



19 October 2020

Dr Kerry Schott AO
Chair, Energy Security Board
info@esb.org.au

Dear Chair

RESPONSE TO CONSULTATION ON POST-2025 MARKET DESIGN

Thank you for the opportunity to respond to the Energy Security Board's consultation paper on the market design of the post-2025 National Electricity Market.

This submission focusses on identifying strategies and projects for establishing an enduring mandate for reform. A short abstract appears on the following page and the submission's **proposed actions are summarised in an appendix.**

I would welcome the opportunity to engage with the Energy Security Board on the content and proposals contained in this submission. I would also be delighted to facilitate introductions to my colleagues in the **Monash Business School**, noting the views expressed in this submission are those of the author and not the Faculty or its staff. Likewise, the **Monash Energy Institute** and the **Monash Sustainable Development Institute** could make valuable contributions to the work that lies ahead.

Yours sincerely

Dr Ron Ben-David
Professorial Fellow
Monash Business School
ron.ben-david@monash.edu

ABSTRACT

The Energy Security Board's consultation paper on post-2025 arrangements for the National Electricity Market explores seven reform Initiatives. These initiatives seek to establish price signals to efficiently coordinate the activities and investments of market participants, including consumers. The reforms are motivated by the many operational challenges facing the national electricity system.

This submission contends that an imperative for reform does not guarantee its success. Ongoing confidence in the market depends on how the proposed reforms are experienced by the community. This submission therefore focusses on the steps needed to establish an enduring mandate for reform – rather than attending to the operational details of the various market design initiatives.

The proposed reforms will require a marked expansion of the rules that make the national electricity market possible. The complexity of all these rules, plus the market's many uncertainties, means price signals may not operate as expected 'on paper'. Will customers even be able to discern individual price signals or will they become lost against a background of white noise coming from the electricity market?

How and whether consumers respond to price signals, and their confidence in the fairness of the market, will depend on a complicated suite of considerations. These concerns are not explored in the ESB paper but deferred to some later time with the development of a consumer protection framework. This submission argues this is the wrong approach. If market rules are the source of adverse outcomes for consumers, then alternative market rules are the only effective remedy. Development of market rules must be constantly guided by fair and clearly articulated outcomes for consumers.

This submission proposes five strategic responses and five policy projects for dealing with these challenges. The policy projects seek to: (i) integrate market design with a focus on the rights of system users and the responsibilities of all market participants, (ii) establish clear standards of fairness in the electricity market, (iii) identify the role of government(s) in supporting the energy transition, (iv) develop pricing principles for the recovery of certain costs, and (v) outline priorities for modelling the evolution of the electricity market.

The submission concludes by observing that the ESB's greatest challenge will be how it tackles the risks to ongoing consumer confidence in the reform of the national electricity market.

Response to Post-2025 Market Design consultation paper

Dr Ron Ben-David

Professorial Fellow, Monash Business School

19 October 2020

1. INTRODUCTION

The Energy Security Board’s consultation paper on post-2025 arrangements for the National Electricity Market (NEM) explores seven Market Design Initiatives (MDI). These proposals represent far-reaching reforms in the up- and down-stream electricity market.¹ The imperative for reform derives from the many operational challenges facing the electricity system. The imperatives are well summarised in the consultation paper and are not in doubt.

The consultation paper proposes the creation of new resource markets and coordination mechanisms. These are shown in Table 1 which also identifies the proximity of the proposed initiatives to the way customers experience the electricity market.²

Table 1 Typology for the seven market design initiatives

	Consumer experience	
	PROXIMAL	DISTANT
RESOURCES	Distributed resources (MDI F)	Resource Adequacy (MDI A) System Services (MDI C)
COORDINATION	Two-sided markets (MDI E)	Ageing Thermal (MDI B) Ahead Markets (MDI D) CoGATI (MDI G)

This submission does not attend to the technical details of these market design initiatives. Instead, it focusses on the economic context and the political economy within which the sum of these reforms must take place. While the proximal initiatives will have the most direct impact on consumers, all of the initiatives are intended to create price signals which will influence the cost of electricity and the way consumers (and others) participate in the electricity market.

¹ <http://www.coagenergycouncil.gov.au/publications/post-2025-market-design-consultation-paper-%E2%80%93-september-2020>

² For the purposes of this paper, references to consumers or customers should be read as referring to ‘small customers’ as defined in the National Energy Retail Law (South Australia) Act 2011.

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 2009-13 provides a cautionary tale.

The then government initiated the roll-out in pursuit of improved system robustness and market efficiency. It was assumed without conscious effort that these outcomes were self-evidently in the public interest. 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.³ When the public's interest was eventually awakened, the project's advocates simply could not comprehend the community's disaffection. Service providers showed no interest in stepping into the breach with offers of new products that realised the project's claimed benefits. Political support for the friendless project went into freefall. Before long, politically inspired constraints were imposed – dashing any hope of realising the project's alleged efficiency gains.

The imperative for market reform does not ensure its success.

This may seem like a paradox. What cannot be disputed, however, is that electricity is an essential service. This inescapable reality alters the way the community relates to the provision of electricity. It is not just another consumer good. The electricity market is not just another market. The electricity market rules are not just another set of rules.

This submission is concerned with establishing an enduring mandate for reform of the national electricity market. In this regard, the submission is responding to the matters directly and indirectly discussed in the early chapters of the consultation paper, as well as some of the subsequent commentary in later chapters.

The submission proceeds as follows.

Chapter 2 recommends five strategic responses to the “toughest gig in town”. The chapter identifies key challenges and how they can be addressed as part of the ESB's reform program. Initial sections of the chapter discuss consumers' unique relationship with electricity and how this defines the role of government(s). This is followed by a discussion about the impact of uncertainty on market design and the unusual nature of the electricity market. The final strategic proposal recognises that if market rules are the source of adverse outcomes for consumers, then alternative market rules are the only remedy.

Chapter 3 recommends five policy projects to support the strategic responses identified in the previous chapter. The policy projects seek to: (i) integrate market design with a focus on the rights of system users and the responsibilities of all market participants, (ii) establish clear standards of fairness in the electricity market, (iii) identify the role of government(s) in

³ Namely, distribution network businesses and electricity retailers.

supporting the energy transition, (iv) develop pricing principles for the recovery of certain costs, and (v) outline priorities for modelling the evolution of the electricity market.

Chapter 4 concludes the paper with a reflection on the sum total of the proposed reforms and why markets do not necessarily produce the outcomes expected 'on paper'. The submission concedes that how the ESB tackles these risks is likely to be its greatest challenge.

An appendix provides a summary of the submission's recommendations.

2. CHALLENGES AND STRATEGIES FOR THE TOUGHEST GIG IN TOWN

The Energy Security Board's (ESB) consultation paper is focussed on the design and implementation of multiple submarkets to generate price signals that will support the coordination of activity and investment across the National Energy Market (NEM). This chapter reflects on some of the assumptions, conditions and constraints that will determine whether these proposals receive enduring community support.

The following discussion is not intended as a comprehensive dissertation on each of the matters raised. Instead, it seeks merely to prompt a broader reflection on these matters ahead of the ESB's options paper due in a few months.

2.1 *Electricity is different. Value & Values matter.*

The uniquely complicated physics of the energy system is not its only distinguishing feature. Its characteristics as a service are also complicated and unique. In the upstream electricity market, electricity takes on the characteristics of a commodity. Its value is reflected solely by its price. In contrast, the value of electricity in the downstream market is a function of a broader and more complicated set of considerations. These include:

- *Consumption is involuntary* – Households, businesses and other end-users do not choose whether they wish to consume electricity. It is *essential* in every regard.
- *Consumption is largely price inelastic* – Traditionally, energy consumption has been viewed as being highly inelastic. This is changing but for the main part it requires capital outlays.⁴ Short run inelasticity is still likely to be high.
- *Consumption is largely non-substitutable* – With few exceptions, electricity cannot be substituted by another form of energy. The opportunities for substitution will become even narrower with the 'beneficial electrification' of more goods and services.
- *Consumption occurs continuously* – Whereas most other goods and services are purchased and consumed in discrete units which are readily observable, electricity is consumed continuously and in intangible quanta.
- *Electricity is perfectly homogeneous* – The final energy product delivered to consumers does not vary with how that electricity is produced or sold.

In addition to these special characteristics, electricity production is now also associated with a much broader social and economic decarbonisation challenge.

For all these reasons, and possibly others, the community attaches values to the production, delivery and consumption of electricity in ways not matched in their relationship to other goods

⁴ For example, to purchase solar panels, new energy efficient appliances, batteries or control devices.

and services. This special attachment and assignment of values to electricity means it cannot be treated like any other consumer good. Electricity is more helpfully described as a ‘political good’ in the sense that it embodies expectations about how it is accessed, priced and produced – as well as expectations about *who* is responsible for ensuring that access, pricing and production.

To be clear, this is not a reference to partisan party politics. Rather, it reflects how energy embodies values which members of the community expect to be upheld on their behalf. Those values may shift over time and they may differ between different groups. Sometimes, values will only be expressed in the breach. But few people would be completely indifferent in all the circumstances. The ongoing presence of energy ministers is no anomaly. It represents the inescapable values-heavy nature of energy, particularly electricity.

These community values were apparent in the detailed analysis commissioned by Energy Consumers Australia which examined consumers’ experiences with, and expectations of, the electricity market.⁵ The media’s seeming obsession with energy stories further reflects the community values attached to electricity. Very few other sectors attract the same degree of attention.

It is against this backdrop that the ESB market design initiatives will need to be developed and implemented. The perceived fairness of the post-2025 market will determine whether it benefits from enduring community support.

The consultation paper notes the importance of fairness in only a few places and it provides no guidance on what it holds to be ‘fair’.⁶ Likewise, the paper refers to meeting the “diverse needs” and “changing expectations” of consumers without further clarifying those needs and expectations.⁷ The paper’s adopted objective does not directly address questions about the intended meaning of fairness, needs and expectations.

“The objective is that the system becomes more resilient, productive (cost effective), and flexible – benefitting all consumers.” (p.25)

The upcoming options paper provides an opportunity to establish a framework for demonstrating how the proposed market reforms will satisfy community values, expectations and needs.

⁵ <https://energyconsumersaustralia.com.au/wp-content/uploads/Future-Energy-Vision-Forethought-Household-Full-Report.pdf>

⁶ Fairness (or fair outcomes) is mentioned on pages 10, 17 (twice) and 106 in the context of DER. It is also mentioned in table of assessment principles on page 124. In the latter case it is mentioned under a category titled, Affordable and Equitable.

⁷ For example, see p.16

2.2 Pricing and the endogeneity of government involvement in the NEM

The consultation paper places considerable emphasis on the power of markets to generate price signals that accurately reflect the cost of producing and delivering the services required to maintain system reliability and security. Efficient prices are expected to reflect efficient costs, stimulate needed investment and motivate commensurate behaviours. For example, when discussing the challenges posed by integrating DER into the NEM, the paper states:

“Creating market transparency and more cost-reflective price signals will go a long way to helping both incentivise investments (without subsidies) and facilitate greater adoption of DER and physical system control.” (p.22)

The importance of prices to signal scarcity in the NEM is discussed at some length, particularly in the context of resource adequacy mechanisms.

“The NEM is designed to use forecast and actual high prices arising from scarcity in particular periods as a signal for new investment.” (p.30)

There is nothing exceptional about this line of reasoning and it is not unique to the National Electricity Market. The community is accustomed to scarcity pricing. When Cyclone Larry devastated crops in northern Queensland in March 2006, banana prices increased four or five-fold almost immediately. Similarly, the closure of the Hazelwood power station in 2017 led to a sharp increase in wholesale electricity prices.⁸

The public reaction to these pricing events differed markedly. So too the political reaction.

When Hazelwood closed, consumers cared little for the signalling value of scarcity prices, theories of quasi-rents, or explanations of bid-stack dispatch. Instead, they saw the same energy companies producing the same electricity and selling it to the same customers, while earning greatly inflated profits. The ESB paper notes how this episode of scarcity pricing led to an intensification of state and federal government interventions in the electricity market.⁹ From recollection, no “big sticks” were threatened against banana growers following Cyclone Larry.

For reasons set out in section 2.1 of this submission, the community does not view bananas and electricity on a par. While economics might see scarcity pricing in these two markets as equivalent phenomena, consumers do not. The consultation paper notes that when scarcity prices manifest in electricity markets, government intervention may be inevitable.

“[S]ustained prices at the level required for [investment in] dispatchable plant may be so high that government intervention is demanded.” (p.30)

⁸ See Figure 13 of the consultation paper.

⁹ See pages 35, 36 and 52

Despite this acknowledgement, the paper still creates an overall impression that such intervention is inefficient, dangerous¹⁰ and exogenous. Government intervention appears to be viewed as something that happens *to* the market rather than something that emanates *from* the market. Whether intended or not, this approach unhelpfully paints government action as contrary to the interests of a market-based approach to the post-2025 NEM and therefore contrary to the interest of consumers.

The ESB should treat government participation in the electricity market as endogenous – that is, a factor to be optimised when solving the complex suite of challenges facing the NEM.

2.3 The uncertainty about uncertainty

Addressing risk and uncertainty is the central theme of the consultation paper. Indeed, the terms risk and uncertainty are each mentioned almost 200 times.¹¹

It is well-established in the economic literature that markets can channel risk to those parties who can manage that risk most efficiently. This includes either minimising extant risks or managing them at least cost. The consultation paper provides strong support for the use of markets in pursuit of this end. Although the use of markets to manage risk is not explicitly adopted as a guiding principle, the ESB's preference is made clear on numerous occasions.

For example, when discussing resource adequacy mechanisms (chapter 4), the paper rejects a centralised capacity market on the basis that:

“It translates to a more fundamental shift in risk allocation and does not utilise the markets ability to innovate and compete to keep prices as low as possible...” (p.46)

Similarly, when discussing its ageing thermal generation strategy (chapter 5), the paper refers to the benefits of its other market design initiatives for managing risk.

“In addition, the options under consideration in the Resource Adequacy Mechanisms, Two Sided Markets and Essential System Services workstreams look to further minimise the risks resulting from thermal exits.” (p.48)

What is less clear, is how the ESB defines the concepts of risk and uncertainty.

¹⁰ ‘Dangerous’ in the sense that that paper notes that government intervention may “deter future necessary investment, which in turn risks further intervention – a **vicious cycle** where consumers will pay more than necessary for investment.” (p.30) [emphasis added]

¹¹ Risk is mentioned 199 times. The terms uncertain, uncertainty and certainty appear 100, 83 and 18 times, respectively.

In general usage, risk usually refers to the likelihood or consequences of an event. Often it refers to both likelihood *and* consequence.

Uncertainty is an even less precisely defined term. It can variously mean that something:

- is unclear or unplanned – for example, in its scope or timing
- can only be described with unusually wide confidence intervals
- may be knowable if more information were available
- is presently unknowable

where “something” could refer to an event or outcome, or a positive or negative pay-off, or the probability of events and pay-offs. The last of these four meanings of uncertainty closely resembles the definition applied by the economist Frank Knight, and which is often used by economists to distinguish between risk and uncertainty.¹² Uncertainty may have other meanings in other contexts.¹³

Box 1 provides some examples of the mixed meanings attached to these terms in the consultation paper.

This is not just a semantic quibble. It goes to the heart of the very difficult market design challenges facing the ESB.

In their colloquial use, the interchangeable meaning of these terms is probably of little consequence. When designing a market, however, they take on much greater significance and terminological precision is required. Markets can deal with risk, albeit at a price. They may be able to deal with the first definition of uncertainty by forming a subjective probability function. The second and third definitions broadly align with the definition of risk, suggesting markets may tolerate these uncertainties albeit at a cost. The market cannot, however, be expected to deal with the fourth definition of uncertainty. Where market participants cannot form a view about outcomes or pay-offs in the presence of ‘Knightian uncertainty’, they cannot be expected to stimulate action or investment.

The ESB should consider developing a robust typology of risk and uncertainty which it can use to frame, assess and coordinate the opportunities, and limits, of its market design initiatives.

¹² This form uncertainty is sometimes called ‘**Knightian uncertainty**’, named after University of Chicago economist Frank Knight who, in his 1921 paper *Risk, Uncertainty, and Profit* wrote: "Uncertainty must be taken in a sense radically distinct from the familiar notion of risk, from which it has never been properly separated.... The essential fact is that 'risk' means in some cases a quantity susceptible of measurement, while at other times it is something distinctly not of this character; and there are far-reaching and crucial differences in the bearings of the phenomena depending on which of the two is really present and operating.... It will appear that a measurable uncertainty, or 'risk' proper, as we shall use the term, is so far different from an unmeasurable one that it is not in effect an uncertainty at all."

¹³ Different academic disciplines can also attach different meanings to these terms.

Box 1 The different meanings assigned to risk and uncertainty in the consultation paper

The multiple meanings of risk and uncertainty can be seen in the following extract.

“Overall, actions taken to invest in transmission to mitigate the risk of uncertain thermal generation exit may not be required if there was greater certainty around the timing of exits. The uncertainty around the timing of closure is accentuated by the risk of a technical failure and unexpected outage...” (p.50)

The first mention of risk appears to refer only to the consequences of exit, whereas the second reference appears to mean both the likelihood and consequences of failure and outage. The first mention of uncertainty appears to refer to the unclear timing of generation exit, whereas the second mention appears to refer to the wide confidence intervals around this timing.

The following extracts appear to reflect the third and fourth meanings of uncertainty, respectively.

“This situation is heightened if there is uncertainty in the unit commitment, i.e. which resources will be made available and committed to being online.” (p.78)

“A key theme in stakeholder responses to the issues paper was the unfavourable effect policy uncertainty has on investment incentives in generation resources.” (p.35)

2.4 Not all markets are the same

As already noted, the consultation paper places considerable emphasis on the power of markets to generate price signals that accurately reflect the cost of producing and delivering the services require to maintain system reliability and security. The foundation for this emphasis was neatly expressed in a paper from the Australian Energy Market Commission last year.¹⁴

“Flexible and resilient frameworks seek to decentralise decision-making to the greatest extent possible. This is because it is participants and consumers – rather than regulators or governments – that typically have the information, tools and incentives to response to changes in circumstances in manner that promotes consumers’ long-term interests.”

This dynamic is true or, at least, sufficiently true, in many of the consumer and intermediate markets operating across the economy. Whether it is true, or sufficiently true, in the electricity market is not a self-evident matter.

As discussed in the previous section, uncertainty means information is either partially or entirely missing from the market. This erodes the ability of market participants to deploy tools or respond to incentives in the way described by the AEMC. The ESB’s consultation paper provides

¹⁴ AEMC (8 July 2019) *Applying the Energy Market Objectives* (p.6)

a germane example of the undermining effect of uncertainty. It observes the financial contracts market “has never evolved to be longer than two to three years duration” and therefore “provide[s] only a relatively short signal for underwriting new investments.”¹⁵ This has been an ongoing feature of the electricity market even though many of the factors that deter investment are relatively recent developments (see Table 2, p. 32). Much of the ESB’s work is motivated by seeking to overcome these factors, however, many questions remain about the efficacy of markets to deal with the challenges that lie ahead.

First among these questions is whether the observations made in the AEMC quote are apposite to the national electricity market.

Adam Smith developed many of his ideas by studying the markets of eighteenth century Scotland. These ideas have pervaded and nourished the growth of economics ever since. But none of the markets studied by Smith remotely resemble the national electricity market.

Neither Smith nor anyone since then, has had to decree markets for butchers, brewers or bakers to sell their wares. These trades emerged, self-organised into markets and thrived, of their own accord. In doing so, they also propelled the self-organisation of markets in their up- and downstream supply chains.

But the national electricity market (NEM) is different. It did not emerge of its own accord. It has not evolved of its own accord; and the market design initiatives proposed in the ESB paper will not occur of their own volition.

There is nothing ‘natural’ about the NEM. It is, and always has been, a construct deemed into existence during the 1980s and 90s. It is not a market enlivened by the countless transactions described by Smith. Instead, the NEM is roused into being by thousands of pages of rules, guidelines, standards and regulatory decisions. If there were no energy rules, there would be no national electricity market. And, the inventory of laws and rules is growing as shown in Table 2.

Table 2 The growing volume of regulation

	THEN...	NOW...	Change
National Electricity Law	Pages = 55 Version of 20 June 1996	Pages = 256 Version of 1 July 2019	+ 201 pages (+365%)
National Electricity Rules	Pages = 909 Version 1, 1 July 2005	Pages = 1,688 Version 150, 17 Sep 2020	+ 779 pages (+86%)

The NEM’s total dependence on rules invites many questions.

¹⁵ See pages 34 and 31, respectively.

- Establishing rules to support the market design initiatives discussed in the consultation paper will presumably require a **very substantial addition to the stock of regulations** already in place. This could have adverse consequences.

For example, the additional rules, and the complexities they create, may represent barriers to market participation that outweigh the ESB's efforts to promote greater competition. Moreover, the likely complexity of the rules will become an inherent source of additional uncertainty (potentially including Knightian uncertainty) which market participants may not be prepared or equipped to handle.

- It is not self-evidently true that the **behaviour of market participants in the NEM** is, or will be, the same as the behaviours observed in other markets.

For example, market participants in the NEM spend considerable time and effort in either seeking to amend the rules (or responding to other parties' efforts to amend the rules). This may indicate electricity companies' resources are disproportionately devoted to managing regulators and policymakers rather than investing in innovations that benefit consumers. An increase in the complexity of the regulatory framework can be expected to intensify this diversion of effort.

- Profit maximisation will continue to motivate market participants in the framework envisaged by the ESB, but **the cheapest path to profits will be a function of the rules** – rather than outcomes that necessarily align with the public interest.

For example, a generator will need to consider into which one-or-more of the ESB's proposed submarkets it sells its capacity. It will presumably do so in a way that maximises its profits, including by co-optimising across submarkets at each point in time and dynamically. Developing these bidding strategies will be computationally challenging and will probably require artificial intelligence. Under certain conditions, this multi-market bidding can be expected to lead to real-time and efficient prices which are dynamically and continuously adjusting in each submarket. The consultation paper does not contemplate the nature of these necessary conditions or the consequences if some of these conditions are not met.

In the event that frictions exist and market power can be exercised, or the algorithms converge on an equilibrium involving 'algorithmic parallelism',¹⁶ prices will be higher than necessary in some or all of the submarkets – leading to overall higher electricity prices for consumers. But how will regulators ever know?

¹⁶ The artificial intelligence corollary to human 'conscious parallelism'

- It is also worth contemplating whether some of the services to be provided through the various market design initiatives represent **private goods or public goods** (as defined in economics).¹⁷

For example, chapter 5 of the consultation paper explores the possibility of creating markets to provide essential system services including “inertia (physical and synthetic), system strength, provision of reserves, and fast responding frequency control services.”¹⁸ The need for these services arises from the externalities resulting from individual decisions by countless market participants across the NEM. However, there does not appear to be a quantitatively traceable relationship between individual actions causing the externality and the overall system services required in response to those actions. Conversely, there does not appear to be a quantitatively traceable relationship between the production of systems services and the benefits accruing to individual market participants, including those who are not responsible for the externality.

This would appear to suggest that some (or all?) essential system services assume the characteristics of public goods. If so, this will have implications for how the providers of these services are compensated. In turn, this will raise issues of equity and fairness as recovery of these costs flows through the supply chain to customers.

The consultation paper states the ESB has a “preference to move towards real-time markets for services where the system and technologies allow”.¹⁹ If these services are indeed public goods, then technology may not be the only factor limiting the design and implementation of markets for system services. This matter is revisited in section 3.3.

The ESB’s evaluation framework should be expanded to comprehensively consider the implications of the very complex regulatory arrangements needed to support its market design initiatives.²⁰ Prior consideration should also be given to whether some of the required services are more appropriately provided as public goods.

¹⁷ A (pure) public good is non-rivalrous and non-excludable. Non-rivalry means one person’s consumption of the good does not diminish its availability to other people. Non-excludability means it is not possible (or prohibitively costly) to prevent someone from consuming the good even if they have not paid for it. By contrast, consumption of a private good is both rivalrous and excludable.

¹⁸ See p.59

¹⁹ See p.59

²⁰ The ESB’s proposed evaluation framework is described in an Appendix to its consultation paper (p.121).

2.5 Taking an integrated approach to consumer protections and market design²¹

The effectiveness of the ESB's post-2025 market design relies heavily on consumers responding to real time price signals. Consumer participation is expressed through the load demanded from the grid, as well as the services provided back to the grid. While the latest consultation paper sees the ESB stepping back from its earlier ambition for universal consumer participation in a two-sided market, the future of the NEM will still be marked by highly varying levels of consumer participation.

The two-way flow of numerous services between consumers and the grid will require comprehensive and complicated electricity contracts with service providers. In many cases, bespoke contracts may be required. At a minimum, it seems these contracts will need to include terms addressing:

- the price at which electricity is sold to, and bought from, the customer
- the quantum of electricity (or other services) to be consumed, or exported, at different prices and at different times of day (week, year)
- the level and conditions of control over demand and supply handed to the service provider
- the compensation to be paid to a consumer if their electricity usage is curtailed beyond agreed limits by the service provider
- any penalties payable to the service provider when the customer fails to meet their contracted commitments, and
- ownership, payment and access arrangements for any equipment installed as part of the contract.

These multi-dimensional contracts will be orders of magnitude more complicated than current electricity-only retail contracts. The consequences of misjudgement could be very costly for consumers.²²

It may be tempting to assume that competing service providers will innovate to overcome this complexity, however experience suggests otherwise. The retail energy market shows that leaving it up to service providers to solve complexity is a misplaced hope.

Markets are generally dynamic institutions. The parties' behaviours co-evolve in response to each other – potentially in unpredictable and counter-intuitive ways. The rapidly expanding complexity of the electricity market will enable service providers to pursue discriminatory pricing, marketing and contracting strategies based on the different consumer behaviours they encounter. These strategies will probably deliver good value to highly discerning customers who

²¹ For further discussion, see Ben-David (2020) *Response to two-sided markets consultation paper*.
<http://www.coagenergycouncil.gov.au/publications/two-sided-markets>.

²² For example, when consumers misjudge their future capacity to comply with contract terms (i.e. the well-known phenomenon of over-confidence bias).

can actively and routinely engage with all the complexities of their contracts. The outlook is far less encouraging for other customers. This has been the community's experience with the far simpler retail energy market, as shown by the ACCC inquiry (2018) and the Thwaites review (2017) into retail competition.^{23,24}

As the complexity of the retail end of the electricity market evolves, it may lead to large transfers between customers without delivering system-wide efficiency benefits or equity gains. The flow of these transfers will be determined by service providers rather than government(s). In this sense, the electricity market will be operating as something akin to a privatised 'tax and transfer' system organised around the pursuit of retailer profits.²⁵

A sense of being adversely discriminated against is potentially a major source of aggrievement for consumers of an essential service – even when they have knowingly chosen not to engage with the market. For the reasons outlined in sections 2.1 and 2.2, a political response inevitably follows community aggrievement. This was the case in the wake of the ACCC and Thwaites reviews when an avalanche of government inspired rule change requests rained down upon energy market regulators.

The post-2025 consultation paper acknowledges the potential risks for consumers arising from the reforms it is pursuing, but only to the extent that current consumer protection frameworks will need to change. The consultation paper leaves that task to some distant time. It would be wrong to delay this work for two reasons.

First, consumer protection frameworks cannot durably mitigate adverse outcomes which are facilitated by market rules. If market rules are the source of adverse outcomes for consumers, then alternative market rules are the only effective remedy. Second, the market is already evolving rapidly. Ensuring fair consumer outcomes is an immediate challenge. It should not be seen as part of a "longer term" work program.²⁶

The ESB is urged to establish an eighth workstream as soon as possible to bring focus to consumer outcomes arising from its market design initiatives. This workstream needs to be deeply integrated across the entire project to ensure adverse consumer outcomes are not embedded within the ESB's proposed market initiatives.

²³ Australian Competition and Consumer Commission (2018), *Restoring electricity affordability and Australia's competitive advantage, Retail Electricity Pricing Inquiry - Final Report*, June

²⁴ Thwaites, J, Mulder, T and Faulkner, P. (2017) *Independent and Bipartisan Review of the Electricity and Gas Retail Markets in Victoria*, August

²⁵ The notion of the retail energy market operating as a "privatised tax and transfer system" is discussed in Ben-David (2018) *Competition, Neo-paternalism and the Nonsumer uprising*, pages 41-43. See: <https://www.esc.vic.gov.au/media-centre/competition-neo-paternalism-and-nonsumer-uprising>

²⁶ As suggested on p.94 where 'longer term' is defined as "five years and beyond".

2.6 Conclusion: *The theory of the second best*

The consultation paper signals a very strong predilection for market-based mechanisms to manage the transition of the electricity system from its current configuration to its future state. Similarly, the paper projects scepticism about the involvement of government(s) or AEMO in the management of service provision.

The counterfactual basis against which these views are being formed is not clear. Of course, they will be true if the assumed counterfactual national electricity market is perfectly constructed and frictionless. Unfortunately, that is the most unlikely alternative reality for the reasons outlined in this chapter. In every other possible state, the ESB should have regard to the theory of the second best.²⁷

As *The Economist* has observed:²⁸

“The second-best may look starkly different than the first best.”

The same article then notes that developing a second-best solution must be “informed by formal theory but not bound to it.”

Whereas this chapter has focussed on challenges and strategies, the next chapter identifies a small number of projects that would support the development of a comprehensive policy framework. Such a framework would help broaden the mandate for reform of the post-2025 national electricity market.

²⁷ The theory’s central proposition is that if an optimum set of economic conditions cannot be satisfied, then seeking to meet the conditions that can be satisfied might not be the second-best option. The theory of the second best was derived by Richard Lipsey and Kelvin Lancaster (1956) *The General Theory of Second Best*. Review of Economic Studies.

²⁸ <https://www.economist.com/free-exchange/2007/08/21/making-the-second-best-of-it>

3. POLICY PROJECTS TO SUPPORT MARKET REFORM

The ESB consultation paper is focussed on developing a pathway to operationalising seven proposed market design initiatives. The paper's purpose is not to explain or justify the economic and social implications of the proposed reforms. Nonetheless, the enduring success of the ESB's reform agenda will depend on whether consumers perceive these outcomes, and the assumptions upon which they rely, to be fair and reasonable.

This requires the market initiatives to be framed in not only operational terms, but also in terms of their consequences for end users.

Whereas the previous chapter identifies broad strategies for building enduring support for reform, this chapter proposes some key projects. To avoid testing the patience of the reader, this chapter desists from making repeated cross references to chapter 2. The relationship between the two chapters is illustrated in an appendix at the end of this submission.

3.1 A framework for aligning system objectives and consumer outcomes

In thinking through the challenge of building enduring support for the ESB's reform agenda, the old joke comes to mind about a lost tourist walking into a pub to ask for directions – only to be told, "Well, if I were you, I wouldn't start from here."

Of course, this advice isn't helpful to the tourist and similar advice wouldn't be helpful to the ESB. Reforming the market is the subject of the ESB's efforts, and that focus is not going to change. However, an opportunity exists for the ESB to undertake a parallel exercise which is framed around people and their interactions with the electricity market being created.

Not long ago, the energy market was defined by a very narrow set of relationships involving customers, retailers, networks, generators, and the occasional regulator. For the main part, the nature of these relationships was reasonably straightforward. That simplicity is disappearing and will be further displaced by the reforms being proposed by the ESB.

A generally linear demarcation of **roles, responsibilities, rights, choices and controls** is being replaced by a complex web of relationships across multiple service offerings, by multiple service providers, potentially operating across multiple markets and timeframes. While the consequences for consumers (including 'prosumers') is of greatest concern, in reality, it will be of concern to every market participant.²⁹ This complex web of roles and responsibilities will also have profound implications for the efficient operation of the market.

²⁹ In this context, a prosumer is an end user who not only consumes electricity from the electricity grid, but also produces and supplies electricity into the grid.

Unless rights and responsibilities are clearly articulated, they are left implied – with their interpretation left to the party with the most ‘power’ in each market interaction.

Integrated with its work on market design, the ESB should consider developing a framework describing the rights of system users and the responsibilities of all market participants. The framework should begin with the rights and responsibilities of consumers and then be expanded ‘outward’ through the web of market relationships.

The benefits of such a framework are twofold and important for the success of the proposed reforms. First, by articulating the outcomes in terms that are meaningful to consumers, it would build a basis for community support. Meaningful support is hard to garner when the ESB’s undertaking is currently expressed in terms of system resilience, productivity and flexibility.³⁰ These are system focussed objectives, not experience-oriented outcomes.

Second, establishing such a framework would help the ESB and stakeholders transparently and continuously cross-check whether its proposed initiatives are achieving its market focussed objectives as well as its intended outcomes for consumers and other stakeholders.

3.2 Fairness will matter more than ever in the new NEM

The definition of fairness is manifold and rarely provided explicitly. While the consultation paper mentions fairness, it too leaves open the question of what the ESB means by its use of this term.

Some of the common meanings attributed to fairness include:

1. not misleading, being truthful
2. not taking advantage of others
3. unhindered access to opportunity
4. equality of access and opportunity
5. unbiased exposure to reward and penalty
6. having the opportunity to pursue one’s own interests
7. equitable access to opportunity, and an equitable sharing of burden³¹
8. following the law

Each of these different types of fairness can variously have substantive, procedural or remedial implications.

³⁰ See page 25

³¹ Including inter-generational equity.

Over the past 20 years, state and national energy market regulators have responded to the first five types of fairness by simply regulating for thorough product and contractual disclosure. They have responded to the sixth type of fairness by simply urging customers to shop around. These actions have effectively transferred responsibility for fair outcomes to consumers.

The seventh type of fairness is in a different category. Energy market regulators have typically deflected from this concern by claiming it is a matter for governments to address through their social or redistributive policy levers – for example, welfare payments, publicly funded concession schemes, housing audits and retrofits, or other support mechanisms.

The eighth definition of fairness comes from Justice Kenneth Hayne who presided over the recent Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry.³² It holds that the law defines fairness and therefore regulators' role in delivering fair outcomes is manifested by their enforcement of the law (and any subordinate rules). This definition does not attend to how fairness is reflected when the law is being made by parliaments and the courts (or rules made by regulators).

Fairness can also be defined in terms of much broader concepts about justice, ethics and morality – but these notions of fairness stray beyond the remit of this submission.³³

As an essential service, the electricity market cannot operate efficiently or effectively unless service providers act fairly at all times and are perceived to be doing so.

The complexity of market arrangements explored in the consultation paper can be expected to increase the likelihood and consequences of breaches of whichever definition of fairness is relevant in the circumstances. Breaches will be to the detriment of consumers, and therefore to their confidence in the integrity and fairness of the overall arrangements for the electricity market. A loss in consumer confidence will tempt the type of government intervention the ESB consultation paper warns against.

If these interventions can be foreseen, then they can be forestalled.

The ESB should consider developing a *Standards of Fairness* instrument to govern the conduct of, and outcomes delivered by, any provider of electricity services to consumers in the national electricity market.

The *Standards of Fairness* would sit above a consumer protection framework and it should negate the need for heavily prescriptive regulation as currently seen in the National Energy Retail Rules and the Victorian Energy Retail Code.

³² <https://financialservices.royalcommission.gov.au/about-us/Pages/About-us.html>

³³ For example, the golden rule (i.e. do unto others as you'd have them do unto you) or Rawls' original position (i.e. the decisions that would be made from behind a "veil of ignorance" about the people upon whom those decisions will impact).

The *Standards of Fairness* would be complemented by guidance material (preferably non-binding) that would describe the conduct and outcomes that met the Standards. Service providers would have a broad discretion over how they complied with the guidance material – with the single proviso that their actions, and the results of their actions for customers, demonstrably honoured the outcomes described in the *Standards of Fairness*.

3.3 Who pays? For what? How?

The consultation paper is careful to highlight that many of the services required for system stability, which have historically been provided as byproduct of energy generation, now need to be procured. Alternatively stated, uncosted services are now becoming costed. Elsewhere, the paper identifies creating markets will generate additional revenue streams to support new investment.³⁴ The net effect is the same. Consumers will bear new costs.

While it is still too early for the ESB to estimate the size of these additional costs, the paper recognises the likely impact of uncertainty.

“Investors will also continue to face uncertainty – at least for a transitional period of time – driven by structural changes within the market and power system, and external factors that impact sector outcomes. This uncertainty will in turn, continue to challenge investors’ ability to bank on revenue streams to support their business case.” (p.44)

Inefficient types of investment, or insufficient levels of investment, will inevitably put even more upward pressure on prices.

Perhaps some uncertainties will be crystalised and made manageable through the market design initiatives proposed in the paper, but many other uncertainties will remain unchecked.

In the midst of this uncertainty, it is also important to remember that demand for the services and resources required to maintain system reliability and security will not be directly observable by market participants. The demand for these services will need to be deemed by the market operator (or potentially by regional market operators). The market rules will then need to establish who is liable for meeting this demand. Liability could sit with the market operator(s) or it could be apportioned to particular market participants.

Under the first option, the market operator(s) would be responsible for procuring the services required to meet the deemed level of demand. The consultation paper seems to variously refer to such arrangements as a centralised capacity market or structured procurement.³⁵ Having

³⁴ For example, on p.40 in the context of resource adequacy mechanisms, and on p.56 in the context of essential system services.

³⁵ See pages 40 and 61, respectively.

incurred these procurement costs, the rules would need to describe how the market operator recovered them from market participants. This would require an allocation formula.

The second option would also need an allocation formula, but rather than allocating costs, the formula would allocate a share of deemed demand to each relevant market participant. Each liable entity would then be responsible for procuring the services required to meet its share of deemed demand. The Retailer Reliability Obligation (RRO) largely reflects such a mechanism.³⁶

Under either option, procurement costs are borne by market participants. Even if the legal liability does not sit with retailers, the costs will pass through the supply chain to retailers (or other consumer facing service providers) who will seek to recover these costs from customers.³⁷

It might be expected that retailers' recovery of costs will be sculpted by the disciplines of a contestable retail market – leading to efficient tariff designs that promote the behaviours envisaged in the consultation paper. Experience with full retail competition over the past two decades demonstrates the contestable retail market has not delivered efficient retail tariffs.³⁸

*

The imposition of additional costs, their likely inefficiencies, and the unpredictable manner in which they will be recovered from customers, calls for a discussion about the role of government(s) in managing the transition of the national electricity market.

To the extent that:

- (1) the required services take the nature of a public good, and/or
- (2) market and system uncertainties unduly raise the cost of private capital

consideration should be given to government(s) either funding these services from their consolidated revenue(s) or assuming responsibility for directly providing them. The case for government involvement falls away once the transition has been successfully navigated – that is, once market and system uncertainties are resolved.

The ESB has an opportunity to explore how government(s) can effectively and efficiently support the transition of the national electricity market.

Of course, government(s) may demure from assuming these responsibilities, in which case, all costs will need to be recovered from consumers.

³⁶ In its current form and its potentially modified form (as described in chapter 4 for the consultation paper).

³⁷ In this context, 'retailer' could include newer forms of consumer-facing service providers.

³⁸ Ben-David (2015) *If the retail energy market is competitive then is Lara Bingle a Russian cosmonaut?* (see Section 4.3, The mystery of two-part tariff). <https://www.esc.vic.gov.au/sites/default/files/documents/If-The-Retail-Energy-Market-Is-Competitive-Then-Is-Lara-Bingle-A-Russian-Cosmonaut.pdf>

Unfortunately, there is no theoretical basis for how costs ought to be recovered from consumers if meeting deemed demand requirements represents either a fixed cost of operating the overall energy system and/or the provision of a public good.³⁹ These are unavoidably matters of judgment – judgement about what is fair.

Leaving decisions about fairness to retailers (and potentially other service providers) jeopardises community confidence in a successful transition of the national electricity market.

The ESB should consider developing pricing principles to guide the recovery of costs arising whenever it is necessary for the market operator to deem the level of demand for services and resources required for system reliability and security.

3.4 Modelling – An unavoidable necessity

The reforms explored in the consultation paper are profound. This makes it difficult to picture how these arrangements will take root in the national electricity market. Likewise, it is difficult to picture how sensitive these outcomes will be to different market conditions (or modelling assumptions).

The consultation paper provides no indication of whether the ESB intends to model the overall effects of the reforms it is proposing. The paper only refers to two very specific modelling exercises. Chapter 9 refers to the ESB modelling “the likely uptake of different types of DER, their technical characteristics and consumer willingness to participate in external markets.”⁴⁰ Chapter 10 refers to modelling already undertaken into “the benefits of introducing locational marginal prices over the next 20 years” and “the benefits of introducing transmission access reform in the NEM”.⁴¹

Both of these modelling exercises are partial insofar as they only examine the impacts introduced by individual market design initiatives. They do not seek to provide a holistic view of the reform proposals or how service providers and consumers might respond.

The ESB can facilitate greater understanding of the combined effects of its proposals, and their consequences and dependencies, by undertaking modelling that answers the following three questions.

³⁹ There is an analogous problem in the regulatory pricing of network services. The theoretical consensus suggests variable charges should reflect a network’s long run marginal cost of providing services. Doing so will rarely raise sufficient revenue to cover a network’s total costs. How the remainder is recovered (whether as a fixed charge or as part of volumetric charge) and from whom it is recovered, are inescapably arbitrary decisions for networks and their regulators.

⁴⁰ See p.101

⁴¹ See pages 108 and 115, respectively.

- (i) What co-optimisation strategies will service providers adopt across the different markets in which they operate in order to maximise their returns; and do these strategies produce market outcomes which align with the interests of consumers?
- (ii) How will price signals intersect and interact, including with network price signals⁴², as they flow downstream through the supply chain from the various markets in which they originate; and how will the sum total of these price signals appear to consumers (including prosumers)?
- (iii) How will the consumer-facing electricity market evolve in the presence of a heterogenous population with different preferences, capital constraints, and different levels of active engagement with the market?⁴³

In each case, the sensitivity of the results will need to be explored by introducing different market frictions, rather than simply assuming complete and frictionless markets.

The difficulty of such modelling exercises is not underestimated. Sophisticated and time-consuming modelling techniques will need to be used (such as agent-based models). It is not clear, however, how else the ESB can demonstrate to the community and policy makers that the reforms will be effective, efficient and fair.

The ESB should consider undertaking modelling that provides a holistic view of the market reforms it is proposing. Areas of particular interest include: (i) how service providers will co-optimize their activities across the different proposed markets, (ii) how price signals emanating from various markets will interact and appear to consumers, and (iii) how the consumer-facing electricity market will evolve in the presence of a heterogenous population.

⁴² Under reforms to network pricing being pursued by the AEMC and AER.

⁴³ For further discussion see: Ben-David (2020) *Response to Consultation on Two Sided Markets* (sections 2.1, 2.2 and 2.4) <http://www.coenergyCouncil.gov.au/publications/two-sided-markets>

4. CONCLUSION

When read in its totality, the consultation paper leaves the reader with a profound impression. The image painted by the paper is one of the NEM almost taking on the characteristics of a living organism innervated by price signals pulsing across its many sub-markets, allowing it to respond in real time to external (eg. weather) and internal (eg. instability) stimuli. In places, it even seems the market becomes sentient – with references like the “needs of the market”.⁴⁴

This may be a somewhat colourful characterisation of the paper but the emphasis it places on price signals is not overstated.⁴⁵

While these price signals are intended to support the coordination of activity and investment across the NEM, their final economic incidence will come to rest with consumers.

These signals will emanate from potentially innumerable points of origin across the entirety of the national electricity market – including from networks (subject to ongoing tariff reforms being pursued by the AEMC and AER). How all these signals interact and combine as they flow downstream towards end users is not addressed in the consultation paper. It is still too early to do so. Will price signals amplify or cancel each other? Or will the NEM become so noisy with crisscrossing price signals that no individual signal is discernible? Will end-users just be confronted by white noise as they seek to navigate their way through the electricity market?

The most likely scenario is that intermediaries will stand between individual consumers and the universe of pricing signals flowing toward them from across the electricity market. These intermediaries may be retailers as they currently exist, or a new class of aggregators may emerge as suggested in the ESB’s consultation paper on two-sided markets.⁴⁶

What happens next is far from obvious.

Experience with full retail competition demonstrates that, contrary to expectations, the contestable retail market has not delivered innovative or efficient outcomes for consumers. Whether driven by consumers’ distrust of complex tariff structures, retailers’ commercial disincentives to make the necessary investments, or a lack of genuine competition, the end result is the same: Markets do not necessarily produce the outcomes expected ‘on paper’.

This matters.

It matters because if the pricing structures generated by the market are not reflecting the intended efficiencies, then pricing decisions by retailers and other intermediaries (potentially including regulators) can have profound redistributive consequences for no good purpose.

⁴⁴ See p.43

⁴⁵ The paper emphasises the role and importance of signals 130 times, usually in the context of price-, market- or investment signals.

⁴⁶ <http://www.coagenergycouncil.gov.au/publications/two-sided-markets>

When this is coupled with all the uncertainties explored in the consultation paper and in this submission, the final impact of reform on consumers could be highly unpredictable and potentially very uneven.

Proceeding with market reforms without giving considerable regard to the unpredictable and redistributive impact on consumers, puts at risk enduring community and political support for those reforms. Managing these risks will require:

- clarifying the role of government(s) in managing market and system uncertainties during the transition period, and
- a cautious and staged approach to implementing market reforms, and with clearly articulated criteria for moving from one stage to the next.

How the ESB tackles these risks in its final advice will be, perhaps, the greatest challenge it faces.

19 October 2020

About the author

Dr Ron Ben-David joined the Monash Business School (Faculty of Business and Economics) in partnership with the Monash Sustainable Development Institute, as a Professorial Fellow in March 2020. This followed ten years as the full-time chair of Victoria's economic regulator, the Essential Services Commission. His earlier career involved senior positions in the Department of Premier and Cabinet (Vic) and Treasury and Finance (Vic). In 2007-08, he led the secretariat for the national Garnaut Climate Change Review. Ron is known for his freethinking and deep commitment to reforms that deliver fairer outcomes for consumers. He has written and presented on a wide range of topics. He holds a B.Sc (Optometry), B.Comm (Hons) and a PhD (economics).

SUMMARY OF RECOMMENDATIONS

The upcoming options paper provides an opportunity to establish a framework for demonstrating how the proposed market reforms will satisfy community values, expectations and needs. [section 2.1]

The ESB should treat government participation in the electricity market as endogenous – that is, a factor to be optimised when solving the complex suite of challenges facing the NEM. [section 2.2]

The ESB should consider developing a robust typology of risk and uncertainty which it can use to frame, assess and coordinate the opportunities, and limits, of its market design initiatives. [section 2.3]

The ESB's evaluation framework should be expanded to comprehensively consider the implications of the very complex regulatory arrangements needed to support its market design initiatives. Prior consideration should also be given to whether some of the required services are more appropriately provided as public goods. [section 2.4]

The ESB is urged to establish an eighth workstream as soon as possible to bring focus to consumer outcomes arising from its market design initiatives. This workstream needs to be deeply integrated across the entire project to ensure adverse consumer outcomes are not embedded within the ESB's proposed market initiatives. [section 2.5]

Integrated with its work on market design, the ESB should consider developing a framework describing the rights of system users and the responsibilities of all market participants. The framework should begin with the rights and responsibilities of consumers and then be expanded 'outward' through the web of market relationships. [section 3.1]

The ESB should consider developing a Standards of Fairness instrument to govern the conduct of, and outcomes delivered by, any provider of electricity services to consumers in the national electricity market. The Standards should unequivocally place responsibility for fair customer outcomes on service providers (so long as the customer is not deliberately acting in a way that thwarts their service provider's efforts to honour the Standards). [section 3.2]

The ESB has an opportunity to explore how government(s) can effectively and efficiently support the transition of the national electricity market. [section 3.3]

The ESB should consider developing pricing principles to guide the recovery of costs arising whenever it is necessary for the market operator to deem the level of demand for services and resources required for system reliability and security. [section 3.3]

The ESB should consider undertaking modelling that provides a holistic view of the market reforms it is proposing. Areas of particular interest include: (i) how service providers will co-optimize their activities across the different proposed markets, (ii) how price signals emanating from various markets will interact and appear to consumers, and (iii) how the consumer-facing electricity market will evolve in the presence of a heterogeneous population. [section 3.4]

RELATIONSHIP BETWEEN PROPOSALS IN CHAPTERS 2 & 3

The table below broadly demonstrates the relationship between the strategic responses discussed in chapter 2 and the policy projects proposed in chapter 3. It is indicative only.

	2.1 Value & Values	2.2 Government endogeneity	2.3 Risk & Uncertainty	2.4 Market characteristics	2.5 Consumer protections
3.1 Rights & Responsibilities					
3.2 Standards of Fairness					
3.3(a) Government(s) role in transition					
3.3(b) Pricing principles					
3.4 Modelling					