



NEM Review – Initial consultation

Energy Efficiency Council Submission

February 2025



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About the EEC

EEC is the peak body for Australia's energy management sector.

We are a membership association for businesses, universities, governments and NGOs that have come together to ensure Australia harnesses the power of efficiency, electrification and demand management to deliver a prosperous, equitable, net zero Australia with:

- People living and working in healthy, comfortable buildings;
- Businesses thriving in a decarbonised global economy; and
- An energy system delivering affordable, reliable energy to everyone.

EEC works on behalf of its members to drive world-leading government policy, support businesses to rapidly decarbonise, and to ensure we have the skilled professionals to drive Australia's energy transformation.

Introduction

Dear NEM Review Secretariat,

Thank you for providing the opportunity to provide initial feedback on the NEM Review.

This review comes at a pivotal time, with just five years remaining for Australia to meet its ambitious target of 82 per cent renewables by 2030, record additions of distributed solar PV capacity, and the fast growth of new sources of demand in data centres and electric vehicles.

While these changes may appear daunting to electricity system planners, tapping into the power of energy management could help Australia decarbonise the electricity system faster, integrate more variable renewables, and ensure the growing number of behind-the-meter assets are valued as resources, rather than problems to be managed.

Doing so requires applying a philosophy of ‘Energy Management First’, which, in practical terms means:

- **Technology neutrality:** Designing markets with a view to achieving genuine ‘technology neutrality’ requires close consideration of: the outcomes being sought; the market features required to facilitate the participation of a diverse range of technologies; and what systems would dispatch an optimal mix of these resources to meet system requirements.
- **Incentives:** All energy users should be able to seamlessly access incentives to manage demand, regardless of their current retail arrangements. Currently, energy users need to become spot exposed or have a major change to their retail plan to even *try* demand response. In other words, we need to consider both accuracy and practicality in incentives;
- **Value stacking:** energy users need to be able to combine multiple value streams, including being rewarded for providing wholesale, network and system services;
- **Access to experts and data:** ensuring energy users that wish to be serviced by multiple parties to help them manage their energy use can do so easily. This covers issues such as access to data and allowing multiple Financially Responsible Market Participants (FRMPs) to service a single connection;
- **Competition:** ensuring that there is competition in energy market services, especially in relation to network services and non-wires alternatives; and

- **Governance reform:** the key to implementing the principle of *'Energy Management First'* will be embedding it in governance systems so that energy policy and markets deliver the lowest cost mixture of supply-side and demand-side investments.

For further information about anything in this submission, please don't hesitate to contact me via email at jeremy.sung@eec.org.au.

The EEC looks forward to continuing to work closely with you on this important review.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'Jeremy Sung', with a stylized flourish at the end.

Jeremy Sung

Head of Policy,
Energy Efficiency Council

Topic 1: Investment incentives

The existing ‘energy-only’ spot market is very efficient at delivering pricing signals for real-time operation. However, it was never intended on its own to be a pricing signal for investment in long-lived firmed renewable generation and storage. It is the interaction of this market with forward derivatives and policies such as the RET, state-based schemes and the CIS that have delivered longer-term pricing signals that allow projects to be banked. This Review will consider options for how to promote investment in firmed, renewable generation and storage capacity beyond the CIS.

We are interested in ideas based around the following questions:

How might the NEM wholesale market and derivate markets most efficiently evolve to provide signals for investment in firmed, renewable generation and storage capacity?

The most efficient investment in firmed, renewable generation and storage is facilitated by optimising the demand side of the energy system. The key is to avoid supply side investments in capacity that could be delivered more cost effectively by the demand side.

Unfortunately, Australia’s energy markets have been designed around a principle of investing in supply-side resources to meet demand, with much less effort on demand-side investment – a problem identified in virtually all reviews of the NEM, since the *Parer Review* in 2002.

Accordingly, the EEC recommends that governments, market bodies and other parties adopt an approach to energy market planning similar to the European Union’s approach which applies the principle of ‘Energy Efficiency First’¹, although we think that this is probably better termed ‘Energy Management First’.

It is important to clarify that ‘Energy Management First’ does not mean that energy management should be given precedence over energy supply. Instead, based on the recognition that energy systems tend to be designed with a supply-side bias, the principle requires decision-makers consider

¹ European Commission, *Energy Efficiency First Principle*, https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-first-principle_en

demand-side options *before* they finalise policy design or infrastructure investments. In other words, ‘first’ refers to sequencing, rather than priority.

Implementing ‘Energy Management First’ will involve applying a set of principles, including:

- **Technology neutrality:** The principle of technology neutrality is much discussed but often poorly implemented in Australia; markets have been designed around the features of specific supply-side technologies (e.g. coal-fired generators and more recently ‘firmed renewables’) and expecting other technologies with different features to compete in these markets. Designing markets with a view to achieving genuine ‘technology neutrality’ requires close consideration of: the outcomes being sought; the market features required to facilitate the participation of a diverse range of technologies; and what systems would dispatch an optimal mix of these resources to meet system requirements.
- **Incentives:** All energy users should be able to seamlessly access incentives to manage demand, regardless of their current retail arrangements. Currently, energy users need to become spot exposed or have a major change to their retail plan to even *try* demand response. In other words, we need to consider both accuracy and practicality in incentives;
- **Value stacking:** energy users need to be able to combine multiple value streams, including being rewarded for providing wholesale, network and system services;
- **Access to experts and data:** ensuring energy users that wish to be serviced by multiple parties to help them manage their energy use can do so easily. This covers issues such as access to data and allowing multiple Financially Responsible Market Participants (FRMPs) to service a single connection;
- **Competition:** ensuring that there is competition in energy market services, especially in relation to network services and non-wires alternatives; and
- **Governance reform:** the key to implementing the principle of ‘*Energy Management First*’ will be embedding it in governance systems so that energy policy and markets deliver the lowest cost mixture of supply-side and demand-side investments.

Demand flexibility capacity in an energy only market

In relation to demand flexibility capacity, experiences with the WDRM suggest that large energy users tend to be reticent to sign up to VPPs where future revenue is uncertain. Aggregators working in jurisdictions outside of the NEM report greater success in recruiting customers into VPPs where capacity markets exist.

As such, a mechanism to provide payments for making flexible demand capacity available (regardless of if it is used) may support higher levels of aggregated flexible demand in the wholesale market. This is akin to underwriting the construction of a physical peaker plant that may only be used on extreme demand days – but at a much lower cost. The incentives provided alongside AEMO’s recent Integrated Price Responsive Resources rule change may help in this respect, although it is currently too early to tell.

Is there a role for certificated schemes to promote investment in firmed, renewable generation and storage and what might these look like?

A certificated scheme is one of several policy options that could promote investment in capacity. Irrespective of the exact mechanism chosen, it is critical that the policy applies a truly technology neutral approach to incentivising investments in both supply- and demand-side capacity.

Importantly, any scheme should avoid intentionally or unintentionally establishing barriers that discourage smaller, decentralised sources of flexible demand capacity from participating, which in aggregate, can form sizeable capacity resources. Too often, incentive schemes for capacity have excluded flexible demand resources through narrow, and often arbitrary eligibility requirements. For example, South Australia’s Firm Energy Reliability Mechanism will only reward capacity of 30 MW or more for 8 hours duration, which signals that smaller, flexible demand resources are ineligible, even though in aggregate, these resources could provide the same service to the grid as larger resources.

Assuming a certificated scheme would ultimately be paid for by consumers through their energy bills, ensuring the scheme delivers capacity at least cost is vital to minimise cost pass-through. This is another reason why any scheme must incentivise flexible demand capacity, which tends to be much cheaper than supply-side generation and storage, given the infrastructure is largely built already. Conversely, a scheme that only rewarded generation and storage would cost much more for consumers.

Could the Retailer Reliability Obligation (RRO) play a role to incentivise new investment if it was expanded in the future?

No comment at this time.

Could other capacity mechanisms efficiently attract investment in firmed, renewable generation and storage capacity?

Other mechanisms could attract investment in firmed renewable generation and storage and demand-side options. As noted above, whatever the mechanism chosen, technology neutrality should be a principle embedded in its design to ensure demand-side options are not prohibited from participating.

How can markets ensure we have sufficient capacity in place when and where we need it before existing resources retire?

One of the advantages of energy management as a form of ‘capacity’, including energy efficiency and flexible demand, is that much of the infrastructure is already built. This makes it well suited to providing the grid services required well before the forecast retirement dates for Australia’s large, fossil generation fleet.

For example, it is straightforward to rewire or reconfigure existing electric water heaters to consume electricity in the middle of the day, helping to maintain minimum operational demand at these times, and reduce peak demand in the evenings. Modelling has shown that an ambitious approach to maximising the potential of domestic hot water could unlock about 24 GW of flexible demand capacity by 2040, the equivalent of 70% of AEMO’s projections for behind-the-meter and coordinated DER storage capacity.²

However, stimulating market participants (including end-users, energy service companies, retailers, and others) to unlock these resources at scale, will require a range of incentives and regulatory reforms, outlined below.

Accessing flexible demand capacity across households and C&I facilities will require the development of new (or expansion of existing) incentives as well as regulatory changes.

AEMO’s recent rule change on Integrated Price Responsive Resources (IPRR) provides a voluntary mechanism that allows unscheduled price-responsive resources into scheduling and dispatch processes and includes a time-limited incentive to encourage participation. It is too early to tell if IPPR will be successful at attracting new sources of flexible demand to participate as scheduled loads, particularly as it is voluntary so much may depend on the design of incentives. However, if the IPPR

² UTS Institute for Sustainable Futures (2023), *Domestic Hot Water and Flexibility*, <https://www.uts.edu.au/sites/default/files/2023-06/Domestic%20Hot%20Water%20and%20Flexibility.pdf>

can help to prove that distributed, small, flexible loads are schedulable, it could be an important step to realising the potential of Australia’s flexible demand resources.

Changes could also be made to existing mechanisms to increase participation of flexible demand in the wholesale market, notably the Wholesale Demand Response Mechanism (WDRM). Anecdotally, the potential for large energy users’ participation in the WDRM is several times larger than current participation, but there are problems with the design of the scheme that are preventing it reaching its full potential. These include:

- The need for more baseline methodologies;
- Overly restrictive eligibility requirements, for example, accuracy scores for baseline calculations applied at the site level that are much more restrictive than compared with other markets internationally, where such scores are applied at the *portfolio* level;
- Tensions between aggregators and retailers reflected in scheme design (e.g., that baselines are applied at the site, rather than portfolio level).

AEMO has demonstrated a willingness to consider changes to the WDRM and has recently released a response³ to a proposal for new baseline methodologies. AEMO is also considering trialling changes to accuracy scores for baseline calculations with a decision currently pending on if the trials will proceed.

Incentives and regulation can also be calibrated to drive changes in demand that reduce the need for extra capacity altogether.

For example, regulatory changes combined with incentives could be used to encourage DNSPs to consider demand management as an equally viable option for investment as network augmentation. Current programs including the Demand Management Innovation Allowance and Demand Management Incentive Scheme have been under-utilised and have not resulted in DNSPs scaling demand management solutions. The fact that only \$3 million of the potential \$1 billion available for investment under the DMIS has been accessed is telling⁴. This suggests a need for large-scale reform

³ AEMO, WDR Baseline Methodology Consultation - Enel X proposals, <https://aemo.com.au/consultations/current-and-closed-consultations/wdr-baseline-methodology-consultation-enelx-proposals>

⁴ UTS, (2024), Flexible Demand State of Play Report, <https://arena.gov.au/assets/2024/06/UTS-Flexible-Demand-State-of-Play-in-Aust-Report.pdf>

or new mechanisms to drive DNSP action on the demand side, such as the creation of new regional competitive markets for network capacity, proposed by some DNSPs.

Similarly, incentives are also needed to encourage energy efficiency investments – helping energy users manage the upfront costs of equipment and building retrofits – which would also reduce the size of capacity additions. This is an urgent issue given the expectation that significant residential heating load currently met by the gas network will transition to the electricity network over the next two decades. While this transition will have significant affordability and emissions benefits, the *quality* of electrification requires close attention; in short, efficient electrification with a focus on highly efficient appliances and thermal performance improvements will help manage peak demand and lower the need for supply side investments. In broad terms, this dynamic is also relevant for many C&I customers, albeit on a longer timescale given capital replacement cycles.

Incentives targeted at energy efficiency are particularly necessary in states without retailer energy efficiency schemes, although existing schemes also require design changes to better reflect the energy system of today and incentivise time-specific energy savings.

Regulation can also be a critical driver of investment in energy efficiency. For example, minimum performance standards that regulate out inefficient appliances and equipment from the market have been critical to reduce Australian energy demand, with standards for refrigerators and freezers estimated to have reduced the need for 360 MW of capacity over their lifetime, equivalent to a small coal-fired generator⁵.

Governance reforms

The governance frameworks for Australia’s energy markets are outdated and heavily focused on regulating and planning energy supply, mostly ignoring demand-side activities. Reforming these frameworks will send a strong signal to markets that investing to reduce the need for capacity is as important as investments in new capacity. More information on governance reforms is provided under topic 4.

⁵ Department of Energy and Environment 2018, The Independent Review of the GEMS Act 2012 Draft Report, Commonwealth of Australia, Canberra.

How do the market settings preferred by stakeholders provide sufficient confidence to consumers and governments that capacity will be delivered?

It should be noted that ultimately, consumers and governments' interests are in energy services, rather than energy or capacity per se. The most important outcome from the energy market is that energy consumers have access to affordable, reliable energy to perform the tasks they need to perform; the amount of capacity built to deliver energy services is of secondary importance, except to the degree that they contribute to that outcome.

The EEC's preferred market settings would see demand- and supply-side resources considered equally capable of serving the energy market. However, in Australia, governments and other decision makers have tended to have low confidence in demand-side resources' ability to deliver tangible outcomes for the energy market, and ultimately for consumers.

This is partly due to deep seated biases in our energy governance systems and historical access to cheap fuels for energy generation leading to a poor understanding of the demand side in general, and distrust that a resource like energy efficiency – labelled the 'first fuel' by the International Energy Agency – could ever play more than a supporting role in energy planning.

However, evidence from other countries shows that demand side resources, including energy efficiency and flexible demand, can be considered 'bankable' investments, that deliver the energy services desired by energy users and at a lower cost overall.

How can the NEM wholesale market and any other markets work in tandem to ensure we have appropriate signals for the right type of resources in place when and where we need it?

As some demand-side resources interact with both the wholesale and retail markets, alignment between the wholesale and retail markets could help to drive more flexibility in some cases.

One consideration in supporting market participants to respond to wholesale market price changes is the network charge component of retail products.

As the network charge component of energy bills increases relative to usage charges, there is a risk that price-responsive energy users who could benefit themselves and the grid by using energy flexibly, are dissuaded from doing so, if the fixed charge components of their bills overwhelms benefits of responding to wholesale price changes. For these users, retail offerings that include

dynamic network tariffs that better align with wholesale price changes may help - an example of where distribution network regulation and the wholesale market intersect.

How can these market settings facilitate emissions reduction in line with the National Electricity Objective and Australia's international commitments?

An energy market that truly values demand-side resources will be much more likely to achieve the transition to a net zero emissions grid, consistent with Australia's emissions reduction goals under the Paris Agreement.

This is because investments in demand side resources would result in a demand profile that is far better matched with variable renewables and storage than one that continues to prioritise supply without altering demand, which results in a high curtailment of renewables and over-reliance on fossil generators to cover demand at times that could have been shifted.

Optimising demand, by both lowering demand and changing when energy is used, supports a higher utilisation of variable renewables (particularly solar), and allows storage to cover more of a household or business's energy use during periods of low renewables penetration. The result is a faster transition to a 100% renewables, zero-emissions grid compared with an approach that ignores demand-side solutions.

In the transport sector, encouraging the uptake of electric vehicles and supporting them to both charge from and discharge into the grid at optimal times – rather than seeing them as a problem to be managed – could provide a dual benefit for emissions reductions: supporting higher renewables use and reducing emissions from internal combustion engine vehicles.

Topic 2: Consumer interaction with the wholesale market

How do we enable consumers—ranging from large businesses to households with rooftop solar—to benefit from and contribute to the market? Integrating new consumer energy resources (CER) such as electric vehicles (EVs), batteries and solar photovoltaic (PV) has the potential for reducing unit costs by lifting capacity utilisation of the network and generation infrastructure. Lifting capacity utilisation

through more efficient use of energy at different times of the day would reduce unit costs and improve outcomes for all consumers.

What can be done to facilitate better interaction between the demand-side, the spot market and any existing or future financial markets?

Any conversation on activating consumer participation in energy markets must begin by recognising the immense variation in energy consumers. This is common to both households and commercial and industrial energy consumers. While there is a minority of ‘prosumers’ who are highly engaged and are willing and able to adjust their consumption to respond to spot prices, most energy users are more concerned with the services energy provides (a cool house, a hot meal, a productive factory, etc).

Nonetheless, there is still a lot of potential for less engaged energy users to have their behind-the-meter resources play a role in supporting the electricity system (and be rewarded for doing so), and technology has an important role to play.

New technologies such as automated home energy management systems (HEMS) could provide a way to offer dynamic pricing without requiring consumers’ active participation. In South Australia, the Energy Masters⁶ program, involving several of the EEC’s members, will test how HEMS can be partnered with ‘flexible network connections’ to tap into demand flexibility in exchange for highly discounted appliances and energy savings, with the HEMS managing the household’s response to time-of-use pricing. The results of this trial may point to possible future retail models in which consumers pay flat subscription fees to retailers offering ‘energy as a service’ style products.

Unlocking this potential will require regulatory changes to energy laws, new equipment standards (for example, to ensure interoperability between different HEMS), data sharing and protection systems, incentives and other market development measures, all steering in the same direction.

The Consumer Energy Resources (CER) Roadmap represents an attempt to address some of the most pressing technical issues (including issues like interoperability). However, the CER is:

- Limited in scope (for example, the definition of CER does not include thermal performance improvements that would support flexible space heating and cooling);
- Dominated by energy market bodies, with limited input from energy users;

⁶ Energy Masters, <https://www.saenergymasters.com.au/>

- Siloed from other Federal policy reform processes that have overlapping objectives (for example the National Energy Performance Strategy, the review of the Greenhouse and Energy Minimum Standards (GEMS) program, National Construction Code updates, etc).

This points to opportunities for governance improvements that could help to prioritise the demand side highlighted earlier: until the demand side is prioritised through institutional reforms that reflect its relative importance to the energy transition, policy reforms will continue to be piecemeal and poorly coordinated.

How might the NEM wholesale market best allow for customers to engage in the market to benefit from their investment in CER, while allowing for different consumers to choose how they engage and continuing to recognise electricity is an essential service with associated accessibility issues for many consumers?

The IPPR rule change and accompanying incentives, represents one possible avenue to support customers to benefit from their investments in CER, provided the right balance is struck between risk and reward to encourage participation.

Better calibration of state retailer energy efficiency and peak demand schemes could also play an important role. For example, the NSW Peak Demand Reduction Scheme provides different levels of incentives for batteries, depending on whether the battery is part of a VPP or not. However, the additional incentive is small relative to the cost of the battery (especially once VPP management fees are deducted) which may be limiting uptake, combined with low consumer literacy on VPPs and energy markets in general.

On the latter point, even with HEMS (referred to above), there is still much to be done to understand how we engage with consumers and build sufficient trust to motivate them to participate directly in the market or via agents like HEMS.

Reforms to the WDRM (discussed above) would also encourage more large commercial and industrial energy users to engage with the wholesale market.

Topic 3: Changing nature of spot electricity prices

During the transition to a highly renewable system, energy-only spot prices have become more volatile, including many periods where electricity is negatively priced and a higher number of extreme price periods. These provide acute signals for generators and consumers to be flexible in supply and consumption as well as for investment in storage. However, it may also make the insurance products to manage price risk more expensive.

Despite representing a small fraction of overall TWh of generation, gas prices drive a significant proportion of average wholesale electricity price outcomes. This trend is also observed across many other overseas markets. Given East Coast gas prices are heavily influenced by Asian gas prices, wholesale prices in the NEM have been and remain influenced by international events.

How will prices at different times of the day and year change and evolve with the move towards firmed, renewable energy generation and storage?

Provided the move towards firmed, renewable energy generation and storage is partnered with the proper integration of demand side resources, there is no reason that gas prices should continue to set the spot price over time; indeed avoiding this outcome is one of the primary benefits of properly integrating demand side resources.

Gas prices are currently influential due to the lack of short- or medium-duration BESS or activation of demand side solutions at scale.

However, there are already significant periods of the day when load – through pumps and batteries – sets the spot price. Short- to medium-duration firming could feasibly be provided primarily by a suite of technologies including aggregated batteries and electric vehicles combined with flexible appliances and equipment, leaving gas to play a role during atypical weather, such as long-duration ‘dunkelflaute’ events in winter.

How might the NEM wholesale market and derivative markets allow market participants to most effectively respond to fluctuating prices and manage price risk?

No comment at this time.

Topic 4: Essential System Services

Many of the system services provided by large thermal generators as a by-product of their generation will not necessarily be provided in the future without new markets and pricing signals.

What new markets and other measures might ensure they are provided?

There is significant uncertainty as to exactly which essential system services will be required as the future electricity system develops.

As our understanding improves, it may be necessary to establish new mechanisms to guarantee these services are provided. In doing so, system reliability should not be conflated with dispatchability⁷, which may limit decisions to one set of technologies. Instead, the principle of technology neutrality should be applied, to allow the possibility of both demand- and supply-side resources to play a role.

Already, demand-side resources provide valuable system services like FCAS, which are critical for reliability. Demand response, in particular, has a number of features that make it well suited to providing grid services, including:

- **Availability:** many forms of demand response are almost permanently ‘ready’ and highly reliable. In contrast, significant investment is required to keep generators ready, even if they are called on for just a few hours a year, and generators need to already be spinning to provide FCAS.
- **Speed:** Many forms of demand response can be delivered rapidly (less than one second), in contrast to longer ramp times for generation.
- **Affordability:** as demand-response services are effectively an adjustment of equipment that has another purpose, it is typically much cheaper to deploy than building and maintaining generation that is only used for a few hours a year. Research has demonstrated that up to 4.3 GW of

⁷ RMI, (2025), *Reality Check: Dispatchability and Reliability Are Not the Same Thing*, <https://rmi.org/reality-check-dispatchability-and-reliability-are-not-the-same-thing>.

potential demand response resources exist in Australia, which could be accessed for prices of between \$300-1500/MWh.⁸

- **No social licence concerns:** As demand response does not require building new infrastructure, and is an opt-in measure, there is not the same requirement to build social licence that is currently proving difficult in some existing transmission projects, such as the VNI West project.

Which entities are best placed to determine what is needed, where and when?

Energy governance reforms are critical to undertaking energy system planning in a more holistic way, including identifying and investing in demand-side resources for essential system services.

Unfortunately, current governance arrangements mean much of the conversation about ‘what is needed, where and when’ in relation to both essential system services and broader system planning, is one-sided, revolving around dispatchable generation.

An example of how the existing supply-side oriented governance system leads to one-sided investments in generation and storage capacity is AEMO’s Integrated System Plan (ISP). The ISP is highly influential, guiding both electricity sector investment and broader policy across state and federal governments. Yet it focuses solely on projecting generation and transmission investments, with demand taken as an input. Efforts have been made – and continue – to better understand what levels of energy efficiency and demand response will be needed in the future. However, specificity on the investments needed to unlock such resources is still missing. This is due to the limits of the energy market models⁹ used by the AEMO, reflecting energy market rules directing the ISP focuses on generation and transmission.

This does not have to be the case. In jurisdictions such as the UK¹⁰ and California, energy planning considers both supply- and demand-side investment options. This is because governance structures (including energy market rules) encourage it, delivering a better overall outcome for consumers.

⁸ Energy Synapse, 2022, [Demand response in the National Electricity Market](#)

⁹ For example, improving the modelling framework would include: Establishment of multi-scale modelling frameworks (time, space, technology); Demand-side management applied to multi-carrier energy systems; expansion of prosumer representation; factoring uncertainties related to emerging technologies and business models; modelling energy consumer behaviour. See, for example, Fodstad M. et al; Renewable and Sustainable Energy Reviews 160 (2022) 112246

¹⁰ National Energy System Operator, *Future Energy Scenarios*, <https://www.neso.energy/publications/future-energy-scenarios-fes>.

Key recommendations for governance reform include:

- Immediately establish a National Energy Performance Agency;
- Set national energy performance targets (include demand flexibility targets), and measure progress; and
- Increase representation of consumers and demand-side experts in decision-making.

There are also existing actors in the electricity system with a rich understanding of what is needed, where and when, and the capacity of the demand side to deliver services: DNSPs. Certain DNSPs are thinking innovatively about their role in the new energy system but many are still focussed on maximising profits from their regulated asset base, rather than considering new revenue streams from helping to provide essential system services by tapping into the resources of their connected customers.

Harnessing DNSPs' resources will require changes to incentives and regulatory settings that currently encourage DNSPs to focus primarily on network augmentation (capex), with little consideration of anything else, such as essential system services provision. Regulatory settings that encourage DNSPs to consider opex as well as capex (a 'totex' approach), or moving away from incentive-based regulation such as totex to a more planned, anticipatory, and input-based (cost of service) approach, may help. However, such reforms need to be approached with care, to ensure the status of DNSPs as a monopoly provider doesn't lock out other participants and business models for delivery of equivalent services.

To maintain system security and strength, how can we ensure these services are procured before existing plant retires?

As the energy system changes, it is important not to be constrained by status quo bias and remember that system security and strength can be delivered by a range of technologies – on both the supply side and demand side.

By its nature, the decentralised future electricity system – which sees the dichotomy between supply and demand break down and a higher level of technology diversity across both supply and demand – is likely to be much stronger than the highly centralised system of the 20th century, where a single failure could bring down a large part of the system.

On the demand side, passive technologies such as energy efficiency, that reduce the amount of energy needed, as well as active measures that can respond dynamically such as flexible demand,

and storage in the form of batteries and electric vehicles, can all play a role in making a more secure, and reliable system.

One of the key advantages of demand-side resources such as VPPs for system strength is that they can be procured and deployed quickly, well before existing plant retires. Resources like energy efficiency in residential buildings, where business models, workforce skills and coordination issues require further development, may take longer to implement. Nonetheless, given Australia's poor historical performance, there is a very high potential to reduce residential and industrial demand through energy efficiency and with concerted effort and government support, significant improvements could be made between now and the retire dates of the main fossil generators.

How can we promote innovation in how these services can be provided at lowest cost?

The key to ensuring these services are procured at least cost is to apply a technology neutral approach to procurement that ensures supply- and demand-side resources are treated equally.

Topic 5: Enhancing competition

Prior to the energy transition, the NEM was primarily made up of large generation units owned by governments and gentailers. The unit sizes of new firmed, renewable generation and storage are becoming increasingly smaller, and the number of energy market participants continues to grow.

How might we harness the larger number of small resources and growing participation to ensure all markets are increasingly competitive?

As noted above, the modern electricity system increasingly sees the supply and demand-side dichotomy broken down, with generation, storage, energy efficiency, and flexible demand resources available across the system.

Harnessing the widest possible range of resources available and encouraging competitive markets will mean taking a technology neutral approach to energy market planning, procurement, and rule setting that does not discriminate based on size.

In addition, stimulating innovation in parts of the electricity system such as the low-voltage distribution network – where generation, storage and much of the behind-the-meter flexible demand, and energy efficiency resources are located – will require new regulations and incentives that encourage DNSPs to participate more actively, yet do not compromise competition by crowding out smaller actors connected to the low-voltage network.

A regulatory sandbox that ring-fences trials at scale could be one way of testing new models for unlocking demand-side resources, such an approach where DNSPs provide sufficient granular data to other service providers to deliver energy services.

While several rule changes have recently been proposed or passed that could help harness the power of Consumer Energy Resources, there is still work needed to enhance their execution. A good example is the ‘Unlocking CER Benefits Through Flexible Trading Rule Change’, rule change of 2024. While this was a positive step forward, in allowing large customers to have multiple energy service providers provide separate services, it could be improved and stimulate increased business model innovation by being extended to smaller users.



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