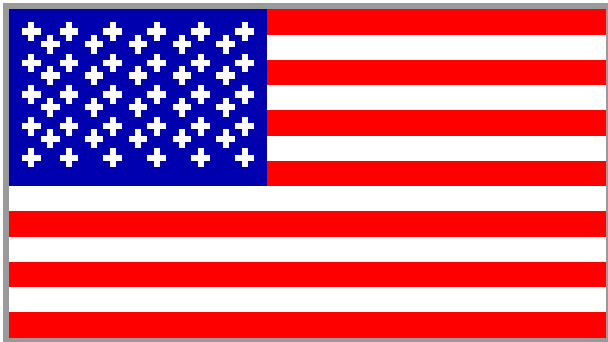
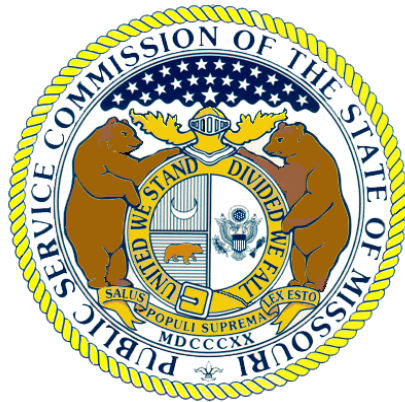


**Rwanda Utilities Regulatory Agency (RURA), National
Association of Regulatory Utility Commissioners (NARUC)
and Missouri Public Service Commission (MPSC)**

Regulatory Partnership Program



Sponsored by US Agency for International Development (USAID)

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Wess Henderson

A Reasonable Rate of Return

- Through a determination of the overall revenue requirement, regulation is designed to provide utilities with the opportunity to earn a fair profit level, to prevent them from earning excessive profits, and to insure that the expenses claimed by utilities are incurred under honest, efficient, and prudent management.

(continued)

- Since utilities function without full competitive pressure and possess monopoly power, the cost information submitted by utilities in rate proceedings is carefully examined to insure that they were incurred honestly, efficiently, and prudently.

(continued)

- Rate base is financed with the capital structure and these two items are normally very similar in size. This procedure is known as the rate base – rate of return standard of public utility rate determination.

Rate Base – Rate of Return Concept

- Public utilities have been traditionally regulated based upon the rate base rate of return concept. Under this method, utilities are allowed to recover their operating expenses, taxes and depreciation, on a dollar-for-dollar basis, plus are allowed an opportunity to earn a fair rate of return on the assets utilized (i.e., rate base) in providing service to its customers.

Rate Base

- The determination of rate base has historically been one of the most important and most difficult problems confronting regulatory commissions.

Components of Rate Base

- Plant in Service
- Accumulated Depreciation
- Working Capital
- Pre Payments
- Fuel Inventory
- Materials and Supplies
- Customer Advances for Construction
- Deferred Income Taxes
- Customer Deposit
- City Tax
- State Tax

Measurement of Rate Base

- The actual measurement technique employed in defining rate base has historically been the subject of much debate.
- The Missouri Public Service Commission uses **Original Cost**. This is the prevalent measurement technique over the past few decades and reflects the purchase price of plant and equipment net of accumulated depreciation.

Fair Rate of Return

- Once the rate base is determined, the fair rate of return must be estimated. The rate base, measured in dollars, is multiplied by the fair rate of return, expressed in a percentage, to determine the portion of revenue requirement necessary to allow the utility to recover its capital costs.

Rate of Return

- Regulation of public utilities reflects a belief that the competitive market alone cannot be relied on to protect the public interest. It is believed that a truly competitive market involving utilities cannot survive and will fail to promote the economic welfare.

Rate of Return (continued)

- Regulation acts as a substitute for competition in utility markets.

Rate of Return (continued)

- The applicable rule of law prohibits a rate of return that provides earnings that are inadequate and therefore confiscatory, and it assures an opportunity to earn a fair return.

Capital Structure

- Maintaining appropriate utility capital structures is a complex undertaking.

Fair Rate of Return

- In reality, there is no single or specific fair rate of return. Rather, the concept of a fair rate of return represents a “zone of reasonableness”. The fair rate of return is obviously a judgmental determination, both from the standpoint of a cost of capital witness’s recommendation and a commission’s decision. As a result, as long as an allowed return falls within this zone, it can be considered “just and reasonable”.

Criteria of Fair Rate of Return

- Capital-Attraction Criteria
- Management-Efficiency Criteria
- Criteria of Rate-Level Stability
- Consumer-Rationing Criteria
- Criteria of Fairness to Investors

Debt and Preferred Earnings Requirements

- Earnings requirements on debt securities and preferred stocks are generally determined easily, since there is a contractual obligation to pay a fixed annual amount of interest or preferred dividends, and their “embedded” costs can be calculated on the basis of a stated interest rate or preferred dividend, net proceeds at time of sale, and expenses of issuance.

Common Equity Earnings Requirements

- The most difficult and most important issue in rate determination is that of finding the appropriate level-of-earnings requirement or rate of return on common stock equity. Common equity is the foundation of the capital structure and makes it possible for a company to issue debt securities. The U.S. Supreme Court, in its 1942 decision in *Hope Natural Gas Company* (320 US 591), held that “the return to the equity owner should be commensurate with returns on investments in those enterprises having corresponding risks. The return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise so as to maintain credit and attract capital . . .”

Common Equity Earnings Requirements (continued)

- It is understood that the cost of equity cannot be obtained from any tables similar to bond yield tables. Expectations of future earnings, dividends, and market prices “cannot be determined by any mathematical or statistical formula but must be approached on the basis of long experience and sound judgment.”

Discounted Cash Flow

- This method generally proposes a rate of return equal to current annual dividends divided by current market price plus the anticipated annual rate of growth (i.e., dividends, earnings, and/or market value of the stock). The current dividend and market prices are easily determined; however, predicting investors' growth expectations is much more subjective.

Earnings-Price Ratio

- This approach is based on earnings from some past period and concurrent or present market prices. Its acceptance may be due partly to the fact that the basic figures are readily available. When this method first came into use, utility common stocks were selling at or near book value per share, and the calculations used were considered to be reasonably realistic. Since then, market price variations have produced highly volatile swings in E/P ratios and the measure has not been widely used.

Comparable Earnings or Opportunity Cost

- This method seeks to determine what the capital that investors have placed in a utility could earn if it were invested in other enterprises with similar risks and uncertainties, either in the utility industry or in other industries, since investors are entitled to a return at least equal to what they could get elsewhere.

Capital Asset Pricing Model (CAPM)

- This model assumes that the expected rate of return consists of a risk-free return, plus compensation for the risk of the security to be invested in.

Capital Structure and Cost of Capital

- The total cost of capital for a public utility, represents the average percentage cost of the capital items that finance assets used to provide utility service to customers. The total cost of capital is computed as follows:
 1. Capital structure components are identified and stated in dollars.

	<u>Amount</u>
Debt	\$56,000
Preferred Stock	\$5,000
Common Equity	<u>\$51,000</u>
Total	\$112,000

Capital Structure and Cost of Capital (continued)

2. Capital structure components are expressed as a percentage of total capital.

	<u>Amount</u>	<u>Percent</u>
Debt	\$56,000	50%
Preferred Stock	\$5,000	4.46%
Common Equity	<u>\$51,000</u>	<u>45.54%</u>
Total	\$112,000	100%

Capital Structure and Cost of Capital (continued)

3. Cost of each capital item is measured and multiplied by the percent of capital.

	<u>Amount</u>	<u>Percent</u>	<u>Cost</u>	<u>Weight</u>
Debt	\$56,000	50%	8%	4.0%
Preferred Stock	\$5,000	4.46%	9%	0.40%
Common Equity	<u>\$51,000</u>	<u>45.54%</u>	<u>8.5%</u>	<u>3.87%</u>
Total	\$112,000	100%		8.27%

Capital Structure and Cost of Capital (continued)

4. The sum of the weighted costs for all items in the capital structure represents the “cost of capital” or “fair rate of return”.

Rate Base

	<u>Adjusted Test Year</u>
Total utility Plant in Service	\$165,000
Less: Accumulated Depreciation	<u>\$64,000</u>
Net Utility Plant in Service	\$101,000
Add:	
Material & Supplies	\$1,900
Fuel Inventory	\$1,100
Cash working capital	<u>\$8,000</u>
Total Rate Base	\$112,000

Net Operating Income or Rate of Return

Adjusted Test Year Rate Base	\$112,000
Rate of Return	<u>x 8.27%</u>
Return on Investment	\$9,262