

Chapter 3

Overview of the regulatory framework and revenue determination process

3.1 The electricity system comprises four components: generation, transmission, distribution and retail activities. Retailers purchase electricity from the generators, the transmission networks connect generators to the distribution networks, which in turn connect most end users. Retailers sell bundled electricity and network services to residential, commercial and industrial energy consumers.¹

3.2 This inquiry focuses on two components of electricity supply: the transmission and distribution networks. This chapter provides an overview of electricity networks and why they are regulated. This chapter also outlines the key regulatory and policy bodies that have a role in electricity regulation in the National Electricity Market (NEM). The committee has generally limited the scope of this report to the network businesses that operate in the NEM as concern about network costs has largely been evident in NEM states and the majority of the evidence received related to the NEM's regulatory framework. The specific business referred to in the terms of reference for this inquiry also operates in the NEM.

Networks in the National Electricity Market

3.3 Prior to May 1996, state and territory government-owned utilities provided all four components of electricity supply. Every state and territory, except Western Australia (WA) and the Northern Territory (NT), are now connected to neighbouring states by interconnectors and participate in the NEM.² The NEM is the wholesale electricity market that allows for electricity generated in one state to be transmitted and sold in another state. The NEM spot market is run by the Australian Energy Market Operator (AEMO).

3.4 Electricity networks facilitate the transmission of electricity from generators to customers, often over long distances. To minimise transmission losses, transformers convert power to a high voltage when it enters the transmission network. After the high voltage electricity is transported by the transmission lines, substations convert the electricity to a lower voltage for transport along a distribution network. Substations within the distribution network lower the voltage further, making the electricity

1 Australian Energy Regulator (AER), *State of the energy market 2014*, p. 22.

2 WA and the NT are not included in the NEM primarily because of their geographical distance from the other states.

suitable for use by consumers (although some power is provided to end users at a high voltage).³

3.5 Within the NEM, there are five transmission networks and 13 major electricity distribution networks. The total asset value of the transmission and distribution networks in the NEM is over \$70 billion.⁴ The Productivity Commission (PC) has noted that the NEM is 'one of the most geographically dispersed electricity networks in the world', with more than 40,000 kilometres of transmission lines and 777,000 kilometres of distribution networks. In comparison, the United Kingdom's population, which is more than three times that of the NEM's, is served by approximately 25,000 kilometres of transmission lines and 800,000 kilometres of distribution lines.⁵

3.6 Key background information about the networks in the NEM is provided at Table 3.1 and Table 3.2.

Table 3.1: Electricity transmission networks in the NEM

Network	Location	Line length (circuit km)	Electricity transmitted (GWh), 2012–13	Maximum demand (MW), 2012–13	Asset base* (\$ million)	Owner
Powerlink	Queensland	14 310	49 334	10 956	6 035	Queensland Government
TransGrid	NSW	12 893	65 200	17 100	5 289	NSW Government
AusNet Services	Victoria	6 573	49 056	9 342	2 414	Listed company (Singapore Power International 31%, State Grid Corporation 20%)
ElectraNet	South Australia	5 527	14 284	4 136	1 786	State Grid Corporation 46.5%, YTL Power Investments 33.5%, Hastings Utilities Trust 20%
TasNetworks	Tasmania	3 503	12 866	2 483	1 236	Tasmanian Government
NEM totals		42 806	190 740		16 760	

Source: AER, *State of the energy market 2014*, p. 66.

3 Productivity Commission (PC), *Electricity networks regulatory frameworks*, vol. 1, April 2013, p. 85.

4 AER, *State of the energy market 2014*, p. 68.

5 PC, *Electricity networks regulatory frameworks*, vol. 1, p. 96.

Table 3.2: Electricity distribution networks in the NEM

Network	Customer numbers	Line length (circuit km)	Electricity delivered (GWh), 2012–13	Maximum demand (MW), 2012–13	Asset base* (\$ million)	Owner
<i>Queensland</i>						
Energex	1 359 712	51 781	21 055	5 029	10 197	Queensland Government
Ergon Energy	710 431	160 110	13 496	3 420	8 837	Queensland Government
<i>New South Wales and Australian Capital Territory</i>						
AusGrid	1 635 053	40 964	26 338	5 570	13 613	NSW Government
Endeavour Energy	919 385	35 029	16 001	4 156	5 344	NSW Government
Essential Energy	844 244	191 107	12 291	2 294	6 518	NSW Government
ActewAGL	177 255	5 088	2 903	698	790	ACTEW Corporation (ACT Government): 50%; Jemena (State Grid Corporation 60%, Singapore Power International 40%): 50%
<i>Victoria</i>						
Powercor	753 913	73 889	10 556	2 396	2 869	Cheung Kong Infrastructure / Power Assets 51%; Spark Infrastructure 49%
AusNet Services	681 299	43 822	7 501	1 877	2 809	Listed company (Singapore Power International 31%, State Grid Corporation 20%)
United Energy	656 516	12 837	7 856	2 077	1 789	DUET Group 66%; Jemena (State Grid Corporation 60%, Singapore Power International 40%) 34%
CitiPower	322 736	4 318	5 981	1 493	1 601	Cheung Kong Infrastructure / Power Assets 51%; Spark Infrastructure 49%
Jemena	318 830	6 135	4 254	986	1 031	Jemena (State Grid Corporation 60%, Singapore Power International 40%)
<i>South Australia</i>						
SA Power Networks	847 766	87 883	11 008	2 915	3 469	Cheung Kong Infrastructure / Power Assets 51%; Spark Infrastructure 49%
<i>Tasmania</i>						
TasNetworks	279 868	22 336	4 248	239	1 455	Tasmanian Government
NEM totals	9 507 007	735 298	143 488		60 322	

*Asset bases are at June 2013 (December 2013 for Victorian businesses).

Source: AER, *State of the energy market 2014*, p. 67.

Regulation of electricity networks in the National Electricity Market

Rationale

3.7 Electricity network businesses in Australia are subject to economic regulation, as is the case in many other countries. Generally, this regulation is based on an understanding that electricity transmission and distribution networks are capital intensive operations where increased output results in declining average costs. As a result of the evident economies of scale, it is generally accepted that networks are a natural monopoly. That is, the most efficient outcome is for a single supplier to provide network services in a particular geographic area.⁶

3.8 Economic regulation of a natural monopoly is required to prevent monopoly pricing, where inefficient outcomes result from monopoly firms charging customers more than what it costs to supply them.⁷ Efficient levels of investment and costs are encouraged by providing the monopoly firm with incentives similar to those faced by firms in competitive markets. Economic regulation is also supplemented by other regulatory requirements seen as desirable, such as reliability and quality of supply standards.⁸

Legislative framework

3.9 The creation of the NEM followed the National Electricity Market Legislation Agreement (NEMLA) entered into by New South Wales, Victoria, Queensland, South Australia and the Australian Capital Territory in 1996. The agreement provided for the National Electricity Law (NEL), a single national law for electricity regulation.⁹ The NEMLA was replaced by the Australian Energy Market Agreement (AEMA) entered into by the Council of Australian Governments (COAG) in June 2004. Tasmania entered the NEM in May 2005.¹⁰

3.10 The NEL provides the foundation for the regulatory framework governing electricity networks in the NEM. Underpinning this framework is the National Electricity Objective (NEO), which is contained in section 7 of the NEL. The NEO is as follows:

The objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to:

6 AER, *Submission 36*, p. 2.

7 AER, *Submission 36*, p. 2.

8 AER, *Submission 36*, p. 2; Australian Energy Market Commission (AEMC), *Submission 41*, p. 4.

9 The NEL is a schedule to the *National Electricity (South Australia) Act 1996 (SA)*. South Australia is the lead legislator for the NEL; other jurisdictions enact application legislation that gives effect to the South Australian legislation.

10 AER, *State of the energy market 2014*, p. 43.

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- (a) price, quality, safety, reliability and security of supply of electricity; and
 - (b) the reliability, safety and security of the national electricity system.¹¹

3.11 The National Electricity Rules (NER) are made under the NEL. The NER provide the detailed arrangements that govern the operation of the NEM. Matters covered by the NER include:

- the procedures that govern the operation of the market for the wholesale trading of electricity;
- the economic regulation of distribution and transmission services;
- retail markets; and
- metering.¹²

3.12 The NEL and NER provide the basis for the revenue determination process, which is discussed later in this chapter and in subsequent chapters.

Institutional regulatory arrangements in the NEM

3.13 There are several bodies established under the NEL and Commonwealth legislation that have a role in electricity policy or the regulation of the networks. These bodies either determine the overall policy that is applied to the NEM or administer functions under the NEL and NER. Of most relevance are the:

- COAG Energy Council;
- Australian Energy Market Commission (AEMC);
- Australian Energy Market Operator (AEMO); and
- Australian Energy Regulator (AER).

3.14 The functions and responsibilities of these bodies are outlined below.

COAG Energy Council

3.15 Reflecting the multi-jurisdictional nature of the NEM, the COAG Energy Council (formerly the Standing Council on Energy and Resources, or SCER) has responsibility for priority issues of national significance and key reforms in the energy and resources sectors. The COAG Energy Council is comprised of energy and resources ministers from the states, territories and New Zealand.

11 *National Electricity (South Australia) Act 1996* (SA), s. 7.

12 The current Rules are available at: www.aemc.gov.au/energy-rules/national-electricity-rules/current-rules

Australian Energy Market Commission

3.16 The AEMC makes rules under the NER, as well as the national gas and energy retail rules. The AEMC also conducts reviews of aspects of the energy markets at the request of the COAG Energy Council. The AEMC is responsible to the COAG Energy Council and is funded by state and territory governments.¹³

3.17 In making rule changes, the AEMC must follow an open and consultative process to ensure that decisions take account of the views of stakeholders. Proposed rule changes are assessed against the relevant statutory objective; for the regulation of electricity networks, this is the NEO.

Australian Energy Market Operator

3.18 AEMO was established in 2009, superseding the National Electricity Market Management Company (NEMMCO) and the state energy market management and planning entities. AEMO's electricity responsibilities include managing the wholesale electricity market and playing a coordinating role in ensuring system security when demand exceeds supply. Other functions performed by AEMO include the provision of long-term planning reports and regional demand forecasts and the planning for the Victorian electricity transmission system (in other jurisdictions, the state government or the transmission service provider undertakes these functions).¹⁴

3.19 AEMO's ownership structure is divided between government (60 per cent) and industry (40 per cent). Industry members include generators, transmission companies, distribution businesses, retailers, and resource companies across the eastern and south-eastern states of Australia. AEMO operates on a cost recovery basis as a company limited by guarantee under the *Corporations Act 2001*.¹⁵

Australian Energy Regulator

3.20 Economic regulation in the NEM is provided by the AER, an independent statutory authority located within the Australian Competition and Consumer Commission (ACCC).¹⁶ The AER regulates network providers in accordance with the NEL and the NER. Its main role is the determination of network revenue, although it also has compliance and information reporting functions.¹⁷

13 AEMC, *Submission 41*, pp. 1, 9.

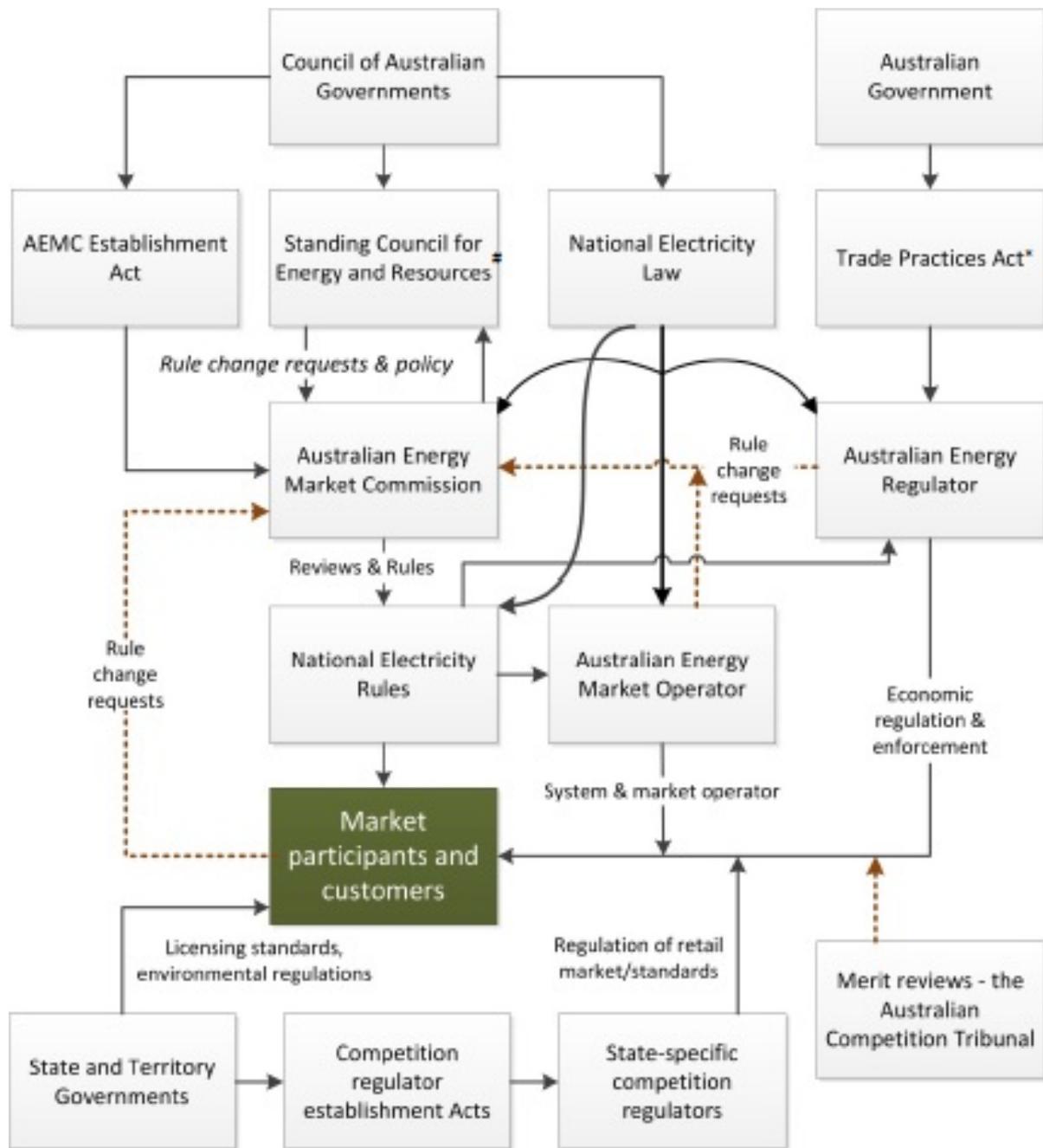
14 PC, *Electricity networks regulatory frameworks*, vol. 1, p. 70.

15 Australian Energy Market Operator, *Annual Report 2014*, p. 11.

16 Outside of the NEM, the Economic Regulation Authority regulates the networks in WA and the Utilities Commission regulates electricity networks in the NT.

17 PC, *Electricity networks regulatory frameworks*, vol. 1, p. 70; AEMC, *Submission 41*, p. 7.

Figure 3.1: Institutional arrangements in the NEM



Now the COAG Energy Council.

* Now the *Competition and Consumer Act 2010*.

Source: PC, *Electricity networks regulatory frameworks*, vol. 1, April 2013, p. 85; modified to indicate recent changes.

Introduction to the revenue determination process

3.21 The economic regulation applied to network businesses involves a regulator determining the amount of revenue the business can recover from its customers. For businesses operating within the NEM, this regulator is the AER.

Key statutory requirements and principles

3.22 The determination process and the roles of the AER are set out in the NEL and NER. The AER is required to exercise its economic regulatory powers and functions in a manner that will, or is likely to, contribute to the achievement of the NEO (section 7 of the NEL).¹⁸ As is evident from the wording of the NEO (see paragraph 3.10), and as the AER noted in its submission, the objective is 'not only concerned with cost outcomes for electricity consumers', but also the safety, reliability and security of energy supplies.¹⁹

3.23 Section 7A of the NEL contains revenue and pricing principles that must be applied to determinations. The principles provide:

- that a network business should be provided with a reasonable opportunity to recover efficient costs;
- for incentives to promote efficiencies; and
- that prices should reflect returns commensurate with the risks involved in providing network services.

3.24 In addition to the objectives and principles set out in the NEL, the NER provide the framework the AER must apply in undertaking its revenue determination role. The rules for the economic regulation of distribution and transmission networks are contained in chapters 6 and 6A of the NER respectively.

Benchmarking

3.25 Incentive-based regulation is enshrined in the NEL and NER, with the benchmarking requirements providing a clear example. When determining the amount of revenue that a network business can recover from its customers, the AER must set an allowed rate of return that reflects the efficient financing costs of a benchmark efficient entity. This involves the AER considering the revenue that would be required by a benchmark efficient business to cover its efficient costs and to provide a commercial return on capital. The AEMC explained that the benchmark entity used by the AER 'must be subject to a similar degree of risk in providing regulated services as the network business'. The AEMC noted that the framework maintains 'incentives for investment because investors can reasonably expect to recover efficient costs'.

18 AER, *Submission 36*, p. 2.

19 AER, *Submission 36*, p. 2.

The AEMC argued that this approach provides incentives for 'network businesses to raise capital as cheaply as possible and make efficient expenditure decisions':

Put simply, if the business spends less than the estimated efficient cost it will earn a higher return because it will still be allowed to recover the total revenue for the remainder of the regulatory period. Conversely, if its spending exceeds the estimated efficient costs, it will earn a lower return or potentially make a loss because it will not be allowed to recover the additional spending. The essential point is that the revenue of a particular network business is based on estimates of the efficient costs of a prudent operator and not on their actual costs.²⁰

3.26 The AEMC explained that the alternative to an incentive-based approach is a cost of service regulatory framework, where the revenue allowance 'is based on the costs that the individual business requires to provide services'. The AEMC argued that such frameworks do not 'provide strong incentives for regulated firms to operate efficiently and minimise costs'.²¹

Method for recovering revenue

3.27 A key consideration in revenue regulation is how the revenue will be recovered. Conceptually, the allowed revenue that a network business can recover from its customers can be recovered in two ways, either by a revenue cap or a price cap. Under a revenue cap approach, the AER determines the allowed revenue a network business can recover from its customers over the regulatory period. A price cap sets an average price level that a network business can charge over the regulatory period.

3.28 The AEMC provided the following information about these approaches:

Prices are based on estimates of future demand under both approaches. Under the revenue cap approach, average prices are adjusted each year for errors in forecast demand that result in revenue recovery above or below the allowed revenue. Put simply, network businesses under a revenue cap are guaranteed to recover the allowed revenue over the regulatory period. Under a price cap approach, prices are not adjusted for errors in forecast demand which result in revenue recovery above or below the allowed revenue. Variations in the allocation of risk should be reflected in how the AER determines the allowed rate of return.²²

3.29 The AEMC went on to note that the AER determines whether a revenue cap or price cap is 'most appropriate for the network business in order to maximise benefits for end-users'. The AEMC observed that recent network revenue determinations made by the AER have used a revenue cap approach. The AEMC

20 AEMC, *Submission 41*, pp. 4, 5.

21 AER, *Submission 36*, pp. 3–4.

22 AEMC, *Submission 41*, pp. 5–6.

suggested that by shifting the burden of demand risk onto consumers, the revenue cap approach could possibly result in lower prices:

Network businesses are required to meet their jurisdictional requirements for reliability such that they are obliged to maintain and develop the network to meet expected demand. In return, consumers experience the benefits of this reliability standard. There may be considerable risk to network businesses who are required to meet both a state-mandated reliability standard (that requires investment) and declining demand (a smaller amount of demand over which to recover the costs of that investment). By consumers bearing the demand risk through a revenue cap approach the risks of the network business are lower and there could then be an opportunity for the benefits to be passed on to consumers in the form of a lower allowed rate of return to the network.²³

Steps in regulating network revenue

3.30 The process for determining the amount of revenue that network businesses can recover from customers is *ex-ante*—businesses apply to the AER for an assessment of their revenue requirements in advance of a new regulatory period. Chapters 6 and 6A of the NER set out a detailed process that the AER must follow in regulating distribution and transmission network revenues. This process is as follows:

- The AER is required to publish a 'framework and approach' paper 23 months before the end of the network business's current regulatory control period (RCP). The paper must set out the AER's proposed approach to the business's next regulatory determination.
- The network business must submit a detailed regulatory proposal to the AER at least 17 months prior to the end of its current RCP. The regulatory proposal must set out the business's proposed regulated revenues for the following RCP.
- The AER must publish:
 - the network business's regulatory proposal and related documents;
 - an issues paper the AER has prepared seeking written submissions from stakeholders; and
 - an invitation to stakeholders to attend a public forum on the issues paper, well before stakeholder submissions are due to be submitted.
- The AER must then publish, nine months before the RCP ends:
 - a draft determination setting out where it refuses to approve any aspect of the network business's regulatory proposal;
 - notice of a pre-determination conference; and
 - an invitation for stakeholders to make written submissions.

23 AEMC, *Submission 41*, pp. 5–6.

- The AER must ultimately publish, at least two months before the RCP ends, a final determination setting out:
 - where it has not accepted elements of a network business's regulatory proposal;
 - reasons why it has not accepted those elements of the proposal; and
 - its decision in substitution of those elements of the regulatory proposal it has not accepted.²⁴

3.31 Following a final determination by the AER, affected parties can apply to the Australian Competition Tribunal for a review of the merits of the determination. Determinations are also subject to judicial review.

3.32 Table 3.3 outlines the next RCPs and key dates for AER decisions.

Table 3.3: Timetable for upcoming revenue determinations

State/ Territory	Service provider	Regulatory control period	Draft decision	Final decision
<i>Electricity transmission</i>				
NSW/Tas	TransGrid, TasNetworks	1 Jul 2015 – 30 Jun 2019	27 Nov 2014	30 Apr 2015*
Qld/NSW	Directlink	1 Jul 2015 – 30 Jun 2025	27 Nov 2014	30 Apr 2015
Vic	AusNet Services	1 Apr 2017 – 30 Mar 2022	30 Jun 2016	31 Jan 2017
Qld	Powerlink	1 Jul 2017 – 30 Jun 2022	30 Sep 2016	30 Apr 2017
SA	ElectraNet	1 Jul 2018 – 30 Jun 2023	30 Sep 2017	30 Apr 2018
Vic/SA	Murraylink	1 Jul 2018 – 30 Jun 2023	30 Sep 2017	30 Apr 2018
<i>Electricity distribution</i>				
NSW/ACT	Ausgrid, Endeavour Energy, Essential Energy, ActewAGL	1 Jul 2015 – 30 Jun 2019	27 Nov 2014	30 Apr 2015*
Qld/SA	Energex, Ergon Energy, SA Power Networks	1 Jul 2015 – 30 Jun 2020	30 Apr 2015	31 Oct 2015
Vic	CitiPower, Powercor, Jemena, Jemena, AusNet Services, United Energy	1 Jan 2016 – 30 Dec 2020	31 Oct 2015	30 Apr 2016
Tas	TasNetworks	1 Jul 2017 – 30 Jun 2022	30 Sep 2016	30 Apr 2017

* These determinations involved a transitional year determination 2014–2015 and a final determination for 2015–2019.

Source: AEMC, *Submission 41*, pp. 17–18.

24 AER, *Submission 36*, pp. 4–5.

The 'building block' approach

3.33 The NER outline a 'building block' approach to setting the revenue that networks are allowed to recover from their customers. The building blocks are estimates of the various costs a network business needs to incur while efficiently providing network services to customers over the RCP. These building blocks are added together to determine the maximum amount of revenue that a network business is allowed to recover from its customers.²⁵ The four blocks are outlined in Table 3.4.

Table 3.4: Regulatory building blocks

Building block	Description
Operating expenditure	Allowance for recovering of operating costs such as forecast labour costs, maintenance expenses and corporate expenses
Return on capital	Allowance for the recovery of capital invested by the business, which is calculated by multiplying the regulatory asset base (RAB) by the allowed rate of return
Return of capital	Allowance for the depreciation of existing assets
Tax allowance	Estimated corporate income tax over the period

Source: AER, *Submission 36*, p. 3.

3.34 In its 2013 report on electricity networks regulation, the PC explained that the building block model consists of two equations: the revenue equation and the asset base roll forward equation. These equations are as follows:

$$\text{MAR} = (\text{WACC} \times \text{RAB}) + \text{depreciation} + \text{operating expenditure} + \text{tax} + \text{incentive payments/penalties}$$

and

$$\text{new RAB} = \text{previous RAB} - \text{depreciation} + \text{capital expenditure}$$

where:

MAR is maximum allowable revenue

WACC is the post-tax nominal weighted average cost of capital

RAB is the regulatory asset base

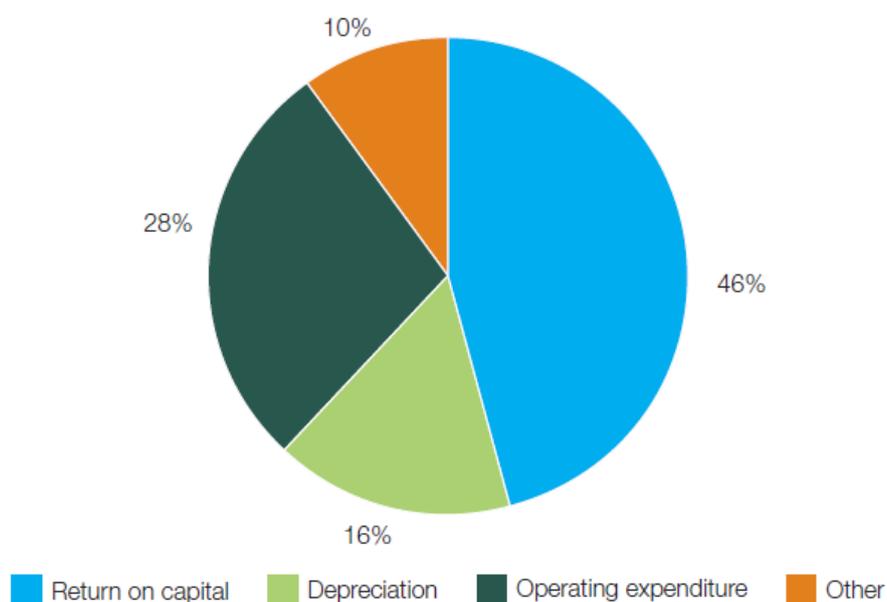
tax equals the expected business income tax payable.²⁶

²⁵ AER, *Submission 36*, p. 3.

²⁶ PC, *Electricity networks regulatory frameworks*, vol. 1, p. 194.

3.35 The AER noted that the largest component of the building block approach is the return on capital, which may account for up to two-thirds of the revenue allowance. Operating expenditure can typically account for 30 per cent of the revenue allowance.²⁷ Figure 3.2 provides an indicative breakdown of electricity distribution network revenue by each building block, based on the determination in place for the Tasmanian distribution network service provider.

Figure 3.2: Indicative composition of electricity network revenues, based on Tasmanian distribution



Source: AER, *State of the energy market 2014*, p. 69.

3.36 The following paragraphs provide an overview of the key building blocks and concepts involved in the determination process.

Regulatory asset base and costs of capital

3.37 The return on capital is calculated by reference to the regulatory asset base (RAB) and the weighted average cost of capital (WACC). Specifically, the NER prescribe that the return on capital for each regulatory year in a RCP must be calculated by applying a rate of return to the value of the regulatory asset base (RAB) at the beginning of that regulatory year.

3.38 EnergyAustralia provided the following description of the RAB:

The RAB is, conceptually, the regulatory valuation of the stock of (typically) physical assets used to provide network services. It represents the cumulative depreciated valuation of the capitalised sunk expenditure.

²⁷ AER, *Submission 36*, p. 3.

Each networks' RAB is calculated at the start of the specified regulatory period based on the asset value at the end of the previous regulatory period:

- less the depreciation on that opening asset base over the regulatory period;
- plus the depreciated value of the actual capitalised expenditure incurred in that period; and
- plus an adjustment to ensure the asset base is not eroded by monetary inflation.²⁸

3.39 The WACC is the expected rate of return required by investors to induce them to commit funds to the network business. The WACC for a firm is determined by the return it pays on debt and equity,²⁹ the two sources of funding for a firm, 'weighted in accordance to their relative use and adjusted for the operation of the tax system'.³⁰

3.40 To estimate the overall rate of return, the AER uses a nominal 'vanilla' WACC, which is a combination of a nominal post-tax return on equity and a nominal pre-tax return on debt.³¹ The WACC is calculated using the following formula:

$$\text{WACC}_{\text{vanilla}} = E(k_e) \frac{E}{V} + E(k_d) \frac{D}{V}$$

where

$E(k_e)$ is the return on equity, calculated with reference to the risk-free rate, the firm specific equity beta and the premium per unit of market risk (calculated using the capital asset pricing model)

$E(k_d)$ is the return on debt, calculated as the sum of the risk-free rate and the premium per unit of market risk

E/V and D/V are proportions of equity and debt in total financing (the AER assumes that the debt weighting is 0.6 and the equity weighting is 0.4).³²

3.41 The PC has made the following comments on how WACC is used as part of the revenue determination process for electricity networks:

...the regulator estimates the WACC of an efficient network business at the start of the regulatory period. It is an estimate of the financing costs of a typical network business with an efficient capital structure and is used to determine the revenue allowance that network businesses may recover.

28 EnergyAustralia, *Submission 23*, p. 4

29 The return on equity is the return shareholders will require for them to continue to invest. The return on debt is the interest rate the business pays when it borrows money to invest. See AEMC, *Submission 41*, p. 12.

30 PC, *Electricity network regulatory frameworks*, vol. 1, p. 195.

31 AER, *Better regulation: Expenditure statement rate of return guideline*, December 2013, www.aer.gov.au/sites/default/files/AER%20Explanatory%20statement%20-%20rate%20of%20return%20guideline%20-%20December%202013.pdf (accessed 27 February 2015), p. 9.

32 AER, *Better regulation: Rate of return guideline*, p. 9.

For clarity, this estimate is referred to as the regulatory WACC, while the actual capital costs that businesses face to fund their investments is referred to as the 'actual' WACC.

The regulator does not consider the individual circumstances of any particular firm when calculating the regulatory WACC. In theory, this creates incentives for businesses to source debt and equity financing efficiently, while considering the financial risks associated with different financing strategies. For instance, if a network operates in a low risk way, and as a result, they can access lower cost financing, they can keep the difference between the actual WACC and the regulatory WACC.³³

3.42 The AEMC remarked that a good estimate of the WACC is 'essential to promote efficient investment by network businesses'. It explained:

If the rate of return is set too low, network businesses may not be able to attract sufficient funds to be able to make required investments to maintain reliability and safety. Alternatively, if the rate of return of return is set too high, network businesses may face an incentive to spend more than necessary and consumers will pay inefficiently high prices.³⁴

Capital and operating expenditure

3.43 This section considers capital expenditure, commonly referred to as capex, and operating expenditure, or opex.

Definitions

3.44 For network businesses, capital expenditure is used for buying and installing assets, such as poles, wires and other equipment used for transporting energy, that are needed for the efficient operation of the network. The AEMC provided the following comments about capital expenditure:

Some types of capital expenditure are relatively certain and regular. However, more often capital expenditure is lumpy, typically varying from year to year because capital assets are generally very costly but last for a number of years. Network businesses earn revenue from capital expenditure through return on capital (WACC multiplied by the regulatory asset base) and return of capital, known as depreciation.³⁵

3.45 Operating expenditure 'is spent on the non-capital cost of running an electricity network and maintaining the assets'. Unlike capital expenditure, the AEMC noted that operating expenditure is 'generally recurrent and predictable from year to year'.³⁶

33 PC, *Electricity network regulatory frameworks*, vol. 1, p. 195.

34 AEMC, *Submission 41*, p. 12.

35 AEMC, *Submission 41*, p. 13.

36 AEMC, *Submission 41*, p. 15.

How capex and opex are determined

3.46 The AEMC explained that as part of the determination process, the AER approves an overall allowance of estimated capital expenditure at the start of an RCP. The total capital expenditure allowance for the RCP is based on the capital expenditure objectives and criteria set out in the NER. These require the AER 'to determine the efficient costs a prudent network business would need to meet or manage expected demand, comply with regulatory requirements (including jurisdictional reliability standards) and maintain safety'.³⁷

3.47 The regulatory arrangements for assessing operating expenditure are similar to those for capital expenditure. Specifically, an overall estimate of operating expenditure for each network business is determined at the start of the regulatory period based on the efficient costs the AER considers a prudent network business would incur. The NER provide 'the AER with discretion to use a range of methods and information to determine the efficient operating expenditure'.³⁸

3.48 The AER must accept the forecasts submitted to it if it is satisfied that a network service provider's proposed total capex forecast and total opex forecast reasonably reflect:

- the efficient costs of achieving the capex and opex objectives;
- the costs that a prudent operator would require to achieve the capex and opex objectives; and
- a realistic expectation of the demand forecast and cost inputs required to achieve the capex and opex objectives.³⁹

3.49 The AER's approach to estimating total capital expenditure is outlined in a guideline. Among other techniques, the AER uses economic benchmarking, modelling and analysis to compare the capital expenditure proposed by a business with estimates the AER develops. The NER also require that network businesses undertake a public regulatory investment test (RIT) process for major projects where expenditure exceeds \$5 million.⁴⁰ The AEMC advised that the RIT process is:

...designed to test whether the businesses' proposed investment is the most efficient solution (eg whether it is the most efficient way to meet the

37 AEMC, *Submission 41*, p. 13.

38 AEMC, *Submission 41*, p. 15.

39 AER, *Better regulation: Expenditure forecast assessment guideline for electricity distribution*, November 2013, www.aer.gov.au/sites/default/files/Expenditure%20Forecast%20Assessment%20Guideline%20-%20Distribution%20-%20FINAL.pdf (accessed 24 February 2015), pp. 6–7. See also National Electricity Rules, rules 6.5.6(c) and 6.5.7(c).

40 These tests are referred to as RIT-D for distribution projects and RIT-T for transmission projects.

applicable reliability standards), including allowing providers of non-network solutions to propose alternative approaches.⁴¹

Recent rule changes and upcoming determinations

3.50 The final section of this chapter briefly outlines the changes to the NER made in recent years that have implications for upcoming revenue determination processes. The AER has started to develop determinations based on these new rules.

3.51 The rule changes sought to address inconsistencies in the framework and other issues that may have contributed to high revenue allowances in previous determinations. For example, regarding the previous approach to determining the rate of return, the AER explained that the version of the NER in place at the time:

...mandated inconsistent approaches to setting rates of return for transmission and distribution businesses, and constrained the AER from setting rates of return that reflected commercial practices. The AER was locked into a parameter-by-parameter assessment of the rate of return, with limited scope to consider the appropriateness of the overall allowance.⁴²

3.52 The AEMC and AER outlined the following rule changes made in 2012 that are relevant to revenue determinations:

- the AER must set an allowed rate of return that reflects the efficient financing costs of a benchmark efficient entity and must consider the appropriateness of the overall rate of return, rather than looking at the individual parameters that make up the rate of return in isolation;
- network businesses are provided with incentives to make cost-effective investment and operational decisions to promote efficient outcomes for consumers (if the businesses are more efficient than the benchmark they get rewarded, if not they get lower returns)—specifically:
 - the AER has the power to review the efficiency of capital expenditure over an RCP that exceeds the efficient amount estimated by the AER; if it is found that the expenditure was not efficient, the AER may decide that the business cannot recover that expenditure during the next RCP;⁴³
 - the AER may develop specific incentive schemes for capital expenditure that provide incentives for network companies to incur efficient capital expenditure;

41 AEMC, *Submission 41*, p. 14.

42 AER, *Submission 36*, p. 7.

43 AEMC, *Submission 41*, pp. 4–5.

- networks are required to consult with consumers about their expenditure plans and the AER regulatory determination processes have been made more accessible to consumer representation; and
- changes have been made to enhance the limited merits review process (these are examined in Chapter 6).⁴⁴

Regulatory proposals currently under consideration

3.53 The first network businesses to have RCPs commence under the new rules are currently having their revenue requirements assessed by the AER. As shown in Table 3.3, these businesses are the Tasmanian electricity transmission business, TasNetworks, and ACT and NSW transmission and distribution network businesses. The next regulatory control period for these businesses commences on 1 July 2015. The AER's final determinations are due by 30 April 2015.

3.54 Operating conditions for these businesses have substantially changed since their previous determinations, particularly as a result of reduced electricity demand and lower costs of capital. It appears that these changing conditions, and the amendments to the NER, are encouraging substantially different regulatory decisions to be made regarding the future revenue requirements of these businesses. The draft determinations issued by the AER in November 2014 challenged elements of the proposals submitted by the businesses. For example:

- the proposed rate of return was decreased—the rate of return proposed by the businesses was 7.58 per cent for TasNetworks, 8.83 per cent for the NSW businesses and 8.99 per cent for the ACT network business—the AER proposed between 6.9 and 7.2 per cent; and
- proposed operating expenditure was decreased—the AER proposed cuts of between 10.3 and 38.6 per cent to the base operating expenditure proposed by the ACT and NSW businesses.⁴⁵

Committee comment

3.55 The AER's latest draft determinations represent a promising development. It is, however, difficult to determine the weight that should be attached to each of the various factors that may have led to this outcome. The recent rule changes may have addressed certain flaws with the determination process, resulting in the AER having greater flexibility when assessing proposals. Lessons learnt following the previous regulatory period may mean the regulator is more sceptical of forecasts presented to it. Public pressure may also be a factor.

44 AER, *Submission 36*, pp. 7, 9; AEMC, *Submission 41*, pp 1–2.

45 AER, *Submission 36*, pp. 9, 12.

3.56 However, this is not the end of the matter. Although it seems the regulator is more willing, or able, to reject exorbitant proposals, the evidence taken by the committee through written submissions and public hearings largely took place after the draft determinations were released. Some well-informed submitters still questioned many of the fundamental principles applied in the economic regulation of network businesses.

3.57 The next chapter starts an analysis of this evidence by considering in detail how the return on capital and other building blocks are determined.

