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Anna Collyer  
Chair  
Energy Security Board  
Via email to [info@esb.org.au](mailto:info@esb.org.au)

28 July 2022

Dear Ms Collyer,

### **Re Capacity mechanism High-level Design Paper**

Engineers Australia is the peak body for the engineering profession in Australia. We are a professional association with over 110,000 individual members, constituted by Royal Charter to advance the science and practice of engineering for the benefit of the community. Our members represent every discipline of engineering and work across all sectors of the economy. The reforms being considered are critically important to a secure, affordable and reliable clean energy transition and we welcome the opportunity to participate in the process.

#### **General Comments**

The increasingly extreme nature of climate change impacts on Australia's energy system, and the reality of coal-fired generation exiting the system over the next decade and being replaced with different types of cleaner energy sources, is having important consequences for Australia's energy systems everywhere including in the National Electricity Market (NEM).

The need to rapidly reduce greenhouse gas emissions, to firm up sufficient supply and enhance the resilience of physical energy assets and systems underlines this transition process. Decisions in the NEM over the next 5 years will determine the nature of Australia's energy supply outcomes for the decades to come. Ensuring an efficient energy market by getting the right technical engineering, regulatory settings and commercial investment signals is an imperative.

The Government's renewed commitment to enhance the share of dispatchable renewable energy, complementing the 2022 Integrated System Plan (ISP) and the Minister's Principles<sup>1</sup> is welcomed.

Engineers Australia recognises that any government intervention in the operationalisation of the NEM is complicated and will have major consequences, especially in regard to the Ministerial principle of assuring efficient system reliability at the lowest cost.

Clearly Australia's power system (generation, grid, distribution, retail, consumers) will continue to be vulnerable to many exogenous shocks including climate change, but also the ongoing Covid pandemic and the war in Ukraine.

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<sup>1</sup> See page 2 of the ESB's discussion paper



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### Conflicting Outcomes

Engineers Australia considers the assessment criteria<sup>2</sup> and Minister's principles sound. The high-level design features of the capacity market should be able to effectively respond to these.

However, some of the outcomes seem contradictory in their ultimate objectives. Engineers Australia appreciates a balance needs to be struck between the individual design criteria and Minister's principles, including between:

- reliability and emission reductions
- technological neutrality and emissions reduction
- the current players in the 'energy only' market and new entrants, particularly given current players have made investment decisions based on the 'old' rules.
- encouraging investment in new clean technology and ensuring we have enough energy at every stage of the transition.

For example, driving emission reductions will require new technologies, new market entrants and whole of system NEM changes to occur. These will typically impose higher whole of system costs relative to either incumbent technologies or existing market entities. This will be in addition to the need to encourage new investments through securing sufficient returns on their investments, this seems at odds with the Government's intention to lower prices through effectively subsidising a Capacity Mechanism which essentially will pay providers to have their capacity available during certain periods whether actually needed or not (i.e., a type of distortion to efficient market operations).

Another example is the Energy Security Board's (ESB's) preference for all resources contributing to capacity requirements being eligible to participate in the mechanism, including demand-side resources. It is difficult to envisage how demand side measures would be further incentivised by paying providers to maintain excess capacity in the market at all times.

The central issues are risk management from an energy security and sovereign risk perspective, balanced with how to facilitate the lowest-cost emissions reductions. The ESB observes that a capacity mechanism would mean less reliance on other government interventions out of market measures. But Engineers Australia poses that a sufficient and appropriately established carbon price determined outside of the NEM would also provide an economically efficient signal to investors to invest in sufficient and climate-friendly energy supply by internalising the carbon externality (emissions scarcity aligned with Australia's emissions reduction targets) as well as by reducing the level of sovereign risk of continued and ad-hoc government interventions.

Engineers Australia believes the Government should be open to the possibility of alternate mechanisms to achieve all the stated goals. A capacity mechanism is one approach. Others include:

- Establishing a price on carbon either administratively or via the market.
- Broadening the current guaranteed market for renewables (Renewable Energy Target) to include other energy sources that can satisfy an emissions performance baseline (i.e., clean energy target).

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<sup>2</sup> See page 4 of ESB's discussion paper



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- A capacity reserve market that funds short- and long-term storage with readiness to supply would be a more prudent investment in capacity, and can be used moving forward, rather than funding something we know cannot be.
- The Retail Reliability Obligation could be strengthened, which requires retailers to hold contracts with generators for peak demand.
- Storage targets to integrate renewables into the grid reliably.
- Regulated exit management contracts.

Engineers Australia is concerned the capacity mechanism may fall short relative to the spirit of the Minister's principles in providing an orderly exit management for thermal generators and supporting new generation and storage.

### **Energy governance and the engineering voice**

There is no comprehensive national transition strategy that encompasses the technology, regulatory reform and social capital needed to take Australia from a centralised system of large fossil-fuel generation to smaller-scale distributed generation through zero emissions and cleaner energy sources such as renewables and mitigated fossil energy.

Individual agencies are doing excellent work in trying to navigate the regulatory reform and operational procedures needed to drive the energy transition forward. Engineers Australia values the efforts and collaboration of the Federal and state organisation such as the Energy National Cabinet Reform Committee, the Energy Ministers' Meeting, ESB, Australian Energy Market Commission (AEMC), Australian Energy Regulator (AER) and Australian Energy Market Operator (AEMO). Many essential organisations are developing and implementing plans. However, what seems to be missing is a national strategy that takes a systems approach to coordinating the numerous activities and challenges at play, including incentivising sufficient clean energy supply while delivering the lowest-cost abatement.

The discussion on a capacity market is an illustrative example of why this is important. The strategy needs to coordinate the work being done in energy efficiency, balancing the need for transmission and storage, energy security and risk-management frameworks, research and development, contingency plans for early retirement of fossil fuel generators, generation capacity and transmission congestion, the impact of electric vehicles on the grid, vehicle emission standards and so forth. It is an uncomfortably complex system of systems and needs to be addressed as such.

The Government could also consider if the current governance structure is still fit for purpose to achieve this transition in a timely manner, including consideration of how to get the focus and authority to drive the changes required. This is a once-in-a-generation change to our energy system and it needs to be treated as such.

Engineers Australia contends that the independent technical voices of engineers have not been given due consideration for far too long. The current market and regulatory structure are not fit-for-purpose for a system transitioning to renewable generation, with a significant proportion of that generation coming from what was previously the load end. The ESB needs to ensure it gives better consideration to the physics of the energy system and does not create a market that drives technology and systems inconsistent with the

best interests of consumers and the broader public interest. Engineers' influence would help balance the design and provide the community and government with independent, technical, evidence-based advice.

### **Who is eligible to participate?**

As recognised by the ESB, if a capacity mechanism does proceed, it is going to have to account for the needs of existing ageing thermal generators with sunk costs, and new capacity with start-up costs, in a way that ensures we meet emission reductions, consistently have enough firm generation, and we do not 'over build' or 'over insure' the system.

Engineers Australia remains concerned that a capacity mechanism alone cannot address the structural difficulties that ageing thermal generators face and the impacts of the increasing pace of their retirement and corresponding need to replace them. The previous government intended to replace them with like generation sources while the ESB is to be lauded for considering alternate approaches and mechanisms, such as regulated exit contracts, to ensure a staged and orderly withdrawal of these generators.

### **The nature of the obligation placed on capacity providers in return for a capacity payment**

Regulatory compliance is critical for a fully functioning and efficient power market.

Engineers Australia considers that the consequences of a provider failing to deliver its scheduled capacity must exceed the initial payment it has been guaranteed. Otherwise, the consequence of overpromising and underdelivering seems rather benign.

The capacity mechanism also needs to manage unexpected lack of capacity. One possibility could be a requirement to have a nominated percentage of firm potential energy to aid with the forward reserve prediction, particularly in a volatile environment in which trust in forecasting is not always high.

In the past, reliability could be considered through a clear relationship between capacity and peak demand. This needs to be reconsidered given a system with more variable renewable generation and storage combined with enhanced transmission in response to different diurnal and 'dunkelflaute' energy events.

Reliability also must be considered in terms of minimum demand and the ability of the system to store excess capacity.

### **Transmission capacity - the role of interstate trade**

Each region of Australia has different needs, but a national transmission infrastructure can bring efficiencies. Balancing the need for a decentralised storage strategy and a national transmission strategy should be central to the solution moving forward.

### **Cost allocation - how costs are passed through to customers.**

Consumers continue to face large increases to power prices, and this especially affects the more vulnerable of our community. Renewables supported by storage are the cheapest form of energy; that is the economics of the market, as again detailed in the latest CSIRO GenCost Report. Replacing the ageing coal fleet will be expensive and those costs will inevitably be passed on to consumers. It can be managed efficiently if appropriate investment decisions can be made to reflect the need for more generation while achieving our emissions targets. This can be facilitated by ensuring investors, both new and existing, face



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the right price signals in terms of competitively costed mitigation technologies and energy sources as well as an appropriately reflective price on carbon.

The development of sufficient energy storage means physical supply no longer needs to equal demand at all times, but this means further increases to infrastructure costs. However, it should be done in the most structured and cost-effective manner possible. This will require government intervention.

A capacity mechanism has the potential to layer in costs for consumers for energy that is never dispatched. This will inevitably serve as an additional tax in the system and could result in inefficient investments and market distortions across transmission, distribution, storage, generation and retail.

The capacity market will underwrite generators (i.e., introducing moral hazard) to increase their capacity from the same assets, including coal and gas, regardless of whether they have priced themselves out of the wholesale market to get dispatched. By signalling to generators, that we know will be leaving the market at some stage, that they will effectively be paid to delay the closure of assets seems inefficient at best.

The corollary is that the Government, or rather Australian taxpayers, may still need to step into the market during this challenging period of flux to pay to ensure a smooth transition. The capacity mechanism should avoid anything that places additional or avoidable costs on consumers or forces taxpayers to pick up the tab to relieve price pressures or serves as a deadweight loss on the efficient functioning of the NEM.

As noted above, it is explicitly relevant to this review to engage in discussions about carbon pricing. Instead of governments trying to pick winners and losers, part of setting the broad policy environment would be re-establishing a carbon price. A policy to reduce emissions without a carbon price necessarily leads to a need for more not less government interventions. This also reinforces the need to add an environmental objective to the National Energy Objective (NEO).

### **Final thoughts**

Whatever mechanisms are put in place they will need regular review and amending. This is not business as usual, and the transition must be managed in a changing environment.

Despite being at the stage of investigating the high-level design features, it is still not clear how a capacity mechanism resolves the central issues currently being faced in our energy sector or how it facilitates the fastest possible transition to clean, reliable, affordable energy. The challenges of getting enough renewables and storage into the system, combined with the enhancement of transmission, are already complex and we cannot afford the capacity mechanism to slow down those processes.

If you wish to discuss the points raised in this submission further, please contact Grant Watt, Senior Policy Advisor, Energy at [gwatt@engineersaustralia.org.au](mailto:gwatt@engineersaustralia.org.au) or on +61 (02) 6270 6584.

Your Sincerely,

Damian Ogden  
General Manager, Policy and Advocacy

Engineering House  
11 National Circuit, Barton ACT 2600  
Phone: +61 2 6270 6555 | Facsimile: +61 2 6273 1488  
[engineersaustralia.org.au](http://engineersaustralia.org.au)