Issues Paper

New Facilities Investment Test Application for Connection of Collgar Windfarm Submitted by Western Power

13 December 2010

Economic Regulation Authority

WESTERN AUSTRALIA

Economic Regulation Authority
Perth, Western Australia
Phone: (08) 9213 1900

Disclaimer

This document has been compiled in good faith by the Economic Regulation Authority (the Authority). This document is not a substitute for legal or technical advice. No person or organisation should act on the basis of any matter contained in this document without obtaining appropriate professional advice.

The Authority and its staff members make no representation or warranty, expressed or implied, as to the accuracy, completeness, reasonableness or reliability of the information contained in this document, and accept no liability, jointly or severally, for any loss or expense of any nature whatsoever (including consequential loss) ("Loss") arising directly or indirectly from any making available of this document, or the inclusion in it or omission from it of any material, or anything done or not done in reliance on it, including in all cases, without limitation, Loss due in whole or part to the negligence of the Authority and its employees. This notice has effect subject to the *Trade Practices Act 1974* (Cth) and the *Fair Trading Act 1987* (WA), if applicable, and to the fullest extent permitted by law.

The summaries of the legislation, regulations or licence provisions in this document do not contain all material terms of those laws or obligations. No attempt has been made in the summaries, definitions or other material to exhaustively identify and describe the rights, obligations and liabilities of any person under those laws or licence provisions.

Contents

1 Introduction

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 is 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 works are estimated to cost $21.7 million and involve the construction of a Collgar Terminal Substation and associated works for the connection of the windfarm.

Western Power's new facilities investment test application has been published on the Authority's website together with this issues paper.[2]

The new facilities investment test is applied to determine the extent to which the cost of an augmentation of the network (i.e. the amount of new facilities investment) can be financed by adding all, or part of, the new facilities investment to the capital base of Western Power's covered network and hence recovered through regulated tariffs. The test seeks to ensure that only efficient investment which benefits all users of the network is recovered through these regulated tariffs.

In making a determination on Western Power's new facilities investment test application, the Authority is required to consult with the public in accordance with the requirements of Appendix 7 of the Access Code. The Authority has prepared this issues paper to assist interested parties in understanding the new facilities investment test and Western Power's application.

The issues paper addresses the following matters:

- a description and explanation of the new facilities investment test under the Access Code;
- a description of the proposed works; and
- an overview of Western Power's assessment of the investment in the proposed works against the requirements of the new facilities investment test.

[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 website: http://www.erawa.com.au/2/537/48/electricity__network_augmentations.pm

2 The New Facilities Investment Test

2.1 Purpose

"New facilities investment" is defined in section 1.3 of the Access Code as:

> [T]he capital costs incurred in developing, constructing and acquiring the new facility, where "new facility" means any capital asset developed, constructed or acquired to enable the service provider to provide covered services, including assets required for the purpose of facilitating competition in retail markets for electricity.

The new facilities investment test is a determination of whether, or to what extent, the new facilities investment associated with a new network asset, or set of assets, can be added to the capital base of the covered network and recovered through regulated network tariffs applied to users of the network. Under the new facilities investment test, the extent to which the cost of an augmentation can be financed through the capital base is determined by tests of the prudence and efficiency of investment, the nature of the benefits of the augmentation, and the distribution of these benefits across users generally. Only that amount of 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.

If all or part of new facilities investment associated with a new network asset does not meet the new facilities investment test, the amount that does not meet the test would need to be financed by some means other than recovery through regulated network tariffs.

2.2 Distinction from the Regulatory Test

The new facilities investment test is one of two tests under the Access Code that service providers may need to apply to capital investment. The other test is the "regulatory test", which is set out in Chapter 9 of the Access Code.

The purpose of the regulatory test is to ensure that the service provider of a covered network has identified the optimal solution to a constraint in electricity supply (either as a network solution or other solution) before committing to the augmentation, whereas the purpose of the new facilities investment test is to determine the extent to which investment in a network solution may be financed through network tariffs applying to all network users, or must be financed by some other means (such as capital contributions from specific network users).

Under the regulatory test, a service provider is required to demonstrate that a major augmentation[3] of a covered network meets the regulatory test before the service provider can commit to the augmentation. In general terms, the purpose of the regulatory test is to determine whether a proposed augmentation to an electricity transmission and/or distribution network is the best way of overcoming constraints in the wider electricity system, taking into account alternative means of overcoming the constraints, such as,

[3] The Access Code defines a major augmentation to be an augmentation for which the new facilities investment for the shared assets exceeds $17.8 million (2010 CPI adjusted amount) where the augmentation is to be part of a distribution system and exceeds $35.6 million (2010 CPI adjusted amount) where the augmentation is to be part of a transmission system or part of both a distribution and transmission system.

alternative network investments, investment in generation, or management of electricity demand.

The regulatory test is used to identify the best network, generation or demand-management option, which is the option that would maximise the net economic benefits to those who generate, transport and consume electricity. The regulatory test is used only to determine whether a proposed investment in the network is the best option for overcoming constraints in the electricity system. The test is not concerned with demonstrating the efficiency of forecast costs for the proposed network investment, or the extent to which the network investment will be financed by increasing the general level of network tariffs. Both of these matters are addressed by the new facilities investment test.

A determination by the Authority that an augmentation of a covered network meets the regulatory test does not mean that the new facilities investment associated with the augmentation meets the new facilities investment test, and vice versa.

2.3 Requirements of the Access Code

Section 6.52 of the Access Code sets out the new facilities investment test.

> 6.52 New facilities investment may be added to the capital base 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
>
> 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.

New facilities investment may be assessed against the requirements of the new facilities investment test either as part of an access arrangement review process or outside an access arrangement review process.

During an access arrangement review process, the Authority undertakes an assessment of whether an actual amount of new facilities investment satisfies the new facilities investment test (under section 6.52 of the Access Code). In addition, a forecast of new facilities investment may be taken into account when determining reference tariffs for the access arrangement period (under section 6.51 of the Access Code). In this instance, the Authority makes and publishes a determination, in respect of the new facilities investment, in accordance with the access arrangement review process that is set out in Chapter 4 of the Access Code.

Outside an access arrangement review process, under section 6.71 of the Access Code, a service provider may at any time apply to the Authority for it to determine whether actual (or forecast) new facilities investment made (or proposed) by the service provider meets (or will meet) the new facilities investment test. In this instance, the Authority must make and publish its determination within a reasonable time. While the Access Code does not specify what a reasonable time period is, the Authority must before making its determination consult with the public in accordance with Appendix 7 of the Access Code and is hence confined to the time limits specified in Appendix 7.

Where the Authority makes a determination outside an access arrangement review process, the determination binds the Authority, when it next approves proposed revisions to the service provider's access arrangement, to allow the addition of the new facilities investment that is determined to satisfy the new facilities investment test. In the case of forecast new facilities investment, the determination only binds the Authority if the investment proceeded as proposed. The Authority considers this to include the investment proceeding as planned and the cost not exceeding the forecast. Should the cost exceed the forecast, then a further application would be necessary for this amount under the new facilities investment test provisions of the Access Code.

Western Power's new facilities investment test application that is the subject of this issues paper is made under section 6.71 of the Access Code (i.e. outside the access arrangement review process) and involves a forecast of new facilities investment. As the total investment is less than $35.6 million the new facilities investment is not a major augmentation as defined by the Access Code and therefore it was not necessary for Western Power to submit a regulatory test application.[4]

2.4 The Structure of the New Facilities Investment Test

The new facilities investment test has several elements. These elements and the general structure of the test are discussed in detail at Appendix A of this issues paper.

[4] The Access Code defines a major augmentation to be an augmentation for which the new facilities investment for the shared assets exceeds $17.8 million (2010 CPI adjusted amount) where the augmentation is to be part of a distribution system and exceeds $35.6 million (2010 CPI adjusted amount) where the augmentation is to be part of a transmission system or part of both a distribution and transmission system.

3 The Proposed New Facility

3.1 Reasons for the Proposed Works

Western Power indicates that the driver for the proposed works is 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. Collgar Windfarm (the customer) has requested Western Power to connect the windfarm with a declared sent out capacity of 250 MW by 27 April 2011.

3.2 Proposed Works

Western Power has, in consultation with Collgar Windfarm, conducted a design study to determine the most efficient way to implement the connection request. The study determined that the construction of a 4-switch mesh substation connected to the Merredin-Yilgarn 220 kV transmission line is the least cost solution that satisfies the requirements of the planning criteria (Technical Rules), the new facilities investment test and Collgar Windfarm's requirements.

Further details of the proposed transmission works are provided in section 3 of Western Power's new facilities investment test application.

3.3 Forecast Cost

Western Power indicates a forecast capital cost for the proposed works of \$21.7 million, inclusive of a \$2.1 million risk allowance. This cost comprises six distinct components of work.

Component of Works	Estimated Cost
(1) Construction of two dedicated circuit breaker bays and associated works for connection of the Collgar Windfarm	\$5.9 million
(2) PLC Communication works	\$1.1 million
(3) Runback scheme	\$0.8 million
(4) Cut-in to the Eastern Goldfields 220 kV transmission line	\$1.0 million
(5) Construction of two circuit breaker bays and associated works	\$11.8 million
(6) Upgrade of the existing protection scheme on the Eastern Goldfields 220 kV transmission line	\$1.1 million
Total cost of augmentation	**\$21.7 million**
Less risk allowance[5]	*\$2.1 million*
Total cost of augmentation net of risk allowance	**\$19.6 million**

5 Western Power has included an allowance for delivery risk. See Western Power, New facilities investment test application, page 17 for further information.

4 Western Power's Assessment under the New Facilities Investment Test

4.1 Western Power's Submission

Western Power submits that $13.9 million of the estimated total capital cost for the proposed works (i.e. $21.7 million) satisfies the new facilities investment test.

In applying the new facilities investment test to the proposed works, Western Power has given separate consideration to two elements of the new facilities investment test:

- the "efficiency test" under section 6.52(a) of the Access Code; and
- the "incremental revenue test" under section 6.52(b)(i)A of the Access Code.

Western Power's considerations are outlined in the remaining sections of this issues paper. In summary:

- Western Power submits that, while the costs relating to the first three components of works (i.e. the two dedicated circuit breaker bays, communication works and run-back scheme) meet the "efficiency test", these costs do not meet any of the other tests for reason of being connection assets. That is, the assets in question are dedicated to and only required for the connection of the Collgar Windfarm. Western Power submits that the costs associated with these connection assets (i.e. $7.8 million) are to be recovered directly from the customer (Collgar Windfarm) via a capital contribution.
- Western Power submits that the cost relating to the remaining three components of works (i.e. cut-in works, circuit breaker bays, and protection scheme upgrades) is associated with shared network assets. That is, while the assets in question are required to connect the Collgar Windfarm, they are not dedicated for use by any single customer. Western Power submits that the total cost of these shared assets (i.e. $13.9 million) meets the "efficiency test" and also meets the "incremental revenue test".

4.2 Efficiency Test

The efficiency test refers to the test under section 6.52(a) of the Access Code of whether the "new facilities investment does not exceed the amount that would be invested by a service provider efficiently minimising costs". For the new facilities investment test to be satisfied, the requirements of the efficiency test must be met.

In its new facilities investment test application, Western Power submits that the total cost of the transmission works meets the efficiency test of section 6.52(a). To substantiate this claim, Western Power submits that it must demonstrate that:

- the most appropriate option has been selected to meet the requirements associated with reasonable forecasts of growth of covered services;
- the design and design standards are appropriate; and

- the delivery cost of the new facility is efficient.[6]

Western Power indicates that the criteria it has used to demonstrate that the most appropriate option has been selected include:

- compliance with the Technical Rules;
- customer requirements; and
- the potential for load growth and its impact on Collgar Windfarm's operations as well as other users.[7]

Western Power considers that the reasoning underlying the first two criteria (i.e. Technical Rules compliance and customer requirements) is self evident and does not require further elaboration, unlike the third criterion that requires careful consideration. In relation to this third criterion, Western Power notes that at the time of writing, although there were no other applicants in the applications queue requiring connection in the immediate vicinity of the Collgar Windfarm, there is the potential for further load growth in the Eastern Goldfields. Therefore, Western Power considers it prudent to allow for a voltage upgrade to the existing Eastern Goldfields transmission line when designing the connection for Collgar Windfarm. The proposed works to connect the Collgar Windfarm to the SWIN allows for this voltage upgrade. Additional information relating to Western Power's assessment of options is provided at Attachment 1 of the new facilities investment test application.

With respect to the appropriateness of design and design standards, Western Power submits that the chosen design associated with the shared assets delivers the lowest cost over the long term and is compliant with the Technical Rules.[8]

With respect to demonstrating efficient cost delivery, Western Power indicates that it uses a suite of approaches to deliver projects to ensure an efficient cost is achieved. In particular, Western Power indicates that its "delivery portfolio" for the proposed works consists of three delivery mechanisms: competitive tender; internal resource; and preferred supplier. Western Power provides further details on its delivery strategy in section 5.2 and Appendix 1 of its new facilities investment test application. Western Power has identified in its delivery strategy a risk component of $3.6 million which is included in the total cost of the forecast new facilities investment as submitted by Western Power.

Submissions are invited from interested parties on whether Western Power has adequately established that the forecast of new facilities investment, for the proposed works, does not exceed the amount that would be invested by a service provider efficiently minimising costs.

Submissions may wish to give particular consideration to:

- the criteria proposed by Western Power to demonstrate that new facilities investment satisfies the requirements of section 6.52(a) of the Access Code (that is, the "efficiency test");

---

6 Western Power, New facilities investment test application, pages 11 -12.

7 Western Power, New facilities investment test application, page 12.

8 Western Power, New facilities investment test application, page 12.

- the criteria proposed by Western Power to demonstrate that the most appropriate option has been selected;
- whether a sufficient number of options were considered; and
- the inclusion of an allowance for risk in the total forecast cost of the proposed works.

4.3 Incremental Revenue Test

The incremental revenue test refers to the test under section 6.52(b)(i)A of the Access Code to determine whether the "anticipated incremental revenue for the new facility is expected to at least recover the new facilities investment".

Western Power has calculated the net present value of the incremental revenue that will arise from the connection of the Collgar Windfarm over a 15 year period. In its calculation Western Power has estimated tariff revenue to be $2,178,750 per annum and has assumed flat real network access prices from the date of commissioning and a real discount rate of 6.76%.[9] Western Power provides further details of the calculation in Appendix 2 of its new facilities investment test application.

Western Power submits that the incremental revenue will be sufficient to cover the shared cost of the proposed works (i.e. the shared assets at $13.9 million) and consequently the incremental revenue test is satisfied.[10]

Submissions are invited from interested parties on Western Power's assessment of the forecast cost of the proposed works under the incremental revenue test.

4.4 Safety and Reliability Test

The safety and reliability test is the test under section 6.52(b)(iii) of the Access Code of whether "the new facility is necessary to maintain the safety or reliability of the covered network or its ability to provide contracted covered services".

Western Power submits that the proposed works to connect the Collgar Windfarm are not required for safety and reliability reasons except for the upgrade of the existing protection scheme on the Eastern Goldfields 220kV transmission line. The benefit associated with the protection upgrade works has not been separately quantified.

4.5 Net Benefits Test

The net benefits test refers to the test under section 6.52(b)(ii) of the Access Code of whether the "new facility provides a net benefit in the covered network over a reasonable

[9] Western Power, New facilities investment test application, pages 13-14 and Appendix 2.

[10] Western Power, New facilities investment test application, page 14.

period of time that justifies the approval of higher reference tariffs". Under the Access Code, "net benefit" is limited to those who generate, transport and consume electricity in, as the case may be, the covered network and/or any interconnected system.

Western Power notes that a report prepared by ACIL Tasman for the Mid-West Energy Project[11] indicates that windfarms may offer a net benefit by way of reducing wholesale electricity market prices. A separate study would, however, be required to quantify the net benefits offered by the connection of the Collgar Windfarm but, given that the shared network assets (and associated cost) meet the incremental revenue test, Western Power has deemed it unnecessary to proceed with a separate market impact study.[12]

[11] The Mid West Energy Project (Southern Section) is the subject of a separate (regulatory test) application under the Access Code.

[12] Western Power, New facilities investment test application, page 14.

Appendix A: The Structure of the New Facilities Investment Test

The new facilities investment test has several elements. These elements and the general structure of the test are set out in Figure 1 and described below.

The first step in applying the new facilities investment test is defining the "new facility" to which the test is being applied. The Access Code contemplates the test being applied to new facilities investment associated with a discrete new facility. However, for many types of new facility there may be a need to aggregate investment projects and associated new facilities investment for the purpose of applying the new facilities investment test.

The second step in applying the new facilities investment test is the determination of the amount of new facilities investment (relating to the particular new facility or aggregate of facilities). This amount is shown as "Value A" in Figure 1.

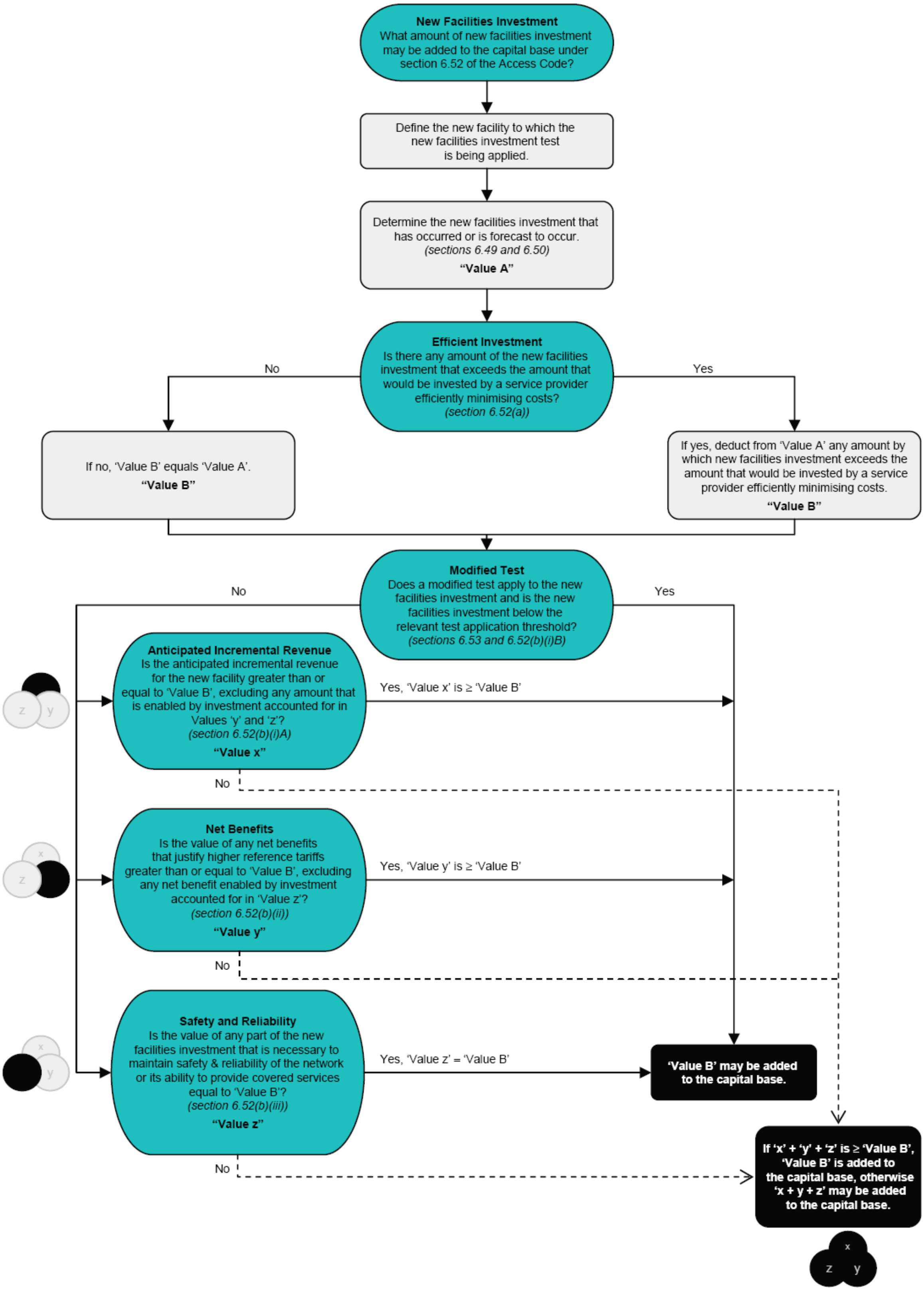
Section 6.52(a) of the Access Code requires that any new facilities investment, that is to be added to the capital base, does not exceed the amount that would be invested by a service provider efficiently minimising costs. The third step in the new facilities investment test is therefore, to determine whether the amount of new facilities investment for a facility meets the requirement of section 6.52(a).

In order to assess the new facilities investment amount ("Value A") against the efficiency test (i.e. section 6.52(a)), a determination needs to be made of the amount that would be invested by a service provider efficiently minimising costs (efficient investment). Such a determination would need to take into consideration the definitions and guidance provided within the Access Code (for example, the meaning of "efficiently minimising costs"). Once a determination is made of the amount that would be invested by a service provider efficiently minimising costs, the amount of the new facilities investment that exceeds the amount of efficient investment is deducted from "Value A". It is this residual amount that is henceforth considered under the new facilities investment test ("Value B" in Figure 1).

If, on the other hand, the investment amount ("Value A") is less than or equal to the amount invested by an efficient service provider, then this amount is the amount that is henceforth considered under the new facilities investment test (i.e. "Value A" becomes "Value B" in Figure 1).

Section 6.52(b) of the Access Code sets out three further conditions, one or more of which must be satisfied, in addition to meeting the requirement of section 6.52(a), for the new facilities investment to be added to the capital base.

Figure 1: The structure of the new facilities investment test



The first condition (section 6.52(b)(i)) comprises two sub-conditions:

- the anticipated incremental revenue for the new facility is expected to at least recover the new facilities investment (section 6.52(b)(i)A); or
- a modified test applies to the new facilities investment and the amount of the new facilities investment is below the value of the test application threshold (section 6.52(b)(i)B).

The modified test referred to in section 6.52(b)(i)B refers to one or more modified tests that may be set out in an access arrangement under section 6.53 of the Access Code and provides a mechanism whereby new facilities investment may pass the new facilities investment test, without assessment against the other conditions of section 6.52(b). Any modified test must have an associated "test application threshold", which will be the maximum value of new facilities investment that may be considered under the modified test.

The terms of section 6.52(b)(i) indicate that only one of the two sub-conditions is applied to the consideration of new facilities investment. That is, if a modified test applies to the new facilities investment under section 6.53 and the relevant amount of new facilities investment (either the total amount or the amount passing the test of section 6.52(a)) is below the relevant test application threshold, then the amount of the new facilities investment that satisfies the condition of section 6.52(b)(i) is the relevant amount of new facilities investment.

In effect, this means that if a modified test applies and the relevant amount of new facilities investment is below the test application threshold, then the relevant amount of new facilities investment satisfies the conditions of 6.52(b) of the Access Code and none of the other conditions of section 6.52(b) need to be considered. As such, a logical construction of the tests in section 6.52(b) is that the first consideration under 6.52(b) is whether the new facilities investment satisfies a modified test, and it is only if a modified test is not satisfied that consideration is given to the other conditions of 6.52(b).

If no modified test applies or the amount of new facilities investment is greater than the test application threshold, then consideration is given to the other conditions of section 6.52(b).

The first of these other conditions is that the value of anticipated incremental revenue for the new facility is expected to at least recover the cost of the new facilities investment. The value of incremental revenue expected to be generated as a result of the new facility is shown as "Value x" in Figure 1.

The second condition of section 6.52(b) is that 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 (section 6.52(b)(ii)). The "net benefits" referred to in this section do not necessarily include benefits of all types, but rather a subset of benefits that are considered to justify the approval of higher reference tariffs. The amount of new facilities investment that meets this condition is indicated as "Value y" in Figure 1.

The third condition of section 6.52(b) is that the new facility is necessary to maintain the safety or reliability of the covered network, or its ability to provide contracted covered services (section 6.52(b)(iii)). The consideration of this condition would, in the first instance, require an assessment of the purpose of the new facility. If the sole purpose of the new facility is one or other of the purposes within the scope of section 6.52(b)(iii), then the entire amount of the relevant new facilities investment ("Value B" in Figure 1) would meet the new facilities investment test.

It is also possible that a new facility may serve multiple purposes and only part of the purpose is one or other of those within the scope of section 6.52(b)(iii). In this case, it may be necessary to ascribe a value to an amount of new facilities investment that would be required to meet the relevant purposes under section 6.52(b)(iii). The amount of new facilities investment attributed to one or other of the purposes of section 6.52(b)(iii) by either of these two approaches is indicated as “Value z” in Figure 1.

A situation relevant to describing the assessment of new facilities investment against the conditions of section 6.52(b) of the Access Code is that where the total relevant amount of new facilities investment (“Value B” in Figure 1) does not fully satisfy any one of the conditions, but may fully or partly satisfy two or more of the conditions. A practical application in this situation is that the assessment against the conditions of section 6.52(b) is an ‘aggregation’ process but, so as to avoid double counting, excluding the extent to which the values of “x”, “y” and “z” overlap. That is, independent assessments can be made of the amounts of new facilities investment that meet the individual conditions of sections 6.52(b)(i)A, 6.52(b)(ii) and 6.52(b)(iii) of the Access Code, and these amounts can be aggregated, excluding any overlaps, to determine the total amount of new facilities investment that satisfies the conditions of section 6.52(b). For example, this is indicated in Figure 1 as the sum total of the relevant parts of values “x”, “y” and “z”, where:

- “value z” is an amount that satisfies section 6.52(b)(iii);
- “value y” is an amount that satisfies section 6.52(b)(ii), but excludes any net benefit enabled by investment accounted for in “value z”; and
- “value x” is an amount that satisfies section 6.52(b)(i)A, but excludes any incremental revenue that is enabled by investment accounted for in values “y” and “z”.

Furthermore, there is no need to assess new facilities investment against the conditions of section 6.52(b) in any particular order, except to first consider whether a modified test is satisfied (as addressed above). The order in which the conditions are addressed could be determined with a view to the primary purpose of the new facility. For example, if the primary purpose of a new facility was to maintain reliability of the network, then consideration could first be given to whether the condition of section 6.52(b)(iii) is satisfied, and consideration given to the other conditions only if the total relevant amount of new facilities investment does not satisfy section 6.52(b)(iii).

Elements of the New Facilities Investment Test

For convenience, the components (or elements) of the new facilities investment test are referred to below as the “efficiency test”, “incremental revenue test”, “net benefits test” and “safety and reliability test”. For the new facilities investment test to be satisfied, the new facilities investment must satisfy the efficiency test and one or more of the other three tests.

The efficiency test

The efficiency test refers to the test under section 6.52(a) of the Access Code of whether the “new facilities investment does not exceed the amount that would be invested by a service provider efficiently minimising costs”.

A demonstration of the efficiency of new facilities investment could include:

- demonstration of the optimal design and construction of the new facility, taking into account forecast demand for covered services, and economies of scale and scope;
- demonstration of 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
- demonstration that the procedures of construction planning, contracting and cost control are consistent with best practice in minimising costs.

The incremental revenue test

The incremental revenue test refers to the test under section 6.52(b)(i)A of the Access Code of whether the “anticipated incremental revenue for the new facility is expected to at least recover the new facilities investment”.

“Anticipated incremental revenue” is defined in the Access Code as:

> “anticipated incremental revenue” for a new facility means:
>
> (a) the present value (calculated at the rate of return over a reasonable period) of the increased income from charges (excluding any capital contributions) reasonably anticipated to arise from the increased sale of covered services on the network to one or more users (where “increased sale of covered services” means sale of covered services which would not have occurred had the new facility not been commissioned),
>
> minus
>
> (b) the present value (calculated at the rate of return over the same period) of the best reasonable forecast of the increase in non-capital costs directly attributable to the increased sale of the covered services (being the covered services referred to in the expression “increased sale of covered services” in paragraph (a) of this definition),
>
> where the “rate of return” is a rate of return determined by the Authority in accordance with the Code objective and in a manner consistent with Chapter 6, which may (but does not have to) be the rate of return most recently approved by the Authority for use in the price control for the covered network under Chapter 6.

The incremental revenue test has application to new facilities investment that is undertaken to extend the network or to expand the capacity of a network in order to provide a service to one or more new users.

The incremental revenue test may be applied by:

- discounted cash-flow analysis, with the necessary condition for roll-in of new facilities investment into the capital base being that the present value of revenues from current tariffs, that would be paid from time to time by the users of the new facility (with roll-in of the new facilities investment), is equal to or greater than the present value of new facilities investment and additional non-capital costs of the new facility; or
- a discounted weighted average tariff (**DWAT**) analysis, with the necessary condition for roll-in of new facilities investment being that the roll-in of the new facilities investment results in a reduction in the DWAT for the covered network.

For either of these forms of analysis, the incremental revenue test should be applied such that:

- the analysis should be undertaken over a period of no longer than the expected economic life of the principal assets of the new facility; and
- the discount rate applied in the analysis may be the rate of return applied in the determination of reference tariffs in either the current access arrangement or proposed revisions to the access arrangement, or may be a rate of return otherwise determined by the Authority to be in accordance with the Code objective and in a manner consistent with Chapter 6 of the Access Code.

The net benefits test

The net benefits test is the test under section 6.52(b)(ii) of the Access Code of whether "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".

"Net benefits" is defined in the Access Code as:

> "net benefit" means a net benefit (measured in present value terms to the extent that it is possible to do so) to those who generate, transport and consume electricity in (as the case may be):
>
> (a) the covered network; or
>
> (b) the covered network and any interconnected system.

The net benefits test applies to new facilities investment that gives rise to some benefits to all, or a large proportion of, network users, other than through providing economies of scale in the network and reductions in tariffs to existing network users. These latter benefits would be captured under the incremental revenue test of section 6.52(b)(i)A of the Access Code and, as such, would not sensibly also be considered under section 6.52(b)(ii).

Application of the net benefits test should take into account the following principles.

- Benefits considered under the net benefits test should be limited to benefits to those parties who produce, transport and consume electricity in the capacities of these parties as producers, transporters or consumers of electricity.
- Benefits considered under the net benefits test should not include any benefits to users that fall within the scope of consideration under the incremental revenue test.
- Benefits considered under the net benefits test should generally accrue to the same parties that would bear the costs of the higher reference tariffs.
- Benefits considered under the net benefits test should not include benefits that are simply transfer payments between producers of electricity, the network owner, network users and/or consumers of electricity; that is, where the benefit to one party is offset by a corresponding and associated cost to another party.
- Any claimed benefit must be explicitly identified with clear demonstration of how the new facility will provide the claimed benefit.

- There should be persuasive evidence that the particular investment would provide the claimed benefit.
- Where reasonably practical, benefits should be quantified using engineering and economic models.

For the net benefits test to be satisfied, the present value of the benefits should exceed the present value of the sum of the new facilities investment associated with the new facility, and of the best reasonable forecast of the change in non-capital costs directly attributable to the new facility.

The safety and reliability test

The safety and reliability test is the test under section 6.52(b)(iii) of the Access Code of whether “the new facility is necessary to maintain the safety or reliability of the covered network, or its ability to provide contracted covered services”.

The safety and reliability test would have application to new facilities investment that is undertaken to maintain the network to a particular level of service capability, or to meet particular requirements for safety in operation or reliability of services. The test relates to the purpose of the new facility and the necessity of the new facility to achieve the purpose. There is no suggestion under section 6.52(b)(iii) of an assessment of the benefits and costs of the new facility.

The Access Code does not provide any guidance on the meaning of safety or reliability of the covered network. The scope of new facilities that may be considered under the safety and reliability test is therefore a matter of interpretation and could potentially include, for example:

- investment required to meet best-practice standards or statutory requirements for safety in the operation of the network; or
- investment required to achieve or maintain reliability of services or capacity of the network sufficient to meet contractual obligations to users or mandatory requirements.