Post 2025 Market Design

Response to the Energy Security Board's Options Paper (Part A and Part B)

June 2021

ENERGY CONSUMERS AUSTRALIA

Version history

VERSION	DATE	COMMENTS

Contents

Introduction

Energy Consumers Australia supports the work of the Energy Security Board (ESB) in developing a package of essential reforms to ensure that the market design of the National Electricity Market (NEM) is fit for purpose to navigate the transition to a net zero emissions future, which consumers also expect to be secure, reliable, affordable and fair.

Energy Consumers Australia appreciates the opportunity to provide a response to the Energy Security Board's (ESB) two-part Options Paper (Part A and Part B) released in April 2021.

Energy Consumers Australia is the independent, national voice for residential and small business energy consumers, established in 2015 by the Council of Australian Government's Energy Council. Through our advocacy we bring about changes in policy, legislative, and regulatory frameworks and industry business models, practice and behaviours for the benefit of people using electricity and gas in their homes and small businesses.

We support the work of the ESB in developing a package of essential reforms to ensure that the market design of the National Electricity Market (NEM) is fit for purpose to navigate the transition to a net zero emissions future.

Response to the Energy Security Board's Options Paper

Responding to the ESB's Options Paper is a challenging task for Energy Consumers Australia for a number of reasons.

As the ESB itself recognises, the proposed reforms are at varying levels of maturity. In evaluating the proposed pathways and reform measures, we have supported those where the evidence and measures themselves are well-advanced. In the case of access and pricing in relation to generation and transmission, despite there being a strong case, the ESB is developing an alternative, more staged approach focussed in the first instance on Renewable Energy Zones.

The ESB's proposed reforms cannot be considered in isolation of other reforms already well advanced or implemented, or other processes that are already tasked with considering related issues. This is particularly the case for some of the measures that address security and reliability and also the workstream that comprises the demand flexibility and distributed energy resources (DER) reforms.

- In the case of operating reserves and the two proposed modifications to the retailer reliability obligation, it is unclear that these will be needed in addition to several and more recent reforms such as five-minute settlement, the retailer reliability obligation, 42-month notice of closure and the wholesale demand response mechanism once they have been bedded down.
- In the case of the demand flexibility and DER reforms we are broadly supportive of the "direction of travel" in many instances, but we still lack clarity about how all the pieces of the puzzle fit together in achieving what outcomes consumers would be looking for. For this reason Energy Consumers Australia is recommending that we need an energy transition plan which sets out a consumer vision of the future, together with a practical roadmap with sequencing of the reform measures that need to be considered and agreed.

The ESB has continued to develop their thinking on other measures since the release of the Options Paper, including access and pricing for renewable energy zones and minimum demand. However, it has been a challenge to stay across the issues and the state of play, so we are not confident that our comment on some of the issues in the Options Paper remains sufficiently informed.

Finally, it is a challenging task to comprehensively respond to the Options Paper, because there is, as yet, no information on which to evaluate;

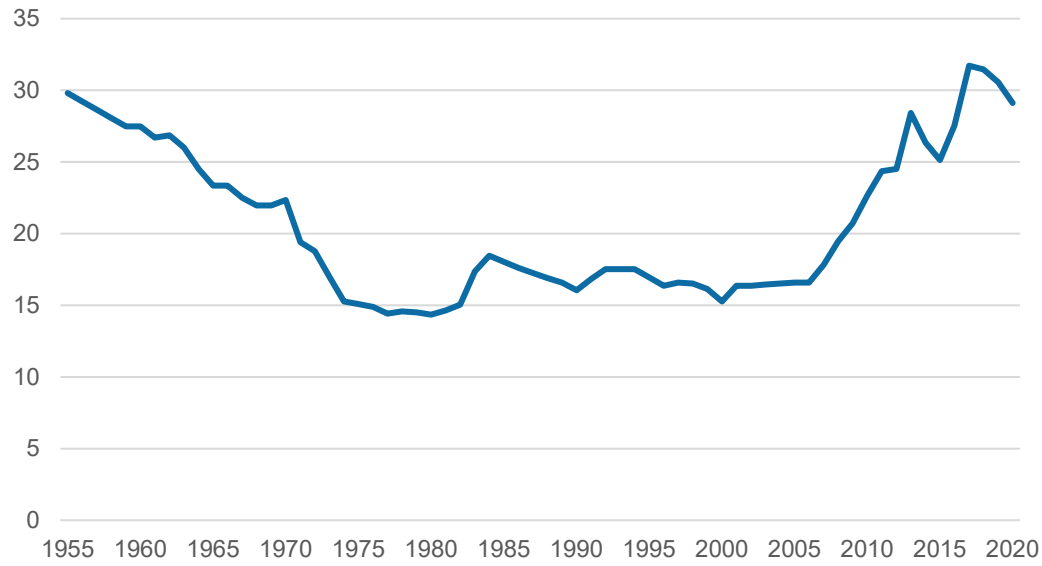
- the costs and benefits of the proposed reforms;
- the impact on future, average electricity prices (affordability); and
- the impact on the energy divide, and intergenerational impacts.

Consumer bill impacts

Affordability needs to be a key constraint on the timing and costs of investment decisions, and the package of reform measures. In the context of a great deal of uncertainty, risks need to be allocated to the parties that can best mitigate those risks, and reform proposals should not pass those risks and costs onto consumers through their electricity bills.

Retail (real) electricity prices remain at historically high levels (see Figure 1), though they have fallen in the past 12 months due to lower wholesale prices and distribution network costs. It would be helpful for the ESB to provide an outlook for future electricity prices as part of its package to Energy Ministers, so that consumers can have confidence and trust in the benefits of the Post 2025 Market Design package, from an affordability perspective as well as from a security perspective.

Figure 1: Electricity price trends



Source: Energy Consumers Australia analysis

In our research, consumers tell us that they expect that the future energy system will be affordable, secure and reliable but also fair.

In releasing the Australian Council of Learned Academies (ACOLA) *Australian Energy Transition Research Plan,* the Chair Drew Clarke commented:

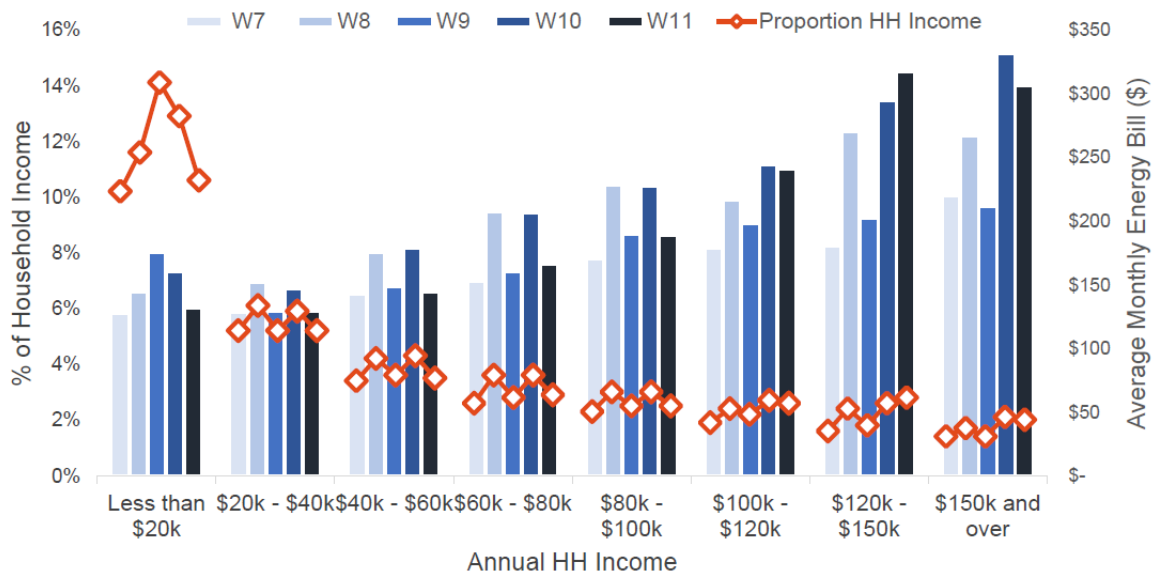
> *"A successful energy transition must both address the energy trilemma (reliable, affordable, net-zero emissions) and be fair, engaging people in the context of their lives, jobs and communities. Australia performs well in science and technology energy research, and this must continue; but more research in the human and social dimensions is needed to better understand and support Australian communities through the energy transition."*

The opportunities, and challenges, in using smart technologies to easily and conveniently shift when energy is used, produced and stored, will not be spread evenly across the community. Without access to efficient housing and appliances, rooftop solar PV or home battery storage, a significant proportion of households and small businesses could face the burden of disproportionately higher energy bills. Given the rise in the proportion of households in rental accommodation, and the decline in detached housing, it is not only the financially vulnerable that are at risk – this could include as many as one third of energy consumers.

There is a significant difference between high, middle and low income households in the proportion of income spent on energy (see Figure 2), which can be assumed to relate to differences in the quality of housing, appliances, and access to rooftop solar. Energy Consumers Australia is undertaking further analysis of the survey data. These costs may seem trivial until they are combined with housing costs. In analysis by the Australia Institute of Health and Welfare the bottom 40% of households by income on average spend over 30% of household income on housing costs.

We need to identify the package of reforms (including through research) that extend beyond the regulatory and energy policy frameworks, that are required to achieve a fairer energy system transition.

Figure 2: Trends in the energy divide



Source: Energy Consumer Sentiment Surveys (Waves 7-11), 2019 – 2021, Energy Consumers Australia

The significance of the consumer perspective in the energy transition

From March 2019 onwards Energy Consumers Australia has engaged with the ESB's Post 2025 Market Design reform process. Since the release of the Consultation Paper, in September 2020, we have worked closely with the ESB, through:

- chairing the Customer Working Group, made up of a range of consumer advocacy organisations representing residential consumers and small business;
- engaging with other stakeholders representing industry and small business;
- engaging a technical adviser to provide us with independent advice (Finncorn Consulting), and sharing that advice with other stakeholders;
- participating in supporting the Maturity Plan Pilot Steering Committee;
- assisting the ESB and Professor Cameron Tonkinwise in the ESB's pilot of human centred design principles in the Maturity Plan Pilot;
- participating in the Maturity Plan Pilot;
- chairing and assisting the ESB's various deep dives on the April Consultation Paper with customer stakeholders; and
- working with the ESB on the application of the consumer risk assessment tool to the flexible trading arrangements proposals

This experience has provided us with insights into the challenges in developing reforms that genuinely seek to start from, and respond to, the long-term interests of consumers.

The transition from our current mature and centralised energy system, to one that is based on more distributed and decentralised renewable generation and storage, requires addressing not only technical design challenges – including engineering, economics, hardware, software – but also addressing these in the context of the values, expectations and needs of society at large, including energy consumers. The challenge is in mobilising and resourcing knowledge of what society, and energy consumers require for their support and participation, and bringing that knowledge and consumer voices to the table, to inform the decisions that are being made about the system they will be served by.

The knowledge, skills and tools to design, plan and build the centralised energy system have been refined over past decades, building on a century of practice. As the Clean Energy Council commented in their submission to the ESB, the imbalance is stark.

> *Effectively achieving deep system integration of DER is a non-trivial task. It involves many different disciplines, a widely diffused body of relevant expertise and diverse stakeholder perspectives. It is essential that a robust, properly funded collaborative model be established to coordinate the portfolio of activities to achieve deep 'whole system' integration of DER.*
>
> *The difference in the depth, maturity and distribution of technical, economic, customer and regulatory knowledge between the traditional centralised power system and the emerging more distributed power system is stark. The traditional centralised power system benefits from a mature body of knowledge and expertise built up over a century and that is highly concentrated in a relatively small number entities (including generators, networks, governments, market and regulatory bodies, etc.). By contrast, the expertise required for the deep 'whole system' integration of the millions of DERs that will need to reliably serve 30 – 50% of the NEM's future generation requirements is far less established. Australia is on the global frontier and as such this body of knowledge is still immature and continues to evolve. Critically, it is widely distributed across a much larger number of entities including various customer types who will be capable of providing both generation and critical flexibility services.*

In our view, this gap will not be closed unless there is time and resources invested in building the knowledge, skills and tools that are needed for this task, and that includes an evidence-based understanding of what different consumer segments will potentially think, say and do in relation to the choices available to them in the future energy system.

The energy system of the future provides opportunities for reward for consumers that are able to access smart technologies, but that is also associated with increased risk. Consumers will need appropriate information, tools and skills to assess and mitigate these risks. It cannot be assumed that intermediaries (both current or future) with little or no experience of how consumers will experience risk in the use, production or storage of energy in their homes and small businesses will be concerned with making sure that these decisions are informed and deliver the outcomes consumers anticipate. The issue of how consumers are informed and supported in their decision making is broader than our current consumer protection frameworks, whether those are energy specific (regulating bills, payment plans and hardship provisions) or economy wide prohibitions on misleading and deceptive conduct, safety and mandating dispute resolution. As the Centre for Sustainable Energy in the UK has identified in their Phase 1 report in their Smart and Fair project consumers will need new capabilities, characteristics and attributes to participate in new energy services and markets. Energy Consumers Australia will continue to apply our behavioural insights approaches in our work, and to work with the UTS Design Innovation Research Centre and the Energy Systems Catapult in the UK to build our capability.

Next steps

The remainder of this submission provides specific feedback on the detailed pathways laid out in the four workstreams.

As we near the end of this process, I want to take the opportunity to thank the ESB, their Board and all of their staff – ably led first by Matt Garbutt and then Jo Witters – and the teams from the market bodies that have engaged with us throughout this Post 2025 Market Design process. The next few years will determine how well Australia navigates the energy system transition in a way that meets the needs of the Australian community and economy, so there remains much work to be done. There are few transformational challenges of our time that are more significant.

In particular, I want to recognise the commitment and willingness shown by the ESB in supporting Energy Consumers Australia in bringing the perspective of consumers into the process in ways that were inclusive and innovative, and at times were difficult. Further, I want to recognise the substantial efforts made by consumer organisations who made valuable contributions to our thinking and the work of the ESB, throughout the process. It is deeply appreciated.

I also want to thank my own team - Chris Alexander, Louise Benjamin, and Alexandra Bishop - for their hard work and ideas, that never flagged, as well as David Heard for excellent technical support and independent advice.

If you have any questions on this submission, or require clarification, do not hesitate to contact me at lynne.gallagher@energyconsumersaustralia.com.au.

Measures to support security and reliability

The Energy Security Board's objectives

The ESB was tasked in 2019 with developing a fit-for-purpose market design for the National Electricity Market (NEM), following the completion of the Independent Review of the Future Security of the National Electricity Market (the Finkel Review) in 2017.

The Finkel Review identified that Australia's electricity system was at a critical point.

> *Managed well, Australia will benefit from a secure and reliable energy future. Managed poorly, our energy future will be less secure, more unreliable and potentially very costly."*

Within the Post 2025 Market Design package three of the four workstreams identify a suite of immediate, initial and next stage reforms to underpin the future security and reliability of the NEM:

- resource adequacy mechanisms and ageing thermal retirement (workstream 1);
- essential system services, scheduling and ahead mechanisms (workstream 2); and
- transmission and access (workstream 4).

Energy Consumers Australia commissioned David Heard (Finncorn Consulting) to provide us with independent advice to inform our position on the proposed reforms, and whether individually and as a package they are in the long-term interests of energy consumers. Finncorn Consulting has separately provided that advice as a public submission to the ESB, for their consideration.

Support for a number of key reform measures

On the basis of the advice from Finncorn Consulting, Energy Consumers Australia is broadly supportive of the majority of reforms.

Workstream 1

- We support the approach to improving and generalising jurisdictional investment or underwriting schemes, based on the NSW model, as a means of avoiding policy-related unintended consequences between states and across time, associated with uncertainty and inconsistency, including:
  - enhancement to information provision on resources to be underwritten; and
  - agreed national principles for contract design.
- We support achieving orderly exit of ageing thermal generation through:
  - increased information around mothballing and seasonal shutdowns;
  - expanding the notice of closure requirements to include mothballing, provided it only seeks to ensure 'mothballed' capacity has a clear ability to return to service in a known and transparent timescale, including some assurance that the necessary maintenance is undertaken by the asset owner to support that return-to-service performance;
  - an integrated process to manage early exit, with modifications so that the cost is funded from budgets and not from consumers in their electricity bills and with flexibility to accommodate improvement in the outlook (i.e., if circumstances change).

Workstream 2

- We support the proposals for frequency control, inertia and system strength as clearly technology-neutral responses to the challenges of the NEM's transition in maintain system security, supporting both existing and new assets for the valuable services they currently provide (or can provide).
  - In addition, Finncorn Consulting recommends:

- that the ESB should use the broadest possible scheduling and dispatch for security, by recommending the System Security Mechanism (SSM) alternative, which brings in all potential system security assets to the dispatch optimisation, rather than just historically contracted resources from TNSPs under the basic Unit Commitment for Security (UCS) process; and
- the ESB should seek to minimise inflexible contracting, where the quantity of procurement under the (less-flexible) UCS contract process is minimised, allowing for shorter-term and more flexible participation of assets in providing the optimal (as opposed to minimum) levels of system security in real time.

Workstream 4

In the Options Paper, ESB describes the Australian Energy Market Operator's (AEMO) Integrated System Plan (ISP) as providing "a least cost pathway for the development of the power system, taking into account the demand side, supply side and network investment costs". In Energy Consumers Australia's view, the ISP is more of a near term transmission investment plan, based on current knowledge and forecasts. It takes a "present forward" view of the potential growth in the demand side rather than a "future back" approach. As the Consumer Panel for the ISP has commented in its first submission:

> *"Big vs small - decentralisations is one of the electricity industry's megatrends and that, historically, the NEM was built as a series of very large capacity investments. We are conscious that adapting past frameworks might bias the 'optimal development path' towards larger investments.*
>
> *Transmission vs Distribution – we are alert to the fact that one easy way for consumers to "pay twice" is if there is no co-optimising of distribution expenditure on increasing hosting capacity for consumers' solar and batteries and transmission expenditure for grid scale solar and storage.*

In relation to the Options Paper, we support the ESB in its immediate reform actions of developing proposed measures to provide a development plan for Renewable Energy Zones, as a means of achieving efficient location decisions. The Options Paper identifies that the ESB will be undertaking further work to develop initial reforms that go to "real time congestion management and reforms to ensure that new technologies are able to be remunerated for alleviating transmission congestion."

In the longer term, we see the efficient solution as being locational marginal pricing and financial transmission rights, which are not being pursued as part of the Post 2025 Market Design package. We agree with the AEMC and ESB analysis which demonstrates very material affordability benefits to consumers through both more efficient investment, and more efficient dispatch of current and new generation capacity in regard to transmission constraints.

The Options Paper identifies a concern with the costs of investing too late in new transmission projects. Energy Consumers Australia characterises the risks somewhat differently. It is true that investing late increases the risks of outages, but equally investing too early increases the risks that consumers pay more than they need to for their electricity. Given current levels of electricity prices, and the scale of investment identified in the ISP, we consider that it is critical that further work be undertaken to identify the trade-offs between investment in distribution and transmission capacity, as well as the least regrets timing of additional transmission capacity.

Some measures are not supported

Consistent with the independent expert advice, Energy Consumers Australia does not believe the case has been made for an operating reserve, or the modifications to the RRO. Finncorn suggests some improvements that can be made to the existing RRO to improve transparency and reduce complexity.

An energy transition plan

The two transitions

There are two transitions underway in Australia's National Electricity Market (NEM).[1]

The first is the transition of the interconnected power system away from fossil fuel generation to a system based on renewable generation and storage. This is a critical challenge that is threatening the stability of our energy system and is the focus of most of the ESB's Post 2025 Market Design work.

The second transition is occurring in the more than 9 million homes and 1 million small businesses, with the potential for smart technologies to enable changes in the way energy is used, generated and stored, including through the sharing of local generation and storage assets.

The pathway to a more affordable, abundant and clean energy future will take us from a 'top-down' centralised electricity system to one that is also more decentralised, more community-based, and more responsive to the needs and voices of consumers (as both users and producers). This future energy system should also be more resilient, featuring many local 'independent' trading systems networked into a bigger whole – better able to withstand or recover from disastrous events.

While this energy system transition brings opportunities for increased consumer participation, unless policy measures are adopted that address the energy divide, there is a real risk that substantial benefits will accrue only to homeowners living in detached housing.

These policies will need to go beyond the energy system to include policy settings in other parts of the economy including incomes policy, housing and urban policy, transport policy and telecommunications policy.

A consumer driven future

The ESB's work on the integration of distributed energy resources and demand side participation is a positive contribution to begin considering these issues at a national level.

Initial work published by the ESB based on the current state of knowledge has identified the potential for demand response in the National Electricity Market (NEM). Currently, some 4.3 gigawatts of potential demand flexibility have been identified in the Demand Response Report. Further work is being funded by the Australian Renewable Energy Agency (ARENA) to undertake a national load flexibility study.

While there is a clear and growing potential to unlock the value of flexible demand and distributed energy resources, the challenge is that realising this opportunity is dependent upon the motivations, abilities and opportunities that are embedded in social practices in homes, and business requirements which will determine what actions consumers can and choose to take. It cannot be simply assumed that consumers will be driven by purely financial incentives, in when and how much they use, generate or store electricity.

[1] The Western Australian Government's Energy Transformation Strategy is addressing the challenges of the transition for their electricity supply system, including the South- West Interconnected System.

The current and growing challenge as highlighted in the ESB Post 2025 Market Design work, is increasingly typified by large amounts of abundant and cheap renewable generation becoming increasingly available during daytime hours, driven by the continuing growth in both large-scale and rooftop solar systems.

Energy Consumers Australia considers that this is not unlike the historical overnight challenge faced when hot water load control (load shifting) programs were first designed more than fifty years ago (see Box 1). This capability continues to be used today to manage capacity constraints on the distribution network, and in the case of Queensland has been extended to dynamically controlling pool pumps and, more recently, air-conditioner loads (the PeakSmart program).

Box 1 Lessons from hot water load control

While currently applied largely as a distribution network management tool, these programs were originally designed to balance the cheap, abundant generation that was available as the now-ageing fleets of coal generation plants were first developed.

Coal generation was then, as it is now, cheaper to operate on a basis where generation could be maintained in a predictable fashion. Customer demand was then, as it is today, difficult to predict. However, hot water systems offered then, as they still do now, a unique capability to store and shift demand in what continues to be a highly flexible source of customer load.

Shifting this flexible customer load improved the utilisation and efficiency of abundant and cheap generation.

Incentives (in the form of cheaper prices) were developed to encourage customers to shift their discretionary demand to fill the underutilised night-time generation capacity.

This incentive provided a predictable (diversified) aggregation of customer demand that enabled generators to maximise utilisation thereby lowering overall costs for customers. No extra demand or intervention was required to achieve these overall benefits.

Most importantly, this program was carefully designed around customer needs and amenity. Load control programs were adjusted over time to ensure that customers received enough energy to maintain required hot water temperatures (comfort) establishing and maintaining trust while implementing programs that were simple and easy for customers to participate in (simple). Over time the load shifting programs were adjusted to target and reduce local peak demand on distribution networks, which still continues to drive localised challenges for networks, while flattening demand to improve overall utilisation.

Critically, this early (and still current) example of demand flexibility, effectively shifting customer storage (hot water) capability, was based on a clear understanding of customer needs, value and amenity with straightforward (low barrier) market participation. Legacy programs saw strong levels of participation with strong customer acceptance and trust due to set and forget program delivery. New business models emerged as a result of this customer-focused program design with hot water manufacturers and installers, designing hot water systems and processes to enable simple customer participation. This led to new processes which became industry standard and accepted. These programs started with the customer.

Today several distribution networks continue to utilise this load flexibility to manage local network conditions and peaks with continuing incentives for customers for participating in these programs. While there is some complexity to address in working through how such flexible loads might potentially be used to address both local network and broader market challenges, the principles of customer focused design and participation will continue to ring true.

This historical example provides a guide for how customer-centred market design and business models (incentives, simple and seamless market design) enabled significant shifts in customer demand to soak up excess and cheap excess generation and to improve local network efficiency. These principles still need to be followed in addressing today's challenges.

A key aim of managing load shifting today is to identify approaches which can assist to flatten the peaks (of maximum demand) and fill in the troughs (maximum generation). There are lessons in how these traditional hot water load control programs have been successful in embedding new social practices or norms, for developing opportunities for consumer participation in markets for flexible demand, aggregated generation and storage. Load flexibility and discretionary customer (demand-side) loads can play a significant role in addressing these challenges, as they have done in the past, by addressing customer barriers and motivations. In this context, Energy Consumers Australia is undertaking research, to be published in the near future, that identifies the potential for hot water storage load control, in both emissions reduction and as a reward to consumers for load flexibility.

Consumer participation in flexibility markets and arrangements

The growth in customer storage devices and smart technologies will present expanded opportunities for customers to shift load and to participate in new and emerging demand flexibility programs.

Energy Consumers Australia encourages the ESB to not only consider these emerging opportunities but also to continue to consider the proven capability of 'discretionary' household appliances, such as hot water systems, as a valuable demand response resource (widely available to a large number of customers). This widely dispersed technology can help to reduce the 'energy divide' between customers who can participate in advanced technology markets and those who cannot.

Such examples of demand response programs also offer important lessons for market participants (traders and aggregators) seeking to help customers use new and emerging DERs and appliances (such as residential storage devices) to participate in new opportunities (beyond maximising household value).

Careful design to place the customer at the centre – supported by effective incentives and simple solutions - will be vital to opening up a growing range of smart appliance technologies and capabilities in flexibility programs.

However, a complex range of choices, options and sophistication may overwhelm any but the most engaged minority of customers. To effectively engage with customers to unlock this customer resource a process to co-design approaches with customers is required to properly explore options to encourage and support increased customer participation in new markets. Energy Consumers Australia strongly encourages the ESB to continue its shift in language building on its Maturity Plan pilot, from using a control and dispatch-based narrative to an incentive driven narrative and customer view of DERs and flexible loads.

Demand response and flexible services programs need to provide the right information, tools, support and incentives to encourage appropriate and protected customer participation and the onus is on industry to provide offers that makes it easy for customers to choose to volunteer their discretionary flexible loads to DER programs. This was the case in establishing customer trust in historical load shifting programs and remains the case today. It is imperative to consider customers desires and motives in any programs to increase or adjust DER participation in markets. Energy Consumers Australia advocates for solutions and design efforts that explore options for customers to participate freely in system services and solutions, rewarding them fairly for sharing their resources with other customers or with the system more broadly.

The need for an energy system transition plan

The ESB's Post 2025 Market Design package includes a dedicated workstream (workstream 3) to support the integration of flexible demand and distributed energy resources (DER).

> *"The objective is to enable the integration of distributed energy resources (DER) and value flexible demand so that they can provide services to networks, the wholesale market and other consumers.*

Energy Consumers Australia appreciates the ESB's focus on enabling wider participation of customer-owned DER through reduced market barriers and enhanced DER markets, as this will deliver improved choice for customers who can participate through new business models and explore new value opportunities.

Energy Consumer Australia outlined how customer flexible demand is a valuable resource that can provide a range of system services in our submission to the ESB Post 2025 Market Design Consultation Paper, in October 2020.

We believe that unlocking customer flexibility through demand response and load shifting capabilities could provide a low cost means to; balance generation and load in a market increasingly dominated by variable renewable energy; manage expected changes in load; and provide an opportunity to harness the potential of customer rooftop solar PV and growing investments in storage capability to manage grid stability issues.

In our earlier submission we outlined that success in unlocking benefits for customers in new flexibility markets would require;

- understanding the barriers to achieving flexible demand at scale;
- setting out a concrete action plan to remove these barriers; and
- creating a framework that incentivises consumers to easily and conveniently offer demand flexibility into markets and be appropriately awarded for doing so.

Energy Consumers Australia considers that a framework is required to advance a series of interrelated matters relevant to DER in a structured manner and over a reasonable time period, with an appropriate governance framework, funding and decision-making model. Such a framework must also be underpinned by a genuine commitment to stakeholder co-design, where the consumer, community, engineering, technical standards and economic aspects of any proposal are fully explored before landing on solutions.

The ESB has outlined a proposed Maturity Plan framework in its Options Paper which is important for progressing approaches to addressing critical near-term issues.

What remains unclear is how the various existing or proposed processes that are exploring DER integration co-exist or build on each other, including:

- AEMC rule making processes;
- the Distributed Energy Integration Program workstreams;
- the proposed DER Governance of Technical Standards committee;
- jurisdictional processes for setting smart controls/standards; and
- Standards Australia committees.

Stepping back from the merits and purpose of each of these processes, including the Maturity Plan, what is clear to us is that it is absolutely critical that an evidence based, informed consumer perspective needs to be embedded in any or all of these processes, and will need to be adequately resourced.

Decisions are being made through these processes impacting the capabilities and functionality of the technology that will be deployed in homes and businesses, and the design of new energy services and markets, to unlock value for consumers as well as to benefit the system. For this reason, we must be designing for the way in which choices will be considered and decisions will be made, across a diverse range of consumers with different motivations, capabilities and opportunities to participate.

Targeted propose and respond processes, which require significant time and resources from consumer advocates, across multiple forums are unlikely to achieve this broader objective.

Since the release of the Options Paper, the ESB has undertaken a significant amount of work on testing the Maturity Plan framework and has established the value in engaging stakeholders on DER integration issues that are often more technical, from a human design perspective. The knowledge sharing report will be very valuable in suggesting ways in which the Maturity Plan process could be adapted to a more human-centric perspective and design approach and build on learnings from the Pilot.

In this context, while we appreciate the detail provided in the Options Paper on the Maturity Plan framework, it is difficult to align the list of priority issues in releases 1 and 2 (Figure 10, page 73 in Options Paper A), and the detailed issues and associated use cases (outlined on page 49 of Options Paper Part B).

The ESB's Maturity Plan framework as it is currently proposed in the Options Paper cannot be a substitute for a shared vision of an energy future in which flexible demand and DER play a significant role in the future energy system and which address the comprehensive and integrated suite of actions that are needed to achieve benefits for consumers in this future. A customer-focused energy system transition plan would provide a practical roadmap and greater visibility of both the sequencing of priority issues and resourcing requirements, which is critical to enabling the meaningful participation of stakeholders.

Energy Consumers Australia is proposing that a DER Taskforce, with appropriate governance and funding, could take responsibility for an energy transition plan to:

- develop an agreed vision of the future energy system typified by high levels of demand flexibility and DER, and its implications for the demand side outlook in the ISP;
- identify the potential pathways to achieving that vision, including future roles and responsibilities;
- support the development of new energy services and markets informed by evidence of consumers values, expectations and needs and longer-term desires;
- facilitate the technical integration of new energy services, potentially through the Maturity Plan Framework;
- support the priority development of a fit-for purpose consumer protections framework; and
- build trust and social licence for these reforms by maximising opportunities for voluntary, and appropriately compensated, consumer participation in the energy system and equitable sharing of rewards and implementing system security measures for controlling DER assets in a transparent way.

In this context, Energy Consumers Australia is engaging with Energy Systems Catapult in the UK, the UTS Design Innovation Research Centre and with consumer organisations to further explore how to embed consumer decision making and choices into technology and market design frameworks.

Measures to unlock flexible demand and distributed energy resources

In the previous section, we make the case for a customer-centric energy transition plan to unlock flexible demand and DER. Our starting point would be to frame a plan around the actions and reform measures, set out in Table 1, which start with enabling consumer choices, decision-making and outcomes. The ESB's Post 2025 Market Design package includes a number of measures in workstream 3 that could be further developed and implemented by a DER Taskforce, and these are bolded in Table 1. In the following sections we have provided feedback on these specific measures, as described in the Options Paper.

Table 1: Consumer choices in new energy services and markets (with actions and measures)

IF… (CONSUMER PARTICIPATION)	WHEN…(ACCESS & PRICING)	HOW…(SYSTEM ARCHITECTURE)
Do I have the information to decide on the benefits and risks in taking up a new energy service? (Behaviour insights, living lab) Do I have the tools to achieve the benefits? (Behaviour insights, living lab)	When is the best time to participate? (Flexible export limits, dynamic operating envelopes) Am I rewarded for certain times? (**Tariff, incentives and regulatory changes**, wholesale market, FCAS and network support services value streams)	Can I switch my energy service provider? (**Framework for enabling switching and increased choice**) Can I have more than one energy service provider? (**Flexible trader arrangements and trader services,** data portability)
Are new energy services available or accessible to me? (Segmentation including renters, detached housing) Can I access shared generation or storage assets? (Regulatory frameworks for distribution network connected storage and solar)	Can I have more than one service and an associated tariff or payment – a general consumption tariff, a load control/flexibility tariff, or payments for export (wholesale, FCAS, network support service)? (Retail pricing and payment options)	What information is available from my smart technology and who has access? (S**mart meters**, **data access**, Consumer Data Right, technical standards, interoperability)
Will I be protected from risk? (**customer protections** and dispute resolution, cybersecurity, privacy)		If I have the tech, can I use it the way I want to? (Business models, technical standards, interoperability)
How will the use of my appliances, electric vehicles, generation and storage assets be controlled by me or others?	When will the system operator need control, and how will I be notified? (Social licence and **minimum demand**)	How will the grid architecture support my choices? (**Scheduling, future roles and responsibilities,** network data visibility obligations, technical standards and functionality)

Consumer choice to participate

Consumer protection frameworks

In our view a protection framework needs to ensure that customers interests are proactively addressed in an uncertain transition typified by forming relationships with a growing number of intermediaries in a manner that avoids the impacts of unscrupulous practices that were prevalent in the solar PV market in its early stages of growth. Similar examples in other industries of growth have demonstrated mixed results for customers. How intermediaries are incentivised and behave is critical especially given the risks that are likely to be associated with mechanisms that expose consumers to the wholesale market or other risks. These must not be seen as a necessary 'residual' risks to be mitigated by secondary lines of defence and avoiding these risks should be central to market design.

Energy Consumers Australia has undertaken extensive research about consumers' values and expectations about the future of energy and how the transition should be managed. This research suggests customers and communities are looking for future services that:

- protect them from exposure to new risk;
- have their best interests at heart;
- give them the choice and simple controls over how appliances and technology in their own homes are used;
- be consistent with social practice;
- be cleaner, cheaper and easier to manage;
- give them tools and information to empower them to look after themselves; and
- a system that is fair and lessens the energy divide.

For a number of years, the Australian Energy Market Commission (AEMC) through its work has emphasised the importance of re-evaluating consumer protection frameworks in the context of an emerging new energy services market. This has been taken further, with the AEMC commissioning ACIL Allen to apply the framework that was developed for Energy Consumers Australia through its Power Shift research project, to "consider the needs of consumers in a two-sided market". This report – *Consumer Archetypes for a Two-Sided Market* – was published in April 2021 and is available here. Its value is in identifying a range of measures – regulation, incentives, information and advice (both financial and non-financial, support services and financial support – that can be used to support better consumer decision making.

In our earlier submission we recommended that the ESB and AEMC identify consumer risks associated with the emerging market design and explore the extent to which they could be managed through the existing consumer protection frameworks. We shared the work done by Energy System Catapult UK, as a potential starting point (see Smart consumer protection manual).

We broadly support this risk-based approach for assessing consumer protections, along with a set of guiding principles that are proposed in the Options Paper as an immediate reform priority, to support the transition to a two-sided market.

Since the Options Paper, we have continued to participate in the ESB's deep dive on the application of the risk assessment tool and, along with our customer advocate colleagues, we have provided detailed feedback on how the tool can be strengthened in the final mid-year recommendations.

One particular aspect where the risk assessment needs to be adapted or applied is in how it considers a diverse range of customers and their needs, including vulnerable or disengaged customers, and how proposed measures to mitigate risk are proportional to the impact on customers.

Furthermore, the framework needs to ensure that the benefits of the proposed transitions are shared equitably and fairly across all customer groups. As markets develop we need to shift the understanding of what is 'essential' to something that is 'universal'. This is critical in ensuring we consider how risks can disproportionately affect one type of consumer or group of consumers. A greater weight must be given to a 'voice' of the customer in this process.

Access and pricing

ESB's approach to tariff and regulatory changes

As noted above it is important for the ESB to properly consider how price signals that motivate or encourage customer flexibility are likely to interact with underlying network and retail price signals.

The ESB outlines several options for tariff design which inherently recognise the relationship between tariff reforms (price signals) and system operation and coordination.

Little detail is provided in the Options Paper (and preceding papers on this topic) and it is disappointing that more detail is not available at this stage given the large amount of effort that has gone into this work with several ESB papers pointing to the need to assess tariff design and the relationship to new market structures and participants.

The models presented in the paper seem to offer a mixture of trader model price structures and potential updated approaches to N+R methodologies.

What is lacking is a considered assessment of how network tariff reform, retail price signals and packages, and proposed new business models and flexibility incentives can work together in a manner that produces system level efficiency and improved customer outcomes and value.

Energy Consumers Australia suggests that any discussion of pricing and incentives should build from a foundation acceptable to customers. We are currently developing a framework for this that would see consumers able to choose a range of retail tariff options, depending on what their preferences and opportunities are to manage their load and their generation. Briefly this would enable consumers to:

- choose a subscription tariff that applies to all or only some of their load, which would make these costs predictable much like streaming, internet or mobile phone plans;
- select a tariff for specific loads – whether hot water storage, home battery storage or electric charging – where the separate "control tariff" would reward the consumer for the time and location value of this flexibility (load shifting to reduce peaks or increase demand) in wholesale markets, FCAS or in the future a network support services market or contract; and
- for generation, be rewarded for the time and location value of the exported energy. Consumers may also potentially choose to have a predictable tariff for generation set as a fixed export limit.

We discuss below in a later section how these options are more consistent with Model 2 of the flexible trading arrangements and should not require additional billing standard meters.

We offer some brief comments on the outlined high-level models with further subsequent detailed commentary on the ESB's direction.

- The structured procurement model, we assume, represents a simple (potentially locational) transactional framework, but seems to lack consideration of any overlay with broader tariffs which customers would also be subject to. There have been some limited examples of RIT-D assessments and DMIS related programs providing incentives direct to customers in return for a service or outcome which benefits local system conditions. However, any such program should be designed and conducted with an awareness of broader tariff conditions for the customers it is targeted at.

- The structured procurement with digital platform model acknowledges a structure which can operate in parallel with tariffs. The concept of a platform has been raised in previous papers with little detail provided. The costs of establishing platforms are rightly identified as being significant, however no proper consideration of a platform can occur in absence of a detailed exploration of the roles and responsibilities of different parties and required interfaces with customers or required timing of such capability. A more fulsome description of how this model might progress in relation to underlying tariffs and price signals is required to provide a basis for further consideration.
- Retailer portfolio level tariff charges has been explored to some degree informally by the AER however little detail is available on whether a retailer centric tariff structure could be effective in aligning price signals across retail and network participants. Furthermore, no detail is provided on how new market offerings and business models might overlay on this suggested tariff frame. How does this proposed tariff structure and approach relate to wholesale prices and how would different retailers, with different hedge positions and generation fleets, react to this on behalf of customers? Retailers will undoubtedly continue to play a key role in managing the risk and complexity of wholesale price signals on behalf of customers, and in passing underlying network signals to customers (or managing these in a manner that best utilises customer resources) and providing returns and better value to customers for participation in markets. This concept likewise requires further consideration to enable further informed comments.
- Dynamic price signals per network element (real time distribution market) seems to build on the previously indicated notion of locational marginal price signals. This is a potentially highly complex price structure that would be dependent on availability of appropriate data which itself would need to overcome a range of complex challenges. How would this complexity be managed by or on behalf of customers? The risk of inequitable practices and outcomes is also increased with the potential implementation of more targeted price signals – how will customers who cannot participate be protected from inequitable cost transfers?

In our view, while we appreciate the opportunity to explore options to increase choice for customers, further consideration is required to assess how these different frameworks might work together with existing efforts in cost-reflective tariff reform including with the currently proposed pricing and access regimes, and more importantly, how these might provide customers with simple and effective price signals for market participation. Also, aside from suggesting inherently complex dynamic locational marginal price signals, little to no attention seems to be given to the growing potential for local markets and trades to occur between localised customers. These models all seem to be predominantly framed from an overarching wholesale market or trading perspective and extra attention is required to properly assess and accommodate overlaying local market opportunities, with customer objectives and broader market structures and opportunities.

The need to reframe principles and approaches to price signals in support of customer flexibility

A starting assumption to any price signal design must recognise that most customers primarily use energy to achieve lifestyle and household objectives.

As Dr Ron Ben-David notes in the Monash Business School submission in response to the ESB's Consultation Paper in September 2020[2], consumption is involuntary – it is essential in every regard; consumption is largely price inelastic – short run elasticity is still high; consumption is largely non-substitutable – with few exceptions; and consumption occurs continuously.

[2] Monash Business School response to P2025 market design consultation paper. September 2020.

Energy Consumers Australia's view on this principle is that most household demand will remain largely inelastic and fundamental to customer amenity, and this principle needs to be reflected in pricing design in a customer-centric manner. Not all load is flexible, and particular care must be taken to support basic lifestyle needs while encouraging voluntary flexibility where it makes sense for customers. While technology will offer household level tools to manage this complexity, market solutions must be progressed as this capability emerges.

The emphasis of much of the ESB discussion is framed around customers accessing markets, but this must be viewed as a second-order (but still valuable) objective for many customers. An active and engaged minority of customers will likely seek to interact more deliberately with technology and markets and this group must also be catered for, however, focusing on engaged customers and market opportunities, external to core objectives for most, risks widening the energy divide for many.

The risk for customers participating in more dynamic tariff offerings is high and it is critical to ensure that participation in dynamic tariffs does not merely result in cost transfers between customers who can participate and those who cannot. Price signals, in and of themselves, without consideration of the consequences for energy as an essential service in homes and businesses, coupled with a faith that new energy services offered by intermediaries will emerge, risks consumers being becoming worse off with trust further diminished. This also reinforces the need for an emphasis on customer-centred design principles of equity and fairness.

In seeking to engage customers while providing value streams through new market opportunities it is important to ensure customers can still achieve core objectives whether that be; managing household costs; embracing technological innovation; reducing carbon; increasing comfort; etc.

Many of the concepts outlined in the ESB paper risk introducing increased complexity for many customers. In our view price signals and market design need to be as simple as possible for the majority of customers (while encouraging dynamic options for those who can manage and engage with this complexity). Energy Consumers Australia strongly suggests that the market bodies need to collectively address the slow pace of tariff reform, rather than calling this out as a barrier, in a manner that works for customers. Further reforms will not succeed unless close attention is paid to the consumer journey and experience being built on a clear value proposition.

As Dr Ron Ben-David also notes in the Monash business school submission in response to the ESB's Consultation Paper in September 2020:

> *"How consumers and other market participants respond, and the confidence the community places in the integrity of the market, cannot be taken for granted by market designers. The mandated universal roll-out of Smart Meters in Victoria 2009-2013 provides a cautionary tale… No attention was given to how these reforms would be experienced by consumers and little notice was taken of the indifference shown by service providers."*

Energy Consumers Australia encourages clear consideration of price signals that help customer manage their lifestyle needs while encouraging and incentivising participation with flexibility using discretionary loads and technologies.

We have considered potentially straightforward examples such as subscription (capacity) billing options emerging in the United States (US) which provide customers with a simple price signal balanced with flexible discretionary load shifting participation. This simple demand-side focused offering encourages customers to choose bands that suit their household needs while participating in discretionary demand response and flexibility programs that assist in supporting electricity system efficiencies.

The California Energy Commission's Retail Automated Transactive Energy System (RATES) trial demonstrated a more dynamic option, but simple for the consumer, in trading in energy (see report here).

In Australia Horizon Power trialled the My Power Plan as a way of enabling consumers to manage an energy budget.

Another example is Duke Energy (US) which has had some success in considering new tariff designs that provide value streams to both customers with DER and customers without DER while ensuring the shared system costs are allocated in a fair manner between all customer groups.

These are all examples of tariff design seeking to create value for customers while catering for (voluntary) discretionary demand response participation as a core part of these offerings.

For instance, as we noted earlier in our historical load flexibility example, hot water system loads can be separated (separately metered – as is the case in many existing load control programs) from general household usage and could potentially participate in demand response programs without impacting on broader household costs or billing arrangements. A simple tariff (or incentive) arrangement might encourage customers to manage their own household usage and costs (fill troughs and reduce peaks by managing household energy usage) while volunteering demand response capable appliances and resources for participation in broader market (and perhaps local) services.

These tariff examples, while still emerging, support increased sophistication and risk for customers who are willing to engage with emerging market rewards, while providing simple approaches for the majority of customers. We believe such an approach is also in line with the notion of subscription approaches to pricing suggested by the ESB in its original Two-Sided Markets Paper (April 2020).

Critically, it is important to ensure that offerings to customers are simple, that participation is straightforward, and that all groups of customers are presented with compelling offers without unfair cost transfers being baked into the policy design.

For those customers who choose to participate in broader markets, the market structures must align the interests of energy companies with their customers so that energy use management is a core part of the service – this must be supported by programs to increase the capacity of households and small businesses to manage their energy use and participate in discretionary load flexibility programs.

As we discuss below (in related commentary on proposed *Flexible Trading Arrangements*), it is critical to ensure that, in voluntarily participating with discretionary loads, that customers do not bear unmanageable or unforeseen costs and complexity. The onus is on energy service providers (retailers and aggregators/traders) to ensure that customer utility is maximised and that appropriate support and arrangements are in place for customers who choose to participate in broader markets. We urge the ESB to be cautious in outlining programs designed to incentivise, and potentially penalise, market participants for the decisions they make over different timescales, all these market mechanisms could have unintended consequences for end users who may not have the foresight, means or discretion to manage their energy use. Very few of today's energy users would be in a position to participate in a two-sided market as a scheduled or dispatchable load, and the intermediaries (energy service providers) that would manage the task on their behalf are still emerging.

As outlined below in our response to *Flexible Trading Arrangements*, a "merit order" use of discretionary loads will likely need to be developed in shaping price signals and overlaying market signals. However, as we recommended above, any such merit order should be agreed with customers and be based on engagement with customers to outline an agreed order of system requirements and customer needs.

Minimum demand and emergency backstop measures

Energy Consumers Australia recognises that there is a need for emergency backstop capability but emphasises that this should be applied in the short-term only to ensure the stable and secure operation of the system.

We strongly advocate that any ongoing backstop measures should be implemented in a manner that is consistent with longer-term customer focused participation-based principles and design. As we have previously highlighted there is a very real risk that a short-term focus on "command and control" methods to deal with system security issues means the trust needed to build a more democratic, consumer-centred system could be damaged.

The extension of the South Australian-style emergency backstop powers throughout the National Electricity Market to enable network operators to "switch off" rooftop solar exporters in the name of system security is concerning. The problem is a real one. Consumers need and deserve a secure system that can balance supply and demand and minimise harmful outages. We acknowledge that there are existing security challenges and that emergency backstop may in some circumstances be necessary.

However, the starting point needs to be engaging with consumers and earning social licence. That comes from establishing trust and designing options that provide Australians with ways of managing their use and generation that help their neighbours, their community and the broader system but also reduce their energy bills. Energy Consumers Australia developed a framework that is appropriate for considering social licence, in the context of control over consumer's assets (see report).

Subsequent minimum demand 'backstop' measures need to be built on customer trust and designed around customer value and clearly addressing customer expectations. Failure to do so will not address a growing trust-deficit that will be catastrophic to any efforts to grow customer participation in broader demand response programs and markets.

ECA strongly favours control solutions that ensure customer utility is maximised. A clear customer focus and community agreed social compact is required to outline the extreme conditions under which such backstop measures may be implemented. This will help provide agreed transparency to customers about how their resources are likely to be impacted to ensure the security of the broader system. It is one thing to compare this to Under Frequency Load Shedding (UFLS), but this concept only makes sense to industry. Customers may be willing to agree to trade-offs to ensure security of supply against costly upgrades, but engagement is required to build understanding and establish a social licence.

As the ESB has indicated a preference for voluntary customer participation in future demand response programs, Energy Consumers Australia strongly advocates for backstop programs to be designed in a manner that maximises customer opportunity to voluntarily participate in solutions, rather than imposing harsh control measures upon all customers.

Since the Options Paper was published, Energy Consumers Australia has been involved in the development of the Customer Working Group's discussion paper on this issue including the development of evaluation criteria to measure solutions (including the backstop) to system imbalance challenges.

Through the workshops that were part of the ESB's pilot process, the ESB and stakeholders have identified potential opportunities for jurisdictions to develop social licence for an emergency backstop mechanism, as well as taking a long-term view of ways in which to reduce reliance on such backstop mechanisms. We continue to work closely with AEMO on this work.

System architecture

Energy Consumers Australia agrees with the ESB's views that there is a need for "clarity and direction on roles and responsibilities for various actors in the system and how they may evolve." While critical, we understand that this is something that now extends beyond the Post 2025 Market Design process.

Understanding roles and responsibilities is foundational to understand the impacts of changes required across the sector to implement the ESB demand side and DER workstream effectively.

Without an articulation of future and evolving roles and responsibilities it is difficult to understand what an overarching architecture or options for architectures might look like to explore potential 'end-state' for the system. This in turn, makes it difficult to undertake an assessment of the benefits, and potential risks for customers in the recommended package. This lack of clarity has tended to feed concern that the design may be too 'top-down', seeking to replicate a level of centralised control that the market operator had in the traditional energy system. As noted in the report and in our paper, an increased level of coordination will be required between aggregators, retailers, traders, distribution networks and AEMO to ensure customers can access multiple markets, appropriately exchange data and maintain both local and system-wide security. How will this complexity be managed? How will the potentially significant costs to transform our sector be justified and how will the costs be spread across market participants, including customers.

Considerable work has been undertaken by a number of consumer advocates in developing approaches to grid architecture that support a more distributed, local and resilient energy future, in particular by Mark Byrne of the Total Environment Centre. This work builds on the models proposed by Paul De Martini, Lorenzo Kristov and Jeff Taft in the US, and who previously undertook work for AEMO (see their report). There is considerable merit in any future process for consideration of roles and responsibilities to be consumer led, as it is the decisions that are made in homes and small businesses, as well as the choices of larger commercial and industrial users that will determine the requirement and scope of the future grid architecture.

Customer switching

The Options Paper discusses potential approaches for customer switching between new service providers to avoid customers being locked into a single provider and increase customer choice and opportunity. The question of cybersecurity under national standards is a separate issue, that we understand is being considered within the Distributed Energy Integration Program's work program. In the absence of more detailed information, a common business process to facilitate switching would appear to be the most appropriate.

Flexible trader arrangements and trader services

Energy Consumers Australia is supportive of the ESB's efforts to create new market opportunities for customers. We would be concerned where the proposed solutions and approaches to introduce increased trading opportunities could introduce increased complexity (and potentially cost) for customers by focusing on aggregators and market participation, rather than paying sufficient attention to consumer preferences and their experience.

The additional metering proposed under Model 1 of the Trader-Services models is problematic given the ongoing issues in the advanced metering rollout and considering the ongoing cost of implementation. The ESB Options Paper also separately criticises the pace of meter rollout as an issue in advancing important customer reforms which seems at odds with the parallel ESB suggestion to consider the rollout of additional metering and telemetry. While potentially 'neat' from a traditional trading perspective, Energy Consumers Australia is concerned that this is a complex and costly exercise for customers to confront.

For these reasons Energy Consumers Australia favours Model 2 of the Flexible Trading Arrangements with the potential for a Sub-meter connection arrangement (potentially through a Private Metering Arrangement (PMA)).

We recognise that rule changes may be required to cater for a sub-metered arrangement, however, Energy Consumers Australia suggests that caution is required to avoid inadvertent lock in for customers entering new private arrangements behind the meter.

To support efforts to introduce more opportunities for customers to voluntarily participate in new markets and in the provision of new services, Energy Consumers Australia agrees that Model 2 goes a long way to enabling new trader-participants with opportunities to work with customers. Importantly this should be designed in a manner that avoids the costs and complexities of an additional metering rollout. There are some examples where sub-meter monitors and arrangements have been successfully deployed. In this context we have developed suggested principles to consider in advancing any further design considerations (see Box 2).

It is generally unclear and sometimes ambiguous within the ESB Options paper about whether obligations and costs are to be borne by customers or their agents (market participants and traders). Energy Consumers Australia supports Model 2 of the proposed Flexible Trading Arrangements but recommends further clarity be provided on what is expected of customers before committing to the further detailed design.

ECA recognises that several challenges need to be overcome in further exploring this model.

- The introduction of new technology, such as Electric Vehicles (EVs), will add significant loads that will need to be coordinated at a localised level. This may necessitate adjusted connection arrangements or more sophisticated arrangements with customers. While introducing new challenges, these resources also provide new opportunities for flexibility for both the energy system and customers alike. The onus is on energy incumbents to find the simplest mechanisms by which to maximise the value that these resources can provide for customers while managing both local network and system security.
- Local network security needs to be managed alongside any aggregation events. ECA understands that approaches to Dynamic Operating Envelopes (DOEs) and flexible export limits are still taking shape and are an important future element in ensuring customer resources and households remain within safe network capacity and system security limits. This is especially important in any coordinated aggregation events where many customer resources may be charging or discharging coincidentally (with low diversity). The role of the network in maintaining network security is important and this role is potentially made more complex with sub-metered aggregation of appliances. Wholesale events may occasionally coincide with local network challenges and the manner in which resources respond to both will require further consideration and coordination. It may be possible to establish a 'merit order' based approach to how and when resources are dispatched or used in programs. Ideally such a merit order could be negotiated and agreed with customers firstly to ensure customer amenity is considered alongside local network security and services and broader system security events.

Energy Consumers Australia hopes that such considerations do not become an impediment to allowing customers to have additional opportunities to participate in new markets to maximise their own value and utility. We also note that increased emphasis and consideration of how tariff reform and passive customer energy usage will impact system level events is required. While customers will have the opportunity to voluntarily participate in aggregation events with discretionary loads and resources, the impact of general (or passive) household level energy usage and the related impacts of price signals will have a significant impact on demand response effectiveness.

Box 2 Customer centred flexible trading principles

The following principles are designed to help inform subsequent Model 2 design and engagement:

- Sub-meter monitors should not need to be billing grade compliant. A range of affordable technologies already exist to monitor appliance usage and to remotely manage appliance loads. We note that it should be possible for traders to make arrangements with customers offering reasonable incentives for demand response participation without billing grade meters being required.
- The risks and costs of participating in dispatch should be borne by Traders and Market Participants – not customers. This is a critical principle of program design. Traders should be able to use monitors and affordable technology at the household level to target and determine the availability of discretionary household appliances (such as hot water systems) for dispatch in aggregated market services without greatly increasing costs for customers. This includes traders bearing the risks of bidding and dispatch given agreed parameters with customers. Energy Consumers Australia notes that some customers (especially larger commercial customers) may choose to interact directly with markets and may choose to bear the costs of additionally telemetry but that this should only occur voluntarily where customers have the sophistication and ability to manage such program participation. We support objectives outlined in earlier ESB work that:
  - requires that the party best placed to provide forecasts of quantity and price does so; and
  - places obligations on functions and activities, rather than participant categories or technologies.
- Traders aggregating customer resources should manage the risks of diversity and availability of resources – not customers. Energy Consumers Australia highlights that customer demand response programs have been run previously with a successful aggregation of diversified portfolios, without real-time or granular billing data, with an apparently reasonable degree of predictable accuracy.
- We do not consider it is necessary for a high (or costly) degree of data granularity at a household level (unless it can be derived without unreasonable telemetry costs) to forecast resources in a diversified portfolio. For this reason, simple monitors could enable aggregators (Traders) to appropriately consider how a diversified, aggregated portfolio bid can be accurately delivered without introducing additional costs of complex metering at a household level.
- It is unreasonable to expect customers to ensure the availability of resources (without pre-warning and voluntary agreement) such as hot water systems, rather, experience should enable traders to determine what diversity of hot water (and other appliance) loads are available for dispatch or control under particular conditions and agree the parameters of such operation with customers while, in return, protecting customer amenity, comfort and utility. As proposed in the Appendices of the Options Paper under Scheduled Lite considerations, Energy Consumers Australia suggests that improved methods for forecasting should be applied without further imposts potentially being applied to customers.
- The onus is on Traders and Aggregators to find cheap and simple ways for customers to participate in new markets. Affordable technologies such as smart appliances, demand response enabled devices (DRED), circuit monitors etc are now widely available. We expect it should be possible for traders, aggregators and other market participants to make it straightforward and affordable for customers to participate in new market opportunities and demand response programs with discretionary loads and flexible technologies.

Schedule Lite Principles

As proposed in the Appendices of the Options Paper under Scheduled Lite considerations, Energy Consumers Australia suggests that improved methods for forecasting and dispatch should be applied without further imposts potentially being applied to customers.

As with the principles outlined above under Flexible Trading Arrangements, Energy Consumers Australia advocates that the costs and complexity of extra metrology or telemetry to achieve increased visibility and improved forecasts should not be borne by customers unless that capability can be introduced at low cost or through other means, or accepted by customers (potentially larger commercial customers) who have the means and/or sophistication to voluntarily choose to participate in increased levels of visibility and dispatch.

As per our approach to increased Trader arrangements, we believe that traders and aggregators, should be able to manage portfolio dispatch and aggregation on behalf of customers. With the addition of 5MS capable meters and potential improved demand flexibility supported by aggregated dispatch with traders, the degree to which additional measures, with associated costs, may be required remains to be seen.

Our preference is that customers with discretionary, flexible (active) resources that can be easily added to dispatch schedules, volunteer to participate in such programs. Any additional risk, data requirements or cost imposts should be borne or managed by agents such as retailers and aggregators, with an aggregated view of portfolios to forecast and dispatch to avoid unnecessary costs of more granular data provision and telemetry.

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