

Response to Energy Security Board
Post 2025 Market Design Issues Paper

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Preamble

The way things are going there might not be a national level market or grid at all in <50 years and that may not be a bad thing. We propose that the natural evolution of the status quo is to a series of microgrid markets and transmission / long distance distribution markets. Australia is arguably the Saudi Arabia of lithium ore. Getting this market design right is a huge opportunity for Australian prosperity and exports for at least the next 100 years. It's an opportunity for leadership.

Responses

What scenarios and shocks should be used? How should these be used to test market design?

Large disruptive random supply & demand peaks and troughs throughout the system. As well as a broad range of scenarios that take into account both reliability and the levelised costs of energy to end consumers.

- How can market and economic modeling best be used to evaluate individual components of market design or the end-to-end market design?

It can't. Markets converge on complex outcomes because the behaviour of market participants evolve in unpredictable ways as market conditions change over time. This complexity means that any model designed to simulate a market design is bound to fail. Thus using modeling to evaluate market designs is a fraught exercise. A better approach is to design a market that's invariant to negative system wide consequences. It's highly possible to do this and retain essential market characteristics that optimize for typical market characteristics such as price, resource allocation, innovation and so on.

- Is the assessment framework appropriate to evaluate the effectiveness of future market designs? What else should be considered for inclusion in the assessment framework?

No. The assessment framework's focus on modeling, a fancy term for fortune telling is wrong for the reasons outlined above. For an in depth explanation of this concept we refer you to the trader Mr. Nassim Nicholas Taleb. This is a topic that he has explored verbosely and exhaustively in his publications. What's really needed is a market that is so simple, the model cannot be wrong. A market that serves the present day, but also speaks to the future. That is the dissolution of the single market into a very large number of inteconnected local markets.

- Have we identified all of the potential challenges and risks to the current market? If not, what would you add?

No. The greatest challenge and risk unidentified in this document is the political influence campaigns of large industry players looking to protect their existing subsidies and high capex investments at the expense of a well functioning market. As the document states, the current "market" designed at their impetus two decades ago is functioning very poorly. One reason for this is the absence in the market of the voice of the Australian consumer and small distributed (eg. household) generators. What's required is a market design that addresses these players as well as the needs of investors and true market innovators. The truth is that the NEM as it stands today is not a market and referring to it as such is a dubious exercise. Wikipedia refers to the NEM as "an arrangement". For example, it is extremely hostile for small market participants to enter the NEM. That is not at all a characteristic typically associated with true markets.

Another problematic aspect of the current NEM is that many of the buyers and sellers in the market are the same persons or have common ownership. A consequence of this unfortunately legal arrangement has been the price gouging of retail consumers. An example of one way to help achieve the goal of a modernized market that serviced the broader public would be by designing innovative financial instruments that help alleviate the key issue of high cost investments (the key inhibitor of many energy efficiency investments) by allowing these costs and benefits to be amortized over time.

- Which of these challenges and risks will be most material when considering future market designs and why?

Driving innovation to benefit the consumer. Innovation doesn't need to be driven or predicted, just accommodated. The way to do this is to create a true market that allows any persons (corporate or otherwise) to participate in it. As any energy startup will tell you, this is the key issue to solving Australia's energy problems. Because a market that excludes prospective participants via excessive upfront costs or bureaucratic inertia is not a true market - it's an arrangement that services only the few. Another risk is that the market will ignore high roi energy efficiency investments because they are accompanied by high upfront costs. One way to achieve this goal would be through the design and provision of financial instruments that effectively finance storage and energy efficiency investments by allowing these costs and benefits to be amortized over time. For example payback periods for home insulation even in retrofit situations have very short horizons <8 years. Yet the R-value of the vast majority of Australian homes is abominably low. A well designed market should consider not only supply and demand and typical market characteristics such as price discovery but also exposing the discovery of characteristics such as relative efficiency and embodied energy of different products and services.

- Which (if any) overseas electricity markets offer useful examples of how to, or how not to, respond to the challenges outlined in this paper?

No one is doing a really great job here, but there are instructive deployments all over the world.

See:

https://en.wikipedia.org/wiki/100%25_renewable_energy#Places_with_near_100%_renewable_electricity

That these deployments are focused on renewables only vs a mix is irrelevant, these are all places that are coping with the key underlying issue of change in the grid, that of intermittent and variable supply generation.