Attachment 4.1

ACIL Allen Consulting Report on Operating Expenditure Methodology

Revised proposed access arrangement information

14 June 2018

Access arrangement information for the period 1 July 2017 to 30 June 2022



REPORT TO WESTERN POWER 10 JUNE 2018

OPERATING EXPENDITURE

EXPERT REPORT





ACIL ALLEN CONSULTING PTY LTD ABN 68 102 652 148

LEVEL NINE 60 COLLINS STREET MELBOURNE VIC 3000 AUSTRALIA T+61 3 8650 6000 F+61 3 9654 6363

LEVEL ONE 50 PITT STREET SYDNEY NSW 2000 AUSTRALIA T+61 2 8272 5100 F+61 2 9247 2455

LEVEL FIFTEEN 127 CREEK STREET BRISBANE QLD 4000 AUSTRALIA T+61 7 3009 8700 F+61 7 3009 8799

LEVEL ONE 15 LONDON CIRCUIT CANBERRA ACT 2600 AUSTRALIA T+61 2 6103 8200 F+61 2 6103 8233

LEVEL TWELVE, BGC CENTRE 28 THE ESPLANADE PERTH WA 6000 AUSTRALIA T+61 8 9449 9600 F+61 8 9322 3955

167 FLINDERS STREET ADELAIDE SA 5000 AUSTRALIA T +61 8 8122 4965

ACILALLEN.COM.AU

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This expert report has been prepared by:

Marianne Lourey Executive Director ACIL Allen Consulting Pty Ltd Level 9, 60 Collins Street Melbourne, VIC, 3000

Marianne has more than 30 years of experience, predominantly in the energy sector, working in, and consulting to, government, regulators and industry. She has worked in a broad range of areas including energy and climate change policy, economic regulation, vocational training, energy supply security, business management, business development, manufacturing and power system planning.

Over the last 18 years Marianne's work has focused on the interface of technical and economic issues, with her detailed understanding of technical, policy, regulatory and commercial matters, her analytical skills and experience, and her practical and pragmatic approach to resolving issues. Since joining ACIL Allen in January 2010, Marianne has provided advice to a range of clients.

Marianne was previously the Manager, Network Regulation at the Essential Services Commission where she was responsible for developing the operating expenditure forecasts as part of the 2006-10 Electricity Distribution Price Review. The 'base-step-trend' approach to forecasting operating expenditure was first applied during this Price Review and is the basis of the current approach that is commonly used to forecast operating expenditure.

Marianne holds a Bachelor of Engineering (First Class Honours) and a Master of Business Administration from Monash University.

A CV is provided in Appendix B.

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On 2 October 2017, Western Power submitted its proposed revised access arrangement for its electricity network for the period 2017-22 (the AA4 period). The Economic Regulation Authority (ERA) published its Draft Decision on 2 May 2018.

Section 5.1 of the Access Code requires that an access arrangement include a price control which, under Section 6.2, may set a target revenue based on the service provider's approved total costs. Section 6.40 provides for approved total costs and the target revenue to include an amount for forecast non-capital costs (operating costs) for the access arrangement period.

6.40 Subject to section 6.41, the non-capital costs component of approved total costs for a covered network must include only those non-capital costs which would be incurred by a service provider efficiently minimising costs.

Efficiently minimising costs is defined in section 1.3 of the Access Code as meaning the service provider incurs 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.

Western Power forecast its operating expenditure using a 'base-step-trend' approach and the ERA has determined a number of amendments be made to the operating expenditure forecast by Western Power.

1.1 Scope

Western Power has engaged ACIL Allen Consulting (ACIL Allen) to prepare an expert opinion on the ERA's draft decision on Western Power's forecast operating expenditure in comparison to Western Power's initial submission proposal on 2 October 2017, in particular, the ERA's application of the 'base-step-trend' approach.

Western Power has asked ACIL Allen to provide an opinion as to whether:

- 1. It has applied the 'base-step-trend' approach in a manner that would result in a total amount of forecast operating expenditure that would be incurred by a service provider efficiently minimising costs.
- 2. The ERA has applied the 'base-step-trend' approach in a manner that would result in a total amount of forecast operating expenditure that would be incurred by a service provider efficiently minimising costs.

ACIL Allen's report is to include:

1. An explanation of the benefit of top-down or revealed cost methods of forecasting operating expenditure.

- 2. An explanation of the 'base-step-trend' approach, why it is used and the purpose of each component.
- 3. An opinion on whether Western Power's forecast operating expenditure methodology meets the requirements of the Access Code.
- 4. An assessment and opinion of the ERA's application of the 'base-step-trend' approach and amendments to the operating expenditure methodology.
- 5. Specific findings on the potential implications associated with any inaccuracies or misapplications, with recommendations about how these should be corrected.

1.2 Report structure

The rest of this report is structured as follows:

- Chapter 2 provides background information on the top-down or revealed cost method of forecasting
 operating expenditure and the 'base-step-trend' approach.
- Chapter 3 provides an opinion on whether Western Power's forecast operating expenditure methodology meets the requirements of the Access Code.
- Chapter 4 provides an assessment of the ERA's application of the 'base-step-trend' approach in its draft decision on Western Power's revised access arrangement, including the specific amendments it has proposed to the operating expenditure methodology.
- Chapter 5 provides responses to Western Power's specific questions.



This chapter provides background information as context for our opinions on the operating expenditure forecasting methodology. Section 2.1 sets out relevant provisions in the Access Code additional to those mentioned in Chapter 1, section 2.2 provides an overview of the economic regulation of network service providers, section 2.3 explains the top down or revealed cost approach to forecasting operating expenditure, and section 2.4 explains the 'base-step-trend' approach.

2.1 Requirements in the Access Code

Some relevant provisions in the Access Code were mentioned in Chapter 1 of this report.

Additionally, Chapter 4 of the *Electricity Networks Access Code 2004* (Access Code) states that the ERA must approve or not approve revisions proposed by Western Power to its access arrangement. The ERA must determine whether the proposed revised access arrangement:

- meets the Access Code objective of promoting economically efficient investment in, and operation and use of, electricity networks and services of networks in Western Australia, in order to promote competition in markets upstream and downstream of the networks; and
- complies with the requirements set out in Chapter 5.

As stated in the ERA's draft decision:

If the ERA considers the Access Code objective and requirements of chapter 5 are satisfied it must approve the access arrangement. The ERA may not reject a proposed access arrangement on the grounds that another form of access arrangement might be better or more effectively satisfy the Access Code objective and the requirements set out in chapter 5.¹

Section 4.33 of the Code states that, if the ERA:

- a) makes a draft decision or final decision to not approve a proposed access arrangement which requires amendments to the price control or pricing methods in the proposed access arrangement or
- b) approves its own access arrangement under section 4.24 or 4.55 containing price control or pricing methods which differ from those in the proposed access arrangement,

(with the price control or pricing methods as required to be amended, or as approved, respectively, being called in this section the "alternative pricing provisions"), then the ERA's reasons for the relevant decision must:

- c) provide a detailed description of the alternative pricing provisions; and
- d) give reasons for the ERA's choice of alternative pricing provisions; and

¹ ERA Draft Decision, para 22

e) provide sufficient information and data to enable the service provider to replicate the ERA's work in selecting and developing the alternative pricing provisions.

2.2 Economic regulation of network service providers

As network services provided by Western Power are a natural monopoly, its revenues are regulated by the ERA. Western Power is subject to an incentive-based economic regulatory regime, as distinct from a cost of service based economic regulatory regime, with a revenue cap.

The ERA determines the revenue that Western Power can earn over a five year access arrangement period using a building block approach. The revenues are determined based on the following building blocks:

- operating expenditure
- return of capital
- return on capital
- tax allowance
- revenue increment or decrement associated with incentive schemes
- recovery of deferred revenue
- allowance for the Tariff Equalisation Contribution.

Once the ERA has determined the revenue cap, Western Power is able to choose how it invests in, operates and uses, its networks.

2.3 The revealed cost approach

The revealed cost approach has been used in regulatory decision making in Australia for more than a decade to forecast operating expenditure of electricity and gas network service providers.

The revealed cost approach relies on the incentive-based regulatory framework to incentivise network service providers to reveal an efficient level of operating expenditure, noting that total operating expenditure tends to be relatively consistent from one year to the next.

The top down or revealed cost approach was first proposed in Australia by the Office of the Regulator-General (the Office) in its 2001-05 price determination for the Victorian electricity distribution network service providers. That price determination was the first to be undertaken by the independent economic regulator post privatisation. The Office undertook detailed cost and benchmarking studies to forecast the operating expenditure for the Victorian electricity distribution network service providers and introduced an efficiency carryover mechanism:

... to provide distributors with a greater incentive to make efficiency gains than would apply under the CPI-X regime alone.²

The Office was of the view that the efficiency carryover mechanism enabled a revealed cost approach to be undertaken in future regulatory periods to forecast operating expenditure:

The long-run mechanism also provides a forward-looking framework within which distributors' actual costs in future regulatory periods will provide a better indicator of efficient cost levels. This implies that the Office will be able to place greater weight on reported cost information at the time of the next Price Review. This increased confidence on the part of the Office that cost information revealed during the next regulatory period will more closely reflect efficient cost levels is expected to reduce substantially the need for detailed cost and benchmarking studies, which have been a necessary part of the current Price Review.³

The revealed cost approach is now routinely adopted by the Australian Energy Regulator (AER) to forecast operating expenditure for both distribution and transmission network service providers. As stated in the AER's most recent draft decision for Transgrid:

² Office of the Regulator-General, Victoria, *Electricity Distribution Price Determination 2001-05, Volume I, Statement of Purpose and Reasons, September 20000, page 83*

³ Ibid, page 84

A key feature of the regulatory framework is that it is based on incentivising networks to be as efficient as possible. We apply incentive-based regulation across the energy networks we regulate, including transmission networks. More specifically for opex, we rely on the efficiency incentives created by both ex ante revenue regulation and the 'efficiency benefit sharing scheme' (EBSS).⁴

One of the key benefits of the revealed cost approach is that it overcomes the information asymmetries between the regulated businesses and the regulator. While the regulator is required to make judgements on an 'efficient' level of costs, the regulator is:

... at an information disadvantage to identify specific inefficiencies they have or their true efficient costs.5

Under the revealed cost approach, the regulator develops an estimate of total operating expenditure using a top down forecasting method, known as the 'base-step-trend' approach. The regulator is able to focus its efforts on assessing the differences in the operating expenditure from one access arrangement period to another, rather than assessing the total operating expenditure.

2.4 The 'base-step-trend' approach

The revealed efficient level of operating expenditure in the penultimate year of one access arrangement period is the starting point for forecasting an efficient level of operating expenditure for the following access arrangement period. The actual operating expenditure in the penultimate year net of movements in provisions (the base opex) is generally used, as the actual operating expenditure in the final year of the access arrangement period is not known until after the revenue determination has been made.

The regulator undertakes benchmarking to be assured that the level of base opex is efficient. Where the base opex is assessed to be materially inefficient, an adjustment may be made.

Having determined the starting point, the focus for forecasting an efficient level of operating expenditure is on the reasons why future expenditure is likely to vary from the revealed level of efficient expenditure. The reasons why future expenditure may vary from the revealed level of efficient expenditure include:

- step changes in operating expenditure
 - new or changed legislative or regulatory obligations, which require additional operating and maintenance activity
 - an efficient and prudent capex/opex substitution
- the trend in operating expenditure, which includes:
 - the impact of growth to be able to operate and maintain the network as the number of connections increases and the network grows
 - real price increases in the inputs labour and materials
 - productivity improvements.

Over the last decade, a number of approaches have been used to determine the impact of growth, the real price increases in the inputs, and productivity improvements. The impacts of growth, increases in input prices and productivity improvements are now commonly determined using the "rate of change", which is used to escalate the operating expenditure.

$$Opex_t = (1 + rate of change) \times Opex_{t-1}$$

where:

Opext is the operating expenditure (opex) in year t

Opex_{t-1} is the opex in year t-1

The rate of change is a function of:

- the forecast real increase in input cost (labour and materials) escalators (Δ real opex price)
- the expected productivity improvement (Δopex partial productivity)

⁴ Australian Energy Regulator, *TransGrid transmission determination 2018 to 2023, Draft Decision, Attachment 7 -Operating Expenditure,* September 2017, page 7-10

⁵ Ibid, page 7-11

— the expected increase in output (Δoutput quantity).

 $\textit{Rate of change} = \Delta \textit{real opex price} - \Delta \textit{opex partial productivity} + \Delta \textit{output quantity}$

The expected productivity improvement generally incorporates productivity improvements associated with technological change, economies of scale and operating environment factors.



Western Power's Access Arrangement Information for the AA4 period states that a 'base-step-trend' approach has been adopted to forecast operating expenditure for the AA4 period.⁶ The following sections discuss each of these elements of the approach, as applied by Western Power.

3.1 Base expenditure

Given the timing of the submission of its revised access arrangement proposal, Western Power has used the actual operating expenditure in the final year of the AA3 period as the basis for setting the base opex for the AA4 period.

Western Power's proposed base opex in its initial proposed revised access arrangement was \$317 million, which was calculated by making the following adjustments:

- Actual opex in 2016/17 \$457 million
- Less opex associated with non-revenue cap services \$17 million
- Less opex associated with the Business Transformation Program \$56 million
- Less opex associated with the electricity market review (EMR) program \$15 million
- Less movement in a provision (\$6) million
- Less indirect costs \$57 million.

In my opinion, it is appropriate to deduct the opex associated with non-revenue cap services as, by definition, this does not relate to revenue cap services for which the opex is to be forecast.

I note the deduction of the opex associated with the Business Transformation Program and EMR review from the base year and the inclusion of expenditure in specific years. This is discussed in section 3.4.

In my opinion it is appropriate to deduct movements in provisions as these are more reflective of an accounting transaction in that year rather than actual activity. I have not undertaken an audit to assess that all movements in provisions have been deducted, and therefore cannot comment on whether all movements in provisions have been deducted.

I also note that indirect costs have been deducted. These are discussed in section 3.5.

The benchmarking undertaken by Western Power indicated that it is not the most efficient of the comparable distribution and transmission network service providers, but is also not materially inefficient. The ERA has similarly concluded that:

⁶ Western Power, Access arrangement information, Access arrangement revisions for the fourth access arrangement period, Public, 2 October 2017, para 442

The benchmarking results ... provide[s] evidence that Western Power's proposed base expenditure for AA4 is at the level that would be incurred by a service provider efficiently minimising its costs.⁷

As the benchmarking undertaken by Western Power and the ERA has identified that the proposed base expenditure is not inefficient, it is my opinion that it could be concluded that the base opex proposed by Western Power is that required for the economically efficient operation of the network.

3.2 Step expenditure

In its initial proposed revised access arrangement, Western Power proposed a negative step change of \$5 million per annum to reflect efficiencies resulting from Business Transformation Program initiatives.⁸

I have not undertaken an audit to assess the efficiency or otherwise of this proposed step change or any others, so am not able to comment on the quantum of the step expenditure proposed. Nevertheless, I am of the opinion that Western Power has appropriately applied the 'base-step-trend' methodology in proposing this step change.

3.3 Trend

3.3.1 Growth

In its initial proposed revised access arrangement, Western Power applied the same methodology used by the AER to forecast growth, drawing on benchmarking reports prepared by Economic Insights for the AER.

The measures and weights that were applied by Western Power to forecast growth in transmission operating expenditure were consistent with Economic Insights' 2014 report.⁹ The measures and weights that were applied by Western Power to forecast growth in distribution operating expenditure were consistent with those used by the AER in the determination of the operating expenditure for SA Power Networks for the 2015-16 to 2019-20 regulatory period.¹⁰

The weights that have been developed by Economic Insights are based on the total operating expenditure for the distribution and transmission network service providers, including corporate overheads that are expensed. It is therefore appropriate for Western Power to apply these same growth rates to the corporate overheads that are expensed (as distinct from the corporate overheads that are capitalised).

Additional comments on the application of the Economic Insights' econometric cost function are provided in section 4.3.1.

3.3.2 Real price increases

In its initial proposed revised access arrangement, Western Power proposed labour growth based on labour costs comprising 40 per cent of operating expenditure, and the forecast annual rate of growth in the wage price index for WA electricity, gas, water and waste water services. I note that Western Power's proportion of operating expenditure that is labour costs is low relative to other distribution network service providers.

The AER has applied a benchmark split of 62 per cent labour to 38 per cent non-labour in its recent decisions. The benchmark split has been derived from Economic Insights' benchmarking reports. The AER is of the view that it:

... should base the price weights we use to forecast price growth on a prudent and efficient benchmark network service provider. Using benchmark price weights provides services providers an in (sic)

⁷ ERA, Draft Decision, para 181

⁸ Western Power, Access arrangement information, Access arrangement revisions for the fourth access arrangement period, Public, 2 October 2017, para 481

⁹ Economic Insights, *Economic Benchmarking Assessment of Operating Expenditure for NSW and Tasmanian Electricity TNSPs*, 10 November 2014, page 9

¹⁰ Australian Energy Regulator, SA Power Networks determination 2015-16 to 2019-20, Final Decision, Attachment 7 – Operating expenditure, page 7-49

incentive to make efficiency gains by adopting the most efficient input mix. Weights of 62 per cent for labour and 38 per cent for non-labour represent the best available estimate available (sic) for the benchmark efficient firm.¹¹

In 2017, Economic Insights updated its labour price weights. It now adopts a weighting of 59.7 per cent for labour for distribution network service providers¹² and 70.4 per cent for transmission network service providers.¹³ The AER includes the labour component of contract labour in the labour price weighting.¹⁴

While I cannot comment on the wage price index used by Western Power, it is my opinion that Western Power has appropriately applied the 'base-step-trend' approach in its forecast of real price increases for labour, although it has understated the proportion of labour in its operating expenditure.

In its initial proposed revised access arrangement, Western Power did not propose any real price growth for materials. This is consistent with the approach that is currently adopted for real price growth for materials for other network service providers. For example, the AER has stated that:

... it is not reasonable to assume some non-labour prices will increase by more than CPI, while all other non-labour prices will increase by CPI. This is because while the real price of some items will increase, others will decrease. Adjusting only for real cost increases, and no decreases, produces upwardly biased price forecasts. In order to establish that compensation for non-labour prices will increase by more than CPI".¹⁵

It goes on to state:

... the most significant input price increase was for oil ... The US Federal Reserve has previously found that over horizons of several years the no change forecast adjusted for expected inflation was a better predictor of nominal oil prices than futures, expert economic forecasts, and the unadjusted current price of oil.¹⁶

It is my opinion that Western Power has appropriately applied the 'base-step-trend' approach in its forecast of real price increases for material.

3.3.3 Productivity

In its initial proposed revised access arrangement, Western Power proposed a 1 per cent per annum productivity improvement, in addition to the negative step change of \$5 million and the productivity that is incorporated in Economic Insights' econometric cost function. While this is an appropriate application of the 'base-step-trend' approach, it is more than the expected productivity improvements for other network service providers. The AER's most recent (draft) decision for a transmission network service provider included forecast productivity growth of 0.2 per cent per annum¹⁷ and the AER's recent decision for the Victorian distribution network service providers provided for no productivity growth.¹⁸

¹¹ Australian Energy Regulator, *CitiPower distribution determination 2016 to 2020, Final Decision, Attachment 7 – Operating expenditure,* May 2016, page 7-82

¹² Economic Insights, Economic Benchmarking Results for the Australian Energy Regulator's 2017 DNSP Benchmarking Report, 31 October 2017, page 2

¹³ Economic Insights, *Economic Benchmarking Results for the Australian Energy Regulator's 2017 TNSP Benchmarking Report*, 6 November 2017, page 7

¹⁴ For example, refer Australian Energy Regulator, CitiPower distribution determination 2016 to 2020, Final Decision, Attachment 7 – Operating expenditure, May 2016, page 7-83

¹⁵ Australian Energy Regulator, CitiPower distribution determination 2016 to 2020, Final Decision, Attachment 7 – Operating expenditure, May 2016, page 7-81

¹⁶ Australian Energy Regulator, CitiPower distribution determination 2016 to 2020, Final Decision, Attachment 7 – Operating expenditure, May 2016, page 7-82

¹⁷ Australian Energy Regulator, TransGrid transmission determination 2018 to 2023, Draft Decision, Attachment 7 – Operating expenditure, September 2017, page 7-32

¹⁸ For example, Australian Energy Regulator, *CitiPower distribution determination* 2016 to 2020, *Final Decision, Attachment* 7 – Operating expenditure, May 2016, page 7-90

3.4 Other

In its initial proposed revised access arrangement, Western Power proposed an additional \$34.4 million opex for the following non-recurrent activities – the Business Transformation Program, the EMR program and ERA regulatory costs associated with the access arrangement review.

I have not reviewed the basis for these cost forecasts so cannot comment on the quantum of the costs proposed.

However, as these costs are not expected to be incurred in each year of the AA4, I am of the opinion that this is an appropriate application of the 'base-step-trend' approach.

3.5 Indirect costs

In its initial proposed revised access arrangement, Western Power deducted indirect costs from the operating expenditure to forecast the base opex and then applied the same 'base-step-trend' approach to forecasting indirect costs. The indirect costs include costs that are expensed and costs that are capitalised.

While I am of the opinion that this is not an inappropriate application of the 'base-step-trend' approach, it is a slightly different approach to that used by other network service providers. The extent to which it varies from the approach adopted by other network service providers depends on the extent to which indirect costs are capitalised. The smaller the proportion of indirect costs that are capitalised, the more similar the approach. This is because the Economic Insights econometric cost function includes expensed indirect costs. It is not evident from publicly available data the extent to which other network service providers capitalise indirect costs.

I have not verified that the application of the growth rate to indirect costs is based on the appropriate weightings of transmission and distribution. Assuming that the weightings of transmission and distribution are correct, I am of the opinion that the way in which Western Power has applied the growth rate to indirect costs is an appropriate application of the 'base-step-trend' approach for the indirect costs that are expensed.

The use of the 'base-step-trend' approach to forecast indirect costs that are capitalised is not an inappropriate application of the approach. However, the opex cost function that is used to determine the growth for operating expenditure, does not include costs that are capitalised. That said, the efficiency dividend that Western Power has proposed more than offsets the growth escalation.

The comments on the real price increases of labour and materials in section 3.3.2 apply to indirect costs.



As noted at the outset of this report, the ERA must be satisfied that Western Power's forecast operating expenditure for the AA4 period includes only those costs that would be incurred by a service provider efficiently minimising costs. It stated that its process for doing so has been to assess:

- the extent to which Western Power's proposed recurrent network base costs would be incurred by a service provider efficiently minimising costs
- whether Western Power has provided adequate justification that the forecast step and forecast changes in the level of operating expenditure over AA4 are consistent with those that would be incurred by a service provider efficiently minimising costs.¹⁹

The following sections identify where, in my opinion, the ERA has undertaken that assessment, for the purposes of its draft decision on Western Power's revised access arrangement, in a way that is not compliant with the relevant requirements of the Access Code. The Chapter concludes with a set of recommendations to correct for these issues.

4.1 Base expenditure

Based on the benchmarking that was undertaken for the ERA by its technical advisor, GHD, the ERA has concluded that:

... Western Power's proposed base operating expenditure for AA4 of \$357.6 million (recurrent network base costs of \$317.6 million plus indirect costs of \$40 million) is below the predicted efficient costs Western Power's proposed expenditure for AA4 is at the level that would be incurred by a service provider efficiently minimising its costs.²⁰

Despite concluding that Western Power's base opex is at a level that would be incurred by a service provider efficiently minimising costs, and therefore meets the Code objective, it has made an adjustment to the base opex of \$6.2 million per annum based on capex it has included in the new facilities investment allowance for SCADA.

In my opinion, the ERA should not reject Western Power's proposed base opex given that it has concluded that it is efficient. Furthermore:

- The ERA approves a total level of capex for Western Power for the AA4 period. Western Power can then invest in its network to best meet its objectives during the AA4 period.
- If Western Power redirects part or all of the capex for SCADA to other projects during the AA4 period, the ERA can be satisfied that it is an appropriate decision to ensure economically efficient investment in the network. ERA's consultant advised that:

¹⁹ ERA, Draft Decision, para 162

²⁰ ERA, Draft Decision, paras 180-181

... Western Power's governance policies and processes and procedures provide a good basis for governance of investment decisions and project delivery, and that Western Power addresses the principles of good governance well. GHD also found that the application of the policies, processes and procedures was in accordance with the relevant standards and guidelines.²¹

The operating and maintenance expenditure in each cost category does not change to the same extent during the access arrangement period. While the portfolio effect is that the operating and maintenance expenditure tends to be relatively consistent from year to year, expenditure on some assets will increase as they age and the expenditure on other assets will decrease as they are replaced. If the ERA singles out operating and maintenance expenditure in one cost category that may decrease during the access arrangement period, then it should also single out operating and maintenance expenditure in other cost categories that will increase during the period. This becomes a bottom up approach, which is inconsistent with the revealed cost approach that the ERA has adopted.

4.2 Step expenditure

The ERA considers that the forecast step reduction in expenditure should be increased by \$2.2 million per annum because Western Power had over forecast the number of non-compliant meters to be replaced.

I am of the opinion that the ERA should not reject Western Power's proposed step expenditure, by increasing the reduction in step expenditure.

As discussed above, the operating and maintenance expenditure in each cost category does not change to the same extent during the access arrangement period. While the portfolio effect is that the total operating and maintenance expenditure tends to be relatively consistent from year to year, expenditure on some assets will increase as they age and the expenditure on other assets will decrease as they are replaced. If the ERA singles out operating and maintenance expenditure in one cost category that may decrease during the access arrangement period, then it should also single out operating and maintenance expenditure in other cost categories that will increase during the period. This becomes a bottom up approach, which is inconsistent with the revealed cost approach that the ERA has adopted.

4.3 Trend

4.3.1 Growth

The ERA has applied the same approach to growth as applied by the AER, which relies on an econometric cost function determined by Economic Insights. The AER noted in a recent decision that:

The output weights are dependent on the elasticities from the econometric cost function and specific to that model specification. The elasticities would be different for different model specifications.²²

Accordingly, either the model specification developed by Economic Insights must be applied in its entirety or a different model specification is required.

Economic Insights' model specification is based on the network service provider's **total** operating and maintenance expenditure, including corporate-related operating expenditure. The model specification would be different if it is to be applied to operating and maintenance expenditure excluding corporate costs.

The ERA has applied the Economic Insights' model specification to Western Power's operating and maintenance expenditure but has excluded corporate costs.²³ This is not consistent with the appropriate application of this model specification. The Economic Insights' model specification needs to be applied to Western Power's total operating and maintenance expenditure, or a different model specification is required.

²¹ ERA Draft Decision, para 374

²² Australian Energy Regulator, SA Power Networks determination 2015-16 to 2019-20, Final Decision, Attachment 7 – Operating expenditure, page 7-51

²³ ERA Draft Decision, para 190

The ERA has indicated that it has updated the weightings using the most recent data from the AER.24

The ERA has applied transmission weightings rounded to the nearest whole number. In my opinion, if the ERA is to use the Australian Energy Regulator's (AER's) most recent data, then it should apply the weightings to one decimal place. The most recent weightings are:

- Energy throughput 23.1 per cent
- Ratcheted maximum demand 19.4 per cent
- End-user numbers 19.9 per cent
- Circuit length 37.6 per cent.²⁵

In my opinion, the ERA is correct in its statement that the energy throughput is the total energy delivered through the transmission system rather than the volumes delivered to transmission connected customers.²⁶

Also, the end-user numbers are the number of customers to which energy is delivered rather than the number of entry and exit points. While the 2014 econometric cost model used the number of entry and exit points, the 2017 econometric cost function used end-user numbers.

The ERA has applied the AER's most recent weightings for distribution network service providers, but has combined two of the measures – ratcheted maximum demand and energy throughput. The weightings should be:

- Energy throughput 12.8 per cent
- Ratcheted maximum demand 17.6 per cent
- Customer numbers 45.8 per cent
- Circuit length 23.8 per cent.²⁷

As noted by the AER, the:

... substitution of one output growth factor with another would not be consistent with the weights used in forming the overall output growth derived in the econometric model.²⁸

In my opinion, if the Economic Insights' econometric cost model is to be used to forecast growth, the measures and weightings need to be consistent with that model. That is, the weightings for the two measures – ratcheted maximum demand and energy throughput – should not be combined.

The ERA is not convinced that the distribution cost escalation is correct because it results in \$75.00 of recurring operating expenditure being added for each new customer.²⁹ The \$75.00 is an outworking of the application of an econometric cost model, which needs to be accepted or rejected in its entirety. In my opinion, the econometric cost model cannot be applied in part in the way that the ERA is seeking to do.

There are legitimate additional costs that are incurred for each new customer. The most significant of these costs are the costs associated with metering. For each new customer, there is an additional meter that needs to be installed and read. The costs will vary from customer to customer based on the location of that customer and the type of meter installed but is generally in the order of \$50 per annum.³⁰ Additionally there will be costs associated with the call centre, customer service etc.

The ERA has identified that comparable networks to Western Power are SA Power Networks and ElectraNet.³¹ The equivalent cost per customer for SA Power Networks is around \$185 per

²⁴ ERA Draft Decision, para 191

²⁵ Economic Insights, *Economic Benchmarking Results for the Australian Energy Regulator's 2017 TNSP Benchmarking Report,* 6 November 2017, page 6

²⁶ ERA Draft Decision, para 194

²⁷ Economic Insights, *Economic Benchmarking Results for the Australian Energy Regulator's 2017 DNSP Benchmarking Report,* 31 October 2017, page 1

²⁸ Australian Energy Regulator, SA Power Networks determination 2015-16 to 2019-20, Final Decision, Attachment 7 – Operating expenditure, pages 7-50 and 7-51

²⁹ ERA Draft Decision, para 195

³⁰ United Energy's 2018 metering charge for a single phase smart meter is \$57.58 per annum excluding GST (United Energy 2018 Pricing proposal, September 2017, page 68), AusNet Services' 2018 metering charge for a single phase meter is \$60.80 per annum excluding GST (AusNet Services, *Electricity Distribution, Annual Tariff Proposal 2018,* 1 January 2018, page 74) and Powercor's 2018 metering charge for a single phase meter is \$65.70 per annum excluding GST (Powercor, *Powercor 2018 Pricing Proposal*, page 78).
³¹ ERA Draft Decision, para 179

customer.³² One of the reasons that the cost per customer for SA Power Networks is higher than for Western Power is because the weighting on customer numbers is higher for SA Power Networks (67.6 per cent) than for Western Power (45.8 per cent).

For these reasons, it is my opinion that the ERA cannot conclude that a service provider efficiently minimising costs would not incur costs of \$75 per new customer.

4.3.2 Productivity

The ERA has considered that it will consider further whether the productivity improvement should be greater than 1 per cent per annum.³³ As discussed in section 3.3, the productivity improvement proposed by Western Power is greater than the productivity improvement expected for any other network service provider in Australia.

I am of the opinion that if the ERA seeks to identify further productivity improvements, then it should also seek to identify whether there are any reasons why productivity may decrease over the AA4 period. This would require a full bottom up approach, rather than a selective top down approach.

4.4 Other

The ERA has excluded \$28.3 million in 2017-18 for the Business Transformation program on the basis that "it is not clear how any savings have been incorporated into the forecast operating expenditure".³⁴ This is despite Western Power proposing a 1 per cent per annum productivity improvement that is substantially higher than other network service providers, a \$5 million step reduction in operating expenditure and a \$12 million step reduction in indirect costs.

The ERA has excluded \$5.1 million for the EMR review on the basis that these costs are not associated with the provision of network services. I am not in a position to comment on this adjustment.

4.5 Indirect costs

The ERA has not applied growth escalation to indirect costs.³⁵ As discussed previously, the ERA has applied the Economic Insights' econometric cost function to forecast growth in operating and maintenance expenditure. The model specification includes total operating and maintenance expenditure and therefore should also include indirect costs that are expensed. The Economic Insights' model specification needs to be applied to Western Power's total operating and maintenance expenditure, or a different model specification is required.

The ERA has considered that it will further consider productivity improvements.³⁶ As discussed in section 4.3.2, if the ERA seeks to identify further productivity improvements, then it should also seek to identify whether there are any reasons why productivity may decrease over the AA4 period. This would require a full bottom up approach, rather than a selective top down approach.

4.6 Implications and recommended corrections

4.6.1 Implications

While the ERA has stated that it has applied the 'base-step-trend' approach in making its draft decision on Western Power's revised access arrangement, I am of the opinion that it has selectively applied elements of the approach resulting in a downward bias to approving non-capital costs. It has rejected elements of Western Power's proposal even though they clearly meet the Code objective to promote the economically efficient investment in, and operation of and use of, Western Power's network. In particular:

³² Customer numbers around 860,000; 0.75 per cent growth in customer numbers per annum, base opex around \$240 mi8llion

³³ ERA Draft Decision, para 201

³⁴ ERA Draft Decision, paras 206 and 207

³⁵ ERA Draft Decision, para 222

³⁶ ERA Draft Decision, para 223

- as discussed in section 4.1, the ERA has deducted \$6.2 million per annum from the base opex despite concluding that Western Power's proposed expenditure for AA4 "is at the level that would be incurred by a service provider efficiently minimising costs"³⁷
- as discussed in section 4.2, the ERA has deducted an additional \$2.2 million per annum as a step reduction in expenditure, without assessing whether there are any step increases in expenditure that a service provider efficiently minimising costs may incur that offset this step reduction
- as discussed in section 4.3.1, the ERA has not allowed for growth escalation that a service provider efficiently minimising costs would incur, in accordance with the econometric cost function determined by Economic Insights
- as discussed in section 4.3.2, the ERA is considering whether there should be additional productivity improvement despite the productivity improvement proposed by Western Power being greater than the productivity expected for any other network service provider in Australia
- as discussed in section 4.4, the ERA has excluded expenditure for the Business Transformation program despite accepting a higher rate of productivity improvement than expected by other network service providers and step decreases in expenditure to reflect efficiencies resulting from the program
- as discussed in section 4.5, the ERA has not allowed for growth escalation in indirect costs that a service provider efficiently minimising costs would incur in accordance with the econometric cost function determined by Economic Insights, and is considering further productivity improvements in indirect costs.

4.6.2 Recommended corrections

As stated in the ERA's draft decision:

If the ERA considers the Access Code objective and requirements of chapter 5 are satisfied it must approve the access arrangement. The ERA may not reject a proposed access arrangement on the grounds that another form of access arrangement might be better or more effectively satisfy the Access Code objective and the requirements set out in chapter 5.³⁸

On this basis, and considering each element in turn, it is my opinion that:

- Base opex the ERA should accept Western Power's forecast base opex as the ERA's benchmarking indicates that it is at a level that would be incurred by a service provider efficiently minimising costs. If it singles out operating and maintenance expenditure in one cost category that may decrease during the access arrangement period, then it should also single out operating and maintenance expenditure in other cost categories that will increase during the period. This becomes a bottom up approach, which is inconsistent with the revealed cost approach.
- Step expenditure the ERA should accept Western Power's forecast step reduction in expenditure as Western Power has appropriately applied the 'base-step-trend' methodology in proposing this step change. If it singles out operating and maintenance expenditure in one cost category that may decrease during the access arrangement period, then it should also single out operating and maintenance expenditure in consistent will increase during the period. This becomes a bottom up approach, which is inconsistent with the revealed cost approach.
- Trend
 - Growth the ERA has accepted the application of Economic Insights' econometric cost function to forecasts. The Economic Insights' model specification needs to be applied to Western Power's <u>total</u> operating and maintenance expenditure, and needs to adopt the same measures and weightings, or a different model specification is required. This requires:
 - the econometric cost function to be applied to the total operating and maintenance expenditure including corporate costs and the indirect costs that are expensed
 - the measures in the most recent reports to be used, with the energy throughput for transmission as the total energy that is delivered through the transmission system and the number of enduser customers for transmission being the total number of customers on Western Power's network, and both ratcheted maximum demand and energy throughput used for growth in distribution expenditure

³⁷ ERA Draft Decision, para 181

³⁸ ERA Draft Decision, para 22

- the most recent weightings to be applied.
- Real price increases for labour the proportion of labour costs proposed by Western Power is less than the benchmark proportion underpinning Economic Insights' econometric cost function.
- Productivity as the productivity improvement proposed by Western Power is greater than the productivity improvement for any other network service provider in Australia, it should be accepted by the ERA.
- Other the ERA should accept the expenditure on the Business Transformation Program in 2017-18 given the negative step changes and productivity improvement proposed.
- Indirect costs the same comments as provided above apply.



In response to Western Power's specific questions:

1. Has Western Power applied the 'base-step-trend' approach in a manner that would result in a total amount of forecast operating expenditure that would be incurred by a service provider efficiently minimising costs?

As discussed in Chapter 3, Western Power has applied the 'base-step-trend' approach in a manner that would result in a total amount of forecast operating expenditure that would be incurred by a service provider efficiently minimising costs, except that Western Power has used the energy throughput for transmission connected customers rather than the energy throughput across the transmission network in escalating for growth.

2. Has the ERA applied the 'base-step-trend' approach in a manner that would result in a total amount of forecast operating expenditure that would be incurred by a service provider efficiently minimising costs?

As discussed in section 4.6.1, in its draft decision on Western Power's revised access arrangement, the ERA has selectively applied elements of the approach resulting in a downward bias to approving non-capital costs. It has rejected elements of Western Power's proposal even though they clearly meet the Code objective to promote the economically efficient investment in, and operation of and use of, Western Power's network.



18 OPERATING EXPENDITURE EXPERT REPORT



This report has been prepared by Marianne Lourey of ACIL Allen Consulting Pty Ltd (ACN 102 652 148).

As the author of this report I have read, understood and complied with the Expert Witness Guidelines entitled Expert Witnesses in Proceedings in the Federal Court of Australia (as defined in the Federal Court of Australia's Practice Note CM 7). As the author I have made all the inquiries that I believe are desirable and appropriate and that no matters of significance that I regard as relevant have, to my knowledge, been withheld from this report.

A curriculum vitae for Marianne Lourey is provided as Appendix B.



Marianne Lourey is an Executive Director at ACIL Allen Consulting (ACIL Allen). She has more than 30 years of experience, predominantly in the energy sector, working in, and consulting to, government, regulators and industry. She has worked in a broad range of areas including energy and climate change policy, economic regulation, vocational training, energy supply security, business management, business development, manufacturing and power system planning.

Over the last 18 years Marianne's work has focused on the interface of technical and economic issues, with her detailed understanding of technical, policy, regulatory and commercial matters, her analytical skills and experience, and her practical and pragmatic approach to resolving issues.

Marianne has a deep understanding of the national economic regulatory framework that applies to electricity networks, and of the economic regulatory framework that applies to Western Power. As she has worked in, or consulted to, government, regulators and industry, she understands the perspective of each of the participants in the revenue determination /access arrangement review process.

Soon after joining ACIL Allen in early 2010, Marianne provided advice to Western Power on its 2012/13-2016/17 access arrangement review for its electricity distribution and transmission networks. The advice focused on the capital and operating expenditure, and service standard and incentive regime. Marianne assisted in developing the strategy for the expenditure and service incentive proposals, assessed the expenditure forecasts, assisted in drafting the relevant parts of Western Power's submission to the regulator, reviewed business cases drafted within the business and reviewed the business's responses to questions from the regulator. The key objective of the advice was to assist Western Power to meet its regulatory obligations.

She has also:

- provided advice to the Victorian Government on the economic regulation of the Victorian electricity distribution businesses, drafting submissions on the Australian Energy Regulator's (AER's) framework and approach, issues paper, and draft determinations for the 2011-15 and 2016-20 regulatory control periods, and supporting appeals made by the Victorian Government
- provided advice to the Victorian Government on the economic regulatory framework, drafting submissions to the Australian Energy Market Commission on proposed rule changes, and derogations to the Rules
- provided advice to the Western Australian Government on the identification and assessment of options for the Western Australian Tariff Equalisation Fund and Tariff Equalisation Contribution – this required the development of a model of Horizon Power's costs and revenues, incorporating a range of sensitivities
- provided advice to Horizon Power on its revenue model and its economic regulatory framework
- undertaken large scale studies for the Victorian Government to assess the impact of cost reflective network tariffs on residential consumers generally, and vulnerable consumers in particular, and

recommended a range of policy options to mitigate the impact of cost reflective network tariffs on vulnerable customers, including consideration of demand side management options

- provided advice to the Victorian Government on the roll out of smart meters, in particular the regulation of the costs for the roll out
- reviewed, for the Essential Services Commission, the GSL payments scheme that applies to the Victorian electricity distribution businesses.

As the Executive Director for Energy Policy within the Victorian Government from 2005 to 2010, Marianne was heavily involved with the development of Chapter 6 of the National Electricity Rules (NER) and the transfer of state-based economic regulation to the Australian Energy Regulator. During this period, she also led the deregulation of retail electricity prices in Victoria and the rollout of smart meters.

During 2004 and 2005 Marianne was the Manager, Network Regulation at the Essential Services Commission. She was responsible for the capital and operating expenditure forecasts, the metering expenditure and price control, and the service standard framework (including a service incentive scheme, guaranteed service level payments and service standards) as part of the 2006-10 Electricity Distribution Price Review. The 'base-step-trend' approach was first used to determine the operating expenditure during this Price Review. Marianne also provided expert advice in relation to the demand forecasts, price control and modelling.

During this period, she also finalised the Essential Services Commission's decision on the rollout of interval meters to all Victorian consumers, and on the charges for public lighting.

As a consultant at KPMG from 1999 to 2004, Marianne provided advice to the former Office of the Regulator-General on the allocation of costs between the retail and distribution businesses and the benchmarking of non-network costs as part of the 2001-05 Electricity Distribution Price Review, and on the costs to roll out interval meters to all Victorian consumers. She also led large market research based studies for the South Australian regulator and NSW businesses to understand the willingness of customers to pay for changes in electricity distribution service levels, and studies for NSW and Queensland businesses to understand consumers' preferred level of reliability.

From 1986-1999, Marianne worked in private industry, predominantly with ABB, and prior to that, with the former State Electricity Commission of Victoria as a power system planner.

Marianne holds a first class honours degree in Electrical and Computer Systems Engineering and a Masters of Business Administration.

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ABOUT ACIL ALLEN CONSULTING

ACIL ALLEN CONSULTING IS THE LARGEST INDEPENDENT, AUSTRALIAN OWNED ECONOMIC AND PUBLIC POLICY CONSULTANCY.

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