public interest
ADVOCACY CENTRE

Post-2025 Market Design Options Paper

11 June 2021

Level 5, 175 Liverpool Street, Sydney NSW 2000
Phone: 61 2 8898 6500 • Fax: 61 2 8898 6555 • www.piac.asn.au

About the Public Interest Advocacy Centre

The Public Interest Advocacy Centre (PIAC) is an independent, non-profit legal centre based in Sydney.

Established in 1982, PIAC tackles barriers to justice and fairness experienced by people who are vulnerable or facing disadvantage. We ensure basic rights are enjoyed across the community through legal assistance and strategic litigation, public policy development, communication and training.

Energy and Water Consumers' Advocacy Program

The Energy and Water Consumers' Advocacy Program (EWCAP) represents the interests of low-income and other residential consumers of electricity, gas and water in New South Wales. The program develops policy and advocates in the interests of low-income and other residential consumers in the NSW energy and water markets. PIAC receives input from a community-based reference group whose members include:

- NSW Council of Social Service;
- Combined Pensioners and Superannuants Association of NSW;
- Ethnic Communities Council NSW;
- Salvation Army;
- Physical Disability Council NSW;
- Anglicare;
- Good Shepherd Microfinance;
- Financial Rights Legal Centre;
- Affiliated Residential Park Residents Association NSW;
- Tenants Union;
- The Sydney Alliance; and
- Mission Australia.

Contact

Anna Livsey
Public Interest Advocacy Centre
Level 5, 175 Liverpool St
Sydney NSW 2000

T: 02 8898 6520
E: alivsey@piac.asn.au

Craig Memery
Public Interest Advocacy Centre
Level 5, 175 Liverpool St
Sydney NSW 2000

T: 02 8898 652
E: cmemery@piac.asn.au

Website: www.piac.asn.au

Public Interest Advocacy Centre

@PIACnews

The Public Interest Advocacy Centre office is located on the land of the Gadigal of the Eora Nation.

Contents

1 Introduction

Australia's energy system is experiencing a rapid and unprecedented transformation, from relying primarily on large scale, centralised, mechanical fossil-fuel generation and passive demand, to one with a small scale, decentralised, variable, electronic, low-emission generation fleet interacting with more sophisticated and active demand-side behaviour.

The rapid transition in energy and resources presents challenges and opens potential opportunities to create more sustainable and prosperous communities.

The Post-2025 project is an opportunity to look ahead to shape the future energy landscape so it is equitable, sustainable and that it happens in the fastest possible timeframe. In the Post-2025 project, the Energy Security Board (ESB), has a unique opportunity in both its remit and the level of engagement from a broad set of stakeholders, to put forward a bold and aspirational vision for the Australia's energy future and a roadmap to reach it.

The Post-2025 market design process has been complex and difficult and we appreciate the hard work of the ESB chair and staff in engaging extensively with a wide range of stakeholders, including consumers. We understand the ESB's task of designing reforms for the future market has been made more difficult by the lack of a nationally consistent climate policy, the rapid pace of technological change and the huge variety of stakeholder input.

It is unsurprising then, in PIAC's view, that the ESB has struggled to seize this opportunity to deliver comprehensive, visionary reform where it is needed. While it has proposed some useful and necessary reforms, it has not put forward robust, enduring solutions for many of the key issues affecting the energy transition and the long-term interests of consumers. In particular the options put forward for resource adequacy mechanisms and thermal generation exit, and transmission access fail to deliver the solutions needed.

In delivering its final recommendations, the ESB should prioritise the long-term interests of consumers and seek reforms that will ensure an equitable, affordable, resilient and zero-carbon future energy system.

2 Resource Adequacy Mechanisms

Australia will see the rapid exit of a considerable portion of its coal fleet in the coming decade and beyond. These coal exits present material risks to the security, reliability and affordability of the NEM only if they are not planned for appropriately.

Planning should begin with acknowledging the transition of the energy system is happening at a much faster pace than earlier predicted, and will likely continue on this path due to the influx of very low-cost renewable energy generation and increasingly bold emissions reduction targets. Consequently, coal generators will likely retire earlier than anticipated and potentially before their expected closure dates registered with the Australian Energy Market Operator (AEMO).

It should also acknowledge this transition must happen rapidly for Australia to meet its international and jurisdictional climate commitments and to ensure the long-term interests of energy consumers.

Australia is a signatory to the Paris Climate Agreement to limit global temperature increase to 2°C. A recent report released by the Climate Targets Panel found:

> To be consistent with the Paris Agreement goal of limiting global warming to well below 2°C, Australia's 2030 emissions reduction target must be 50% below 2005 levels. A 2035 target would need to be 67% below 2005 levels. Net-zero emissions would need to be reached by 2045.
>
> To be consistent with the Paris Agreement goal of limiting global warming to 1.5°C, Australia's 2030 emissions reduction target must be 74% below 2005 levels, with net-zero emissions reached by 2035.
>
> A simple 'net-zero emissions by 2050' target for Australia is not sufficient for the Paris Agreement goal of limiting global warming to well below 2°C (nor 1.5°C).[1]

These targets are 'economy-wide' targets, and many argue the electricity sector can and should transition faster than other sectors, including gas, in which the relative cost of achieving zero emissions is higher.

The Federal Government has recently indicated it will aim for net-zero by 2050 and jurisdictional governments all have plans for net-zero by 2050 or earlier and various interim targets. For example, the NSW net-zero by 2050 plan aims for a 35% cut in emissions by 2030 compared to 2005 levels.[2]

Research indicates globally most coal generators would need to close by 2030 to limit global temperature rise to 1.5°C. As a wealthy country experiencing one of the fastest energy transitions in the world, Australia should lead the way in coal plant closures.

As the rapid closure of Australia's coal power plants is inevitable and in the interests of consumers, the ESB should focus on creating certainty around closures and giving governments and policy makers the tools to ensure they close in a way that shields consumers and the public from costs and that doesn't compromise the reliability and security of the system.

Uncertainty around government energy policy and market interventions, particularly at the federal level, has consistently been acknowledged to as a major issue discouraging efficient investment in new resources needed for the energy transition.[3]

---

1 Climate Targets Panel Report, January 2021. *Australia's Paris Agreement Pathways: Updating the Climate Change Authority's 2014 Emissions Reduction Targets,* 6.

2 NSW Government, March 2020, *Net-Zero Plan Stage 1.* https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Climate-change/net-zero-plan-2020-2030-200057.pdf?la=en&hash=D65AA226F83B8113382956470EF649A31C74AAA7.

3 PV Magazine, 31 May 2021. *Batteries boom as investment in large-scale renewables slumps to a 5-year low.* https://www.pv-magazine-australia.com/2021/05/31/batteries-boom-as-investment-in-large-scale-renewables-slumps-to-a-5-year-low/

2.1 Proposed approach to Resource Adequacy Mechanisms

The ESB's key reform options for meeting the threats to wholesale prices and reliability posed by rapid and unexpected coal closures are modifications to the Retailer Reliability Obligation, either by removing the T-3 trigger or introducing new physical capacity certificates, known as a Physical Retailer Reliability Obligation (P-RRO). PIAC does not support either of these proposals, considering they are inadequate, unnecessary and do not reflect widespread feedback provided by stakeholders during extensive consultation.

We understand concerns about the risk of a sudden, unexpected generator exit threatening reliability and resulting in higher prices for energy consumers. This scenario is possible, however existing and future measures, including some proposed by the ESB make these negative outcomes unlikely.

State mechanisms are in place to bring in large amounts of new renewable generation, long-duration storage and firming resources. In NSW, the *Electricity Infrastructure Roadmap* will unlock pumped hydro resources and support investment in dispatchable capacity via the Energy Security Target. Victoria has a target for 50% renewable energy by 2030 and its Renewable Energy Action plan will encourage development of new generation and storage. Queensland also has a target of 50% renewable energy by 2030 and a strategy to transition the energy system to net-zero.

There are also a number of new market reforms already in train which will encourage new flexible capacity into the system to replace thermal capacity. Five-minute settlement and the Wholesale Demand Response Mechanism will commence in October 2021, and the Australian Energy Market Commission (AEMC) is considering rule changes to introduce an operating reserve and a fast frequency response market.

The ESB's proposed measures to improve information sharing around coal generation exits will also help address the impacts of uncertainty. The System and Market Impact Assessments (SMIA) give more detailed projections of potential reliability shortfalls arising from the retirement of coal-fired generators and give governments the ability to keep units online longer if needed to reduce risks to consumers through the Orderly Exit Management Contract (OEMC) proposed by the ESB.

These arrangements leave limited residual risk of sudden and unexpected coal plant closures causing reliability shortfalls or spikes in prices as they provide certainty over the timing of closures while incentivizing investment in new dispatchable capacity.

To address the remaining risks, modifications to the Retailer Reliability Obligation are not the best way forward for the following reasons:

- The ESB has acknowledged a P-RRO would be costly to implement, complex to administer, anti-competitive and risks 'overcompensating' coal-fired power stations.
- A P-RRO cannot reduce the risks of ageing thermal generators breaking down suddenly: it does nothing to improve the capacity factor or engineering integrity of ageing generators. Rather, by leaning on these increasingly unreliable resources as a long-term fix it increases risks to consumers.
- The P-RRO is not a quick solution and cannot address the short-term risks posed by sudden, unexpected coal generation exits. The existing RRO has taken years to be implemented from when it was first proposed. If the P-RRO follows a similar trajectory it may take at least five years to be operational.

- The P-RRO does not complement jurisdictional plans. As noted above, states and territories in the NEM are pushing ahead with plans to bring in required new flexible capacity.
- The P-RRO puts responsibility for resource adequacy in the hands of retailers and the market, making future interventions by jurisdictional ministers more likely.

PIAC recommends the ESB pursue an approach to resource adequacy that addresses the risks posed by sudden, unexpected coal closures effectively, at least cost to consumers and in a way that reduces the likelihood of further interventions by governments.

2.2 Preferred approaches to resource adequacy

2.2.1 Jurisdictional schemes

The ESB should look at designing a tool for state governments to use to support procurement in new flexible capacity and demand response if a gap arises due to a coal generator exiting or otherwise becoming unavailable. Such an approach would provide state governments with certainty reliability will be maintained while keeping costs to consumers down.

Developing a framework similar and complementary to the Reliability and Emergency Reserve Trader (RERT) would be a cost-effective and pragmatic approach. Under this approach a state government would run a process ahead of time to add dispatchable capacity and demand response providers to a panel under a set of agreed terms and conditions. If the scenario described above arises, the state government would approach the panel and request tenders to fill the gap. A competitive process would determine which providers were awarded contracts. This approach would protect against the risk of any short-term reliability gaps at least cost and would have the benefit of supporting demand response, which is well suited to addressing these challenges. It could also work effectively alongside jurisdictional plans, for example being triggered by a forecast breach of the Energy Security Target.

Jurisdictional government agreements with exiting generators to stay online until gaps are closed by new resources – like the OEMC – would be also be a more effective solution than the P-RRO. This allows jurisdictional governments control, provides certainty and is an immediate, though possibly short-term, fix.

While we strongly prefer the option of a panel for dispatchable capacity and demand response, both it and state government agreements to keep plants online better meet the goal of ensuring reliability at lowest cost while decarbonizing. Both give governments more control over the costs of ensuring reliability, and over who and what technologies fill the gap. Importantly, these approaches preserve the existing energy-only market design and the price signals upon which significant new investments are being made.

The following principles should guide state-led resource adequacy schemes such as those we propose above:

- Reliability targets, and cost of mechanisms to achieve them, should reflect the value consumers place on reliability
- Costs for the schemes should be recovered through state budgets, rather than through consumer bills, especially when schemes exceed the value consumers place on reliability

- RERT-like arrangements for dispatchable capacity and demand response should be prioritised.
- Agreements with individual coal generators should only be used as a last resort, when absolutely necessary and demonstrably in the consumer interest.
- Any payments to exiting coal generators should only be made once the generator is under administration.
- Contracts with individual generators should only be for the amount of capacity required to meet identified reliability goals
- Contracts should allow coal generators to exit earlier than expected if there is sufficient capacity to prevent any reliability shortfalls.

2.2.2 Flexibility market

Before jurisdictional tools are developed for meeting gaps as they emerge, markets for flexible resources should be optimised. Markets for flexibility should create transparent price signals to encourage flexible generation, storage and demand side resources and ensure they are available when needed.

Flexibility services might include:

- fast response
- fast ramping, up and/or down
- reserve storage capacity
- new ancillary services
- network support capability

Much new flexibility would be expected to come from batteries, other energy storage systems, and demand response. Details on how a flexibility market could be designed are in Appendix 1.

3 Essential System Services

The shift from large-scale synchronous generation to more variable forms of large-scale and distributed generation is impacting system security and requiring innovation of Essential System Services (ESS). The ESB has identified four ESS - frequency, operating reserve, inertia and system strength. PIAC acknowledges the current arrangements are lacking as they do not value all services, do not separate system services from each other and are not competitively procured through an open market.

We highlight the need for better provision of system services is urgent:

- AEMO is already directing participants to procure ESS out of market, and a number of rule changes concerned with creating markets for ESS are in progress.
- Sudden and unexpected coal generator closures are becoming more likely and ESS markets are needed to ensure the appropriate resources are available to keep the system secure.

PIAC generally supports the ESB's approach to ESS, in particular the move towards a spot market for unbundled services.

However, we note ESB's approach is centred around the needs of existing large synchronous generators and a centralised grid architecture. As the energy system transitions towards being decentralised, inverter-based and zero-emission, this approach will become inefficient and inappropriate. It may also slow the transition if it incentivises coal generators to provide operating reserves or other services.

PIAC recommends the ESB approach ESS with the future energy system in mind and design near term mechanisms to incentivise Inverter-Based Resources (IBRs), DER and storage, and to move as efficiently as possible towards a new operational model.

4 Demand Side Participation

More flexible demand and better integrated DER has a range of consumer benefits. It can reduce network and wholesale costs, improve reliability and lower emissions. It can give some consumers more control of their energy bills and usage.

Increased participation of demand in the wholesale market also introduces new risks and costs both at a system and individual level, including from new communications and telemetry requirements, obligations associated with dispatch and scheduling and increased volatility.

PIAC considers the key problems the ESB should address to increase demand side participation are:

- Consumers want access to products and services that reward them more flexible demand, but have very limited opportunity due to a lack of offerings.
- Many disadvantaged consumers, particularly renters and those on low incomes, are unable to benefit from offering their flexible demand into the market due to lack of access to DER technologies.
- Third parties are unable to access the wholesale market to offer innovative products and services to consumers that want them.
- The wholesale energy market lacks efficient levels of demand flexibility.
- The market operator cannot transparently deploy the demand-side in the same way as generation.

Any reforms aimed at facilitating demand side participation should solve these problems at least-cost and most benefit to consumers and in a way that promotes the timely transition to a zero-emissions energy system.

4.1 Roles and responsibilities

Roles and responsibilities in the energy system are changing as it becomes decentralised, localised and zero-emission. Currently, the NEM's roles and responsibilities, and its overall grid architecture, take a top down approach, based on the one-way transmission of power from central power stations through distribution level networks to users. As we move to a more decentralised and localised energy system this top down approach is increasingly unfit for purpose and needs reforming.

The ESB should consider how best to design the emerging energy system to ensure roles and responsibilities, and the overall grid architecture, evolve in a way that maximises benefits to

consumers and delivers clean, resilient and affordable energy. This could be achieved in part by developing a 'bottom up' grid architecture model which maximises opportunities for control/autonomy, flexibility/innovation and sharing/trading by users and/or their agents. These opportunities could involve flexible energy generation, demand, storage and trading on both sides of the meter, and via microgrids.

The 'bottom up' approach should be pursued where it efficient and appropriate to do so. Where regulatory reforms or infrastructure investments are planned, bottom-up solutions that best meet the needs of users should be allowed to emerge, whether they be energy sovereignty; low cost power; improved choice, resilience or social equity; or a clean energy supply.

This work of determining an appropriate grid architecture and associated roles and responsibilities should be a priority for the Maturity Plan, and we provide recommendations for how it should be carried out in the next section.

4.2 Maturity Plan

PIAC supports arrangements to allow Demand Side Participation work to continue after mid-2021. The task of unlocking the demand side is critical to fast decarbonisation and a more efficient energy system.

The proposal for a three-year Maturity Plan to undertake work on key areas of demand-side reform has merit, however its value will be contingent on how it is designed and operated. To be successful, development and implementation of the Maturity Plan must be well resourced. It must have clear governance, roles and responsibilities, and methods of determining its work program. It should align with and complement existing processes and have clear decision and implementation pathways for reform recommendations. Importantly, as demand-side participation is largely consumer-facing, the Maturity Plan work should be framed with consumer advocate expertise, and informed the perspectives and lived experience of consumers.

Drawing on our experience of working in groups to inform the delivery of hundreds of reform processes over many years, PIAC considers the proposed structure of 6-month releases to be ineffective and risky. The ESB has not given any reasoning for the choice of the 6-month releases and PIAC does not consider 6 months is a realistic timeframe for fully understanding, building support for and solving issues of the nature ESB is prioritising in the Maturity Plan.

PIAC appreciates strict timeframes and schedules are attractive to encourage the timely completion of work and roll out of reforms. However, getting strong agreement on fundamentals such as problem definitions, principles and objectives, priorities, and governance frameworks would be more effective at ensuring the Maturity Plan delivers timely results.

4.2.1 Maturity Plan aims and priorities

The ESB proposes the priorities for the Maturity Plan are will be Minimum Demand, Residential Appliance Participation, distribution security for solar PV, distribution security for DER, DER participation in new ESS/RAMS markets, DER participation in existing ESS/RAMS, and DER participation in local energy services.

PIAC considers these priorities, and their scheduling are not clearly aligned with the ESB's stated aims of the transitional reform process. These are:

- rewarding customers for their flexible demand, enabling access to products and services that innovation offers, and managing risks to customers through the right protections, no matter how customers choose to use or receive energy, or their level of engagement,
- integrating flexible DER and demand-based assets into the market at all levels, safely and effectively.

PIAC also considers these priorities and their schedule were not determined transparently, or demonstrably based on consultation and feedback from stakeholders.

To increase confidence in and likelihood of success of the Maturity Plan process, the ESB should seek agreement on the problem the process is trying to solve, and clear objectives, principles and assessment criteria to guide activities, priorities and solutions of the process. We recommend it hold a workshop prior to developing its final recommendations to Ministers, or prior to the Maturity Plan commencing, to reach agreement on a design for a consumer-centred Maturity Plan and overall Demand-Side Participation objectives and priorities.

We note the Maturity Plan Pilot currently being undertaken appears to be a step towards this, however PIAC considers this method is not achieving consensus around a problem statement, principles, objectives and evaluation criteria. We consider a more straight-forward, robust and proven process, such as that outlined in the Energy Compact, which was used by consumer groups to contribute to the Two-Sided Market element of the Post-2025 work in the past year might be more suitable, effective and less resource intensive.

4.2.2 Consumer framing of issues

PIAC notes the ESB's top priority for the Maturity Plan is addressing 'Minimum Demand'. PIAC considers this focus is problematic as it frames Minimum Demand solely as a consumer rather than transmission network issue and consequently focuses on solutions that do not reflect consumer energy needs and expectations.

PIAC considers there are two 'groups' of problems being lumped under the term minimum demand by the ESB.

The first relates to regional and transmission issues of inertia and fault current tolerance (aka system strength) relating to increasing coincident peaks in solar generation. The technically correct and non-system centric term for those issues, which is being employed in the latest Reliability Panel Market Report is 'Minimum System Load'. The Reliability Panel avoided using the term 'Minimum Demand' because it is inaccurate and falsely frames it as a demand problem.

The second is much broader than just Minimum System Load as it includes distribution and quality of supply issues. This seems to be closer to the actual focus of the Demand Side Participation workstream and Maturity Plan. The most accurate term for this group of issues is along the line of 'impacts of increasing solar on the energy system'. 'Changing dynamics of energy supply' would also be appropriate.

PIAC recommends the ESB stops using the incorrect term 'Minimum Demand' for either of these groups of problem, and instead correctly frames the issues it is seeking to address to better reflect the nature of the problems.

4.3 Consumer protections framework

PIAC welcomes steps to incorporate consideration of consumer risks and harms throughout the Maturity Plan process. The ESB's proposed Risk Assessment framework is valuable for identifying risks of new arrangements but PIAC considers a focus on the type and severity of harms is more useful and important. Types of harm can range from inconvenience, to financial loss to detriment to health or well being.

As noted in our earlier submissions, PIAC considers consumer protections should be commensurate with a new arrangement, product or service's potential to cause harm if it doesn't function correctly or becomes unavailable. The more serious the potential harm, the more protection a consumer should have while using it.

See Section 5 of PIAC's submission to the Post-2025 Market Design Consultation for more details on its approach to consumer protections.[4]

4.4 Tariffs

There is considerable work to be done to ensure tariffs encourage the efficient and fair use of networks and optimise them for the benefit of all consumers. PIAC considers DER integration should begin with accurately pricing the costs of consumption on the distribution network through cost-reflective network pricing. Cost-reflective pricing of energy from the grid rewards people for making investments and behavioural decisions that increase self-consumption of the energy they generate, reducing the need for the grid to handle export.

Under cost reflective consumption pricing, solar households can be incentivised to shift load to coincide with solar generation, orient solar panels to coincide better with energy consumption, and to store excess solar generation for use during times of higher demand. This would help limit the export impact of DER on networks and open up more network capacity for exporting DER in a more deliberate and efficient way for the benefit of all consumers.

PIAC recommends any major reforms to pricing of export or generation capacity should follow, not precede, the full implementation of cost-reflective pricing of consumption. It should also be prioritised well ahead of any sort of structured procurement by Distribution Network Service Providers (DNSP) for network services.

PIAC notes vulnerable consumers with inflexible, high-peak usage can be worse off under cost-reflective pricing without support measures in place. To mitigate these impacts PIAC recommends providing percentage-based energy concessions to vulnerable consumers who are likely to be worse off and a phase in of the cost-reflective component of tariffs.

4.5 Flexible Trading Arrangements

PIAC supports the ESB pursuing the two proposed metering models as starting points for change. The primary focus of a solution should be to allow different data streams from a single meter to be shared by multiple market participants so consumers can facilitate the provision of

[4] PIAC, October 2020. Post-2025 Market Design Consultation. https://piac.asn.au/wp-content/uploads/2020/10/20.10.30-PIAC-sub-to-P2025-Market-Design-Consultation-Paper-updated.pdf. p10-14.

different products and services such as by netting-off solar, separately metering electric vehicles, batteries or controlled loads.

PIAC considers Option 1 – a second connection point – will likely be prohibitively expensive or technically unfeasible for a large portion of energy consumers, particularly households. As a result, this model will likely exclude many consumers from new products and services and create risks for consumers unaware of the high cost or technical requirements of the second meter.

PIAC prefers Option 2 to Option 1 as it is likely less costly to install and suitable for a wider portion of premises.

PIAC understands ESB's preference for metering reforms that require a minimum of change to current systems, but notes there are likely substantially more benefits, and avoided metering installation costs involved in separating out data streams from individual single- or dual-element meters to Flexible Trading Relationships.

There are a range of risks, costs and benefits for consumers of both options, which we welcome further exploration of.

PIAC notes one of the primary attractions of the options put forward by the ESB is only imposing costs on those consumers that want to engage multiple service providers. We appreciate the desire not to impose costs on those who won't benefit from the metering, however we note the demand side participation this metering seeks to facilitate will bring about efficiencies that benefit all consumers, not just those who participate directly.

PIAC considers metering is part of the electricity network – a component of shared infrastructure all consumers use and benefit from. As such it is appropriate to socialise metering costs to some extent and it should be affordable and accessible to all. This is particularly important for metering that supports the energy system to decarbonise quickly. More detail on PIAC's view on metering can be found in our submission to the recent AEMC review of the regulatory framework for metering services.[5]

Treating metering as discretionary and marketising its provision will ensure any option for Flexible Trading Arrangements will be rolled out slowly, inefficiently and at a high cost, as has been the case for the contestable roll-out of smart meters.

4.6 Scheduled-Lite

Scheduling is a major barrier preventing more demand side participation in the wholesale market. The issue can be seen in the Wholesale Demand Response (WDR) mechanism, where scheduling requirements and obligations are discouraging or preventing participation by many valuable commercial and industrial loads.

PIAC supports measures to reduce these barriers and encourage participation in the market of currently non-scheduled resources. We do not have a strong opinion on whether either of the

[5] PIAC, February 2021. Submission to the review of the regulatory framework for metering services. https://piac.asn.au/wp-content/uploads/2021/02/21.02.26-Sumission-to-AEMC-review-of-the-regulatory-framework-for-metering-services-consultation-paper-final.pdf

scheduled-lite options put forward by the ESB are likely to materially increase the amount of resources participating in the wholesale market or which are visible to AEMO.

Under the visibility model, providing demand forecasts every 5 minutes is costly, requiring a level of accuracy and predictability few existing unscheduled loads currently have. It's not clear whether the incentives would be sufficient to overcome this barrier.

The dispatchability model has higher potential benefits to consumers, but has more burdensome requirements for participation. Seeking lower-cost alternatives to telemetry, such as through dispatch web services where dispatch instructions and data communications are issued through web-based APIs, will likely allow more participation.

Both the scheduled-lite options have merits and, where they do not require costly changes, are worth developing further. However, PIAC considers neither option addresses a key issue preventing much of the demand side participating and hampering the effectiveness of wholesale demand response: the unrealistically high assumed likelihood of gaming by demand response providers that is constraining the effectiveness of the new Demand Response Mechanism.

The main objective of energy users is not to provide demand response or other flexibility, but undertaking their core business or household activities. Opportunities for consumers to inflate or otherwise manipulate baselines are limited, and concern they will indicates a lack of understanding of how consumers use energy.

In the case of WDR, given dispatch is not guaranteed until the start of a dispatch period, a demand response service provider (DRSP) would need to artificially inflate consumption in the adjustment window prior to dispatch or over a prolonged period on the chance they would be dispatched. This is an extremely risky and unlikely strategy.

Much demand-side participation is likely to be automated, which may be harder to manipulate and easier to monitor for the purpose of regulation compared to entirely manual demand response. In the case of the more advanced demand response markets in the US, in 2018 only 0.7GW of over 18.3GW of enrolled demand response capacity in the US was behavioural.[6] This is compared with the mostly manual curtailment processes found in the Reliability and Emergency Reserve Trader (RERT) and many demand response pilots.

Many loads, particularly temperature-sensitive ones, will have little capacity to artificially inflate their baselines on days when demand response is most likely to be required (hot days when prices are high) because they are already running at high consumption to manage heat.

There is also reputational risk for participants gaming systems that will serve as a further deterrent. DRSPs, for instance, will generally have an ongoing relationship with consumers and provide consumer goods and services such as electric vehicles, smart appliances and batteries. Behaving with integrity and transparency will be key to maintaining these relationships, retaining customers and protecting brands.

[6] Smart Electric Power Alliance (2018) 2018 Utility Demand Response Market Snapshot

This concern over gaming has led to onerous requirements for predictability, baseline compliance and meeting dispatch targets, which have discouraged many loads that would bring benefit to the system from participating.

PIAC recommends the ESB take an approach which acknowledges participating energy users' primary purpose is not to provide demand flexibility and consequently have little incentive or capacity to manipulate or game arrangements.

5 Transmission Access

The current arrangements for transmission access and coordination of generation and transmission are preventing effective development of transmission networks to support the efficient, timely decarbonisation of the energy system.

A key reason is rules and regulations – collectively, a relic of last century's energy grid – that do not support building transmission infrastructure ahead of new generation and do not require generators to cover some of the cost of the regulated transmission infrastructure they need. The result is inefficient transmission investment that lumps consumers with unnecessary and unfair costs and risks and slows the deployment of renewables.

Through the Post-2025 process, the ESB should seek comprehensive reform to the transmission cost and risk sharing for REZs to ensure arrangements are fit for the purpose of delivering reliable, affordable, zero-emissions energy system.

5.1 Cost and risk sharing top priority

The fair and efficient allocation of costs and risks of new transmission investment should be the key priority of the ESB in its transmission access reform pathway. Under the current arrangements, all the costs and risks of regulated transmission investments – all ISP projects – are recovered from consumers.

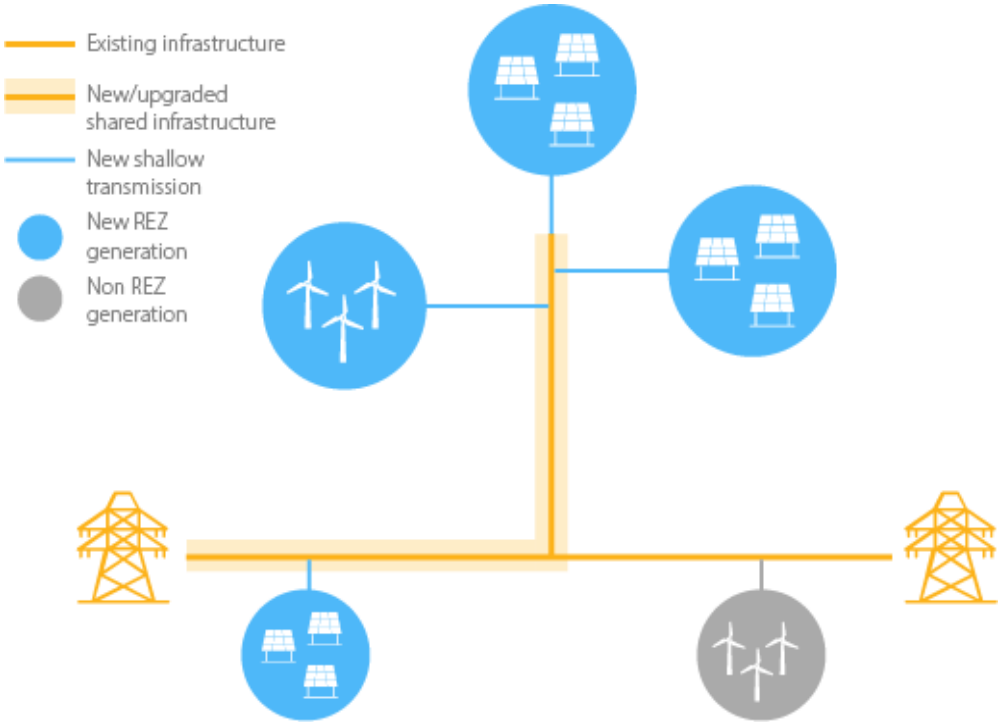
The ESB acknowledges actionable ISP projects often have benefits for more than just energy consumers and suggests they should be subject to a broader cost-benefit test. The ESB highlights the benefits to local economies and employment of ISP projects, but PIAC considers benefits to generators to be of the most relevant consideration.

As the energy system transitions, new transmission is built in large part not to serve new consumers but to connect new renewable generators, making connecting generators, not consumers, the primary beneficiaries of this investment. Despite this, the costs of regulated transmission investment are recovered entirely from consumers.

This mismatch between who benefits and who pays for new transmission is causing delays in new projects as projects must pass a high consumer benefit threshold in order for their costs to be recovered from consumers. Altering the rules around how costs for transmission assets are shared so they can be recovered from connecting generators and other benefiting parties is necessary to overcome this regulatory hurdle.

PIAC has developed an approach to cost and risk sharing of REZs that aims to ensure the costs of shared REZ infrastructure are recovered from the beneficiaries – primarily connecting generators – and the risks are not borne entirely by consumers. More details on PIAC's approach can be found in our submission to the Post-2025 Market Design Consultation Paper.[7] The approach allows the capital costs of shared infrastructure, including augmentations to the existing network, to be recovered from connecting generators, rather than just consumers, and for shared infrastructure to be financed by a contestable investor, such as government, the TNSP or some other entity, rather than just through a TNSP (see Figure 1).

Figure 1: Classification of network in a REZ



A fundamental aspect of the PIAC approach is that REZ transmission capex is recovered from both generators and consumers, rather than just consumers. This is achieved by separating transmission investment into two portions: one, consistent with current cost recovery, is rolled into the RAB of the incumbent TNSP and is recovered through regulated revenue; and a contestable portion, funded by a contestable investor or government, and is recovered through generator connection charges. The connection charge would be pre-determined at fixed rate (such as $/MVA) that increases with time, commensurate to the underutilisation risk the speculative investor bears – this is both transparent to all parties and incentivises early connection.

The PIAC approach seeks to allocate costs and risks fairly and efficiently, while providing a means for REZ infrastructure to progress through the regulatory process more quickly by lowering the consumer benefit projects must provide.

[7] PIAC, 2020. Submission to Post-2025 Market Design Consultation Paper. https://piac.asn.au/wp-content/uploads/2020/10/20.10.30-PIAC-sub-to-P2025-Market-Design-Consultation-Paper-updated.pdf. p33-36

PIAC understand**s** this approach is opposed by some generators. We urge the ESB to prioritise the interests of consumers, who do not wish to shoulder or have the ability to mitigate these costs and risks of shared REZ transmission, and take with a grain of salt any claims from generators that they are unable to make a contribution to the shared transmission cost in a REZ, given these will typically be no more than the cost of direct connection outside of a REZ.

PIAC also stresses there is no evidence to suggest generators would prefer to build outside a REZ if they are asked to pay a portion of the shared network. Generators get a range of benefits from connecting in a REZ that are not impacted by making a contribution to their transmission costs.

While PIAC consider**s** the ESB's main priority should be to open up the allocation of cost and risk from transmission projects, a number of the ESB's proposals for transmission access reform are worthwhile and should be pursued. We discuss them in the next section.

5.2 REZ framework

PIAC supports the ESB's intention to develop an interim REZ framework which includes arrangements and principles for REZ planning and implementation. PIAC considers as jurisdictions push ahead with REZ developments, a uniform set of principles and approaches will be helpful in ensuring consumers across the NEM can access the benefits of REZs.

PIAC urges the ESB to prioritise allocation of costs and risks and the need to decarbonise rapidly in the principles for REZ implementation. PIAC favours an approach that allocates some of the capital cost of shared infrastructure to generators and recovers it through access charges (as noted above). As part of this approach, the principles should encourage governments to take on some of the risk of shared network infrastructure. Under the PIAC approach described above, this could mean governments investing in the contestable portion of shared REZ infrastructure.

We do not support financial access rights for connecting generators. We support REZs being built to provide access with an efficient amount of curtailment.

5.3 Access reform

PIAC supports a more robust and enduring approach to access reform which seeks to make needed changes as quickly as possible and not create interim measures which may or may not have utility long-term.

PIAC considers the ESB should broaden its option assessment criteria to include cost allocation and decarbonisation. Options should be assessed for how they allocate costs according to who benefits and risks according to who is best-placed to manage them. It should assess options for how they contribute to the decarbonisation of the energy system.

These additional principles support the Generator Transmission Use of Service (G-TUOS) model as a medium term access solution. PIAC questions why a G-TUOS is being considered instead of an upfront charge reflecting the cost of the shared transmission network asset in line with the PIAC approach.

Appendix 1

An energy price signal can be retained while introducing an incentive for flexible energy services. PIAC considers there is value in retaining an energy price, however it will need to be modified, and potentially have another market layer introduced, to incentivise the products and services required in the future market.

Currently, all generators are paid the same spot price irrespective of whether they are dispatchable and scheduling depends on the outmoded measure of their nameplate capacity, not whether they are available for dispatch when needed.

Options for incentivising more fast ramping dispatchability with minimal disruption to the existing arrangements, include:

- Moving to a two-tier wholesale energy price
- Introducing a flexibility payment and reducing the market price cap.

OPTION 1: A two-tier wholesale energy price This option involves modifying the current scheduling and settlement arrangements so that generators are classified and incentivised based on their ability to be dispatched and ramped up and down. The new 'scheduled' participant category may:

- include dispatchable (on and off) sources such as batteries, hydro, some gas generators, and demand response
- apply to single or aggregated units totalling 5MW and above and be dispatched by AEMO on a 5 minute basis, and
- have the current Market Price Cap arrangements applied.

The new 'non-scheduled' participant category may:

- include generators that cannot be centrally dispatched on and off as needed, such as coal, solar and wind (without batteries) and smaller generators;
- not be dispatched by AEMO, although some obligations and 'semi-scheduling' arrangements may apply in the interest of good behaviour and grid stability, and
- be subject to a lower price cap, that would apply uniformly to all generators in the category, say between $300 and $5,000/MWh.

OPTION 2: A flexibility payment and lower market price cap

Under this option, new flexible generators, storage and demand response providers could, through an appropriate competitive process, be given fixed annual payments to provide flexible services such as:

- fast ramping, up and/or down,
- fast response, either automated or centrally dispatched, and/or
- reserve capacity, including reserve storage capacity.

Participation in the market would be limited to new entrants.

Under this arrangement, a spot market would remain, but the Market Price Cap and Cumulative Price Threshold should be lowered to reflect that new generators would be incentivised by the flexibility market.

A key challenge of this model is managing the interaction between the flexibility market, the existing spot market, and RERT. Managing this may require closing the spot market to new entrants and requiring them to participate in the new market, however this would limit investor choice with respect to risk, which may increase the cost to consumers