Energy Efficiency Council submission to the Capacity Investment Scheme Discussion Paper

31 August 2023

1. Overview

The Energy Efficiency Council (EEC) welcomes the opportunity to make a submission to the Government's consultation on the Capacity Investment Scheme. The EEC is Australia's peak body for energy efficiency, energy management and decarbonisation.

The EEC is concerned that the proposed design of the CIS practically excludes the establishment of new demand response capacity in the energy system. Demand response is a firming technology that can be spun up quickly at relatively low cost and can play a substantial role in system security.

The Government's approach of underwriting revenue is not appropriate to incentivise demand response, which frequently acts as system insurance for unexpected conditions that place unusual constraints on the energy system. While DR can provide a substantial firming capacity, its ability to recoup costs in an energy-only market is limited.

The EEC recommends that the Government consider complementary mechanisms within the CIS to bring greater demand response capacity to market. This could potentially leverage substantial savings to the total cost of the energy system and diversify the technology basket to reduce risk of concentration.

2. The CIS is missing a huge opportunity by largely ignoring demand response

The Government's proposed Capacity Investment Scheme is a vehicle for de-risking investment in new energy market capacity. As currently proposed, the scheme is unsuitable to underwrite demand-side capacity, such as demand response and demand flexibility. While the Consultation Paper notes that demand response could be eligible for inclusion in the Scheme, the design of the Scheme makes it highly unlikely that the Scheme will catalyse significant additional deployment of demand-side measures. This is primarily because participation in the Wholesale Demand Response Mechanism is only suitable for a small portion of demand response, and its inability to provide capacity payments for the valuable but infrequently used role played by demand response means the incentives to stand up new demand response capacity are limited.

Demand response (DR) is a relatively inexpensive way of assisting grid security compared to the cost of building generation assets that are used for only a brief period each year. DR may be used to reduce or shape demand in response to prevailing grid conditions and can be particularly valuable in abnormal or exceptional grid conditions. For example, during the NEM suspension of June 2022, entities providing demand reduction (across a range of types and arrangements) reduced peak operational demand by **630 MW**.[1]

Demand response is an important energy system asset. The International Energy Agency's Net Zero by 2050 scenario requires 500 GW of demand response being brought to market by 2030, a goal which will require significant acceleration of deployment.[2]

Demand response has a range of benefits:

- **Reduced infrastructure requirements**: Use of demand response – especially in areas of peak or critical demand[3] – can reduce the need to build new assets to serve a very small number of hours in each year. This both reduces the cost of the energy system and reduces the build pipeline for the energy transition.

- **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 network projects, such as the VNI West project.

- **Can be built rapidly**: As DR does not require substantial new capital, nor does it require substantial construction, it can be stood up in a matter of weeks or months, rather than years.

[1] Australian Energy Market Operator 2022, *NEM market suspension and operational challenges in June 2022*, AEMO, Melbourne, p.20
[2] International Energy Agency 2023, 'Demand response', in *Tracking Clean Energy Progress 2023*, IEA, Paris.
[3] 'Peak demand', typically experienced in summer, is characterised by short but intense periods of operational demand, where the system is often constrained by network capacity or instaneous generation capacity. In the future, we see coming periods of 'critical demand', where instantaneous demand is lower than annual peak demand, and the system is constrained by the amount of energy available in storage – typically in winter.

- **Highly effective emissions reduction:** As DR tends to be dispatched at time of high grid utilisation when the majority of the fossil fuel fleet is in operation, dispatch of demand response is highly effective at reducing energy demand at the most emissions-intensive times of grid operation.

- **Highly cost effective:** Research has demonstrated that up to 4.3 GW of potential demand response resources exist in Australia, and could be accessed for prices of between $300-1500/MWh.[4]

However, leveraging DR resources requires appropriate, supportive policy and market settings. The Capacity Investment Scheme as currently designed is a missed opportunity to expedite the energy transition through rapid deployment of demand-side energy resources.

2.1 Consider complementary policy measures to unlock DR potential

While we understand that it is not the Government's intention to deliver a capacity market with this reform, it would be possible to incentivise the delivery of demand response capacity with some creative solutions.

At present, the intention is that the CIS will effectively operate through contracts for difference, where revenue that is above a ceiling or below a floor will trigger transfers between the Commonwealth and project proponents. This establishes that the Commonwealth intends to de-risk projects, but does not necessarily intend to fully fund the projects.

This approach makes sense in the context of large infrastructure projects, where additional revenue certainty can create favourable conditions for proponents to attract funding. Under normal circumstances, the revenue stream for generation and storage conditions is foreseeable, and providing a level of de-risking, rather than funding, is an appropriate mechanism to facilitate investment.

However, in the case of demand response – particularly large DR facilities that would meet the 30MW requirement – the operational frequency is less clear, as this type of DR plays a backup role. Large DR facilities are usually not intended to be dispatched every day but are available to support the grid where unusual demand-supply balances make reduction, shifting or shaving of demand valuable.

Given these circumstances, it's essential for DR facilities to be on standby, although dispatch might be infrequent or even absent. This mandates DR facilities to invest in accreditation under the Wholesale Demand Response Mechanism, with minimal or no compensation in return. Consequently, there's little motivation for others to enrol and contribute DR resources to the market. This scarcity of incentives leads to a limited DR capacity.

To address this, the EEC recommends the Government explores reallocating some of the designated CIS resources to establish a direct payment for DR capacity. Such payments may not necessarily be large, compared to upfront investment in generation infrastructure (or network augmentation projects) and a mechanism could be devised to reclaim a portion of this payment if the DR is actually dispatched. It is likely that by investing in adding DR capacity, there will be a net saving to the energy system overall.[5]

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[4] Energy Synapse 2022, *Demand response in the National Electricity Market*

[5] See for example Carbon and Energy Markets 2012, *Reducing electricity costs through Demand Response in the National Electricity Market*

Beyond the Capacity Investment Scheme, there is a need for a broader set of policy settings to encourage demand flexibility at a range of scales to help manage the grid on a day-to-day basis. As we move to an electricity system characterised by high levels of renewable energy, the value of energy will vary significantly across different times and places. As the EEC's 2023 report *Clean Energy, Clean Demand* makes clear, there are a range of ways that we can meet the nation's energy needs. Some – such as new energy infrastructure – are high cost, while others – such as energy management and flexible demand – are much lower cost. A suite of incentives to better encourage flexible and efficient demand is needed. If implemented well, flexible and efficient demand will make the task of building the clean energy system easier, quicker and cheaper.

Recommendation:

The Government should incorporate an appropriate complementary policy into the CIS to incentivise the introduction of demand response capacity into electricity markets.

3. Comments on specific questions

1. *The Department is seeking feedback on what other implications the CIS might have on the energy market, and how the CIS can be designed to mitigate risks while delivering on key policy objectives.*

The CIS as designed is likely to favour a single firming technology type (battery energy storage systems). This is due to the nature of the incentives on offer; the relatively assured revenue streams that BESS technologies will have access to, and the relative ease of investing in battery systems due to the modular nature of the technology. While it is undoubtedly the case that a significant amount of storage will be required in the electricity network as the transition unfolds, relying heavily on one technology presents risks into the program.

A portfolio of different technologies, including demand response supported through appropriate funding mechanisms, will better manage risk and provide a variety of options to the market operator to manage periods of peak or critical demand. Relying on a single technology type also introduces skill and supply chain pinch points, while a diverse portfolio could reduce the risk of non-delivery of new capacity into the market.

2. *The Department is seeking feedback on WA implementation of the CIS, including interaction with the existing Reserve Capacity Mechanism. This will be further canvassed in a WA-specific consultation paper.*

The EEC has no comment on this question at this time.

3. *What minimum storage duration should be required for tender eligibility, to achieve CIS policy objectives?*

In this case, we suggest this question be better considered as storage or demand response. The NSW LTESA benchmarks of two hours and eight hours are appropriate. Two hours is sufficient to ameliorate peak demand in summer peaks, and eight hours' demand reduction will make a significant contribution to managing critical demand periods in winter when the system is energy-constrained overnight.

4. *What methodology for modelling and measuring duration requirements for various technology durations would be appropriate?*
5. *How could the CIS eligibility criteria and assessment methodology change and adapt over time?*
6. *What methodology for considering a project's contribution to zero scope 1 emissions would be appropriate?*
7. *How could this criteria and assessment methodology adapt as technology matures over time?*

The EEC has no comment on these questions at this time.

8. *What types of demand response would be consistent or inconsistent with the CIS objectives?*

To be consistent with the CIS objectives, DR must be dispatchable. Some forms of demand flexibility – such as permanent load shifting – are not dispatchable demand response, and are hence inconsistent with the objectives of encouraging dispatchable capacity. However, most other forms of DR are consistent with the objectives of introducing security to the system.

The EEC does not necessarily agree that virtual power plants do not provide effective demand response. Aggregated demand response resources, as with aggregated consumer energy resources, arguably provide a greater contribution to system security than single point sources of generation or demand response. The geographically distributed nature of these types of resources provides an inherent risk mitigation, as well as the ability to lower network loads generally, rather than in one specific location.

For example, if a single large industrial load served by its own transmission feeder is curtailed, overall operational demand is lowered, but relief against network constraints is limited to a very small portion of the network. In contrast, if a small amount of demand is curtailed at thousands of separate locations in the network, operational demand is lowered and relief against network constraints is experienced all over the system.

9. *How can the CIS design be future-proofed for an evolving/changing technology mix?*

The EEC has no comment on this question at this time.

10. *The Department is seeking feedback on the eligibility requirement of projects in the NEM for equal to or greater than 30MW registered capacity.*

The EEC notes that 30MW is an achievable capacity for demand response facilities, as long as this requirement can be met through aggregation of a range of smaller loads. This would also take advantage of the benefits of diversification.

Questions 11-16

The EEC has no comment on these questions at this time.