Congestion management Technical Working Group
Working paper – Managing access risk

Purpose of paper

The purpose of this paper is to support a discussion among TWG members about how to manage access risk. We would like the group to discuss:

1. Do connection fees which escalate as the network becomes more congested provide sufficient revenue certainty for investors?
2. Should the access model include features that provide more certainty to investors?
3. If we can get it to work, does the hybrid model with queue-based access have potential to strike an appropriate balance between investment certainty and supporting efficient new entry?

Context

Managing access risk is one of the ESB's core access objectives:

> **2. Manage access risk:**
>
> Address elements of the current market design that have the effect of amplifying investor risk above what would occur in a natural competitive market. The intent is to achieve a level playing field that balances investor risk with the continued promotion of new generation and storage entry that contributes to effective competition, reliability and system security in the long-term interests of consumers.

Delivering on this access objective is a delicate balancing act between the interests of incumbents, new entrants and consumers. The role of access reform is to find a way to share a scarce resource – the transmission network – fairly and efficiently between the parties. These conflicting interests, and the need for balance, are reflected in the ESB's assessment criteria, which include three inter-related criteria:

	Criteria	Description
3	Appropriate allocation of risk	• Risk arising due to congestion in the NEM should be allocated, to the extent possible, to the party that is best placed to manage or otherwise bear that risk, noting the practical limitations on exposing parties to risk without appropriate mitigation tools and measures.
4	Manage access risk	• Lower risk to investors, where the benefits of doing this outweigh the costs (from a consumer perspective), by addressing the features of the current market design that amplify access risk. • Facilitate market participants' ability to manage access risk. • Managing the risk arising from regulatory change, i.e. consider whether there are strategies to mitigate the impact of the changes on market participants.
5	Effective wholesale competition	• Any changes should promote an effectively competitive wholesale market by avoiding creating barriers to new entry; any additional costs to new entrants associated with their transmission connection reflects a benefit(s) they receive in return.

The ESB's access reform objectives are directed towards addressing the feature of our extreme open access regime that enables newcomers to acquire the access of existing generators with no recourse for the incumbent. A shop owner may be adversely affected if a competitor opens next door, however, the competitor must still compete with the incumbent. In the NEM, competitive outcomes are determined by complex technical rules which can give rise to binary outcomes.

The ESB would like TWG members to consider whether the shortlisted investment timeframe models strike the right balance between investor risk and promoting effective wholesale competition.

Discussion

Managing access risk under the connection fee model

Under the connection fee model, the risk of inefficient curtailment is lower than at present, because the market signals are designed to align profitable investment decisions with the efficient outcome.

In return for paying a connection fee, project proponents receive improved investment certainty because subsequent generators are also subject to the fee. A generator that wishes to locate inefficiently will be at a competitive disadvantage because they will have to pay a fee that reflects the costs of the congestion. This connection fee model reflects the idea that the market design should not prohibit poor commercial decisions, but rather provide signals to investors that align with the efficient development of the power system as a whole.

However, neither connection fees, nor the CRM, change the winner takes all characteristics of the current market design, other than by promoting more efficient location decisions. A project proponent may still have their access cannibalised by a deep-pocketed successor that chooses to pay a high connection fee. This characteristic has led stakeholders to question whether connection fees without any corresponding rights will be effective in reducing the cost of capital of new generation projects.

Managing access risk under the transmission queue model

The TQM is primarily aimed at delivering an improvement in certainty for investors. This is important in the development of renewables where the overall cost of delivered energy is mostly the capital cost. The CEIG highlight this in their submission:

> "A key factor for investors when considering whether to invest in a clean energy project is the relative certainty of future revenue streams associated with the project over the life of the proposed asset. The higher the revenue certainty, the lower the risk, and in turn, the lower the cost of capital for the project, and therefore a lower overall cost for consumers. "

When investing under the TQM regime, an investor would know their relative ranking in the queue and may be able to influence that ranking by their choice of location, funding of additional transmission or participating in a REZ process. Once provided with the ranking, they would be protected from other parties joining the market[1] and increasing congestion on them by those parties having a lower ranking in the queue.

[1] As discussed at the 18 August TWG meeting, the ESB has identified issues which mean that it may be necessary to limit the number of queue positions. If this is the case, we could establish bands of access (e.g. primary, secondary and tertiary) rather than a queue with each generator getting their own number. This

For discussion: Hybrid model with queue-based access

This model uses the transmission queue to establish the priority of access, but market participants can trade to an efficient dispatch outcome using the CRM. This approach resolves:

- the dispatch inefficiency that arises if the TQM is applied on its own; and
- the lack of locational signals/investor certainty if the CRM is applied on its own.

The project's queue ranking would give priority in the allocation of access rather than in dispatch, meaning that it would not negatively impact on the efficiency of dispatch.

Incumbent generators would all receive the same, highest ranking position in the queue. Until another generator connects, the CRM would be unchanged. Generators would be free to trade congestion relief via the CRM. A subsequent connecting generator would receiving a lower ranking. When congestion occurs, the low ranked generator would need to purchase congestion relief from higher ranked generators to be dispatched. This may be for part, or all, of their output, depending on how severe the congestion is, and their relative position in the queue.

If the initial (TQM) dispatch outcome is inefficient, both parties will be able to make more money by participating in the CRM[2]:

- *Higher ranked generator.* The higher ranked generator would be willing to accept a congestion relief payment in order to not be dispatched if this is more profitable than being dispatched. This would occur, for instance, if the higher ranked generator had higher costs than the lower ranked generator, or if the lower ranked generator had the same cost, but a better participation factor in the relevant constraints.
- *Lower ranked generator.* The lower ranked generator would only choose to participate in the CRM if it is more profitable for them to pay for congestion relief and be dispatched.[3] The alternative faced by the lower ranked generator is that they are not dispatched due to congestion.

This model would require new generators to "internalise the externality"; i.e. to take into account the costs they cause when they invest in projects which increase congestion. The revenue that the late-connecting generator would otherwise have received under the winner-takes-all arrangements are instead shared with pre-existing generator via the congestion relief payments.

Given the need to balance investment certainty and competition, the ESB would like TWG members to consider the impact of this model on new entrants. Specifically, will we stifle investment if incumbents are always ahead of new entrants in the queue?

The ESB's initial thinking is that the hybrid model would not deter efficient new entry. Queue rights are fluid; they adjust in accordance with prevailing network conditions and local generator output. To the extent that there is spare network capacity available at any given time, new entrants will be able to make use of it. They will also be able to get dispatched via the CRM if they can supply energy at lower cost than their competitors.

means that a generator might still be curtailed by a subsequent connecting generator in the same band, so the level of investment certainty conferred by the model is reduced. However, it would give investors the ability to place an upper limit on how much congestion they'll face, which is a substantial improvement on the status quo. This issue is under active consideration by the ESB's technical experts.

[2] Subject to their contractual arrangements, as discussed below.

[3] It would be profitable for the lower ranked generator to purchase congestion relief if they have lower costs than a higher ranked generator, or an equal cost generator with a better participation factor.

An investor considering a new project would have more confidence in their congestion studies as projects are not exposed to unexpected curtailment caused by subsequent connecting generators. However, the level of access may be less than they would get under a non-queued model, where:

- curtailment is borne by a mixture of incumbents and new entrants, and
- winner-takes-all outcomes are present.

For example, the average curtailment in a zone might be 2%, but the new entrant might be subject to 5%. If the new entrant cannot make a profit at 5% curtailment, arguably, it shouldn't be connecting at that location in the first place. This would suggest that the new project's business case relies on its ability to cannibalise access from incumbents. If a new transmission investment is planned, a new entrant may choose to absorb higher levels of curtailment in the short term, so that they are well placed to take advantage of the new hosting capacity when it becomes available.

The sharing of access in a non-queued model (such as the status quo, or stand-alone CRM) is a double-edged sword. It may confer more access in the short-term, but it carries the risk that the access will be degraded by later entrants.

As discussed at the 1 September TWG, the duration of queue positions would also be an important feature of any queue-based model.