

## Congestion management technical working group

### Key outstanding questions for resolution

**Table 1 Key outstanding questions – investment timeframe models**

#	Category	Key outstanding questions
<b>Connection fees</b>		
1.	Nature of incentive – connection fees	<ul style="list-style-type: none"> <li>• What costs are we trying to reflect in the connection fee? For instance, is it the marginal cost of congestion at the location? Is it necessary to distinguish between efficient and inefficient congestion and if so how?</li> <li>• How would the fee be calculated?</li> <li>• Should we pre-define connection fees or specify a process which can be applied at the time connection is finalised?</li> </ul>
2.	Efficient retirement decisions - connection fees	<ul style="list-style-type: none"> <li>• What is the appropriate timeframe before an end-of-life generator's access is excluded from connection fee studies?</li> <li>• Should the reduction in access (for fee-setting purposes) be scaled down gradually over time?</li> </ul>
<b>Transmission queue</b>		
3.	Nature of incentive – transmission queue	<ul style="list-style-type: none"> <li>• What is the nature of the right conferred by the queue number?</li> </ul>
4.	Efficient retirement decisions - transmission queue	<ul style="list-style-type: none"> <li>• What is the appropriate duration for queue rights?</li> <li>• How do queue rights interact with the notice of closure provisions?</li> <li>• Should queue rights be tradeable?</li> </ul>
<b>Shared questions</b>		
5.	Calculations used to quantify available transmission hosting capacity	<ul style="list-style-type: none"> <li>• How do we quantify the efficient level of congestion for the purposes of defining and classifying congestion zones (i.e. where transmission hosting capacity is available)?</li> <li>• Should we define congestion based on physical or financial impacts?</li> <li>• How do we take into account the impact of diverse output profiles when determining where, and for how much generation capacity, transmission hosting capacity is available?</li> <li>• How do we treat storage and load in calculating available network hosting capacity?</li> <li>• How do we take into account network interdependencies when determining where, and for how much generation capacity, transmission hosting capacity is available?</li> <li>• If boundaries are needed, how do we specify the boundaries of a congestion zone or REZ?</li> </ul>
6.	Governance of process used to quantify transmission hosting capacity	<ul style="list-style-type: none"> <li>• Is there a need for guidelines to describe process to calculate forecast congestion, and if so, who prepares them?</li> <li>• Who is responsible for forecasting congestion?</li> <li>• In what form is forecast congestion information made available?</li> <li>• How often are congestion forecasts updated?</li> </ul>
7.	Payment of fees/auction bids	<ul style="list-style-type: none"> <li>• What arrangements would apply to the payment of (a) connection fees or (b) successful auction bids?</li> </ul>
8.	Process for allocating transmission queue positions	<ul style="list-style-type: none"> <li>• What is the process by which prospective market participants can apply to receive (a) a queue number or (b) a quote for a connection fee?</li> <li>• What threshold requirements (such as prudential requirements) must be met in order for a party to secure their position in the queue (either</li> </ul>

		<p>for the purpose of locking in a connection fee or securing a queue right)?</p> <ul style="list-style-type: none"> <li>• How does the access regime interact with the proposed batching arrangements for new connections?</li> <li>• Should queue positions/fee levels be forfeited if a project fails to progress?</li> </ul>
9.	Parties subject to the access arrangements	<ul style="list-style-type: none"> <li>• Who is subject to the access arrangement? Eg scheduled, semi-scheduled, non-scheduled?</li> <li>• Are DNSP connected-generators included? If so, how?</li> <li>• What happens to dual function assets?</li> </ul>
10.	Governance	<ul style="list-style-type: none"> <li>• Who is responsible for allocating queue numbers/setting fees?</li> <li>• What is the role of State planning bodies?</li> </ul>
11.	Use of revenue	<ul style="list-style-type: none"> <li>• What happens to revenue generated through the sale of access entitlements or from connection fees?</li> </ul>
12.	Treatment of pre-existing generators	<ul style="list-style-type: none"> <li>• At what point should an in-train development be treated as an incumbent?</li> <li>• How should changes to existing connections be treated for the purpose of receiving grandfathered rights?</li> <li>• What date do the new arrangements take effect?</li> </ul>
13.	Maximising hosting capacity of available transmission	<ul style="list-style-type: none"> <li>• How does the model maximise the potential hosting capacity of the network by encouraging investments that enhance hosting capacity?</li> <li>• Should generators have the opportunity to pay for, and receive, enhanced access (or reduced connection fees) in return for funding incremental enhancements to the shred transmission network? If so, should we establish a reimbursement scheme so that subsequent connecting generators can contribute to the cost?</li> <li>• Should TNSPs be subject to an incentive scheme to incentivise them to deliver an efficient level of transmission hosting capacity? If so, what form should the scheme take?</li> <li>• Is it necessary to review the MIC component of the STPIS?</li> </ul>
14.	Signals for congestion relief	<ul style="list-style-type: none"> <li>• How does the model create incentives for storage and DRP to locate where they provide the most benefits to the system?</li> <li>• Given that storage can both worsen or alleviate congestion, depending on whether it charges or discharges, are rules required ensure that storage and load do not operate in ways that worsen congestion?</li> </ul>
15.	Modelling of impacts	<ul style="list-style-type: none"> <li>• How are different market participants affected by the model under different design choices?</li> </ul>
16.	Integrating with jurisdictional schemes	<ul style="list-style-type: none"> <li>• How does the model support jurisdictional REZ schemes?</li> <li>• Are there any details of the REZ schemes that might affect the design/operation of the model options?</li> </ul>
17.	Interaction with other schemes	<p>How does the model interact with:</p> <ul style="list-style-type: none"> <li>• dedicated network assets?</li> <li>• system strength arrangements?</li> <li>• Integrating Energy Storage Rule change?</li> <li>• capacity mechanism design?</li> </ul>
18.	Implementation	<ul style="list-style-type: none"> <li>• How costly and complex would it be to implement the model(s)?</li> <li>• How long will it take to implement the model?</li> </ul>
19.	Transitional arrangements	What transitional arrangements are required?
20.	Cost benefit analysis	What costs and benefits will be modelled as part of the options assessment?

**Table 2 Key outstanding questions – operational timeframe models**

#	Category	Key question/issue
<b>Congestion relief market</b>		
1.	CRM - formulation	<ul style="list-style-type: none"> <li>• How do we make sure that we dispatch the cheapest available combination of resources to securely meet demand?</li> <li>• How can the CRM logic be embedded into the dispatch algorithm?</li> <li>• What attributes must be retained as the logic is developed to solve?</li> </ul>
<b>Congestion management model</b>		
2.	CMM – formulation of allocation metric	<ul style="list-style-type: none"> <li>• What allocation principles should be considered?</li> <li>• What is the proposed assessment framework for them?</li> <li>• If we adopt nferred economic dispatch approach, how do we infer costs?</li> </ul>
<b>Shared questions</b>		
3.	Incentives for storage and load	<ul style="list-style-type: none"> <li>• How will the model reward parties that operate in ways that alleviate congestion?</li> <li>• What is the scale of the potential revenue streams?</li> <li>• Are rules required ensure that storage and load do not operate in ways that worsen congestion?</li> </ul>
4.	Winner takes all	<ul style="list-style-type: none"> <li>• Should the model formulation be modified to soften the knife-edge properties of generator coefficients in access payments? [NB: We do not propose to change the treatment of generator coefficients in dispatch.]</li> <li>• If so, what changes are required?</li> </ul>
5.	Interconnectors	<ul style="list-style-type: none"> <li>• How do we ensure that we use the transmission system efficiently when inter-regional flows are affected by congestion?</li> <li>• How does the model apply to regulated interconnectors?</li> <li>• How does the model affect the need for clamping?</li> <li>• How does the model apply to MNSPs?</li> <li>• How does the model interact with the inter-regional settlement residue auctions?</li> </ul>
6.	Out of merit order generators	<ul style="list-style-type: none"> <li>• Should the framework be adjusted to ensure that out-of-merit order generators (i.e. peakers) do not receive a rebate/congestion relief payment when the RRP is below the price they would be willing to generate at?</li> <li>• If so, how do we identify which generators are out of merit?</li> </ul>
7.	Parties subject to the arrangements	<ul style="list-style-type: none"> <li>• Who faces the LMP?</li> <li>• What price are non-scheduled market participants settled at?</li> <li>• Are DNSP connected-generators included? If so, how is their LMP calculated?</li> <li>• What happens to dual function assets?</li> </ul>
8.	Constraints included in model	<ul style="list-style-type: none"> <li>• Which constraints count in the calculation of LMPs?</li> <li>• How are market participants on the RHS of constraints treated?</li> <li>• Constrained off i.e. NSCAS provision.</li> </ul>
9.	Treatment of losses	<ul style="list-style-type: none"> <li>• How are losses reflecting in the settlement algebra?</li> </ul>
10.	Unusual pricing outcomes	<p>How does the model work in the event of:</p> <ul style="list-style-type: none"> <li>• Market settings (MPC etc), extreme LMPs</li> <li>• Administered prices</li> <li>• Compensation to market participants throughout the rules</li> <li>• Over-constrained dispatch</li> <li>• Mixed constraints</li> </ul>

		<ul style="list-style-type: none"> <li>• Incomplete or inconsistent dispatch data</li> <li>• Incomplete settlement</li> <li>• Re-run settlement</li> <li>• Negative prices</li> </ul>
11.	Constrained on generators	<ul style="list-style-type: none"> <li>• How does the model treat constrained on generators?</li> <li>• Can the LMP exceed the RRP?</li> <li>• If a design choice is made for the LMP to be able to exceed RRP, how do we mitigate the exercise of market power?</li> </ul>
12.	Potential for gaming	<ul style="list-style-type: none"> <li>• How could the arrangements be gamed?</li> <li>• Is it worse than the status quo?</li> </ul>
13.	Contractual arrangements	<ul style="list-style-type: none"> <li>• How does the model affect generator hedging arrangements?</li> <li>• How does the model affect PPAs?</li> <li>• Are the issues different for existing contracts vs contracts to be entering into in the future? Are transitional arrangements needed?</li> </ul>
14.	Governance	<ul style="list-style-type: none"> <li>• What governance arrangements (eg guidelines) are required to administer the scheme?</li> </ul>
15.	Modelling of impacts	<ul style="list-style-type: none"> <li>• How are different market participants affected by the model under different design choices?</li> </ul>
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