Terms of reference

Transmission Access Reform
EPR0098

Background

Under section 45 of the National Electricity Law (NEL), the Australian Energy Market Commission (AEMC or Commission) has initiated a review to develop the Energy Security Board's (ESB) work on transmission access reform in collaboration with the Australian Energy Regulator (AER) and Australian Energy Market Operator (AEMO). This review will progress work on transmission access reform, to revert to Energy Ministers in 2024 with final recommendations.

The purpose of this reform is to address four transmission access reform objectives, which have been agreed by Energy Ministers and which were developed by the ESB in consultation with stakeholders:

1. **Investment efficiency:** Better long-term signals for market participants to locate in areas where they can provide the most benefit to consumers, taking into account the impact on overall congestion
2. **Manage access risk:** Establish a level playing field that balances investor risk with the continued promotion of new entry that contributes to effective competition in the long-term interests of consumers
3. **Operational efficiency:** Remove incentives for non cost reflective bidding to promote better use of the network in operational timeframes, resulting in more efficient dispatch outcomes and lower costs for consumers
4. **Incentivise congestion relief:** Create incentives for demand side and two-way technologies to locate where they are needed most and operate in ways that benefit the broader system

The ESB has developed a hybrid model for transmission access reform that seeks to achieve the above objectives. This hybrid model comprises the voluntary congestion relief market and a queue approach for priority access.

At the November 2023 Energy and Climate Change Ministerial Council meeting, Energy Ministers agreed to progress the agreed transmission access reform and congestion management through further design work, having considered advice from the Energy Advisory Panel (EAP) and stakeholder engagement.

This terms of reference sets out how work will be undertaken to further progress the design of this model with the intent of reporting back on final recommendations in 2024. Following consideration of these final recommendations, Energy Ministers will make a decision as to whether to implement the hybrid model. If a decision is made to proceed, a detailed implementation phase including development of draft rules and consultation on these would commence.

The AEMC's review on Transmission access reform

The AEMC will conduct a review to progress the design of the hybrid model for transmission access reform to make final recommendations to the Energy Ministers in accordance with these Terms of Reference.

These Terms of Reference, which have been developed in accordance with section 45 of the NEL, are intended to guide how the AEMC undertakes this review, including how it collaborates with AEMO and the AER.

Purpose

The purpose of this review is to provide final recommendations to Energy Ministers on a design of the hybrid model that best meets the reform objectives.

Scope

In undertaking the review, the AEMC will do the following:

- Build on the design of the model that was developed by the ESB, which is summarised in Appendix A. The current design is to be taken as the basis of the work, including the fact that Energy Ministers have agreed to proceed with a queue-based approach for priority access
- Consult with market participants, industry, consumers, the AER, AEMO, and government officials, as appropriate to form these final recommendations, in particular:
    - Undertake formal consultation with industry on the design of the hybrid model
    - Continue to work closely with senior officials and jurisdictions to ensure the reforms support the renewable energy zones that are currently being developed and implemented
    - Collaborate with AER and AEMO as set out further below
- Develop final recommendations that comprise design specifications for a hybrid model that best meets the reform objectives as articulated above.

The matters that the AEMC will specifically consider and progress in developing its final recommendations are:

- The development and final design recommendations for both the CRM and priority access components of the hybrid model
- In relation to priority access, consideration of three approaches for how the queue could be allocated:
    - Queue allocated by time
    - Queue allocated by jurisdictions
    - Hybrid of the two approaches e.g. partly allocated by jurisdictions, partly by time
- Whether a further modification to consider a co-optimised dispatch model for implementing the hybrid model would better meet the objectives, and if so, what the implications would be for key design components
- The development of a simple, stylised network model for stakeholders to interact with and improve their understanding of the hybrid model
- Key stakeholder concerns and issues, including:
    - The timing of priority access allocation to generators and how this would impact investment decisions and the connection process
    - The ability to meaningfully model priority access to support an investment case
    - Setting out the prototype testing and work to date
    - Prioritisation and the impact of certain constraints
    - PPA impacts from the implementation of the hybrid model
    - Financial market impacts of the hybrid model.

In February 2022, the ESB undertook a cost-benefit analysis to confirm that there are net benefits to progressing with the hybrid model. The AEMC has consulted with and sought advice from government officials on key work items for this review. Based on this advice the AEMC will not be undertaking a new cost-benefit analysis of the hybrid model.

Governance, consultation and timeframe

Stakeholders have diverse views on this issue. Stakeholders need to have the analysis, modelling and tools that they need to be fully informed.

The AEMC will collaborate with the AER and AEMO in the development of the reforms. To that end, the AEMC will:

- Update the Energy Advisory Panel at each of its quarterly meetings with an update on key areas of work and key themes it is hearing from stakeholders, in order to receive feedback
- Accompany its final advice with letters from heads of AEMO and AER setting out their views on the final recommendations and final model
- Sets up an executive-level and staff working groups that comprises market bodies to facilitate productive collaboration.

We will also undertake public consultation on this review. This will comprise:

- Publication in Q2 2024 of a design paper setting out test case analysis, and current design of the CRM and options for the priority access models for stakeholder feedback
- Reforming the ESB's technical working group for regular meetings
- Regular updates to senior officials through the National Energy Transformation Partnerships transmission working group.

We will provide a report to Energy Ministers with our final recommendations on the design of the hybrid model by September 2024, including a summary of stakeholder feedback.

Appendix A

The hybrid model is a marrying of two separate models put forward by stakeholders:

- *The **congestion relief market (CRM)** model, put forward by Edify Energy and the CEC*: this provides grandfathering of existing access to RRP, incentives for cost-reflective bidding and so efficient dispatch, and the ability to opt-in to exposure to nodal prices (congestion relief market prices or CRMPs) to manage existing trading or contractual arrangements;
- *The **priority access** model, put forward by CEIG*: this prioritises access to RRP, based on chronology of entry, and so solves the "cannibalization" problem, whereby entrants can profitably locate in congested areas, by taking access from incumbents.

The fundamental objective of access reform, in the operational timescale, is to separate the access quantity (the amount that RRP is payable on) from physical output, with the difference between the two settled at a nodal price that reflects the local value of generation: referred to as the congestion relief market price (CRMP). Unlike other access models, the CRM model does this by calculating two separate generation dispatches:

- The access dispatch (also known as EN dispatch) determines the access quantity; and
- The physical dispatch (also known as CRM dispatch) determines the physical output.

This approach has two advantages over previous access models:

- The access dispatch can, in principle, be made to give similar outcomes to today's dispatch, other things being equal, thus reducing the financial impacts of the reform on existing generators; and
- Generators are able to *opt-in* to exposure to nodal prices (in the absence of which their physical dispatch exactly follows their access dispatch): thus reducing the impact of the reform on existing contracts; particularly variable PPAs where payments are based on output.

The *priority access model*, on the other hand, prioritizes the dispatch of incumbent generators over new entrants. If physical dispatch itself were prioritized (as the CEIG originally proposed), dispatch costs would increase due to higher-cost, high-priority generators being dispatched in preference to lower-cost low-priority generators. However, with the two dispatches used in the CRM model, prioritization can be introduced without adversely affecting the efficiency of dispatch by:

- Prioritizing the access dispatch (now referred to as "*priority* access dispatch"); and
- Leaving physical dispatch unprioritized and efficient.

Prioritization means that generators can be confident that, once established, their access won't then be cannibalized by future entrants. The flip side of this is that these new generators will earn revenue only from the value they add to the market, and not from the value they cannibalise from existing generators. This will improve the locational efficiency of generation investment decisions. So "no cannibalization" achieves both key reform objectives relating to investment.

The ESB has developed a *queueing* system for priority access, where each generator is assigned a "Q" number denoting its priority: the lower the Q number, the higher the priority. The Q numbers are then automatically assigned as follows:

- Legacy generators existing prior to the reform all have Q=0;
- Each new non-REZ generator is assigned the next available Q number when it enters: ie the Q series reflects the chronology of entry;

- Each REZ is assigned the next available Q number when it is established, and all generators entering that REZ receive the REZ's Q number, regardless of when they enter
- So, the Q series represents the interwoven chronology of REZ establishment and non-REZ generator entry.

The Q numbers are then fed into the priority access dispatch algorithm to give the appropriate prioritization of access. One important element of the model is whether the priority offered is 'hard' or 'soft' which affects the degree to which a generator's priority level supersedes its constraint coefficients in determining dispatch outcomes. While the degree of priority is a design choice, it is also subject to technical considerations, including the approach to implementing priorities in the dispatch engine.

The ESB has so far investigated implementation of priority access in NEMDE through the adjusted BPF methodology. The BPF adjustment works by giving higher-priority (lower Q) generators lower (ie more negative) BPFs, allowing them to bid to undercut lower-priority generators. Note that, like today, they will only bid at these low levels when liable to be curtailed due to congestion. However, recent work has under covered a number of limitations to using the adjusted BPF methodology – in particular, we are only likely to be able to implement a small number of meaningful priority levels. The ESB has looked at possible grouping designs to address this limitation. Grouping means collapsing the individual Q numbers into a few groups and then assigning a different BPF to each group rather than each Q number.

In summary, the hybrid model has the potential to:

- Achieve ESB access reform objectives in both operational and investment timescales;
- Address incumbent generator concerns around financial and trading impacts;
- Reduce investor risks arising from cannibalization from future entrants; and
- Support jurisdictional policy ambitions to bring investors to new REZs by promising them attractive and sustained levels of access.

Current design of congestion relief market

Design Element	*Proposed Design*
Who participates in CRM	Schedule and semi-scheduled gens, scheduled load, scheduled storage
Rounding of constraint coefficients	No rounding
Bidding Regulations	TBD
Treatment of storage	Same as generator/load
Settling variances (difference between dispatch and actual)	At RRP
Allocate CRM residues	Allocated to customers via TUoS or NEM settlements.
Treatment of MNSPs	Generator-load pair
Structure of CRM bids	Same as today's bid, but with quantity limit on LMP exposure
FCAS bids	One set of bids
FCAS opt-out of CRM	Not permitted

Ramp rate limits in access dispatch	Tethered to initial output

Current design of priority access

Design element	*Proposed design*
Approach to allocation of priority	TBD. Options include: queue allocated by time (eg 10 year batching approach); queue allocated by jurisdictions; hybrid of the two approaches e.g. partly allocated by jurisdictions, partly by time.
Timing of allocation of priority to REZs	Multi-criteria approach at an early-mid point in the REZ development process ie. when a REZ is committed, and its capacity (MW) specified
Timing of allocation of priority to non-REZ generators	Multi-criteria approach confirming the advanced nature of the project and commitment to construction
Treatment of incumbents	Access arrangements substantially grandfathered
Duration of priority access	Long lived duration based on economic or operating life