Determination of Pilbara networks rate of return

Issues paper

2 September 2021

Economic Regulation Authority
WESTERN AUSTRALIA

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Invitation to make submissions

Submissions are due by 4:00 pm WST, Wednesday, 6 October 2021

The ERA invites comment on this paper and encourages all interested parties to provide comment on the matters discussed in this paper and any other issues or concerns not already raised in this paper.

We would prefer to receive your comments via our online submission form https://www.erawa.com.au/consultation

You can also send comments through:

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Please note that submissions provided electronically do not need to be provided separately in hard copy.

All submissions will be made available on our website unless arrangements are made in advance between the author and the ERA. This is because it is preferable that all submissions be publicly available to facilitate an informed and transparent consultative process. Parties wishing to submit confidential information are requested to contact us at info@erawa.com.au.

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1. Introduction

1. This issues paper provides a summary of the Economic Regulation Authority's preliminary approach to estimate the weighted average cost of capital (WACC) for the Pilbara networks and seeks comment on how the risks of the Pilbara networks may affect their rate of return.

2. On 25 June 2021 the *Pilbara Networks Access Code* (PNAC) was gazetted. The PNAC implements a light-handed access regime and establishes an independent system operator for the Pilbara region. The aim of this reform initiative is to implement a regulatory regime that is a lower-cost, more efficient alternative to facilitate third-party access to electricity networks than the arrangements that were available under the *Electricity Networks Access Code 2004*.

3. The PNAC covers two Pilbara electricity networks:

   - Alinta Energy's Port Hedland network.
   - Horizon Power's coastal network.

4. Under the PNAC, the ERA is required to determine an initial rate of return for the two Pilbara networks, administer the pool of arbitrators and arbitration regime, approve ring-fencing arrangements and publish guidelines, such as the financial reporting guidelines for network operators.

5. The PNAC specifies that the ERA must determine the rate of return to be applied to the capital base for the first pricing period for the relevant light regulation network.

6. The Pilbara networks service providers are responsible for any subsequent determinations of rates of return and have discretion on how they determine future rate of return for their respective networks.

7. This issues paper relates to the determination of the initial rate of return for the Pilbara networks.

8. In this issues paper the ERA takes a preliminary approach consistent with its standard energy network approach to determining the rate of return and seeks comment on how the risks of the Pilbara networks may affect their rate of returns. The ERA details the WACC parameters for its standard approach and focuses questions on those elements of the WACC that may be most affected by specifics of the Pilbara networks.

9. Understanding the specific risks of the Pilbara networks is the core issue of this paper. The ERA is seeking views on how its standard approach for the rate of return may have to change for:

   - the light-handed regulatory framework detailed in the PNAC
   - the specific circumstances of the Pilbara networks.

10. The ERA also invites comment on the WACC framework, the method for estimating WACC parameters or any other matter associated with the ERA's determination of the Pilbara networks' rate of return.

11. The ERA will consider these submissions and publish a subsequent draft decision on the Pilbara networks' rate of return.

2. The Pilbara regulatory framework

12. Part 8A of the *Electricity Industry Act 2004* provides for the light regulation of access to services of covered Pilbara networks.

13. Section 119(2) of the *Electricity Industry Act 2004* specifies the Pilbara electricity objective.

> 119(2) The objective of this Part (the ***Pilbara electricity objective***) is to promote efficient investment in, and efficient operation and use of, services of Pilbara networks for the long-term interests of consumers of electricity in the Pilbara region in relation to—
>
> (a) price, quality, safety, reliability and security of supply of electricity; and
>
> (b) the reliability, safety and security of any interconnected Pilbara system.

14. The PNAC is subsidiary legislation under the *Electricity Industry Act 2004*. The PNAC was gazetted on 25 June 2021.

15. The PNAC specifies the building block approach to determine target revenue for each year. One of these building blocks is the return on capital, which is a return on the capital base calculated through applying a determined rate of return.

16. Section 57 and section 58 of the PNAC specify that the ERA must determine the rate of return to be applied to the capital bases of each light regulation network for the first pricing period (of up to five years).

17. Section 57 of the PNAC states:

> 57. Rate of return – Horizon Power coastal network and Alinta Port Hedland network
>
> (1) The *Authority* must, within six months of the *code commencement date*, determine the *rate of return* to be applied under section 47(1)(a)(i) to the *capital base for the first pricing period* for each of the *Horizon Power coastal network* and the *Alinta Port Hedland network*.
>
> (2) A determination under section 57(1) must—:
>
> (a) be commensurate with the regulatory and commercial risks involved in providing *covered services*; and
>
> (b) have regard to regulatory precedent on rates of return in the electricity and other industries, but—
>
> (i) undertake a specific assessment for the particular *light regulation network* based on its unique circumstances and any matters prescribed under regulation 4 of the *regulations*; and
>
> (ii) not assume that the circumstances of each *light regulation network* are the same; and
>
> (c) use a pre-tax version of the cost of capital; and
>
> (d) be undertaken in accordance with the *standard consultation process*.
>
> (3) Subject to any review by the *Electricity Review Board* under section 130 of the Act, the determination under section 57(1) is binding on:
>
> (a) the NSP of the relevant *light regulation network*; and
>
> (b) the *arbitrator*,
>
> in respect of the *first pricing period*, and must not be the subject of an *access dispute* or otherwise be the subject of civil proceedings.

18. Section 58 of the PNAC states:

> 58. Rate of return
>
> (1) Except to the extent section 57 applies, the NSP for a *light regulation network* must determine, for a *pricing period*, and include in its *services and pricing policy*, the *rate of return* to be applied to the *capital base* under section 47(1)(a)(i), together with the methodology used to determine that *rate of return*.
>
> (2) A determination under section 58(1):
>
> (a) must be commensurate with the regulatory and commercial risks involved in providing *covered services*; and
>
> (b) have regard to regulatory precedent on rates of return in the electricity and other industries, but—
>
> (i) undertake a specific assessment for the particular *light regulation network* based on its unique circumstances and any matters prescribed under regulation 4 of the *regulations*; and
>
> (ii) not assume that the circumstances of each *light regulation network* are the same;
>
> and
>
> (iii) use a pre-tax version of the cost of capital.

19. The PNAC does not prescribe a method for determining the rate of return.

20. Under section 57(2)(d) of the PNAC, the ERA must undertake its determination of the rate of return in accordance with the standard consultation process. The standard consultation process is detailed in Appendix 1 of the PNAC and includes:

- Consultation steps where the ERA may publish an issues paper and a draft decision.
- Required timing of consultation.
- Provisions for the ERA to extend deadlines.

3. The Pilbara networks

21. The following sections detail the two Pilbara electricity networks that are covered under the PNAC.

3.1 Alinta Port Hedland network

22. Section 5 of the PNAC defines the Alinta Port Hedland network as comprising:

    (a) the network as at the code commencement date used for connecting Alinta's Port Hedland and Boodarie power stations with each other, and with Horizon Power's Wedgefield and Murdoch substations; and

    (b) any augmentation of the network which forms part of the network under section 4(1).

23. In Port Hedland, Alinta operates two generation sites as a single power station.

24. Alinta's network consists of three 75MVA 66kV feeders compromising about 25 kilometres of conductors.

25. The Alinta Port Hedland network is detailed in Figure 1:

    - A single transmission line connects Alinta's two generation sites.
    - The network connects Alinta's generators to the Horizon Power network substations at Wedgefield and Murdoch Drive.

Figure 1: Alinta Port Hedland network

Note: Alinta's network is represented by the red lines

26. The Alinta network services three large customers under long-term arrangements of firm and non-firm contracted capacity. Alinta's customers are exposed to risks in commodity markets, particularly iron ore. These customers include an Alinta-related company for North West Interconnected System sales.

27. The Alinta network is a relatively small network, which services a few large customers.

3.2 Horizon Power coastal network

28. Section 5 of the PNAC defines the Horizon Power coastal network as comprising:

(a) the network which became a covered network as a result of the Minister's "final coverage decision" of 2 February 2018 under the ENAC; and

(b) any other network owned by Regional Power Corporation and interconnected as at the code commencement date with the network in paragraph (a); and

(c) any augmentation as at the code commencement date of a network in paragraph (a) or (b); and

(d) any augmentation of the network which forms part of the network under section 4(1).

{Note: The Minister's decision defined the network as all of the electrically interconnected network infrastructure facilities (transmission and distribution) owned by Horizon Power and located in the Pilbara region of Western Australia. For the avoidance of doubt, this includes—

(a) all of Horizon Power's network infrastructure in the West Pilbara area, which supplies customers located in and around Karratha, including the connections to the Port of Dampier, Cape Lambert, Point Samson and Roebourne;

(b) all of Horizon Power's network infrastructure in the East Pilbara area, which supplies customers in and around greater Port Hedland, including the connections to the port operations of BHP Billiton and Fortescue Metals Group;

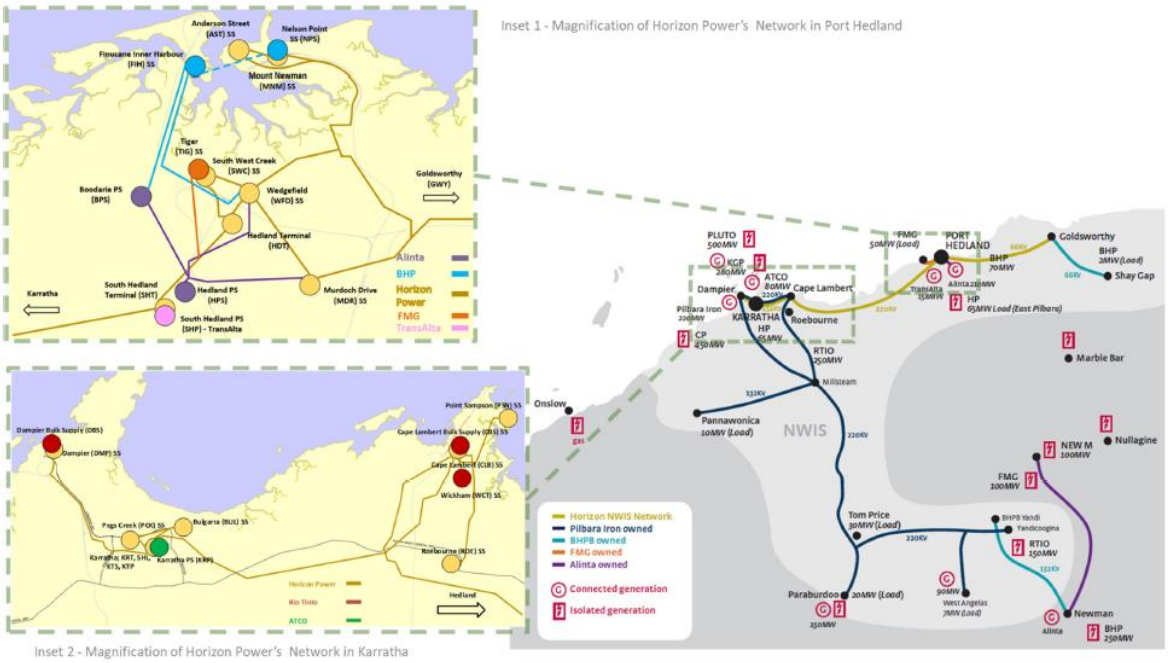
(c) the transmission line that connects Horizon Power's network infrastructure in the West Pilbara and East Pilbara areas; and

(d) the transmission line that runs from Port Hedland to the site of the former mining town of Goldsworthy.

29. The Horizon Power coastal network services customers around Karratha and Port Hedland.

30. The Horizon Power coastal network is detailed in Figure 2.

Figure 2: Horizon Power coastal network within the North West Interconnected System



31. The Horizon Power coastal network services small and medium customers in the townships of Karratha, Roebourne, Point Samson, and Port Hedland (including Wedgefield and South Hedland). This customer base is small, relative to other electricity distributors in Australia.

32. The network also services major loads in the port area of Port Hedland. This major customer base is exposed to risks in commodity markets, particularly iron ore.

33. Horizon Power's customer base in the Pilbara region is less diversified than the customer bases of other electricity network service providers. For example:

- The three large resource-based customers represent around 40 per cent of the non-coincident peak demand on the Pilbara network.
- High voltage customers represent 0.2 per cent of the customer base and almost 9 per cent of the non-coincident peak demand on the Pilbara network.
- The majority of customers (99.8 per cent) represent 52 per cent of the non-coincident peak demand on the Pilbara network.

4. Regulatory and commercial risks for the Pilbara networks

34. Under section 57(2) of the PNAC the ERA must have regard to the regulatory and commercial risks involved in providing covered services for the Pilbara networks. In particular, the ERA must have regard to regulatory precedent, the circumstances of the light regulation applying to the Pilbara networks and the characteristics of the Pilbara networks.

> 57(2) A determination under section 57(1) must—:
>
> (a) be commensurate with the regulatory and commercial risks involved in providing *covered services*; and
>
> (b) have regard to regulatory precedent on rates of return in the electricity and other industries, but—
>
> (i) undertake a specific assessment for the particular *light regulation network* based on its unique circumstances and any matters prescribed under regulation 4 of the *regulations*; and
>
> (ii) not assume that the circumstances of each *light regulation network* are the same; and
>
> (c) use a pre-tax version of the cost of capital; and
>
> (d) be undertaken in accordance with the *standard consultation process*.

35. As a preliminary approach this issues paper sets out a simple application of the ERA's standard energy network approach to determining the rate of return. This rate of return approach follows the ERA's regulatory precedent that is applied to Western Australia's covered electricity networks and gas pipelines.

36. The issues paper does not include detailed discussion on the technical models underlying the ERA's standard approach. Rather, this paper seeks comment on the specific risks of the Pilbara networks and their effect on the rate of return.

37. The ERA is seeking to understand possible departures from its standard energy network rate of return approach and how this standard approach may have to change for:

- The light-handed regulatory framework detailed in the PNAC.
- The specific circumstances of the Pilbara networks.

38. The ERA will need to consider the purpose of the rate of return under the light-handed regulatory framework. Under the PNAC, the rate of return is being used to set reference prices using a building block approach. The price list for reference services is then used as a starting point for price negotiation. The rate of return is not used to set regulatory revenues, rather network revenues depend on the negotiated arrangements agreed between the networks and access seekers.

39. The ERA will also need to consider the relevant commercial and regulatory risks of the two Pilbara networks, and questions including:

- How are the circumstances of the Pilbara networks different from the very large energy networks that are typically subject to regulation and how might these differences affect risk? The Pilbara networks are very small compared to other energy networks in Australia and predominantly service the mining sector.

- How might risks diverge between the two networks? For example, Horizon Power's network services a more diverse customer base, including small and medium customers. However, both networks are affected by the mining sector, both in terms of first and second order demand.
- Are these differences material enough to justify an approach that recognises differing risks from those in the comparator sample under the standard energy method?

40. The core issue of this paper is seeking comment on how the risks of the Pilbara networks may affect their rate of return. In this regard, the paper asks questions on specific WACC parameters to seek views on how its standard approach for the rate of return may have to change to reflect the specific risks of the Pilbara networks.

41. Other areas of the ERA's standard rate of return approach that are not affected by the specific risks of the Pilbara networks remain fixed.

42. Given the above, the following sections invite comment on the WACC framework, the method for estimating WACC parameters or any other matter associated with the ERA's determination of the Pilbara networks' rate of return.

43. The ERA will consider these submissions and put out a subsequent draft decision on the Pilbara networks' rate of return.

5. List of questions for the Pilbara networks' WACC

44. This issues paper seeks comment on how the Pilbara networks' risks may be different to those of an Australian energy network and therefore what elements of the ERA's standard energy network rate of return approach may need to change.

45. The paper asks questions on specific WACC parameters to seek views on the appropriate approach for those parameters for the Pilbara networks. The questions are detailed throughout the paper and are summarised in Table 1.

Table 1: List of questions for the Pilbara networks' WACC

Question	
1	Do you support the use of a five-year term for the WACC for the Pilbara networks? If not, please explain why and provide details of your alternative approach.
2	Do you support the use of an energy network benchmark efficient entity for both Pilbara networks? If not, please explain why and provide your proposed alternative approach. If not, are there risks not adequately captured and how might they be quantified?
3	Do you agree that the energy networks benchmark entities are suitable for the Pilbara networks? If not, please explain why. Are there other entities that could be included in the benchmark sample?
4	Do you agree that the two Pilbara networks' risk profiles are not significantly different? If not, please explain why and how differences from the benchmark sample could be quantified.
5	Do you support the use of a gearing level of 55 per cent for the Pilbara networks? If not, please explain why and your alternative approach?
6	Do you support the use of a 0.6 equity beta for the Pilbara networks? If not, please explain why and your alternative approach to calculating the equity beta?
7	Do you support the use of a 10-year term of debt for the Pilbara networks? If not, please explain why and your alternative approach?
8	Do you support the use of a benchmark credit rating of BBB+ for the Pilbara networks? If not, please explain why and your alternative approach?
9	Do you support the use of a trailing average debt risk premium of 1.987 per cent for the Pilbara networks? If not, please explain why and your alternative approach?

6. The rate of return framework

46. The rate of return provides a service provider with a return on the capital it has invested in its business.

47. The PNAC does not explicitly prescribe the use of a WACC.

48. The ERA considers that the rates of return for the Pilbara networks should reflect a WACC, that is, it should include a weighted average of an allowed return on equity and an allowed return on debt. This would provide the Pilbara networks with returns on the capital invested in their businesses.

49. The WACC is the rate that a company is expected to pay on average to all its security holders to finance its assets and is therefore commonly referred to as the cost of capital. The WACC represents the minimum return that a company must earn on an existing asset base to satisfy its creditors, owners, and other providers of capital.

50. The WACC is calculated taking into account the relative weights of each component of the capital structure. The PNAC does not prescribe the components of capital costs to be assessed, or the method for weighting the components.

51. The ERA employs a generally accepted WACC framework, which provides for:

- The cost of equity.
- The cost of debt.
- The shares of equity and debt in a benchmark financing portfolio as the weightings of those components.

52. Under sections 57(2)(c) and 58(2)(c) of the PNAC, a rate of return determination must use a pre-tax version of the cost of capital.

53. In nominal terms, the WACC equation is expressed:

$$WACC_{nom} = R^{e}_{pre} * \frac{E}{V} + R^{d}_{pre} * \frac{D}{V} \qquad \text{(equation 1)}$$

where

$WACC_{nom}$	is the nominal pre-tax weighted average cost of capital
R^{e}_{pre}	is the pre-tax rate of return on equity, or the cost of equity
R^{d}_{pre}	is the pre-tax rate of return on debt, or the cost of debt
E/V	is the proportion of equity in the total financing (comprising equity and debt)
D/V	is the proportion of debt in the total financing.

54. The pre-tax rate of return on equity is not readily available. Therefore, a post-tax rate of return on equity is used, which is more easily observed.

55. To determine a pre-tax return on equity it is necessary to adjust the post-tax return on equity for taxation effects, including recognition of the value of imputation credits (commonly known as gamma).

56. The imputation tax system prevents corporate profits from being taxed twice. The gamma parameter accounts for the reduction in the effective corporate taxation that is generated by the distribution of franking credits to investors. Generally, investors who are able to use franking credits will accept a lower required rate of return, before personal tax, on an investment that has franking credits, compared with an investment that has similar risk and no franking credits.

57. This provides a framework for calculation of a nominal pre-tax WACC, as follows:[1]

$$WACC_{nom} = R^{e}_{post} * \frac{1}{(1-T*(1-\gamma))} * \frac{E}{V} + R^{d}_{pre} * \frac{D}{V} \qquad \text{(equation 2)}$$

where:

$WACC_{nom}$ is the nominal pre-tax weighted average cost of capital

R^{e}_{post} is the post-tax rate of return on equity, or cost of equity

R^{d}_{pre} is the pre-tax rate of return on debt, or the cost of debt

T is the tax rate

γ is the value of imputation credits (gamma)

E/V is the proportion of equity in the total financing (comprising equity and debt)

D/V is the proportion of debt in the total financing.

58. In order to invest, debt and equity investors will require compensation for inflation.

59. Under section 46 of the PNAC, pricing for a light regulation network may be determined on a real or nominal basis:

> 46. Real or nominal pricing
>
> Pricing for a light regulation network may be determined on a real or nominal basis but the methodology chosen by the NSP must be applied consistently.

60. Under a nominal pricing method, a network would use a nominal WACC, which incorporates the real rate of return compounded with a rate that reflects expectations of inflation.

[1] Known as the "Officer/Monkhouse framework".

61. Under a real pricing method, a network would use a real WACC. The real WACC is obtained from the nominal WACC by removing expected inflation (π) from the nominal pre-tax WACC, as follows:[2]

$$WACC_{real} = \frac{(1+ WACC_{nom})}{1+\pi} - 1 \qquad \text{(equation 3)}$$

where:

$WACC_{real}$ is the real pre-tax weighted average cost of capital

$WACC_{nom}$ is the nominal pre-tax weighted average cost of capital

π is expected inflation.

62. Under the real pricing method, compensation for inflation is provided through adjusting the capital base for actual inflation, rather than providing it through the WACC.

63. The individual Pilbara network's choice of a nominal or real price for their reference services will determine whether they will use a nominal or real WACC. The ERA will therefore report both nominal and real WACCs.

64. The resulting WACCs will represent the rate of returns that an entity must earn on its existing asset base in order to satisfy its creditors, shareholders and other providers of capital.

65. For these reasons, the ERA considers it reasonable to use a WACC when estimating the rates of return for the Pilbara networks.

[2] This has been referred to as the "Market Transformation Method".

7. The term of the WACC

66. The PNAC does not prescribe the term of the rate of return for the Pilbara networks.

67. The PNAC is designed to produce a price list for reference services to be used as a starting point for price negotiations and arbitration for covered services.

68. The pricing arrangements are set out in Chapter 5 of the PNAC and these arrangements use the building block approach to determine target revenue:

> 47 Building block approach to target revenue
>
> (1) The target revenue for each year (or other interval) in a pricing period is to be determined using the building block approach in which the building blocks are —
>
> (a) "capital-related costs" calculated by —
>
> (i) (return on capital) calculating a return on the capital base for the pricing period by applying the rate of return as determined under section 57 or 58; and adding
>
> (ii) (return of capital) depreciation for the pricing period under section 59);
>
> {Note: The capital base is determined at the start of the pricing period as set out in or as determined by sections 52 to 54 (as applicable).}
>
> plus
>
> (b) "non-capital costs" determined under section 60; plus
>
> (c) an amount (if any) determined under section 48.

69. The PNAC subchapter 1.2 defines a pricing period:

> [pricing period] means the defined future period, which must not be more than 5 years, for which a services and pricing policy is applicable.

70. This pricing arrangement in effect creates a resetting revenue stream for the Pilbara networks.

71. The "present value principle" is a major consideration for regulators when establishing the appropriate term for the return on equity and the return on debt. The present value principle requires that the present value of a service provider's revenue stream should match the present value of their expenditure stream (plus or minus any efficiency rewards or penalties).[3] This will result in the so-called net present value equals zero condition (NPV=0).

72. The present value principle helps ensure that investors are compensated at a level to encourage efficient investment. This condition means that the present value of the future stream of expected cash flows of a firm is equal to the regulatory asset base. This means that the value of the regulatory asset base is maintained.

73. Therefore, to maintain the regulatory asset base, the rate of return does not over-compensate the business (thereby increasing asset values) nor does the rate of return under-compensate the business (thereby reducing asset values).

[3] Lally, M., *The risk free rate and the present value principle, 2012,* p. 8.

74. In respect of the return on equity, the NPV = 0 principle is achieved when the term matches the regulatory cycle.[4]

75. In respect of the cost of debt, the NPV = 0 principle can be achieved using a trailing average for the debt risk premium component coupled with a risk-free rate that at the commencement of the regulatory cycle matches the term of the regulatory cycle.[5]

76. The ERA considers that the regulatory return is likely to most closely match the NPV=0 condition when the terms of components of the return on equity and the return on debt are based, as far as possible, on the length of the regulatory period.

77. The PNAC is a light-handed regulatory framework that uses the reference prices as a starting point for price negotiations for covered services. Therefore, the revenues that Pilbara networks receive from a negotiated arrangement may not align with those that would arise from the application of a building block revenue model to determine reference services prices. The light-handed nature of the framework also means that the term of the negotiated arrangement may differ from the length of the regulatory period.

78. The use of a five-year term arises due to the five-year resets typical under more heavy-handed regulation. Under the light-handed approach of the PNAC, an alternative approach may be to consider a period in terms of a typical financing period for networks' assets, or a typical contracting period for network services.

79. It may be more in the spirit of the light-handed regulation to set a longer-term WACC using a 10-year term and allow negotiation around this point. However, setting a 10-year WACC may result in overcompensation of the Pilbara networks based on the NPV = 0 principle.

80. The ERA's preliminary view, as much as possible, is to set the term of estimates for the rate of return consistent with the term of the pricing period. Accordingly, as the pricing period in the PNAC is set to a maximum of five years, the term of the ERA's preliminary estimates of the components of the rate of return is five years.

81. The ERA seeks views from stakeholders on the appropriate terms for the WACC under the light-handed regulatory framework applying to the Pilbara networks.

Question

1. Do you support the use of a five-year term for the WACC for the Pilbara networks? If not, please explain why and provide details of your alternative approach.

[4] Lally, M., *Appropriate term for the allowed cost of capital,* 9 April 2021, p. 52.

[5] Lally, M., *Appropriate term for the allowed cost of capital,* 9 April 2021, p. 53.

8. The benchmark efficient entity and risk

82. The PNAC sets out the following requirements for determining Pilbara network rates of return:

> 58 (2) A determination under section 58(1) –
>
> (a) must be commensurate with the regulatory and commercial risks involved in providing covered services; and
>
> (b) have regard to regulatory precedent on rates of return in electricity and other industries, but –
>
> i) undertake a specific assessment for the particular light regulation network based on its unique circumstances and any matters prescribed under regulation 4 of the regulations; and
>
> ii) not assume that the circumstances of each light regulation network are the same;
>
> and
>
> (c) use a pre-tax version of the cost of capital.

83. Regulators use a benchmark efficient entity to inform the WACC parameters set for a regulated entity. This is consistent with incentive regulation and ensures that a regulator does not compensate a regulated service provider for its actual costs but compensates it as if it were operating and financed efficiently.

84. The ERA will estimate the Pilbara networks WACC consistent with the efficient financing costs of entities with a similar degree of risk to the provision of network services. This approach proceeds on the basis that efficient firms with efficient financing provide a benchmark for each regulatory decision. Basing regulatory decisions on efficient input costs and output prices will facilitate contestability, security and reliability in the provision of Pilbara networks services.

85. The ERA uses a benchmark entity for network service providers that are judged to be similar. The ERA defines the benchmark efficient entity as a pure-play network service provider operating within Australia without parental ownership, with a similar degree of risk as that which applies to the service provider in respect of the provision of the network services in the Pilbara.

86. The ERA proposes the components of this definition as follows:

- A “pure-play” network service provider focuses exclusively on network services. This solely reflects the risk in providing network services and does not reflect the provision of any other business activities, such as electricity or retailing, that may have a different risk profile.
- “Operating within Australia” is intended to account for country-specific factors such as currency, the level of economic growth and laws affecting business. The ERA will base its estimates of WACC components on domestic financial markets. This is consistent with the guiding principle that the risk of the asset in question should stem from the economy in which the benchmark efficient entity is situated.
- “Without parental ownership” is intended to recognise that some risks associated with providing reference services cannot be eliminated, and thus must be compensated. In this event, without parental ownership allows for explicit recognition of those risks, to ensure that these are not simply transferred to the parent in a way that is not transparent and accountable.

- "With a similar degree of risk as that which applies to the service provider in respect of the provision of the network services in the Pilbara" is intended to recognise the risk profiles of the network providers in the Pilbara.

87. The rate of return must be commensurate with the risks involved in the provision of the reference services. The ERA considers that using an energy network benchmark efficient entity that is the average of a sample of firms that meet the benchmark criterion satisfies this requirement.

88. The ERA considers that companies included in the benchmark sample must have the following characteristics to be useful as comparators for the benchmark efficient entity:

- The company must be a network service provider in the gas and/or electricity industry in Australia.
- The company must have financial data available.

89. The ERA's preliminary view is to use sample companies that satisfy the criteria for comparable energy network benchmark entities. These companies include APA Group, DUET Group, AusNet Services and Spark Infrastructure. This benchmark sample includes distribution and transmission networks.

- APA Group is a large Australian energy infrastructure company that owns and operates a portfolio of gas and electricity assets around Australia, including gas pipelines.
- The DUET Group was a large Australian energy infrastructure company that owned gas pipelines and electricity networks around Australia, including the Dampier to Bunbury Natural Gas Pipeline.[6]
- AusNet Services owns and operates Victorian electricity network and gas pipeline assets.
- Spark Infrastructure has investments in energy infrastructure businesses in Australia, including SA Power Networks, Victoria Power Networks and TransGrid.

90. The ERA notes that both Pilbara networks exist as part of integrated businesses. In assessing the benchmark sample in relation to the Pilbara networks, the ERA will need to consider whether a pure-play network service provider would exist at the very small scale of the Pilbara networks.

91. The ERA recognises that there may be areas of divergence between the Pilbara networks and the benchmark sample, which may affect the Pilbara networks' relative risks and efficient financing costs:

- The energy network sample includes a large proportion of assets regulated under a heavy-handed regulatory framework which determines regulatory revenues.
- The Pilbara networks are small in comparison to the energy network sample.
- The Pilbara networks service the resource industry, particularly the iron ore industry, while other Australian energy networks service a more diverse customer base.

[6] The DUET Group was acquired by Cheung Kong Group and delisted in 2017. Although the DUET Group is no longer listed it still has data that can support analysis.

92. If there are material risk differences between the Pilbara networks and the energy network benchmark sample, this could be recognised through either:

- Adjusting the energy network benchmark sample.
- Using the ERA's discretion when determining point estimates from a range for WACC parameters.

93. The ERA will also need to consider whether there are material differences in risk between the two Pilbara networks that may support different rate of returns for each of the networks. These areas of divergence include:

- Horizon Power's network also including distribution infrastructure.
- Horizon Power servicing a more diverse customer base, which includes small and medium customers in the region.

94. The ERA's preliminary view is that while the physical layouts of the networks may be different, the two Pilbara networks have similar risk profiles as:

- They operate under the same light regulatory framework.
- They operate in the same region.
- They service similar regional customers, though Horizon Power also services a smaller diversified customer base.

95. The ERA considers that the risk profiles of transmission and distribution assets are not significantly different, and that the Pilbara networks support a large customer base, with both first and second order demand, driven by the resources industries in the region.

96. Therefore, the ERA's preliminary view is that an energy network benchmark efficient entity can effectively represent both Pilbara networks. Consequently, for both Pilbara networks the ERA intends to use the same benchmarks for gearing, credit rating and equity beta.

97. The ERA welcomes views on the use of the energy network benchmark for the Pilbara networks and the use of the same benchmarks for both Pilbara networks.

Questions

2. Do you support the use of an energy network benchmark efficient entity for both Pilbara networks? If not, please explain why and provide your proposed alternative approach. If not, are there risks not adequately captured and how might they be quantified?

3. Do you agree that the energy networks benchmark entities are suitable for the Pilbara networks? If not, please explain why. Are there other entities that could be included in the benchmark sample?

4. Do you agree that the two Pilbara networks' risk profiles are not significantly different? If not, please explain why and how differences from the benchmark sample could be quantified.

8.1 State government ownership of Horizon Power

98. There may be a view that the ERA should recognise Horizon Power's status as a government trading enterprise and that this may result in lower commercial risk and access to lower borrowing costs.

99. The ERA's preliminary view is that Horizon Power's government ownership is not a compelling reason to depart from the proposed efficient benchmark network service provider for the following reasons:

- Taxpayers should be compensated for covering a share of the commercial risks of Horizon Power's network business.
- A credit rating established independently of ownership is required to maintain competitive neutrality. Agencies borrowing from the Government should thus face interest rates equal to private sector rates; that is, Horizon Power's cost of debt should not be lowered to reflect the benefit of Government ownership and should instead be commensurate with the risks Horizon Power would face were it privately owned. To ensure competitive neutrality and reflect risk more appropriately, the State Government charges Horizon Power a loan guarantee fee over and above the rate at which the State can borrow.
- A cost of capital that is inconsistent with market outcomes distorts investment decisions in upstream and downstream markets. Investment decisions made in those markets would be undertaken as a result of artificially low or high prices stemming from an artificial credit rating and lead to inefficient investment.
- A cost of capital that is inconsistent with efficient market outcomes also creates the potential for the network service provider to undertake inefficient levels of capital investment. The WACC must accurately reflect the level of risk embodied in the network service provider's operations in order to constrain the potential for inefficient investment.

100. The ERA considers that Horizon Power's government ownership should not be taken into account in determining a benchmark cost of capital.

9. Gearing

101. Gearing is the proportion of a business's assets financed by debt and equity. Gearing is defined as the ratio of the value of debt to total capital (that is, including debt and equity) and is generally expressed as follows:

$$Gearing = \frac{Debt}{Debt + Equity} \quad \text{(equation 4)}$$

102. The ERA uses this ratio to weight the costs of debt and equity to determine regulated WACC.

103. In addition to being used to weight the expected returns on debt and equity to determine the regulated rate of return, the level of gearing of a benchmark efficient business is also used when estimating equity beta.

104. A target gearing is the relevant gearing level in the cost of capital. The ERA considers that target gearing should be determined from observations of the gearing levels of firms in the benchmark sample of Australian utility businesses.

105. An implication of adopting a benchmark firm is that the actual decisions of a service provider may differ (and often will differ) from the benchmark firm. However, under the principles of incentive regulation, the regulator does not compensate the regulated service provider for its actual decisions but instead compensates it as if it were operating efficiently.

106. The ERA considers that the use of average gearing from the benchmark sample is appropriate. Using average gearing is a commonly applied approach that involves averaging performance measures across similar firms to infer an attainable benchmark.

107. Gearing requires estimates of the value of a firm's debt and equity, which can be obtained from a firm's financial statements or from market values of traded debt and equity securities.

108. In principle, the values of debt and equity should be obtained from the same information source, that is, obtained from either book or market data. However, liquidity limitations restrict the ability to source market data for debt securities and a proxy may have to be used. The ERA uses a market-based gearing level to reflect efficient financing.

109. The ERA has used a gearing of 55 per cent for its energy networks' last revenue determinations.[7] [8]

110. The ERA has updated its gearing estimate using current data and the approach detailed in the gas rate of return instrument.[9] Table 2 details the gearing estimate for benchmark entities based on observable data from comparable firms.

7 ERA, *Final Rate of Return Guidelines,* December 2018*,* p. 15.

8 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, p. 91.

9 ERA, *Final Rate of Return Guidelines Explanatory Statement,* December 2018*,* p. 66.

Table 2: ERA market value gearing estimates (%)

	APA Group (APA)	AusNet Services (AST)	DUET Group (DUE)	Spark Infrastructure Group (SKI)	Average
2016	49	57	51	54	52
2017	49	52	N/A	52	51
2018	46	56	N/A	57	53
2019	45	55	N/A	60	53
2020	45	59	N/A	60	55
5-year average	**47**	**56**	**51**	**57**	**52**

Source: Annual reports, Bloomberg, ERA analysis.

111. The ERA's analysis estimates that average gearing for the energy network sample is 52 per cent.

112. Removing DUET from the analysis produces an average gearing for the energy network sample of 53 per cent. The ERA has also extended its analysis to include the last observable five years for DUET, where DUET's five-year average gearing is 64 per cent. The five-year average of the sample increases to 56 per cent when using DUET's last observable five years.

113. The AER's recent analysis has shown that gearing levels based on market values are 52 per cent over a five-year average or 55 per cent over a 10-year average.[10]

114. On the basis of the above information, including considerations around DUET, a five-year gearing level of 55 per cent may be warranted when rounding to the closest five percentage points.

115. The ERA's preliminary view is to use a gearing level of 55 per cent for the Pilbara networks.

Question

5. Do you support the use of a gearing level of 55 per cent for the Pilbara networks? If not, please explain why and your alternative approach?

[10] Australian Energy Regulator, *Rate of return Annual Update,* December 2020, p. 6.

10. Return on equity

116. The return on equity is the return that investors require from a firm to compensate them for the risk they take by investing their capital.

117. There are no readily observable proxies for the expected return on equity. While estimates of the cost of debt can be obtained by observing debt instruments, financial markets do not provide a directly observable proxy for the cost of equity, for either individual firms or for the market.

118. The model most used by Australian regulators to quantify the return on equity has been the Sharpe-Lintner Capital Asset Pricing Model (CAPM):

$$R_i = R_f + \beta_i(R_m - R_f) \qquad \text{(equation 5)}$$

where,

R_i is the required rate of return on equity for the asset, firm or industry in question

R_f is the risk free rate

β_i is the equity beta that describes how the return for a particular asset will follow the market return, which is defined as,

$$\beta_i = cov(R_i, R_m)/\sigma^2_{R_m}$$

$(R_m - R_f)$ is the market risk premium.

119. The ERA has used the Sharpe-Lintner CAPM to estimate the return on equity across its regulatory determinations.[11] [12] [13]

120. The ERA considers that the Sharpe-Lintner CAPM:

- is reflective of economic and finance principles and market information
- is commonly used by regulators and market participants
- is fit-for-purpose as it was developed for estimating the return on equity.

121. The ERA considers that the CAPM is a model commonly adopted by regulators and market practitioners.

122. For the Pilbara networks, the ERA proposes to use the Sharpe-Lintner CAPM to determine a single point estimate for the return on equity.

123. To estimate the return on equity, the ERA will separately estimate:

- the risk free rate
- the market risk premium
- the equity beta.

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11 ERA, *Final Rate of Return Guidelines,* December 2018, pp. 27-28.

12 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, p. 11.

13 ERA, *Final Determination 2018 and 2019 Weighted Average Cost of Capital for the Freight and Urban Networks and Pilbara Railways*, August 2019, p. 37.

124. The ERA notes that while the CAPM is commonly used, there are varying views on how best to estimate its individual parameters.

10.1 Risk free rate - equity

125. The risk free rate is the return an investor would expect when investing in an asset with no risk.

126. The risk free rate is the return an investor receives from holding an asset with a guaranteed payment stream (that is, where there is no risk of default). Since there is no likelihood of default, the return on risk free assets compensates investors for the time value of money.

127. The ERA uses observed yields from Commonwealth Government bonds as the best proxy for risk free assets in Australia to estimate the risk free rate of return.

128. To calculate the risk free rate, the ERA uses indicative mid-rates published by the Reserve Bank of Australia. Where there are no Commonwealth Government bonds with a maturity of exactly the desired maturity, the ERA interpolates the risk free rate on a straight line basis.[14]

129. Consistent with the term of the WACC, for the purposes of the Pilbara networks the ERA preliminary view is to use a five-year term for the risk free rate.

130. Applying the NPV=0 principle helps to ensure that investors are compensated at a level to encourage efficient investment. NPV=0 means that the present value of the future stream of expected cash flows of a firm is equal to the regulatory asset base. That is, the regulatory asset base maintains its value and the regulated businesses are not over or under compensated.

131. In order to ensure that NPV=0, the ERA believes that the appropriate term for the risk free rate in the Pilbara networks regulatory setting is five years. The PNAC requires that the Pilbara networks have a pricing period of up to five years. The use of a five-year term is the subject of ERA considerations discussed in the section “The term of the WACC”.

132. The ERA estimates a risk free rate of 0.73 per cent for the 20-day averaging period to 30 June 2021.

10.2 Market risk premium

133. The market risk premium is the expected rate of return over and above the risk free rate that investors require to invest in a fully-diversified portfolio. *Ex ante*, investors always require a rate of return above the risk free rate to invest and so the expected market risk premium is always positive. To establish the cost of capital, the *ex ante* market premium is relevant.

[14] It is not common to observe a Commonwealth Government Security bond with an expiry date that exactly matches that of the regulatory period end. To overcome this, two bonds are selected that fall on either side of the end day of the pricing period. The dates on these bonds are referred to as the ‘straddle’ dates. Linear interpolation estimates the yields on the regulatory or pricing period end date by assuming a linear increase in yields between the straddle dates on the two bonds observed.

134. The market risk premium compensates an investor for the systematic risk of investing in a fully diversified portfolio. Systematic risk is risk that cannot be eliminated by investing in a diversified portfolio of assets, because such risk affects all assets in the market.[15] Therefore, the market risk premium represents an investor's required return, over and above the risk free rate of return, on a fully diversified portfolio of assets. This is a forward-looking concept.

135. While estimates of the cost of debt can be obtained by observing debt instruments, the financial markets do not provide a directly observable proxy for the cost of equity for either individual firms or the market. The market risk premium cannot be directly observed because it depends on investor expectations at the time of investment. In order to set the return on equity, the market risk premium needs to be estimated for a future time period.

136. For energy networks, the ERA applies a forward-looking market risk premium estimated over a five-year period, consistent with the term of the regulatory period. The ERA's approach to estimating the market risk premium is detailed in the gas rate of return instrument.[16] The ERA has used a market risk premium of 6.0 per cent for its energy networks' last revenue determinations.[17] [18]

137. The ERA's energy network approach to determining the market risk premium:

- Places more reliance on the historic market risk premium – the historic market risk premium is the average realised annual return that stocks have earned in excess of the government bond rate. The ERA considers that investors are likely to consider historical information on equity risk premiums to form their expected market risk premium.
- Places less reliance on the dividend growth model to estimate the market risk premium – the dividend growth method examines the forecast future dividends of businesses and estimates the return on equity that makes these dividends consistent with the market valuation of those businesses.
- Determines a final point estimate of the market risk premium by using regulatory judgement, including considering conditioning variables. The ERA will round the final point estimate of the market risk premium to one decimal figure.

138. The historic market risk premium can be directly measured. The Ibbotson approach is a well-accepted method for calculating the market premium using historic data.

139. The ERA has estimated the historic market premium using current data and the approach detailed in the gas rate of return instrument.[19] The ERA's estimate takes the average of the lowest arithmetic mean (6.21 per cent) and the highest geometric mean (5.27 per cent) to develop an estimate of the historic market risk premium of 5.7 per cent.

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15 The foundation of the Sharpe-Lintner CAPM is the proposition that adding an asset to a portfolio reduces risk via the diversification effect but not beyond the risks that the assets in a portfolio share in common, that is, their systematic risk. At the limit, when one has invested in all available assets in the market portfolio, there is only systematic risk left. An important assumption of the CAPM is that assets are priced as though it is only their systematic risk that is relevant to investors.

16 ERA, *Final Rate of Return Guidelines,* December 2018*,* pp. 30-32.

17 ERA, *Final Rate of Return Guidelines,* December 2018*,* p. 32.

18 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, p. 65.

19 ERA, *Final Rate of Return Guidelines Explanatory Statement,* December 2018*,* pp. 192-193.

140. When estimating the market risk premium with the dividend growth model, the ERA uses the two-stage dividend growth model to estimate the market risk premium. The dividend growth model uses an assumed forecast dividend growth rate, an assumed forecast future growth rate, current share prices and historical returns on equity to estimate the market risk premium. This forward-looking discount rate is the implied market return on equity. The ERA holds some concern with the use of the dividend growth model and does not place a large reliance on its market risk premium estimate.[20]

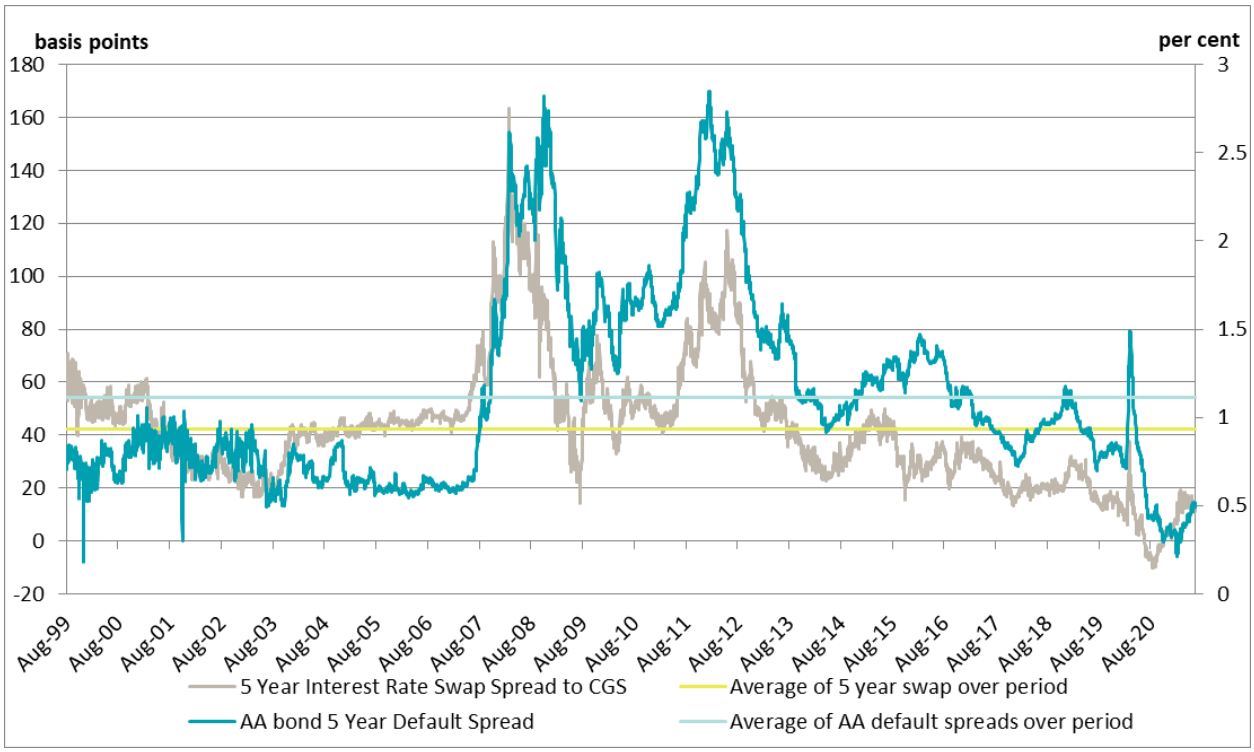
141. The ERA estimates a market risk premium of 8.09 per cent from the dividend growth model.

142. To inform a point estimate for the market risk premium the ERA also considers conditioning variables. Conditioning variables are readily available market data which allow the ERA to take into account current market conditions. The ERA has given consideration to conditioning variables including:

- The AA bond five-year default spread, which provides the spread between AA Australian Corporate Bloomberg Fair Value Curve and a Commonwealth Government bond.
- The five-year interest rate swap spread, which provides the spread between the interest rate swap rate and a Commonwealth Government bond.
- Market dividend yields, which provide the All Ordinaries dividend yield as a ratio of dividends paid to the portfolio price.
- Implied market volatility, which is measured through the ASX 200 volatility index.

143. Each of these conditioning variables is presented in the following charts.

Figure 3: Five-year AA bond default spread and Five-year interest rate swap



[20] ERA, *Final Rate of Return Guidelines Explanatory Statement,* December 2018, pp. 201-204.

Figure 4: All Ordinaries Index annual dividend yield

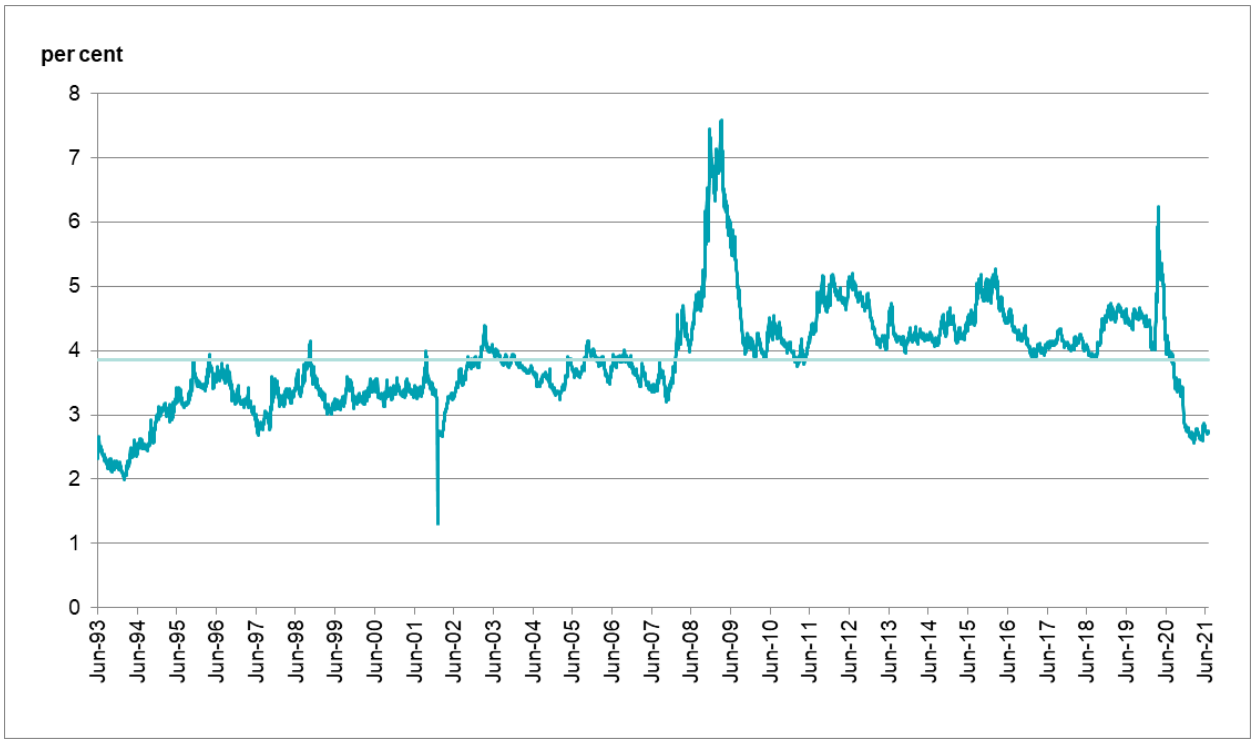
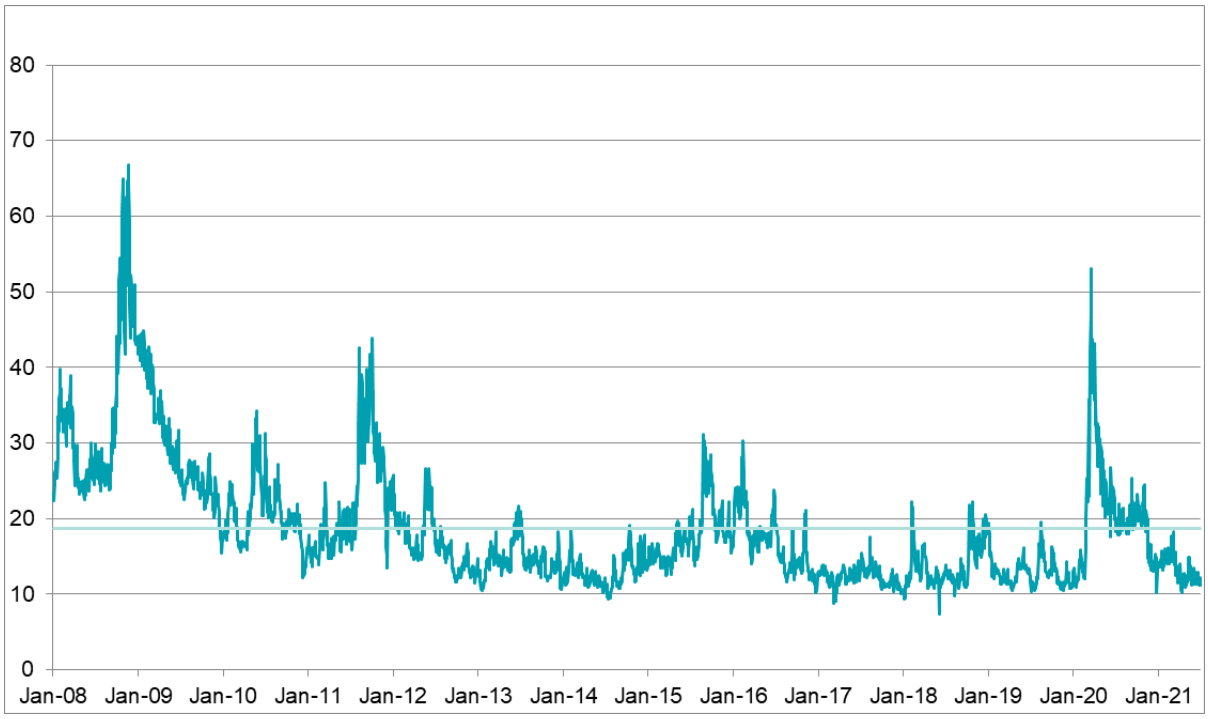


Figure 5: Implied Volatility (ASX200 VIX)



144. On balance, the ERA considers that the conditioning variables are currently below their historic averages and support a market risk premium at the lower end of its range.

145. The ERA uses regulatory discretion to select the final point estimate of the market risk premium from the historic data method and the dividend growth model method. The ERA gives a greater weight to estimates of the market risk premium from historical data than the estimates from the dividend growth model.

146. On the basis of all available information, together with its regulatory discretion, the ERA estimates a market risk premium of 6.0 per cent for the Pilbara networks.

10.3 Equity beta

147. The risk of an asset is typically thought of as the variance in asset returns. This variance is a measure of the total risk of an asset. Total risk consists of systematic and non-systematic risk. Systematic risk is that part of total risk in a firm's returns that stems from the economy and markets more broadly. Systematic risk cannot be eliminated through diversification. Non-systematic risk is the risk stemming from unique attributes of the firm, which may be eliminated by an investor through diversification. For this reason, only systematic risk is compensated by the return on equity.

148. The equity beta is a parameter that measures the systematic risk of a security or a portfolio in comparison to the market as a whole.

149. Equity beta is the "slope" parameter β_i in the Sharpe-Lintner CAPM. The slope parameter β_i correlates the return on the specific asset, in excess of the risk free rate of return, to the return on the market portfolio.

150. Two risk factors are generally considered to affect the value of equity beta for a particular firm:

- The type of business, and associated capital assets, that the firm operates, measured by asset or "un-levered" beta.
- The amount of financial leverage (gearing) employed by the firm, which levers or "amplifies" the asset beta to arrive at equity beta.

151. The ERA has used an equity beta of 0.7 for its last energy networks' revenue determinations.[21] [22]

152. The ERA has estimated equity beta using current data and the approach detailed in the gas rate of return instrument.[23] Given estimating equity betas involves a degree of imprecision, the ERA rounds its equity beta to one decimal place.

153. On the basis of all available information, the ERA estimates an equity beta of 0.6 for the Pilbara networks.

Question

6. Do you support the use of a 0.6 equity beta for the Pilbara networks? If not, please explain why and your alternative approach to calculating the equity beta?

[21] ERA, *Final Rate of Return Guidelines,* December 2018*,* p. 34.

[22] ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, p. 24.

[23] ERA, *Final Rate of Return Guidelines Explanatory Statement,* December 2018*,* pp. 230-231.

11. Return on debt

154. The return on debt is the return that debtholders require from a firm to compensate them for the risk they take in providing debt financing to the company.

155. The ERA's approach to estimating the return on debt is based on a risk premium over and above the risk free rate, combined with an additional margin for administrative and hedging costs.

156. For the Pilbara networks the ERA proposes to estimate the return on debt as:

$$\text{Return on debt} = \text{risk free rate} + \text{debt risk premium} + \text{debt raising costs} + \text{hedging costs} \quad \text{(equation 6)}$$

157. The ERA has used a similar return on debt approach across its regulatory determinations.[24] [25] [26]

158. The risk free rate is the rate of return of a hypothetical investment with no risk of financial loss, over a given period of time.

159. The debt risk premium is the margin above the risk free rate of return, required to compensate holders of debt securities for the risk of providing debt finance. The debt risk premium is compensation for investors who tolerate the extra risk, compared to that of a risk free asset.

160. The ERA's return on debt estimate is based on a hybrid trailing average approach. This method:

- adopts a five-year bank bill swap rate, set on-the-day
- uses a 10-year trailing average for the debt risk premium.

161. These individual parameters are discussed in the sections below.

162. The ERA considers that the regulatory return is likely to most closely match the NPV=0 condition when the term of components of the return on debt are based, as far as possible, on the length of the regulatory period.

163. The ERA considers that the hybrid trailing average approach best approximates the NPV=0 principle while also recognising interest rate risk, refinancing risk and the staggered nature of debt portfolios.

164. Debt-raising and hedging costs are the administrative costs and other charges incurred by businesses in raising and hedging finance.

165. Each of the components of the return on debt is detailed below.

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[24] ERA, *Final Rate of Return Guidelines,* December 2018*,* p. 16.

[25] ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, p. 66.

[26] ERA, *Final Determination 2018 and 2019 Weighted Average Cost of Capital for the Freight and Urban Networks and Pilbara Railways*, August 2019, p. 20.

11.1 Risk free rate – Debt

166. For the Pilbara networks, the ERA preliminary view is to estimate the risk free rate from the observed yield of a five-year term bank bill swap rate, averaged over a 20-day period to 30 June 2021. The ERA estimates a risk free rate for debt of 0.87 per cent.

167. The ERA has used a five-year bank bill swap rate for its energy network regulatory determinations.[27, 28]

168. The ERA considers that a five-year term best reflects the NPV=0 principle that the term of debt should match the length of the regulatory period. This ensures that additional costs are not passed on to consumers. The use of a five-year term is the subject of ERA considerations discussed in the section "The term of the WACC".

169. The ERA will use estimates of the prevailing interest rate swap rates of appropriate terms for estimating the return on debt. The swap rate is referred to as the "base rate" in the return on debt calculation. It incorporates a spread to the rate on Commonwealth Government Security bonds and is available at specified terms from data providers such as Bloomberg.

170. The use of swap rates:

- Provides a strong means to hedge and manage risk.
- Simplifies the calculation of the debt risk premium.
- Produces a closer match between the allowed cost of debt and the cost actually incurred by the firm.

171. If debt risk premiums are estimated consistently with the chosen base – whether that base be the Commonwealth Government Security risk free rate or the swap rate – there should be no difference in the resulting build-up of the overall return on debt.

11.2 Debt risk premium

172. The debt risk premium is the return above the risk free rate that lenders require to compensate them for the risk of providing debt funding to a benchmark business. The debt risk premium compensates holders of debt securities for the possibility of default by the issuer.

173. The debt risk premium is closely aligned with the risk of the business. When issuing debt in the form of bonds, a credit rating can be assigned that reflects the probability of default of the issuer, and therefore the risk present in the bond.

174. The debt risk premium relies on two inputs:

- the term of debt
- the benchmark credit rating.

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27 ERA, *Final Rate of Return Guidelines,* December 2018*,* p. 20.

28 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, p. 66.

11.2.1 Term of debt

175. The ERA needs to determine a benchmark debt term to calculate the debt risk premium for a service provider. The benchmark debt term also establishes the period over which the trailing average is calculated.

176. For energy networks the ERA has used a 10-year term of debt.[29], [30]

177. The ERA considers that a benchmark term of 10 years should be used as it is a valid financing strategy for service providers to issue long-term debt where possible to reflect the lives of their long-term assets and minimise refinancing risk. This approach assumes refinancing of 10 per cent of total debt each year with the new tenth year fixed rate debt.

178. For the Pilbara networks the ERA's preliminary view is to use a 10-year term of debt to calculate the debt risk premium.

Question

7. Do you support the use of a 10-year term of debt for the Pilbara networks? If not, please explain why and your alternative approach?

11.2.2 Benchmark credit rating

179. The credit rating is defined as the forward-looking opinion provided by a ratings agency of an entity's credit risk. Credit ratings provide a broad classification of a firm's probability of defaulting on its debt obligations. As a consequence, credit ratings represent the risk present in holding a debt instrument.

180. The benchmark credit rating determines the sample of 10-year bonds used to calculate the debt risk premium and should reflect the credit rating of a benchmark efficient entity.

181. For recent energy network determinations, the ERA has used a benchmark credit rating of BBB+.[31, 32]

182. The ERA's review of the credit ratings of the benchmark sample has found that a BBB+ rating is still appropriate.

183. The AER's review of credit ratings also found that the median energy network credit rating has remained stable at BBB+.[33]

184. For the Pilbara networks, the ERA's preliminary view is to use a benchmark credit rating of BBB+.

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29 ERA, *Final Rate of Return Guidelines Explanatory Statement,* December 2018, pp. 140-141.

30 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, pp. 73-74.

31 ERA, *Final Rate of Return Guidelines (2018),* December 2018, p. 22.

32 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, p. 72.

33 AER, *Rate of return Annual Update*, December 2020, p. 19.

Question

8. Do you support the use of a benchmark credit rating of BBB+ for the Pilbara networks? If not, please explain why and your alternative approach?

11.2.3 Debt risk premium estimation method

185. To calculate the debt risk premium for energy and rail networks the ERA has used the "revised bond yield approach".[34]

186. At a high-level the revised bond yield approach takes a sample of relevant corporate bonds that reflect the benchmark credit rating and estimates yield curves that are then used to calculate a 10-year debt risk premium. These steps determine the debt risk premium at a point in time, being the date of calculation.

187. With the use of a hybrid trailing average approach to the return on debt, the ERA needs to calculate a 10-year trailing average debt risk premium.

188. The use of a 10-year trailing average debt risk premium arises from the historic refinancing of a debt portfolio and matching these costs under more heavy-handed revenue regulation.

189. To determine the debt risk premium used to calculate the rate of return, the ERA constructs a 10-year trailing average debt risk premium. This will consist of a debt risk premium for the current year and a debt risk premium for each of the nine prior years.

190. For the purposes of calculating the trailing average for the Pilbara networks, the ERA will use Western Power's historic on-the-day debt risk premiums and update the current year. Historic on-the-day debt risk premiums estimates for the financial year are available from the ERA's previous decisions on Western Power.

191. The ERA's estimate of the Pilbara networks' trailing average debt risk premium is provided in Table 3.

[34] Technical detail and tools to run the ERA's revised bond yield approach can be found on the ERA's website.

Table 3: ERA estimated trailing average debt risk premium for Pilbara networks 2012 to 2021

Year	Debt risk premium (%)
2012	2.842
2013	2.768
2014	2.634
2015	1.640
2016	2.352
2017	1.656
2018	1.241
2019	1.724
2020	1.497
2021	1.513*
Trailing average debt risk premium	**1.987**

** Debt risk premium estimate for 20-day averaging period to 30 June 2021.*
Source: ERA analysis; ERA, 2018, Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network, Appendix 5, Return on Regulated Capital Base, p.79, Table 15.

192. On this basis, the ERA calculates the Pilbara networks' trailing average debt risk premium as 1.987 per cent.

193. The PNAC is a light-handed regulatory framework that does not set revenues, but rather uses the reference price as a starting point for price negotiations for covered services. Under the light-handed approach of the PNAC an alternative approach may be to consider a debt risk premium set on-the-day that reflects financing the network assets at that point in time. This opening position can then be used for the basis of negotiation. However, this method only reflects the debt risk premium at a point in time. In the above case, the ERA estimates the on-the-day debt risk premium to 30 June 2021 at 1.513 per cent.

194. The ERA's preliminary view is to set Pilbara networks' debt risk premium based on a 10-year trailing average. This approach better reflects that the Pilbara networks are existing network assets which have been financed over a period of time.

Question

9. Do you support the use of a trailing average debt risk premium of 1.987 per cent for the Pilbara networks? If not, please explain why and your alternative approach?

11.3 Debt raising costs

195. Debt raising costs are administrative costs incurred by businesses when obtaining debt financing.

196. Regulators across Australia have typically included an allowance to account for direct debt-raising costs in their regulatory decisions. A company pays debt-raising costs over and above the debt risk premium.

197. Australian regulators use benchmark estimates to determine debt-raising costs. To do so, regulators attempt to derive an estimate of debt-raising costs that reflects the costs that would be incurred by a well-managed efficient benchmark business operating in a competitive market.

198. The ERA considers that the debt-raising costs included in the rate of return should only include the direct cost components recommended by the Allen Consulting Group in its 2004 report to the Australian Competition and Consumer Commission.[35] The approach set out in this report has been adopted by many Australian regulators over the last 10 years. The ERA considers that this approach is robust, still relevant and fit-for-purpose.

199. Direct debt raising costs will be recompensed in proportion to the average annual issuance, and will cover:

- gross underwriting fees
- legal and roadshow fees
- company credit rating fees
- issue credit rating fees
- registry fees
- paying fees.

200. Indirect costs should not be included in the estimate of debt-raising costs and will not be compensated.

201. The ERA has used a debt-raising cost allowance of 0.10 per cent per annum in past determinations.[36, 37, 38]

202. For the Pilbara networks the ERA's preliminary view is to include an annual allowance of 0.10 per cent for debt-raising costs.

11.4 Debt hedging costs

203. Debt hedging costs are the administrative costs and other charges incurred by businesses when hedging finance.

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35 The Allen Consulting Group, Debt and Equity Raising Transaction Costs: Final Report, December 2004.

36 ERA, *Final Determination 2018 and 2019 Weighted Average Cost of Capital for the Freight and Urban Networks and Pilbara Railways*, August 2019, pp. 32-34.

37 ERA, *Final Rate of Return Guidelines (2018),* December 2018, p. 35.

38 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, pp. 81-84.

204. Given a regulated business's portfolio of long-term debt and its resetting regulatory cashflows, it is reasonable to assume that such a business would enter into arrangements to manage risk.

205. Interest rate swaps are derivative contracts, which typically exchange – or swap – fixed-rate interest payments for floating-rate interest payments. They provide a means to hedge and manage risk, but also have a cost.

206. The ERA engaged Chairmont Consulting to advise on the cost of undertaking swaps.[39] Based on Chairmont Consulting's advice and work by the Competition Economists Group, the ERA concluded that an annual swap allowance of 0.114 per cent was appropriate in its recent decisions for energy networks.[40]

207. The ERA has used an annual swap allowance of 0.114 per cent for energy networks to allow firms to be compensated for the cost of conducting hedging for exposure to movements in the risk free rate.[41] [42]

208. For the Pilbara networks the ERA's preliminary view is to include an annual allowance of 0.114 per cent for debt-hedging costs.

39 Chairmont Consulting, *ERA Hedging Costs in the Cost of Debt*, 13 May 2015.

40 Competition Economists Group, *Debt strategies for utility businesses*, June 2013.

41 ERA, *Final Rate of Return Guidelines (2018),* December 2018, pp. 245-246.

42 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, pp. 83-84.

12. Inflation

209. Inflation is the rate of change in the general level of prices of goods and services.

210. To invest debt and equity investors will require compensation for inflation.

211. Under section 46 of the PNAC, pricing for a light regulation network may be determined by the network on a real or nominal basis:

> 46. Real or nominal pricing
>
> Pricing for a light regulation network may be determined on a real or nominal basis but the methodology chosen by the NSP must be applied consistently.

212. Under a nominal pricing method, a network would use a nominal WACC, which incorporates the real rate of return compounded with a rate that reflects expectations of inflation. This approach requires no adjustment for inflation and an inflation forecast is not needed.

213. Under a real pricing method, a network would use a real WACC. The real WACC is obtained from the nominal WACC by removing expected inflation (π) from the nominal pre-tax WACC, as follows:[43]

$$WACC_{real} = \frac{(1+ WACC_{nom})}{1+\pi} - 1 \qquad \text{(equation 3)}$$

where:

$WACC_{real}$ is the real pre-tax weighted average cost of capital

$WACC_{nom}$ is the nominal pre-tax weighted average cost of capital

π is expected inflation.

214. Under the real pricing method:

- Expected inflation is removed from the nominal WACC and a real WACC is applied to the capital base.
- Compensation for inflation is provided through adjusting the capital base for actual inflation, rather than providing it through the WACC.

215. The use of the real pricing method requires an inflation forecast that matches the term of the WACC.

216. The ERA uses the Fisher equation and the observed yields of the following bonds to calculate forecast inflation:

- Five-year Commonwealth Government Securities, which reflect a market-based estimate of the nominal risk free rate.
- Five-year Indexed Treasury bonds, which reflect a market-based estimate of a real risk free rate.

[43] This has been referred to as the "Market Transformation Method".

217. The Fisher equation can be expressed in the equation below:

$$\pi = \frac{(1+ R_f)}{(1+ R_{Rf})} - 1 \qquad \text{(equation 6)}$$

where:

π is the expected inflation rate

R_f is the five-year nominal risk free rate of return estimated on Treasury bonds

R_{Rf} is the five-year real risk free rate of return estimated on Treasury indexed bonds.

218. The ERA estimates the expected inflation rate consistent with the estimate of the risk free rate by adopting an averaging period of 20 trading days. The approach uses linear interpolation to derive the daily point estimates of both the nominal five-year risk free rate and the real five-year risk free rate, for use in the Fisher equation.[44]

219. The term of the resulting average expected inflation rate is five years, consistent with the length of the pricing period under the PNAC. The use of a five-year term is the subject of ERA considerations discussed in the section "The term of the WACC".

220. The ERA supports the Treasury bond implied inflation approach as:

- It uses both nominal and real risk free rates directly observed in the market, which includes information on the market's view of the expected inflation rate. The rationale for using market-based approaches is that market prices reflect the aggregation of diverse market participant expectations.
- It is a dynamic market measure that is updated daily.
- It is not driven by static policy targets.
- It is consistent with market forecasts built into other WACC parameters.

221. The ERA estimates the expected inflation rate consistent with the estimate of the risk free rate and adopts an averaging period of 20 business days to 30 June 2021.

222. The ERA estimates a forecast inflation rate of 2.03 per cent for the 20-day averaging period to 30 June 2021.

[44] It is not common to observe a Commonwealth Government Security bond with an expiry date that exactly matches that of the regulatory period end. To overcome this, two bonds are selected that fall on either side of the end day of the pricing period. The dates on these bonds are referred to as the 'straddle' dates. Linear interpolation estimates the yields on the regulatory or pricing period end date by assuming a linear increase in yields between the straddle dates on the two bonds observed.

13. Value of imputation credits (gamma)

223. The imputation tax system prevents corporate profits from being taxed twice. Under the Australian imputation tax system, franking credits are distributed to investors at the time that dividends are paid and provide an offset to those investors' taxation liabilities.

224. The gamma parameter accounts for the reduction in the effective corporate taxation that arises from the distribution of franking credits to investors. Generally, investors who are able to use franking credits will accept a lower required rate of return, before personal tax, on an investment that has franking credits, compared with an investment that has similar risk and no franking credits.

225. Gamma is commonly estimated through the Monkhouse formula as the product of the distribution rate and the utilisation rate, as follows:[45]

gamma = distribution rate x utilisation rate (equation 8)

226. The distribution rate represents the proportion of imputation credits created that is expected to be distributed to investors. The distribution of franking credits differs among companies, primarily as a result of differences in shares of profit that are liable for taxation and the proportion of profits paid as dividends.

227. The utilisation rate is the weighted average of the utilisation rates of individual investors, with investors able to fully use the credits having a rate of one and those unable to use them having a rate of zero.

228. Over the course of its reviews of electricity, gas and rail rates of return, the ERA has considered gamma.[46, 47] The ERA's current approach to gamma is based on:

- Contemporary tribunal and Federal Court judicial reviews, which supported the use of the utilisation approach.
- The limitations of Australian Taxation Office data being applied to the calculation of gamma.
- New reports and analysis, which presented new methods and numbers to inform improved calculations of gamma.

229. The ERA has used a gamma of 0.5 for its recent energy networks' revenue determinations.[48] [49]

230. For the rate of return for the Pilbara networks, the ERA's preliminary view is to continue to determine gamma through the following approach:

- Gamma will be determined through the Monkhouse formula as the product of the distribution rate and utilisation rate. The distribution rate and utilisation rate are separately estimated.

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45 Office, B., *The cost of capital of a company under an imputation tax system*, Accounting and Finance, May 1994.

46 ERA, *Final Gas Rate of Return Guidelines Explanatory Statement*, December 2018, Chapter 16.

47 ERA, *Final Determination 2018 and 2019 Weighted Average Cost of Capital for the Freight and Urban Networks and Pilbara Railways*, August 2019, Chapter 9.

48 ERA, *Final Rate of Return Guidelines,* December 2018*,* p. 40.

49 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, p. 104.

- The distribution rate represents the proportion of imputation credits generated by a benchmark efficient entity that is expected to be distributed to investors. The ERA considers that the distribution rate is a firm-specific rather than a market-wide parameter.
- To estimate the distribution rate, the ERA relies on 0.9 for the distribution rate from financial reports of the 50 largest listed firms on the Australian Securities Exchange.
- The ERA considers that the distribution rate should be at least 0.9. Dr Lally found that the distribution rate may be slightly higher with the removal of foreign operations.[50,51]
- The utilisation rate is the weighted average over the utilisation rates of individual investors, with investors able to fully use the credits having a rate of one and those unable to use them having a rate of zero. The ERA considers that the utilisation rate is a market-wide rather than a firm-specific parameter.
- To estimate the utilisation rate, the ERA relies on the equity ownership approach to determine the percentage of domestic investors in the Australian equity market. The utilisation rate is estimated for all Australian equity from the national accounts of the ABS.[52, 53] The ERA estimates the utilisation rate to be 0.6, based on a five-year average to March 2021 and rounded to the nearest decimal point. The ERA considers that a utilisation rate of 0.6 is appropriate.

231. The ERA's preliminary view is to use a gamma of 0.5, being the product of the distribution rate of 0.9 and a utilisation rate of 0.6.

50 Lally, M., *The Estimation of Gamma: Review of Recent Evidence,* December 2018.

51 Lally, M., *Estimating the distribution rate for imputation credits for the top 50 ASX companies,* December 2019.

52 Australian Bureau of Statistics, *Australian National Accounts: Finance and Wealth, Catalogue 5232.0, Tables 48 and 49*.

53 Australian Energy Regulator, *Rate of return Annual Update,* December 2020, p. 26.

14. Indicative rate of return

232. This section provides an illustrative rate of return based on the ERA's standard approach to estimating energy network WACC parameters described in the preceding sections.

233. The annual WACC determination is for the 20-business day averaging period as at 30 June 2021.

234. For the Pilbara networks the illustrative rates of return are:

- nominal pre-tax rate of return of 3.98 per cent
- real pre-tax rate of return of 1.91 per cent.

Table 4: Illustrative Pilbara network rate of return for period to 30 June 2021

Parameter	
Cost of equity parameters	
Nominal risk free rate (%)	0.73
Equity beta	0.60
Market risk premium (%)	6.00
Nominal after tax return on equity (%)	**4.33**
Cost of debt parameters	
Nominal risk free rate (%)	0.87
Benchmark credit rating	BBB+
Term of debt for debt risk premium	10 years
Debt risk premium (%)	1.987
Debt issuing costs (%)	0.214
Nominal return on debt (%)	**3.07**
Other parameters	
Debt proportion (gearing) (%)	55
Forecast inflation rate (%)	2.03
Franking credits (gamma) (%)	50
Corporate tax rate (%)	30
Weighted Average Cost of Capital	
Nominal after-tax WACC (%)	3.64
Real after-tax (WACC) (%)	1.58
Nominal pre-tax WACC (%)	**3.98**
Real pre-tax (WACC) (%)	**1.91**

Source: ERA analysis