



Estimating WACC for Regulated Utilities in the United States

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1 Introduction and Summary

In its March 2014 report prepared for Transpower, Frontier Economics challenges the New Zealand High Court's ("Court") assertion that the Commerce Commission's ("Commission") practice of choosing a point estimate well above the 50th percentile enjoys limited favour. Specifically, the Frontier Economics' report draws on examples of regulatory practice in Great Britain and Australia to suggest that "the Commission's approach of adopting the 75th percentile of the WACC range is very much in line with accepted regulatory practice."¹

Here, we expand on the Frontier Economics research by examining regulatory practice in the United States (US). We have surveyed nine recent state-level regulatory decisions in the energy sector, as well as federal decisions made by the Federal Energy Regulatory Commission (FERC). Two relevant points can be drawn from this analysis (summarised in Table 1.1 on the next page)

- US regulators (like their counterparts in the UK, Australia and New Zealand), adopt the practice of specifying a reasonable range of returns. This reflects the uncertainty involved in setting an allowed rate of return for infrastructure assets. The way that the ranges are set varies by regulator.
- Regardless of how the range is determined, most recent regulatory decisions in the US allow energy utilities to earn returns that sit above the mid-point of the range. In five of the nine state-level decisions we reviewed, the regulator allowed a return on equity between the 75th and 86th percentile. In the case of electricity transmission, specific incentives apply that shift the allowed ROE from the mid-point of the range to well above the 75th percentile (depending on certain criteria being met, such as participation in a Regional Transmission Organisation).

While not often explicitly stated in the regulatory decisions, the clear inference from the decisions we reviewed is that US regulators err on the side of granting a higher rate of return to avoid constraining capital for investment in critical infrastructure.

¹ Frontier Economics. March 2014. "Evidence in support of setting allowed rates of return above the midpoint of the WACC range." Prepared for Transpower New Zealand Ltd. <http://comcom.govt.nz/dmsdocument/11642> (accessed April 15, 2014).

Table 1.1: ROE Estimation in Recent Energy Sector Rate Cases in the US

Jurisdiction	Service	Utility Name	ROE Range of Reasonableness	Authorised ROE	Percentile in ROE Range
FERC ¹	Electricity transmission	N/A	Based on DCF of Proxy Group	N/A	Median or 50 th , with an allowed uplift when certain conditions are met
FERC ¹	Gas pipelines	N/A	Based on DCF of Proxy Group	N/A	Median
California ²	Electricity & Gas	San Diego Gas & Electric	9.7 to 10.4%	10.3%	86th
California ³	Electricity	Southern California Edison	9.8 to 10.6%	10.45%	81st
Massachusetts ⁴	Electricity	National Grid	7.5 to 11.02%	10.35%	81st
California ⁵	Gas	Southern California Gas	9.4 to 10.3%	10.1%	78th
California ⁶	Electricity & Gas	Pacific Gas & Electric	9.8 to 10.6%	10.4%	75th
District of Columbia ⁷	Electricity	Pepco	9.75 to 10.25%	10%	50th
Florida ⁸	Electricity	Florida Power & Light	9.5 to 11.5%	10.5%	50th
North Carolina ⁹	Electricity	Duke Energy	9.75 to 10.75%	10.2%	45th
Maryland ¹⁰	Electricity	Pepco	9.1 to 10.25%	9.36%	23rd

Sources: ¹ *Southern California Edison v. FERC*, No. 11-1471, (D.C. Circuit, May 10, 2013). Pp. 9–10. <http://www.ferc.gov/legal/court-cases/opinions/2013/11-1471-opinion.pdf>

² California Public Utilities Commission. Dec. 26, 2012. Decision 12-12-034. Proceeding A12-04-015. P. 40.

³ CPUC. D.12-12-034. P. 39.

⁴ Massachusetts Department of Public Utilities. Nov. 30, 2009. Order on D.P.U. 09-39. P. 400.

⁵ CPUC. D.12-12-034. P. 42.

⁶ CPUC. D.12-12-034. P. 43.

⁷ Dist. of Columbia Public Service Commission. Sept. 27, 2012. Order No. 16930. Formal Case 1087. P. 61.

⁸ Florida Public Service Commission. Jan. 14, 2013. Order No. PSC-13-0023-S-EI. Docket No. 120015-EI. P. 5.

⁹ North Carolina Utilities Commission. Sept. 24, 2013. Docket No. E-7, Sub 1026. P. 50.

¹⁰ Maryland Public Service Commission. July 12, 2013. Order No. 85724. Case No. 9311. P. 105.

We begin by providing a brief overview of the regulatory framework in the United States (Section 2), which is essential to understanding why regulators rely on such diverse approaches for setting the authorised cost of capital. We then turn to the two steps in determining the cost of capital that US regulators generally follow:

- Establishing the “range of reasonableness” for return on equity (ROE) (Section 3)²
- Selecting the point estimate within this range, which is used for ratemaking purposes (Section 4)

In Sections 3 and 4, we rely on evidence from recent ratemaking proceedings before federal and state regulators.

² As we describe in Section 2, the cost of debt is generally uncontested in ratemaking proceedings. Therefore, regulators, utilities, and interveners tend to focus on ROE.

2 Overview of Regulation in the United States

To understand the approaches adopted by regulators in the US to setting the cost of capital, it is worth briefly describing the broad framework for making regulatory pricing decisions. Three features are particularly relevant to this survey of how regulators define the ROE range, and select a point estimate for ratemaking:

- The regulatory jurisdiction that applies to different utilities
- The broad principles that regulators in the United States follow when setting the authorised cost of capital
- Why regulatory proceedings in the United States generally focus on the ROE component of cost of capital.

2.1 A “Patchwork” of Regulatory Jurisdictions

Public utilities in the US are generally regulated by multiple regulatory agencies. At a minimum, this includes a state regulator—one in each of 50 states and the District of Columbia—and a federal regulator. This distinction matters because each regulator uses a unique approach to establishing the authorised cost of capital in ratemaking proceedings.

For the purposes of this note, we focus on federal and state regulation in the energy sector.³ The Federal Energy Regulatory Commission (FERC) has jurisdiction over electric transmission networks, oil and natural gas (“gas”) pipelines, and wholesale power transactions. This federal jurisdiction applies because these infrastructure assets cross state boundaries. Meanwhile, state regulators (also known as Public Utilities Commissions or PUCs) have jurisdiction over energy distribution networks, retailing services, and retail rates.

2.2 Broad Principles for Setting the Authorised Cost of Capital

In setting the authorised cost of capital, both federal and state regulators adhere to the same set of broad regulatory principles. These principles are important because regulators frame their decisions about the cost of capital in these terms. Specifically, regulators need to ensure that the authorised cost of capital:

- Preserves a company’s financial integrity
- Allows a company to attract capital on reasonable terms, and
- Is comparable to returns on investments of similar risk.⁴

Importantly, the focus in the US is on achieving these outcomes—not on the methodology that is used to determine the regulatory cost of capital.

These principles have been shaped by decades of legal and regulatory precedent, in which the United States courts have granted significant deference to regulators on matters of fact and other technical issues, such as ratemaking and specifically setting the allowed cost of capital.

³ The water sector in the United States is mostly publicly-owned, and therefore generally not subject to economic regulation under United States laws. The telecommunications industry has largely transitioned to price cap regulation, and therefore authorised costs of capital are not explicitly defined as they would be under traditional, rate-of-return regulation.

⁴ Massachusetts Department of Public Utilities. November 30, 2009. Order on D.P.U. 09-39. P. 396.

2.3 Regulators Focus on ROE

In the United States, regulators tend to focus on the ROE component of authorised cost of capital. This is because regulatory precedent in the United States relies on the embedded cost of debt as the basis for setting the allowed cost of debt for ratemaking purposes. Because the embedded cost of debt is easily observable, so long as it is reasonable, it is generally uncontested by consumer advocates and other parties with an interest in the regulatory proceeding.

As noted in a report submitted to the Australian Productivity Commission: "...many US regulators have considered whether the utility's proposed finance costs are appropriate, rather than determine a benchmark debt finance allowance."⁵

⁵ Network Economics Consulting Group. September 2003. "International comparison of WACC decisions." Submission to the Productivity Commission Review of the Gas Access Regime. P. 32. http://www.pc.gov.au/__data/assets/pdf_file/0018/52182/sub056.pdf (accessed April 15, 2014).

3 Approaches for Defining the ROE Range of Reasonableness

While US regulators have a specific focus on ROE, the practice of specifying a “range of reasonableness” is widespread.⁶ This is not surprising since in jurisdictions (like New Zealand) that estimate a broader cost of capital, much of the uncertainty comes from estimating the required ROE.

Table 3.1 summarises the degree of discretion enjoyed by regulators in defining the range of reasonableness for ROE. While FERC follows a roughly prescribed methodology, state PUCs generally consider multiple calculation methodologies before defining a “range of reasonableness”. We provide specific detail in the sections that follow.

Table 3.1: Elements of Regulatory Discretion in Setting the ROE Range

Regulator	Does the regulator have discretion in choosing...?		
	Calculation Method	Proxy Group	Inputs to Calculation
FERC		✓	✓
State PUCs	✓	✓	✓

3.1 FERC’s Approach

The FERC methodology relies on a simple discounted cash flow (DCF) model (also known as the Gordon growth model). This model “postulates that common equity cost can be derived by adding the dividend-to-price ratio (D/P) of a company’s common stock to the investors’ expected (constant and infinite) growth rate in the stock’s dividend per share (g).”⁷ In this regard, by selecting a preferred calculation method, FERC seeks to promote regulatory certainty by minimising perceptions of discretion.

However, much discretion—and thus uncertainty—remains in FERC’s preferred DCF methodology. For example, because many energy utilities are wholly owned subsidiaries of publicly-traded holding companies, FERC cannot rely on publicly-available dividend pay-out and stock price data. Rather, FERC must establish an acceptable proxy group of comparable-risk utilities. FERC has specified a preference for three criteria in determining risk comparability:⁸

- **Business profile**—do comparators have similar lines of business (such as electric, gas, and so on)?
- **Firm size and composition**—do comparators have similarly sized annual revenues and comparable assets (such as large generation facilities)?

⁶ The concept of a “range of reasonableness” is couched in a long history of legal and regulatory precedent, including two seminal United States Supreme Court cases: *Fed. Power Comm’n v. Hope Natural Gas Co.*, 320 U.S. 591 (1944); and *Bluefield Waterworks & Improvement Co. v. Pub. Serv. Comm’n.*, 262 U.S. 679 (1923)

⁷ Gentile, Carmen L. and Monica M. Berry. August 2013. “Bargain Bonanza: Is Discounted Cash Flow (DCF) Still a Reliable Tool for Determining Equity Cost?” *Public Utilities Fortnightly*. [http://www.schiffhardin.com/File%20Library/Publications%20\(File%20Based\)/HTML/energy_080913index2.html](http://www.schiffhardin.com/File%20Library/Publications%20(File%20Based)/HTML/energy_080913index2.html) (accessed April 15, 2014)

⁸ Lesser, Jonathan A. and Emma Nicholson. 2009. “Abandon All *Hope*? FERC’s Evolving Standards for Identifying Comparable Firms and Estimating the Rate of Return.” *Energy Law Journal* 30:105, 105–132. http://continentalecon.com/publications/other/elj_april2009.pdf (accessed April 15, 2014)

- **Geography**—are comparators clustered in the same geographic regions?

Despite these criteria, the choice of proxy group remains a major source of contention among interested parties.

Once the proxy group has been chosen, there remains the difficult challenge of how to derive the growth rate (g) that is essential FERC's preferred DCF model. FERC precedent indicates a preference for data from one of two sources: (1) analysts' estimates of earnings growth as compiled by the Institutional Brokers' Estimate System (IBES), and (2) sustainable internal dividend growth (SIDG) derived from projected data from Value Line.

To summarise FERC's approach, while it has prescribed the calculation method and even specified criteria regarding the choice of proxy group and inputs to the growth rate, significant regulatory discretion remains.

3.2 The PUCs' Approach

To contrast with FERC's approach, the state PUCs generally define the range of reasonableness for ROE by considering all interested parties' submissions. In practice, this means that interested parties derive their own set of ranges by varying:

- **Calculation method**—DCF, risk premium (RPM), and capital asset pricing model (CAPM) are commonly used
- **Proxy group**—Choice of proxy group varies significantly from state to state, depending on regulatory precedent
- **Inputs to the calculation**—Interested parties can “cherry pick” inputs that yield a result that suits their position.

For example, the cost of capital testimony submitted by the utility may include a ROE range on the high end (such as 11.5 to 12.5 percent), whereas the testimony submitted by major energy users' groups and consumer advocates would propose a ROE range on the low end (such as 7.5 to 9 percent). Regulators then aggregate all of the parties' proposals, screen the aggregate range for outliers, and ultimately select a “range of reasonableness” that complies with the broad regulatory mandates set out in Section 2.2.

4 Approaches for Selecting a ROE Point Estimate

Selecting the ROE point estimate used to set regulated prices is inevitably contentious. Our research suggests that there are generally two approaches to setting the ROE point estimate once the range of reasonableness is defined:

- Explicitly selecting the midpoint (50th percentile) or the median
- Selecting a point estimate based on the judgment of the regulator.

As with the approaches for defining the range of reasonableness, FERC prefers the more prescriptive approach of selecting the midpoint or the median, while the state PUCs tend to select a point estimate based on regulatory judgment and precedent.

4.1 Midpoint (50th Percentile) or Median

Once the zone of reasonableness is constructed, FERC relies on regulatory precedent to determine whether to apply the median or midpoint (50th percentile). In the case of individual electric transmission companies, FERC selects the median of the range if the companies are filing individually. In contrast, FERC opts for the midpoint (50th percentile) for transmission companies that are applying jointly as a regional group.⁹ For gas pipeline companies, FERC relies exclusively on the median of the “range of reasonableness.” This approach has been modified at times to address the concern that the allowance may be insufficient to promote efficient levels of transmission investment.

4.2 Commission Judgment

To contrast with FERC’s approach, state PUCs tend to exercise considerable discretion in setting the ROE point estimate. While the level of discretion is generally consistent from state to state,¹⁰ the degree to which the PUCs characterise their determination of a ROE point estimate is not.

4.2.1 Commission judgment guided by broad regulatory principles

PUC orders in ratemaking proceedings generally do not specify how a point estimate was selected, other than stating that their orders comply with the broad regulatory principles described in Section 2.2. While somewhat vague, regulatory practice in the United States is for PUCs to demonstrate that the authorised ROE for any utility meets the principles set out in legal and regulatory precedent—including the Supreme Court’s *Bluefield* and *Hope* decisions.⁶ As a result, PUCs shy away from more explicitly defining a policy of selecting a point estimate within the upper range of the “range of reasonableness” for fear of exposing themselves to unnecessary scrutiny and litigation risk.

For example, in Pepco’s recent rate case before the District of Columbia Public Service Commission, the commission suggested that it considered all results submitted by interested parties.

*...In determining the just and reasonable cost of equity, the Commission considers the entire record, which may include comparative results derived from other models....*¹¹

⁹ *Southern California Edison v. FERC*, No. 11-1471, (D.C. Circuit, May 10, 2013). P. 10. <http://www.ferc.gov/legal/court-cases/opinions/2013/11-1471-opinion.pdf>

¹⁰ Subject to state laws governing the authorities delegated to the PUCs.

¹¹ Dist. of Columbia Public Service Commission. Order No. 16930. Formal Case 1087. P. 58.

...the case law is well-settled that the establishment of a rate of return on common equity at any point within the set range of reasonableness is clearly within the Commission's statutory authority to set, just, reasonable, and non-discriminatory rates.

In a similar show of Commission discretion, in National Grid's rate case before the Massachusetts regulator (Department of Public Utilities), the commission indicated that it wielded "considerable judgment and agency expertise" in setting a ROE point estimate.

...While the results of analytical models are useful, the Department must ultimately apply its own judgment to the evidence to determine an appropriate rate of return. We must apply to the record evidence and argument considerable judgment and agency expertise to determine the appropriate use of the empirical results. Our task is not a mechanical or model-driven exercise....In making these findings, we have considered both qualitative and quantitative aspects of the Company's various methods for determining its proposed rate of ROE, as well as the arguments of the parties in this proceeding.¹²

4.2.2 Commission judgment guided by more explicitly defined factors

In very rare cases, PUCs have more explicitly defined the factors affecting their choice of ROE—particularly in the instance of a point estimate at the high end of the "range of reasonableness." For example, in a 2012 cost of capital proceeding affecting the state's four largest investor-owned electric and/or gas utilities, the California Public Utilities Commission (CPUC) determined that the ROE point estimate for Southern California Edison should be "set at the upper end of the adopted ROE range." Among the reasons for selecting a high point estimate, the CPUC identified a need to "assure confidence in the financial soundness of the utility and to maintain investment grade credit ratings."

*After considering the evidence on market conditions, trends, creditworthiness, interest rate forecasts, quantitative financial models, additional risk factors, and interest coverage presented by the parties and applying our informed judgment, we arrive at a base ROE range of 9.8% to 10.6%. **From that range we conclude that the adopted ROE should be set at the upper end of the adopted ROE range found just and reasonable.** We find that SCE's authorized test year 2013 ROE should be 10.45%.¹³ This ROE is reasonably sufficient to assure confidence in the financial soundness of the utility and to maintain investment grade credit ratings while balancing the interest between shareholders and ratepayers.¹⁴*

The CPUC relied on similar language in justifying ROE point estimates at the "upper end of the adopted ROE range" for Pacific Gas & Electric and for San Diego Gas & Electric.¹⁵

Yet, the CPUC stopped short of identifying a specific percentile within the range that was "just and reasonable." The commission instead reaffirmed that its ROE determinations complied with legal precedent, were based on informed judgment (instead of mechanistic analysis), and fully considered the unique risks and costs facing each utility.

¹² Massachusetts Department of Public Utilities. November 30, 2009. Order on D.P.U. 09-39. Pp. 399 & 401.

¹³ This is equivalent to the 81st percentile of the ROE range of reasonableness established for Southern California Edison (SCE).

¹⁴ California Public Utilities Commission. December 26, 2012. Decision 12-12-034. Proceeding A12-04-015. P. 39.

¹⁵ CPUC. D.12-12-034. Pp. 40 & 43.

The legal standard for setting the fair ROE has been established by the United States Supreme Court in the Bluefield and Hope cases....It is the application of informed judgment, not the precision of quantitative financial models, which is the key to electing a specific ROE....Company-wide factors such as risks, capital structures, debt costs and credit ratings are considered in arriving at a fair ROE.¹⁶

¹⁶ CPUC. D.12-12-034. Pp. 50–51.