



Name: Essential Energy

Submission date: 6/06/2025

1. Reduce the cost of meeting carbon targets

1. What could be done to improve the cost-effectiveness and alignment of policies to reduce emissions across the industrial, electricity and transport sectors?

As the regional Distribution Network Service Provider (DNSP) in NSW, Essential Energy brings a unique perspective to this consultation as our network comprises over 183,000 km of powerlines, covering 95 per cent of NSW. Beyond supplying electricity to its customers, Essential Energy is increasingly tasked with delivering infrastructure that enables renewable integration into the energy system. Essential Energy has direct experience in connecting more than 1.5GW of utility scale generation and has another 3GW of generation currently progressing through the connection pipeline. Essential Energy's sub-transmission assets alone comprise approximately ~2100 km of 132 kV lines and ~7500 km of 66 kV lines, all technically capable of hosting additional utility-scale renewables and storage.

Over the past 18 months, Essential Energy has completed detailed hosting-capacity assessments of 37 bulk-supply points (BSPs) in the network. Those studies have found approximately 15 GW of spare headroom, with six priority BSPs able to accommodate ~8.4 GW of generation capacity.

Unlocking that latent capacity would connect new clean generation faster, at far lower cost and with fewer land-use conflicts relative to building new greenfield high-voltage transmission corridors.

Despite this opportunity, several entrenched rule-based distortions prevent distribution networks from contributing their full weight to Australia's net-zero task, including:

- Rule obligated sequential "first-in, first-served" processing of connection enquiries;
- A misaligned network-charging regime that penalises distribution connections;
- And a first-mover cost burden that deters early investors.

The following actions would remove those distortions and lower the national abatement bill.

Utilise network capacity that already exists

Direct Commonwealth underwriting or grant programs to mid-scale generation projects that connect at the distribution level. Because most sites require only modest conductor or transformer work, bringing on this ~15 GW of headroom can be less costly than new greenfield transmission links.

Fix the unequal treatment of connection-charges between Transmission vs Distribution Generators at distribution level pay mandatory "deep connection" Distribution Use of System charges (DUOS) based on long-run marginal cost, plus Transmission Use of System (TUOS) and jurisdictional levies such as the NSW Climate Change Fund and NSW Electricity Infrastructure Roadmap costs. A comparable generator that connects to

the transmission grid can usually negotiate away TUOS and avoid Jurisdictional levies altogether. Aligning charges so that like projects pay like fees, regardless of voltage, would stop the distribution network being inadvertently bypassed as a viable connection site, and level the playing field for similar types of connections.

Extend Renewable Energy Zone-style cost sharing to distribution networks
NSW already uses its Electricity Infrastructure Investment Act to fund shared assets in transmission REZs. Prioritising the establishment of equivalent distribution-level REZs, or similar cost recover mechanisms, would allow mid-scale projects share augmentation costs fairly across all beneficiaries of bringing that generation into the system and ease the first-mover deterrent.

Make sub-transmission hosting data part of national planning
Today's Integrated System Plan and Capacity Investment Scheme assume almost all new utility supply arrives via the transmission grid. Re-casting those models with DNSP-verified hosting data would reveal expansion paths that may be less costly to use and add distribution to the mix with greenfield transmission lines.

Empower distribution networks to deliver charging infrastructure that encourages electric vehicle (EV) uptake

Australia lags the world in EV sales, and range anxiety is a major barrier for many consumers, both inside and outside of cities. The competitive EV charging infrastructure (EVCI) market is not delivering public charging infrastructure, particularly in regional, rural and remote areas. Where EVCI is being delivered regionally, such infrastructure has higher costs to operate and maintain infrastructure and lower levels of demand. With regulatory reform, DNSPs could help ease range anxiety and facilitate EV uptake by installing kerbside chargers on their existing distribution poles as open access platforms enabling charge point operators to provide choice in charging services to customers without bearing the costs of installation and maintenance of infrastructure. Numerous publicly accessible chargers could be made available, particularly in regional areas that are underserved by the competitive market which may facilitate EV adoption.

Expanding the availability of charging infrastructure will enable low and zero-emissions vehicles to travel further and more frequently across more of NSW. This can have broad-ranging benefits, including reducing carbon emissions, improving air quality, helping households spend less on fuel and vehicle maintenance. Further, this would enable EV drivers to visit more NSW towns across the state, delivering a boost in economic activity across the regions. And by enabling greater utilisation of distribution networks, all energy customers would see downward pressure on their bills.

2. Are there gaps in the emissions-reduction policies in the industrial, electricity and transport sectors which should be addressed?

Although the measures outlined above would remove some of the most immediate frictions, the Productivity Commission should note that several structural gaps remain in the Federal–State policy mix. Filling these gaps can facilitate investment in mid-scale renewables in connecting quickly to distribution networks to speed the pathway to meeting Australia's carbon targets, at arguable lower cost.

- Framework for mid-scale renewables at distribution level is needed – The National Electricity Rules were designed for an era when very few generators connected below the transmission level of the grid. The mandatory first-in-queue approach “prevents

geographical grouping of generation projects” and strands valuable hosting capacity that could be unlocked at minimal cost.

- First-mover disadvantage deters early capital – Where an initial project funds an augmentation that opens up capacity for others, there are limited mechanisms for that generator to recoup a fair share of that cost. Proponents therefore defer or redirect investment, even when their project is technically and commercially sound.
- Distribution capacity is invisible in Commonwealth modelling – Current national planning instruments and underwriting schemes assume almost all new utility-scale supply arrives through high-voltage corridors. Incorporating DNSP-verified sub-transmission headroom into the Integrated System Plan and related programs would reveal lower-cost expansion paths and avoid over-investment in long-haul lines.
- The potential for behind-the-meter technologies to reshape energy markets is largely unknown: Rooftop solar has evolved from an emerging source of new generation to a behemoth in the NEM, and is contributing to grid stability risks, including in minimum demand events. Home batteries may help to alleviate these issues and, if adopted rapidly at scale, could transform energy markets, especially when combined with home energy management systems and other emerging Consumer Energy Resources (CER). However, incentives for households to invest are insufficiently tied to priorities in the national Consumer Energy Roadmap to not only integrate CER but capitalise on opportunities to drive lower costs for all energy consumers. Left unchecked, incentives for home batteries could widen technology inequality for millions of households that cannot invest in their own CER. Visibility behind-the-meter also remains poor, and AEMO’s Integrated Systems Plan is only beginning to model the potential impacts of CER on the grid. This work should be accelerated to ensure it can shape the rollout of home batteries and other emerging CER.
- Removing barriers to business investment in decarbonisation and electrification: Essential Energy believes that successfully delivering Australia’s energy transition will require a rapid, scaled and coordinated decarbonisation and electrification of the commercial and industrial sectors. Removing barriers to business investment in decarbonisation and electrification is critical to achieving this in an efficient and cost-effective manner.

The size of the industrial emissions problem and the opportunity it presents.

Essential Energy estimates that manufacturing in NSW accounts for approximately 75% of stationary emissions, which equates to 13MT of CO₂ annually. The reduction or elimination of these emissions using electrification technology could require up to 6TWhs of additional electricity in Essential Energy’s footprint alone. This would support 4.4GW of co-located solar PV on commercial and industrial sites across the Essential Energy network footprint. Crucially, this would lead to faster uptake of low-cost renewable energy and lower network connection costs for all network users, driven by increased utilisation.

Any new policies and incentives should provide a level playing field for different decarbonisation technologies and offer meaningful financial support to those technologies that can deliver the fastest and lowest cost forms of carbon abatement. Current government funding programs at a state and federal level are inaccessible or unsuitable for many businesses, or do not support the full range of technologies available to rapidly decarbonise the full range of heat requirements. Essential Energy recommends policies or schemes that focus on:

- Reducing barriers and increase financial incentives for Commercial and Industrial customers to undertake electrification of industrial processes and decarbonisation; focusing on those technologies that can deliver fastest and lowest cost carbon

abatement

- Incentivising load shifting not just from peak times of use, but also to periods where there is a lower carbon intensity associated with the electricity that has been generated.
- Fast tracking the deployment of commercially available and technologically proven solutions yet to be deployed at scale in Australia (such as thermal batteries), accelerating market development and helping NSW industrial businesses find the most affordable path to rapidly decarbonise.
- Electrification of commercial and industrial customers which contributes to peak demand reduction schemes to assist distribution networks to better manage peak demand during the energy transition and support a lowest-cost path to achieving the transition.

Addressing these gaps would unlock the immediate, low-cost decarbonisation potential sitting on the distribution network and ensure that investment signals are technology and location neutral across the National Electricity Market.

3. Are there any duplicative emissions-reduction policies in the industrial, electricity and transport sectors which could be streamlined?

The participant did not respond to this question.

2. Speed up approvals for new energy infrastructure

1. Are planning and approvals processes for large energy infrastructure taking too long? If so, what causes the most delay?

Yes, Essential Energy's recent connection experiences in NSW have shown that responsibilities for system planning are split between Transgrid (jurisdictional planner under the National Electricity Rules), EnergyCo (Infrastructure Planner under the NSW Electricity Infrastructure Investment Act) and AEMO (System Operator). That fragmentation blurs accountability and slows decisions. Further delay arises from rule-mandated, "first-in, first-served" processing of connection enquiries, which blocks parallel assessment and strands distribution hosting capacity, while an uneven charging framework often compels late design changes when proponents discover that distribution-level connections attract deeper network fees than equivalent transmission projects.

These issues have been noted in the Independent NSW Transmission Planning Review, currently being undertaken at the request of the NSW Government.

2. How can planning and approvals processes be sped up without unduly compromising regulatory standards?

The participant did not respond to this question.

3. Should clean energy projects be treated differently to other projects for the purpose of environmental and other approvals? If so, how?

Potentially: provided any new framework remains evidence-based and maintains environmental, engineering and technical safeguards.

A differentiated or streamlined pathway could be justified where projects re-use existing network corridors or assets, limiting new land disturbance (e.g. distribution-connected solar or BESS on brownfield sub-transmission sites). The NSW EII Act could act as a potential guide for how projects could be streamlined, but importantly it should be applied to distribution level connections as well, as opposed to solely utilised on Greenfield Transmission connected projects as is the case today.

4. What can be done to build local community support for new energy infrastructure projects?

Locating projects on distribution assets that are brownfield developments with existing easements, rather than carving new greenfield transmission corridors, dramatically reduces visual, cultural-heritage and land-use concerns.

5. Please outline any evidence showing the productivity benefits of faster approvals for energy projects.

As noted above in section 2, Detailed hosting-capacity studies across thirty-seven Bulk Supply Points show about 8.4 GW of immediate thermal headroom, enough for roughly 15 GW of nameplate renewables, available on Essential Energy's sub-transmission network. Connecting that capacity through streamlined distribution pathways can deliver generation years sooner than building new high-voltage transmission, at materially lower cost and with far fewer land-use conflicts. These opportunities have been identified and noted in various recent review processes, such as the 2023 Electricity Supply and Reliability Check Up Report, the AEMO Draft 2025 Electricity Network Options Report and others.

3. Encourage adaptation by addressing barriers to private investment

1. What are the barriers and enablers impacting decisions by owner-occupiers, landlords and developers about how housing is built and updated over time so that it is resilient to the effects of climate change?

The participant did not respond to this question.

2. What information do people need to make decisions about where to live, how to build and how to upgrade their homes to appropriately factor in climate change?

The participant did not respond to this question.

3. What are the most cost-effective retrofitting options for improving the resilience of Australia's existing housing stock? What are their costs and benefits?

The participant did not respond to this question.

4. What role might minimum standards play in ensuring the resilience of Australia's housing stock?

The participant did not respond to this question.

5. The impacts of climate change are being factored into the regulation of where and how houses are built in different ways around Australia. What does leading practice look like? Where is there room for improvement? Are there lessons we can learn from other countries?

The participant did not respond to this question.