

Final Determination on the New Facilities Investment Test Application for the Connection of Collgar Windfarm

Submitted by Western Power

13 May 2011

Economic Regulation Authority



WESTERN AUSTRALIA

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FINAL DETERMINATION

1. On 25 October 2010, the Economic Regulation Authority (**Authority**) received a new facilities investment test application from Western Power submitted under section 6.71(b) of the *Electricity Networks Access Code 2004* (**Access Code**).¹ The application was for the Authority to determine that forecast new facilities investment proposed by Western Power, for the connection of the Collgar Windfarm to the South West Interconnected Network (**SWIN**), meets the new facilities investment test. The proposed work was estimated to cost \$21.7 million and involved the construction of Collgar Terminal Substation and associated works for the connection of the wind farm.
2. Western Power's pre-approval application was for a total amount of forecast new facilities investment for the proposed works of \$21.7 million. Western Power submitted that an amount of \$13.9 million met the test of section 6.51A of the Access Code, by virtue of satisfying the new facilities investment test of section 6.52 of the Access Code. Western Power stated that the remaining expenditure would be financed by a capital contribution from the customer (Collgar Windfarm).
3. For the new facilities investment test to be satisfied, the new facilities investment must not exceed the amount that would be invested by a service provider efficiently minimising costs and must satisfy at least one of the following conditions:
 - the investment generates enough revenue to cover the investment costs (the "incremental revenue" condition); or
 - the investment provides a net benefit to justify higher network tariffs (the "net benefits" condition); or
 - the investment is necessary to maintain the safety or reliability of the network or its ability to provide network services (the "safety and reliability" condition).
4. In making a determination on a new facilities investment test application, the Authority is required to consult with the public in accordance with the consultation requirements of Appendix 7 of the Access Code. The Authority issued an invitation for submissions on 13 December 2010, with a closing date for submissions of 29 December 2010. As part of this consultation, the Authority prepared an issues paper to assist interested parties in understanding the new facilities investment test and Western Power's new facilities investment test application.² No submissions were received.
5. On 1 March 2011, the Authority issued a Draft Determination to not approve Western Power's new facilities investment test application on the basis that the information provided by Western Power was not sufficient to enable the Authority to satisfy itself that the forecast costs were efficient.

¹ Western Power, 11 October 2010, Approval of New Facilities Investment: Construction of Collgar Terminal Substation and associated works for the connection of Collgar Windfarm (hereafter referred to as "**new facilities investment test application**").

² Economic Regulation Authority, 13 December 2010, Issues Paper: New Facilities Investment Test Application for Connection of Collgar Windfarm Submitted by Western Power.

6. The Authority invited submissions on the Draft Determination until 30 March 2011. The only submission received was from Western Power.
7. Western Power's submission included a revised forecast capital cost of \$19.7 million for the connection of Collgar Windfarm, which excluded a risk allowance that was incorporated into its application. Western Power submitted that an amount of \$12.2 million now met the test of section 6.51A of the Access Code.
8. After consideration of Western Power's new facilities investment test application, its subsequent submission and independent advice from the Authority's technical advisor,³ the Authority's Final Determination is to give pre-approval to the forecast new facilities investment included in Western Power's revised submission. As the application relates to forecast new facilities investment, the determination only binds the Authority if the new facilities investment has proceeded as proposed. The Authority considers this to include the new facilities investment proceeding as planned and the cost not exceeding the forecast. Only actual capital expenditure up to the pre-approved forecast amount will be added to the regulatory capital base at the next access arrangement review.

REASONS

9. The reasons for this final determination address the following matters:
 - the test of section 6.51A of the Access Code for adding new facilities investment to the capital base;
 - the structure and elements of the new facilities investment test under section 6.52 of the Access Code;
 - details of Western Power's proposed works; and
 - the assessment of the proposed transmission works against the requirements of the test of section 6.51A of the Access Code, including the new facilities investment test under section 6.52 of the Access Code.

Test for adding New Facilities Investment to the Capital Base

10. Section 6.51A of the Access Code establishes a test that must be satisfied for an amount of new facilities investment to be added to the capital base.

6.51A New facilities investment may be added to the capital base if:

- (a) it satisfies the new facilities investment test; or
- (b) the Authority otherwise approves it being added *[sic]* to the capital base if:
 - (i) it has been, or is expected to be, the subject of a contribution; and
 - (ii) it meets the requirements of section 6.52(a); and

³ Geoff Brown & Associates Ltd.

- (iii) the access arrangement contains a mechanism designed to ensure that there is no double recovery of costs as a result of the addition.
- 11. Sections 6.71 and 6.72 of the Access Code allow a service provider to seek a determination that either an actual amount, or forecast amount, of new facilities investment meets the test of section 6.51A.
 - 6.71 A service provider may at any time apply to the Authority for the Authority to determine whether:
 - (a) actual new facilities investment made by the service provider meets the test in section 6.51A; or
 - (b) forecast new facilities investment proposed by the service provider is forecast to meet the test in section 6.51A.
 - 6.72 If an application is made to the Authority under section 6.71, then subject to section 6.75 the Authority must make and publish a determination (subject to conditions as the Authority may consider appropriate) within a reasonable time.⁴

The New Facilities Investment Test

- 12. Section 6.52 of the Access Code sets out the new facilities investment test.
 - 6.52 New facilities investment satisfies the new facilities investment test if:
 - (a) the new facilities investment does not exceed the amount that would be invested by a service provider efficiently minimising costs, having regard, without limitation, to:
 - (i) whether the new facility exhibits economies of scale or scope and the increments in which capacity can be added; and
 - (ii) whether the lowest sustainable cost of providing the covered services forecast to be sold over a reasonable period may require the installation of a new facility with capacity sufficient to meet the forecast sales;
 - and
 - (b) one or more of the following conditions is satisfied:
 - (i) either:
 - A. the anticipated incremental revenue for the new facility is expected to at least recover the new facilities investment; or

⁴ Section 6.75 of the Access Code indicates that the Authority must make a determination if the actual or forecast amount of new facilities investment is equal to or greater than \$15 million (CPI adjusted); otherwise the Authority may make a determination. The 2010 CPI adjusted threshold is \$17.8 million as stated in the Economic Regulation Authority's Notice on 2010 Consumer Price Index Adjustments, 1 July 2010.

- B. if a modified test has been approved under section 6.53 and the new facilities investment is below the test application threshold - the modified test is satisfied;

or

- (ii) the new facility provides a net benefit in the covered network over a reasonable period of time that justifies the approval of higher reference tariffs; or
 - (iii) the new facility is necessary to maintain the safety or reliability of the covered network or its ability to provide contracted covered services.
13. For convenience, the elements of the new facilities investment test are referred to below as the “efficiency test” (section 6.52(a) of the Access Code), “incremental revenue test” (section 6.52(b)(i)A of the Access Code), “net benefits test” (section 6.52(b)(ii) of the Access Code) and “safety and reliability test” (section 6.52(b)(iii) of the Access Code).
14. For the new facilities investment test to be satisfied, the new facilities investment must satisfy the efficiency test and one or more of the incremental revenue test, net benefits test, or safety and reliability test.

Western Power’s Pre-Approval Application

15. Western Power’s proposed works are required to connect the Collgar Windfarm, which is located adjacent to the Merredin-Yilgarn 220 kV transmission line approximately 25 km east of Merredin Terminal, to the SWIN.
16. The proposed works consist of the construction of Collgar Terminal Substation and associated works for the connection of Collgar Windfarm. The forecast capital cost included in the original new facilities investment test application was \$21.7 million which included a \$2.1 million risk allowance. Following the draft determination, Western Power made a submission which included a revised forecast exclusive of the risk allowance.

Component of Works	Original Application	Submission
(1) Construction of two dedicated circuit breaker bays and associated works for connection of the Collgar Windfarm	\$5.9 million	\$5.6 million
(2) PLC Communication works	\$1.1 million	\$1.0 million
(3) Runback scheme	\$0.8 million	\$0.8 million
(4) Cut-in to the Eastern Goldfields 220 kV transmission line	\$1.0 million	\$1.0 million
(5) Construction of two circuit breaker bays and associated works	\$11.8 million	\$9.9 million
(6) Upgrade of the existing protection scheme on the Eastern Goldfields 220 kV transmission line	\$1.1 million	\$1.3 million
Total cost of augmentation	\$21.7 million	\$19.7 million

17. Western Power has advised that the customer has agreed to make a contribution to cover the first three components in the table above. Western Power has submitted that \$12.2 million, relating to the cost of components 4, 5 and 6 in the table above, satisfies the test of section 6.51A of the Access Code for adding the investment to the capital base, by virtue of satisfying the new facilities investment test.

Assessment Against the New Facilities Investment Test

18. The Authority considered Western Power's application under each part of the new facilities investment test as set out below.

Efficiency Test

Authority's Draft Determination

19. In assessing whether the proposed transmission works met the efficiency test of section 6.52(a) of the Access Code, the Authority gave consideration to the choice of project, the design standard and whether the forecast costs for the project were minimised.
20. Taking account of Western Power's submission and advice from the Authority's technical advisor, the Authority was satisfied that the proposed works represent an efficient choice of project.
21. On the matter of design standard, the Authority's technical advisor considered that, subject to the issues noted below, the design of the project appeared reasonable and the use of assets rated at 330 kV was appropriate.
22. The Authority's technical advisor noted the potential impact on network performance as a result of connecting a large power station in the middle of a relatively weak interconnection. Connection of the wind farm without adequately simulating its impact on the operation of the power system under both steady state and dynamic conditions creates a risk. Western Power may find it has to meet unforeseen mitigation costs if unexpected network operating characteristics resulting from the connection give rise to complaints from existing users.
23. The Authority's technical advisor also noted that the proposed works includes replacement of the line protection between Merredin, Yilgarn and West Kalgoorlie terminal stations and a runback scheme that will limit the output of the wind farm in situations where the 132 kV line between Merredin and Northam is overloaded. The Authority's technical advisor agreed these measures are needed to deal with system stability but noted that Western Power did not appear to have completed all the dynamic studies needed to quantify any potential stability issues resulting from the connection, so there remained a residual risk that some existing users will be adversely affected by the wind farm connection. The Authority's technical advisor considered that the dynamic system studies should have been completed prior to submission of the new facilities investment test application.
24. Taking account of Western Power's submission and advice from the Authority's technical advisor, the Authority, whilst recognising that the design of the project appears to be reasonable, noted there were potential concerns regarding the impact of connecting the wind farm on system stability and other users, and considered the dynamic system studies need to be completed before the Authority can make a determination as to whether the design standards are efficient.

25. With respect to whether the forecast costs for the project were minimised, technical advice to the Authority⁵ indicates that Western Power had not demonstrated that its estimated project cost was sufficiently accurate to be used as a basis for new facilities investment test pre-approval. The total cost of the project of \$21.7 million had been derived from:
- a cost estimate of \$14.5 million prepared in December 2008; and
 - a variation of \$7.2 million to reflect scope changes since the original cost estimate was prepared as well as cost increases over the intervening two year period.
26. The Authority's technical advisor noted that the 2008 cost estimate was at the level of accuracy required by the Western Power Board for business case submission and was supported by a Project Definition Document and a cost estimate report. However, no information had been provided to support the variation in costs. As the variation component represents more than a third of the total cost estimate, the Authority's technical advisor did not consider that Western Power had provided sufficient information to determine whether the cost estimate was reasonable.
27. Taking account of the concerns raised by the Authority's technical advisor regarding the lack of information to support Western Power's cost estimates and also the fact that Western Power had included a \$2.1 million risk allowance (i.e. 10 per cent of the total forecast) in its application, the Authority was not able to satisfy itself that the forecast costs were efficient.
28. Taking the above considerations into account, i.e.
- a lack of information supporting a third of the estimated cost;
 - the inclusion of a large risk allowance; and
 - system studies in relation to network stability appeared to still require finalisation,

the Authority was unable to determine whether the proposed costs do not exceed the amount that would be invested by a service provider efficiently minimising costs and hence determined that the Western Power's new facilities investment test application did not meet the requirement of the efficiency test of section 6.52(a) of the Access Code.

Western Power's Further Submission to the Authority

29. In its further submission to the Authority, Western Power has revised its estimate of the total cost of the project and provided some further information to explain the level of costs included for the project.
30. Western Power has removed the risk component from its pre-approval application, which results in an estimated total capital cost for the project of \$19.7 million of which Western Power considers \$12.2 million satisfies the new facilities investment test.

⁵ Geoff Brown & Associates Ltd, 9 February 2011, Memorandum: Collgar Wind Farm Connection NFIT Pre-approval Application Review.

31. Western Power has also provided additional system studies to the Authority, to demonstrate that there will be no adverse effects on existing customers.

Final Determination of the Authority

32. In making its final determination on whether the proposed works meets the efficiency test of section 6.52(a) of the Access Code, the Authority has considered Western Power's further submission and additional advice from the Authority's technical advisor.
33. As set out in the draft determination, in assessing whether the proposed works meet the efficiency test of section 6.52(a) of the Access Code, the Authority has given consideration to the choice of project, the design standard and whether forecast costs for the project are minimised.
34. In the draft determination, the Authority was satisfied that the proposed works represented an efficient choice of project.
35. On the matter of the design standard, based on the advice of its technical advisor, the Authority was satisfied that the design of the project appeared reasonable. However, as it appeared system studies in relation to network stability were not finalised, the Authority was not able to finalise its decision. Western Power provided additional system studies as part of its further submission to the Authority, to demonstrate that there will be no adverse effects on existing customers. Taking account of this additional information, the Authority is satisfied that the design of the project is reasonable.
36. On the minimisation of project costs, the Authority considers that this could be demonstrated in various ways, including:
- demonstrating the consistency of unit rates of construction with historical unit rates for the covered network and unit rates of similar works in other networks, taking into account trends in productivity improvements and underlying costs; and or
 - demonstrating that the procedures of construction planning, contracting and cost control are consistent with minimising costs.
37. As noted in the draft determination, technical advice to the Authority indicated that Western Power's new facilities investment test application contained limited information to support the estimated cost of the investment, making it difficult to properly verify whether or not the cost is reasonable. However, the technical advisor reviewed the procurement strategy and delivery assessment included in Western Power's application and considered that it reflects a reasonably efficient approach to project implementation.
38. In its further submission following the draft determination, Western Power notes that the project is almost complete and that it is now clear that the risk allowance is not required. Consequently, Western Power has revised down the forecast expenditure to exclude the risk allowance. Western Power also provided additional information to demonstrate that the cost revisions included in the original new facilities investment test application, which were of concern to the Authority, had been compiled following the A2 estimating process.
39. Having regard to technical advice and additional information provided by Western Power on its costs and delivery mechanisms, the Authority considers that as the

forecast no longer includes the risk allowance, Western Power has adequate delivery processes and procedures in place, which should facilitate an investment that does not exceed an amount that would be invested by a service provider efficiently minimising costs. In particular, the Authority notes that Western Power will use preferred supplier contract and competitive tender mechanisms to deliver nearly two-thirds of the total value of the investment (i.e. \$12.7 million or approximately 64 per cent). The Authority accepts that such delivery mechanisms, if periodically reviewed and maintained to reflect current market conditions, are consistent with minimising costs and are likely to result in efficient investment costs.

Incremental Revenue Test

Authority's Draft Determination

40. The Authority considered Western Power's claim that the incremental revenue that would arise from the connection of Collgar Windfarm would be sufficient.
41. Advice from the Authority's technical advisor noted that Western Power had used a discounted cash flow model to determine whether the incremental revenue test is satisfied.
42. The Authority considered the discount rate used by Western Power was incorrect and it should have used a discount rate consistent with the cost of capital determined for the current access arrangement, i.e. 7.98 per cent. An adjustment for this would reduce incremental revenue by \$1.2 million.
43. The Authority also identified that Western Power had included goods and service tax (GST) in its calculation of annual revenue. Western Power confirmed this was an unintentional error. The Authority recalculated incremental revenue to exclude GST. Adjusting Western Power's calculation to remove the error reduced incremental revenue by \$1.9 million.
44. Having regard to the expected life of network transmission assets and the wind farm, the Authority considered that it would be reasonable to consider the incremental revenue over a longer period than 15 years. The Authority noted this would increase the amount of incremental revenue. For example, increasing the period to 25 years would increase incremental revenue by \$3.5 million.
45. After taking account of the issues outlined above, the Authority considered it likely that any reductions in incremental revenue as a result of adjustments to reflect the current discount rate and removal of GST from the calculation would most likely be offset by using a more appropriate time period such as 25 years. Therefore, subject to any uncertainties regarding the efficient cost of the investment, the incremental revenue from the connection of Collgar Windfarm is likely to be sufficient to cover the \$13.9 million expenditure which Western Power considered met the new facilities investment test.

Western Power's Further Submission to the Authority

46. Western Power's further submission to the Authority has revised the parameters used in its discounted cash flow model to determine whether the incremental revenue test is satisfied. The model now relies on the following parameters:

- an estimated capital cost for new facilities investment to be added to the capital base of \$12.2 million (rather than \$13.9 million, which included a risk cost allowance);
 - a discount rate of 7.98 per cent, which is the real pre-tax weighted average cost of capital used in Western Power's second access arrangement (rather than 6.76 per cent, which was the real pre-tax weighted average cost of capital in Western Power's first access arrangement);
 - an annual maintenance cost of 2.1 per cent of the capital cost of the shared works to connect Collgar Windfarm, which reflects the parameter in Western Power's second access arrangement (rather than 2.46 per cent as per Western Power's first access arrangement);
 - a 15 year analysis timeframe; and
 - annual revenue from the customer (Collgar Windfarm) of \$2,548,613, based on the appropriate GST exclusive prices from the 2010/11 Price List (rather than the 2009/10 Price List).
47. Based on these parameters, Western Power estimates a net present value (incremental revenue less cost) of \$6.5 million.
48. Western Power did not adjust the 15 year calculation period of the discounted cash flow model, noting that a longer period would increase the estimated incremental revenue which already is in excess of the amount required under the incremental revenue test.

Final Determination of the Authority

49. The Authority has considered Western Power's claim that the incremental revenue that will arise from the connection of Collgar Windfarm will be sufficient.
50. The Authority acknowledges that Western Power has updated its calculation of incremental revenue to use the correct discount rate and annual revenue. However, the Authority notes that Western Power did not adjust the time frame for the calculation but acknowledges that if it had extended the timeframe as suggested this would only increase the margin by which the incremental revenue test is satisfied.
51. The Authority considers that the incremental revenue is sufficient to cover the \$12.2 million expenditure claimed by Western Power to meet the new facilities investment test.

Net Benefits Test

Authority's Draft Determination

52. As Western Power did not rely on the net benefits test to demonstrate that an amount of the total forecast cost of the proposed works satisfies section 6.52(b) of the new facilities investment test, and in light of no public submissions, the Authority did not give consideration to this matter in its draft determination.

Western Power's Further Submission to the Authority

53. Western Power's further submission to the Authority does not provide any additional information with respect to the net benefits test.

Final Determination of the Authority

54. Given that no additional information has been provided by Western Power to the Authority with respect to the net benefits test, the Authority has decided to maintain its draft determination position. That is, the Authority has not given consideration to this matter.

Safety and Reliability Test

Authority's Draft Determination

55. As Western Power does not rely on the safety and reliability test to demonstrate that an amount of the total forecast cost of the proposed works satisfies section 6.52(b) of the new facilities investment test, and in light of no public submissions, the Authority did not consider this matter.

Western Power's Further Submission to the Authority

56. Western Power's further submission to the Authority does not provide any additional information with respect to the safety and reliability test.

Final Determination of the Authority

57. Given that no additional information has been provided by Western Power to the Authority with respect to the safety and reliability test, the Authority has decided to maintain its draft determination position. That is, the Authority has not given consideration to this matter.

Total Satisfying the New Facilities Investment Test

58. For the new facilities investment test to be satisfied, the new facilities investment must satisfy the efficiency test (section 6.52(a) of the Access Code) and one or more of the other tests specified in section 6.52(b) of the Access Code (i.e. the incremental revenue test, net benefits test or safety and reliability test).
59. On the basis of the above considerations, the Authority has determined that the amount claimed by Western Power under section 6.71 of the Access Code of \$12.2 million meets the requirements of the new facilities investment test. The Authority will assess the actual expenditure in relation to this new facilities investment when considering proposed revisions to Western Power's access arrangement.