Issues Paper on the New Facilities Investment Test Application for a 132-66/11 kV Medical Centre Zone Substation

Submitted by Western Power

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Economic Regulation Authority
WESTERN AUSTRALIA

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1 Introduction

On 19 November 2012, 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 whether the forecast new facilities investment proposed by Western Power, to construct a new 132-66/11 kV Medical Centre zone substation, meets the new facilities investment test. The proposed customer-driven investment is estimated to cost $28.84 million, of which Western Power considers that $27.21 million meets the new facilities investment test.

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

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 investment; and
- an overview of Western Power's assessment of the investment against the requirements of the new facilities investment test.

[1] 19 November 2012, Western Power, *Application for Determination that a Forecast New Facilities Investment will Satisfy the New Facilities Investment Test: Establishment of a new 132-66/11 kV zone substation at the QEII Medical Centre* (hereafter referred to as "**new facilities investment test application**").

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[2] 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,

[2] The Access Code defines a major augmentation to be an augmentation for which the new facilities investment for the shared assets exceeds $11.1 million (2012 CPI adjusted amount) where the augmentation is to be part of a distribution system and exceeds $33.2 million (2012 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.

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.

3 The Proposed New Facility

3.1 Reasons for the Proposed Investment

Western Power indicates that the primary driver for the proposed investment is due to the increased electrical requirements of the Queen Elizabeth (QEII) Medical Centre. However, Western Power notes that the existing Medical Centre zone substation is forecast to be non-compliant with the N-1 reliability requirement within the Technical Rules by 2016[3] and that, under its long term strategic plan for the Western Terminal development area, this project was scheduled for completion in 2016.

The QEII Medical Centre is undertaking a major redevelopment and expansion programme and requires this investment to be undertaken two years earlier than planned by Western Power (by June 2014). The QEII Medical Centre load is expected to rise from 12.5 MVA to 27.5 MVA by 2020 and its high voltage distribution network will need to be upgraded from 6.6 kV to 11 kV by June 2014.[4]

3.2 Proposed Investment

Western Power has undertaken a review of the long-term (25 year) development strategies in the Western Terminal area. The preferred development strategy from this review incorporated the construction of a new 132/11 kV Medical Centre zone substation adjacent to the current zone substation. The new 132/11 kV Medical Centre zone substation would incorporate the load from the existing 66/6.6 kV Medical Centre and University zone substations. As a result, these substations would be decommissioned following the transfer of load.

As part of the specific Medical Centre project development, Western Power considered five options for the Medical Centre, including one for demand-side management. Western Power's preferred option includes the establishment of a new 132-66/11 kV Medical Centre zone substation with three 33 MVA transformers energised at 66 kV initially and ultimately converted to 132 kV operation in 2018. The QEII Medical Centre has made land available to Western Power adjacent to the existing Medical Centre zone substation for the construction of the new Medical Centre zone substation.

Western Power's preferred investment option also includes the transfer of load from the existing 66/6.6 kV Medical Centre and University zone substations to the new substation, as well as upgrading the operating voltage from 6.6 kV to 11 kV. The decommissioning of the 66/6.6 kV Medical Centre and University zone substations is also a component of the preferred investment option.

3.2.1 Western Power's New Facilities Investment Application

Western Power has excluded a number of components of its preferred development option from its new facilities investment test application in relation to investments not driven by the QEII Medical Centre. These components included a third 33 MVA 132-66/11 kV transformer at the new Medical Centre zone substation, the transfer of the

[3] N-1 is commonly used for describing the level of security where one element on the network fails.

[4] 19 November 2012, Western Power, *New Facilities Investment Test Application,* p. 3.

load from the University zone substation and the decommissioning of the University substation.

The components of its preferred development option which are driven by the QEII Medical Centre and subject to Western Power's new facilities investment test application include:

- establishing a new 132-66/11 kV Medical Centre zone substation with two 33 MVA 132-66/11 kV transformers;
- transfer of load from the existing 66/6.6 kV Medical Centre zone substation to the new 132-66/11 kV Medical Centre zone substation and upgrade the operating voltage from 6.6 kV to 11 kV;
- decommissioning the existing Medical Centre zone substation.[5]

3.3 Forecast Cost

Western Power indicates a forecast capital cost of the proposed investment of $28.84 million to establish a new zone substation and upgrade the associated distribution infrastructure driven by the requirements of the QEII Medical Centre (Table 1).

Table 3 Western Power's forecast new facilities investment driven by customer ($ million)

Component of Works	Estimated Cost
1) Establish a new 132-66/11 kV Medical Centre zone substation with two 33 MVA 132-66/11/11 kV transformers	19.96
2) Transfer the load from the existing 66/6.6 kV Medical Centre zone substation to the new 132-66/11 kV Medical Centre zone substation and upgrade the operating voltage from 6.6 kV to 11 kV	5.40
3) Decommission the existing Medical Centre zone substation	3.48
Total cost of customer-driven work	**28.84**

[5] 19 November 2012, Western Power, *New Facilities Investment Test Application,* p. 6.

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

4.1 Western Power's Submission

Western Power submits that the entire proposed customer-driven investment, to construct a new 132-66/11 kV Medical Centre zone substation and upgrade the distribution voltage from 6.6 kV to 11 kV of $28.84 million meets the efficiency test of the new facilities investment test but that only $27.21 million satisfies the second limb of the new facilities investment test. This is made up of:

- $25.48 million which satisfies the "safety and reliability test" under section 6.52(b)(iii) of the Access Code; and
- $1.73 million which satisfies the "incremental revenue test" under section 6.52(b)(i)A of the Access Code.

Western Power considers that the remaining amount ($1.63 million), comprising $1.22 million relating to customer connection works at the zone substation and $0.41 million relating to the financial costs of bringing forward the investment relating to distribution shared works, meets the efficiency test but does not meet the other requirements of the new facilities investment test and will require a contribution from the party seeking the augmentation.

Western Power's assessments against the efficiency, incremental revenue and safety and reliability tests are outlined in the remaining sections of this issues paper and in Table 2. In summary, Western Power:

- Considered a range of investment options, with the proposed (recommended) option being the option that is least cost and which addresses all network constraint and customer requirements without introducing any additional technical risk.[6] In addition to its option selection process, Western Power considers that its design and delivery mechanisms are efficient and comply with section 6.52(a) of the Access Code.
- Submits that the investment is necessary by 2016 in order to ensure compliance with its Technical Rules and to maintain network safety and reliability. Therefore this investment excluding the brought-forward costs of the investment should satisfy section 6.52(b)(iii).
- Submits that some of the brought-forward costs of the investment will be met through incremental revenue of the customer and therefore satisfy section 6.52(b)(i)A of the Access Code.

[6] 19 November 2012, Western Power, *Project Planning Report – Establishment of a New Zone Substation at the QEII Medical Centre*, p. 12.

Table 2 Western Power's assessment of new facilities investment satisfying the new facilities investment test ($ million)

	Amount that meets the NFIT
Section 6.52(a) – efficiency test	**28.84**
Section 6.52(b) – 'other tests'	
Safety and reliability test (transmission and distribution shared works excluding brought-forward costs)	25.48
Incremental revenue test	1.73
Net benefits test	0
Sub total of Section 6.52(b)	**27.21**
Total satisfying the new facilities investment test	**27.21**
Total not satisfying the new facilities investment test	**1.63**

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 proposed investment meets the efficiency test of section 6.52(a) on the basis that:

- the most appropriate development option was selected to meet reasonable forecasts of growth; and
- the selected investment has been designed appropriately and will be delivered in an efficient manner.

Western Power considered five investment options. Details of each option are provided in Attachment 2 of Western Power's new facilities investment test application. Western Power submits that option 3 is the preferred option in terms of total cost as it addresses all network constraints and customer requirements without introducing any additional technical risk.

With respect to program delivery, Western Power submits that it uses a suite of approaches in its project delivery portfolio to ensure on an ongoing basis that an efficient cost is achieved. Western Power provides a breakdown of the cost by delivery mechanisms (internal labour, competitive tender, preferred supplier etc) in section 5.2.5 of its application. Western Power has also included an allowance for risk.

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

4.3 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".

If normal load growth continued (not including major increases in customer load, such as the QEII Medical Centre load increase request), Western Power considers that the proposed investment would need to be completed by 2016. This is because two of the existing feeders at the Medical Centre substation are at 100 per cent or exceeding rated capacity; there is insufficient distribution feeder back-up capability to satisfy clause 2.5.5.3(b)2(A) of the Technical Rules[7]; and compliance with clause 2.5.2.2(b) in relation to the N-1 criterion will not be met by 2016[8].

In order to meet the QEII Medical Centre load increase, this investment needs to be brought forward by two years. Western Power has calculated the brought-forward costs in relation to undertaking the proposed customer-driven investment two years earlier than planned on a net present value basis. Western Power has separately assessed the amounts relating to transmission and distribution.

Western Power considers that the cost of undertaking the transmission and distribution works, reduced by the net present value of the brought-forward cost of carrying out the investment two years ahead of what would otherwise be required and excluding customer connection costs ($1.22 million), meets the safety and reliability test ($25.48 million)[9].

Submissions are invited from interested parties on Western Power's position that the proposed investment is necessary to maintain network safety and therefore the investment (discounted for bringing forward construction by two years) should satisfy the requirements of the safety and reliability test.

4.4 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 assessed the remaining costs[10] against the incremental revenue test.

Western Power considers there is sufficient incremental transmission revenue to fully offset the remaining cost of the transmission works (i.e. $1.73 million). However, Western

[7] Clause 2.5.5.3(b)2(A) of Western Power's Technical Rules requires Western Power to design urban distribution feeders (constructed following commencement of the Rules) so that no other feeder will pick up more than 50 per cent of the peak load from a faulted distribution feeder unless capacity has been specifically reserved to provide back-up, following an unplanned single feeder outage in certain circumstances.

[8] Clause 2.5.2.2(b) of Western Power's Technical Rules requires Western Power to maintain the transmission network designed to meet the N-1 criterion to ensure supply is maintained and load shedding avoided at any load level or for any generation schedule following an outage of any single transmission element.

[9] 19 November 2012, Western Power, *New Facilities Investment Test Application,* p. 16.

[10] These costs which do not meet the safety and reliability test and are not customer connection works.

Power considers that the incremental revenue associated with the distribution works is not sufficient to cover the remaining cost of the distribution works costs (i.e. $0.41 million).[11] Details of Western Power's assessment of increment revenue are included in Appendix 4 of Western Power's application.

Submissions are invited from interested parties on Western Power's assessment of the incremental revenue test arising from the proposed augmentation. In particular they may wish to consider:

- Western Power's assessment that bring-forward costs on the distribution network do not meet the incremental revenue test;
- the time period over which the revenue has been forecast; and
- the tariffs used to forecast revenue.

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 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 considers that the forecast new facilities investment does not provide any quantifiable net benefit to network users. As a result, Western Power has not taken the net benefits test into consideration for this application.

Submissions are invited from interested parties on Western Power's position that the proposed investment does not satisfy the requirements of the net benefits test.

[11] 19 November 2012, Western Power, *New Facilities Investment Test Application,* p. 16.

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.

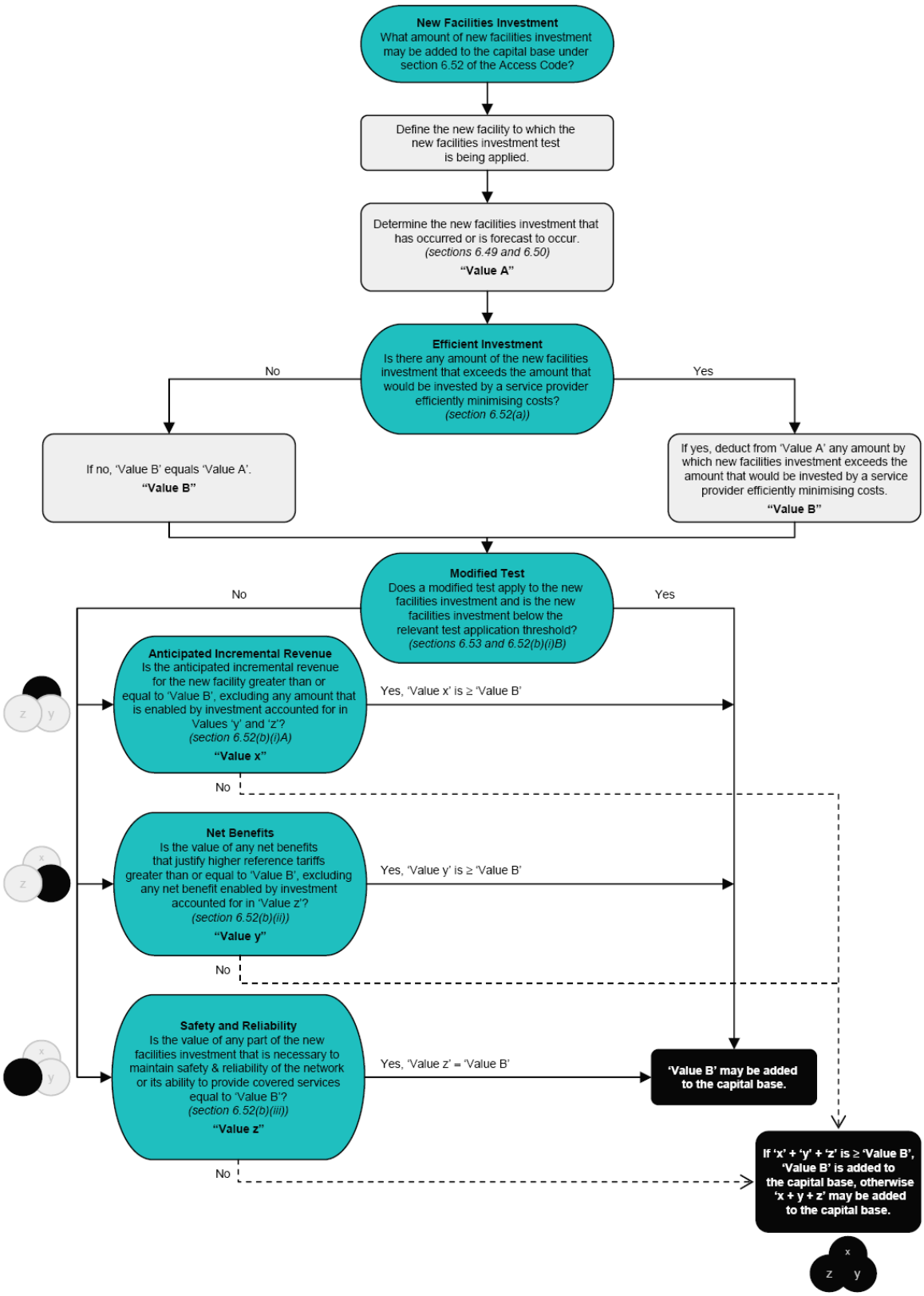
Section 6.52(a) of the Access Code requires that any new facilities investment, that is to be added to the capital base, does not exceed the amount that would be invested by a service provider efficiently minimising costs. The third step in the new facilities investment test is therefore, to determine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