

Re: Application for review of the decision by the Economic Regulation Authority for amendment to the Technical Rules dated 19 July 2016 and titled "Final Decision on Western Power's Proposed Amendments for the Technical Rules (Submitted November 2015) - Clause 3.2.1(c)(3) - DC Injection".

Application by:

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Applicant

APPLICATION FOR REVIEW

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Pursuant to Chapter 10 of the *Electricity Networks Access Code 2004 (the Code)* the Applicant applies for review of the Final Decision (**Decision**) made in July 2016 by the Economic Regulation Authority (**Authority**) and placed on the public register kept by the Code Registrar under the Code on or about 19 July 2016 whereby the Authority approved the proposed deletion of DC Injection Clause 3.2.1(c)(3) and insertion of new Clause 3.2.1(g)(2) by Western Power Corporation on 6 November 2015 under section 12.50 of the Code.

The application seeks the following final orders: -


1. The Decision of the Authority be set aside or varied to give effect to the matters asserted in the grounds for this application.
2. Further or alternatively the Electricity Review Board to draft and approve the original wording of clause 3.2.1(c)(3) and remove new clause 3.2.1(g)(2) to give effect to the matters asserted in this application.
3. Further or alternatively the Electricity Review Board to order temporary stay of implementation of sections 6.9 to 6.12 of the Access Code (which allow for the end-of-the Access Arrangement period adjustment of the regulated revenue resulting from any changes to the TR) with respect to Decision to

change clause 3.2.1(c)(3) until the issues raised in this Application is resolved to give effect to the matters asserted in this application.

4. Further or alternatively the Electricity Review Board to cause the release to the Applicant (apparently confidential) product(s) of the work of the "independent consultant" engaged by Western Power to "research and provide recommendations with regard to DC injection in the Western Australian Technical Rules context", that was not publicly available.
5. The Applicant reserves the right to make additional submission upon reviewing the work outputs of the "independent consultant" requested under Order 4 here.
6. Further or alternatively, the Electricity Review Board to investigate whether the actions of Western Power and the Authority, with respect to deletion of DC Injection Clause 3.2.1(c)(3) and insertion of new Clause 3.2.1(g)(2), asserted in the grounds for this application amount to just a coincidence, cooperation or collusion, as well as what was the motive and intent, in order to give effect to the matters asserted in the grounds for this application.
7. Such further or other orders as may be appropriate.

The grounds for this application are annexed.

Applicant



GROUNDS

1. The Authority erred in its finding of facts or the exercise of its discretion was incorrect or was unreasonable having regard to all the circumstances in approving for amendment to the Technical Rules dated 6 November 2015 and titled “DC Injection Amendment” when this is inconsistent with the objectives and sections 12.1, 12.2 and 12.3 of the Code by substantially relying on the apparently inappropriate, for the purpose of changing the Technical Rules, report by the “*independent consultant*” that was not made publicly available, whereas the report was of suspect quality and apparently unfit for the purpose of decision making:¹

“During their internal and external review of the Technical Rules, focused on DC Injection and NVD protection, Western Power distributed a questionnaire to the industry to both a technical and non-technical base. This questionnaire contained a number of questions that in our opinion could be considered as “leading”, specifically in relation to DC injection. Should responses to these questions have contributed to any scientific studies performed by Western Power or their external consultants, we would query the validity of the findings.”

2. The Authority erred in its finding of facts or the exercise of its discretion was incorrect or was unreasonable having regard to all the circumstances in approving for amendment to the Technical Rules dated 6 November 2015 and titled “DC Injection Amendment” when this is inconsistent with the objectives and sections 12.1, 12.2 and 12.3 of the Code by substantially on the summary of the industry practice presented in Table 2: Standards with DC Injection², whereas:
 - a) the information in Row 1 of the table was factually incorrect;
 - b) Row 2 and Row 3 contained outdated references, over 10 years old;

¹ Wood & Grieve Engineers, *Comment on the Proposed Amendments to Western Power's Technical Rules*, Submission for Economic Regulation Authority, 11 March 2016, page 6.

² Western Power, *Proposed Amendments to Western Power's Technical Rules – November 2015 – Part A*, Submission for Economic Regulation Authority, 6 November 2015, Table 2: Standards with DC Injection, page 6.

- c) Row 3 was misleading, as it could be interpreted that it describes contemporary industry practice in the European Union, and;
 - d) Table 2 did not mention more recent European connection requirements and good industry practice from Germany and UK (which disallow the level of DC Injection allowed under the Decision).
- 3. The concerns of Item 2 here were addressed in the public submission (see the Attachment here).
- 4. The submission of Item 3 here was, unfortunately, sent two days after the deadline and was not mentioned by the Authority. This was unfair to the public and quality of the public debate, because the ERA gave Western Power time to complete its own (incomplete initial) proposal (of 6 November 2015) and two weeks later submit an addendum.
- 5. The Authority erred in its finding of facts or the exercise of its discretion was incorrect or was unreasonable having regard to all the circumstances in approving for amendment to the Technical Rules dated 6 November 2015 and titled "DC Injection Amendment" when this is inconsistent with the objectives and sections 12.1, 12.2 and 12.3 of the Code by choosing not to consider the attached submission of Item 3 here (with significant new information for decision making), whereas the Access Code gives discretionary power to the Authority to consider late submissions.
- 6. The public debate revealed the unexpected process that ended with the Decision to change the Technical Rules, Western Power:
 - a) chose to selectively ignore publically stated rules (individual clauses of the TR) when conducting business;
 - b) initially secretly, then less secretly, then increasingly more transparently, with the ultimate objective to formally change the rules in order to legalize what have been non-compliant practice at the time.
- 7. Throughout the process of Item 7 here, Western Power:
 - a) submits opinions (expressed as facts) and no real facts;
 - b) selectively presents facts, only those that support its proposal;
 - c) the alleged key arguments of Item 1 here were 'declared confidential', which makes a mockery of the public debate and consultation process.

8. The Authority's (technical consultant's report) comment on the process raised in Items 6 and 7 here was:³

Our role is to critically review this information, and also information included in any public submissions, and to advise the Authority whether we think sufficient information has been provided to justify a Rules amendment. It does not extend to making an independent assessment of a proposed amendment if doing so requires reliance on information not provided to us in the application or the public submissions."

9. The quote of Item 8 here raises the question on has the Authority internal processes to fulfill its obligations under the Electricity Industry Act and Access Code?
10. The Applicant submits its intention to make a follow-up submission upon reviewing the work outputs of the "independent consultant" requested under Order 4 here.
11. For the reasons of Item 10 here, the Applicant submits that more detailed submission at this time now may not be the optimal way forward.

³ Geoff Brown & Associates, *Final Review of Western Power's Application for Technical Rules Amendments, Submission for Economic Regulation Authority*, 30 April 2016, 2nd last bullet point, body, page 2.

ATTACHMENT – PUBLIC SUBMISSION SENT 2 DAYS AFTER THE DEADLINE

COMMENTS ON NOV 2015 – DRAFT DECISION

Direct Current (DC) Injection

I would like to bring to the attention of the public debate new information, I believe relevant to decision making, that may not have been considered so far.

1. DR AS/NZS 3000-2016 (Wiring Rules) mandate a Residual Current Device (RCD) for all LV circuits in Australia and New Zealand. The document is publicly available from the Standards Australia web site (one has to register):
<http://www.homeinsulationroyalcommission.gov.au/documentation/documents/reportoftheroyalcommissionintothehomeinsulationprogram.pdf>
2. The Report of the Royal Commission into the Home Insulation Program (HIRC) established the need to protect all Low Voltage (LV) circuits with RCD devices. The HIRC report can be downloaded from the following link:
<http://www.homeinsulationroyalcommission.gov.au/documentation/documents/reportoftheroyalcommissionintothehomeinsulationprogram.pdf>
3. DR AS/NZS 4777.1-2016 (Part 1 - Installation Requirements), see Figure 1, mandates a Residual Current Device (RCD), Type B (sensitive to both AC and DC currents) in Australia and New Zealand for each LV circuit to the Inverter Energy System (IES) at the Main Switchboard (next to the revenue meter).
4. AS/NZS 4777.2-2015 (Part 2 – Grid Connection of Energy Systems via Inverters), clause 9.2.5 on page 38, states that IEC62109-1 and IEC62109-2 mandate RCDs on the DC side of the inverters for solar PV array installations.
5. In UK, ENA ER G83/2:2012 and ENA ER G59/3-2:2015 Recommendations For The Connection Of Embedded Generators limit DC injection to 0.25% for each a.c. port (phase and neutral conductor).
6. In Germany, VDE-AR-N 4105:2011 (Requirements for Connection of Embedded Generators to the LV Networks) mandates the use of a dedicated RCD for the LV circuit to the AC terminals of the embedded generator(s). The RCD is part of the "Grid Protection Device", mandatory located in the metering box.
7. DIN V VDE 0128-1-1 is standard for the "Grid Protection Device", mandated under VDE-AR-N 4105:2011. Its Table 1, on page 8, specifies the maximum tripping times versus the magnitude of the residual (or earth leakage) current. Note that the maximum tripping time of 300ms of Table 1 grades with the 400ms maximum tripping time for RCDs protecting load circuits of AS/NZS 3000.
8. Schneider Electric Brochure No. 204, J. Schonek & Y. Nebon, "LV protection devices and variable speed drives" * shows that LV circuits in commercial and industrial installations are routinely protected by RCD protection. This disproves the opinion that solar PV generation is treated differently to any other load with the front end inverter.
<http://www2.schneider-electric.com/documents/technical-publications/en/shared/electrical-engineering/electrical-environmental-constraints/low-voltage-minus-1kv/ect204.pdf>
9. 41% of fires in buildings are due to electrical fault. DC current of just 300mA can cause it.
10. VDE 0128-1-1 (VDE-AR-N 4105) compliant inverters are exported to Australia already with in-built RCD (on the AC side). Thus, there is no additional cost to achieve this.
11. Well-designed transformerless inverters can control DC injection to below 30mA RCD threshold. Isolating transformers are the last resort for low end quality inverters.
12. A DC level below the threshold of 30mA might be acceptable.
13. One approach could be not to remove the clause but to simply adjust it. 30mA DC might be appropriate.
14. VDE 0128-1-1 (VDE-AR-N 4105) also requires a settable DC injection limit for fire hazard 300mA, so simply a change of setting be required, thus low cost to achieve.