy work, the efficient functioning of reforms, such as the two-sided market, requires trade execution based on common and accurate data transfers between parties. Nonetheless, at present within the market there are several well identified issues regarding National Meter identifier data sharing between market participants, networks and third-party aggregators.

As such, we would encourage the ESB to set out pragmatic recommendations as to how data is defined and shared across a common market architecture with agreed quality, security, and standard requirements. One potential reform pathway previously contemplated could be a logical extension of the Market Settlement and Transfer Solutions framework for two-sided market trading activities.

Community Energy services

Community energy services include the sharing and trading of community resources such as solar and community batteries and customer DER. The provision of community energy services can reduce network congestion and capacity issues without the need for traditional investment solutions. Community batteries for instance provide options for customers that live in apartments and would not otherwise have access to these services.

Given the rapidly changing technology and innovative business models currently being developed Essential Energy would encourage greater consideration as to the role that community energy services have in supporting the transition to a more distributed energy market and lower emissions economy. Whilst some of these issues are being considered as part of the AER’s ring fencing review, it is worth noting the role DNSPs businesses can contribute to the uptake of community energy services through:

- **Overcoming cost barriers for capital investments:** DNSPs can assist in establishing community batteries on scale on behalf of customers, to assist in overcoming the high-cost barrier of individual households purchasing batteries themselves. This would likely result in quicker uptake, which would assist the more efficient utilisation of local renewable generation. This would reduce pressure on existing network assets and, at scale, may also help defer or avoid network costs.
- **Better management of local network issues:** DNSPs are well placed to use community batteries to support the network by managing voltage issues and absorbing excess intermittent energy at a community level. This would most effectively be done as a provider of a storage service to customers.
- **Access to economies of scale for technology services:** DNSPs have access to economies of scale that could allow for greater investment in more intelligent storage technology and programming if able to be offered to consumers.
- **Solve coordination problems:** By working closely with communities DNSPs are able to maximise the community energy services value stack and support communities in a way that is centrally coordinated.
- **Ability to leverage synergies with existing distribution assets:** DNSPs have the unique ability to leverage synergies with existing (and planned) distribution assets to derive more value for customers, as well as better support the network more generally.

Whilst a significant amount of complexity exists in defining the local settlement of community energy services and an appropriate consumer protection framework, it is worth noting that customer advocates and wider consumer preferences are continuing to strongly advocate for reforms in this area.

Maturity plan and implementation costs

Essential Energy supports an incremental approach to rolling out a two-sided market design in a way that maximises customer's options to generate and use energy. Any options also need to support customers that choose not to participate in future local energy markets. There is also a need to fully demonstrate how existing market arrangements can support the objectives of two-sided market design (e.g. by specifying clear technical standards to enable DER control to access local energy value stacks), before implementing more reforms which may be seeking to solve similar problems.

In this context, we support the ESB's proposed development of a maturity plan, as a robust way to enable the incremental roll-out of service options to access local energy value stacks. It is vital that customer representatives participate in co-designing this outcome, though this will require specific thought in managing the technical considerations required for timely market design in a way that ensures customer collaboration. A key principle that should support the ESB's maturity plan is how current market arrangements are assessed to demonstrate net benefits that are in the long-term interest of customers.

Essential Energy recommends that as part of the maturity plan a thorough examination of the costs identified should be presented to stakeholders in conjunction with the proposed recommendations. This would allow for:

- The appropriate staging of reforms, where those reforms which deliver the greatest net-benefits receive preference; and
- Clearly defined hurdles for reforms to proceed.

It is worth noting that implementation costs are an important issue for regulated network businesses, as many of the identified reforms entail investments in new data gathering, storage and processing capabilities. Any investments needed to deliver reforms are approved on a five-yearly basis through the AER's determinations, which is not guaranteed. Essential Energy would encourage the ESB to progress with the contemplation of a cost-benefit analysis at the next stage of consultation.

In addition, in order to reduce any potential duplication of reports and effective use of participants resources and time, we would suggest aligning the maturity plan as much as possible with existing scheduled reports. For instance, an input into the maturity plan could be the AER's annual "state of the energy market report" or the AEMC's bi-annual retail competition reviews. As such, we support the ENA suggestion for the AEMC to take the lead in establishing appropriate systems and governance frameworks to manage the maturity plan's development.

Finally, it is also worth noting the unprecedented amount of existing transformational market reforms taking place, many of which require a significant deployment of resources from participants, for example the five-minute settlement rule change. In this context, we believe it is important the maturity plan also continually consider the implementation costs associated with many of the ESB Post-2025 recommendations to ensure the achievement of net-customer benefits.

Transmission and Access

Renewable Energy Zones

At present several individual NEM jurisdictions are in the process of implementing ambitious government renewable programs and the development of State Renewable Energy Zone (REZ) schemes. Of particular interest to Essential Energy are the five REZ zones to be introduced as part of NSW's Electricity Infrastructure Roadmap, three of which cover large areas of the service territory.

Whilst the potential funding of the shared transmission network is a worthwhile objective as a method of bringing forward investment and reducing network congestion, detailed analysis needs to be taken to ensure risks are minimised. For instance, physical problems associated with unanticipated

constraints and variable marginal loss factors would affect REZs, just as much as the shared open access network.

Although the focus on REZs is primarily directed to transmission assets, it is also worth noting that DNSPs may have surplus network capacity in areas surrounding REZs. Shifting some of the generation and transmission investment risk away from consumers through the efficient utilisation of distribution networks is a worthwhile objective and one which would contribute to place downward pressure on the costs of energy market transition for consumers. Ideally this should feed into REZ processes to align efficiencies.

In this context, Essential Energy supports the whole of system approach advocated by the ESB, which can be complemented by State jurisdictions. In particular the ESB's REZ planning rules aligning with the optional development path as set out in the Integrated System Plan is a worthy objective.

We note the discussion of the proposed "REZ coordinator" reforms, which may establish a hard cap of total hosting capacity of a REZ which could be maintained through either a physical or financial access right. Whilst an interesting proposition, it remains unclear how such a framework will interact with the wider open access regime, in addition close consideration is needed of the potential gaming risks that may be introduced where connecting generators "shop" between different regimes on the distribution and transmission level.

We understand an interim REZ framework paper will be submitted to Energy Ministers in the near term and Essential Energy looks forward to engaging in that process.

Design of the Regulatory Investment Test for Transmission (RIT-T)

We note the discussion within the consultation paper of the Actionable ISP rules and their interaction with the broader RIT-T framework. The implication being that the existing RIT-T can lead to project delays and increased project approval requirements.

At its core the RIT-T is fundamentally a cost benefit analysis. Essential Energy believes it is important that appropriate planning and assessment processes are undertaken, to ensure that long-life transmission investments made on behalf of consumers are both efficiently sized and prudent. As such, we would caution against any transmission project circumventing or being processed through a "second tier" or "fast tracked" RIT-T process, even if the project is an actionable ISP (or even REZ) project.

In addition, the discussion on the potential inclusion of a wider range of benefits such as "broader benefits to society" into the RIT-T process requires close consideration. Whilst ultimately a policy issue for Governments to determine, it is likely that such a reform would entail significant complexity for the AER in administering the RIT-T process and potentially lead to consumers paying for inefficient investments. It is also unclear how such a proposal would align with the National Electricity Objective (NEO).

Whilst we support reforms which can streamline administrative delays or duplicative planning decisions, we believe this can be achieved without any compromising of the fundamental assessment tasks undertaken by the existing RIT-T processes.

Medium term access reform options

Whilst REZs may address some of the immediate challenges facing transmission reform, we agree with the ESB that this is only a partial solution to the broader challenges faced by access seekers in the medium to long term, such as locational signals, congestion management and ongoing risk management tools.

As such, we welcome the presentation of the three models (and two further variations) which seek to address concerns associated with the CoGATI model's locational marginal pricing and financial transmission rights. These five models being:

- Congestion management model

- Congestion management model mechanism modified for new investment and renewable energy zones
- Locational connection fee
- Generator transmission use of system charge
- Hybrid congestion management and connection fee model

All of the models presented have various positive and negative attributes which, given all of the models are at the conceptual stage, should be further explored in consultation with stakeholders before explicit support can be canvassed.

Nonetheless, it is worth noting that in the immediate term, the progression of interim REZ models across various jurisdictions would imply the transition to an “whole of system solution” must be fundamentally compatible with the elements of various REZs currently in design.

To guide the ESB’s work in this area, we suggest that the five medium term models should be evaluated against the costs, benefits and other trade-offs associated with each pathway to ensure benefits are consistent with the national electricity objective. This would provide assurance to participants that benefits and overall economic efficiency is being maximised and that the timelines and sequencing options are informed by an appropriate assessment methodology.

Other Considerations – Network Resilience

Whilst not an issue directly considered by the ESB Post 2025 options paper, in the wake of the 2019-20 bushfire season it is worth raising the need to embed resilience across Australian networks to minimise the risks and impacts of future natural disasters. The findings and recommendations of the recent Royal Commission and State jurisdictional inquiries strongly emphasised the importance of a continuous energy supply in mitigating the risk and impact of natural disasters by creating resilience in the electricity network.

A significant portion of Essential Energy’s network is in a designated bushfire zone, and vegetation management is the biggest operational expense, after labour. The issues identified in the bushfire inquiries are likely to be amplified over time as bushfire risks and their severity increase due to climate change effects. One potential way to embed resilience in the network is through the investigation of methods for valuing environmental and community benefits when networks consider DER hosting capacity decisions.

Despite the growing community expectations for greater network resilience to be provided, there appears to be a recognition in both the inquiry and royal commission findings, that at present, there is no corresponding methodology within the regulatory framework to value the resilience. As such, we would encourage the ESB2025 project to contemplate how “resilience” could also form part of future reform processes.