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WESTERN POWER SUBMISSION TO ERA 2014 WHOLESALE ELECTRICITY MARKET REPORT TO THE MINISTER FOR ENERGY

Western Power welcomes the opportunity to contribute to the Economic Regulation Authority (ERA)'s 2014 Wholesale Electricity Market (WEM) Report to the Minister for Energy.

Please note this submission is confined to relevant issues from a network management perspective. Responses relating to system management functions will be submitted separately to the ERA by System Management.

Western Power is fully supportive of changing the WEM Market to incorporate a model of constrained generator dispatch that recognises the increasing level of constraints in the South Western Interconnected Network.

While not formally codified in any legislation, there is a generally accepted design principle that generators connected to the Western Power Network are unconstrained, with the network planned, designed, and built to allow unconstrained generation access. The current model of dispatch in the WEM is designed so that generators supply electricity onto the network without limitation for credible contingencies. There are instances in the SWIN where the cost of upgrades to ensure that generator access is unlimited ("firm") is significant. As a result prospective generators either do not want, or cannot afford, the cost of connection. By comparison, a fully constrained network is typically built to accommodate load growth and therefore generators compete for network access during periods of constraint.

In more recent years, generation access in the SWIN has been described as quasi-constrained, where some generators have chosen to connect on a partially constrained basis using "run-back schemes". These runback schemes work on the premise of detecting real time line overloads and sending signals to generators to runback quickly. With the addition of the North Country Competing Access Groups (CAGs), in particular, studies have demonstrated that the potential level of post-contingent overload on some lines is considered high. These overloads typically occur under certain operating conditions such as peak load or high localised generation dispatch. Relieving such overloads would necessitate rapid runback of large volumes of generation in different locations. Coordination of this runback in accordance with associated Connection

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Agreements is cumbersome, as is the ongoing management of these schemes as additional future overloads become evident.

The connection of future new entrants will also need to be added to existing architecture potentially requiring reconfiguration of in-service schemes. The volume of rapid runback can also be shown to be in excess of current spinning reserve ancillary service limits. Without the market procuring more spinning reserve services this presents a system wide frequency stability risk.

A constrained network is potentially more efficient for the network over the long term, however, security of supply and existing contracts will need to be considered. The move is unlikely to change the cost for parties who are currently choosing non-firm access connection, supported by Western Power's applications queuing policy (AQP).

Adding new generation to the network

When considering if the current approach to runbacks can be further utilised for prospective generation – in the form of the current groups of CAGs it is important to understand the volume of new entrant generation proposed. For example the North Country CAG comprises 265 MW of proposed generation all requiring connection to the 132 kV network. Under study scenarios which are considered reasonably likely to occur, this level of proposed generation creates (and exacerbates) numerous 132 kV network limitations. Studies have indicated that to manage system security each of the CAG members would need to monitor the loading on at least the following 7 lines from their date of connection:

- Mullaloo to Joondalup 132 kV
- Joondalup to Wanneroo 132 kV
- Henley Brook to Muchea 132 kV
- Clarkson to Yanchep 132 kV
- Pinjar to Yanchep 132 kV
- Neerabup to Pinjar 132 kV
- Neerabup to Wanneroo 132 kV

With each of the generators monitoring all 7 lines, more than 25 additional runback schemes would be required. Given the non-reference nature of the generators as future network limitations arise, due to load growth or other new entrant generation, additional runback schemes will need to be created. Existing schemes may also be required to be altered in some instances.

The expandability of the current type of post-contingent runback scheme is dependent primarily on the following requirements. All other options will also consider these requirements for relative measures.

- Ability to coordinate the runback schemes among various generators to protect against a single specified network event, such as overload of a particular line
- Ability to coordinate the runback requirements when there are multiple events that need to be protected against
- Ability to manage the risk if one or more runback systems fail

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- Flexibility to modify the runbacks to manage prior an outage or future events
 - Ability to manage excessive runback where that could potentially lead to a subsequent system security threat
 - Ability to undertake pre-contingent generation constraint where necessary to alleviate some of the above issues.

Clearly there is a need for a more centralised, coordinated and flexible control scheme. Allowing these potential generators to connect without a centralised scheme increases the risk that supply to customers may be disrupted and safety compromised. Western Power's compliance with the Technical Rules may also be adversely affected in some areas.

The alternative is to insist that new generation in affected areas of the SWIN are only able to have firm access. This would represent a significant barrier to entry to the WEM for new generators.

Conclusion

Western Power recognises the challenges of undertaking an improvised approach to addressing network constraints, with the current quasi-constrained structure attempting to meet both the requirements of the Technical Rules and the expectations of customers. As part of addressing these challenges, Western Power is open to reviewing its AQP and subsequent approvals processes, however the core of the issue lies with managing constraints – whether that be via a market mechanism, or through the sourcing of significant additional funding to overcome potential constraints that may bind for a small number of hours in a year.

Movement towards a constrained network will involve a range of risks that will require mitigation including:

- Potential reliability issues relating to the size and islanded nature of the network
- Risk that sufficient generation capacity will not be installed in future years (due to incentives inherent in a different market design including perhaps removal of generation availability payments), and
- Contractual liability of Western Power to existing generators whose firm access rights may be removed.

The general requirements for such a transition include:

- Access Code variations to preclude unconstrained generation access
- Existing access contracts overturned or grandfathered
- Existing Technical Rules for transmission modified
- Removal or modification of WEM reserve capacity credit mechanism – as current mechanism provides capacity to the level of unconstrained access to the network, and would therefore be impacted
- Changes to dispatch process and systems to incorporate network constraints.

There may be additional considerations, depending on the outcomes of the Electricity Market Review (EMR) and any movement towards the National Electricity Rules.

Western Power notes that a number of issues raised in the position paper will be addressed by the EMR and have not addressed them in this submission, including industry structure and market governance processes. Western Power welcomes the outcomes of the EMR and looks forward to working with the State Government, Public Utilities Office and ERA on their implementation.

Yours Sincerely

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CHIEF FINANCIAL OFFICER