ENERGY SECURITY BOARD

POST 2025 MARKET DESIGN PROGRAM

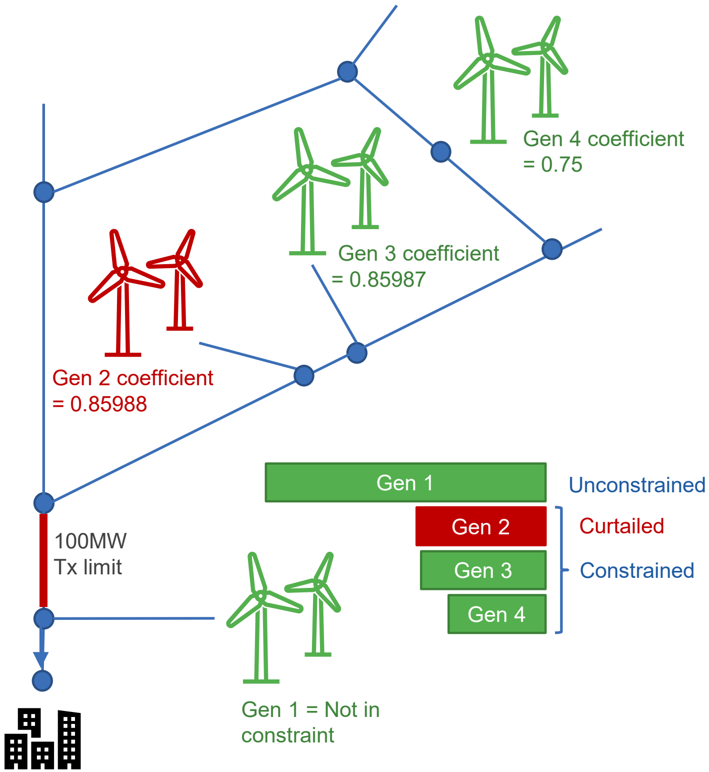
TRANSMISSION ACCESS REFORM: TECHNICAL WORKING GROUP - SESSION 6

14 APRIL 2022

AGENDA

Time	Topic
2:00	Welcome, objectives and agenda
2:05	Generator coefficients and winner takes all dispatch in the NEM
2:25	TWG's key reflections on the evaluation of models as prepared by the ESB • On an "exceptions basis"
2:45	ESB project team's views on preferred model options • TWG feedback
3:50	Next Steps • Opportunity for TWG to present to Board
4:00	Thanks and Close

"WINNER-TAKES-ALL" DISPATCH AMPLIFIES INVESTOR RISK



- Consider 4 generators, each with availability of 50 MW, where 3 of the 4 generators are subject to a transmission limit of 100MW.
- If all curtailed generators bid -$1000, NEMDE will maximise the output of low cost generation by dispatching the generators that contribute least to the constraint
  - Even if the coefficients are virtually identical
- Incumbents cannot change their location to optimise their participation factor, but prospective projects can.
- Can be profitable for generators to cannibalise their neighbour's output rather than adding usable new megawatts to the system.
- Unique and complex feature of NEM design has taken some investors by surprise.
- In contrast, consider two retail competitors selling virtually identical products in close proximity
  - Shops - customers disperse between them both
  - Generators (with congestion) - dispatch algorithm selects the one with the lowest participation factor.

MODELS PROPOSED FOR PROGRESSION TO DETAILED DESIGN PHASE

Operational timeframes	Investment timeframes
CMM with universal rebates Single, combined-bid energy and congestion market - Sub-option: Allocate access to rebates using methodology derived from queue order	**Congestion zones with connection fees** Charge connection fees that reflect forecast congestion at given location.
Congestion relief market Separate energy and congestion ancillary co-optimised-bid markets - Sub-option: Reflect queue order in initial process to establish who buys and who sells congestion relief.	**Transmission queue** Establish a transmission queue that confers priority rights.

Operational and investment models can be mix and matched.
[*Caveat: transmission queue model requires blue-shaded sub-options in operational timeframes*.]

OPERATIONAL TIMEFRAMES

CMM WITH UNIVERSAL REBATES

Why we recommended this model

- Efficient outcomes in operational timeframes
- Incentives for storage and scheduled load to relieve congestion
- Addresses stakeholder concerns re risk to generators who do not receive rebates
- Cheaper to implement than alternatives

Key matters to be resolved

- What metric should we use to allocate rebates between generators?
  - Should we remove the “winner takes all” characteristics implicit in the current specification?
  - *Need for modelling of participant impacts*
- Should we adapt the model to preclude peaking generators from receiving rebates when the RRP is low?
- How can this model better support generator contractual arrangements for congestion relief?

CONGESTION RELIEF MARKET

Why we recommended this model	Key matters to be resolved
•Efficient outcomes in operational timeframes •Transparently rewards parties who alleviate congestion •Gives market participants autonomy over whether they choose to participate •Provides a clear path for developing supporting contractual arrangements.	• Does the existing model require material alteration to ensure that the dispatch algorithm is able to solve? • What implementation costs are involved – both for AEMO and market participants? • Should we adapt the model to remove the "winner takes all" characteristics implicit in the current specification? • What are the consequences of the congestion relief market in terms of bidding incentives? • Should we adapt the model to preclude peaking generators from selling congestion relief when the RRP is low?

INVESTMENT TIMEFRAMES

CONGESTION ZONES WITH CONNECTION FEES

Why we recommended this model

- Clear, upfront signals to investors re efficient location decisions
- Able to provide more nuanced signals than CMM-REZ, which is more binary
- Able to be combined with a range of operational timeframe models
- Integrates with jurisdictional schemes as zones can be identified having regard to State REZ schemes
- Cost associated with locational signal is known at the time of investment
- Addresses stakeholder concerns re risk to generators who do not receive rebates
- Supported by key stakeholders (eg ECA)

Key matters to be resolved

- What is the nature of the incentive used to influence generator location decisions?
- What methodology is used to calculate the efficient hosting capacity of the network for each zone?
- What happens when multiple generators seek access to the same part of the network?
- Under the connection fee model, how are connection fees calculated?
- How does the model encourage efficient retirement decisions for end-of-life generators?
- What happens to revenue paid by generators? For instance, is it used to:
  - offset transmission use of service fees paid by customers?
  - accelerate transmission investment in accordance with the ISP?

TRANSMISSION QUEUE

Why we recommended this model	Key matters to be resolved
•Gives investors a tool to manage their access risk. •New entrants wishing to connect in congested locations may do so, however they face the associated congestion risk. •Use of auctions to allocate queue positions in cases where the network is oversubscribed helps to overcome challenges associated with connection queues in other jurisdictions. •Able to provide more nuanced signals than CMM-REZ. •Integrates with jurisdictional schemes as queue positions can be made available having regard to State REZ schemes	•How does a generator's queue position manifest in operational timeframes? •What methodology is used to calculate the efficient hosting capacity of the network (for the purposes of establishing whether initial queue positions are available)? •Who is responsible for administering the framework? •What prerequisites are required to secure queue position? •Can queue positions can be traded? •Should energy storage be subject to the same queuing terms as generators? •How does the model encourage efficient retirement decisions for end-of-life generators? •What happens to auction revenue?

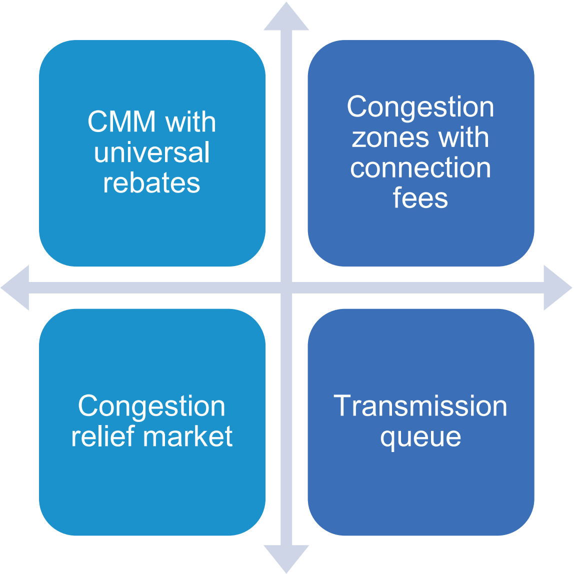
UPDATED LIST OF MODELS UNDER CONSIDERATION

Operational timeframes	Investment timeframes
Vanilla congestion management model	REZ adaptation (i.e. selective availability of rebates as per CMM-REZ)
Congestion relief market	Transmission queue
New tie-breaker rules	Locational connection fees (physical access)
Dual price floors	Connection fees based on long term plan
Shaped MLFs	PIAC REZ model

Based on discussions with stakeholders to date, we do not propose to progress the detailed design of the grey shaded models.

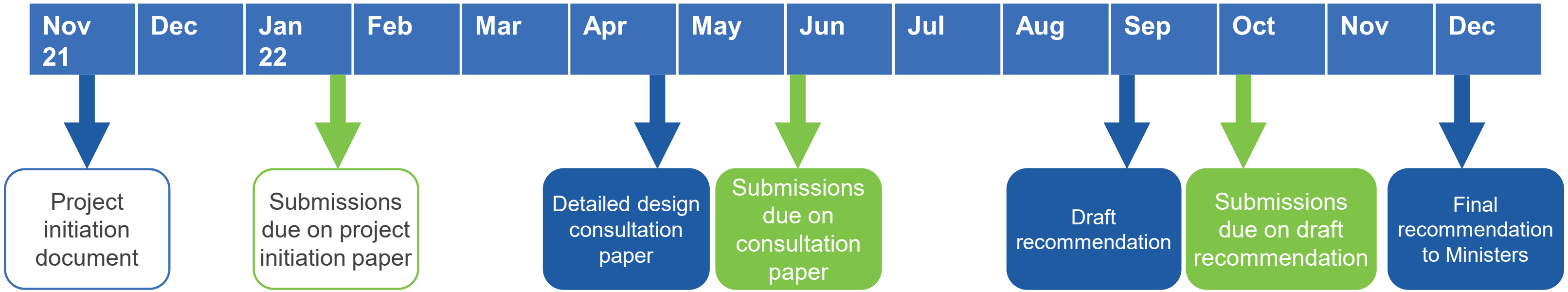
INTEGRATION WITH STATE REZ SCHEMES

- Operational timeframe models needs to be applied consistently across the NEM.
    - Affect dispatch and/or settlements
- Do not clash with REZ schemes as apply in a different timeframe.
- Reforms encourage storage, load to locate in REZs.



- Investment timeframe models will reinforce REZ schemes by design.
- Both models rely on transmission planning framework to identify where hosting capacity is available
    - Info is used to determine zones/ availability of initial queue positions
    - Planning framework takes into account government schemes.
- Who determines zones etc is yet to be determined.

NEXT STEPS



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Project initiation document
Submissions due on project initiation paper
Detailed design consultation paper
Submissions due on consultation paper
Draft recommendation
Submissions due on draft recommendation
Final recommendation to Ministers