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Anna Collyer
Chair
Energy Security Board
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Energy Consumers Australia Response to Capacity Mechanism Project High-level Design Paper

Dear Anna,

We appreciate the opportunity to provide comments on the Capacity Mechanism Project High-level Design Paper. We have solicited in-depth, independent reviews of the Design Paper from two consultants: David Heard (Finncorn Consulting) and Neil Lessem (Econalytics). Their submissions should be read as expert evidence expanding and supporting our views.

Energy Consumers Australia is the national voice of Australia's residential and small business consumers. Our vision is that consumer values, expectations and needs are realised through a modern, flexible and resilient energy system. It is possible that a capacity mechanism, if well-designed with appropriate safeguards and on-going enhancements, can help meet this vision. Both these comments and those from our consultants should be viewed as helpful suggestions to the Energy Security Board (ESB) to improve the design of a capacity mechanism.

In that context, we agree with the ESB's assessment that there is a risk of higher prices and poor reliability outcomes if the energy transition is not managed well, so that as coal-fired generation is withdrawn it is replaced by dispatchable capacity including storage to firm renewable energy. In this context, as our submission underlines, the risks for consumers and investors can be mitigated by a well-designed capacity mechanism that includes a material role for demand response and energy efficiency.

We note that the intention is that the capacity mechanism will be operational from 1 July 2025, and the intention of the ESB is to have a straightforward mechanism that can be introduced in that time frame and refined over time. We would not support demand response and energy efficiency, including by households and small business consumers, being excluded from the initial mechanism as was the case with the decision by the Australian Energy Market Commission on the introduction of the Wholesale Demand Response Mechanism.[1] Such an approach would leave some of the lowest cost approaches to meeting capacity needs outside of the initial scheme.

Even in its initial design, the capacity mechanism needs to identify the changing needs of the system and procure the capacity that the system needs. While traditional capacity markets focus on high demand days, CSIRO's most recent GenCosts study identifies that "as the variable renewable generation share increases, summer or winter peaking events may not represent the most critical day for back-up generation...A more challenging period for variable renewable system might be on a lower demand day when cloud cover is high and wind speed is low. These days…could see the greatest demands on storage, peaking and other flexible capacity." (p. 61)

[1] See Final Determination, https://www.aemc.gov.au/rule-changes/wholesale-demand-response-mechanism

We appreciate the focus of the ESB in its design on avoiding consumers paying more for the same service, including through consideration of materially lowering the market price cap from its current level.

In our submission we make three concrete recommendations for improving the design of a capacity mechanism.

- The capacity mechanism should include a specific role for an independent "Mechanism Monitor" that will objectively monitor, investigate, evaluate and report on the capacity mechanism, including, but not limited to, structural, design or operational flaws in the capacity mechanism.[2]
- The detailed design should include specific actions to investigate and pursue all cost-effective demand response and energy efficiency in the capacity mechanism. For example, prior to market inception and at regular intervals thereafter a demand response and energy efficiency potential study should be undertaken to assess the potential for cost effective demand-side market participation. Moreover, the Mechanism Monitor should conduct annual reviews of demand-side participation, assessing the operation of the mechanism against the potential study and recommending fine-tuning of approaches as needed.
- To help ensure that the capacity mechanism does not result in consumers paying more money for the same level of service, the Mechanism Monitor should annually review the cost of the capacity mechanism to see if its design and operation is meeting the ESB and Minister's intention.[3]

Again, thank you for providing this opportunity for Energy Consumer Australia and other stakeholders to comment on the high-level design of the capacity mechanism. We look forward to further engaging with the Energy Security Board to progress the capacity mechanism's design and helping ensure over time that it is demonstrably in the long-term interests of all consumers including households and small, medium and large businesses. Should you have any questions or require clarification, please contact Brian Spak at brian.spak@energyconsumersaustralia.com.au.

Yours sincerely,

Lynne Gallagher
Chief Executive Officer

[2] Inspiration for a "Mechanism Monitor" comes from the PJM's Independent Market Monitor in the United States. Detailed information about that Market Monitor, including their responsibilities and relationship with the market operator can be found in the in the PJM Open Access Transmission Tariff, Attachment M – Market Monitoring Plan.

[3] The Design Paper notes, "a capacity mechanism could cause customers to pay more for the same level of service. This is clearly not the intent, and it will be avoided through careful design."

Submission to the Capacity Mechanism High-level Design Paper

A mechanism monitor is a sensible approach to managing the risks of adopting a capacity mechanism. There is a clear risk that the detailed design adopted, no matter how thoroughly debated and well researched, will fail to effectively manage the multiple trade-offs and interactions capacity resources have to deliver an affordable energy system.

Furthermore, because the type of capacity the National Electricity Market (NEM) needs in the short-term will vary, perhaps significantly, from what is required in the medium term and long term, it is prudent to expect the mechanism itself to need to change as the energy system transitions. As certain resources retire and others come online, each with unique energy and capacity characteristics, it is likely there will be a greater need for longer-duration capacity resources (6-12 hours). Over time, the need for seasonal storage, may (or may not) emerge as a requirement. Establishing an independent mechanism monitor can build in the expert oversight and review of the mechanism over time as the system itself changes.

In discussions with capacity experts overseas, a common refrain we have heard is *"it is not worth having a capacity mechanism without a monitor".* The PJM Market in the mid-Atlantic region of the United States and several others have a "market monitor," and these monitors typically have one of, or both, of the two distinct functions outlined below.

1. **Review of the market design and recommending improvements** – Offering an independent expert voice to the public and regulators/board members so they can hear from a non-interested party expert and ask for a second opinion (i.e. not the market operator and not a market participant). This role is combined with the above in PJM and some other markets. But in Ontario and California they separate out this role into a distinct "Market Review Panel" that's an independent panel of part-time experts (well-known academics and consultants) that can offer that independent review annually to the regulators/public, as well as respond to specific questions that the regulators may have. This body provides a party to help regulators and policymakers decide between, for example, consumers who may be complaining about a particular issue, while the market operators and generators say the opposite.

2. **Monitoring and preventing abuses of market power** – System operators in the United States typically have both an internal and external market monitor to examine potential abuses of power. The internal role is a bit more functional (i.e. any standardised calculations of market power and related processes, performed in house, but without independence and little mandate to be controversial). The external market monitor tends to have a bit more latitude, typically complete independence from the market operator, with a role to look for any broad types of gaming and is an externally known personality that will testify in various cases. In the United States, both the internal and external monitors can identify abuses that will be flagged for Federal Energy Regulatory Commission action – similar to actions potentially taken by the Australian Competition and Consumer Commission (ACCC).

Given the scope of this consultation is focused on the capacity mechanism, our recommendation is focused on the first function. Regardless, our view is that it's essential to have independent monitoring and independent expert design advice that is fully funded – regulators, consumer advocates, and the public do not have sufficient funding or staff to get that level of expert advice absent a funding stream for this role. An overseas expert has estimated the typically cost of a mechanism monitor at roughly $4 million annually. While not a small figure, it's tiny compared to the value-add from getting even one good market design change. Such an entity has the potential and likelihood to more than pay for itself every year in the value it provides to the public and stakeholders.

The detailed design should include specific actions to investigate and pursue all cost-effective demand response and energy efficiency in the capacity mechanism.

The fundamental reason the electricity system needs capacity is to meet peak consumer demand for electricity. Solving the capacity challenge needs to focus as much on demand as on supply.

Demand response and energy efficiency are low-cost resources that the capacity mechanism should be specifically designed to procure. A recent study by the Australian Renewable Energy Agency (ARENA) found that enabling load flexibility would reduce electricity system costs for consumers over the next twenty years by $6-18 billion in net present value.

A common misconception is that if energy efficiency and demand response were economic ways of meeting energy or capacity needs, then the market would already provide them. The reality is that there are multiple barriers to demand side resources. Some of these barriers include

- market operator familiarity with supply-side resources and lack of trust and confidence in demand side resources;
- the inherent change in mindset and difficulty in collecting many small things rather than building one big thing;
- a lack of consumer information or education;
- the business models of networks and retailers; and
- the lack of a unified actor to be responsible for obtaining and seeing the value of demand side resources in disaggregated utility markets like the NEM.[4]

Energy efficiency and demand response may be unique capacity resources that require careful mechanism design to unlock their potential, but the same is true of all capacity resources. A capacity mechanism is not a commodity market. All capacity resources are not created equal; they each have unique characteristics that the mechanism must be designed to examine and help unlock.

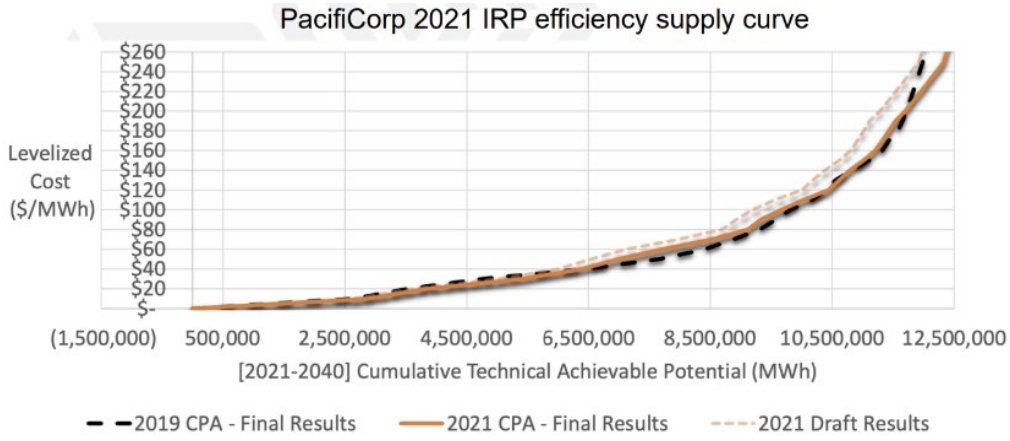
- For example, the efficiency and capacity factor of most generation varies with temperature. According to a 2017 paper, at high air temperatures, *"fuel efficiency is affected due to a lower oxygen concentration in the air and thus shows a 0.1% reduction in gas and fuel powered plants for each increase of 1 degree C in the temperature."*[5]
- Battery energy storage – which has been proven to move from full charge to full discharge in only a few seconds – can provide tremendous flexibility to the system, but quick changes in its operation could challenge overall system stability, thereby creating the need for additional stability services if battery storage is used as flexibly as it is able. Moreover, sufficient energy resources need to exist to sufficiently charge battery storage in the hours prior to an event window.

[4] A quick google of "barriers to demand side resources" will reveal an extensive literature on the topic of market barriers and approaches to relieving them.

[5] Añel, J.A.; Fernández-González, M.; Labandeira, X.; López-Otero, X.; De la Torre, L. Impact of Cold Waves and Heat Waves on the Energy Production Sector. *Atmosphere* **2017**, *8*, 209. https://doi.org/10.3390/atmos8110209

Demand response and energy efficiency have a few additional advantages, however, compared to most supply-side capacity options. Indeed, in the 2002 book *Small is Profitable*, Amory Lovins and his collaborators identify 207 unique benefits of small-scale, demand-side resources.[6] As the ARENA study and the Figure below demonstrate, certain demand-side resources are regularly identified as the least cost options for meeting capacity. Unlike most other resources which typically have one value per MW or MWh, there are a wide range of energy efficiency and demand response programs, each with distinct costs.

As the Figure[7] below demonstrates, one utility in the United States has identified 2.5 GWh of energy efficiency programs at USD$20/MWh and another 4 GWh for programs costing more than USD$20/MWh and less than $65/MWh.



In this context, efficiency programs are various approaches, such as home energy audits, financial incentives to lower the up-front cost of more efficient than mandatory efficiency standards for appliances and lighting, and automated lighting and air-conditioning control in commercial buildings. It is notable that this supply curve is only forward looking, it does not incorporate, for example, past efficiency programs focused on replacing incandescent with LED lightbulbs.

While they are not sufficient to meet all capacity needs, including demand side resources as capacity resources is necessary to create an affordable energy system. Furthermore, not only do demand-side resources provide a low-cost source of capacity for all consumers, they also provide a way for participating consumers to individually financially benefit from the mechanism.

[6] The list of benefits can be found on the first few pages of the book, available here: https://library.uniteddiversity.coop/Money_and_Economics/Small-is-Profitable.pdf

[7] Natalie Mims Frick, "Energy Efficiency and Demand Response as Resource Options in Bulk Power System Planning," Berkeley Lab, October 2021.

An important nuance of demand response and energy efficiency programs is that they have important interconnections. Specifically, the ability to significantly reduce and shift peaking load from space cooling and heating depends upon the thermal inertia of buildings and their insulation. A capacity mechanism that appropriately values increases in insulation at buildings (an energy efficiency measure) not only reduces the demand from a given building, it also provides a tighter building envelope that makes the shifting of heating and cooling to earlier and/or later times (a demand response measure) more likely and effective. Such measures are likely to not only have a positive impact on the amount of generation capacity required, they also can help to avoid or delay network upgrades needed to meet increasing load. They also have positive externalities: better insulated buildings are more resilient dwellings if the grid were to go down during an extreme heatwave (or cool wave), they provide their occupants on-going energy savings, and they are more comfortable to live in.

Given the strong benefits of demand side resources and their unique characteristics, we recommend that **prior to market inception and at regular intervals thereafter a demand response and energy efficiency potential study should be undertaken to assess the potential for cost effective demand-side market participation.** The objective of potential assessments is to provide accurate and reliable information on the:

- quantity of energy efficiency and demand response available:
- timing of availability (e.g., new construction, appliance turnover):
- efficiency and demand response measure cost; and
- load or savings shape throughout the day/year so that its capacity contribution can be properly identified.

Such studies have been a regular feature of Integrated Resource Planning in the United States for more than thirty years and are primary documents for driving program designs to achieve significant cost and energy savings from demand-side resource programs. A capacity mechanism that is serious about incorporating these resources into the mix of eligible capacity resources likewise needs to study their potential, costs, and load/savings shapes.

Moreover, **the Mechanism Monitor should conduct annual reviews of demand-side participation, assessing the operation of the mechanism against the potential study and recommending fine-tuning of approaches as needed.** It would be unrealistic to think that the capacity mechanism and various energy market actors would be able to achieve significant amounts of the cost-effective demand side resource savings identified in potential studies. Regular reviews by the mechanism monitor of demand-side resources, which are a feature of the Market Monitor's quarterly report in PJM, can help identify approaches to close gaps and better capture the cost savings available.

Last but not least, **the Mechanism Monitor should annually review the cost of the capacity mechanism to help ensure that the capacity mechanism does not result in consumers paying more money for the same level of service.** While we believe the ESB in the Design Paper when it writes, "a capacity mechanism could cause customers to pay more for the same level of service. This is clearly not the intent, and it will be avoided through careful design." We think it is prudent to verify this assertion on an ongoing basis to ensure that consumer costs are affordable, and the capacity mechanism does not serve to increase revenues for generators while they provide no additional service. Indeed, verifying the assertion that a capacity mechanism will not increase net costs on consumers given static service quality is a primary if not the primary motivation for establishing a Mechanism Monitor.