



Economic Regulation Authority

Focused consultation for the 2022 gas rate of return instrument review

Discussion paper

4 April 2022

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About this instrument and review

The Economic Regulation Authority is currently undertaking a review of the gas rate of return instrument.

The expected rate of return on capital provides a business with funds to service the interest on its loans and give a return to shareholders.

The gas instrument is required under the National Gas Law as implemented in Western Australia by the *National Gas Access (WA) Act 2009*.¹ The gas instrument sets out the methods the ERA will use to estimate the allowed rate of return and value of imputation credits for gas transmission and distribution service providers. These regulated gas pipelines include the Dampier to Bunbury Natural Gas Pipeline, the Goldfields Gas Pipeline and the Mid-West and South-West Gas Distribution Systems.

The ERA published its current gas instrument on 18 December 2018.²

The ERA is required to complete a review of the gas instrument every four years and its next gas instrument is required to be published by 18 December 2022.

In December 2021 the ERA published a discussion paper as part of the 2022 gas rate of return instrument review. The discussion paper set out the ERA's working views on the method for calculating the allowed rate of return, and its components, for the 2022 gas instrument, and sought stakeholder feedback.

The ERA is now conducting additional focused exploratory consultation on certain components of the allowed rate of return. These components are the equity beta and the market risk premium.

This discussion paper outlines the ERA's plans for conducting this focused consultation ahead of the publication of the draft 2022 gas rate of return instrument.

The ERA will consider stakeholder feedback from this focused consultation in the development of its draft 2022 gas instrument, which is expected to be published for further comment in mid-2022.

¹ The *National Gas Access (WA) Act 2009* implements the National Gas Access (Western Australia) Law and National Gas Rules for Western Australia. All references to National Gas Law and National Gas Rules referred to throughout this document are references to the law and rules that apply in Western Australia.

² ERA, *Final Rate of Return Guidelines (2018)*, December 2018.

Invitation to make submissions

Submissions are due by 4:00 pm WST, 9 May 2022

The ERA invites all interested parties to provide comment on the specific matters discussed in this paper and during the consultation session.

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

You can also send comments through:

Email: publicsubmissions@erawa.com.au

Post: Level 4, Albert Facey House, 469 Wellington Street, Perth WA 6000

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. As part of the ERA's regulatory responsibility to determine revenues for gas network service providers, the ERA must set a rate of return to be applied on regulated assets. Investors expect to receive a return on their investment to cover financing costs. The expected rate of return provides a business with funds to service the interest on its loans and give a return to shareholders.
2. The National Gas Law requires the ERA to produce a gas rate of return instrument.³
3. The ERA published its current 2018 gas rate of return guidelines on 18 December 2018.
4. The ERA must review the gas instrument and replace the reviewed instrument within four years of the last gas instrument. The ERA must publish the 2022 gas instrument by 18 December 2022.
5. The review provides an opportunity to undertake a comprehensive assessment of approaches for determining the allowed rate of return.
6. On 8 December 2021, the ERA released a discussion paper for the 2022 gas rate of return instrument review. The discussion paper set out the ERA's working views on the method for calculating the allowed rate of return on capital for gas network service providers and called for public submissions.
7. The ERA received public submissions on the discussion paper in February 2022.
8. The ERA is required to seek concurrent expert evidence on the rate of return to assist with the 2022 gas instrument review. The ERA's planned approach to fulfilling the requirement to seek concurrent evidence is:
 - The ERA is using the concurrent evidence sessions conducted by the Australian Energy Regulator (AER) as part of the AER's 2022 rate of return instrument review to inform this review.
 - The ERA will gather available expert evidence from other rate of return regulatory processes.
 - Additionally, the ERA may choose to supplement the evidence from the AER's concurrent expert sessions by seeking further evidence on issues relevant to the ERA's review.
9. The ERA attended the AER's concurrent expert sessions on 10 February 2022 and 17 February 2022.
10. The ERA has now reviewed submissions and concurrent expert sessions and considers there is further value that can be gained through focused consultation before the publication of the draft gas instrument. The ERA has identified some topics for which it considers additional consultation will assist the ERA to make decisions that contribute to the achievement of the national gas objective. Further focused consultation was generally supported by submissions received on the discussion paper.

³ National Gas Law, chapter 2, part 1, subdivision 2, cl. 30D.

11. The purpose of this paper is to outline the focused consultation the ERA intends to undertake in advance of the publication of the draft gas instrument.
12. Indicative milestones for the 2022 gas instrument review are shown in Table 1.

Table 1: Milestones for the 2022 gas rate of return instrument review

Milestone	Description of milestone	Date
Engagement process position paper	This paper detailed the process for the 2022 gas instrument review and sought nominations for the consumer and expert bodies that the ERA must establish under the National Gas Law consultation requirements.	Published July 2021
Discussion paper	This paper outlined the ERA's working positions on the method for calculating the allowed rate of return for the 2022 gas instrument and invited public submissions.	Published December 2021
Public submissions on discussion paper	The ERA received written submissions in response to the discussion paper.	Submissions closed February 2022
Concurrent evidence	Concurrent expert evidence was gathered.	Conducted February 2022
Focused consultation (this paper)	The ERA is conducting focused consultation to gather further stakeholder input on the equity beta and market risk premium.	March/April 2022
2022 draft gas instrument	The ERA will publish a draft gas rate of return instrument and explanatory information, which will subsequently be reviewed by the Independent Panel.	Mid 2022
Independent Panel report	The Independent Panel will provide a report, to be published on the ERA website, of its assessment of the evidence and reasons used to form the draft 2022 gas instrument.	August 2022
Public submissions on draft gas instrument and Independent Panel report	The ERA will invite public submissions on the draft 2022 gas instrument and the Independent Panel report.	September 2022
Final 2022 gas instrument	The 2022 gas instrument and explanatory statement will be published and will be a binding instrument, applying to all regulatory determinations made while it is in force.	December 2022

2. Focused consultation – Overview

2.1 Topics

13. Having reviewed the information received during the review so far, the ERA considers that additional focused exploratory consultation on select rate of return matters would be beneficial.
14. The ERA has identified some topics related to equity beta and the market risk premium as areas for further consultation because:
 - These factors can have a material impact on the overall rate of return.
 - The estimation of these areas is complex, and a clear and unanimously "single best" estimation method has not been identified from the academic literature, expert views and other information.
 - There appear to be diverging views amongst stakeholders.
 - These parameters entail new or novel estimation/methodological matters including:
 - For equity beta, given the de-listing of energy networks, the ERA is considering the potential use of international comparators for the 2022 gas instrument. This would be a new element of the beta estimation method, and so the ERA is seeking views on how international comparators might be selected.
 - For the market risk premium, the ERA is considering suggestions from stakeholders that may assign specific weights to the results of different estimation methods to estimate the market risk premium and suggestions that the market risk premium should be updated at every access arrangement review, rather than remaining fixed for the four-year term of the gas instrument.
15. This further consultation will address specific questions in order to elicit stakeholder views and ideas on possible alternatives for the topics addressed. This consultation does not represent recommended positions from the ERA, rather it is an exploration of issues and additional information that may assist the ERA when making the draft gas instrument.

2.2 Process

16. The publication of this discussion paper is the first step in the focused consultation on equity beta and the market risk premium.
17. Sections 3 and 4 of this paper supply exploratory information on the equity beta and the market risk premium relevant to the specific questions the focused consultation will address.
18. Following the publication of this paper, the ERA will conduct an online session with interested stakeholders to present the underlying analysis and ask questions. During the session there will be opportunity for stakeholders to provide information to the ERA and outline their own views.

19. Following the online session, the ERA encourages stakeholders to submit their views and any further input on the selected focus topics in writing. The closing date for submissions will be 9 May 2022.
20. The ERA will consider this consultation and written submissions from this focussed consultation in its consideration for the draft instrument.

3. Equity beta

21. Equity beta is a component of the required return on equity.
22. 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.
23. Equity beta is the slope parameter β_i in the Sharpe-Lintner capital asset pricing model (CAPM). The slope parameter β_i correlates a specific asset's return in excess of the risk free rate of return, to movements in the return on the market portfolio:

$$R_i = R_f + \beta_i (R_M - R_f) \quad (\text{equation 1})$$

where:

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

R_M is the expected market return on equity in the market

R_f is the risk free rate

β_i is the equity beta that describes how a particular portfolio i will follow the market which is defined as $\beta_i = cov(R_i, R_M) / var(R_M)$

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

24. This section details the ERA's working view on equity beta (as outlined in the discussion paper) and the further focused consultation on a possible move to the use of international firms to estimate equity beta.

3.1 Discussion paper working view on equity beta

25. To estimate an appropriate equity beta for its regulated energy networks, the ERA empirically analyses a sample of comparable listed energy networks.
26. The discussion paper detailed that listed regulated and long-term Australian infrastructure businesses have been actively sought-after acquisition targets. In 2021 there were takeover bids for both Spark Infrastructure and Ausnet Services.
27. With those takeovers now complete, APA Group is the only remaining domestic listed energy network. This means that the domestic energy sample used in the 2018 gas instrument has substantially reduced from 2022 onwards.
28. As the delistings have occurred recently, the ERA's working view is that recently delisted firms will still be considered as they are informative of the underlying systematic risk of the benchmark entity. This may not be the case for firms which have been delisted for a substantial amount of time.
29. In the discussion paper the ERA considered how, and if, the benchmark sample needed to change due to market developments. Options discussed included:
 - Maintaining the status quo of using a sample of Australian energy businesses.
 - Expanding the domestic sample to include similar industries to energy networks.

- Expanding to an international sample of energy networks, alongside the existing domestic energy network sample.
30. The ERA considered expanding the domestic sample to other non-energy network Australian infrastructure firms. However, on balance, for the purposes of equity betas the ERA considered that an expanded domestic sample was not appropriate and would move away from a process that sets efficient rates for energy networks:
- The inclusion of domestic infrastructure firms would increase the sample of live firms based in Australia and could be considered an extension of existing practice.
 - However, this would be a departure from the pure-play energy network benchmark approach and could introduce large additional idiosyncratic risks where these other Australian infrastructure businesses are not comparable. Delisting risk remains with this approach, given investor appetite for Australian infrastructure assets and the delisting of these other infrastructure firms. When the ERA examined the estimated domestic industry equity betas, the wide range between and within industries did not provide the ERA with confidence that they could be used to set a rate of return for energy networks.
31. The discussion paper provided detail on how international energy networks could be included and provided empirical results from a potential sample of energy networks. In the discussion paper the ERA proposed the following method for estimating equity beta using both domestic and international energy network firms:
- To use a domestic CAPM model for each country to estimate the equity beta. The use of an international CAPM would introduce complexity without substantial benefits as it relies on stronger assumptions than the domestic CAPM.
 - To only include firms where the majority of the observations are present in the estimation window.
 - Consistent with the manner in which domestic equity beta estimates are unlevered and re-levered to the benchmark gearing level, to use the same procedure for international equity beta estimates.
32. The ERA examined a set of comparators beyond the domestic energy network sample. An initial sample of domestic and international energy networks was listed in Appendix 4 of the discussion paper and is reproduced in Appendix 1 of this paper.
33. With regard to the selection of international energy networks the ERA looked to countries where energy networks operate under similar regulatory, legal and other institutional arrangements to those in Australia. The ERA's method for selecting international energy networks applied a similar method to that used by the New Zealand Commerce Commission.
34. The ERA's working view on equity beta, as outlined in the discussion paper, was:
- To apply an equity beta of 0.7, which would remain fixed for the term of the 2022 gas instrument.
 - That examining both domestic and international listed energy networks may be useful for estimating the equity beta for Australian energy networks, given the smaller domestic sample.

35. The ERA considered that expected equity beta exhibits stability in the short-term, and therefore beta should be set at the beginning of the gas instrument and remain fixed for the term of the instrument.

3.2 Focused consultation on equity beta

36. Submissions in response to the discussion paper presented diverging views on whether the energy network sample should be extended to include international energy networks. These responses ranged from no support to support qualified by a request for further details on the method used by the ERA. Additionally, most stakeholders requested further information and consultation on the sample used to estimate the equity beta.
37. The discussion paper included an expanded sample of international energy networks and accompanying empirical analysis.
38. During the focused consultation session on equity beta the ERA will present more detail on the possible use of an expanded international sample to estimate equity beta as outlined in the discussion paper.
39. A key objective of the focused consultation session on equity beta is for the ERA to gather stakeholder views on the approach to the selection of an international sample. To develop its international sample in the discussion paper, the ERA selected energy networks:
- That operate under similar regulatory, legal and other institutional arrangements to those in Australia.
 - That operate in countries with capital markets that are sufficiently deep, liquid, large and informationally efficient.
 - Where the majority of observations are present in the estimation window.
 - That have a market capitalisation greater than US\$100 million.
40. Once the international sample has been selected and betas for the networks in the sample have been estimated, the ERA will need to consider how it will use this information to develop a point estimate of equity beta as part of its regulatory approach. Broadly, the ERA could:
- Establish a mechanical or formulaic way for combining beta estimates to develop an equity beta point estimate.
 - Assess the available information, including international betas, and use its regulatory discretion to develop the best equity beta estimate.
41. To facilitate this further consultation, the ERA has used the beta estimates for the combined domestic and international sample from the discussion paper and provided some illustrative options below. It should be noted that the emphasis of this consultation is method. The beta estimates from the discussion paper are used below to facilitate discussion on the method only. The ERA has not finalised or updated comparators at this stage.

42. Some possible mechanical approaches for estimating a fixed equity beta are:
- **Full pooling** - Combining all estimates and equally weighting them. This results in an indicative OLS (LAD) equity beta of 1.1 (0.8).⁴
 - **Country pooling** - Separating estimates by country, estimating country means that are then equally weighted. This results in an indicative OLS (LAD) equity beta of 0.8 (0.7).
 - **Domestic anchoring** - Putting more weight on domestic estimates as an anchor, which is then modified by lower weightings on international estimates (either individually or by country). This results in an equity beta which depends on an explicit choice of weights and would produce a range of results from 0.5 to 0.8.
43. The ERA could exercise its regulatory discretion for estimating a fixed equity beta, which would involve considering all samples as part of its information set and making a judgement about where the best estimate of equity beta lies within that sample:
- For example, based on the information available during the drafting of the discussion paper, the ERA's working view was to apply an equity beta of 0.7.
44. Stakeholder feedback on the questions below will be useful for the ERA's consideration of the possible use of an expanded international sample to estimate equity beta.

Questions – Equity beta

1. Are the firms selected by the ERA in the discussion paper (reproduced in Appendix 1 of this paper) appropriate? If there are firms which are inappropriate, what characteristics make them inappropriate?
2. Are there any additional jurisdictions that should be considered by the ERA?
3. Should the ERA consider reweighting foreign market indices to be reflective of the Australian Securities Exchange (ASX), or would this create distortions and interpretation issues as the market beta would no longer be one?
4. What adjustments, if any, should be made to estimates of international equity betas?
5. Once the sample has been selected and individual betas have been estimated, how should the ERA best use this information to determine an equity beta point estimate? Should this be done in a mechanical way or should regulatory discretion be used?

⁴ Equity betas are estimated using either the Ordinary Least Squares (OLS) method of regression, or Least Absolute Deviation (LAD). These methods produce different estimates in the presence of outliers. For further details please consult Appendix 17 of the Appendices to the Explanatory Statement for the Rate of Return Guidelines 2013.

4. Market risk premium

45. The market risk premium is a parameter of the Sharpe-Lintner CAPM (equation 1).
46. The market risk premium is the expected rate of return in excess of 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 in a risky asset, therefore the expected market risk premium is always positive. *Ex post*, the realised return to the market portfolio may be negative. To establish the cost of capital, the *ex ante* market premium is relevant.
47. 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 diversified away by investors because it affects all firms in the market.⁵ This is a forward-looking concept.
48. The market risk premium is calculated as follows:

$$\text{MRP} = R_M - R_F \quad (\text{equation 5})$$

where:

R_M is the expected market return on equity observed in the Australian stock market

R_F is the risk free rate of return.

49. This section details the ERA's working view on the market risk premium (as outlined in the discussion paper) and the planned focused consultation on how best to weight evidence to estimate the market risk premium and whether the market risk premium should remain fixed or updated during the period of the gas instrument.

4.1 Discussion paper working view on the market risk premium

50. The discussion paper detailed the ERA's proposed market risk premium approach for the 2022 gas instrument, which:
- Places more reliance on the historic market risk premium, relative to the dividend growth model.
 - Determines a final point estimate of the market risk premium by using regulatory judgement, including considering conditioning variables. The final point estimate of the market risk premium would be rounded to one decimal place.
51. The ERA's working view outlined in the discussion paper was that a market risk premium of 6.0 per cent should be maintained.
52. The ERA also considered that the market risk premium would remain fixed for the term of the gas instrument.

5 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.

4.2 Focused consultation on the market risk premium

53. Submissions in response to the discussion paper presented differing views on how the market risk premium should be estimated (for example, which inputs to use and how to weight them) and requested additional detail on how the ERA would combine evidence to determine a point estimate of the market risk premium.
54. Stakeholders also presented differing views on whether the market risk premium should be fixed for the term of the gas instrument or updated at each access arrangement.
55. The key objectives of the focused consultation session on the market risk premium are for the ERA to gather stakeholder views on how the ERA should best combine inputs when estimating the market risk premium and whether the market risk premium should be fixed for the term of the 2022 gas instrument.
56. The estimation of the market risk premium is a complex exercise where there is no unambiguously correct or agreed method. The ERA is considering the trade-offs between available methods and how they could be incorporated in estimating a forward-looking market risk premium.
57. The market risk premium for the current gas instrument was determined based on the historic market risk premium, the dividend growth model (DGM) and conditioning variables.⁶
58. The historical market risk premium is directly measurable and is information available to all market participants but is an *ex post* method that is based on realised returns.
59. The DGM examines the forecast future dividends for a market portfolio and estimates the return on equity that makes these dividends consistent with the market valuation of that portfolio. The results of the DGM are highly sensitive to the assumed values of the input parameters for the model. While the ERA acknowledges the significant issues with the DGM, it is a forward-looking model that may provide information about investor expectations of the market risk premium.
60. Energy Networks Australia suggests that certain implementation issues with DGMs (choice of long-term growth rates, biased analyst forecasts and sensitivity to assumptions) could be addressed via a model they call the “calibrated DGM” from Frontier Economics.
61. The ERA understands that the calibration refers to making monthly DGM estimates, which are then rescaled to fit a specified number over the entire sample period.⁷ As described, the ERA notes that the method adjusts estimated long term growth rates to fit a target mean market risk premium. Frontier Economics has chosen the AER’s historic market risk premium of 6.1 per cent, such that individual monthly estimates are constrained to a mean of 6.1 per cent. However, any target mean is possible under calibration.

⁶ ERA, *Final Rate of Return Guidelines (2018)*, December 2018, pp. 30-32.

⁷ Frontier economics, *Implementation of a calibrated DGM*, available [online](#).

62. The ERA is unsure how this calibrated DGM would be used as suggested by stakeholders. Frontier Economics suggests that the calibrated DGM could be used to produce a range from recent calibrated numbers. However, the time period for this range and how the range would be used are still unclear.
63. Furthermore, the ERA is unsure that the calibrated DGM addresses the core issues with using DGMs as a method of estimating the market risk premium:
- The long-term growth assumption identified by the calibration might not be unique and is not directly used.
 - The calibration does not address biased analyst forecasts.
64. Conditioning variables are readily available market data which allow the ERA to take into account current market conditions. The ERA considered conditioning variables as part of its determination of a point estimate for the market risk premium for the discussion paper. The ERA considered 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 to the portfolio price.
 - Implied market volatility, which is measured through the ASX 200 volatility index.
65. When assessing current market conditions, the ERA considers how the current value of each conditioning variable compares to its historic average.
66. With the difficulty in estimating a forward-looking market risk premium, at present the ERA uses a level of regulatory discretion when combining all inputs to best estimate a forward-looking market risk premium.
67. The ERA is also considering whether the market risk premium should:
- be calculated at the time of the final gas instrument and remain fixed for the four-year term of the gas instrument
- or
- be updated (re-estimated) at the time of each access arrangement in order to reflect current market conditions, with the calculation methodology detailed in the gas instrument.
68. Once the models have been selected and their respective separate market risk premiums estimated, the ERA will need to consider how it will use this information to estimate the market risk premium as part of its regulatory approach. In a broad sense the ERA could:
- Establish a mechanical or formulaic way for combining estimates to develop a market risk premium point estimate (which could be either fixed for the term of the final gas instrument, or updated at each access arrangement review).
 - Assess the available information and use its regulatory discretion to develop the best market risk premium estimate (which could only be calculated at the time of the final gas instrument and fixed for the term of the instrument).

69. To facilitate this further consultation, the ERA has used the market risk premium estimates from the discussion paper and provided some illustrative potential options below. The emphasis of this consultation is the method.
70. Possible mechanical approaches for estimating the market risk premium include:
- **Equally weighted** - Combining the historical market risk premium estimates (5.8 per cent in the discussion paper) with the DGM estimates (8.1 per cent in the discussion paper) using equal weights. This would produce a market risk premium estimate of 7.0 per cent.
 - **Merit weighted** – Combining the historical market risk premium estimates with the DGM estimates using weights that reflect the relative merit of these different estimates.
 - As an illustrative example, noting the ERA’s concerns with the DGM, applying a 20 per cent weight to the DGM and an 80 per cent weight to the historical market risk premium estimate. This would produce a market risk premium estimate of 6.3 per cent.
 - Depending on the ERA’s final assessment of the DGM, the weight applied may well be higher or lower than 20 per cent.
71. The ERA’s working view is that there is insufficient evidence that supports a deterministic relationship between the market risk premium and the risk free rate, and no estimation methods have been put forward which reliably quantify the magnitude of any such relationship and whether it in fact changes over time. Therefore, the ERA’s working view is that it is not possible to mechanically estimate a market risk premium as a function of changes in the risk free rate.
72. The ERA, however, considers that it may be appropriate to adopt a mechanical method that would incorporate a forward looking DGM, where this would provide some flexibility for the market risk premium to reflect current market conditions.
73. The ERA considers that no formulaic use of conditioning variables would be possible, as there is no mechanical mapping between them and the market risk premium.
74. The ERA could exercise its regulatory discretion for estimating the market risk premium, as it has done in the past, which would involve considering all relevant information using regulatory discretion to select a point estimate.
- The ERA would be able to consider information including conditioning variables as part of its regulatory discretion under this approach.
 - For example, with the information available during the drafting of the discussion paper, the ERA used its discretion and chose a market risk premium of 6 per cent.

Questions – Market risk premium

6. What are stakeholder views on the calibrated DGM proposed by Energy Networks Australia? Does this amended model provide additional confidence in the DGM and how?
7. Is it possible to combine inputs in a more formulaic manner when estimating a forward-looking market risk premium?
8. What weight, if any, should be assigned to the historic market risk premium, DGM and conditioning variables in estimating the market risk premium?
9. Do you support a fixed or updating market risk premium being used over the four-year term of the gas instrument?
10. Is it possible to estimate a forward looking market risk premium in a completely mechanical way with no use of regulatory discretion?

Appendix 1 International Comparators

Ticker	Company Name	ERA Industry	Company Description
Canada			
ACO/X CN Equity	ATCO LTD -CLASS I	Integrated	ATCO Ltd. generates, transmits, and distributes electric power to customers in Canada, and owns and operates power projects in Canada, Great Britain, and Australia. The Company also gathers, stores, transmits, and distributes natural gas in Alberta, Canada. In addition, ATCO manufactures and sells industrial workforce housing, provides technical services, and conducts other operations.
ALA CN Equity	ALTAGAS LTD	Gas	AltaGas Ltd. produces, transmits, distributes, processes and stores natural gas, and generates electricity. The Company also offers energy management consulting services and arranges gas and electricity supply for non-residential end users.
AQN CN Equity	ALGONQUIN POWER & UTILITIES	Integrated	Algonquin Power & Utilities Corp. owns and has interests in a diverse portfolio of renewable power generation and sustainable infrastructure assets across North America. The Company's interests include renewable energy facilities, thermal energy facilities, and water distribution and waste-water facilities.
CU CN Equity	CANADIAN UTILITIES LTD-A	Integrated	Canadian Utilities Limited conducts operations in electrical utility services, independent power production, and retail gas and electricity marketing. The Company also distributes, transmits, gathers, processes, and stores natural gas. In addition, Canadian Utilities provides technical logistical services and billing and call centre services.
EMA CN Equity	EMERA INC	Integrated	Emera Inc. owns and operates a broad portfolio of electric and natural gas generation, transmission and distribution assets and services, and has an overall strategic focus on transformation to cleaner energy. The Company serves customers across Canada, the Caribbean and the United States, including Florida and New Mexico.

Ticker	Company Name	ERA Industry	Company Description
FTS CN Equity	FORTIS INC	Integrated	Fortis, Inc. operates as a gas and electric distribution company. The Company offers regulated utilities comprised of electric and gas as well as engages in non-regulated hydroelectric operations. Fortis serves customers across Canada and in the United States and the Caribbean.
H CN Equity	HYDRO ONE LTD	Electricity	Hydro One Limited is an electrical transmission and distribution utility in Ontario. The company delivers electricity safely and reliably to customers across the province, and to large industrial customers and municipal utilities. Hydro One owns and operates Ontario's transmission and low-voltage distribution network.
SPB CN Equity	SUPERIOR PLUS CORP	Gas	Superior Plus Corporation distributes propane, supplies chemicals and technology, and produces potassium products. The Company is the sixth largest retail propane distributor in the US. Superior Plus serves clients in the United States and Canada.
United Kingdom			
NG/ LN Equity	NATIONAL GRID PLC	Integrated	National Grid plc is an investor-owned utility company which is focused on the transmission and distribution of electricity and gas. The Company owns and operates the electricity transmission network in England and Wales, the gas transmission network in Great Britain, and electricity transmission networks in the North Eastern United States and Scotland.
SSE LN Equity	SSE PLC	Integrated	SSE plc generates, transmits, distributes, and supplies electricity to industrial, commercial, and domestic customers in the United Kingdom and Ireland. The Company also stores and distributes natural gas, and operates a telecommunications network that offers bandwidth and capacity to companies, public sector organizations, Internet service providers, and others.
New Zealand			

Ticker	Company Name	ERA Industry	Company Description
VCTNZ Equity	VECTOR LTD	Integrated	Vector Limited is an energy infrastructure company in New Zealand that provides electricity and gas transmission and distribution along with metering. The Company is also a wholesaler of LPG and natural gas. Vector also delivers broadband voice and data communications in the Auckland and Wellington regions.
United States			
AEE US Equity	AMEREN CORPORATION	Integrated	Ameren Corporation is a public utility holding company. The Company, through its subsidiaries, generates electricity, delivers electricity, and distributes natural gas to customers in Missouri and Illinois.
AEP US Equity	AMERICAN ELECTRIC POWER	Electricity	American Electric Power Company, Inc. (AEP) operates as a public utility holding company. The Company generates, transmits, distributes, and sells electricity to residential and commercial customers. AEP serves customers in the United States.
AES US Equity	AES CORP	Electricity	The AES Corporation acquires, develops, owns, and operates generation plants and distribution businesses in several countries. The Company sells electricity under long term contracts and serves customers under its regulated utility businesses. AES also mines coal, turns seawater into drinking water, and develops alternative sources of energy.
AGR US Equity	AVANGRID INC	Integrated	Avangrid, Inc. is a U.S. based diversified energy and utility company that provides clean energy. The Company owns and operates electricity generation and natural gas storage utilities.
ALE US Equity	ALLETE INC	Electricity	ALLETE, Inc. provides energy services in the upper Midwest United States. The Company generates, transmits, distributes, markets, and trades electrical power for retail and wholesale customers.
ATO US Equity	ATMOS ENERGY CORP	Gas	Atmos Energy Corporation distributes natural gas to utility customers. The Company's non-utility operations span various states and provide natural gas marketing and procurement services to large customers. Atmos Energy also manages company-owned natural gas storage and pipeline assets, including an intrastate natural gas pipeline in Texas.

Ticker	Company Name	ERA Industry	Company Description
AVA US Equity	AVISTA CORP	Integrated	Avista Corporation operates as an energy company. The Company generates, transmits, and distributes electric and natural gas. Avista serves business and residential customers in the United States.
BKH US Equity	BLACK HILLS CORP	Integrated	Black Hills Corporation is a growth-oriented utility company. The Company delivers electricity and natural gas, generates electricity and produces coal to serve onsite generation. Black Hills serves customers in Arkansas, Colorado, Iowa, Kansas, Montana, Nebraska, South Dakota, and Wyoming.
CMS US Equity	CMS ENERGY CORP	Integrated	CMS Energy Corporation is an energy company. The Company, through its subsidiaries, provides electricity and natural gas to its customers. CMS Energy also invests in and operates non-utility power generation plants in the United States and abroad.
CNP US Equity	CENTERPOINT ENERGY INC	Integrated	CenterPoint Energy, Inc. is a public utility holding company. The Company, through its subsidiaries, conducts activities in electricity transmission and distribution, natural gas distribution, interstate pipeline and gathering operations, and power generation.
CPK US Equity	CHESAPEAKE UTILITIES CORP	Gas	Chesapeake Utilities Corporation is a utility company that provides natural gas transmission and distribution, propane distribution, and information technology services. The Company distributes natural gas to residential, commercial, and industrial customers in Delaware, Maryland, and Florida. Chesapeake Utilities' propane is distributed to customers in Delaware, Maryland, and Virginia.
D US Equity	DOMINION ENERGY INC	Integrated	Dominion Energy, Inc. produces and transports energy products. The Company offers natural gas and electric energy transmission, gathering, and storage solutions. Dominion Energy serves customers in the United States.
DTE US Equity	DTE ENERGY COMPANY	Integrated	DTE Energy Company, a diversified energy company, develops and manages energy-related businesses and services nationwide. The Company, through its subsidiaries, generates, purchases, transmits, distributes, and sells electric energy in southeastern Michigan. DTE is also involved in gas pipelines and storage, unconventional gas exploration, development, and production.

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DUK US Equity	DUKE ENERGY CORP	Integrated	Duke Energy Corporation is an energy company located primarily in the Americas that owns an integrated network of energy assets. The Company manages a portfolio of natural gas and electric supply, delivery, and trading businesses in the United States and Latin America.
ED US Equity	CONSOLIDATED EDISON INC	Integrated	Consolidated Edison, Inc., through its subsidiaries, provides a variety of energy related products and services. The Company supplies electric service in New York, parts of New Jersey, and Pennsylvania as well as supplies electricity to wholesale customers.
EIX US Equity	EDISON INTERNATIONAL	Electricity	Edison International, through its subsidiaries, develops, acquires, owns, and operates electric power generation facilities worldwide. The Company also provides capital and financial services for energy and infrastructure projects, as well as manages and sells real estate projects. Edison provides integrated energy services, utility outsourcing, and consumer products.
ENB US Equity	ENBRIDGE INC	Gas	Enbridge Inc. provides energy transportation, distribution, and related services in North America and internationally. The Company operates a crude oil and liquids pipeline system, is involved in international energy projects, and is involved in natural gas transmission and midstream businesses. Enbridge also distributes natural gas and electricity, and provides retail energy products.
ES US Equity	EVERSOURCE ENERGY	Integrated	Eversource Energy is a public utility holding company. The Company, through its subsidiaries, provides electric service to customers in Connecticut, New Hampshire, and western Massachusetts. Eversource Energy also distributes natural gas throughout Connecticut.
ETR US Equity	ENTERGY CORP	Electricity	Entergy Corporation is an integrated energy company that is primarily focused on electric power production and retail electric distribution operations. The Company delivers electricity to utility customers in Arkansas, Louisiana, Mississippi, and Texas. Entergy also owns and operates nuclear plants in the northern United States.
EVRG US Equity	EVERGY INC	Electricity	Evergy, Inc. provides electricity generation, transmission, and distribution services. The Company offers its services in the United States.

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EXC US Equity	EXELON CORP	Integrated	Exelon Corporation is a utility services holding company. The Company, through its subsidiaries, distributes electricity to customers in Illinois and Pennsylvania. Exelon also distributes gas to customers in the Philadelphia area as well as operates nuclear power plants in states that include Pennsylvania and New Jersey.
FE US Equity	FIRSTENERGY CORP	Integrated	FirstEnergy Corp. operates as a public utility holding company. The Company, through its subsidiaries, generates, transmits, and distributes electricity, as well as offers exploration, production, and distribution of natural gas. FirstEnergy provides energy management and other energy related services.
HE US Equity	HAWAIIAN ELECTRIC INDS	Electricity	Hawaiian Electric Industries, Inc. is a diversified holding company that delivers a variety of services to the people of Hawaii. The Company's subsidiaries offer electric utilities, savings banks, and other businesses, primarily in the state of Hawaii.
IDA US Equity	IDACORP INC	Electricity	IDACORP, Inc. operates as a holding company. The Company, through its subsidiaries, generates, purchases, transmits, distributes, and sells electric energy in southern Idaho, eastern Oregon, northern Nevada, and Wyoming. IDACORP maintains electricity and natural gas marketing operations, as well as manages affordable housing projects and other real estate investments.
KMI US Equity	KINDER MORGAN INC	Gas	Kinder Morgan, Inc. of Delaware operates as a pipeline transportation and energy storage company. The Company owns and operates pipelines that transport natural gas, gasoline, crude oil, carbon dioxide, and other products, as well as terminals that store petroleum products and chemicals and handle bulk materials like coal and petroleum coke.
LNT US Equity	ALLIANT ENERGY CORP	Integrated	Alliant Energy Corporation provides public-utility services. The Company supplies electricity, natural gas, and water to residential and commercial customers. Alliant Energy serves customers in the States of Illinois, Iowa, Minnesota, and Wisconsin.

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MGEE US Equity	MGE ENERGY INC	Integrated	MGE Energy, Inc. is a public utility holding company. The Company's principal subsidiary generates and distributes electricity to customers in Dane County, Wisconsin. MGE also purchases, transports, and distributes natural gas in several Wisconsin counties.
NEE US Equity	NEXTERA ENERGY INC	Electricity	NextEra Energy, Inc. provides sustainable energy generation and distribution services. The Company generates electricity through wind, solar, and natural gas. Through its subsidiaries, NextEra Energy also operates multiple commercial nuclear power units.
NFG US Equity	NATIONAL FUEL GAS CO	Gas	National Fuel Gas Company is an integrated natural gas company with operations in all segments of the natural gas industry, including utility, pipeline and storage, exploration and production, and marketing operations. The Company operates across the United States.
NI US Equity	NISOURCE INC	Integrated	NiSource Inc. is an energy holding company. The Company's subsidiaries provide natural gas, electricity, and other products and services to customers located within a corridor that runs from the Gulf Coast through the Midwest to New England.
NJR US Equity	NEW JERSEY RESOURCES CORP	Gas	New Jersey Resources Corporation provides retail and wholesale energy services. The Company's principal subsidiary, New Jersey Natural Gas Co., is a local distribution company serving customers in central and northern New Jersey.
NWE US Equity	NORTHWESTERN CORP	Integrated	NorthWestern Corporation, doing business as NorthWestern Energy, provides electricity and natural gas in the Upper Midwest and Northwest. The Company serves customers in Montana, South Dakota, and Nebraska.
NWN US Equity	NORTHWEST NATURAL HOLDING CO	Gas	Northwest Natural Holding Company operates as a holding company. The Company, through its subsidiaries, builds and maintains natural gas distribution system, as well as invests in natural gas pipeline projects. Northwest Natural Holding serves residential, commercial, and industrial customers in the United States, Canada, and Service Territory.

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OGE US Equity	OGE ENERGY CORP	Integrated	OGE Energy Corp., through its principal subsidiary Oklahoma Gas and Electric Company, generates, transmits, and distributes electricity to wholesale and retail customers in communities in Oklahoma and western Arkansas. The Company, through Enogex Inc., operates natural gas transmission and gathering pipelines, has interests in gas processing plants, and markets electricity.
OGS US Equity	ONE GAS INC	Gas	ONE Gas, Inc. is a regulated natural gas utility. The Company distributes natural gas to customers in Oklahoma, Kansas, and Texas. ONE Gas serves the residential, commercial, industrial, transportation, and wholesale industries.
OKE US Equity	ONEOK INC	Gas	ONEOK, Inc. is a diversified energy company. The Company is involved in the natural gas and natural gas liquids business across the United States.
OTTR US Equity	OTTER TAIL CORP	Electricity	Otter Tail Corporation, through its utility business units, provides electricity and energy services to customers in Minnesota, North Dakota, and South Dakota. The Company expands its scope to include interest in manufacturing and plastics businesses. Otter Tail Corporation serve customers primarily in the United States.
PCG US Equity	P G & E CORP	Integrated	PG&E Corporation is a holding company that holds interests in energy based businesses. The Company's holdings include a public utility operating in northern and central California that provides electricity and natural gas distribution, electricity generation, procurement, and transmission, and natural gas procurement, transportation, and storage.
PEG US Equity	PUBLIC SERVICE ENTERPRISE GP	Integrated	Public Service Enterprise Group Incorporated is a public utility holding company. The Company, through its subsidiaries, generates, transmits, and distributes electricity and produces natural gas in the North Eastern and Mid Atlantic United States.
PNM US Equity	PNM RESOURCES INC	Electricity	PNM Resources Inc. is a holding company. The Company, through its subsidiaries, generates, transmits, and distributes electricity. PNM Resources serves customers in the State of New Mexico.

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PNW US Equity	PINNACLE WEST CAPITAL	Electricity	Pinnacle West Capital Corporation is a utility holding company. The Company, through its subsidiary, provides retail and wholesale electric service to most of the State of Arizona. Pinnacle West Capital through a subsidiary, also is involved in real estate development activities in the western United States.
POR US Equity	PORTLAND GENERAL ELECTRIC CO	Electricity	Portland General Electric Company is an electric utility involved in the generation, purchase, transmission, distribution, and sale of electricity in Oregon. The Company also participates in the wholesale market by purchasing and selling electricity and natural gas to utilities and energy marketers.
PPL US Equity	PPL CORP	Integrated	PPL Corporation is an energy and utility holding company. The Company, through its subsidiaries, generates electricity from power plants in the north eastern and western United States, and markets wholesale and retail energy primarily in the north eastern and western portions of the United States, and delivers electricity in Pennsylvania and the United Kingdom.
RGCO US Equity	RGC RESOURCES INC	Gas	RGC Resources, Inc. and its subsidiaries distribute and sell natural gas and propane. The Company serves residential, commercial, and industrial customers in the Roanoke Valley and Bluefield areas of southwestern Virginia, as well as southern West Virginia.
SJI US Equity	SOUTH JERSEY INDUSTRIES	Gas	South Jersey Industries, Inc. is an energy services holding company. The Company provides regulated, natural gas service to residential, commercial, and industrial customers in southern New Jersey. South Jersey also markets total energy management services, including natural gas, electricity, demand-side management, and consulting services throughout the eastern United States.
SO US Equity	SOUTHERN CO/THE	Electricity	The Southern Company is a public utility holding company. The Company, through its subsidiaries, generates, wholesales, and retails electricity in the south eastern United States. The Company also offers wireless telecommunications services, and provides businesses with two-way radio, telephone, paging, and internet access services, as well as wholesales fibre optic solutions.

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SPH US Equity	SUBURBAN PROPANE PARTNERS LP	Gas	Suburban Propane Partners, L.P. is a retail propane gas marketer that serves residential, commercial, industrial, and agricultural customers through service centres.
SR US Equity	SPIRE INC	Gas	Spire Inc. is a public utility company involved in the retail distribution of natural gas. The Company serves an area in eastern Missouri and parts of several other counties. Spire also operates underground natural gas storage fields and transports and stores liquid propane.
SRE US Equity	SEMPRA ENERGY	Integrated	Sempra Energy operates as an energy infrastructure company. The Company focuses on delivering sustainable energy to consumers, as well as invests in, develops, and operates transmission and distribution infrastructure in North America including California, Texas, Mexico, and the LNG export market.
SWX US Equity	SOUTHWEST GAS HOLDINGS INC	Gas	Southwest Gas Holdings, Inc. operates as a holding company. The Company, through its subsidiaries, provides natural gas operation, construction, and distribution services. Southwest Gas Holdings serves customers in North America.
TCP US Equity	TC PIPELINES LP	Gas	TC Pipelines, LP acquires, owns, and participates in the management of United States-based pipeline assets. The Company owns interest in the Northern Border Pipeline Company, the owner of an interstate pipeline system that transports natural gas from the Montana-Saskatchewan border to natural gas markets in the Midwestern United States.
UGI US Equity	UGI CORP	Gas	UGI Corporation distributes and markets energy products and services. The Company is a domestic and international distributor of propane. UGI offers natural gas and electricity and sells related products and services in the Middle Atlantic region of the United States.
UTL US Equity	UNITIL CORP	Integrated	Unitil Corporation, a public utility holding company, conducts a combination electric and gas utility distribution operation in north central Massachusetts and electric utility distribution operations in the seacoast and capital city areas of New Hampshire. The Company is also involved in energy planning, procurement, marketing, and consulting activities.

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WEC US Equity	WEC ENERGY GROUP INC	Integrated	WEC Energy Group, Inc. operates as an electric and natural gas delivery company. The Company manages electric and natural gas distribution and transmission lines, as well as power plants. WEC Energy Group serves customers in Wisconsin, Illinois, Michigan, and Minnesota.
XEL US Equity	XCEL ENERGY INC	Integrated	Xcel Energy, Inc. provides electric and natural gas services. The Company offers a variety of energy-related services including generation, transmission, and distribution of electricity and natural gas throughout the United States. Xcel Energy serves customers in portions of Colorado, Michigan, Minnesota, New Mexico, North Dakota, South Dakota, Texas, and Wisconsin.