



Economic Regulation Authority

Guideline on factors that will be considered in new facilities investment test determinations and methods to value net benefits

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Economic Regulation Authority

Level 4, Albert Facey House

469 Wellington Street, Perth WA 6000

Telephone 08 6557 7900

Email info@erawa.com.au

Website www.erawa.com.au

This document can also be made available in alternative formats on request.

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1. Introduction

As required under the *Electricity Networks Access Code 2004*, this guideline sets out:

- The factors the ERA proposes to consider when making a determination under the new facilities investment test set out in section 6.52 of the Access Code.¹
- Acceptable methods for service providers to value net benefits including, but not limited to, consideration of changes in costs and benefits for participants in the Wholesale Electricity Market.²

Currently, the Western Power Network is the only network covered under the Access Code.

The new facilities investment test is contained in section 6.52 of the Access Code. It is a determination of whether, or to what extent, expenditure can be added to the capital base of the covered network and recovered through regulated tariffs applied to users of the network.

“Net benefit” is defined in the Access Code as 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 the covered network. Net benefits are relevant to the new facilities investment test, the approval of non-capital costs under section 6.41 of the Access Code and the regulatory test set out in chapter nine of the Access Code.³

As permitted under section 14.35 of the Access Code, the ERA has published a single guideline addressing factors that will be considered when making a new facilities investment test determination and acceptable methods to value net benefits. The guideline is structured as follows:

- An overview of the capital expenditure regulatory framework.
- Recent amendments to the Access Code and other changes in the energy sector which have influenced the factors that are considered.
- Factors the ERA will consider for each element of the new facilities investment test.
- Acceptable methods for valuing net benefits.

It is anticipated that the guideline will be reviewed and amended from time to time to take account of material new developments.

¹ Section 6.56 of the Access Code.

² Section 6A.6.

³ The regulatory test is an assessment under Chapter 9 of whether a proposed major augmentation to a covered network maximises the net benefit after considering alternative options.

2. Regulatory framework

2.1 Overview

This guideline relates to factors that will be considered in new facilities investment test determinations and methods to value net benefits. However, it is useful to consider the guideline in the context of the overall regulatory framework for Western Power's electricity network.

Western Power's electricity network is a natural monopoly. The economies of scale of the network of poles and wires means that network services are most efficiently provided by a single supplier. To protect consumers from the potential risks of monopoly rent seeking behaviour, such as overcharging or poor service, Western Power's network is regulated under the Access Code.

The Access Code seeks to promote efficient investment in, and efficient operation and use of, services of networks for the long-term interests of consumers.

The ERA must set target revenue for an access arrangement period that gives the network service provider the opportunity to earn revenue that meets its forward-looking and efficient costs of providing regulated services including a return on investment commensurate with the commercial risks involved. The ERA must also determine tariffs for each reference service that reflect the service provider's efficient costs of providing those reference services.

A building block method is used to determine regulated revenue and prices. Capital investment is added to a regulated asset base. The building blocks include a return on the regulated asset base and a return of the regulated asset base (generally based on depreciation recovered over the life of each asset).

In the absence of controls over the values of investment added to the regulated asset base, a natural monopoly service provider may have incentives to make inefficient investments in infrastructure assets to increase the regulatory asset value and, therefore, increase regulated revenues and prices.

The Access Code includes a two-step assessment for major augmentations – a “regulatory test” followed by the “new facilities investment test”. A major augmentation must pass both tests before it can be added to the regulated asset base. Other types of capital investment must pass the new facilities investment test before they can be added to the regulated asset base.

The regulatory test is an assessment of whether an increase in the capability of the covered network to provide covered services, including by the development, construction, acquisition or commissioning of new network assets maximises the net benefit to those who generate, transport and consume electricity after considering alternative options. Recognising that network augmentations are irreversible, the test must be undertaken and approved by the ERA before the service provider can commit to a major augmentation.

The new facilities investment test considers both the efficiency and purpose of an investment. The test ensures that prices increase only to the extent necessary to maintain the safety of the network and the reliability of provision of contracted covered services or, otherwise, there is a benefit to users that justifies an increase in prices.

In the case of augmentations to the network for new demand, expenditure will meet the new facilities investment test when the investment is the efficiently delivered lowest cost option and the forecast additional revenue from the augmentation does not require an increase in prices.

Investment that goes beyond what is required to maintain the safety of the network and the reliability of provision of contracted covered services or, in the case of augmentations, is not matched by additional revenue from new demand, will only meet the new facilities investment test if the service provider can demonstrate that there is a benefit to those who generate, transport and consume electricity in the covered network that justifies an increase in prices.

The Access Code requires capital expenditure to be assessed against the new facilities investment test both *ex-ante* and *ex-post*. At each access arrangement review, the ERA is required to determine whether the proposed forecast capital expenditure is reasonably likely to meet the new facilities investment test and assess actual capital expenditure incurred in the previous access arrangement period to determine whether it met the new facilities investment test.

2.2 Energy transformation

The regulatory framework was developed at a time when the most economic means of providing electricity to consumers was generally based on large scale generation and networks and an expectation that the costs of these long-life assets could be recovered over the life of those assets.

The current environment is very different. The sector is experiencing a major transformation due to the rapid uptake of rooftop solar panels and increasing levels of renewable generation. The availability and rapidly declining cost of new technologies, particularly storage and distributed generation, means that end-use customers increasingly have a real choice between receiving electricity supply from the grid, and investing in their own supply, either as a partial, or total substitute for grid supply.

The advances in battery storage, distributed energy technologies and evolving consumer preferences are significantly changing the dynamics of the power system and the demands on the electricity network. Forecasting future demand is becoming increasingly challenging with many uncertainties, including the effects of decarbonisation of the economy and uptake of electric vehicles.

In this new environment, the regulatory framework should encourage the network service provider to take steps to retain customers where it is efficient to do so and maximise utilisation of its existing network before investing in additional network infrastructure.

The State Government's Energy Transformation Strategy has introduced reforms that will assist with this:

- The Whole of System Plan is seeking to better co-ordinate network and generation planning. The ERA considers the Whole of System Plan has a key role to play in identifying network infrastructure requirements to support decarbonisation of the economy and uptake of electric vehicles.
- The Distributed Energy Resource Roadmap is seeking to facilitate the full capabilities of distributed energy to provide benefits and value to all customers while ensuring a safe and reliable power system. The ERA considers this will guide the investment decisions for the network to provide the overall best outcome for consumers.

- The planned introduction of a new security constrained economic dispatch market design and other associated market reforms that will optimise the use of the existing network infrastructure.
- Reforms to the Access Code that increase the opportunities for new technologies to be used as an alternative to traditional network investments and opportunities for third parties to deliver non-network solutions.
- Reforms to the pricing principles in the Access Code that require the network service provider to develop efficient tariffs for each network service should lead to better utilisation of the network.

Western Power has responded to the new environment by developing a Grid Transformation Engine which has enabled it to develop a plan to transition towards a modular grid using new technologies to supply customers via stand-alone power systems or microgrids where that is a more economic option than a traditional network supply.

All of these measures should help to mitigate the risk of the current network assets becoming redundant and reduce the risk of building new network assets that may not be required in future.

However, in this environment of uncertainty about future technologies, demand for network services and asset lives, it will be even more important than in the past to ensure that the new facilities investment test is applied carefully.

When planning the network, it would be prudent to retain flexibility to changing market developments or scenarios. Adopting tools such as real options analysis that enable the ability to expand, change or curtail projects based on changing economic, technological or market conditions could help to reduce the risk of regrettable investment.

The consideration of uncertain demand and expected economic lives of assets will be particularly relevant to the net present value analysis required for the incremental revenue and net benefit test under the new facilities investment test.

For expenditure relating to safety and reliability, careful consideration will be needed of whether investments in long-lived assets is efficient and prudent, given the uncertainty in the future utilisation of the assets. The ability to use non-network solutions should be maximised.

2.3 The new facilities investment test

The test is set out in section 6.52 of the Access Code.⁴

“New facility investment” is defined as the 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.

Consequently, a prerequisite for meeting the test is that the expenditure is capital in nature and for a tangible asset that is required to provide covered services.

The test has two limbs. Both limbs must be met.

The first limb tests whether the investment is efficient. This would generally require the service provider to demonstrate that:

⁴ An extract of the relevant Access Code requirements is included in Appendix 3.

- All options (including non-network options) have been considered and the most efficient option has been selected.
- The design is efficient.
- The cost is efficient.

The second limb requires at least one of the following conditions to be met:⁵

- The investment is necessary to maintain the safety or reliability of the network or its ability to provide contracted covered services (the “safety and reliability” condition).
- The investment generates enough additional revenue to cover the investment cost (the “incremental revenue” condition).
- The investment provides a net benefit to justify higher network tariffs (the “net benefits” condition).
- The investment is for a “priority project”.

The purpose of the investment will generally determine which of the above conditions is relevant. “Business as usual expenditure” is likely to fall under the first condition. Investment required to meet new legislative or regulatory requirements would also likely be considered under this first condition.

The safety and reliability condition includes investment required to provide contracted services. Augmentations for new, or a step up in, demand would most likely need to meet the incremental revenue condition.

Investment that goes beyond what can be demonstrated as required under the safety and reliability condition, or an augmentation that does not meet the incremental revenue condition would need to meet the net benefits condition.

A new condition for priority projects was added as part of the amendments to the Access Code in September 2020. Priority projects can be specified in the whole of system plan.

A new facility may serve multiple purposes and consequently meet more than one condition under the second limb of the test. There is no need to assess the conditions in any particular order. The only requirement is that the aggregate amount equals or exceeds the efficient new facilities investment.

It is also possible that only part of the new facilities investment satisfies the test. In such cases, only the expenditure that meets both limbs of the new facilities test can be added to the regulated asset base.

Further details on each element of the test are set out below.

2.3.1 Efficiency Test

“Efficiently minimising costs” is defined as the service provider incurring no more costs than would be incurred by a prudent service provider acting efficiently, in accordance with good electricity industry practice, seeking to achieve the lowest sustainable cost of delivering

⁵ There are also provisions for a service provider to propose a “modified test” that allows new facilities investment to 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 is the maximum value of new facilities investment that may be considered under the modified test. This provision has not been used to date.

covered services and without reducing service standards below the service standard benchmarks set for each covered service in the access arrangement or contract for services.

Good electricity industry practice is defined as the exercise of that degree of skill, diligence, prudence and foresight that a skilled and experienced person would reasonably and ordinarily exercise under comparable conditions and circumstances consistent with applicable written laws and statutory instruments and applicable recognised codes, standards and guidelines.

Regard must also be had to:

- Whether the new facility exhibits economies of scale or scope and the increments in which capacity can be added
- 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
- If it is not a priority project, alternative options to the new facility (including the capital costs and non-capital costs that would be incurred in respect of that alternative option).

2.3.2 **Safety and reliability**

This condition is relevant to new facilities investment that is necessary to maintain the safety or reliability of the covered network or its ability to provide contracted covered services.

It would generally require evidence that the new facilities investment is required to either:

- Meet best-practice standards or statutory requirements for human and environmental safety in operation of the network; or
- Achieve or maintain reliability of services or capacity of the network sufficient to meet contractual obligations to users or mandatory requirements.

2.3.3 **Incremental revenue**

This condition is relevant to new facilities investment that is undertaken to expand the capacity of the network to meet new, or a step-up in, demand for services.

To satisfy this condition, the service provider must demonstrate that the anticipated incremental revenue from the new facility (that would not have occurred without the new facility and based on existing prices) is expected to at least recover the new facilities investment.

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

the present value (calculated at the *rate of return* over a reasonable period) of the increased income from *charges* (excluding any *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

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.

In practice, there may be cases where the anticipated incremental revenue will only partially recover the forecast new facilities investment and consequently, only a portion of the new facility investment will meet this condition. As discussed below, there may be other benefits arising from the augmentation that can be considered under the net benefits condition.

2.3.4 *Net benefits*

This condition is relevant to new facilities investment that is not required to maintain the safety or reliability of the covered network or its ability to provide contracted covered services or augmentations to the network that are not fully offset by additional revenue from the augmentation.

To satisfy this condition, the service provider must demonstrate that the new facility investment provides a net benefit in the covered network over a reasonable period of time that justifies the approval of higher prices.

“Net benefits” are defined as 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 the covered network.

The new facilities investment test determination on the Mid West Energy Project (Southern Section) provides an example of an instance where the costs of an augmentation were not fully met by incremental revenue from new demand but other benefits were identified that justified the investment.⁶ Total benefits, including incremental revenue were assessed as:

- Incremental revenue (44 per cent).
- Reduced energy costs from new wind generation (45 per cent).
- Network investment deferral benefits (9 per cent).
- Reductions in transmission losses (2 per cent).

2.3.5 *Priority project*

This condition was added as part of the amendments to the Access Code on 18 September 2020. A priority project is a project specified as a priority project in a “whole of system plan”. A whole of system plan is the document published by the Minister from time to time as the Whole of System Plan for the efficient development of the SWIS over a 20-year period.

New facilities investment for priority projects will be subject to the efficiency test, however, the Energy Transformation Taskforce considered:

If Western Power has undertaken a project on the basis that it has been deemed as a priority project in the WOSP, it would not be reasonable for the ERA to retest the prudence of the project (i.e. need, size and timing). However, there does need to be surety that Western Power’s investment into the network is efficient. Therefore, it is reasonable that the ERA reviews the unit cost of priority projects that Western Power has undertaken.

⁶ The final decision can be found here

[https://www.erawa.com.au/cproot/10217/2/20120127%20FD%20on%20the%20NFIT%20Application%20for%20the%20MWEPE%20\(SS\)%20-%20Submitted%20by%20Western%20Power.pdf](https://www.erawa.com.au/cproot/10217/2/20120127%20FD%20on%20the%20NFIT%20Application%20for%20the%20MWEPE%20(SS)%20-%20Submitted%20by%20Western%20Power.pdf)

The processes for preparing the whole of system plan are set out in the Wholesale Market Rules. The ERA anticipates that as the process develops, the rules will incorporate how projects are determined to be priority projects and this guideline can be updated as required to incorporate any new developments.

3. Changes that affect the factors considered

As part of the Energy Transformation strategy, amendments were made to the new facilities investment test to increase opportunities for new technologies. Extracts of the relevant sections of the Access Code with the changes highlighted are included in Appendix 1.

This section considers the following changes to the Access Code and other changes in the energy sector, that affect factors the ERA will need to consider when making a new facilities investment test determination:

- Alternative options.
- Stand-alone power systems.
- Distributed energy resources.
- Code objective.

3.1 Alternative options

The efficiency test has been expanded to include a requirement that alternative options to the new facility must be considered. The ERA considers this was an implicit requirement for demonstrating efficiency, as a service provider should always consider alternative options and select the most efficient one. Including it as an explicit requirement will make it clearer that Western Power must always consider alternative options. Alternative options include network and non-network options.

Advances in technology are leading to greater opportunities for non-network options to be used to support network services. The new requirements in chapter 6A of the Access Code to publish a network opportunity map and alternative options strategy are intended to increase the information about, and opportunities for, non-network options. To meet the efficiency test, Western Power will need to demonstrate that it has properly identified and evaluated non-network options before proceeding with a new facilities investment. This includes allowing adequate time for third parties to develop feasible alternatives.

Expenditure for non-network options may be classified as non-capital expenditure. The provisions for assessing non-capital expenditure, set out in section 6.40 to 6.42 of the Access Code, are similar to the new facilities investment test.

As discussed below, stand-alone power systems are an alternative option to network investment but, as they can be treated as part of the covered network, they are subject to the new facilities investment test.

3.2 Stand-alone power systems

Changes were made to the *Electricity Industry Act 2004* in April 2020 that allow Western Power to install a stand-alone power system and treat it as part of the covered network to which it is an adjunct if it replaces part of the covered network or is required to be provided by the service provider pursuant to a written law or statutory instrument.

The ERA understands that Western Power is installing stand-alone power systems in parts of the network where it is a lower cost option than maintaining the existing network. Stand-alone power systems have also been deployed where the network has been damaged due to bushfires or storms and it is a lower cost option than rebuilding the network.

The legislative changes allow Western Power to install and operate a stand-alone power system in its entirety. However, the costs of stand-alone power systems can be added to Western Power's regulated asset base and recovered from all network users only if they meet the requirements of the new facilities investment test.

To meet the efficiency test, Western Power will need to demonstrate that it has selected the most efficient option to meet the service obligation, including taking account of operational costs and future maintenance and replacement of the assets. Western Power will need to demonstrate that the systems have been designed efficiently and that the costs are efficient.

The condition that is relevant under the second limb of the test is likely to depend on the timing of the investment. If it is undertaken at the point when the network requires replacement or significant maintenance to maintain the safety and reliability of the covered network and the ability to provide contracted covered services, then the safety and reliability condition may apply. Otherwise, Western Power would need to demonstrate that there is a net benefit from undertaking the investment.

3.3 Distributed Energy Resources

Distributed energy resources include rooftop solar, batteries, electric vehicles and energy management systems. They can be located on the customer's side of the electricity meter or directly connected to the distribution network.

There has been significant customer led growth in distributed energy resources which will likely continue into the future. Distributed energy resources can also provide lower cost options to network investment, so it is important that they be considered in the application of the new facilities investment test.

Higher levels of distributed energy resources have cost implications for the network:

- The capability of the distribution network to accommodate the export of energy from distributed energy resources is determined by voltage and thermal limits. Increasing exports from distributed energy resources might require investment in the local distribution network to manage voltage and thermal limits.
- Higher levels of distributed energy, including exports into the distribution network, lead to lower demand for energy from the generation connected to the transmission network. This can result in periods of very low demand on the system which affects system security and stability. Network investment may be required to address issues including voltage control, reactive power, protection systems and underfrequency load shedding arrangements.
- Managing increased distributed energy resources may require increased monitoring and management of the network at a more granular level which may require investment in monitoring and communication equipment and associated information systems.

Proactively managing distributed energy resources could help to reduce the network investment that would otherwise be required to accommodate distributed energy resources and reduce any negative effect on power system security. There are a variety of ways distributed energy resources could be managed including:

- Price signals that encourage efficient use of the network.
- Requirements for distributed energy resources that manage the amount and/or capability of energy imported and exported to the network.

Investment required to integrate, manage and utilise distributed energy resources should seek to achieve an optimal balance between the level of distributed energy that can be managed by the network to deliver benefits while maintaining power system security and minimising the network investment required.

Western Power will need to clearly demonstrate that it has adopted a coherent and coordinated approach on investment required to integrate, manage and utilise distributed energy resources that incorporates expenditure, pricing and demand management. It will need to show that, of the options available, it has chosen the lowest cost option and that the design and costs are efficient. It will need to identify which condition it meets under the second limb of the new facilities investment test and provide supporting evidence,

Investment that is not required for safety and reliability will need to be justified based on the benefits it will provide. When making its assessment, the ERA will take into consideration whether the proposed network investment is aligned with the strategies set out in the Distributed Energy Resource Roadmap and ongoing reforms to provide future power system security.

3.4 Code objective

As part of the Energy Transformation amendments, the Code objective was changed from promoting the economically efficient investment in, and operation and use of, networks and services of networks in Western Australia in order to promote competition in markets upstream and downstream of the network to the following:

... to promote the efficient investment in, and efficient operation and use of, *services of networks* in Western Australia for the long term interests of consumers in relation to:

price, quality, safety, reliability and security of supply of electricity;

the safety, reliability and security of *covered networks*; and

the environmental consequences of energy supply and consumption, including reducing greenhouse gas emissions, considering land use and biodiversity impacts and encouraging energy efficiency and demand management.

{Note: *Consumers* in the context of the *Code objective* has the meaning in this Code being “a person who consumes electricity”}.

The Code objective sets out factors the Minister, ERA and arbitrator must have regard to when performing a function under the Access Code. When undertaking a new facilities investment test assessment as part of an access arrangement review, the ERA is also required to ensure that the proposed access arrangement is consistent with the Code objective. When undertaking a new facilities investment test assessment outside of an access arrangement review, the ERA is subject to the general requirement to have regard to the Code objective. In either case, if there is a conflict between the new facilities investment test and the Code objective, the requirements of the new facilities investment test prevail as specified under section 2.3 of the Access Code.

If Western Power proposes new facilities investment to achieve environmental standards it will need to demonstrate that the investment meets the new facilities investment test. Western Power must demonstrate that the investment is efficient and that it meets at least one of the conditions under the second limb of the test.

If the investment is necessary to meet legislative requirements it would meet the safety and reliability condition. If it goes beyond such requirements, Western Power must demonstrate

that there is a net benefit to those who generate, transport and consume electricity in the covered network over a reasonable period of time that justifies an increase in prices.

The ERA will assess Western Power's proposed expenditure against the requirements of the new facilities investment test and the Access Code objective.

4. Factors that will be considered when making a new facilities investment test determination

The ERA has set out below the factors it will consider when making a new facilities investment test determination.

The new facilities investment test requires that expenditure must meet the efficiency test and at least one of the following conditions:

- Safety and reliability.
- Incremental revenue
- Net benefits.
- Priority project.

4.1 Efficiency Test factors

“New facility investment” is defined as the 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.

The service provider needs to demonstrate that the expenditure is capital in nature and for a tangible asset that is required to provide covered services. Generally, this would not include:

- Expenditure relating to cancelled projects.
- Planning costs not directly related to specific capital projects or programs.
- Intellectual property.
- Provisions for future expenditure, for example, future decommissioning of the asset.

“Efficiently minimising costs” is defined as the service provider incurring no more costs than would be incurred by a prudent service provider acting efficiently, in accordance with good electricity industry practice, seeking to achieve the lowest sustainable cost of delivering covered services and without reducing service standards below the service standard benchmarks set for each covered service in the access arrangement or contract for services.

Good electricity industry practice is defined as the exercise of that degree of skill, diligence, prudence and foresight that a skilled and experienced person would reasonably and ordinarily exercise under comparable conditions and circumstances consistent with applicable written laws and statutory instruments and applicable recognised codes, standards and guidelines.

Regard must also be had to:

- Whether the new facility exhibits economies of scale or scope and the increments in which capacity can be added
- 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
- If it is not a priority project, alternative options to the new facility (including the capital costs and non-capital costs that would be incurred in respect of that alternative option).

When considering the efficiency of a new facility investment, the ERA considers whether the service provider has demonstrated that:

- The most efficient option has been selected.
- The design is efficient.
- The cost is efficient.

Most new facility investment test determinations are done as part of an access arrangement review. Consequently, the ERA considers both the overall development of the capital investment proposal and specific projects or programs included in the proposal.

Factors considered in the assessment are:

- The quality and efficacy of the systems and processes used by the service provider to manage its expenditures including:
 - Integration and consistency of procedures and policies across projects.
 - The adequacy of internal control structures or specific internal controls, to ensure due regard for effectiveness and efficiency.
 - The extent to which activities have been effective in achieving organisational objectives.
 - Whether projects take place on a timely basis with minimum network disruption and at least cost.
 - The effectiveness of internal audit processes.
 - Past practices relating to planning future work programs and strategies.
 - The independent review of Western Power’s Asset Management Plan regularly conducted at the request of the ERA.
 - Long term network development strategies.
- Forecast capital expenditure:
 - Current operational and service level performance in comparison with industry standards.
 - Forecast changes to operational and service level performance including any justifications and the likelihood of achievability.
 - An assessment of the service provider’s forecasts, considering historical and industry benchmark data.
 - The reasonableness of any assumptions made by the service provider in its calculations.
 - The adequacy and reliability of asset information the service provider has based its forecasts on.
 - The method used to develop demand forecasts and how/if this was independently assessed, including:
 - The key drivers behind the demand forecasts.
 - How the demand forecast has been used to develop expenditure forecasts.
 - Identification of all options, including non-network options, and selection of the one with the highest net present value (or lowest net present cost). This should

incorporate the factors set out in the section on the calculation of net benefits and consider:

- Each alternative network option, including how different network or non-network projects could be combined.
- Any non-network alternative option, including those that could be developed by parties other than the service provider.
- Option value that may arise from retaining flexibility to changing market developments or scenarios by staging investment and preserving options to respond to new information when it emerges.
- The methods, including models, used to estimate expenditure including the process for prioritising expenditure against other potential expenditure.
- If real options analysis is used the following factors will be considered:
 - Whether a full set of relevant uncertainties, their relationships and the learning that takes place about their evolution over time has been considered.
 - Whether decision points and choices in those decisions have been clearly identified and explained.
 - The robustness of assumptions used in the analysis and evidence to support them.
- The cost estimation process and level of unit costs for network augmentation, asset replacement and operating expenditure.
- The process to account for cost estimation risk in both the option selection process and once a project has been selected and whether the level is acceptable. Should not include blanket estimating risk margins or contingency provisions.
- The appropriateness and consistency with prior periods of its capitalisation policy.
- An assessment of overhead costs including the appropriateness of the cost categories the service provider includes and how overhead costs are allocated over other operating expenditure categories, including comparisons with other service providers.
- The interaction between capital expenditure and operating expenditure and whether the forecasts are based on an optimal mix.
- The extent to which future efficiencies/savings have been factored into the service provider's proposed expenditure and whether these are reasonable.
- The reasonableness of the method and level of any escalation factors proposed by the service provider in its expenditure forecasts.
- The reasonableness of procurement practices and processes, including whether they are regularly reviewed and maintained to reflect current market conditions.
- The service provider's ability to deliver its proposed capital expenditure program.
- Actual capital expenditure:
 - The extent to which the service provider applied its expenditure management governance processes in the development, approval and implementation of the project or program.
 - The justification for any positive or negative variance between the estimated cost at the time of the project or program approval and the final project or program cost.
 - The justification for project or program implementation schedule changes.

- The scope of the forecast project compared to the scope at the time of project approval.

4.2 Safety and reliability factors

This condition is relevant if the investment is necessary to maintain the safety or reliability of the network or its ability to provide contracted covered services.

The service provider needs to provide evidence that the new facilities investment is required to either:

- Meet best-practice standards or statutory requirements for human and environmental safety in operation of the network.
- Achieve or maintain reliability of services or capacity of the network sufficient to meet contractual obligations to users or mandatory requirements.

Factors the ERA will consider include:

- Whether there is a legislative requirement or it is reasonable under good electricity industry practice for the service provider to meet the obligation it has identified.
- If the requirement is based on forecast demand or other forecasts, whether those forecasts are reasonable.
- Whether the proposed new facility investment will meet the requirement identified.

4.3 Incremental revenue factors

This condition is relevant to augmentations for new, or a step change in, demand for services.

The service provider needs to provide evidence that the anticipated incremental revenue for the new facility is expected to at least recover the new facilities investment.

“Anticipated incremental revenue” is defined as:

the present value (calculated at the *rate of return* over a reasonable period) of the increased income from *charges* (excluding any *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

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.

Factors the ERA will consider include:

- Period of time used – it should generally be the shorter of the expected economic life of the principal assets of the new facility or the economic life of the customer/s demand for services that the incremental revenue relates to.
- Discount rate – as set out in the definition of incremental revenue, it may, but does not have to be, the rate of return most recently approved by the ERA for use in the price control. The ERA would consider the timing of the new facilities investment to determine whether it was appropriate to use the most recently approved rate of return or if it should be updated for more current data.
- Non-capital costs should be based on realistic and the most current information available.
- The calculation of additional revenue received must be based on a reasonable demand forecast and only include revenue over and above what would be earned if the new facility investment was not commissioned and assuming no change in prices.

4.4 Net benefits factors

The net benefit condition is generally relevant to new facilities investment that is not required to maintain the safety or reliability of the covered network or its ability to provide contracted covered services, or augmentations to the network that are not fully offset by additional revenue earned as a result of the augmentation.

The service provider must demonstrate that the new facility investment provides a net benefit in the covered network over a reasonable period of time that justifies the approval of higher prices.

Net benefits must be measured in present value terms, to the extent that it is possible to do so, and over a reasonable period of time. The net benefits can relate to those who generate, transport and consume electricity in the covered network but only include those that justify the approval of higher prices. This might include:

- Deferral or avoided network capital expenditure.
- Reductions in non-capital costs.
- Reductions in line losses.
- Improvements in customer service.
- Reductions in overall energy and/or essential system service costs.
- Reductions in whole of system costs.
- Reductions in greenhouse gas emissions or other environmental benefits.

Factors the ERA will consider when assessing net benefits include:

- Whether the methods used to calculate net benefits are reasonable and fit for purpose.
- The assumptions used must be reasonable.
- The time period should generally be the shorter of the expected economic life of the principal assets of the new facility or the period over which the benefit will be available.
- The benefits claimed should be limited to benefits to those parties who produce, transport and consume electricity in the capacity of these parties as producers,

transporters or consumers of electricity. They should include consideration of changes in costs and benefits for participants in the Wholesale Electricity Market.

- Where relevant, there should be evidence that AEMO has been consulted on and reviewed the calculation of costs and benefits for participants in the Wholesale Electricity Market as required under section 6.70A of the Access Code.
- The benefits claimed should not include benefits that are simply transfer payments between producers of electricity, the network owner, network users and/or consumers of electricity.
- There must be sufficient evidence that the particular investment would provide the claimed benefit and that the benefits are directly (and solely) attributable to the investment.

5. Acceptable methods to value net benefits

Benefits should be quantified using engineering and economic models as appropriate. All sources, inputs and assumptions must be clearly documented and referenced. Models must be well organised, easy to understand and use and apply best practice modelling conventions.

In determining the net benefit, market simulation modelling can be used if needed. If it is used, the modelling must be replicable and verifiable.

The analysis may include, but need not be limited to the following benefits:

- Changes in fuel consumption arising through different methods of generation dispatch.
- Changes in voluntary load curtailment caused through reduction in demand-side curtailment.
- Changes in involuntary load shedding caused through savings in reduction in lost load, using a reasonable forecast of the value of electricity to consumers, or deferral of generating plant otherwise required solely for the purpose of maintaining system reliability.
- Changes in costs caused through:
 - Deferral of new plant.
 - Differences in capital costs.
 - Differences in the operational and maintenance costs.
 - Deferral of network investments.
- Changes in losses.
- Changes in essential system services.
- Other benefits relevant to the case concerned.

Net benefits should be measured in present value terms to the extent that it is possible to do so. The method applied in estimating costs and benefits must be consistent between different options. This may be especially important where the different options involve different costs and benefits that may be difficult to identify in a quantitative sense.

The service provider must use reasonable market development scenarios including:

- Reasonable forecasts of:
 - Electricity demand (modified where appropriate to take into account demand-side options, variations in economic growth, variations in weather patterns and reasonable assumptions regarding price elasticity).
 - The efficient operating costs of competitively supplying energy to meet forecast demand from existing, committed, anticipated and modelled projects including demand side and generation projects.
 - The avoidable costs of options and alternative options including demand side and generation projects and whether all avoidable costs are completely or partially avoided or deferred.
 - The cost of providing sufficient essential system services to meet the forecast demand.

- The capital and operating costs of other regulated network and market network service projects that are augmentations consistent with the forecast demand and generation scenarios.
- Sensitivity testing that may include, depending on the size and type of project:
 - Benefits
 - Using all reasonable methodologies
 - Testing reasonable forecasts of the value of electricity to consumers.
 - Price elasticity of demand.
 - Capital and operating costs of alternative options.
 - Market demand.
 - Commissioning dates of options and alternative options.

Appendix 1 Access Code requirements

The sections of the Access Code relevant to the new facilities investment test and net benefits are extracted below. The amendments made on 20 September 2020 are marked up in blue.

Definition of “new facilities investment” in section 1.3:

the 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* and to avoid doubt, including stand-alone power systems, storage works or other assets required for the purpose of facilitating competition in retail markets for electricity.

The new facilities investment test is set out in section 6.52:

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
 - (iii) if it is not a *priority project*, *alternative options to the new facility* (including the capital costs and *non-capital costs* that would be incurred in respect of that *alternative option*.

and

- (b) one of 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*; or
 - (iv) the *new facility* is in respect of a *priority project*.

Definition of “efficiently minimising costs” in section 1.3:

the *service provider* incurring no more costs than would be incurred by a prudent *service provider* acting efficiently, in accordance with *good electricity industry practice*, seeking to

achieve the lowest sustainable cost of delivering *covered services* and without reducing *service standards* below the *service standard benchmarks* set for each *covered service* in the *access arrangement* or *contract for services*.

Definition of “good electricity industry practice” in section 1.3:

the exercise of that degree of skill, diligence, prudence and foresight that a skilled and experienced person would reasonably and ordinarily exercise under comparable conditions and circumstances consistent with applicable *written laws* and *statutory instruments* and applicable recognised codes, standards and guidelines.

Definition of “alternative options” in section 1.3:

alternatives to part or all of a *major augmentation* or *new facilities investment, including stand-alone power systems, storage works,* demand-side management and *generation* solutions (such as distributed *generation*), either instead of or in combination with *network augmentation*.

Definition of “anticipated incremental revenue” in section 1.3:

the present value (calculated at the *rate of return* over a reasonable period) of the increased income from *charges* (excluding any *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

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).

Definition of “net benefit” in section 1.3:

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*.

Definition of “priority project” in section 1.3:

a project specified as a priority project in a *whole of system plan*.⁷

Additional requirements for the new facilities investment test are included in section 6.54 and 6.55:

6.54 In making a determination under section 6.52 the *Authority* must have regard to:

- (a) if the *new facilities investment* is in respect of a *priority project*, for the purposes of considering the amount invested or recovered under section 6.52(a), the unit costs of the *service provider’s actual new facilities investment* only; and
- (b) whether the *new facilities investment* was required by a *written law* or a *statutory instrument*.

6.55 Section 6.54 does not limit the matters to which regard must or may be had in making a determination under section 6.52.

⁷ The “whole of system plan” means the document published by the Minister from time to time as the Whole of System Plan for the efficient development of the SWIS over a 20 year period.

The requirements for the modified test referred to in section 6.52(b)(i)B are set out in section 6.53:

6.53 The *Authority* may, in an *access arrangement*, approve a “**modified test**” for the purposes of section 6.52(b)(i)B to apply to a *covered network* in respect of *new facilities investment* below the *test application threshold* where:

- (a) the *service provider* has proposed a *modified test* to apply in respect of *new facilities investment* below a proposed *test application threshold*; and
- (b) the *Authority* determines that *approving* the *access arrangement* with the proposed *modified test*:
 - (i) would be efficient in that the advantages of approving the *proposed modified test* would outweigh the disadvantages; and
 - (ii) would promote the achievement of the *Code objective*.

“Net benefits” are also relevant to the regulatory test set out in chapter 9 of the Access Code.

9.3 The “regulatory test” is an assessment under this Chapter 9 of whether a *proposed major augmentation* to a *covered network* maximises the *net benefit after considering alternative options*.

9.4 A “net benefit after considering alternative options” 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 the *covered network* and any *interconnected system*, having regard to all reasonable *alternative options*, including the likelihood of each *alternative option* proceeding.

Definition of “major augmentation” in section 1.3:

An augmentation (where an augmentation is defined as an increase in the capability of the covered network to provide covered services) for which the *new facilities investment* for the *shared assets*:

- (a) exceeds \$10 million (CPI adjusted), where the network assets comprising the augmentation are, or are to be, part of a distribution system; and
- (b) exceeds \$30 million (CPI adjusted), where the network assets comprising the augmentation are, or are to be, part of:
 - (i) a transmission system; or
 - (ii) both a distribution system and a transmission system.

Definition of “shared assets” in section 1.3:

those *network assets* which are not *connection assets* where “connection assets” are defined as all of the *network assets* that are used only in order to provide *covered services* at the *connection point* and “connection point” means a point on a *covered network* identified in, or to be identified in, a *contract for services* as an *entry point* or *exit point*.

The Code objective is in section 2.1:

2.1 The objective of this Code (Code objective”) is to promote ~~the economically~~ efficient investment in, and ~~efficient~~ operation ~~of~~ and use of, ~~networks and services of networks~~ in Western Australia ~~in order to promote competition in markets upstream and downstream of the networks~~ for the long-term interests of *consumers* in relation to:

- (a) price, quality, safety, reliability and security of supply of electricity;
- (b) the safety, reliability and security of covered networks; and
- (c) the environmental consequences of energy supply and consumption, including reducing greenhouse gas emissions, considering land use and biodiversity impacts, and encouraging energy efficiency and demand management.

{Note: Consumers in the context of the *Code objective* has the meaning in this Code being “a person who consumes electricity”.}

Requirement for guidelines on factors that will be considered in a new facilities investment test determination in section 6.56:

6.56 The Authority must make and publish guidelines that provide guidance as to the factors the Authority proposes to consider in making a determination under section 6.52 and must consult the public in accordance with Appendix 7 before making and publishing any guidelines under this section.

Requirement for guidelines on methods to value net benefits in section 6A.6:

6A.6 The Authority must:

- (a) make and publish guidelines that provide guidance as to acceptable methodologies for valuing *net benefits* by a *service provider*, which methodologies must include, but are not limited to, for the *SWIS*, consideration of changes in costs and benefits for participants in the *Wholesale Electricity Market*, and
- (b) consult the public in accordance with Appendix 7 before making and publishing any guidelines under section 6A.6(a).