## TRANSMISSION ACCESS REFORM TECHNICAL WORKING GROUP

16 March 2023



## AGENDA

Time	Торіс
2:00	Welcome, objectives and agenda
2:05	Project update and TWG engagement
2:15	Modelling results
2:40	Cost benefit analysis
3:05	Priority access – introduction to key questions for future consideration
3:30	Q&A (additional time allowance if needed)
3:55	Next steps
4:00	Thanks and close

#	Organisation	Name
1	ACEN Renewables	Con van Kemenade
2	AEC (Australian Energy Council)	Ben Skinner
3	AEC (Australian Energy Council)	Peter Brook
4	AEMC (on behalf of ESB)	Victoria Mollard
5	AEMC (on behalf of ESB)	Tom Meares
6	AEMO (on behalf of ESB)	Paul Austin
7	AEMO (on behalf of ESB)	Tom Livingstone
8	AEMO	Eli Pack
9	AER (on behalf of ESB)	Storm Scarlett
10	Ark Energy	Sharon Tissai-Krishna
11	CEC (Clean Energy Council)	Christiaan Zuur
12	CEC (Clean Energy Council)	Morgan Rossiter
13	CEPA (on behalf of ESB)	Tom Walker
14	Creative Energy Consulting (on behalf of ESB)	Dave Smith
15	ECA (Energy Consumers Australia)	Brian Spak
16	Edify Energy	Manas Choudhury

#	Organisation	Name
17	ElectraNet	Bill Jackson
18	ENA (Energy Networks Association)	Verity Watson
19	ENA (Energy Networks Association)	Dominic Adams
20	ESB	Jess Hunt
21	ESB	Amanda Sinden
22	ESB	David Swift
23	Genuity	Robert Pane
24	Hydro Tasmania	Jonathan Myrtle
25	Online Power (on behalf of ESB)	Neil Gibbs
26	Online Power (on behalf of ESB)	Tom Gibson
27	Origin	Sarah-Jane Derby
28	Powerlink	Byron Carter
29	RES Group	Martin Hemphill
30	RWE	Matthew Dickie
31	Tilt Renewables on behalf of CEIG	Jonathan Upson

# PROJECT UPDATE





#### Achieve policy objectives at lower cost

- Avoid wasting solar and wind investments
- Support and strengthen jurisdictional REZ schemes
- Achieve emissions savings by making greater use of existing renewables resources



#### Reduce the cost of capital

• Investment is more expensive than it should be because the additional risk and uncertainty adds to the cost of capital faced by generation investors.



#### Boost storage and hydrogen

• New opportunities for batteries and flexible demand (e.g. hydrogen) by rewarding behaviour that benefits customers.



#### Get more value from our transmission investments

- Maximise the value of investment in interconnectors
- Avoid overspend in building the transmission network that customers (or taxpayers) pay for



#### Less expensive dispatch outcomes

•Ensure that we aren't using more expensive forms of generation (e.g. fossil fuels or storage) when we could be using wind or solar instead.



Ministers agreed a way forward on the complex issue of transmission access reform. Ministers agreed to immediately implement 'enhanced information' reforms to provide east-coast market participants with better information on the optimal location for new generation and storage. Ministers requested the Energy Security Board (ESB) to work with Senior Officials and stakeholders to develop the voluntary Congestion Relief Market (CRM) and the priority access model and to bring forward a detailed design for consideration by ECMC in mid-2023. Ministers decided not to further develop or consider the congestion management model and congestion fee options, ruling out any models using locational marginal pricing.





Deliverable	Indicative timing
Publish project update, cost benefit analysis and modelling results	3 March 2023
Joint Senior Officials – ESB public webinar on project update, CBA and modelling	w/c 20 March 2023 (date tbc)
Publish draft detailed design for consultation	Late April 2023
Public forum/webinar and workshops	May 2023
Submissions due	Late May 2023
Submit detailed design and final policy recommendations to Energy Ministers	Mid 2023

If Ministers accept the ESB's final policy recommendations, the ESB would consult on draft amendments to the National Electricity Rules.

#### TWG engagement with detailed design

- Inputs to the ESB's final policy recommendations to Ministers
- Inputs to the ESB's considerations for drafting Rules (assuming approval by Ministers)

#### **Provisional dates**

Monthly meetings with agenda items and pre-reading circulated to TWG members.

- 30 March 2023
- 27 April 2023
- 25 May 2023
- 29 June 2023
- 27 July 2023

## **MODELLING RESULTS**

## Congestion arises mainly near regional boundaries, affecting interconnectors and causing counter-price flows. Congestion is a national, not a localised, problem.

Today's market design will limit the efficient use of national transmission network investments.

In the absence of reform, it will be increasingly necessary to clamp the interconnectors to avoid customers having to fund revenue shortfalls.

CRM trading will reduce the extent of counterprice flows and lead to a significant reduction in the dispatch costs in these cases.

#### Lines with most significant forecast congestion 2023



Lines with most significant forecast congestion 2033



In 2023, [2] and [3] are marked in grey because they relate to 'pure' inter-regional congestion involving interconnector participation only. They would not lead to CRM trading.

### CRM trading leads to a significant reduction in dispatch costs.



#### Dispatch adjustments and costs by technology, 2023 Dispatch adjustments and costs by technology, 2033

#### Imbalance due to modelling complexities Cost saving as a result of CRM giving rise to unserved energy adjustments 800 16,000 700 14.000 600 12.000 \$615 million **GWh** adjustments 500 10,000 cost saving \$ millions 400 8,000 300 6,000 4.000 200 100 2,000 0 Reduced output Increased output Avoided costs Costs of increased output Solar ■ Wind ■ Natural Gas ■ Liquid Fuel ■ Hydro ■ Coal The dispatch saving is higher in 2033 compared to 2023 since most of the must-run coal capacity has retired and gas has displaced coal at the margin. There are also more opportunities for efficiency gains from the increased interconnector flows enabled by the QNI expansion.

### The efficiency gain from lower dispatch costs is shared between generators and customers.

The efficiency gain is shared between CRM participants (generators and scheduled load) and customers through an "efficiency dividend".

The "customer" component relates to a change in settlement residue which is passed through to customers.

All CRM participants will receive an efficiency dividend; non-participants will not.

The CRM still provides efficiency gains and dividends even if there is substantial non-participation, although these gains are reduced.

Breakdown of efficiency gain

	2023		2033	
Annual amount	\$m	%	\$m	%
Generator dividend	13	32.5%	538	87.5%
Customer dividend	27	67.5%	77	12.5%
Efficiency gain	40	100%	615	100%

## COST BENEFIT ANALYSIS

## **KEY FINDINGS OF COST BENEFIT ANALYSIS**

Preferred model is priority access and congestion relief market
Quantified net benefits estimated at \$2.1-5.9 billion in NPV terms
Possible reduction in the cost of capital for storage and generation investors
Emissions reductions of 23 million tonnes
Avoids need to redistribute value between existing market participants

- Benefits come from dispatch efficiency gains under the CRM and CMM, and investment efficiency gains under the congestion fees or priority access models.
- Cost estimates are lower than preliminary indicative estimates, which drew from COGATI.
- Various hybrid models have similar quantitative net benefits so qualitative factors are key.



## **RANGE OF NET FINANCIAL BENEFITS OF MODEL OPTIONS (\$ BILLIONS 2022)**





## SUMMARY OF TOTAL IMPACTS, MID POINT NPV 2023-2050 (\$ BILLIONS 2022)

	CRM alone	CMM alone	Congestion fee alone	CRM + congestion fee	CMM + congestion fee	CRM + priority access*	CMM + priority access*
Operational benefits	\$0.49	\$0.42	\$0.00	\$0.49	\$0.42	\$0.49	\$0.42
Capital and fuel cost savings from more efficient locational decisions	\$0.00	\$0 <b>.</b> 00	\$3.80	\$3.80	\$3.80	\$3.80	\$3.80
AEMO costs	\$0.06	\$0.01	\$0.01	\$0.07	\$0.02	\$0.08	\$0.02
Participant costs	\$0.18	\$0.19	\$0.00	\$0.18	\$0.19	\$0.18	\$0.19
Net benefits	\$0.24	\$0.22	\$3.79	\$4.03	\$4.01	\$4.03	\$4.00
Net benefits exclude the following changes in market disruption and emissions							
Market disruption; redistribution of wealth between existing generators	-	<b>^</b>	-	-	<b>^</b>	-	1
Change in CO <sub>2</sub> emissions (tonnes)	-23m	-21m	-	-23m	-21m	-23m	-21m

\* On a stand-alone basis the priority access model is unlikely to have the highest net benefit (and may have net costs) because it may not improve operational efficiency (and may decrease operational efficiency) for reasons outlined in section 3.4.2. For these reasons the costs and benefits of implementing it on a standalone basis have not been determined.

Note: Rounding difference in table for CRM, CRM + congestion fee and CMM + priority access.



## CONSIDERATION OF A TIERED APPROACH

The following slides are shared as an introduction to key questions on the development of a detailed design for priority access. These questions will form agenda items for discussion at future TWG sessions.

The directions paper proposed three options for allocating priority access:

- unique queue numbers
- batches
- tiers.

The unique queue proposal is currently under investigation. The number of queue numbers (or batches or tiers) may be limited by the technical feasibility to implement into AEMO's systems.

In the meantime, we want to initiate a discussion of a tiered approach with TWG members.

Discussion topics are introduced at this first mobilisation TWG, but will be explored further at future sessions.

Under a tiered approach:

- There are a small number of priority levels that correspond to different levels of "firmness" (e.g. Tier 1, 2, 3).
- Planners decide where and how much capacity is available within each tier.



#### Figure 1. Illustration of a tiered access concept



- Rules could set out principles for allocating generators to tiers, supplemented by more flexible guidelines.
- Access levels could be made available on a firstcome first-served basis.
  - Question for consideration whether generators have the opportunity to change tiers, and if so, how?
- Scope to go to auction in the case of multiple simultaneous connections?

## NATURE OF THE CHALLENGE



#### Figure 2. Forecast NEM capacity to 2050, Step Change scenario

- Key challenge is to strike a balance between the interests of existing and future investors.
- We want to provide investors with the certainty required to support investment, however this has an impact on future investment opportunities.
- Given forecast 9-fold increase in the renewable generation fleet, incumbents and new entrants are the same people.
- Which design choices best support efficient investment throughout the energy transition?

#### Figure 3. Three preliminary options for allocating access rights (for consideration)



Note: Approach will need to accommodate government preferences with respect to REZ schemes, technical limitations.



- There are a range of policy levers that we can use to calibrate the balance between incumbents and new entrants.
- These issues will be a key focus of future discussions.



- •Incumbents are more/less protected from being curtailed as a result of new entry.
- •More/fewer opportunities for new entrants as they are more likely to be curtailed.

Grandfathering arrangements





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