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Elizabeth Walters  
Assistant Director Electricity  
Economic Regulation Authority  
Level 4, Albert Facey House  
469 Wellington Street  
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Dear Elizabeth

## **Draft decision - Technical Rules amendments March 2016**

I refer to the Authority's draft decision of 7 September 2016 in relation to amendments to the Technical Rules proposed by Western Power in March 2016. The proposal was made under section 12.50 of the Electricity Industry Access Code 2004 (Access Code).

The proposed amendments were submitted in three parts:

1. the re-definition of credible contingency events in relation to two and three phase to ground (2 PH-G and 3 PH-G) faults;
2. amendments to the N-1 provisions to enable Western Power and a network User to agree post contingent load shedding and/or generation run back or tripping arrangements; and
3. the addition of the term "*weak infeed fault conditions*" to the Rules Glossary and a new subclause to clause 2.9.4 setting out how quickly a protection relay and associated circuit breaker must clear a fault under *weak infeed fault conditions*.

Please refer below to Western Power's responses to the draft decision.

## **1 Three Phase Ground Faults**

### **Required amendment 1**

Western Power must provide data to support the claim that three phase faults on the transmission system are rare and amend the wording to provide clarity and transparency in relation to how three phase faults will be treated. Specifically, three phase faults should be excluded from the definition of credible contingency events and a provision added to enable non-credible contingency events (such as three phase faults) to be included in appropriate circumstances. A requirement to publish a report setting out details and reasons for including a non-credible contingency event should be included in the rule amendment.  
(from March draft decision p. 9).



Western Power has reviewed the draft decision comments and the feedback from both Geoff Brown and Associates (GBA) and the Authority. Whilst 3PH-G faults are rare, they can and do occur. The main question the proposed amendment seeks to address is whether a more conservative approach such as using 3PH-G faults as credible contingency events leads to unwarranted and higher network investment levels and unnecessary restriction of power transfer capacity made available to Users (for example, compared with the requirements under the National Electricity Rules (NER)).

A change to the original proposal's wording for limits above and below 66 kV was discussed at the Authority's workshop held on 10 May 2016, and these are reflected in the proposed changes outlined below.

## **Data**

Two 3 PH-G faults have been identified since the Technical Rules commencement date at 1 July 2007. One occurred as result of bushfire damage, the other as a result of human error in disconnection of portable earths after line maintenance work. Western Power does not believe that planning for either of those events should be considered as more generally efficient in analysing and establishing network requirements.

## **Reporting**

Western Power's position is that there is no compelling reason to introduce wider reporting on credible contingency modelling at this time. This is because the proposed amendment itself, if approved, will not result in either a decrease or an increase in transparency. For example, no data is presently published about the fault clearance times used, faulted elements, location of faults on elements, specifics of load models used in the simulations and so on. For customer projects the justification of the fault type(s) used and any requested results of non-credible contingencies would be published in the relevant planning report. In some cases, this report would be prepared by the customer themselves (or their nominated consultant) with input from Western Power.

Western Power accepts though that providing information into the public record will improve transparency where investment decisions are taken based on a risk assessment which determines it prudent to proceed with work on the basis of using 2 PH-G and 3 PH-G faults as part of implementing the planning considerations. Western Power proposes to report on the more significant cases where modelling credible ground faults affects the power transfer limits and this forms the basis on which investment decisions are taken. Hence, a revision to the draft decision and GBA wording is provided below which Western Power believes meets with the intention of those suggestions, as is understood from the published reports.

Broader changes underpinning how the Technical Rules deal with non-credible events can then be transferred to a future stage of rule amendments. A thorough reading of the approach under the NER may be fruitful in the medium or longer term, as a balance can be gained between the need for additional resources and the identified benefits driving a realignment in reporting requirements.

## **Recommended revisions**

Western Power's analysis of the view provided by GBA to extend the amendments more broadly across a range of non-credible events creates a concern. Western Power does not believe that the more substantial change to 'single' and 'multiple' contingent events should be undertaken without a wider review of the impact that those changes would bring. Technically, these wider changes will also impact frequency standards rather than the power transfer limits Western Power is seeking to address through the proposed amendment restricted to treatment of specific ground fault types.

On the basis of the above, Western Power's preferred final amendment includes the following revisions, which replace the proposed amendment which is contained in the March 2016 submission:



**Proposed re-definition of *credible contingency event***

A single contingency event of one of the following:

for voltages at or below 66kV, a three phase to earth fault cleared by disconnection of the faulted component, with the fastest main protection scheme out of service;

for voltages above 66kV, a two phase to earth fault (or three phase to earth fault when that is consistent with good industry practice based on the modes of operation) cleared by the disconnection of the faulted component, with the fastest main protection scheme out of service.

(the existing single phase and *disconnection* sections remain unchanged).

**New Clause 2.3.7.1(f)**

Where the simulation of either 2PH-G or 3PH-G fault events in accordance with the provisions of clause 2.3.7.1 limits the maximum power transfer capability or other relevant operating parameter of a part of the power system and this forms the basis for an investment decision which triggers the requirement for a Regulatory Investment Test, the Network Service Provider must provide to the Economic Regulation Authority with its submission, information regarding:

- 1) the part of the transmission system affected;
- 2) the contingency events modelled;
- 3) an overview of the investment decision and the reasons for modelling particular contingency events; and
- 4) the impact of contingency events on the maximum power transfer capability.

**2 User agreed N-1 connection provisions**

Western Power concurs with the Authority's draft decision to approve the proposed amendments.

**3 Weak infeed protection**

Western Power concurs with the Authority's draft decision to approve the proposed amendments.

If you have any queries in relation to these matters, please do not hesitate to contact Mr Lindsay Offer.

Yours sincerely



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Regulatory Compliance Manager

