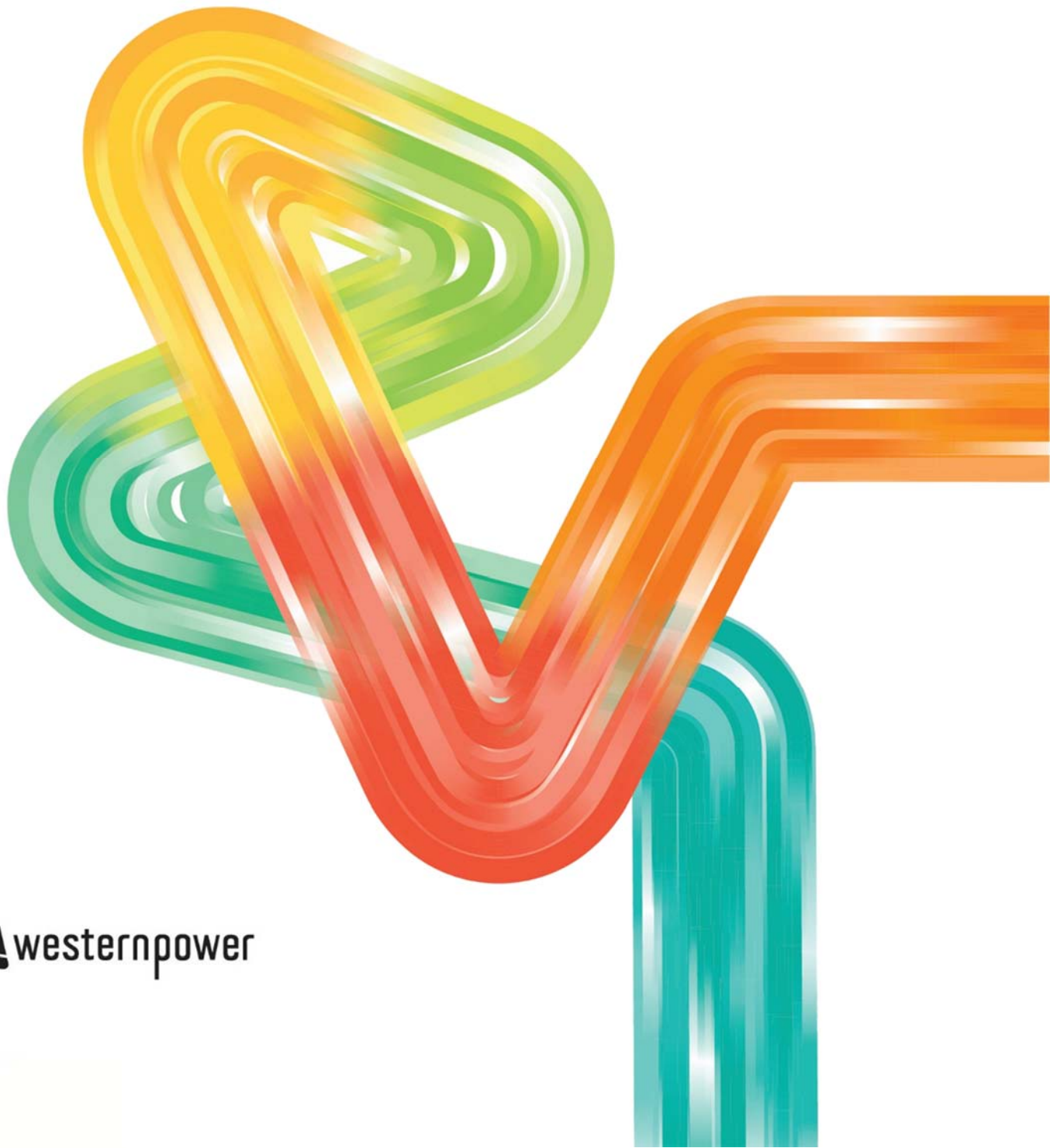


Submission to PUO Consultation Papers

Improving access to the Western Power Network

1. Implementing Constrained Access
2. Allocation of Capacity Credits
3. Modelling the impacts

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Table of Contents

| | |
|---|-----------|
| 1. Introduction | 1 |
| 2. The need for constrained network access | 2 |
| 3. Consultation Paper #1 - Implementing Constrained Network Access | 5 |
| 3.1 Question 1 – Other essential reforms..... | 5 |
| 3.2 Question 2 – Implementation timeline..... | 5 |
| 3.3 Question 3 – Managing existing firm access rights..... | 6 |
| 3.4 Question 4 – Managing inconsistent contractual provisions..... | 6 |
| 3.5 Question 5 – Proposed legislative intervention..... | 7 |
| 3.6 Question 6 – Transitional assistance | 7 |
| 3.7 Question 7 – Other types of financial losses..... | 7 |
| 3.8 Question 8 – Transitional design options | 7 |
| 3.9 Question 9 – Market vs administrative solution..... | 8 |
| 3.10 Question 10 – Capital contribution refunds | 8 |
| 3.11 Question 11 – Dispatch engine and relocation of reference node..... | 9 |
| 3.12 Medium-long term reforms | 9 |
| 4. Consultation Paper #2 – Allocation of Capacity Credits in a Constrained Network | 11 |
| 5. Consultation Paper #3 – Modelling the impacts of constrained access | 12 |

1. Introduction

Western Power appreciates the opportunity to provide feedback on the proposed reforms to improve access to Western Power's network, as outlined in the three consultation papers published by the Public Utilities Office (PUO). This submission is provided in response to matters raised in these consultation papers:

1. Improving access to Western Power's network
2. Allocation of capacity credits in a constrained network
3. Modelling the impacts of constrained access methodology and assumptions

Western Power has played an integral role in Western Australia's growth over the last 100 years. The Western Power network forms the vast majority of the South West Interconnected Network (SWIN), which together with the electricity generators and consumers, comprises the South West Interconnected System (SWIS). Western Power's network connects Western Australians to a wide range of both traditional and renewable energy resources, while providing customers with a network that is safe, reliable and efficient. We operate a complex business, which includes maintaining, enhancing and expanding the existing infrastructure.

Increasingly, we are acting as a platform for business and residential customers to choose how they want their electricity supplied and delivered. During the next five years, we will be making network changes to support customer needs. Specifically, we are considering not just augmentation of the network, but also non-traditional options, such as demand management and non-standard connections. To date, the development of the Western Power network has been managed prudently to minimise the requirement for the construction of new lines, terminals, substations and circuits in order to reduce capital costs. This is particularly important in a time of rapid technological change and changing customer expectations of the network.

In this rapidly changing landscape, we recognise a key part of our role is to facilitate connection of both traditional and renewable energy sources. Generator access to our network is currently under an unconstrained framework which means that Western Power is required to connect generators that apply for a reference service to the network.

Options to connect new generation in many areas of the network are largely exhausted without further network augmentation under the current unconstrained network access regime. There is now limited or no capability in many parts of the network to support additional runback schemes and the GIA solution being implemented as a temporary measure is now fully subscribed. The cost of network augmentation represents a significant barrier to new generation. Enabling better utilisation of the existing network capacity before turning to major investments in infrastructure will help maintain downward pressure on prices.

The current network access framework has been restricting Western Power's ability to provide affordable connection opportunities to new generators. We strongly support the need for a fully constrained network access regime to facilitate better utilisation of the network and the connection of new generation.

Western Power is supportive of new low cost generation connecting to our network, and we are looking forward to continuing to work with stakeholders and government, including the PUO, to update legislation and regulations to address current limitations.

2. The need for constrained network access

Western Power strongly supports implementing a fully constrained network access regime for the following key reasons:

1. It will reduce the time required for, and cost of, new generator connections compared to the current unconstrained network access model
2. It will unlock the capacity of the electricity network and makes efficient use of existing infrastructure
3. It will provide a long term sustainable solution to replace the Generator Interim Access (GIA) solution
4. It will allow better management of power system security
5. It will place downward pressure on network prices
6. It has the potential to support regional jobs and local skills development.

Connection of new generation

Within the last five years, Western Power has not connected any large-scale generation on an unconstrained basis to the SWIS. Generator connections that have progressed have typically used runback schemes, where individual generators are 'constrained off', to manage constraints and avoid network augmentation.

There is now limited or no capability in many parts of the network to support additional runback schemes and the GIA solution being implemented as a temporary measure is now fully subscribed. Further new generation connections under the current unconstrained network access model are likely to require costly network augmentations. Western Power supports efficient connection of generation that will help place downward pressure on prices for SWIS electricity consumers. A constrained network access model will reduce the cost of, and time for, new generation connections which in turn is expected to encourage the connection of new, lower cost generation.

New generation proponents consider the time to connect and high network augmentation costs associated with the current unconstrained network access as barriers to entry which can influence their decision to commit and invest in Western Australia, compared to other states within Australia where connections are under a constrained network access model.

A shift to a constrained network access model will facilitate more timely connections and allow network augmentation costs to be reduced, or deferred, until such time as market and customer benefits fully justify the cost.

Unlocking the capacity of the network

Under the current unconstrained network access model, emerging network constraints in the SWIS driven by both load and generation need to be mitigated by costly network augmentations. In most cases, these constraints are only expected to occur for a small percentage of time in a year. A shift to a constrained network access model will maximise the utilisation of existing infrastructure and defer the need for network augmentations until the load and generation increase to a level that would justify the cost for augmentation based on the net benefit to customers. Under a constrained network access regime, it is estimated that approximately \$45M of potential network augmentations over the next ten years will be deferred.

The majority of new entrant generators, currently likely to connect under the GIA solution, are not expected to suffer significant curtailment due to network constraints, and consequently the impact of constraints is not expected to be a significant barrier in determining their investments.

By moving to a constrained model WA would gain greater value from Western Power's infrastructure by effectively "unlocking the capacity" of the existing network. Whilst Western Power expects to connect in excess of 500MW of new generation (predominantly renewable generation) under the GIA this is a temporary solution and is limited in the generation that can be connected, as discussed below.

Western Power publishes the Annual Planning Report (APR)¹ to provide information to electricity market participants, and interested members of the broader Western Australian community, on the nature and location of the emerging capacity constraints on the Western Power network. This report is available on Western Power's website. Chapter 6 of the APR provides a summary of the:

- Key transmission load constraints in section 6.19; and
- Key transmission generation constraints in section 6.20.

The APR complements the Australian Energy Market Operator (AEMO) Electricity Statement of Opportunities (ESOO) 2017² published on AEMO's website. While the AEMO ESOO focuses on the overall adequacy of generation capacity in the SWIS (refer to Chapter 7), the APR's focus is on the identification of emerging network capacity issues and major assets issues, as well as potential solutions for our transmission and distribution networks.

The Western Power APR and the AEMO ESOO jointly provide a valuable insight into the current and future opportunities for new and existing generators, developers and customers.

Generator Interim Access solution

The GIA solution was designed as a temporary solution to enable a limited amount of new generation to connect to the Western Power network until a constrained dispatch engine was introduced. The GIA was originally intended to be replaced in 2019.

The GIA will be unable to support all new generation projects requesting connections before constrained network access "go live" on 1 October 2022 because it is not scalable.

The GIA does not support economic dispatch of all available generation as only newer generation will be constrained, which may not deliver the most efficient market outcome. For example, given the level of load and existing generation, the GIA is only able to connect limited new generation in the Muja area. New generators connecting in the area are subject to the thermal network constraints³ in the Mandurah area. As the GIA will not constrain existing firm access generation, there will be less incentive for new generators to connect under the GIA in the Muja area. This potentially means that older more expensive generation will operate more frequently and take longer to be replaced.

These GIA limitations would be addressed by a fully constrained network access model. Hence, Western Power strongly supports the implementation of fully constrained network access as soon as practically possible to enable further new generation to connect to the SWIS and improve market efficiency.

¹ Annual Planning Report (APR) 2017 <https://westernpower.com.au/media/2360/annual-planning-report-2017.pdf>

² AEMO's Electricity Statement of Opportunities (ESOO) 2017 - (https://www.aemo.com.au/-/media/Files/Electricity/WEM/Planning_and_Forecasting/ESOO/2017/2017-Electricity-Statement-of-Opportunities-for-the-WEM.pdf)

³ These thermal network constraints relate to the overload of transmission conductors. Section 6.20 in the APR indicates south country 132kV capacity limitations for flows from south to north.

Better power system security

A fully constrained network access model will enable better management of power system security stability as well as management of new intermittent renewable generation for the following reasons:

- Operational planning would be made easier because the constraint equations are published or determined ahead of a planned outage
- Constraint equations would be derived to manage various network limitations (in addition to thermal) such as voltage stability and fault level limitations
- Visibility of network limitations will be improved
- All generators will be constrained pre-contingent and in real-time by an AEMO dispatch engine, rather than through a mix of existing pre-contingent runback schemes and network controller intervention
- Generator dispatch would be managed and optimised against a set of constraint equations and offsets – this is a better way to respond to both planned and unplanned outages and events
- Control of all generation will be improved, rather than just new generation.

Downward pressure on prices

Western Power supports efficient connection of generation that will help place downward pressure on electricity prices for SWIS electricity consumers. A fully constrained network access model will reduce the cost and time of new generation connections which in turn is expected to encourage the connection of new, lower cost generation.

Local jobs and skill development

Western Power believes that facilitating connection of new more efficient generation across the SWIS will support regional jobs and new local skills development. For example, Stellata has indicated for the Merredin Solar Farm project that *“the construction and operational phases of Merredin Solar Farm will provide local employment opportunities and stimulus to local businesses. We expect a peak of 200 people to be working on site during the construction period with further permanent and temporary staff during ongoing operations and maintenance”*⁴. Fuel sources such as wind and solar are more abundant in regional areas and this is where many new generators will prefer to connect. Connection of lower cost renewable generation will enable the development of local skills in these emerging technologies. New generation projects have the potential to create regional jobs not only during construction but for ongoing operation and maintenance of these facilities.

⁴ <http://www.merredinsolarfarm.com.au/project/>

3. Consultation Paper #1 - Implementing Constrained Network Access

3.1 Question 1 – Other essential reforms

Question 1: Are there other reforms that are essential to implement a constrained network access regime?

Western Power has not identified any other reforms essential for the implementation of a constrained network access regime.

Western Power strongly supports the implementation of constrained network access regime as soon as possible and believes the implementation of other reforms should be deferred if they are likely to impede or delay its delivery in 2022.

Western Power notes that constrained network access can be achieved within the existing access arrangement policies, including the Applications and Queuing Policy. Depending on what form of constrained access is eventually implemented, some amendments to the existing Applications and Queuing Policy may be desirable but these can occur through existing access arrangement amendment processes set out in the Electricity Network Access Code, and implemented as part of the next access arrangement.

3.2 Question 2 – Implementation timeline

Question 2: Are there other issues associated with the implementation timeline, including the proposed 'go-live' date of 1 October 2022?

Western Power's preference is for a 'go-live' for the implementation of constrained network access as soon as possible, whilst recognising there may be practical issues for the market in achieving implementation before 1 October 2022.

The key issues with a late 'go-live' date of 1 October 2022 include:

- As raised in the PUO's consultation paper, the connection of generation via the GIA solution is limited. As such, there are likely to be barriers to connection for additional new generation through to 2022.
- Western Power will commence its preparations of the fifth access arrangement (AA5) in 2020 rather than 2021 as indicated in the paper, as the AA5 proposed revisions will need to be submitted by 1 March 2021. Legislative certainty is required before 2020 to enable Western Power to prepare a proposal that is able to be approved by the ERA in accordance with legislative obligations.
- Applicants seeking to connect generally start the process some 2 to 3 years prior to connecting and will therefore be subject to the existing Application and Queuing Policy. Western Power will also need to be able to make access offers that are consistent with legislated constrained network access.

- To meet the obligation for a 1 October 2022 ‘go-live’, generators will need to be able to perform commissioning and testing in the months leading up to this date. As such, the constrained dispatch engine will need to be implemented and available by mid-2022 to enable this to occur. Transitional arrangements may need to be considered.

3.3 Question 3 – Managing existing firm access rights

Question 3: Are there other principles that should be considered?

Western Power agrees that the principles stated in section 2.3.1 are sufficient and appropriate.

3.4 Question 4 – Managing inconsistent contractual provisions

Question 4:

- a) Are there other options (including variations of each option above) that could better meet the guiding principles?*
- b) Are there other advantages and disadvantages of each option (including other alternatives) that should be considered*

While conscious of the disadvantages of legislative intervention in contractual arrangements, in this case Western Power submits this is the most practicable and equitable alternative.

The process of renegotiating Western Power’s existing contractual arrangements would be a major enterprise requiring commitment of substantial resources and time with a significant risk that negotiations of over 40 contracts would not be complete by 2022.

It will also be difficult to undertake meaningful negotiations until the new regulatory environment is fully developed. This would further constrain the time for effective renegotiation.

Experience to date suggests that renegotiations of existing contracts take considerable time and would be unlikely to be achieved within the required timeframes. Maintaining legacy contracts under different regimes is also costly and inefficient for Western Power to administer.

Arbitration on unresolved disputes would also take additional time, and incur cost, and a legislative solution may still be required as a fall back to meet the required timeframes.

The negotiation process may not achieve equity between the generators – the larger/better resourced generators may achieve better negotiated outcomes.

If constrained access is intended to be introduced generally across the market, the more equitable approach is to ensure everyone is treated equally by reference to common legislative provisions.

3.5 Question 5 – Proposed legislative intervention

Question 5:

- a) Does this approach best meet the guiding principles?*
- b) Are there other approaches that should be considered?*
- c) Are there other legislative provisions should be considered?*
- d) What consequences could arise from the proposed approach (including the impact on specific arrangements such as bilateral trading agreements)?*

Western Power does not have anything further to add to its response in relation to question 4 above.

3.6 Question 6 – Transitional assistance

Question 6: Are there other considerations that should influence the design of a mechanism to provide transitional assistance?

Western Power has not identified any other considerations that should influence the design of a mechanism to provide transitional assistance.

3.7 Question 7 – Other types of financial losses

Question 7: Are there other types of financial losses that should be considered? Why?

Western Power has not identified any other types of financial losses that should be considered.

3.8 Question 8 – Transitional design options

Question 8: Are there other options that could be utilised to provide transitional assistance?

Western Power has not identified any other options that could be utilised to provide transitional assistance.

3.9 Question 9 – Market vs administrative solution

Question 9: Is a market solution preferable to an administrative solution?

Western Power supports the most cost efficient approach to achieve the outcome. The consultation paper indicates that a market-based solution, using existing market-based systems and processes, minimises costs.

3.10 Question 10 – Capital contribution refunds

Question 10:

- a) Under what conditions should a refund be made available to a transmission connected generator who has paid a capital contribution to augment the shared network?*
- b) How should the refund be paid to the generator who qualifies for a refund, and who should pay for the refund?*

Western Power notes that this issue is primarily one for generators to comment on but makes the following observations:

- The principal beneficiaries of the change in regime will be electricity consumers generally as well as new generators
- It would be difficult to demonstrate where a generator has suffered a loss (a 'transfer of benefit') and to quantify any loss
- Given the negligible investment in 'deep network / capacity augmentation' in recent years, it would be expected that any potential financial loss would be minor
- It is important to ensure that any entity responsible for paying a refund is properly funded to ensure that entity is not negatively impacted due to the payment of the refund
- Any refund of a customer's capital contribution by Western Power may result in an increase in Western Power's Regulated Asset Base value with the resultant increase in costs to all consumers.

3.11 Question 11 – Dispatch engine and relocation of reference node

Question 11:

- a) Are there other considerations that influence the choice of the dispatch engine?*
- b) Are transitional arrangements required to facilitate the relocation of the reference node?*

- a) Western Power suggests that the dispatch engine should also be able to cater for future ancillary service markets
- b) Western Power suggests that the consequential financial implications resulting from the transition to the new regional reference node at Southern Terminal should be assessed prior to determining the transitional arrangements.

3.12 Medium-long term reforms

Western Power notes that Appendix A includes medium to long-term reforms to market and network arrangements.

One of the proposed reforms is *removing regulatory barriers to emerging technology*. Western Power supports this being a priority focus for medium and long-term reforms. Western Power will continue to work with the PUO to ensure that the regulatory framework supports Western Power delivering lower cost network and better customer outcomes, irrespective of whether the solution involves a network augmentation and/or utilises emerging technology. More specifically, reforms are required to remove regulatory barriers to allow standalone power systems where these can be shown to be more efficient than maintaining or replacing existing poles and wires.

Western Power recommends some inclusions to the medium to long term reforms as part of improving the regulatory framework for network regulation, as mentioned in section 1.3 of the consultation paper:

- Locational signals - consideration of locational signals to incentivise generation to locate in regional areas to improve reliability and efficiency. This could include consideration of regional pricing.
- New ancillary service markets - it is not clear whether the intention is to maintain the current ancillary service market as is. Consideration should be given to other ancillary services such as reactive power support and inertia.
- Standalone power systems – removing regulatory barriers to allow standalone power systems where these can be shown to be more efficient than maintaining or replacing existing poles and wires.
- Advanced metering and tariff reform
- Voltage limits – the current Electricity Act 1945 specifies voltage limits. Best practice changes have occurred to voltage limits within Australian and internationally which better support distributed local generation and emerging technologies such as Solar PVs on rooftops. It is unusual for a technical specification to be included in an Act and Western Power recommends that specification of voltage limits be removed from the Act and defined in other instruments that do not require a parliamentary

process for changes to be adopted. Western Power is currently reviewing voltage limits to align with industry best practice.

4. Consultation Paper #2 – Allocation of Capacity Credits in a Constrained Network

Western Power has no comments on consultation paper “Allocation of Capacity Credits in a Constrained Network”.

5. Consultation Paper #3 – Modelling the impacts of constrained access

Western Power appreciates the opportunity to comment on the consultation paper “Modelling the impacts of constrained access – Methodology and assumptions”.

Western Power provides the following comments on this consultation paper:

| Section | Comments |
|---------|---|
| 1.2 | <p>Under the current status quo, the relevant GIA generators are constrained based on the order of their coefficients. Table 1 indicates that GIA generators and any new entrant generators will be constrained to achieve a least cost objective under the partially constrained access. The last paragraph of Section 1.2 should be updated to reflect this difference.</p> <p>Under the current status quo, GIA generators do not receive constrained off payment if they are constrained off under system normal. How will this work under the partially constrained access for system ab/normal?</p> |
| 1.4 | <p>Will generator ramp rates and the minimum output of scheduled generators (Pmin) be included in the congestion model?</p> <p>Western Power suggests including comments on how significantly the assumption applicable to the loss factors impacts on the final outcomes.</p> |
| 3.1 | <p>If the PUO has made any changes to the constraint equations provided by Western Power, then this should be noted.</p> <p>Constraint equations applicable to frequency stability should be included.</p> |
| 3.2 | <p>If the expected unserved energy exceeds the allowed level, the model should be adjusted following step 3 under Section 5.2 unless the reserve capacity requirement allows this to happen.</p> <p>Western Power suggests including an explanation of why modelled generators are assumed not to receive constrained off payments be provided. Table 7 in Section 5.2.1 indicates the generators can be constrained off.</p> |
| 5.2 | <p>Western Power suggests that battery storage should be included at some wind farms or solar farms.</p> |
| 5.2.1 | <p>The first paragraph should be corrected to say that the two constraint equation sets were provided by PUO or Western Power instead of Ernst & Young (EY).</p> |
| 5.2.2 | <p>Capital costs for more recently connected existing generators in service should be included. Western Power suggests the PUO determine a threshold of time for when existing generators are in service e.g. <X years, where their capital cost should be included.</p> |
| 6.1.1 | <p>Western Power suggests for EY to note that when using historical data, some windfarms were constrained in some instances to cater for the potential of multiple system outages.</p> |