

By email: MDAG@ea.govt.nz

15 March 2022

Price Discovery Under 100% Renewable Electricity Supply – Issues Discussion Paper

Mercury welcomes the opportunity to comment on the MDAG Issues Discussion Paper, no part of our submission is confidential. Mercury sees this project as important. New Zealand has made a commitment to reduce our greenhouse gas emissions and the electricity sector can play a key role to help meet this commitment. As we transition to 100% renewable electricity supply consumers need to know that the future security and reliability of the electricity system is safeguarded, and that prices reflect underlying costs and the electricity market remains competitive. Investors require detail including predictability on how the regulatory regime will evolve over time. This is important for the technically complex electricity sector which relies on long-lived capital intense investments.

Alignment of EA workstreams

In addition to the comments shared below, Mercury also believes it will be critical there is close alignment between the work MDAG are undertaking with this Price Discovery Project and existing workstreams being undertaken by the Electricity Authority (EA). In particular, the Energy Transitions Roadmap, (which endeavours to set out all the projects designed to support a low emissions future), the Future Reliability and Security (FRS) project and any further work coming out of the recent Wholesale Market Review (WMR). As we highlighted in our submission on the WMR, it is important that transitional issues for the sector are dealt with in an integrated rather than a fragmented way.¹ MDAG could ask the EA to extend its project brief to consider how the issues it has identified in the 100% RE work could dovetail with the analysis and options identified in the WMR.

Support open-minded rigorous approach

We support the open-minded, rigorous and collaborative approach taken by MDAG. We particularly value the opportunities available to engage in dialogue and the commissioning of research and analysis from a wide range of consultants with a deep understanding of and expertise in electricity markets generally, and New Zealand's market evolution in particular. This price discovery project will play an important part in preparing the New Zealand Electricity Market for the challenges we face moving to a greater degree of renewability in the electricity system. The Issues Discussion Paper represents a good start and we agree that the key issues have been identified. Phase one which focuses on issue identification is the most straightforward phase, but it is also crucial for ensuring we, as an industry, are focusing on the 'right' problems. We expect phase two, with its focus on option identification and analysis, to be more challenging.

Issues Discussion Paper identifies the physical dynamics of an 100% renewable electricity market

Mercury agrees with the high-level conclusions drawn from MDAG's simulations in particular, the assessment that as we transition to 100% renewable electricity we can expect significantly more spot market volatility, especially

¹ Mercury response to the Electricity Authority's Wholesale Market Competition Review, 17 January 2022.



shorter-term weather-driven volatility. We do however believe the MDAG suggestion that “the sizeable hydro generation base is likely to moderate the growth in volatility to some extent, making extreme oscillations between zero and shortage spot prices relatively unlikely” understates the challenge but also appreciate that New Zealand’s hydro generation base will likely moderate price volatility growth making extreme oscillations between zero and scarcity spot prices less frequent.

Delivering the desired market outcomes will be very challenging and will require a high degree of co-ordination, information sharing, behaviour change and innovation. Every market participant will need to fully engage and be prepared to work collaboratively towards a common objective of ensuring system security and reliability while maintaining competition and acting in the best interests of consumers. It will be crucial that each participant knows what is going on in both the short and long-term and what is expected of them in times when supply and demand are finely balanced. Mercury is committed to such a collaborative approach within the framework of a regulated market.

The role of ancillary service in the transition should not be understated even though New Zealand is fortunate to have significant renewable synchronous generation resources at its disposal (i.e. hydro and geothermal). Appropriately designed ancillary service products (e.g. potentially covering “newer” concepts like inertia, very fast reserves and voltage support) will provide important incentives for investment and reinvestment in synchronous generation as well as support the “value stacking” necessary for the uptake of new technologies such as battery storage, be it grid connected or built within distribution networks.

Issues Discussion Paper identifies the key issues arising from an 100% renewable electricity market

Mercury agrees that MDAG has identified the key issues that need to be considered in Phase Two. We found the expert reports attached to the Issues Discussion Paper particularly helpful. Without rushing to solutions, we believe there will need to be a combination of demand side management, bio-peakers and potentially some overbuild of renewable generation to address this challenge. What happens with Tiwai and the outcome of the NZ Battery Project are key uncertainties although we remain confident the market can and will adapt as it has to date.

We also believe that ensuring all market participants understand the changing dynamics of the market and the options available to them to manage risk will be very important. One of the biggest challenges is likely to be evolving the nature and structure of risk management products and coverage of peak demand.

Yours sincerely



Tim Thompson
Head of Wholesale Markets



Appendix One Consultation Questions

Consultation Question	Mercury Comment
<p>1. Do you agree with the broad conclusions that emerge from the simulations in relation to spot price levels and volatility, in particular:</p> <p>a. significantly more spot price volatility is likely with a 100%RE system, especially shorter-term weather-driven volatility?</p> <p>b. New Zealand's sizeable hydro generation base is likely to moderate the growth in volatility to some extent, making extreme oscillations between zero and shortage spot prices relatively unlikely? (pg 18,61)</p>	<p>Yes. We note that extreme oscillations will get worse without better communication and modelling assumptions play a crucial role in any analysis. With respect to a. we agree with MDAG's assessment. With respect to b. as a hydro operator, Mercury considers it is a strong statement to make that extreme oscillations between zero and shortage spot prices are "relatively unlikely". This is a point that needs clarification as we work through solutions.</p>
<p>2. If you disagree, what is your view and the reasoning for it? (pg 18,61)</p>	<p>NA.</p>
<p>3. Do you agree that in a 100%RE system there will be many diverse and disaggregated resources to coordinate, and that a wholesale market will be the preferred mechanism to coordinate plans and actions among all the resource owners? If you disagree, what is your view and the reasoning for it? (pg 18,65)</p>	<p>Yes.</p>
<p>4. Do you agree that these are the key issues in relation to real-time coordination? If you disagree, what is your view and the reasoning for it? (pg 20,69)</p>	<p>Yes. It will be crucial that MDAG's work is closely aligned with the Future Security and Reliability (FSR), the Energy Transitions Roadmap and Wholesale Market Review (WMR) work being undertaken by the EA. As noted in our cover letter an integrated approach to market design is important. There may be benefit in MDAG's brief being expanded to include the issues identified as part of the WMR.</p>
<p>5. Do you agree that these are the key issues in relation to ancillary services with 100%RE? If you disagree, what is your view and the reasoning for it? (pg21,74)</p>	<p>Yes. As with real time co-ordination issues, it will be important to ensure that MDAG's work in this area is aligned with the EA led FSR project and the other relevant projects as noted in our cover letter.</p> <p>Thought should be going into future ancillary service products even though New Zealand is fortunate to have significant renewable synchronous generation resources at its disposal (i.e., hydro and geothermal.) Appropriately designed ancillary service products (e.g.,</p>



	<p>potentially covering “newer” concepts like inertia, very fast reserves and voltage) will provide important incentives for investment and reinvestment in synchronous generation as well as support the “value stacking” necessary for the uptake of new technologies such as battery storage, be it at grid scale or within distribution networks.</p>
<p>6. Do you agree that these are the key issues in relation to price signalling with 100%RE as summarised in paragraph 3.42 above? If you disagree, what is your view and the reasoning for it? (pg 24,88)</p>	<p>Mercury sees the following as the key issues. Para 3.38 (a) prices that reflect real demand and supply conditions, (b) confidence amongst sellers and buyers that the high prices make sense, (including robust market rules) and, (c) availability of ‘tools’ for wholesale buyers to manage their exposure to spot price risk as particularly important. We agree with MDAG’s assessment that more pressure will fall on these particular factors in the future.</p> <p>As we transition to 100% renewable electricity supply consumers need to know that the future security and reliability of the electricity system is safeguarded, and that prices reflect underlying costs and the electricity market remains competitive. Investors require detail including predictability on how the regulatory regime will evolve over time. This is important for the technically complex electricity sector which relies on long-lived capital intense investments.</p>
<p>7. Do you agree that the preconditions in paragraph 3.38 would need to be in place for an energy-only market design to be effective? If you disagree what is your view and the reasoning for it? (pg 24,88)</p>	<p>Yes.</p>
<p>8. Do you agree that we should take forward to the next stage of the process (options identification and analysis) the measures referred to in paragraph 3.43 above? If you disagree, what is your view and the reasoning for it? (pg 24,88)</p>	<p>Yes.</p>
<p>9. Do you agree that these are the key issues in relation to demand-side flexibility with 100%RE? If you disagree, what is your view and the reasoning for it? (pg 25,93)</p>	<p>Yes – 3.46 covers the issues off bearing in mind that there will be significant technical development required along with commitment from market participants to adapt and innovate as conditions change. We anticipate a key change is for the demand side to be prepared to be flexible.</p> <p>We note that we currently have a dispatchable demand market but relatively few participants have used it. It will be important that market participants are willing to evolve their business models as the market changes.</p>
<p>10. Do you agree that these are the key issues in relation to</p>	<p>Yes.</p>



<p>contracts markets with 100%RE? If you disagree, what is your view and the reasoning for it? (pg 26,28)</p>	
<p>11. Do you agree that these are the key issues in relation to transition to 100%RE? If you disagree, what is your view and the reasoning for it? (pg28,102)</p>	<p>Yes.</p>
<p>12. Are there any other 'lumpy' issues that warrant specific consideration in the transition to 100%RE? (pg 28,102)</p>	<p>See our cover letter. What happens with Tiwai, whether it remains or exits New Zealand, along with the outcome of the NZ Battery Project including whether the Onslow pumped hydro proposal goes ahead with associated transmission to enable electricity to be moved north. Both of these are “lumpy” issues that warrant specific consideration in the transition to 100% RE. Both could have a significant impact on market design.</p>
<p>13. Do you agree that we should analyse how competition in the wholesale market is likely to be affected by a shift to 100%RE, in particular, in competition for seasonal flexibility services? If you disagree, what is your view and the reasoning for it? (pg 28,102)</p>	<p>Yes we see this as a very important workstream.</p>
<p>14. What other key areas of opportunity or challenge (if any) will arise in the wholesale electricity market with 100%RE that are likely to have a significant impact in relation to achieving the statutory objective of the Authority, which is to “promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers”³³? (pg 29, 104)</p>	<p>Mercury considers MDAG has done a thorough job of identifying all the key areas of opportunity or challenge that will arise in the wholesale electricity market with 100% RE. We look forward to engaging with the next stage of this process.</p>

