Western Power response to the ERA's 7 November 2011 issues paper on proposed revisions to the access arrangement

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1 Western Power's position on issues raised by the ERA

On 7 November 2011, the Economic Regulation Authority (the Authority) released an issues paper on Western Power's proposed revisions to the access arrangement for the Western Power Network.

The Authority's issues paper highlights several issues for consideration on which it has invited submissions from interested parties. The paper also includes a broad interpretation of each of these issues by the Authority.

As part of the public submission process we are taking this opportunity to clarify some aspects of our revisions that may not have been clear in our original submission based on the Authority's interpretation presented in the issues paper.

1.1 Return on investment

It is important that Western Power receives a return on investment commensurate with the commercial risk of providing covered services.

If the business is unable to earn an appropriate return it may experience difficulty accessing the additional debt required. This would reduce its ability to deliver the proposed investment program.

The proposed investment program for AA3 is designed to deliver specific outcomes related to safety, capacity, security and service levels. Reduced investment may lead to higher connection costs for new customers because capacity would not keep pace with organic growth. It would also lead to a higher likelihood of widespread outages and increased safety risk.

With regard to the consideration of an appropriate credit rating, our position is that using a benchmark efficient rating is appropriate as it provides an incentive for regulated business to pursue efficient financing arrangements. Furthermore, the risk profile for investment in Western Power varies significantly from the Government's AAA default risk rating profile and therefore the two should not be deemed interchangeable.

We also note that in its 2009 WACC Review, the Australian Energy Regulator concluded that a credit rating of BBB+ was appropriate for energy businesses. This is a view that was supported by the Authority in its recent draft decision on the Dampier to Bunbury pipeline, where the Authority proposed that a BBB+ rating was appropriate for a gas pipeline operator. The Authority's reasoning in the Dampier to Bunbury determination strongly suggests that the same benchmark is appropriate for electricity networks.[1]

The current benchmark rating system, as used in all AER and ERA precedents, has proven to be effective to date. There has been no indication from the Authority in recent regulatory decisions that Western Power's credit rating should be treated differently to other regulated energy businesses. Regulatory precedent suggests there is little compelling evidence to vary from a BBB+ rating.

It is important that the Authority does not inadvertently make a policy statement regarding the ownership of utility businesses through its approach to calculation of return on investment. For example, providing a lower return simply because a business is government owned effectively results in bias towards public ownership. This may de-value the business and inhibit any move to change ownership in the future, should a change in ownership be considered beneficial for Western Australians.

[1] Paras 496-498, *Draft decision on proposed revisions to the access arrangement for the Dampier to Bunbury natural gas pipeline*, ERA, 14 March 2011.

Customers should not pay more simply because of a change in ownership or because a firm is less efficient in managing its financing costs than other businesses.

1.2 Treatment of taxation

In our 30 September 2011 submission we have adopted a real pre-tax approach to modelling our target revenue. To date, the Authority has accepted a real pre-tax approach in its regulatory decisions.

In its 7 November 2011 issues paper the Authority invited submissions on the most appropriate method of incorporating taxation liabilities in a service provider's revenue requirement.

A move to a post-tax model would require considerable time to obtain the relevant data, modify the model and test the results. It is our view that a change of this significance would require sufficient notice to enable this to happen and is best left until the next regulatory period.

1.3 Mid-year timing assumption

A mid-year timing assumption for capital expenditure better reflects the costs incurred when investing in the network. Western Power incurs interest costs on funds from the time it borrows them.

Currently, Western Power does not recover these costs. Our proposal is that it does recover them. The mid-year timing assumption ensures that the forward-looking efficient costs resulting from capital expenditure are fully recovered.

1.4 Service standards incentive framework

The outcome of the proposed changes to the service incentive regime enhances customer outcomes in two ways. Firstly, Western Power has a greater incentive to reduce operating costs and secondly, it will be hit with a greater penalty if it does not maintain existing service levels.

One of the proposed changes that make this improvement possible is establishing the service standard benchmarks as minimum standards. On first glance it is easy to perceive that setting the service standard benchmark at a lower level might result in poorer service. This is far from the truth.

Setting the benchmarks as minimum standards simply means that the gain sharing mechanism – a device that rewards the business for achieving operating efficiencies – operates as intended to provide an effective incentive to reduce costs. The gain sharing mechanism did not operate effectively during AA2.

Lowering the service standard benchmarks does not mean that service levels will decline. When we deliver the proposed AA3 expenditure as forecast we will achieve a level of service consistent with the level customers have experienced over the last five years.

This is an important point – the AA3 expenditure proposal is expected to achieve a specific level of performance. If the regulatory process reduces expenditure below that which is forecast as necessary for the investment program, and as a consequence that program is reduced, the service levels we can achieve will be lower. This means the service standard benchmarks and service targets would need to be re-set at a lower level.

To ensure the business is not rewarded for achieving cost efficiencies by reducing service levels, we propose that the service level targets for the financial incentive regime are set at the level we are expecting to achieve as a result of our AA3 expenditure. This is significantly higher than the minimum standard prescribed by the service standard benchmarks. If

Western Power does not achieve this target, it will be subject to a substantial financial penalty.

This effectively eliminates any temptation to allow service levels to decline, as the penalty will offset any perceived benefit under the gain sharing mechanism. Furthermore, we propose that the penalties (and rewards) under the AA3 financial incentive scheme are commensurate with customer value and in most cases are significantly greater than in AA2.

It is also important to note that the elements of the incentive framework for AA3 are not significantly changing - the SSAM, gain sharing mechanism, investment adjustment mechanism, and D-factor all existed in AA2 and they will continue to exist in AA3. The main difference is that gain sharing mechanism will now function effectively.

The key challenge regarding this proposal is to ensure that the targets for the financial incentives and the targets for the service standard benchmarks are set at the appropriate levels. Our approach is to use historical performance data to set the service standard benchmarks at minimum standard and the financial incentive targets at a level that will maintain current average service levels. The expected financial rewards and penalties are zero under our approach.

1.5 Deferred revenue

Western Power has a right to recover revenue that was deferred for collection AA2. This revenue was deferred to help reduce price impacts during that period.

We propose that the deferred revenue is collected in full during AA3. Recovering the deferred revenue over the five years of AA3 ensures future customers do not pay more because previous customers did not pay their fair share. If we recover the revenue as proposed, the total amounts to $976 million ($ real at 30 June 2012).

The Authority stated its preference was to recover the revenue over the life of the assets (42 years for distribution assets and 50 years for transmission). If it was recovered over that time, the total would grow to $2.9 billion ($ real at 30 June 2012).

NERA Economic Consulting has reviewed this issue and concluded that deferring the AA2 revenue further would lead to intergenerational inequity and a requirement for Western Power to recover equity raising costs. NERA's report on recovery of revenue deferred from AA2 is attached at Appendix A.

1.6 Operating expenditure

In its 7 November issues paper the Authority states that Western Power has not assumed any efficiency gains on base operating costs in its AA3 forecast. This is incorrect. The forecast operating expenditure incorporates the efficiency initiatives delivered during AA2 and the efficiency gains we expect to continue into the AA3 period.

Consistent with section 6.4 of the Access Code, our forecasts reflect *an amount that meets the forward-looking and efficient costs of providing covered services*[2]. If we were to specify further reductions, we would most likely not recover our forward-looking costs.

The incentive framework provides strong incentives to achieve further cost efficiencies. This will be strengthened if our proposed changes to the service standards framework are adopted.

The operating expenditure increase is modest compared to growth in the size of the network and new customers connecting. Our operating expenditure is increasing by 21.1% over the five years of AA3. This is lower than our operating expenditure increase over the five years prior to AA3, which was 40.2%.

[2] Section 6.4(a) i., Price control objectives, *Electricity networks Access Code 2004*.

We can achieve this despite the size of the network and number of customers growing at a faster rate than the preceding five years[3]. This is due in part to the efficiency improvements achieved to date and embedded in our AA3 forecast, meaning we can deliver more for less.

1.7 Investment from prior periods

The Authority's 7 November 2011 issues paper claims that 'Western Power has proposed to include $244.4 million (real dollars at 30 June 2012) in the opening capital base for AA3 capital expenditure in AA1 that did not meet the requirement of the new facilities investment test (NFIT).' This statement is incomplete.

The $244.4 million we are adding to the opening capital base under section 6.60 of the Access Code is speculative investment from the AA1 period.

A review of documentation relating to specific projects and programs undertaken during AA1 has shown that these investments satisfied the NFIT and can be added to the capital base.

With regard to AA2 investment, we consider that all capital expenditure during the period satisfied NFIT and can be added to the AA3 opening capital base. Therefore we see no reason for AA2 capital investment to be considered as speculative investment in future periods.

If the Authority considers that any amount of AA2 investment should be excluded from the AA3 capital base, the Authority must address the consequential impact on business risk and on the incentives for economic efficiency.

1.8 Conclusion

The current revisions process is Western Power's third involvement in the development and review of the access arrangement for the Western Power Network. As a result the business has greater maturity and understanding of the regulatory framework and has built experience from prior access arrangement periods into the proposal for AA3.

These revisions do not unnecessarily increase prices to customers. Our proposal attempts to make incremental changes to the access arrangement that balance the outcomes, risks and costs to customers. We will deliver much more investment for much less than we have in the past, while ensuring continued incentives for achieving operating efficiency and maintaining service levels.

The AA3 forecast investment has been developed to deliver specific network outcomes and service standards. The proposed revisions to the range of services, service measures and incentive framework for AA3 are directly linked to this investment proposal – any reduction to the investment program would have implications for the service framework and the outcomes for customers. Therefore it is important that any variance to the proposed access arrangement revisions are carefully considered against network risk and the service customers can expect to receive.

We would like to continue to talk to the Authority and our stakeholders to help them understand the implications of adjusting different aspects of our proposal. We welcome the opportunity to participate in the Authority's transparent consultation process and are happy to discuss any aspects of the proposed revisions with customers and any other interested parties.

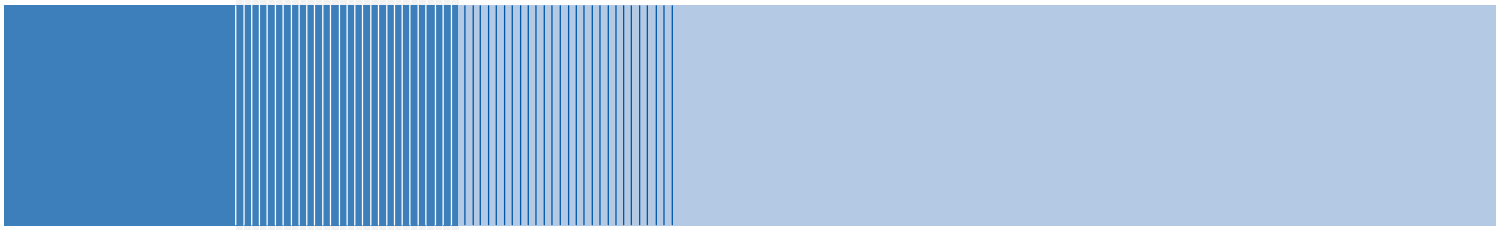
[3] The network will grow in size by 20.5% during AA3, compared to 14.5% during the previous five years. Customer numbers will grow by 12.6% during AA3, compared to 10.2% during the previous five years.

Appendix A. Appropriate Period for the Recovery of Revenue Deferred from AA2 – NERA Economic Consulting, November 2011

22 November 2011 – Final Report

Appropriate Period for the Recovery of Revenue Deferred from AA2

Western Power



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Executive Summary

Western Power has asked us to provide independent advice addressing the following question:

> 'What is the appropriate period for the recovery of the revenue deferred from the second Access Arrangement period (AA2) into the third or subsequent Access Arrangement periods?'

As part of its decision for AA2, the Economic Regulatory Authority (ERA) required Western Power to defer $548.7m of target revenue (present value as at 30 June 2009), representing the revenue impact associated with the change in Western Power's treatment of capital contributions. The ERA justified the deferral of target revenue on the basis of the avoidance of price shocks. The ERA left open the period over which the deferred revenue is to be recovered, as an issue which will be subject to ERA approval as part of future Access Arrangement revisions.

We have considered the following matters in thinking about the appropriate period for recovery of the deferred revenue:

- The cash flow implications for Western Power, and in particular whether faster recovery of the deferred revenue will enable the avoidance of equity raising costs in the third Access Arrangement period (AA3);
- Inter-generational equity; and
- Avoiding price shocks to customers – in line with the objective in clause 6.4(c) of the Access Code.

E.1 Cash flow implications

Based on the capital expenditure program, overall target revenue and tariff profile proposed by Western Power for AA3, if the deferred AA2 revenue is recovered on a straight-line basis over the average life of network assets Western Power will be assumed to incur $8.5m for equity raising costs in AA3.[1] We have estimated that this cost could be avoided by accelerating the recovery profile of deferred revenue to providing an additional $265.2m (real $2012) of revenue in AA3.[2] The avoidance of equity raising costs in AA3 represents a real cost saving to users, as these costs would otherwise be incorporated in higher target revenue in AA3.

Deferred revenue not recovered over AA3 could be used to increase cash flows in later Access Arrangement periods, which may enable equity raising costs to be reduced or even

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[1] This amount has been calculated on the premise that the ERA adopts the same approach as that adopted by the Australian Energy Regulator (AER) in calculating allowed equity raising costs.

[2] The exact value of the amount of deferred revenue which would need to be recovered in AA3 in order to avoid Western Power incurring equity raising costs may change, where the ERA's Final Decision for AA3 results in revisions to the tariffs and capital expenditure program proposed by Western Power for AA3, or to the proposed price path. It would also change if a profile other than straight-line were adopted for revenue recovery.

avoided in these future periods. Whether or not Western Power will have a modelled equity raising cost in future periods will depend on the level of cash flows otherwise projected for those periods and Western Power's capital expenditure program in those periods, both of which are uncertain at this time. This uncertainty means that there is a greater benefit in completely avoiding equity raising costs as soon as it is possible to do so, rather than only partially avoiding the costs, since in future access arrangement periods there may not be any equity raising costs (and therefore no potential to avoid these costs through the recovery of deferred AA2 revenue in those periods). This in turn implies that a faster recovery profile is likely to have more benefits in terms of avoided equity raising costs than one under which revenue recovery is more thinly spread across a greater number of future periods, given the uncertainty over the potential to avoid equity raising costs in future periods.

E.2 Inter-generational equity

The amount of deferred revenue reflects the amount of capital contributions received by Western Power in AA2, which are no longer included as an off-set in calculating Western Power's target revenue. However, the deferral of this target revenue means that customers in AA2 have avoided paying some of the costs of supplying network services to them. These costs will instead be partly funded by future users, who may differ from current users. The deferral of revenue therefore gives rise to inter-generational equity effects. These effects will be greater the longer the period over which the revenue is deferred, since it becomes more likely that there will be a difference between the group of users who have avoided paying for the costs of services and the future users who will instead incur these costs. In contrast, shorter recovery periods reduce inter-generational equity effects.

E.3 Avoidance of price shocks

Recovering the deferred AA2 revenue over a shorter period will increase tariffs by more than if the deferred revenue is recovered over a longer period. However, the resulting overall increases in tariffs may not equate to 'price shocks', which are defined in the Access Code to be 'sudden material tariff adjustments.' It is necessary to also consider the underlying changes in target revenue and demand in order to form a view as to whether the overall tariff changes implied by a shorter recovery profile represent a 'price shock'.

NERA has reviewed Western Power's modelling, which shows that the total increase in tariffs in AA3 if all of the deferred AA2 revenue is recovered in AA3 is 12.9% in the first year followed by 4.5% in the following four years for transmission, and 17.6% in the first year, followed by 13.4% in the following four years for distribution. Ultimately it is a subjective decision as to whether this level of price increase is 'material'. However the implied total levels of price increases are around the same levels as those approved by the ERA for AA2.

E.4 Conclusions

It is not possible to provide a definitive answer as to the appropriate period for cost recovery. One of the key factors that needs to be considered is what constitutes a 'price shock', which is to a large extent a matter of judgement (outside of 'obvious' high and low bounds, which is not the situation in the current case).

However looking at the particular circumstances of Western Power, and in particular its projected cash flows and capital program for AA3, we consider that there is a benefit to users in terms of avoided equity raising costs if the profile of cost recovery is accelerated in order to result in an additional $265.2m (real $2012) of revenue in AA3, compared with the revenue associated with a straight-line recovery path over the life of the network assets. This would imply a total increase in first year distribution tariffs for AA3 of 12.7%, which is below the tariff increases approved by the ERA for AA2 and may therefore arguably not be considered to impose a 'tariff shock'.

Adopting a recovery profile which allows more than this amount of revenue to be recovered in AA3 would have further benefits in terms of reduced inter-generational equity effects. However offsetting this would be potential foregone benefits relating to avoided equity raising costs in future Access Arrangement periods (albeit that these benefits are currently uncertain).

Whilst it is not possible to be definitive on the recovery profile, we can conclude that the average life of network assets (ie, 43 years for distribution and 46 years for transmission) would be too long a period for deferred revenue recovery. It is unlikely to be necessary to adopt such a long period in order to avoid material price changes. Moreover, adopting such a long period would result in a real increase in the costs borne by consumers (as a result of higher equity raising costs in AA3 and potentially later access arrangement periods) and would reduce inter-generational equity.

1 Introduction

This report has been prepared by NERA Economic Consulting (NERA) at the request of Western Power.

Western Power has asked NERA to provide independent advice addressing the following question:

> 'What is the appropriate period for the recovery of the revenue deferred from the second Access Arrangement period (AA2) into the third or subsequent Access Arrangement periods?'

In considering this question, NERA has been asked by Western Power to have regard to:

- the current Access Arrangement, in particular clauses 5.37A and 5.48A;
- the Code Objective set out in clause 2.1 of the Access Code;
- other relevant provisions in the Access Code, in particular clauses 2.3, 6.4 and 7.3;
- the cash flow effects on Western Power's business;
- the reasons the Economic Regulatory Authority (ERA) sets out in its AA2 Final Decision, in particular paragraphs 1177 to 1190; and
- the NERA Report dated 1 September 2009, *ERA Requirement Amendments 32 and 36: Deferral of Target Revenue from AA2 to AA2 and Beyond*.

1.1 Structure of this Report

The remainder of this report is structured as follows:

- Section 2 discusses the deferral of revenue from AA2 and Western Power's current Access Arrangement provisions (5.37A and 5.48A);
- Section 3 discusses relevant provisions of the Electricity Network Access Code ('the Code');
- Section 4 discusses factors relevant to determining an appropriate recovery period, in particular:
  - The opportunity for the Service Provider to recover an amount that meets its efficient and forward-looking costs (price control objective 6.4(a));
  - the potential cash flow impacts on Western Power's business;
  - inter-generational equity; and
  - the avoidance of price shocks (price control objective 6.4(c)).
- Section 5 provides conclusions in relation to the question asked.

1.2 Statement of Credentials

This report has been prepared by Ann Whitfield and Brendan Quach.

Ann Whitfield is an Associate Director with NERA Economic Consulting. Ann has eighteen years experience working as an economist for both private consultancies and government. Ann's particular areas of experience include utility regulation and market design. Ann has advised across a range of regulatory issues in both Western Australia and the National Electricity Market in the eastern states, with particular focus on the arrangements for capital investment, price control mechanisms and efficiency incentive arrangements. Ann has worked for a range of Australian clients, including both regulators and utility businesses, and has also managed a number of large international projects. Ann previously authored the 2009 NERA Report *ERA Requirement Amendments 32 and 36: Deferral of Target Revenue from AA2 to AA2 and Beyond.*

Brendan Quach is a Senior Consultant in NERA's Sydney Office. He has eleven years experience as an economist, specialising in regulatory and financial modelling and the cost of capital for network businesses.

This report has been peer reviewed by **Greg Houston**. Greg serves on the United States Board of Directors and the Management Committee of National Economic Research Associates Inc, and is head of NERA's Australian operations. Greg has twenty years experience in the economic analysis of markets and the provision of expert advice in litigation, business strategy, and policy contexts. Greg has directed a wide range of competition, regulatory and financial economics assignments since joining NERA in 1989. Greg has acted as expert witness in valuation, antitrust and regulatory proceedings before the courts, in various arbitration and mediation processes, and before regulatory and judicial bodies in Australia, Fiji, New Zealand, the Philippines, Singapore and the United Kingdom. Greg previously advised Western Power on the optimal treatment and application of capital contributions.

In preparing this report, we have made all the inquiries we believe are desirable and appropriate and no matters of significance that we regard as relevant have, to our knowledge, been withheld from this report. We have been provided with a copy of the Federal Court guidelines *Guidelines for Expert Witnesses in Proceedings in the Federal Court of Australia* dated 5 May 2008. We have reviewed those guidelines and this report has been prepared consistently with the form of expert evidence required by those guidelines.

2 The Deferral of Revenue from AA2

The ERA's Final Decision for AA2 was to defer an amount of $548.7m (in present value terms, end-June 2009) in revenue from the AA2 period to the third or subsequent Access Arrangement periods.

The amount of revenue deferred reflects the total revenue impact in AA2 associated with the change in the manner in which Western Power accounts for customer contributions. The ERA's Final Decision left open the period over which the deferred revenue is to be recovered, as an issue which will be subject to ERA approval as part of future Access Arrangement revisions.[3]

In this section we discuss:

- the driver for the change in Western Power's treatment of capital contributions, which has resulted in the deferred revenue amount;
- the ERA's Final Decision to defer the amount of revenue associated with the change in capital contribution treatment from AA2; and
- the resulting provisions in Western Power's Access Arrangement for AA2 which give effect to the ERA's Final Decision.

2.1 The Change in Western Power's Treatment of Capital Contributions

Western Power's treatment of capital contributions in the first Access Arrangement period (AA1) followed the so-called 'Queensland approach.' Under this approach, forecast capital contributions were subtracted from Western Power's target revenue for AA1 and the assets covered by those contributions were incorporated into Western Power's Regulatory Asset Base (RAB). This treatment of capital contributions reduced target revenue and therefore network tariffs for AA1, but resulted in future tariffs being higher than they otherwise would have been, as Western Power earns a return on and return of the value of the AA1 contributed assets over the expected life of those assets. In effect, under this treatment of capital contributions current customers defer paying some of the costs associated with assets they are using today, but instead future customers pay the return on and of those assets over subsequent regulatory periods.

Western Power changed its treatment of capital contributions in AA2, to bring it into line with conventional regulatory treatment. Under the conventional approach, adopted by the majority of energy network business in Australia, contributed assets and the associated revenue from capital contributions are excluded both from the RAB and from the determination of target revenue (and therefore the determination of network tariffs). Western Power is continuing with this conventional approach to the treatment of capital contributions in AA3.

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[3] Economic Regulatory Authority, December 2009, *Final Decision on Proposed Revisions to the Access Arrangement for the South West Interconnected Network*, para 1189. (Hereafter 'ERA Final Decision)

NERA earlier provided advice to Western Power in relation to the appropriate treatment of capital contributions which highlighted the following advantages of changing the AA1 approach to reflect the conventional treatment:

- an improvement in financial sustainability for Western Power, through enhanced cash flows;
- reduced tariff volatility and improved inter-generational equity, as future users are not paying for assets used by current users; and
- an improvement in economic efficiency, by avoiding distortions to current and future tariffs.

2.2 The Deferral of Revenue from AA2

The calculation of target revenue for AA2 was based on Western Power's revised treatment of capital contributions.

As part of its proposed AA2 Access Arrangement, Western Power proposed to defer the recovery of $191.9m (present value as at 30 June 2009) of target revenue from AA2 'to the third or subsequent Access Arrangement periods.'[4] Western Power commented at the time that the deferral of revenue was proposed in order 'to effect a transition to the conventional approach to capital contributions' and also to manage the price increase in AA2 as a result of Western Power's increased expenditure needs.

The ERA's Final Decision for AA2 required Western Power to defer the entire amount of the adjustment to target revenue associated with the change in treatment of capital contributions. The amount required to be deferred totalled $548.7m (in present value terms, end-June 2009).

The ERA's Final Decision leaves open the period over which the deferred revenue is to be recovered, as an issue which will be subject to ERA approval as part of future Access Arrangement revisions.[5] The ERA notes that avoiding price shocks for users of reference services will be a relevant consideration in determining the time path for the recovery of deferred revenue. The ERA considers that the avoidance of price shocks would best occur through a planned recovery of the deferred revenue by a pre-determined schedule over an extended period, such as by a real annuity amount over the average life of the network assets.[6] However the ERA also notes that the potential for adverse effects on Western Power's business due to effects on cash flows should also be taken into account in determining the time path for recovery of the deferred AA2 revenue.[7]

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4 Western Power, *Revised Access Arrangement Information for the Network of the South West Interconnected System*, 1 October 2008, p. 110 and p. 146.

5 ERA Final Decision, para 1117-1190.

6 ERA Final Decision, para 1189.

7 ERA Final Decision, para 1187.

2.3 Western Power's Access Arrangement for AA2

Western Power's Access Arrangement for AA2 reflects the ERA's Final Decision and gives effect to the deferral of AA2 revenue. Specifically the deferral of revenue associated with transmission reference services is addressed by clause 5.37A of the current Access Arrangement:

> **5.37A** To manage the overall price increases in this *Access Arrangement period*, Western Power has deferred the recovery of some transmission *reference service* revenue from this *Access Arrangement period* to the third or subsequent Access Arrangement periods. The deferred amount of revenue is $64.5 million ($ real as at 30 June 2009) expressed in present value terms as at 30 June 2009. An amount must be added to the *target revenue* for the transmission network in the third *Access Arrangement period* or subsequent *Access Arrangement periods* such that the present value (at 30 June 2009) of the total amount added to *target revenue* (taking account of inflation and the time value of money) is equal to the present value of the deferred transmission *reference service* revenue (at 30 June 2009). For the avoidance of doubt, the addition to *target revenue* in the third and subsequent *Access Arrangement periods* must leave Western Power financially neutral compared to a situation where transmission *reference service* revenue deferral had not occurred. The timeframe for recovering deferred revenue will consider the price impact on users of reference services and will be subject to approval by the Authority.

An equivalent clause (5.48A) gives effect to the deferral of distribution reference service revenue, with a value of $484.2m ($ real as at 30 June 2009).

In addition the current Access Arrangement contains a section explaining how the pricing method complies with the Code Requirements.[8] Clause 9.18A relates to the 'Avoidance of price shock' and sets out the following:

> **9.18A** In accordance [sic] section 3.10A of this Access Arrangement, to manage the overall price increases in this *Access Arrangement period*, Western Power has deferred the recovery of some revenue from this Access Arrangement period until the third or subsequent *Access Arrangement periods*. The deferred revenue amounts and the arrangements for recovering this deferred revenue in the third or subsequent *Access Arrangement periods* are described in section 5.37A and 5.48A of this *Access Arrangement*. In addition, the forecast tariff revenue has been smoothed across the *Access Arrangement* period so that price movements will be smoothed across each year. The approach for recovering deferred revenue will minimise the likelihood of price shock at the start of the third *Access Arrangement period*.

[8] Access Arrangement, clause 9.7.

3 Access Code Requirements

In this section we consider the Code provisions which are relevant to the issue of the period over which revenue deferred from AA2 should be recovered. Specifically we consider:

- the price control objectives under clause 6.4 and in particular those set out in 6.4(a) and 6.4(c);
- the provision in clause 2.3 of the Code for the Code objective to be used to determine how to reconcile competing provisions; and
- the extent of uncertainty in relation to the future recovery of the deferred AA2 revenue.

3.1 Price Control Objectives

The Code sets out objectives for the price control applying during an Access Arrangement, in clause 6.4. Specifically, clause 6.4 requires that the price control must have the objectives of:

> (a) giving the *service provider* an opportunity to earn revenue **("target revenue"**) for the *Access Arrangement period* from the provision of *covered services* as follows:
>
> (i) an amount that meets the forward-looking and efficient costs of providing *covered services*, including a return on investment commensurate with the commercial risks involved;
>
> [..]
>
> (c) avoiding price shocks (that is, sudden material tariff adjustments between succeeding years).

The ERA has highlighted the objective of avoiding price shocks (ie, clause 6.4(c)) in considering the appropriate period for the recovery of the deferred AA2 revenue.[9] We consider the implications of clause 6.4(c) for the appropriate period of cost recovery in section 4.4.

We have also considered the implications of the objective set out in clause 6.4(a) in the context of the recovery of the deferred AA2 revenue.

The objective in 6.4(a) is that target revenue should be set in relation to the forward-looking and efficient costs of providing covered services. This objective is primarily focused on ensuring cost recovery for efficient investments. However the reference to 'forward-looking' costs also implies an alignment between pricing and the costs of providing the service, in the context of providing efficient price signals.

The recovery of deferred revenue from AA2 will result in the revenue recovered under the price control for future Access Arrangement periods being *above* the level required to meet forward-looking and efficient costs, ie, not to meet the objective in 6.4(a). The extent to which this has implications for efficient price signals will depend on the manner in which these costs are reflected in the price structure that customers face. In principle economic efficiency requires that customers pay the marginal cost associated with providing goods or

[9] ERA Final Decision, para 1187.

services to them. Where customers face prices which are above marginal costs, they will consume less, resulting in outcomes which are less allocatively efficient. This is discussed further in section 4.1.

3.2 Conflicts to be Resolved by Reference to the Code Objective

Under clause 2.3(b)(ii) of the Code, where there is a conflict between specific criteria in the Code in relation to the same thing, the Code objective is to be applied in deciding how the specific criteria can best be reconciled and which of them should prevail. The Code objective is set out in clause 2.1 as:

> The objective of this Code ("Code objective") is to promote the economically efficient:
>
> (a) investment in; and
>
> (b) 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*.

It is possible that there could be a conflict between the objectives set out in 6.4(a) and 6.4(c), in considering the appropriate period for the recovery of deferred AA2 revenue. Whether this is the case in practice is considered further in section 4 of this report.

In the event that there is a conflict, consideration of economic efficiency would support a view that the objective in 6.4(a) should be given precedence over the objective in 6.4(c). A distortion of price signals resulting from a failure to meet the objective in 6.4(a) and the pricing structure adopted by the business would imply a reduction in allocative efficiency. Such an outcome would not promote the efficient use of networks, as required by the Code objective.

We note that the ERA has also previously expressed the view that the objective in clause 6.4(a) should prevail over the objective of 6.4(c).[10]

3.3 Changes to the Code to Ensure Recovery of Deferred AA2 Revenue

Amendments have recently been made to the Code in relation to the recovery of the deferred AA2 revenue.[11]

Importantly the amendments require that an amount in respect of the AA2 deferred revenue amount must be added to the target revenue for the Western Power Network for one or more Access Arrangement periods until a limit is reached, reflecting the $549m deferral amount (present value end-June 2009), adjusted for the time value of money and inflation.[12] The

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[10] Economic Regulatory Authority, December 2009, *Final Decision on Proposed Revisions to the Access Arrangement for the South West Interconnected Network*, para 1021 p. 278; and ERA Draft Decision, para 860, p. 240.

[11] The amendments were gazetted on 30 September. See: Western Australian Government Gazette, September 30 2011, No. 182.

[12] Access Code amendments 6.5A-E.

amendments require the adjustments for the time value of money and inflation 'so that the deferral of revenue is financially neutral' for Western Power.[13]

The amendments further allow that the ERA may determine the timing of recovery of the deferred revenue, by determining the amount to be added to target revenue in a given Access Arrangement period.[14]

The Code changes remove any potential uncertainty associated with recovery of the deferred revenue amount from AA2. This means that the uncertainty of revenue recovery is not a factor that needs to be considered in determining the appropriate period for the recovery of deferred AA2 revenue.

[13] Access Code amendment 6.5C.

[14] Access Code amendment 6.5D.

4 Determining the Appropriate Period for Recovery of Deferred Revenue

The question NERA has been asked to address is:

> 'What is the appropriate period for the recovery of the revenue deferred from the AA2 period into the third or subsequent Access Arrangement periods?'

In deciding on the appropriate period for the recovery of the AA2 deferred revenue, the following considerations are relevant:

- mitigating distortions to economic signals – in line with the objective in clause 6.4(a) of the Code;
- the cash flow implications for Western Power - faster recovery of the AA2 deferred revenue may allow a reduction of the allowance made in target revenue to reflect equity raising costs;
- inter-generational equity – extended deferral of revenue recovery implies that current users will avoid paying some of the costs of supplying network services to them; and
- avoiding price shocks to customers - in line with the objective in clause 6.4(c) of the Code.

This section discusses each of these factors in turn, and their relevance for determining the appropriate recovery period for the deferred AA2 revenue.

We begin with the consideration of distortions to economic signals (clause 6.4(a)), and conclude that this objective does not provide relevant guidance on the appropriate period for cost recovery in the current case.

We then consider the potential reduction in equity raising costs for Western Power and inter-generational equity. These are both factors which support the deferred AA2 revenue being recovered over a shorter timeframe than the remaining life of network assets. We then consider the extent to which recovery of the deferred revenue over a shorter period would represent a conflict with the objective in the Code of avoiding price shocks (clause 6.4(c)).

4.1 Distortions to Economic Signals

Clause 6.4 of the Code requires that the price control must have the objectives of:

> (a) giving the *service provider* an opportunity to earn revenue **("target revenue"**) for the *Access Arrangement period* from the provision of *covered services* as follows:
>
> (i) an amount that meets the forward-looking and efficient costs of providing *covered services*, including a return on investment commensurate with the commercial risks involved;

The recovery of the deferred AA2 target revenue means that target revenue in future access arrangement periods will be *above* the forward-looking and efficient cost of supplying network services.

Whether or not this introduces a distortion in the economic signals provided to customers will depend on the structure of tariffs adopted by Western Power. We note that Clause 7.3 of the Code contains a similarly worded objective in relation to reference tariffs recovering the forward looking efficient costs of providing reference services.

In principle, economic efficiency requires customers to pay the marginal cost associated with providing goods or services to them.[15] Where customers face a price above marginal cost, consumption will be less than the efficient level because some consumers who would have consumed the good if price had reflected marginal cost, no longer choose to do so. The benefit of this consumption is therefore lost. Such an outcome would not promote the efficient use of networks, as required by the Code objective.

However tariffs are typically structured so that there is a variable element which reflects the marginal cost of providing network services, and a fixed element to allow for the recovery of the balance of total costs. In the current context, the recovery of deferred revenue is not a cost that varies with output, and so has not signalling role in terms of network usage decisions. Rather, the priority in terms of tariff structure would be to ensure that such revenue was recovered by way of charges that did not vary with network usage, so as to minimise the distortion of pricing signals associated with the recovery of the deferred AA2 revenue. We note that there is nothing in the 'Pricing methods' requirements in section 7 of the Code which appear to prevent Western Power from adopting this form of tariff structure. Indeed, clause 7.6 proposes a similar approach to setting variable tariff components to capture the incremental costs of service provision. It is therefore not the case that the recovery of deferred revenue need imply any distortion of efficient pricing signals.

We note that the impact of differing recovery profiles on the efficiency of the price signals faced by customers for use of the network is therefore only likely to be relevant for new customers, whose decision as to whether or where to connect may be influenced by the total costs they face (ie, both fixed and variable charging elements) for doing so. The longer the period over which the deferred AA2 revenue is recovered, the lower will be the impact on fixed charges in any one Access Arrangement period, and so the lower will be the extent of any distortion to network connection decisions (assuming that network usage decisions are not affected by the range of potential effects on fixed charges). However the longer the period of cost recovery, the longer will be the period over which total charges will exceed forward-looking costs (and therefore the period over which the connection-related distortion persists). Conversely, the shorter the period over which the deferred revenue is recovered, the greater the impact on tariffs in any one Access Arrangement period, but the more quickly tariffs will return to reflecting forward-looking efficient costs.

In general the highly inelastic nature of the demand for electricity services means that differences in the total costs faced by users would need to be substantial to have any material impact on the decision to connect to the network. The costs of electricity supply form only a

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[15] This principle can be given effect in either short or long run terms. Which approach is best may not always be clear cut and will depend on the particular context, transactions costs associated with providing and responding to price signals, and the time frame by reference to which consumption decisions are made. However, for network services, it is generally accepted that long run marginal costs are the most appropriate.

small part of the overall costs incurred by developers of new facilities. As a result we conclude that consideration of the objective under 6.4(a) of the Code does not provide useful guidance in determining the appropriate period for the recovery of deferred AA2 revenue, as different recovery profiles are unlikely to materially affect users' decisions to connect to the network.

4.2 Impact on Western Power's Cash Flows

Western Power's cash flows depend on the level of tariffs set in each year of an Access Arrangement period. The higher the tariff level, the higher are the associated cash flows.

The recovery of deferred AA2 revenue in future Access Arrangement periods will increase target revenue and the resulting tariff level from that which would otherwise be determined for those periods. The higher the level of deferred AA2 revenue recovered in a given Access Arrangement period, the greater the associated increase in Western Power's cash flows for that period.

There may be a real cost saving associated with the improvement in Western Power's cash flows associated with faster recovery of the deferred AA2 revenue. The period over which the deferred revenue is recovered does not generally affect the net present value of the amount received by Western Power. However, cash flows will differ depending on the length of the recovery period. Differences in cash flows can in some circumstances have a real impact on costs; specifically when Western Power's 'free' cash flows (that is, cash flows after operating expenditure and debt repayments) are insufficient to fund its capital program. In these circumstances, Western Power would need to raise additional equity in order to maintain the benchmark gearing ratio, given its forecast capital program.[16] Raising this additional equity has a cost. Higher cash flows (eg, from recovering deferred AA2 revenue faster) would reduce or avoid the requirement to raise new equity in these circumstances and so would lower equity raising costs.

The ERA has recognised that the recovery of the AA2 deferred revenue over a long period may have adverse effects on Western Power's business due to effects on cash flows.[17] The ERA has highlighted that this effect on Western Power's business should be taken into consideration in determining a time path for recovery of deferred revenue. In the National Electricity Market (NEM) the AER explicitly allows equity raising costs as a component of allowed revenues, where 'free' cash flows are insufficient to fund the forecast capital program over the regulatory period.

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[16] As a government owned business, in practice Western Power would not go to the equity market in order to raise the finance necessary to fund its capital program, in the event of a shortfall in cash flows. However the generally accepted regulatory approach to determining the costs associated with obtaining additional finance due to cash flow shortfalls is to adopt as a benchmark the cost which would be associated with a private sector firm raising equity. This is the approach that is adopted by the Australian Energy Regulator (AER) for electricity network businesses in the National Electricity Market. See for example, AER *Final Decision – TransGrid Transmission Determination 2009-10 to 2012-14*, April 2009.

[17] ERA Final Decision, para 1187

The extent to which Western Power is expected to incur equity raising costs, and the impact of the recovery of deferred AA2 revenue on the extent of these costs is a factor which can be explicitly assessed.

We have reviewed the models used by Western Power to project its expected revenues, and to then calculate the equity raising costs associated with the difference between its cash flows and its capital funding requirements. We have not undertaken a full audit of these models. However we have reviewed the logic and assumptions applied and verified that these are consistent with the general principles underlying the building block approach to regulation and the calculation of equity raising costs, within the pre-tax framework applying to Western Power. Appendix B to this Report discusses the assumptions incorporated in Western Power's models in more detail.

Using Western Power's models, we have calculated the difference in projected equity raising costs for AA3 between:

- a scenario in which all of the deferred AA2 revenue is recovered in AA3; and
- a scenario in which the amount of deferred AA2 revenue recovered in AA3 is limited to that associated with a straight-line depreciation over the average life of network assets.

The second scenario reflects the recovery profile required by the ERA in its Draft Decision on Western Power's AA2 Access Arrangement,[18] which it stated was based on the objective of avoiding price shocks for users. We understand from Western Power that the average economic life of its network assets is 43 years for distribution assets and 46 years for transmission assets. We have therefore adopted these average life assumptions in the second scenario.

Our analysis shows that in the second scenario, Western Power would incur equity raising costs of $8.5m over AA3 (real $2012).[19] In contrast, if all of the deferred AA2 revenue is recovered in AA3, the equity raising costs incurred by Western Power fall to zero.

We have also calculated the minimum amount of deferred AA2 revenue that would need to be recovered in AA3 in order to avoid any equity raising costs. Under the regulatory approach adopted by the AER, equity raising costs are not required once 'free' cash flows are sufficient to cover the forecast capital program while maintaining the benchmark gearing ratio. Note that the value of this minimum amount depends on a number of variables that may change where the ERA's Final Decision for AA3 results in revisions to the tariffs and capital expenditure program proposed by Western Power for AA3.

In calculating the minimum amount of additional deferred revenue that needs to be recovered in AA3 in order to avoid equity raising costs we have assumed that:

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[18] ERA, Draft Decision, Required Amendment 36.

[19] We note that in its Final Decision, the ERA makes reference to a recovery profile based on a 'real annuity amount over a period equal to the average life of network assets'. (para 1189.). We note that this recovery profile would further back-end revenue recovery, resulting in equity raising costs in AA3 increasing to $10.6m (real $2012).

- the expenditure forecasts and cost of capital estimates proposed by Western Power for AA3;
- the tariff profile for years 2 to 5 (ie, the X-factors) proposed by Western Power is retained and prices in year 1 (ie, the P_0) are adjusted in order to achieve the target revenue required;
- deferred revenue is recovered on the basis of a straight line profile over time; and
- equity raising costs only arise when there are insufficient free cash flows over the regulatory period to finance the equity component of the forecast net capex program.[20]

On the basis of these assumptions, the amount of additional revenue that needs to be generated over AA3 (compared to the revenue associated with a scenario where deferred revenue is recovered over the average life of network assets) is $265.2m (real $2012). This additional revenue can be generated by adopting a faster recovery profile for deferred revenue, equivalent to a straight-line profile over 10.79 years for the deferred distribution revenue and 5 years for the deferred transmission revenue.[21]

The accelerated recovery of deferred revenue in AA3 results in the amount of retained deferred revenue falling over AA3 from $754.4m (real $2012) to $357.9m (real $2012). Under the counterfactual profile of straight-line recovery over the average life of network assets, the amount of retained deferred revenue remaining at the end of AA3 would be $668.7m (real $2012)

Adopting a profile for the recovery of deferred AA2 revenue which allows equity raising costs to be avoided in AA3 results in an amount of $8.5m being able to be completely avoided, compared to the counterfactual where deferred AA2 revenue is recovered on a straight-line basis over the average life of network assets. This represents a real cost saving for users, as in the counterfactual case the level of target revenue for Western Power would need to be $8.5m higher in AA3 to cover the expected equity raising costs.

We note that the above estimate of equity raising costs is based on the approach adopted by the AER for the NEM, Western Power's proposed capital expenditure program for AA3, its cost of capital estimate, as well as its proposed tariff profile over years 2 to 5 of the AA3 period. If these variables are subject to revision in the ERA's Final Decision for AA3, then this would change the level of equity raising costs assumed for AA3 under a straight-line recovery approach for deferred AA2 revenue. Similarly, the calculation of the minimum amount of AA2 revenue that needs to be recovered in AA3 to avoid these equity raising costs would also change.

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[20] This last assumption is consistent with the approach adopted by the AER, for electricity network businesses in the National Electricity Market. See for example, AER, *Victorian electricity distribution network service providers: Distribution determination 2011-2015: Draft decision – Appendices*, pages 299-300.

[21] We note that a number of alternative recovery profiles could be adopted between the deferred revenue associated with distribution and transmission in order to provide the additional $265.2m (real $2012) revenue required in AA3. However our calculations show that there is a significant deficit in free cash flows for the transmission network, and so we adopted profiles which result in all of the deferred transmission revenue being recovered first, with distribution deferred revenue then being recovered as required in order to reach the target revenue amount.

It is possible that the recovery of deferred revenue in later Access Arrangement periods may enable equity raising costs to be reduced in those periods. Whether this is the case or not will depend on the level of cash flows otherwise projected for those periods and Western Power's capital expenditure program in those periods, both of which are uncertain at this time. This uncertainty means that there is a greater benefit in completely avoiding equity raising costs as soon as it is possible to do so, rather than only partially avoiding the costs, since in future access arrangement periods there may be no equity raising costs to be avoided. Our analysis shows that up to the level of $265.2m (real $2012), every dollar of additional revenue resulting from the recovery of deferred AA2 revenue in AA3 offsets equity raising costs which would otherwise need to be incurred in AA3. As a result, there is a benefit to users from allowing *at least* the recovery of the deferred revenue necessary to generate this level of additional revenue in AA3, rather than some of the revenue being further deferred into later Access Arrangement periods.

The uncertainty in relation to future equity raising costs also implies that a faster recovery profile which allows equity raising costs to be fully avoided in access arrangement periods as soon as they occur is likely to have more benefits in terms of avoided equity raising costs than one under which revenue recovery is more thinly spread across a greater number of future periods, since there may not be equity raising costs in those periods to be avoided.

Adopting a faster recovery profile for deferred AA2 revenue in AA3 (compared to straight-line recovery over the average life of network assets) therefore results in a real cost saving for users, given the funding requirements for Western Power's AA3 capital expenditure program.

4.3 Inter-generational Equity

In the case of the revenue deferred from AA2, customers in AA2 have avoided paying for some of the costs of supplying network services to them. Instead the cost of providing electricity network services for AA2 will be funded partly by future users. In effect, future customers will pay for assets being used by customers in AA2, giving rise to inter-generational equity effects.

The longer the period over which the deferred revenue is recovered, the more likely it is that inter-generational equity considerations will arise, as the customers who benefited from lower prices in AA2 will not be the same as the customers who will face higher prices in later Access Arrangement periods. The ERA has flagged the prospect of recovering the deferred AA2 revenue over a period of more than forty years (ie, the average economic life of Western Power's network assets). Deferral over such a long period makes this inter-generational impact even more likely, as the group of customers paying for the contributed assets at the end of the period will not be the same group of customers who are benefitting from the use of those assets now.

Recovery of the deferred AA2 revenue over a shorter period would reduce inter-generational equity effects. This provides a rationale for faster recovery of the deferred revenue in AA3, over and above the minimum amount of recovery required to avoid equity raising costs. However offsetting this would be the potential foregone benefits from avoiding equity raising costs in future Access Arrangement periods (albeit that these benefits are currently uncertain).

4.4 Avoidance of Price Shocks

Clause 6.4(c) of the Code requires that the price control must have the objective of:

> (c) avoiding price shocks (that is, sudden material tariff adjustments between succeeding years).

Clause 9.18A in Western Power's current Access Arrangement states that the approach for recovering the deferred revenue from AA2 will minimise the likelihood of price shock 'at the start of the third Access Arrangement period'.

The ERA justified its earlier decision to defer revenue from AA2 on the basis of the 'avoidance of price shocks', in accordance with Clause 6.4(c).[22]

The deferred AA2 revenue will be recovered in future Access Arrangement periods by adding an amount to the target revenue determined for those Access Arrangement periods.[23] As a result, tariffs will be higher for these Access Arrangement periods than they would have been in the absence of adding the deferred AA2 revenue amount.

In its Final Decision the ERA commented that the avoidance of price shocks would best occur through a planned recovery of the deferred revenue by a pre-determined schedule over an extended period, such as by a real annuity amount over the average life of the network assets.[24]

It is important to note that the objective in clause 6.4(c) refers to 'avoiding sudden and material tariff adjustments.' This does not equate to minimising the extent of price changes in any one Access Arrangement period associated with the recovery of the deferred AA2 revenue. The objective in 6.4(c) does not therefore by itself justify deferring the recovery of revenue over an extended period of more than forty years (ie, the average life of Western Power's network assets). Neither does the wording of Clause 9.18A in the current Access Arrangement, since the reference is again to minimising the likelihood of 'price shock', rather than minimising 'price changes'. It is possible that the objective in 6.4(c) of the Code and the requirement of Clause 9.18A of Western Power's Access Arrangement could both continue to be met under a faster recovery profile for deferred AA2 revenue, if the implied impact on tariffs is not 'material'.

By itself, the profile for deferred revenue recovery does not provide much insight into whether the associated difference in tariffs would represent a 'price shock'. The level of tariffs in future access arrangement periods will depend not only on the level of deferred AA2 revenue being recovered but, more fundamentally, on the overall level of target revenue in

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[22] Economic Regulatory Authority, December 2009, *Final Decision on Proposed Revisions to the Access Arrangement for the South West Interconnected Network*, para 1179.

[23] See proposed Access Code amendments 6.5A-D and 6.5F.

[24] The ERA's Final Decision refers to the recovery of AA2 deferred revenue via 'a real annuity amount' over the life of the assets, rather than recovery on a straight-line basis. An annuity approach in effect further back-ends the recovery of the deferred revenue, as it results in a fixed (in real terms) dollar amount being recovered in each year to cover both the recovery of the deferred revenue plus the return component (reflecting the 'time value of money').

future access arrangement periods (which will reflect expenditure projections in those periods) and the forecast changes in demand.[25]

Consideration of the price shock objective in clause 6.4(c) therefore needs to go further than concluding that the more extended the recovery period, the better it meets this objective. In the preceding sections we have identified several considerations which support recovering the deferred AA2 revenue over a shorter rather than a longer period. Specifically, a shorter recovery period would allow Western Power to avoid equity raising costs in AA3, by improving cash flows. This results in a real cost saving for users. A shorter recovery period would also lower inter-generational equity effects. The objective in 6.4(c) should therefore be considered from the perspective of establishing how much of the deferred AA2 revenue can be recovered in AA3 (in order to further these other considerations), without resulting in a price shock.

This implies that it is necessary to consider:

- the expected change in AA3 tariffs associated with different recovery profiles; and
- what size of tariff change in AA3 would be considered a 'material' adjustment.

The effect of deferring AA2 revenue means that the change in Western Power's contributions policy has yet to feed through to prices. The one-off impact on prices from this change will now be reflected in prices in AA3. As a result the change in contributions policy can be expected to have an upwards impact on prices for AA3, absent any recovery of the revenue deferred from AA2.

We have used models developed by Western Power in order to analyse these tariff impacts. As noted earlier, we have reviewed these models. Whilst we have not conducted a detailed model audit, we are satisfied that the logic used to translate target revenue into forecast tariffs in these models is consistent with general practice.

Our analysis indicates the following:

- where deferred AA2 revenue is recovered *on a straight-line basis* over the average life of network assets, this would imply a total increase of 10.3% increase in tariffs in the first year, followed by 4.5% in the following four years for transmission, and 9.6% in the first year, followed by 13.4% in the following four years for distribution;[26]
- where the amount of recovered deferred revenue is increased in AA3 to the minimum level required in order to avoid equity raising costs (as discussed in section 4.2), the total increase in tariffs in the first year changes to 12.9% for transmission and 12.7% for distribution;

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[25] A forecast increase in demand allows a higher amount of target revenue to be recovered with a less than proportionate increase in tariffs.

[26] We note that our analysis has kept tariff increases in years 2 to 5 the same as those proposed by Western Power, and has then varied the change in tariffs required in the first year in order to recover the different total revenue requirement implied by different recovery profiles for the deferred AA2 revenue.

- if instead *all* of the deferred AA2 revenue were recovered in AA3, this would change the total increase in tariffs in the first year for AA3 to 12.9% for transmission and 17.6% for distribution.

The second question is then whether a price increase of the magnitude indicated above should be considered 'material' and therefore to constitute a 'price shock' under clause 6.3(c). Ultimately this question will be one of judgement for the ERA, since these level of price changes do not fall within any obvious upper or lower bounds of what may be considered material. However we note that in AA2, real network tariffs for Western Power's distribution and transmission businesses increased by 17.7 and 12.9 per cent respectively, on an annual basis.[27] Price increases for AA3 within these bounds could therefore be said not to constitute an unacceptable 'price shock', given the precedent from AA2. Further, Appendix A summarises recent regulatory determinations for electricity network businesses in other states of Australia, showing the annual increases in network charges (and the corresponding impact on retail levels).[28] This summary shows that, whilst the price increases approved by the ERA in AA2 are towards the upper end of the price increases approved in other states, they were not substantially out of line with those increases.

The analysis above suggests that if all of the deferred AA2 revenue were recovered in AA3, the resulting increase in tariffs in AA3 would still remain within these previously allowed levels. Adopting a profile for revenue recovery which avoids equity raising costs in AA3 would result in tariff increases of *less* than those allowed by the ERA for AA2.

If recovery of all of the deferred AA2 revenue can be achieved in AA3 without resulting in a 'price shock', then this outcome would allow the other competing considerations to be addressed, whilst still meeting the objective of 6.4(c).

In the event that the ERA considers that the price impact of recovering all deferred AA2 revenue in AA3 does represent a material tariff adjustment, the focus should then be on identifying how much of the deferred AA2 revenue can be recovered in AA3 without resulting in a price shock. The focus should be on shorter periods and the faster recovery of the deferred AA2 revenue, which will lower equity raising costs in AA3 (and potentially in future periods) as a result of improved cash flows for Western Power, as well as improving inter-generational equity.

4.5 Perpetuation of 'Queensland approach' to Capital Contributions for AA2

The revenue deferred from AA2 reflects the entire change in AA2 target revenue arising as a result of Western Power's change in its treatment of capital contributions. If this deferred revenue is recovered over the average life of network assets (as suggested by the ERA) this will in effect perpetuate the 'Queensland approach' to the capital contributions that occurred

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[27] ERA Media Statement, 4 December 2009

[28] Increases in the cost of capital following the global financial crises mean that the more recent price determinations have resulted in higher allowed tariff increases. Significant capital expenditure requirements have also driven these price increases.

in AA2.[29] As discussed earlier, the Queensland approach to capital contributions results in a reduction in target revenue for the period in which the capital contributions occurred, offset with an increase in future target revenue associated with the return on and of the level of capital contributions.

As noted earlier, the benefits associated with the change in capital contributions policy included improved financial sustainability for Western Power through higher cash flows, improved inter-generational equity (as future users are not paying for assets used by current users) and improved price signals for economic efficiency (by avoiding distortions to current and future tariffs).

The deferral of AA2 revenue has meant that none of these benefits from the change in contributions policy have yet been realised. An extended period of recovery of the deferred AA2 revenue over the life of network assets would have the result that these benefits would be completely lost for AA2 contributions.

Western Power's original proposal to defer revenue from AA2 was described as a means of 'transitioning' to the new capital contributions approach. Deferring the recovery of the AA2 revenue over the life of the existing network assets would mean that the new contributions policy will in effect not be implemented for AA2, but will only apply from AA3.

We note that the benefits arising from the change in capital contributions policy are in effect the same categories of benefits which would now accrue from allowing for the recovery of the deferred AA2 revenue over a shorter period. That is, improved cash flows for Western Power and improved inter-generational equity.

[29] The ERA refers in its Final Decision to recovering the AA2 revenue on the basis of a 'real annuity amount' over the average life of network assets. Such an approach effectively 'back ends' depreciation and target revenues compared to the 'Queensland approach', and would therefore result in the recovery of revenue associated with contributed AA2 assets being deferred by even more than if Western Power had maintained the Queensland approach for AA2.

5 Conclusions

Western Power has asked NERA the following question:

> 'What is the appropriate period for the recovery of the revenue deferred from the AA2 period into the third or subsequent Access Arrangement periods?'

In deciding on the appropriate period for the recovery of the AA2 deferred revenue, the following considerations are relevant:

- the cash flow implications for Western Power, and the consequent impact on the allowance made in target revenue to reflect equity raising costs in AA3 and beyond;
- the implications for inter-generational equity; and
- avoiding price shocks to customers - in line with the objective in clause 6.4(c) of the Code.

We consider that it is not possible to provide a definitive answer to the question of the appropriate period for cost recovery, as the decision as to the last of these factors (ie, what constitutes a 'price shock') is to a large extent a matter of judgement. However looking at the particular circumstances of Western Power, and in particular its projected cash flows and capital program for AA3, we consider that there are benefits associated with recovering the deferred revenue over a shorter rather than a longer period. We also conclude that recovery over a period reflecting the average life of network assets (ie, 43 years for distribution and 46 years for transmission) would not be appropriate.

A shorter period for revenue recovery would improve Western Power's cash flow position, compared with a longer period. Improved cash flows may in turn result in a reduction (or even avoidance) of modelled equity raising costs. The avoidance of equity raising costs represents a real cost saving to users, as these costs would otherwise need to be recovered through higher target revenue. Based on the capital expenditure program, overall target revenue and tariff profile proposed by Western Power for AA3, if deferred AA2 revenue is recovered on a straight-line basis over the average life of network assets Western Power will be assumed to incur $8.5m in equity raising costs in AA3. We have estimated that accelerating the recovery of deferred revenue on a straight-line basis to result in an additional $265.2m (real $2012) in AA3 revenues would avoid Western Power incurring any equity raising costs in AA3.[30] The accelerated depreciation profile would result in the amount of retained deferred revenue falling over AA3 from $754.4m (real $2012) to $357.9m (real $2012).

Deferred revenue which is not recovered over AA3 could be used to instead increase cash flows in later Access Arrangement periods. It is possible that the resulting higher cash flows will enable equity raising costs to be reduced or even avoided in these future periods. Whether this is the case or not will depend on the level of cash flows otherwise projected for

[30] The exact value of the amount of deferred revenue which would need to be recovered in AA3 in order to avoid Western Power incurring equity raising costs may change, where the ERA's Final Decision for AA3 results in revisions to the tariff profile, target revenue and capital expenditure program proposed by Western Power for AA3.

those periods and Western Power's capital expenditure program in those periods, both of which are uncertain at this time. This uncertainty means that, up to the level necessary to increase AA3 revenues by $265.2m (real $2012) as identified above, the value of avoiding equity raising costs in AA3 outweighs the uncertain potential value of avoiding equity raising costs in future Access Arrangement periods. It also means that the benefit of completely avoiding equity raising costs in one Access Arrangement period is greater than the uncertain benefit of partially avoiding equity raising costs across a number of future periods. This in turn implies that a faster recovery profile is likely to have more benefits than one under which revenue recovery is more thinly spread across a greater number of future periods.

Shorter periods for the recovery of the deferred AA2 revenue also improves inter-generational equity, as current users will not avoid paying costs associated with assets they are currently using.

Countering these two benefits, recovering the deferred AA2 revenue over a shorter period will increase tariffs by more than if the deferred revenue is recovered over a longer period. However, the resulting increases in tariffs may not equate to 'price shocks', which are defined in the Code to be 'sudden material tariff adjustments.' It is necessary to also consider the underlying changes in target revenue and demand in order to form a view as to whether the tariff changes implied by a shorter recovery profile represent a 'price shock'.

Western Power's modelling shows that the total increase in tariffs in AA3 if all of the deferred AA2 revenue is recovered in AA3 is 12.9% in the first year followed by 4.5% in the following four years for transmission, and 17.6% in the first year, followed by 13.4% in the following four years for distribution. We have reviewed the assumptions and logic adopted by Western Power in its tariff models, and consider that these are consistent with standard practice.

Ultimately it is a subjective decision as to what level of tariff increase is 'material', and in particular whether an overall 16.4% increase in prices is 'material'.[31] However we note that the ERA's previous approval of price increases for AA2 of 17.7 per cent (for distribution) and 12.9 per cent (for transmission), provide a precedent for the level of price changes which may be considered 'material' in the context of 6.4(c). The implied price increases for AA3 (assuming full recovery of deferred AA2 revenue) are around these same levels.

If the ERA determines that the price increases associated with allowing full recovery of the deferred revenue are material, the focus should then be on identifying the shortest period for cost recovery which is consistent with avoiding price shocks. Allowing Western Power to recover an amount of deferred revenues which results in at least $265.2m in additional revenue in AA3 (compared with the revenue resulting from a straight-line recovery profile over the average life of network assets) would allow equity raising costs to be avoided by

[31] 16.4% is the weighted average of first year transmission and distribution price increases, if all of the deferred AA2 revenue is recovered in AA3.

users, whilst reducing the overall increase in first year tariffs in AA3 to 12.7% and 12.9% for distribution and transmission, respectively.[32]

The average remaining life of network assets is too long a period for revenue recovery. It is not necessary to adopt such a long period (of more than eight regulatory periods) in order to avoid material price increases. Moreover, adopting such a long period would result in a real increase in the costs borne by consumers (as a result of increased equity raising costs in AA3 and potentially later access arrangement periods, than would be the case if a faster profile were to be adopted) and would reduce inter-generational equity.

[32] Our assessment has taken the transmission tariff increase for the first year, and the (lower) transmission and distribution tariffs for years 2 to 5 as constant, and determined the impact of the level of deferred revenue recovery on the increase in distribution tariffs in the first year.

Appendix A. Recent Increases in Electricity Network Tariffs - Australia

Table A.1
Recent Increases in Electricity Network Tariffs

Service Provider	State	Regulatory Period	Estimated Yearly Network Price Increase (% Nominal)	Estimated Yearly Retail Price Increase (%Nominal)
Distribution Services				
CitiPower	VIC	2011	-4.0	-1.6
		2012 – 2015	7.2	2.9
Powercor	VIC	2011	2.7	1.1
		2012 – 2015	6.0	2.5
JEN	VIC	2011	7.7	3.1
		2012 – 2015	5.7	2.3
SP AusNet	VIC	2011	12.8	5.1
		2012 – 2015	7.2	2.9
United Energy	VIC	2011	3.0	1.2
		2012 – 2015	6.4	2.6
ETSA Utilities*	SA	2010-11	15	6.0
		2011-12 – 2014-15	8.4	3.4
Energex*	QLD	2010-11	17.0	6.8
		2011-12 – 2014-15	6.8	2.7
Ergon Energy*	QLD	2010-11	29.0	11.6
		2011-12 – 2014-15	4.6	1.8

Transmission Services				
SP AusNet	VIC	2008-09	5.08	0.88 – 2.89 (real)
		2009-10 – 2013-14	5.08	0.07 – 0.23 (real)
VENCorp	VIC	2008-09 – 2013-14	4.63	2.74
ElectraNet	SA	2008-09 – 2012-13	8.5	0.85
Powerlink	QLD	2007-08 – 2011-12	6.0	0.48
TransGrid*	NSW	2009-10 – 2013-14	4.8	0.3
Western Australia				
Western Power	WA	2010-11 – 2011-12	Distribution – 17.7 (real) Transmission – 12.9 (real)	Combined effect – 7 (real)

* The final price increases for these businesses have been or are likely to be subject to upwards revision following the outcome of appeals process.

Sources: AER, *Victorian Electricity Distribution Network Service Providers Distribution Determination 2011-2015: Final Decision*, October 2010, p. x; AER, *South Australia Distribution Determination 2010-11 to 2014-15: Final Decision*, May 2010, p. vi; AER, *Queensland Distribution Determination 2010-11 to 2014-15: Final Decision*, May 2010, pp. xxxix-xl; AER, *AER's Final Decision on Queensland Distribution Determinations for Energex and Ergon Energy*, Media Release, 6 May 2010; AER, *SP AusNet Transmission Determination 2008-09 to 2013-14: Final Decision*, January 2008, p. 2; AER, *Victorian Energy Networks Corporation (VENCorp) Transmission Determination 2008-09 to 2013-14: Final Decision*, April 2008, pp. 2-3; AER, *ElectraNet Transmission Determination 2008-09 to 2012-13: Final Decision*, 11 April 2008, p. vii; AER, *Powerlink Queensland Transmission Network Revenue Cap 2007-08 to 2011-12: Final Decision*, 14 June 2007, p. vi; AER, *TransGrid Transmission Determination 2009-10 to 2013-14: Final Decision*, 28 April 2009, p. vi; ERA, *Economic Regulation Authority Releases Further Final Decision on Western Power's Access Arrangement Revisions*, Media Statement, 19 January 2010.

Appendix B. Western Power's Models for Calculating Equity Raising Costs

NERA has reviewed the models used by Western Power to project its expected revenues, and to then calculate the equity raising costs associated with the difference between its cash flows and its capital funding requirements. We have not undertaken a full audit of these models. However we have reviewed the logic and assumptions applied and verified that these are consistent with the general principles underlying the building block approach to regulation and the calculation of equity raising costs, within the pre-tax framework applying to Western Power.

The approach adopted by Western Power to estimate equity raising costs (ERC) conforms to the approach adopted by the Australian Energy Regulator (AER) to estimate these costs for energy network service providers in the National Electricity Market, with the only differences being to reflect a pre-tax rather than a post-tax framework.

Key features of Western Power's equity raising cost model are that:

- it is fully integrated with Western Power's regulatory cost building block and smoothed revenue calculation;
- it calculates the new equity requirement as the difference between Western Power's free cash flows and the amount of equity needed to fund the forecast capex program for AA3;
- it adopts the same input assumptions as the AER for:
  - the benchmark costs of raising new equity, ie, three per cent;
  - the benchmark cost of a dividend reinvestment program (DRP), ie, one per cent;
  - the benchmark take-up rate for the DRP of 25 per cent; and
  - a dividend policy that is consistent with the assumed value of imputation credits (ie, gamma), ie, dividends sufficient to distribute 70 per cent of all created imputation credits; and
- it calculates a single equity raising costs for Western Power networks, and so any free cashflows in the distribution network are used to offset the ERC for the transmission network (and vice versa).

The principal steps for calculating equity raising costs (as reflected in Western Power's models) are as follows:

1. Calculate the amount of equity used in the distribution network at the start of each year of the regulatory period;
2. Estimate the distribution network's net profit before tax by multiplying the amount of equity by the nominal pre-tax cost of equity;
3. Calculate the dividends necessary to distribute 70 per cent of the estimated tax paid by the distribution network;

4. Estimate the amount of equity that will be reinvested through a DRP;
5. Calculate the retained cash flows by the distribution network as:
   - smoothed distribution revenue; *less*
   - cost of providing the distribution services, ie, the tariff equalisation costs, opex, interest and tax; *less*
   - dividends (as calculated in step 3); *plus*
   - reinvested equity (as calculated in step 4).
6. Calculate the equity requirement by the distribution network as:
   - net capex; *less*
   - the proportion of debt raised in that year; *less*
   - retained cash flows (as calculated in Step 5)
7. Repeat the steps 1 through 6 for the transmission network.
8. Determine if Western Power in total (ie, transmission plus distribution) has a net equity requirement over AA3.
9. If step 8 shows that Western Power has a positive net equity requirement calculate the total equity costs as the sum of:
   - external equity raising costs, ie, net equity requirement multiplied by the benchmark costs of raising new equity; and
   - DRP costs, ie, reinvested equity multiplied by the benchmark cost of a dividend reinvestment program.

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