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20 March 2023

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Price discovery in a renewables-based electricity system – Options paper

Genesis Energy Limited (**Genesis**) welcomes the opportunity to comment on the Market Development Advisory Group's (**MDAG**) options paper on price discovery in a renewables-based electricity system.

MDAG has produced a thorough and useful scan of the issues moving to a more highly renewable electricity system will present, and the wide range of options for tackling these issues. MDAG notes that the system is changing faster than anticipated at the outset of this project, and there is therefore greater urgency associated with some issues. Genesis agrees.

A general observation is that the work programme MDAG proposes for the Electricity Authority (**the Authority**), and in many cases the industry, is extremely demanding in terms of the range of options proposed, and the complexity of many options. As a consequence, we hope the Authority is selective in choosing which workstreams to progress and at what level of urgency, with a focus on measures where there is a high degree of confidence in supporting better outcomes, through the transition and in the long- term.

Prioritising work on the basis of accessing the highest net benefits makes sense, as does focusing on measures that address problems (or opportunities) that are a reality today, and leaving aside those that are targeting hypothetical future issues that may or may not arise. This allows both for inevitable constraints in resources, and the changing nature of the landscape.

Comments addressing the specific proposals and positions in the paper follow.

Ensure reliable and efficient operational coordination

Genesis agrees that spot prices are, and will continue to be, the 'heartbeat' of the electricity system. This is true in the extent to which they signal demand and scarcity in real time, and serve as the basis for pricing and design of contracts. The MDAG is right that a market remains the best way of coordinating supply and demand in the electricity system, and spot prices play the key role in ensuring this market delivers as it should.

MDAG highlights an expected increase in winter peak risk, rightly pointing out that capacity challenges are already emerging. This issue has been well-canvassed over the past few months, with a particular focus on finding ‘quick win’ solutions that could mitigate the risk of capacity shortfalls this coming winter.

In Genesis’ view, these issues have been particularly acute in recent years due to several factors:

1. A relatively high proportion of the dispatchable generation on New Zealand’s system being ‘slow start’ thermal plant, that can take hours-to-days to ramp up to full capacity.
2. An abundance of energy (mainly stored water for hydro generation) resulting in very low spot prices during the day, with only short periods of high prices at peaks providing insufficient incentive for slow start thermal to be ready to run. This is compounded by uncertainty around peak prices owing to the difficulty in predicting availability of intermittent generation.
3. A reduced incentive on electricity distribution networks to exercise discretionary load control (primarily hot water) under the new Transmission Pricing Methodology.

MDAG proposes several measures specifically targeting this challenge. Improving forecasting of demand and intermittent generation, also supported by the Authority, has merit. To the extent that improved forecasting can enable better decision- making by participants, that is a good thing.

Genesis also supports development of a new reserve product to cover capacity constraints arising due to sudden and sustained reduction from intermittent sources (principally wind, but increasingly solar). Depending on how it is designed, this product could perform the same role as the winter peak product the CE Forum proposed for introduction¹ in time for Winter 2023, a proposal rejected by the Authority².

Genesis agrees that it is worth progressing development of an ahead market. While this would be a complex undertaking that would likely take some time to design and deploy, we consider it likely the benefits of progressing this work would outweigh costs for our sector and Aotearoa New Zealand.

Spot prices and contracting alone may be insufficient

The MDAG eschews development of capacity adequacy mechanisms to address the current and emerging peak challenges, citing the risk of such solutions imposing higher costs than are necessary to ensure peak demand is met. The MDAG also warns of the risk that such approaches, which may effectively target a short-term problem, endure beyond the time they are useful, or worse, crowd out more efficient or effective solutions.

Genesis agrees that it is prudent to be wary of these risks. Equally, regulators and participants should be mindful of the risk of placing too high a value on efficiency relative to security. Genesis considers that it is possible, even likely, that the value of security to consumers is under-priced/valued, because it is practically impossible to discern from behaviour in the

¹ <https://www.ea.govt.nz/assets/dms-assets/31/CEO-Forum-Submission-161222-1383294.pdf>

² <https://www.ea.govt.nz/assets/dms-assets/31/Driving-efficient-solutions-to-promote-consumer-interests-through-winter-2023-Decision-Paper-1.pdf>

market as it is currently designed. Arguably, the true value consumers place on security of supply is not apparent until the market fails to provide it.

Ensuring electricity supply is available when consumers wish to consume it is arguably the 'bottom line' objective of any electricity market. And the consequences of failing to deliver on this objective are more severe than ever. A growing body of analysis, even a consensus, suggests that electrification of currently fossil fuelled activities will be crucial to meeting decarbonisation targets. Little could be more damaging to the uptake of electricity as an alternative energy source than a lack of confidence that the resource will be available when it is needed.

There are two elements to this – impact on decarbonisation and impact on the economy. That is, a secure supply will be equally important as more sectors electrify. Having a significant portion of the light vehicle fleet impaired or large industrials exposed because of security of supply issues would have a material adverse impact on the economy.

We consider it is worthwhile for regulators and System Operators to ensure they have access to the full range of tools for ensuring the system delivers reliable supply. If the exercise of these tools results in inefficiently high costs, it is likely this is a less disruptive and more easily solved problem than the impact of failing to ensure security of supply (for short or long durations).

Genesis contends that consideration should be given to measures that provide participants with the appropriate commercial incentives to ensure the right mix of plant and demand response is available to meet demand at all times. The appropriate prescription will change over time as the system adapts and the technology mix changes. For example, it is likely that large batteries will play an increasingly important balancing role in the market and that these will not require any incentive in addition to spot prices (and associated contracts) to perform this role. Equally, and as noted elsewhere in MDAG's paper, dynamic demand response can reasonably be expected to play an increasingly important role in smoothing and meeting peaks.

Dry year/energy challenges remain

The MDAG highlights that the system is moving to becoming more capacity constrained, having historically been subject to energy constraints during periods of low hydrology. Most analysis (and, in recent years, lived experience) supports this contention. The options in this paper primarily focus on peak capacity or short-term variability issues which are present and important. Genesis considers that the range of emerging technologies and regular frequency of events to send price signal will support the market to find and implement solutions in the medium to long- term.

Genesis considers that while extended periods of energy shortage are likely to occur less frequently as new renewables join the system, effectively managing these situations will remain critical and potentially more challenging than addressing short term variability.

Care should be taken not to lose focus on dry-year risk, and this should be considered separately to capacity challenges. In this space, there are few emerging new technologies and

there are expected to be infrequent (but potentially severe) price signals that may be less well suited to driving efficient investment to ensure reliability meets market expectations.

As we have previously stated, we consider that there is a risk that the thermal plant currently relied upon to manage through energy shortages becomes uneconomic to maintain and is retired before the market ceases to require it (however infrequently). We remain of the view that appropriate market measures/ancillary markets may be more effective than either relying solely on the energy only market signals and contracting, or a centrally controlled solution to meeting challenges related to energy shortfalls.

For both capacity and energy challenges, avoiding entrenching such approaches beyond their usefulness is, we acknowledge, important. As they are targeting issues that we expect will be transitional, their design should itself provide for a transition (or a degree of competition in the services the products contract for that enables the lowest cost approaches to prevail, over time).

Options

Ensure reliable and efficient operational coordination

Support	
Partially support	
Does not support	

Measure	MDAG	GNE	Comment
A1 Improve short-term forecasts of wind, solar and demand			
A2 Strengthen governance for next phase of FSR project			
A3 Update shortage price values			
A4 New reserve product to cover sudden reduction from intermittent sources			
A5 Offer price reductions after gate closure			
A6 Investigate + develop ahead market			
A7 Remove UTS over-ride of trading conduct provisions			
A8 Negative offers/prices			
A9 Centralised commitment based on complex offers			
A10 Warming contracts			This option should be investigated as a time-limited, transitional measure. A competitive solution is preferable.

Ensure effective risk management and efficient new investment

It is right that the contract market will have to do a lot more of the 'heavy lifting' in supporting effective risk management and efficient investment and divestment as the electricity system transitions to an ever-greater proportion of renewables. A spot market that accurately

reflects the value of energy at each location and time will necessarily produce volatile prices when the drivers of supply are themselves volatile. Participants will need access to, and the appetite to engage with, a market that provides the appropriate solutions to the various risks a highly renewable system will present.

Improved, appropriate disclosure

It is preferable wherever possible for regulators to focus on ensuring the market settings are appropriate and allowing buyers and sellers to manage risks and make investment decisions as they see fit. Genesis agrees that “it will be very hard for a regulator to efficiently identify the best mix and level of resources for the system, especially as the share of renewable supply increases and makes the system much more dynamic”³. Any departure from this approach should be carefully considered and in response to identified market failures, which may arise as the underlying asset and participant mix deviates from what the market was designed for.

Providing more detailed information on contracts traded, particularly in relation to new and emerging products, would be an improvement to the current regime, which provides poor visibility of shapes traded (super peak, overnight etc.).

Enhancements to the disclosure platform should be carefully considered however, and targeted at surfacing information that would be genuinely useful to participants and avoid creating confusion. Requiring disclosure of price information for declined offers/bids, for example, is likely to generate a body of information that is open to misinterpretation or miscommunication (deliberate or otherwise). Therefore, Genesis does not support this option. A variety of factors are relevant to a participant’s willingness to trade in addition to price.

Market making is not without cost

The cost of requiring market making of longer-term contracts is likely to outweigh the benefits. While improved shared information on longer term price expectations would be beneficial, particularly to buy-side participants, market making is already an expensive exercise. It is not clear that market making over much longer durations would provide a useful price discovery mechanism, or, not as useful as the current time horizons. This is because uncertainty increases materially as the curve lengthens, and there is a greater likelihood of reality deviating from expectations.

Genesis would be eager to avoid the market incurring costs where these do not provide material benefits. If this option proceeds, which Genesis does not support, consideration should be given to how the costs can be more fairly distributed. It is likely that there are cheaper ways of providing for price discovery.

The MDAG appears to conclude that there is some market failure preventing what should be willing buyers and willing sellers to develop shaped hedge products that would meet a market need that grows greater as the generation mix changes. It is unclear why this would be the case for certain shaped hedge products but not, say, for short- and/or long-duration risk

³ Price Discovery In A Renewables-Based Electricity System: Options Paper 2022, p60

cover. Indeed, in Genesis’ experience there is a misalignment between the cost of providing long duration risk cover and the price participants, in aggregate, are willing to pay.

In the absence of a stronger rationale than that presented by MDAG, requiring the industry and regulator to work together on new contract designs would seem a low value investment (especially given the vast amount of work MDAG suggests is undertaken to prepare for a highly renewable market).

With respect to safeguarding competition, it should be sufficient to extend the wholesale market trading conduct provisions⁴ (MDAG option B7) without necessitating the drafting and imposition of an entirely new ‘flexibility access code’ (MDAG option B6). Alternatively, if a ‘flexibility access code’ has merit this should be introduced without extending the remit of the trading conduct provisions. To do both is a ‘belt and braces’ approach that creates work and introduces complexity, and should not be necessary if either individual measure is effective.

Options

Ensure effective risk management and efficient new investment

Support	
Partially support	
Does not support	

Measure	MDAG	GNE	Comment
B1/D2 Greater transparency of hedge info (esp non-base load) covering offers, bids + agreed prices			We would not support requiring disclosure of price information on declined offers/bids. The limited potential benefits are outweighed by the potential for this information to be misinterpreted or miscommunicated (intentionally or otherwise).
B2 Market-making for longer dated futures (for price discovery)			Market making is already very expensive, and this would increase costs without obvious benefits.
B3 Publish aggregated information on pipeline of new developments, energy and capacity adequacy			
B4 Enhance stress testing regime			
B5 Develop standardised ‘shape’ product(s)			These products will arise if they are valued by consumers. There is little value in developing a product for which there is no, or insufficient, demand.
B6/D3 Develop flexibility access code (non-price elements)			Genesis considers that while this option may have merit in future, there is insufficient evidence of a problem to justify this work and the risks it entails today. There should be a high bar to cross before introducing

⁴ <https://www.ea.govt.nz/assets/TheCodeParts/Code-Part-13-Trading-Arrangements-1-November-2022-Real-Time-Pricing1376476.1.pdf>

			obligations/restrictions on how participants interact commercially.
B7/D4 Extend trading conduct rules to hedge market			
B8/D5 Market making in caps or other shaped products			As above at B2.
B9 Capacity mechanisms			Genesis supports further work on what measures could be put in place to ensure commercial solutions to peak/dry year challenges that can be relied upon through the transition. While the contracts market may alleviate these issues, it may not, and developing an understanding of what schemes may be introduced to 'fill the gap' between supply and demand during peak and energy shortfalls would be a low regrets course of action.
B10 Strategic reserve			As above at B9. When considering these options it is important to be mindful of the different characteristics of energy and capacity constraints, and acknowledge that solution design will necessarily therefore be different.

Lift demand-side flexibility

Genesis agrees that increased participation of demand-side flexibility could have numerous valuable benefits such as mitigating market power concerns, improving security and peak management, and improved price discovery. Accessing these benefits will require the appropriate arrangements to be in place and, crucially, consumers need to value the service.

Broadly, Genesis agrees with steps to improve the quality of information available to consumers and the industry on the value DSF could unlock, and running well-targeted trial programmes to identify any gaps. Genesis understands this is the focus of the FlexForum, and we have had discussions regarding how we can best engage with this group's valuable work.

However, Genesis does not support options that would compel participants or consumers to behave in a particular way, seemingly because a regulatory agency has decided this behaviour is desirable. Genesis, and presumably other retailers, continually review and refine our products to meet customer needs, on the basis of what we understand customers value. This is a dynamic and ongoing process, which we do not believe would be improved by a central body coordinating the development of standardised hedge products (C4).

Similarly, requiring retailers to offer DSF tariffs (C3) should not be considered further. Genesis considers that retailers are best placed to determine what offers consumers will value. Retailers will succeed or otherwise according to how much value their propositions can unlock, and there is a powerful commercial incentive to establish a leadership position in this area. If the market does not deliver, and there is a demonstrable problem resulting in consumer harm, this position could easily be revisited.

Options

Lift demand-side flexibility

Support	Green
Partially support	Yellow
Does not support	Red

Measure	MDAG	GNE	Comment
C1 Monitor provision + uptake of DSF-rewarding tariffs (incl automation)	Green	Green	
C2 Sunset profiling if smart meters in place	Green	Green	
C3 Require retailers to offer DSF tariffs	Yellow	Red	It is likely to be desirable for consumers to have access to these products. However, if that is the case, they will be developed and taken up on the basis of the extent to which they are valued by customers.
C4 Develop standardised shape-related hedge products to reward DSF	Green	Yellow	As above. Central or compelled design of products should only be contemplated where there is clear market failure (for example, if a customer need for which there is demand is unmet).
C5 Provide significant funding for pilots/trials to kick-start dynamic tariff use	Green	Yellow	
C6 Use Customer Compensation Scheme to reward DSF	Red	Red	
C7 Negawatt scheme for wholesale market	Red	Red	
C8 FSR – improve DSF visibility and remove Code barriers	Green	Green	
C9 FSR – accelerate new ancillary services for DSF uptake	Red	Yellow	Similarly to C4, Genesis considers there is potentially value here. We agree that further work is not currently justified presently but this should be monitored.
C10 Procurement process for high-scarcity DSF (RERT)	Yellow	Yellow	
C11 Ensure distribution pricing reflects network needs	Green	Green	
C12 Investigate extending LMP into distribution networks	Yellow	Yellow	
C13 Provide info to help large users with upcoming DSF investment decisions	Green	Green	
C14 Provide info to help domestic customers with DSF decisions	Green	Green	

Strengthen competition

Genesis agrees that measures to address market power and/or strengthen competition should focus on conduct measures in the first instance. The risks associated with structural interventions are high, which sets a high bar for taking this approach. We do not support commencing work on structural solutions in the absence of an identified present competition concern.

If and when work on targeted structural interventions is to be carried out, Genesis agrees that it should focus on allocation of assets/resources in the generation sector rather than separation of wholesale and retail functions. While the latter approach has its advocates, we are not aware of any evidence that this would yield benefits for consumers (though it may improve the viability of some business models, by raising the costs of risk management for previously vertically integrated firms).

Options

Strengthen competition

Support	
Partially support	
Does not support	

Measure	MDAG	GNE	Comment
D1 Develop dashboard of competition indicators for flexibility segment of wholesale market			
D2/B1 Greater transparency of hedge info (esp non-base load) covering offers, bids + agreed prices			We would not support requiring disclosure of price information on declined offers/bids. The limited potential benefits are outweighed by the potential for this information to be misinterpreted or miscommunicated (intentionally or otherwise).
D3/B6 Develop flexibility access code (non-price elements)			Genesis considers that while this option may have merit in future, there is insufficient evidence of a problem to justify this work and the risks it entails today. There should be a high bar to cross before introducing obligations/restrictions on how participants interact commercially.
D4/B7 Extend trading conduct rules to hedge market			
D5/B8 Market making in caps or other shaped products			As above at B2.
D6 Physical disaggregation of flexible generation base			
D7 Virtual disaggregation of flexible generation base			
D8 Price caps applied in the electricity spot market			

Increase public confidence

Confidence is critical to a successful energy transition, in which highly renewable electricity makes its maximum contribution to powering the economy. Policymakers and regulators need to have confidence that disruptive interventions are not justified (where they are not). Consumers need confidence to electrify fossil fuelled processes (heating and transport initially), and refrain from calling for or supporting interventions (however well meaning) that may ultimately be counterproductive.

In our view, the top priority in maintaining this confidence is in ensuring reliability. That is one reason Genesis places such a high value on managing the risks that arise as a consequence of tight energy or capacity balances. Fair and stable (over time) prices are another key factor.

MDAG's suggestions to improve the availability and usability of information are sound. However, the effectiveness of these steps will be limited if the electricity sector continues to be the subject of sustained attacks from within. Certain participants have been actively seeking to undermine confidence for years, not least through the use of regulatory processes as lobbying and PR tools.

This is a difficult problem to tackle and is not well suited to being addressed in regulation. However, a combination of a structured information programme for policymakers and the public and publication of monitoring reports giving a true picture of how the market is behaving may be a sensible and low-cost approach. While it is not for regulators to be advocates for the sector or individual participants, it is appropriate that where confidence in the market is being deliberately undermined – in the absence of genuine systemic problems – that the regulator steps in to correct the record.

Genesis notes that the Authority has already increased its monitoring capability and activity, and regular and event-based reports are being published more often. This is good, but more effort could be directed to ensuring this material reaches the right audience.

Options

Increase public confidence

Support	
Partially support	
Does not support	

Measure	MDAG	GNE	Comment
E1 Structured information programme for wider stakeholders			
E2 Regular briefings for Ministers and officials on current and expected conditions			
E3 Increase inter-change with international experts			
E4 Enhance monitoring with more autonomy			
E5 Periodic warrant of fitness review for independent regulatory agencies			

