Price discovery in a renewables based electricity system – options paper

MARKET DEVELOPMENT ADVISORY GROUP

ELECTRICITY
AUTHORITY
TE MANA HIKO

Acknowledgements

MDAG members:

Tony Baldwin (Chairperson)

Paul Baker

Matthew Cleland

Stu Innes

Dr Andrew Kerr

Tony Oosten

Rebecca Osborne

Fiona Wiseman

Al Yates

Observers:

Conrad Edwards - MBIE (NZ Battery)

Dr Ramu Naidoo - Transpower New Zealand

Dr James Tipping - Vector

Joey Au - Chief Strategy Office, Electricity Authority

Michael Chapman - Policy Analyst, Electricity Authority

Secretariat:

Dr Stephen Batstone - Wayne Manor Advisory

John Culy - JC2

David Hunt - Concept Consulting

Rachel Holden - Concept Consulting

James Innes - Concept Consulting

ELECTRICITY
AUTHORITY
TE MANA HIKO

About MDAG

- Established by the Electricity Authority under section 21 of the Electricity Industry Act 2010

- Focuses on matters relating to the evolution of the 'machinery' of the electricity market.

Purpose

The aim of this slide pack is to a brief distillation of our Options Paper

Other papers in the package are here

What this project is about

- How our wholesale electricity arrangements should be changed to enable our electricity system to play its role, fully and efficiently, in decarbonising New Zealand's economy

Other work-streams

The process of improving our system's regulatory settings benefits from an open exchange of information and a robust competition of ideas among interested parties. To this end, we have taken a very open and cooperative approach to sharing our work with other initiatives, and will continue to do so. Other projects in this space include:

- NZ Battery Project
- NZ Energy Strategy
- Gas Transition Plan
- Future Security and Resilience Project

- Wholesale Market Review
- Boston Consulting Group (BCG) Report
- Winter 'peak' issue
- Flex Forum

International experience and expertise

- European Union – Agency for the Cooperation of Energy Regulators

- Alberta – Market Surveillance Administrator

- Australia – Energy Security Board

- Singapore – Electricity Market Authority

- Columbia – Prof. Peter Cramton

- PJM, Texas, other markets - Prof. Peter Cramton

What we are publishing

- Options paper

- 'Library' of Options

- Summary of submissions

- Competition analysis

- Demand-side flexibility (DSF)

- DSF case studies

- 'Nega-watt scheme'

Goal of 100% renewable

- Our analysis and proposals do not depend on reaching 100%RE, or even 96%.

- Future is happening now

- Government's Emission Reduction Plan released in May 2022 – aims for 50% of total final energy consumption coming from renewable sources by 2035.

- 100%RE by 2030 is as an aspirational target.

- Climate Change Commission projects renewables at 96.5% share by 2030.

Do we need a market?

We have a chapter covering:

- What is a "market"?

- We will need it more than ever – but it needs to be strengthened

- Why marginal cost pricing?

- Cooperation in competition

- Measures need to work for New Zealand and avoid complicating features

"Electricity markets are necessarily complex. This follows from the complexity of the engineering and economic problems that must be solved. Still designers should strive to keep the design as simple as possible. Complicating features should only be added if they are necessary and consistent with market principles" - Professor Peter Cramton

Strengthening required

- NZ's wholesale market has sound foundations

- But WEM 2.0 must be much stronger in five areas

- We have a chapter on each setting out:
  - Suite of options
  - Evaluation
  - Action timeline
  - Alignment with other reports
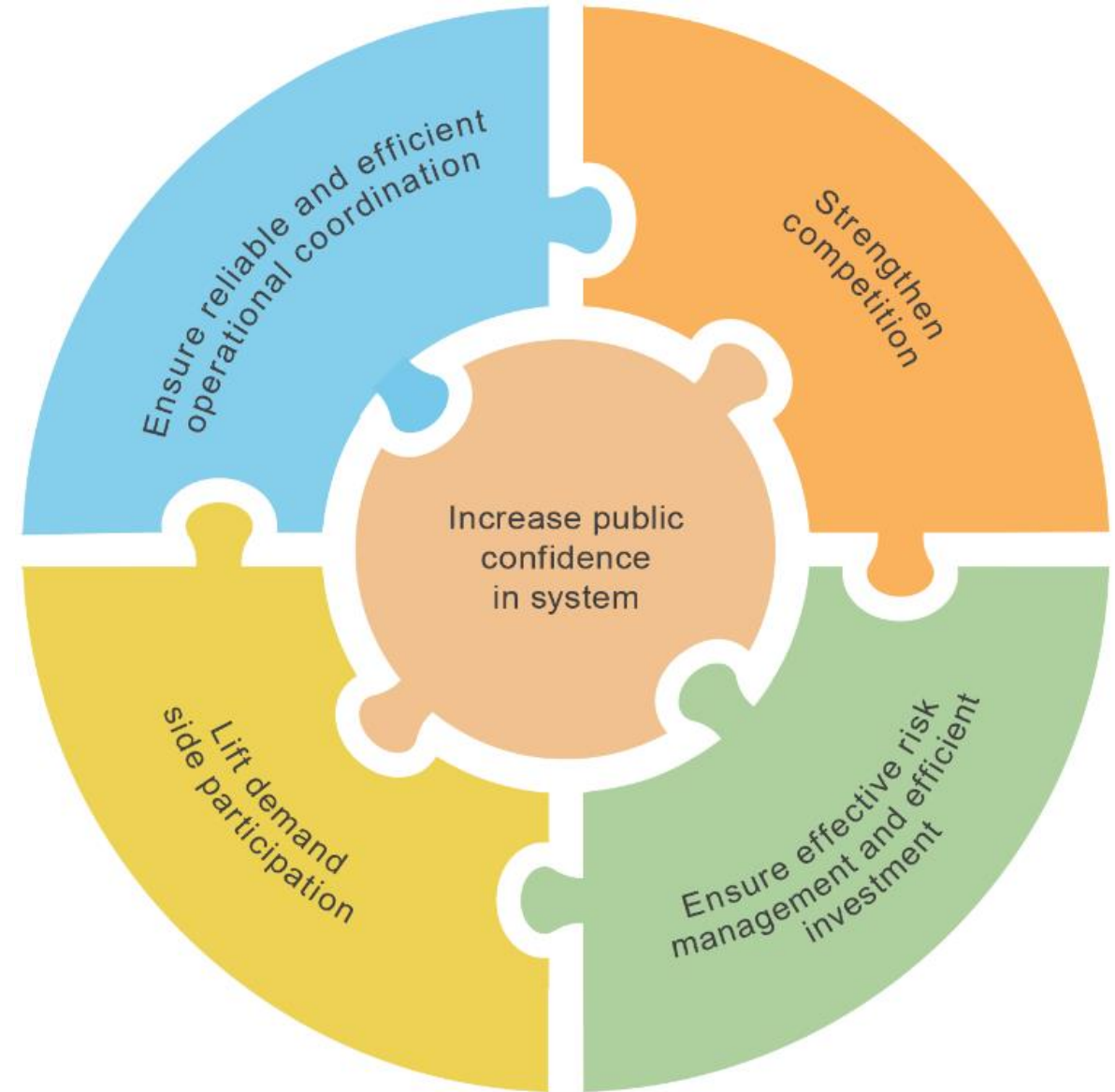
Reliable and efficient operational coordination

TOPIC	CODE	MEASURE	MDAG	WMR	BCG	CODE	CO-DESIGN	HYBRID
Reliable and efficient operational coordination	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	🟠	⚪	🔵			

🟢 SUPPORTS OPTION   🟠 DOES NOT SUPPORT OPTION   🔵 PARTIALLY SUPPORTS OPTION   ⚪ OPTION NOT DISCUSSED

Effective risk management and efficient investment

TOPIC	CODE	MEASURE	MDAG	WMR	BCG	CODE	CO-DESIGN	HYBRID
Effective risk management and efficient investment	B1	Greater transparency of hedge info (esp non-base load) covering offers, bids + agreed prices	🟢	🟢	🔵			✔
	B2	Market-making for longer dated futures (for price discovery)	🟢	🟢	🟢	✔		
	B3	Publish aggregated information on pipeline of new developments, energy and capacity adequacy	🟢	🟢	🟢	✔		
	B4	Enhance stress testing regime	🟢	⚪	⚪	✔		
	B5	Develop standardised 'shape' product(s)	🟢	🔵	⚪		✔	
	B6	Develop flexibility access code (non-price elements)	🟢	🟢	🟢			✔
	B7	Extend trading conduct rules to hedge market	🟢	🟢	⚪	✔		
	B8	Market making in caps or other shaped products	🔵	🔵	🟢			✔
	B9	Capacity mechanisms	🟠	⚪	🟠			
	B10	Strategic reserve	🟠	⚪	🟠			

🟢 SUPPORTS OPTION 🟠 DOES NOT SUPPORT OPTION 🔵 PARTIALLY SUPPORTS OPTION ⚪ OPTION NOT DISCUSSED

Lift demand side flexibility

TOPIC	CODE	MEASURE	MDAG	WMR	BCG	CODE	CO-DESIGN	HYBRID
Lift demand side participation	C1	Monitor provision + uptake of DSF-rewarding tariffs (incl automation)	Supports	Partially	Not discussed		✓	
	C2	Sunset profiling if smart meters in place	Supports	Not discussed	Partially	✓		
	C3	Require retailers to offer DSF tariffs	Partially	Not discussed	Supports			
	C4	Develop standardised shape-related hedge products to reward DSF	Supports	Not discussed	Not discussed		✓	
	C5	Provide significant funding for pilots/trials to kick-start dynamic tariff use	Supports	Not discussed	Not discussed		✓	
	C6	Use Customer Compensation Scheme to reward DSF	Does not support	Not discussed	Partially			
	C7	Negawatt scheme for wholesale market	Does not support	Not discussed	Not discussed			
	C8	FSR – improve DSF visibility and remove Code barriers	Supports	Not discussed	Not discussed	✓		
	C9	FSR – accelerate new ancillary services for DSF uptake	Does not support	Not discussed	Not discussed			
	C10	Procurement process for high-scarcity DSF (RERT)	Partially	Not discussed	Supports			
	C11	Ensure distribution pricing reflects network needs	Supports	Not discussed	Supports		✓	
	C12	Investigate extending LMP into distribution networks	Partially	Not discussed	Not discussed			
	C13	Provide info to help large users with upcoming DSF investment decisions	Supports	Not discussed	Not discussed		✓	
	C14	Provide info to help domestic customers with DSF decisions	Supports	Not discussed	Not discussed		✓	

Legend: ● SUPPORTS OPTION ● DOES NOT SUPPORT OPTION ● PARTIALLY SUPPORTS OPTION ○ OPTION NOT DISCUSSED

Strengthen competition

TOPIC	CODE	MEASURE	MDAG	WMR	BCG	CODE	CO-DESIGN	HYBRID
Strengthen competition	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	🟢	🟢	🔵			✓
	D3 (=B6)	Develop flexibility access code (non-price elements)	🟢	🟢	🟢			✓
	D4 (=B7)	Extend trading conduct rules for hedge market	🟢	🟢	⚪	✓		
	D5 (=B8)	Market making in caps or other shaped products	🔵	🔵	🟢			✓
	D6	Physical disaggregation of flexible generation base	🟠	🟠	⚪			
	D7	Virtual disaggregation of flexible generation base	🔵	🔵	⚪			
	D8	Price caps applied in the electricity spot market	🟠	🟠	⚪			

🟢 SUPPORTS OPTION 🟠 DOES NOT SUPPORT OPTION 🔵 PARTIALLY SUPPORTS OPTION ⚪ OPTION NOT DISCUSSED

Increase public confidence

TOPIC	CODE	MEASURE	MDAG	WMR	BCG	CODE	CO-DESIGN	HYBRID
Strengthen competition	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	🟢	🟢	🔵			✓
	D3 (=B6)	Develop flexibility access code (non-price elements)	🟢	🟢	🟢			✓
	D4 (=B7)	Extend trading conduct rules for hedge market	🟢	🟢	⚪	✓		
	D5 (=B8)	Market making in caps or other shaped products	🔵	🔵	🟢			✓
	D6	Physical disaggregation of flexible generation base	🟠	🟠	⚪			
	D7	Virtual disaggregation of flexible generation base	🔵	🔵	⚪			
	D8	Price caps applied in the electricity spot market	🟠	🟠	⚪			

🟢 SUPPORTS OPTION   🟠 DOES NOT SUPPORT OPTION   🔵 PARTIALLY SUPPORTS OPTION   ⚪ OPTION NOT DISCUSSED

Getting the work done

- Transition already happening – need to act

- Multiple tools: regulation, co-design, and hybrid

- Resourcing needs to match work plan

Next steps

- Extensive bilateral consultations

- Workshops – Wellington and Auckland (16-20 Jan)

- Follow up bilaterals as required (16-20 Jan)

- Submissions due 6 March

- Final recommendations mid 2023

- Need to action with urgency

We look forward to working
with you and your team

ELECTRICITY
AUTHORITY
TE MANA HIKO