IN THE WESTERN AUSTRALIAN ELECTRICITY REVIEW BOARD

No 3 of 2017

Re: Application for review of the decision by the Economic Regulation Authority for amendment of the Final Determination on the New facilities Investment Test Application for the Connection of the Collgar Windfarm.

Application by:

STEPHEN DAVIDSON — Applicant

APPLICATION FOR REVIEW

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Filed on behalf of The Applicant

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Pursuant to Chapter 10 of the *Electricity Networks Access Code 2004* (**the Code**) the Applicant applies for review of the decision (**Decision**) made on 13 May 2011 by the Economic Regulation Authority (**Authority**) and placed on the public register kept by the Code Registrar under the Code on or about 13 May 2011 whereby the Authority approved the proposed revised New Facilities Investment Test Application for Transmission Works to Connect Collgar Windfarm submitted by Western Power Corporation (**Western Power**) on 25 October 2010 under section 6.71(b) of the Code. The application was for the Authority to determine that forecast new facilities investment proposed by Western Power, for the connection of the Collgar wind farm in the South West Interconnected Network (**SWIN**), meets the new facilities investment test. Western Power submitted the revised forecast total capital cost of $19.7M, of which the amount of $12.2M the Authority approved as meeting the test of section 6.51A 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 revised (lower) amount of the total Capital Expenditures (**CAPEX**) that would have met the test of section 6.51A of the Code at the time to give effect to the matters asserted in this application.

3. Further or alternatively, the Electricity Review Board to remove from the Regulatory Capital Base (**RCB**) / Regulated Asset Base (**RAB**) the difference between the CAPEX amount the Authority approved in the Decision (which is the lesser of $12.2M or the actual spend) and the CAPEX amount determined in Order 2 here to give effect to the matters asserted in the grounds for this application.

4. Further or alternatively, the Electricity Review Board to make the adjustments consequential to any order under Order 2 and Order 3 here, for Western Power to effectively pay back for any excessive returns it received from inclusion of the CAPEX, allowed under the Decision, into the RCB/RAB to give effect to the matters asserted in the grounds for this application.

5. Further or alternatively, the Electricity Review Board to remove from the Regulatory Capital Base (**RCB**), if applicable, any difference between the projected recovery of costs (based on the 250MW DSOC stated in the Decision) and the actual recovery of costs (if the actual DSOC was lesser than that stated in the Decision for any period of time so far) to give effect to the matters asserted in the grounds for this application.

6. Further or alternatively, the Electricity Review Board to cause single line diagrams for the connection of all wind farms in the SWIN to become available for review to give effect to the matters asserted in the grounds for this application.

7. Further or alternatively, the Electricity Review Board to cause a review of the single line diagram(s) for the connection of all wind farms in the SWIN in order to assess whether in each case:

    a. Western Power enforced compliance with the Technical Rules?
    b. Western Power equally treated all wind farms with respect to enforcing compliance with the Technical Rules under Order 7.a here?
    c. Were the works efficient works?
    d. Were the shared and connection assets correctly classified?
    e. Did any wind farm generator receive advantage (financial or risk mitigation) from any works above the efficient works or any incorrect classification of connection assets into shared assets, as determined under Orders 7.c. and 7.d. here?
    f. Did Western Power receive regulatory advantage (financial or risk mitigation) from any works above the efficient works or any incorrect classification of connection assets into shared assets, as determined under Orders 7.c. and 7.d. here?

g. Were the third party users of electricity in the SWIN disadvantaged (financially or by the risk mitigated away from the wind farm or Western Power) from any works above the efficient works or any incorrect classification of connection assets into shared assets, as determined under Orders 7.c. to 7.f. here?

h. Describe and quantify (in dollar terms) the aggregate financial (and, if possible, the risk mitigated away from the wind farm or Western Power) disadvantage the third party users of electricity in the SWIN received, as determined under Orders 7.c. to 7.f. here.

to give effect to the matters asserted in the grounds for this application.

8. Further or alternatively, the Electricity Review Board to verify adequacy of the current power transfer limit of 155MW on the 220kV line to the Eastern Goldfields to give effect to the matters asserted in the grounds for this application.

9. Further or alternatively the Electricity Review Board to calculate, draft and approve the aggregate amount of damage to the network users in the SWIN for any higher than necessary electricity prices resulting from any unused power transfer capacity of the 220kV transmission line, as determined under Order 8 here.

10. Further or alternatively, the Electricity Review Board to remove from the RCB, any amount determined under Order 9 here to give effect to the matters asserted in the grounds for this application.

11. Upon request, the Applicant may review the single line diagrams referred to in Order 6 here and conduct a preliminary assessment of Orders 7.a to 7.g.

12. Further or alternatively, the Electricity Review Board to cause an order to rectify any disadvantage determined under Order 7.h. here to the third party users of electricity in the SWIN, for example by reducing the RCB effective on 30 June 2017, which is the end date for the current Access Agreement (**AA2**) to give effect to the matters asserted in the grounds for this application.

13. Further or alternatively, the Electricity Review Board to verify cost effectiveness of the design of the two 'cut-in' towers for connection of the CGT and whether or not the 220kV safety clearances on the adjacent two line segments are met.

14. Further or alternatively, the Electricity Review Board to remove from the RCB, any amount determined under Order 13 here (the cost above the efficient cost and those to establish the safety clearance compliance) to give effect to the matters asserted in the grounds for this application.

15. Further or alternatively, the Electricity Review Board to investigate whether the actions of Western Power and the Authority, with respect to the Collgar Windfarm NFIT assignment, 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.

16. Such further or other orders as may be appropriate.

The grounds for this application are annexed.

Applicant

S. Davidson

GROUNDS

Background

Societal

The issue raised here is important and urgent. It is important because any rise in electricity tariffs adversely affects Western Australian industrial competitiveness and consumer welfare, which is job and living standards. It is urgent because the current Access Arrangement expires on 30 June 2017 and the regulatory financial adjustments are made effective on that day.

Concern

Of concern is the extent to which the network investment (for example, Transmission Works to Connect Collgar Windfarm) will be financed by increasing the regulated network tariffs applying to all network users.

New Facilities Investment Test

Only that amount of the new facilities investment that meets the new facilities investment test can be added to the capital base of the network and recovered through regulated network tariffs.

The Authority's Final Determination on the New facilities Investment Test Application for the Connection of the Collgar Windfarm

Classification of Assets

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 on 13 May 2011 the proposed revised New Facilities Investment Test Application for Transmission Works to Connect Collgar Windfarm, submitted to the Authority on 25 October 2010 under section 6.71(b) of the Code when this is inconsistent with the objectives and sections 12.1, 12.2 and 12.3 of the Code by classifying a portion of the network augmentation as shared assets valued at $12,2M, whereby these should have be classified as connection assets[1].

[1] Note for information the Access Code definition for connection assets is: for a *connection point*, means all of the *network assets* that are used only in order to provide *covered services* at the *connection point*.

2. Namely, the Collgar Windfarm is located next to the 220kV interconnector to the Eastern Goldfields (**EGF)** region of Western Australia, adjacent to its Merredin – Yilgram 220kV transmission line section, approximately 25km east of the existing Merredin Terminal.
3. The Transmission Works to Connect Collgar Windfarm result in the 220kV transmission line cut-in to establish Collgar Terminal (**CGT**). These works provide new services to exclusively support CGT and the associated wind farm.
4. Prior to the Collgar Windfarm's application for access, Western Power had no plans to establish a terminal station at the CGT location. No other user of the network is supplied from the CGT, other than the Collgar Windfarm.
5. The Applicant advises that no benefit will be realised by existing customers as a result of the CGT. Hence the Applicant submits that all Transmission Works to Connect Collgar Windfarm should be classified as connection assets.
6. However, in the event that the Electricity Review Board determines that a portion of Transmission Works to Connect Collgar Windfarm should remain classified as shared assets, the Applicant requests that the classification be explained so that reasoning can be reflected in future submissions on customer connection works.
7. The erroneous classification of connection assets into shared assets, explained in Items 1 to 6 here, also adversely contributed to the level of the public/government debt in Western Australia.
8. It may have also contributed to the State of Western Australia losing its AAA credit rating, with all consequential adverse effects.
9. For example, one of the consequences of loosing AAA credit rating is increased borrowing costs. An increase in the borrowing costs, generally, increases the Weighted Average Cost of Capital (**WACC**). Western Power's revenue increases as the WACC increases.
10. An increase in Western Power's revenue could be interpreted as a financial award.
11. It would be unfair that Western Power (as well as any other decision maker) be financially rewarded for poor decision(s) / financial management, if these result in unreasonable gold plating of the network, the cost of which is transferred away from the decision maker(s) to other users of the network.

The Applicable Planning Criterion of the Technical Rules

12. Further or alternatively, 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 on 13 May 2011 the proposed revised New Facilities Investment Test Application for Transmission Works to Connect Collgar Windfarm, submitted to the Authority on 25 October 2010 under section 6.71(b) of the Code when this is inconsistent with the objectives and sections 12.1, 12.2 and 12.3 of the Code by uncritically relying on the inappropriate, for the purpose of selecting the design of the project, assertion by Western Power that clause 2.5.2.2 of the Technical Rules applies to the 220kV interconnection supplying the Eastern Goldfields region, whereby it is explicitly stated in the Technical Rules that clause 2.5.2.1 applies.
13. That is shown in the following extract from clause 2.5.2 Transmission System (up to the end of clause 2.5.2.2): [2]

*"**2.5.2 Transmission System***

The Network Service Provider must design the transmission system in accordance with the applicable criteria described below.

2.5.2.1 N-0 Criterion

(a) A sub-network of the transmission system designed to the N-0 criterion will experience the loss of the ability to transfer power into the area supplied by that sub-network on the loss of a transmission element. Following such an event this power transfer capability will not be restored until the transmission element has been repaired or replaced.

(b) The N-0 criterion may be applied to sub-networks with a peak load of less than 20 MVA and to zone substations with a peak load of less than 10 MVA. The N-0 criterion also applies to the 220 kV interconnection supplying the Eastern Goldfields region.

In the event of an unplanned outage of the 220 kV interconnection supplying the Eastern Goldfields region the power system is expected to split into two islands. Arrangements are in place to supply the

[2] Western Power, "*Technical Rules*", Approved by Economic Regulation Authority, effective from 23 December 2011, clause 2.5.2.2, p.24.

Kalgoorlie-Boulder city and Coolgardie town loads during an interconnection outage but Users outside these areas will need to make their own arrangements for any back-up generation requirement.

2.5.2.2 N-1 Criterion

(a) Any sub-network of the transmission system that is not identified within this clause 2.5.2 as being designed to another criterion must be designed to the N-1 planning criterion.

(b) For sub-networks designed to the N-1 criterion (excluding a zone substation designed to the 1% risk or NCR criteria in accordance with clause 2.5.4), supply must be maintained and load shedding avoided at any load level and for any generation schedule following an outage of any single transmission element.

(c) Following the loss of the transmission element, the power system must continue to operate in accordance with the power system performance standards specified in clause 2.2.

(d) Notwithstanding the requirements clauses 2.5.2.2(b) and 2.5.2.2(c), where the failed transmission element is a zone substation supply transformer, supply may be lost for a brief switching period while loads are transferred to un-faulted supply transformers by means of distribution system switching. The Network Service Provider must maintain sufficient power transfer capacity to allow supply to all Consumers to be restored following switching"

14. Note the qualifier of clause 2.5.2.1(a):

    "The N-0 criterion also applies to the 220 kV interconnection supplying the Eastern Goldfields region."

    (as it consists of only one circuit) and clause 2.5.2. Hence Item 13 and this Item 14 prove the assertion of Item 12 here.

15. In order to be quite sure, it is pertinent to consider whether the Technical Rules require, as a condition for the provision of new or upgraded connections, network augmentations that provide enhanced levels of service, or whether required augmentations should be limited to those necessary to ensure that existing levels of service are maintained and no user is detrimentally affected by the new or upgraded connection.

16. The applicant advises that the Rules require only the maintenance of existing service levels and only require upgrades to meet current Rules requirements when new assets are installed or existing assets are being modified. The applicant was unable to identify any provision in the Technical Rules that requires otherwise.
17. In 2015, the Authority shared the view of Item 16 here:

> *"... because the augmentations Western Power considers would be needed ... would provide a [SD: reliability and] quality of supply to the affected users over and above the quality they currently receive. We are unable to identify any provision in the Technical Rules that requires this."*[3]

18. The augmentation that Western Power considered for the CGT provided a reliability and quality of supply to the Collgar Windfarm user over and above the reliability and quality other users supplied from the 220kV EGF interconnector currently receive.
19. 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 on 13 May 2011 the proposed revised New Facilities Investment Test Application for Transmission Works to Connect Collgar Windfarm when this is inconsistent with the objectives and sections 12.1, 12.2 and 12.3 of the Code in that the Authority approved the design, that Western Power proposed for the CGT, that provide a reliability and quality of supply to the Collgar Windfarm user over and above the reliability and quality stipulated in the Technical Rules and above that other users supplied from the 220kV EGF interconnector currently receive.
20. The above Items 12 to 19 here show that the CGT's design exceeds the efficient design level stipulated in the Technical Rules, so the cost of the Transmission Works to Connect Collgar Windfarm is higher than the cost of efficient works.
21. The Applicant asserts that costs above efficient levels should be funded by the network owner(s), not customers.

Clause 3.2.2 of the Technical Rules

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[3] Economic Regulation Authority, Notice, *Application for an exemption from certain requirements of the Technical Rules submitted by Western Power*, 4 September 2015, p.2.

22. Further or alternatively, 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 on 13 May 2011 the proposed revised New Facilities Investment Test Application for Transmission Works to Connect Collgar Windfarm, submitted to the Authority on 25 October 2010 under section 6.71(b) of the Code when this is inconsistent with the objectives and sections 12.1, 12.2 and 12.3 of the Code by uncritically approving the inappropriate, for the purpose of selecting the design of the project, assertion by Western Power that the proposed design of the EGT complies with the Technical Rules, whereby the design of the EGT does not comply with clause 3.2.2 Main Switch of the Technical Rules

23. Clause 3.2.2 Main Switch of the Technical Rules:[4]

*"**3.2.2 Main Switch***

Except as provided in clause 3.3.3.10, a User must be able to de-energise its own equipment without reliance on the Network Service Provider."

allocates the responsibility on users to install own switching apparatus in order to connect to and disconnect from the transmission or distribution network.

24. Clause 3.3.3.10 De-energisation of Generator Circuits of the Technical Rules[5] complements clause 3.2.2 Main Switch of Item 23 here, as follows:

*"**3.3.3.10 De-energisation of Generator Circuits***

The Network Service Provider's relevant circuit breaker may be used as a point of de-energisation, instead of the main switch specified in clause 3.2.2 provided that the Generator meets the following requirements:

(a) the Generator must be able to synchronise any parallel generating equipment to the transmission or distribution system across a circuit breaker owned by the Generator;

(b) the Generator must be able to clear a fault on its equipment:

(1) without adversely affecting any other User or potential User; and

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[4] Western Power, "*Technical Rules*", Approved by Economic Regulation Authority, effective from 23 December 2011, clause 3.2.2, p.40.

[5] Western Power, "*Technical Rules*", Approved by Economic Regulation Authority, effective from 23 December 2011, clause 3.3.3.10, p.54.

(2) within the fault clearance times specified in clause 3.5.2(b);

provided that the substation where the Network Service Provider's relevant circuit breaker is located is in its normal operating configuration.

(c) if:

(1) the Generator has only one circuit at the connection point; and

(2) the Network Service Provider's relevant circuit breaker is located in a meshed substation

and if:

(3) the Generator's facilities are continuously manned with personnel capable of resetting a hand-reset protection relay; or

(4) the Generator's facilities have self-resetting relays,

then the Generator may de-energise its equipment by sending a trip signal to the Network Service Provider's relevant circuit breaker.

(d) the Generator must own a visible point of isolation between the Network Service Provider's relevant circuit breaker and the Generator's equipment for each piece of equipment connected to the transmission or distribution system.

Under the relevant connection agreement, the Network Service Provider will require the Generator to indemnify the Network Service Provider from any and all liability for any direct or indirect damage caused to the User as a result of the Generator's electing to use any Network Service Provider's circuit breaker to clear a fault under clause 3.3.3.10(c).

25. Clause 3.3.3.10 De-energisation of Generator Circuits of the Technical Rules was probably added to the Technical Rules in order to accommodate the Electricity Generation Corporation (then Verve, now Synergy) after old Western Power was segregated into four corporations, and the administrative decision was made to allocate ownership of the transmission switchyards to the Electricity Network Corporation. If so, then it could be said, instead, that

clause 3.2.2 does not apply for Verve's power stations existing at the time of the segregation.

26. For avoidance of doubt, it will be considered that clause 3.2.2 applies here.
27. Further or alternatively, 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 on 13 May 2011 the proposed revised New Facilities Investment Test Application for Transmission Works to Connect Collgar Windfarm, submitted to the Authority on 25 October 2010 under section 6.71(b) of the Code when this is inconsistent with the objectives and sections 12.1, 12.2 and 12.3 of the Code by uncritically approving the inappropriate, for the purpose of selecting the design of the project, assertion by Western Power that the proposed design of the EGT complies with the Technical Rules, whereby the design of the EGT does not comply with clause 3.3.3.10 De-energisation of Generator Circuits, as evidenced by the NFIT submission.[6]
28. For fairness, on 9 September 2009 Western Power granted to the Collgar Windfarm exemption from compliance with clause 3.3.3.10 of the Technical Rules[7] and included it in the NFIT submission.
29. However, the amount of capital contribution Western Power charged to Collgar Windfarm, in exchange for the exemption from compliance with clause 3.3.3.10, was less than the full cost: *a)* Collgar Winfarm would incur to comply with clause 3.3.3.10 of the Technical Rules, and; *b)* Western Power incurred to construct the same equipment (two circuit breaker bays). For example, our review of Table 2, Section 3, page 5 of the NFIT submission shows $11.8M cost for Western Power (row numbered 5) and, only, $5.9M for Collgar Windfarm (row numbered 1). By doing so, Western Power and Collgar Windfarm effectively transferred the costs to users of electricity in the SWIN.
30. The above Items 22 to 29 here show that the CGT's design exceeds the efficient design level stipulated in the Technical Rules, so the cost of the Transmission Works to Connect Collgar Windfarm is higher than the cost of efficient works.

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[6] Western Power, *APPROVAL OF NEW FACILITIES INVESTMENT Construction of Collgar Terminal Substation and associated works for the connection of Collgar Windfarm*, Submission for the Economic Regulation Authority, 11 October 2010.

[7] Western Power, *APPROVAL OF NEW FACILITIES INVESTMENT Construction of Collgar Terminal Substation and associated works for the connection of Collgar Windfarm*, Submission for the Economic Regulation Authority, 11 October 2010, Attachment 1 – Options Analysis, Appendix 2, pages 37-38.

31. The Applicant asserts that costs above efficient levels should be funded by the network owner(s), not customers.

Declared Sent Out Capacity

32. Further or alternatively, 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 on 13 May 2011 the proposed revised New Facilities Investment Test Application for Transmission Works to Connect Collgar Windfarm, submitted to the Authority on 25 October 2010 under section 6.71(b) of the Code when this is inconsistent with the objectives and sections 12.1, 12.2 and 12.3 of the Code by uncritically approving the inappropriate, for the purpose of the NFIT submission, calculation of the anticipated incremental revenue by Western Power based on the Collgar Windfarm's Declared Sent Out Capacity (**DSOC**) of 250MW, whereby the Collgar Windfarm had at the time a considerably lesser installed generation capacity than 250MW used in the NFIT submission.
33. Namely, Collgar Windfarm currently has (after recent increase?) a considerably lesser installed generation capacity of 206MW:[8]

> *"The power station consists of 111 Vestas V90 1.86 MW wind turbines with a total generating capacity of 206 MW."*

34. Further, at the time of the NFIT submission (before the recent upgrade to 206MW?), Colgar Windfarm probably had DSOC of less than 200MW (the Applicant was unable to find this information on the Authority's web site at the time of writhing this Application).
35. The above DSOC discrepancy of Items 32 to 34 here considerably and unreasonably over estimated the amount of the anticipated incremental revenue in the NFIT submission.
36. It also shifted the cost of establishing of the CGT and the associated financial risk away from Western Power and Collgar Windfarm to other network users.
37. Western Power and the Authority should have known at the time that the DSOC value of 250MW was unrealistic, for the following reasons:

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[8] McGill Engineering Services Pty Ltd, *COLLGAR WIND FARM PTY LTD GENERATION LICENCE EGL 22 PERFORMANCE AUDIT ASSET MANAGEMENT REVIEW REPORT*, Submission for Economic Regulation Authority, 7 March 2017, p.6.

(a) A DSOC value other than 250MW DSOC was (probably) stated in the Western Power's (executed) access contract with Collgar Windfarm at the time.

(b) A DSOC value other than 250MW DSOC was (probably) stated in the license the Authority granted to the Collgar Windfarm at the time or any audit report(s) published as a licence condition.

(c) A registered DSOC value is a basis for market and network fees and charges.

38. Consequently, the NFIT application submitted by Western Power on 25 October 2010 did not appear to be in good faith nor the appropriate use of the Collgar Windfarm's DSOC information publicly, and privately to Western Power, available at the time.

39. Subsequently, the NFIT application approved by the Authority on 13 May 2011 did not appear to be in good faith nor the appropriate use of the Collgar Windfarm's DSOC information that was publicly, and privately to the Authority, available at the time.

40. Consequently, Western Power and the Authority failed and financially disadvantaged other network users of the SWIN (other than the Collgar Windfarm). This should be rectified, for example by calculating the shortfall (based on its timing) and deducting it from the Western Power's RCB; for estimating the future shortfall, the current 206MW DSOC for Collgar Windfarm should be used, in the Applicant's opinion.

Voltage conversion (of the 220kV EGF line)

41. Further or alternatively, 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 on 13 May 2011 the proposed revised New Facilities Investment Test Application for Transmission Works to Connect Collgar Windfarm, submitted to the Authority on 25 October 2010 under section 6.71(b) of the Code when this is inconsistent with the objectives and sections 12.1, 12.2 and 12.3 of the Code by uncritically approving the inappropriate, for the purpose of the NFIT submission, assertion by Western Power that upfront installation of 330kV plant and equipment minimizes the total cost of the installation of CGT over a reasonable period of time.

42. The assertion of Item 41 here was based on the assumption (in the NFIT submission) that the (voltage) conversion of the existing 220kV EGF line (to either 275kV or 330kV) will occur in 2018.
43. The assumption of Item 42 here was unreasonable at the time, not substantiated and inconsistent with the "verbose qualifier"[9] (in the same NFIT submission) to the effect of that "*Western Power is not currently committing [in year 2010] to upgrading the 220kV line in 2018*":

> "*Although Western Power are not currently committing to upgrading the line in 2018, given the current information, anticipated load forecast and available options, the recommended option is that the EGF line is up-rated from 220 kV to 275 kV in 2018. This is the best information available at this moment in time but it may be subject to change in the future if the load forecast changes or if the generation profile in the East Country and/or EGF changes.*"

44. The Applicant understands that the purpose of converting the 220kV transmission line to either 275kV or 330kV is to increase its maximum power transfer capacity. Western Power's Collgar Windfarm NFIT submission apparently sends a mixed message whether that increase needed or not, as is shown in Item 42 and Item 43 here.
45. Further or alternatively, the Applicant's review of the subsequent (in year 2015) Western Power's application for exemption from compliance from clause 2.5.2.2 the Technical Rules clause for Newmont Mining Services reveals that there is no uniformity in opinion between Western Power and the Authority (the Authority's technical consultant) on whether or not increase of the power transfer capacity of the 220kV transmission line is needed or not, as is shown in Items 46 and 47 here.
46. Namely, on 20 August 2015 the Authority's technical consultant reported, to the effect of, that there is no need to increase the power transfer capacity of the 220kV transmission line to the EGF, as:[10]

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[9] Western Power, APPROVAL OF NEW FACILITIES INVESTMENT *Construction of Collgar Terminal Substation and associated works for the connection of Collgar Windfarm*, Submission for the Economic Regulation Authority, 11 October 2010, Attachment 1 – Options Analysis, page 16, 1st paragraph.

[10] Geoff Brown & Associates, *Review of Western Power's Application for a Technical Rules Exemption for Newmont Mining Services*, Submission for the Economic Regulation Authority, 20 August 2015, page 3, 3rd paragraph, 1st sentence.

"*In the Application Western Power has indicated that the current power transfer limit of 155MW is sufficient to meet forecast short to medium term load requirements.*"

47. However, the Applicant's review of the Western Power's application referred to in Item 46 here revealed that Western Power had, actually, asserted:[11]

"*Western Power is currently investigating a number of options to alleviate the voltage and transient stability limitations in the Eastern Goldfields load area.*"

48. Consequently, the assertions of Item 46 and Item 47 here are conflicting or inconsistent.
49. That conflict or inconsistency is unexpected and the Applicant is unsure to which assertions to believe in: to that made by the Authority (in Item 46 here) or to that made by Western Power (in Item 47 here), and, most importantly, whether the additional expenditure to design the CGT to 330kV was efficient use of the capital or not.
50. One way or another, decisions to spend large amounts of money should not be made if the arguments are conflicting or inconsistent, for example as those described in Items 41 to 49 here.
51. Consequently, the Applicant is of the opinion that the 330kV design for the CGT was unjustified at the time the Authority approved it in 2011.
52. The above Items 41 to 51 here show that the CGT's design exceeds the efficient design level stipulated in the Technical Rules, so the cost of the Transmission Works to Connect Collgar Windfarm is higher than the cost of efficient works at the time.
53. The Applicant asserts that costs above efficient levels should be funded by the network owner(s), not customers.

Protection upgrade

54. Refer to Paragraph 34 of Western Power's response to the draft determination dated 30 March 2011[12]:

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[11] Western Power, *Submission to the Economic Regulatory Authority for exemption from the Technical Rules clause 2.5.2.2 for Newmont Mining Services*, Submission for the Economic Regulation Authority, 3 July 2015, page 6, 2nd last paragraph, 1st sentence.

[12] Western Power, *SUBMISSION ON DRAFT DETERMINATION OF NFIT PRE-APPROVAL FOR THE CONNECTION OF COLLGAR WINDFARM*, Submission for the Economic Regulation Authority, 30 March 2011, Paragraph 34, p.8.

*"The communications works for Collgar involves cut-in of the existing powerline carrier (**PLC**) systems between Merredin Terminal (MRT) and Yilgarn (YLN) substations. This is as a result of the 220kV transmission line cut-in to establish CGT…".*

55. The decision to cut into the 220kV transmission line results from the erroneous interpretation of the Technical Rules that the "N-1" planning criterion of clause 2.5.2.2 applies, as explained in Items 12 to 21 here.
56. The applicable "N-0" planning criterion of clause 2.5.2.1 of the Technical Rules permits teed connections, including for the Collgar Windfarm.
57. The Applicant understands that more than one substation is supplied from the 220kV EGF line via a teed connection.
58. Consequently, and pursuant to clause 1.9.4 of the Technical Rules, the protection upgrade was not mandated by the Technical Rules, meaning the protection upgrade works were works above the efficient level of works required to provide covered services for connection of the Collgar Windfarn.
59. Further or alternatively, 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 on 13 May 2011 the proposed revised New Facilities Investment Test Application for Transmission Works to Connect Collgar Windfarm, submitted to the Authority on 25 October 2010 under section 6.71(b) of the Code when this is inconsistent with the objectives and sections 12.1, 12.2 and 12.3 of the Code by uncritically approving the inappropriate, communication works for the purpose of the NFIT submission, whereby these works were not needed to efficiently provide covered service to the Collgar Windfarm.
60. The above Items 54 to 59 here show that the CGT's design exceeds the efficient design level stipulated in the Technical Rules, so the cost of the Transmission Works to Connect Collgar Windfarm is higher than the cost of efficient works.
61. The Applicant asserts that costs above efficient levels should be funded by the network owner(s), not customers.

Communication upgrade

62. Refer to Paragraph 35 of Authority's Draft Determination[13] of 1 March 2011:

> *"The Authority also considers that the costs relating to the communication component should be classified as a shared asset for the reasons given by the Authority's technical advisor."*

63. At the time of writing this Application the Applicant was unable to find the "*reasons given by the Authority's technical advisor*" nor the report prepared by the Authority's technical advisor on the Authority's web site. Hence, apparently there is no full transparency on the Collgar Windfarm NFIT determination.
64. For the reasons of Item 63 here, the Applicant is unable to comment on the recommendation of Item 62 here.
65. However, the recommendation of Item 62 here infers that the Authority may have taken the role of the player and referee at the same time. Was that appropriate?
66. For fairness, the Western Power did not accept the Authority's recommendation of Item 62, as explained in Paragraph 36 of Western Power's response to the draft determination dated 30 March 2011[14], as:

> *"... no benefit will be realised by existing customers as a result of the PLC Communication Works. Hence Western Power submits that the PLC communication works should remain classified as connection assets."*

67. The Authority accepted the argument of Item 66 here.
68. This Application generalizes the argument of Item 66 here to other components of the Transmission Works to Connect Collgar Windfarm.
69. Item 1 here applies to the CGT plant as a whole. Hence, the Applicant submits that the CGT as a whole should be classified as a connection asset for essentially the same reasons of Items 66 and 67 here (and in addition to those stated in Items 1 to 11 here).

Related Issue – Increasing the 220kV EGF line rating

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[13] Economic Regulation Authority, *DRAFT DETERMINATION ON THE NEW FACILITIES INVESTMENT TEST APPLICATION FOR THE CONNECTION OF COLLGAR WINDFARM*, Draft Determination, 1 March 2011, Last sentence of Paragraph 35, p.8.

[14] Western Power, *SUBMISSION ON DRAFT DETERMINATION OF NFIT PRE-APPROVAL FOR THE CONNECTION OF COLLGAR WINDFARM*, Submission for the Economic Regulation Authority, 30 March 2011, Paragraph 36, p.9.

70. There is a possibility that the power transfer limit on the EGF line may be increased at no cost if it was found that the application of either TVD, TVR or 180 degrees criteria, abandoned in TR-2007 as over-conservative, set the current 155MW limit. Western Power should have submitted that document(s) to the System Management/ERA/IMO/AEMO[15], as per clause 2.3.8(a) of the Technical Rules.
71. The suggestion of Item 70 here was put forward to the Authority during the public consultation process in 2016. The Authority (Authority's technical consultant replied,[16] to the effect of, that "*they are not aware of any adverse consequences*":

> "*We are not aware of any adverse effects of Mr Davidson's submission notes that three stability safety margins, transient voltage dip (TVD), transient voltage recovery (TVR) and 180^0 rotor angle stability criterion, were removed from the Rules in 2007 as over-conservative. We are not aware of any adverse impact as a result of these changes.*"

That reply did not address the central issue of Item 70 here.

72. It is reasonable to investigate first no cost or low cost options to increase the power transfer limit of any line, including that of the EGF 220kV transmission line, before considering high cost options of increasing voltage levels Western Power considered in the Collgar Windfarm NFIT submission.
73. Similarly and apparently, another unexplored no cost or low cost option to increase the power transfer limit of the 220kV EGF interconnection is to utilize fast responsive reactive power capability of the static equipment (Static VAr Compensator or STATCOM) installed in the Collgar Windfarm. It could have a similar role to that installed in Snuggery near the border between Victoria and South Australia, on the Victorian interconnector to South Australia. In simple terms, that role could be to provide a strong voltage support point in the mid section of the extremely long interconnection to the EGF (about 640km), in order to increase its power transfer capacity above 155MW (the current limit).

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[15] Steve Davidson, *ISSUES PAPER - MARCH 2016 PROPPOSED CHANGES OF THE TECHNICAL RULES – THREE PHASE CREDIBLE CONTINGENCY*, Submission for the Economic Regulation Authority, 8 June 2016, p.2

[16] Geoff Brown & Associates, *REVIEW OF WESTERN POWER'S APPLICATION FOR TECHNICAL RULES AMENDMENTS*, 31 August 2016, Submission for Economic Regulation Authority, 1st bullet point, extract from 2nd sentence, p.7.

74. The Applicant seeks an order to verify adequacy of the 155MW current power transfer limit on the 220kV EGF line, as per Item 70 and Item 73 here and as required under clause 2.3.8 of the Technical Rules. When was the last time the power transfer limit on the EGF line was re-evaluated and what stability criteria were used? Similarly, was the power transfer limit on other transmission lines in the SWIN re-evaluated or not after relaxing the stability criteria in 2007?
75. An under-stated power transfer capacity of the transmission line (or distribution line operated by the AEMO)(apart from not complying with the requirement of clause 2.3.8 of the Technical Rules) adversely impacts on the operation of the Wholesale Electricity Market **(WEM**), valuation of the line (for the purpose of selling the asset as part of Western Power, as it reflects its 'ability to earn income') and increases the cost of electricity supplied to users of the SWIN.
76. If the investigation requested in Item 74 here showed that the power transfer limit could have been increased above the current limit of 155MW (under certain operating conditions, as per clause 2.3.8 of the Technical Rules), then network users in the SWIN should be compensated for higher than necessary, resulting, electricity prices.
77. The Applicant asserts that the consequential (market and network) costs above the efficient levels should be funded by the network owner(s) / causers and refunded to other users of the SWIN, for example by calculating the total excess cost and deducting it from the Western Power's RCB effective on 30 June 2017.

Related Issue – Inconsistent Application of the Regulation

78. It is shown in Items 12-14 and 17-18 here that Western Power consistently misinterpreted the planning criterion of the Technical Rules (in 2010 and in 2015 respectively the Collgar Windfarm NFIT for the exemption to supply Newmont Mining Services). These are just two projects the Applicant randomly selected to audit, hence the concern is for how many other projects the same or similar may apply?
79. In both examples of Item 78 here Western Power erred on the side of unfairly and excessively increasing own regulated revenue, through increased regulated tariffs.

80. It is shown in Items 12 and 17 here that the Authority inconsistently interpreted the applicable planning criterion of the Technical Rules for the 220kV interconnector to the EGF (in 2010 and in 2015 respectively the Collgar Windfarm NFIT for the exemption to supply Newmont Mining Services). These are just two projects the Applicant randomly selected to audit, hence the concern is for how many other projects the same or similar may apply?
81. It is also shown in Item 62 here that the Authority also erred in recommending to Western Power to reclassify the connection assets as shared assets.
82. Similarly to the stated in Item 79 here, the Authority's inconsistent application of the Technical Rules of Item 80 here and the recommendation of Item 81 here also erred to the effect of unfairly and excessively increasing the Western Power's regulated revenue, through increased network tariffs, and ultimately increasing electricity prices to other network users in the SWIN.
83. It is also shown in Items 32 to 34 and 37 here that Western Power and the Authority did not use the best DSOC information available at the time, which considerably and unreasonably over estimated the amount of the anticipated incremental revenue in the NFIT submission. This could be interpreted as coordinated or misleading conduct, the beneficiary of which were Collgar Windfarm and Western Power. This conduct adversely affected other users of the SWIN by unreasonably increasing prices for electricity.
84. The matters raised in Items 78 to 83 here raise concern about adequacy of the regulatory scrutiny and assessment Western Power and the Authority conducted in cases other than the Collgar Windfarm NFIT and Western Power's request for exemption to supply Newmont Mining Services.
85. In order to define a manageable scope of work to address the concern of Item 84 here, the Applicant respectfully requests that the Electricity Review Board cause the checking of the adequacy of the regulatory assessment of all already connected wind farms in the SWIN. The ultimate objective would be to lower the: a) overall price of electricity in Western Australia, and b) amount needed to fund the Tariff Equalisation Scheme; by removing any excess capital from the Western Power's RCB and any excess assets from the RAB.
86. In order to efficiently carry out the requested assignment of Item 85 here, the first step would be to acquire single line diagrams (of the primary equipment) for all wind farms in the SWIN.

87. The single line diagrams of Item 86 here would be used to determine if the design complies or not with the requirements of cluse 3.2.2 of the Technical Rules and the applicable planning criteria, and whether it is an efficient design.
88. Comparison of the single line diagrams of Item 86 here would also provide an indication on whether Western Power equally treated or not all wind farm generators as its customers. Any unequal treatment, if found, could be a matter for referral to the Australian Consumer and Competition Commission.
89. Upon request, the Applicant may review the single line diagrams of Item 86 here and conduct the preliminary assessment of Items 87 and 88 here.

Related Issue – Two transmission towers

90. Visual inspection of the aerial photos of the CGT on the Collgar Windfarm's web site reveals two unexpected engineering design features of its cut-in connection to the 220kV transmission line concerning the NFIT and safety.
91. One, the cut-in is made of two closely spaced and very high cost towers (due to uneven mechanical loading). An obviously more cost effective design would be to use a much lower cost single tower instead, so that the mechanical loads, on the opposite line sides, cancel each other.
92. Two, the two cut-in towers are seemingly of considerably lower height than the adjacent 220kV line towers which raises the safety concern. Namely, it should be checked whether or not the minimum 220kV safe clearance (from ground) was achieved on the two line segments between each of the two 'cut-in' towers and its adjacent 220kV line tower.
93. A related concern to those of Items 91 and 92 here is the number of man-hours spent to design the two towers.
94. The Applicant asserts that the costs above the efficient levels, as suggested in Items 91 and Item 93 here should be funded by the network owner(s) and refunded to other users of the SWIN, for example by calculating the total excess cost and deducting it from the Western Power's RCB effective on 30 June 2017.
95. The Applicant asserts that any costs to make the unsafe design compliant with the safety standards (existing at the time or current, whichever is greater), as suggested in Items 92 and 93 here should be funded by the network owner(s).

Related Issue – Instead of conclusion

96. The following is an extract from a recent article published in The Australian newspaper:[17]

> *"The energy debate is riddled with self-serving arguments in which the loser always seems to be the consumer.*
>
> *...*
>
> *The NSW government has just collected $23bn from partial sales of its state-owned electricity distribution assets, which underlines the self-interest in the appeal against the original AER decision.*
>
> *It wanted to maximize privatization returns so it wanted to get the best regulatory ruling, even if this means every NSW consumer will pay more for their electricity.*
>
> *That is dumb short-term thinking. ..."*

97. The Applicant shares the view John Durie expressed in the article the extract of which is quoted in Item 96 here.
98. The Applicant notes similarity with the Collgar Windfarm NFIT Determination - the loser has been the consumer, in Western Australia.
99. This Application presents an opportunity for the Electricity Review Board to protect small consumers in Western Australia.

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[17] John Durie, *Consumers zapped as bright sparks tinker with energy policy*, The Australian, 25 May 2017, p.19 (continued on) p.22.