MDAG project proposal: Price discovery in the New Zealand wholesale electricity market under 100% renewable electricity supply

Background
For its next project, MDAG is interested in contributing to core questions relating to the wholesale electricity market in a decarbonised economy. It is proposed that MDAG should undertake a project to describe how price discovery would work in the New Zealand wholesale electricity market (spot and hedge) under a 100% renewable electricity system.

Objective
The project’s objective is to develop sound recommendations on what changes should be made to the wholesale electricity market assuming 100% renewable supply to ensure economically efficient price signals (from short to long term) to meet the statutory objective of promoting competition in, reliable supply by, and the efficient operation of the electricity industry for the long-term benefit of consumers.

For the avoidance of doubt, the New Zealand wholesale electricity market includes the spot and hedge markets (which includes both over-the-counter hedges and exchange-traded futures, as well as FTRs).

Project outline
The project will consider wholesale electricity pricing efficiency in four dimensions:

- Short term: trading period (half hourly to weekly)
- Medium term: inter-seasonal
- Dry year: extended periods of scarcity
- Long term: new investment.

The project will have four stages:

1. Issues discovery:
   - An evidence and literature review; and
   - Input from industry experts and academics with a deep understanding of wholesale electricity market design

2. Option identification: Identifying options to address the problems established in step 1.

3. Options analysis: Analysing options identified in step 2.

4. Recommendations/proposal: Reporting with recommendations to the Authority’s Board.

The projects papers, reports and recommendations will be published in a timely manner, to contribute to industry and Government consideration of electricity decarbonisation issues.

Scope and key assumptions
- The project will assume:
  - A full nodal spot market (the project will not revisit the New Zealand electricity market design from first principles);
  - A 100% renewables electricity system with dry year supply provided by
    - the market, whether in the form of generation overbuild, storage or demand response, or some combination of these
A technology neutral approach (recognising (i) that this project is not about promoting or prescribing particular technology or supply solutions or market outcomes, and (ii) that the menu of technology solutions may develop significantly in the coming decades);

- The following are within scope:
  - Consideration of alternative or supplementary market mechanisms, such as improvements to the hedge market, capacity markets, reserve energy schemes, or mandatory contracting; and
  - Consideration of adequacy of competition for investment in sufficient dry year provision and, if required, market mechanisms to address any competition issues identified.

- The following are out of scope:
  - Consideration of Government ownership and/or operation of any generation overbuild, storage or demand response solution

- While the transition path from the current arrangements to 100% renewables is not directly within the scope of the project, it is likely to come into view as a question during the process of the project and may be taken into account in developing MDAG’s recommendations.

**Timeline**

There are no specific external drivers for the timeline, which is based on allowing sufficient time for achieving a quality outcome. An indicative timeline for each stage of the MDAG project is:

- Problem definition: 2 months (mid-June – early September 2021)
- Options identification and analysis: 2 months (mid September – mid November 2021)
- Interim report (to Authority Board) on problem definition and options identification and analysis: 1 month (mid December 2021)
- Proposal and final report: 2 months (mid January – mid March 2022)
- Submission of report to Authority Board – end April 2022

**Stakeholder consultation**

Stakeholder consultation will be undertaken by targeted engagement such as occasional workshops.

**Resourcing**

The MDAG secretariat would be supported by external expertise contracted on MDAG’s behalf by the Authority. Both the secretariat and external expertise would report to the MDAG Chair.

It is expected that MDAG will meet much more frequently than normal with a short meeting fortnightly.