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Dear Kerry,

Submission to Post 2025 Options Paper

The Australia Institute welcomes the opportunity to make a submission in response to the *Post 2025 Market Design Options Paper*.

The most urgent challenge facing the National Electricity Market (NEM) as it transitions to clean energy is not technological but regulatory; keeping coal power stations going for the minimum time required as new clean energy and system services supply is built. The Options Paper provides Australian governments with the missing pieces of this coal retirement and reliability puzzle.

Our overarching proposal is that state governments can use the ESB's new mechanisms in conjunction with their own policies to push forward with renewable energy zones (REZ) without being held hostage by ageing and unreliable coal power stations.

The Australia Institute is very keen to continue to engage constructively with the ESB's market design process. We have been pleased to participate in the Technical Working Group and the select 'deep dive' on ageing thermal generation retirement strategy. Unfortunately, we were excluded from the consultations subsequent to the release of the Options Paper.

Australian states can accelerate their plans for clean energy transition, while maintaining the reliability and security of the NEM. We are happy to discuss further the set of recommendations below which constitute a simple planning process that puts states firmly in charge of risk management through the coal retirement process.

The reliability dilemma: preparing for coal exits brings them forward

State governments face a policy dilemma which is that *preparing* for coal retirements brings them forward. It is a rare public policy challenge that risk mitigation increases risk, but that is the situation faced in a coal-dependent and largely *laissez-faire* generation market such as the NEM.

State governments are right to be working hard to replace the energy and security capacity provided by coal. They are building REZs and interconnectors and delivering other demand and supply side resources such as demand response, Virtual Power Plants

and energy efficiency. The problem is that this new supply (including negawatts) reduces the profitability of coal power stations and increases their ramping costs and stresses.

In theory, coal power stations are supposed to give 42 months notice before they retire and to operate at full capacity until that retirement date. Unfortunately, the rules are insufficient to enforce this.

The key question is how to remedy this regulatory failure. There are two options on the ESB's table. The first is to redesign the market to keep coal generation going over the long term, through a complex retailer contracting system overseen by the Australian Energy Regulator (AER).¹ The second option is to use state contracting to keep specific power stations operating for short periods at the discretion of state ministers until new capacity is built.²

The second option is preferable. Orderly Exit Management Contracts could give state ministers direct control over specific high-risk generators. This is appropriate risk management as these are the jurisdictions responsible for electricity supply. State contracting is simple to administer and imposes no costs on market participants.

As the ESB acknowledged in the Options Paper there are major risks around the second proposal, the physical certificate option for the retailer reliability obligation (PRRO). The ESB notes the PRRO would be likely to reduce competition and innovation and push up prices.³ We have raised this privately and in formal consultations for some months and will continue to raise it with state ministers and energy stakeholders.

The federal government has expressed a strong preference for the PRRO⁴ and already characterised it as a coal capacity market,⁵ so it is impossible to see how it could be designed to be technologically neutral.

The impact that the Post 2025 redesign has on the pace of coal retirements and thus national emissions is becoming increasingly important. Australia is under pressure to set long term and short-term climate targets before the Glasgow climate COP in November 2021.

¹ This is the Physical certificate option to expand and institutionalise the Retailer Reliability Obligation.

² This is the Orderly Exit Management Contract.

³ Energy Security Board (2021) *Post 2025 Market Design Options – A paper for consultation Part A* ('Options Paper Part A') p.36 'A physical RRO is likely to impose increased barriers to retail competition and product innovation than (sic) modifying the current RRO. It may also lead to possible overcompensation of existing thermal generation assets and detrimental impacts to liquidity in financial markets.'

⁴ Taylor (2021) *Governments must co-operate on energy policy to send the right signals*, <https://www.theaustralian.com.au/business/mining-energy/governments-must-cooperate-on-energy-policy-to-send-the-right-signals/news-story/2ba6cdb85c259fa6386f52e4c6a9eb67>

⁵ MacDonald-Smith (2021) *Users clash with Taylor over price of energy reliability*, <https://www.afr.com/companies/energy/electricity-reforms-raise-cost-fears-20210429-p57nlj>



The catastrophic failure of the Callide C coal power station in Queensland in May 2021 demonstrated dramatically that even relatively young, supercritical black coal power stations are a reliability and security risk.

Global pressure for coal phase out by 2030

Last month the International Energy Agency published *Net Zero by 2050 - A Roadmap for the Global Energy Sector*. This is a landmark report which sets a clear goal that ‘all unabated coal-fired power plants are phased out in advanced economies by 2030’.⁶ Indeed, its roadmap projects the coal market to collapse, the market halving every decade to 2050.⁷

The retirement of coal power stations by 2030 should be under consideration because of the rising reliability risks posed by reliance on coal power stations and the political winds building towards greater climate action in 2021. It would be appropriate for the ESB to request that that AEMO models an Integrated System Plan scenario in which coal is retired by 2030.

Australia’s trading partners and other advanced economies have explicit or implied coal phase-out plans. The G7 nations (Canada, France, Germany, Italy, Japan, UK, US) have collectively agreed to end financing of coal projects by the end of 2021. Further, 36 national governments, and 38 state governments, have signed onto the Powering Past Coal Alliance, a commitment to phase out coal by 2030 in the OECD and EU, and by no later than 2050 in the rest of the world.⁸

Japan, the biggest customer of Australian coal, is taking clear steps to phase out coal. In April 2021, Japan announced it would reduce emissions by 46% by 2030 compared to 2013. In line with this, Japan reconfirmed that it would retire 100 of its 144 coal power plants.

Under the new administration of President Joe Biden, America is developing policies for net zero by 2050, at least halving emissions by 2030, 100% clean energy by 2035 and electrifying the US government car fleet. America is prioritizing grid modernization with hundreds of billions in public spending in the proposed budget.

In the Australia Institute’s October 2020 submission to the Consultation Paper we highlighted principles that remain relevant to the Options Paper.⁹ We argued that the ESB needs to fully coordinate all reforms underway in the NEM, in order to maintain the coherence of the Post 2025 redesign. We are concerned that the access charging rule change under consideration by the AEMC would pre-empt the outcomes of the ESB’s work on Distributed Energy Resources and Demand Side Participation (DER/DSP).

⁶ IEA (2021) *Net Zero by 2050 - A Roadmap for the Global Energy Sector*

⁷ Ibid, p.163

⁸ Powering Past Coal Alliance (n.d.) *PPCA Members*, <https://www.poweringpastcoal.org/members>

⁹ Cass (2020) *Post 2025 Market Design Consultation Paper Submission*

We also proposed in October last year that if the redesign drives innovation around large-scale renewables, storage and DER/DSP, that will address the energy trilemma of price, reliability and emissions. There is no need to prop up unreliable coal power stations over the long term.

Coal is the reliability and security liability in the NEM

For many years Australians have been told that coal can be relied on to maintain reliability and security and controls costs. This is all changing as storage-firmed renewable energy becomes cheaper than fossil fuels and coal power station owners plan for their early retirement. The threat of disorderly retirements of thermal generators has repositioned coal power from being the reliability solution to the reliability problem in the NEM. The Australia Institute's Gas and Coal Watch project tracks unscheduled gas and coal outages in the NEM and has recorded over 370 since December 2017.¹⁰

Much of the ESB's work on thermal retirements has been around weaknesses in the 42-month Notice of Closure system. Owners of thermal plant can mothball them or allow them to fail, creating reliability issues within the 42-month window that is supposed to precede retirements. AEMO has reported that unit decommitments are creating security issues (inertia and system strength).¹¹

The best way to manage coal risks is to better coordinate planning of Integrated System Plan infrastructure and state renewable energy targets with NEM market design reforms. The ESB's 'NEM wide' coordination proposals are the right approach because they acknowledge that states are the locus of infrastructure planning and market formation (in the REZs).

In the following section we propose that the ESB has now created the tools required for states and the market bodies to work together in a simple planning process that can manage risk and control costs as coal retires.

Key recommendation: control coal exits, keep calm and carry on

One of the most important outcomes of the Post 2025 redesign is that the ESB has shifted the debate from idealising some mythical perfect national market and towards a pragmatic acknowledgement that states, private investors, consumers/prosumers and the market bodies are jointly driving the clean energy transition. The ESB's work on national principles to coordinate government underwriting are useful here. The federal government's role is less clear due to the absence of a coherent climate and energy policy at the national level.

States are delivering new capacity through two means: direct state underwriting and indirectly by creating a stable market for private investment, concentrated in the REZs. The role of the market bodies is less about creating the ideal market and more about

¹⁰ *Gas & Coal Watch*, <https://australiainstitute.org.au/initiative/gas-coal-watch/>

¹¹ AEMO (2020) *2020 System Strength and Inertia Report*, p.4

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coordinating these investment streams so they flow to the resources required for coal to be retired rapidly and safely.

The goal for energy policy makers and regulators now should be to provide as much certainty for private investors within a paradigm where states are in an active planning role. In the lead up to the Glasgow COP in November 2021 some states might want to formulate plans to retire coal by 2030 or thereabouts and the Post 2025 redesign should support such targets.

Orderly Exit Management Contracts

The most important immediate reform is the Orderly Exit Management Contract. The ESB and state governments were right to seek a mechanism to force unhelpful owners of coal power stations not to create disorder in the NEM. The Contract allows states to step in and force coal generators to continue operating for a short period until new energy and system security resources are in place. It is the ultimate insurance policy for state energy ministers and it allows them to proceed with building out REZs without fear that new supply will undermine the profitability of coal power stations.

If the owners of coal power stations threaten a game of chicken with the NEM, the Contract ensures they lose and the public wins. It allows states to negotiate aggressively and prevent the owners of coal power stations from using the threat of disorder to profit from energy consumers.

If these contracts are negotiated badly they will make the problem worse. If coal owners know there is no future profit for their asset but they can contract with a state then there is an incentive to seek those contracts. If there is a lucrative market in state contracts available then that becomes a perverse incentive for asset owners to cut maintenance, run down their units and become a subsidised generator.

It is important that these contracts are transparent and do not socialise private risks around carbon and other liabilities. If coal generators have become a national reliability liability then there should be no subsidy to them through Contracts. Contracts should be paid on a zero-profit basis.

States should also work together to share information and negotiation strategies with each other, for public benefit. Rather than have each state bargain as the sole counterparty, states should form a buyer's association on behalf of the public. The ESB could play a role assessing competing proposals from different generators and choosing the cheapest option. The Energy National Cabinet Reform Committee could coordinate negotiations.

When a state agrees to a Contract they should publish the reason for the decision and the cost. This is basic public sector accountability.

The primary purpose of the Contract is to give the jurisdiction certainty and the secondary purpose should be to give the market certainty. Given the pace of renewable energy transition and the rising competitiveness of clean energy and batteries, it would be advisable not to use the Contacts to hold a power station in the market until a set date.

This might mean propping up coal longer than necessary. There should instead be a target for the supply of energy and inertia and system strength (and any other aspects of system security) and the Contract would allow the coal power station to retire as soon as the target is met. If progress towards the target is reported publicly, then this forms the critical market signal for private investors. This information provision tool is the System and Market Impact Assessment proposed in the Options Paper.

System and Market Impact Assessments

The System and Market Impact Assessment is an excellent proposal and should be a priority immediate phase reform. It would give states the information they require to plan infrastructure and if necessary to propose Orderly Exit Management Contracts. This reform recognises that states are actively planning the clean energy transition and managing risk on behalf of the public.

These Assessments are scenario based or probabilistic predictions of reliability and security. They would complement AEMO's existing forecasting processes: Integrated System Plan (ISP), Electricity Statement of Opportunities (ESOO), and Medium-Term Projected Assessment of System Adequacy (MT-PASA).

This proposal addresses jurisdictional risk appropriately because it provides information about both risks and mitigation options. This accords entirely with the state-focus we proposed in our Directions Paper submission. States would be able to use state contracting such as NSW is establishing through its Electricity Infrastructure Roadmap to build up reserve or 'firm' capacity including storage and bulk, variable renewable energy capacity in the REZs.

We recommend that the System and Market Impact Assessment should be broadened to include DER/DSP resources including wholesale demand response and technology trials such as VPPs. This capacity reduces the need to contract with coal. AEMO can use appropriate statistical tools to predict capacity from emerging technologies.

We also support the ESB's proposals for strengthening the 42-month Notice of Closure rule and creating related exit mechanisms including information provision and tightening exemption requirements that allow generators to close early.

Structured procurement of essential system services

In 2020 the Australia Institute evaluated the renewable energy and storage project pipeline and nascent state plans for REZ developments and determined that the primary technical challenge facing the Post 2025 redesign would be system security.

States (and the Commonwealth, through a properly constituted procurement scheme or Snowy Hydro) could easily speed up clean energy and storage deployment to fill reliability gaps left by coal retirements. The residual risk is that coal failures remove inertia and system strength resources and the NEM has insufficient markets and mechanisms to fill these gaps.

The Australia Institute commissioned the Victorian Energy Policy Centre to write a technical study and we briefed the ESB, AEMO, AEMC and governments on the



preliminary and final findings.¹² This report was written by Professor Bruce Mountain and VEPC's battery specialist, Dr Steven Percy. It demonstrated that batteries and inverter-based resources are developing the capabilities to replace conventional inertia and system strength technologies. They also presented evidence that the new technologies will be cost effective.

The ESB proposals for a unit commitment for security and system security mechanism are described in some detail in Part B of the Options Paper but it remains hard to understand how these would actually operate in real time.¹³ Nor is it entirely clear exactly what problem they are trying to address. It appears that they are not for inertia but are for system strength or to maintain minimum combinations of generators per NEM region. For example, in Part B there is reference to payments for 'general power system security', which seems to be a payment for spinning reserve, however this is not quantified.¹⁴

The key regulatory recommendation made by Mountain and Percy is that the ESB's structured procurement option is the best solution. We understand the desire expressed for a 'next' phase reform that creates full co-optimised security services markets but whether or not that eventuates, structured procurement is best initial phase reform. It is efficient and can allow states to have the planning control they require.

The Australia Institute wrote an accompanying policy paper which contained 10 recommendations for the procurement of essential system services and we recommend them again now.¹⁵ We proposed that AEMO could work with states to predict future security risks and procure inertia and system strength on behalf of states. The System and Market Impact Assessment is a more advanced version of that proposal.

RERT or reserve market

In addition to stimulating and coordinating new investment, there may be periods where states need to procure some capacity in reserve. **We recommend that two most compelling options are the operating reserve market under consideration by the AEMC or an expansion of AEMO's Reliability and Emergency Reserve Trader (RERT).**

States would want to have the ability to procure reserves through one of these mechanisms, as part of their planning processes in response to the System and Market Impact Assessment.

One advantage of the RERT is that it is proven. It would be worth revisiting the contract duration and other design elements if the RERT is to play a more integral ongoing role as states coordinate expansion of market capacity in the face of disorderly coal retirements.

¹² Mountain & Percy (2021) *Inertia and System Strength in the National Energy Market: A report prepared for The Australia Institute*

¹³ Energy Security Board (2021) *Post 2025 Market Design Options – A paper for consultation Part B* ('Options Paper Part B'), section 2.2

¹⁴ Options Paper Part A, p.48, n.36

¹⁵ Cass (2021) *Volt-face: Changing energy security in the National Electricity Market*

Electrification

On 17 May 2021 President Biden announced a slew of new energy efficiency programs and endorsed a bold electrification proposal called ‘Rewiring Communities’.¹⁶ This plan was published by Rewiring America and the Coalition for Green Capital. The vision to electrify residential and commercial construction, transportation, and industrial sectors in order to deliver rapid emissions reduction and provide jobs and economic stimulus.

The Rewiring Communities project is the first stage and focuses on replacement of gas-powered and inefficient household appliances with efficient electric ones.¹⁷ The authors calculate that 12 million US households could be ‘rewired’ by 2030, at a saving of up to \$750 per annum per household, creating over 700,000 jobs and reducing emissions up almost 40 million tonnes per annum. Three quarters of the households would be at or below 80% of median household income.¹⁸

These demand side resources will both increase load, which would promote more investment in clean energy but also provide considerable ‘firm’ resources through demand response and VPP functionality. This would extend to inertia and system strength with the appropriate technical standards.

We recommend that the ESB commissions a report outlining the scope of a similar project rewiring low to middle income Australian households, including a cost benefit analysis of its impact on consumer energy costs, long term system cost and any impact on resource adequacy. This would inform the Market Design Recommendations paper and state and federal government policy beyond the Post 2025 redesign process.

Energy efficiency, DER/DSP acceleration and wholesale demand response

Energy efficiency is often overlooked in Australian climate and energy policy. The National Energy Productivity Plan 2015–2030 (NEPP) seems to have languished. **We recommend that the ESB reviews progress made under the NEPP and sets appropriate energy efficiency goals as part of the Post 2025 redesign.** For the purpose of this review, efficiency programs should be valued in part according to the impact they would have on reduction of peak load during critical periods.

We understand why the DER/DSP are the most undefined of the ‘next’ reforms. The ESB has taken counsel from AEMO that it must step carefully here, as it is a big change in the NEM architecture to replace tens of scheduled power stations with hundreds of large variable renewable energy generators and storage facilities and millions of distributed energy resources ranging from batteries and PV to loads such as HVAC and pool pumps.

¹⁶ (2021) *Biden Administration Accelerates Efforts to Create Jobs Making American Buildings More Affordable, Cleaner, and Resilient*, <https://www.whitehouse.gov/briefing-room/statements-releases/2021/05/17/fact-sheet-biden-administration-accelerates-efforts-to-create-jobs-making-american-buildings-more-affordable-cleaner-and-resilient/>

¹⁷ Zurofsky, Schub, Rhodes, Curnes, & Calisch (2021) *Rewiring Communities: A Plan to Accelerate Climate Action and Environmental Justice By Investing in Household Electrification at the Local Level*

¹⁸ *Ibid*, p.3

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However, we think progress can be made more quickly in this critical area now that AEMO has appointed a new Chief Executive Officer and Managing Director.

For example, we are optimistic that baselines for wholesale demand response can be progressively improved, to bring more resource into this new market. The Australia Institute was a co-sponsor of the successful wholesale demand response reform made by the AEMC last year and we are part of AEMO's Consultation Group for the technical implementation of the rule change.

Through that Consultation Group process, AEMO has resolved to use a conservative baseline design that rules out much demand response, in order to manage risk. A more vigorous trial-based process could see baselines developed more rapidly. As we have advocated before, AEMO can set limits to particular classes of DER/DSP within a NEM region, to manage risk and accelerate innovation.

ARENA is the agency to partner with AEMO and demand response service providers as it has previously demonstrated success in the (RERT) demand response program. A wholesale demand response market development project could build from the analysis done for the ESB by Energy Synapse.¹⁹ AEMO could work with higher list load to develop baselining, telemetry and dispatch standards and assist companies understand the risk and opportunities of participating in demand response. ARENA could also provide bond or other finance support to derisk deployment. This would not need to wait on the outcomes of the Maturity Plan Pilot on Minimum Demand.

We recommend that ARENA work with the ESB to develop a market acceleration project, focused on wholesale demand response as an immediate phase reform.

We are happy to provide further detail if required.

Yours sincerely,

Dan Cass
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The Australia Institute

¹⁹ Energy Synapse (2020) *Demand response in the National Electricity Market*