Q. Evidence of Dr. Vander Weide: When did Dr. Vander Weide last file evidence on behalf of a U.S. electricity utility in which he provided an estimate of the firm's cost of equity? Please provide a copy of the evidence filed.

A. Dr. Vander Weide filed evidence on the cost of equity before the Federal Energy Regulatory Commission ("FERC") using the FERC's DCF formula approach on behalf of Mississippi Power Company. The testimony is attached.

Federal Energy Regulatory Commission
Docket No. ER012-___-000
Testimony of Dr. James H. Vander Weide

UNITED STATES OF AMERICA

BEFORE THE

FEDERAL ENERGY REGULATORY COMMISSION

MISSISSIPPI POWER COMPANY / DOCKET NO. ER012-___-000

MISSISSIPPI POWER COMPANY

PREPARED DIRECT TESTIMONY OF DR. JAMES H. VANDER WEIDE

NOVEMBER 2011

MISSISSIPPI POWER COMPANY
RATE OF RETURN

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UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

MISSISSIPPI POWER COMPANY **DOCKET NO. ER012-___-000**

PREPARED DIRECT TESTIMONY OF JAMES H. VANDER WEIDE
ON BEHALF OF
MISSISSIPPI POWER COMPANY

A. Introduction

Q. 1 Please state your name, title, and business address for the record.

A. 1 My name is James H. Vander Weide. I am Research Professor of Finance and Economics at Duke University, the Fuqua School of Business. I am also President of Financial Strategy Associates, a firm that provides strategic and financial consulting services to corporate clients. My business address is 3606 Stoneybrook Drive, Durham, North Carolina 27705.

Q. 2 Please describe your educational background and prior academic experience.

A. 2 I graduated from Cornell University with a Bachelor's Degree in Economics and from Northwestern University with a Ph.D. in Finance. After joining the faculty of the School of Business at Duke University, I was named Assistant Professor, Associate Professor, Professor, and then Research Professor. I have published research in the areas of finance and economics and taught courses in these fields at Duke for more than thirty-five years. I am now retired from my teaching duties at Duke. A summary of my research, teaching, and other professional experience is presented in Attachment 1.

Q. 3 Have you previously testified on financial or economic issues?

A. 3 Yes. As an expert on financial and economic theory and practice, I have participated in more than 400 regulatory and legal proceedings before the U.S. Congress, the Canadian Radio-Television and Telecommunications Commission, the Federal Communications Commission, the National Telecommunications and Information Administration, the Federal Energy Regulatory Commission, the National Energy Board (Canada), the public service commissions of forty-three

states and three Canadian provinces, the insurance commissions of five states, the Iowa State Board of Tax Review, the National Association of Securities Dealers, and the North Carolina Property Tax Commission. In addition, I have prepared expert testimony in proceedings before the U.S. Tax Court, the U.S. District Court for the District of Nebraska; the U.S. District Court for the District of New Hampshire; the U.S. District Court for the District of Northern Illinois; the U.S. District Court for the Eastern District of North Carolina; the Montana Second Judicial District Court, Silver Bow County; the U.S. District Court for the Northern District of California; the Superior Court, North Carolina; the U.S. Bankruptcy Court for the Southern District of West Virginia; and the U. S. District Court for the Eastern District of Michigan.

Q. 4 What is the purpose of your testimony?

A. 4 I have been asked by Mississippi Power Company ("Mississippi Power" or "the Company") to prepare an independent appraisal of Mississippi Power's cost of equity and to recommend a rate of return on equity ("ROE") that is fair, that allows Mississippi Power to attract capital on reasonable terms, and that allows Mississippi Power to maintain its financial integrity.

B. Economic and Legal Principles

Q. 5 How do economists define the required rate of return, or cost of capital, associated with particular investment decisions, such as the decision to invest in electric generation, transmission, and distribution facilities?

A. 5 Economists define the cost of capital as the return investors expect to receive on alternative investments of comparable risk.

Q. 6 How does the cost of capital affect a firm's investment decisions?

A. 6 The goal of a firm is to maximize the value of the firm. This goal can be accomplished by accepting all investments in plant and equipment with an expected rate of return greater than the cost of capital. Thus, a firm should continue to invest in plant and equipment only so long as the return on its investment is greater than or equal to its cost of capital.

Q. 7 How does the cost of capital affect investors' willingness to invest in a company?

A. 7 The cost of capital measures the return investors can expect on investments of comparable risk. The cost of capital also measures the investor's required rate of return on investment because rational investors will not invest in a particular investment opportunity if the expected return on that opportunity is less than the cost of capital. Thus, the cost of capital is a hurdle rate for both investors and the firm.

Q. 8 Do all investors have the same position in the firm?

A. 8 No. Debt investors have a fixed claim on a firm's assets and income that must be paid prior to any payment to the firm's equity investors. Since the firm's equity investors have a residual claim on the firm's assets and income, equity investments are riskier than debt investments. Thus, the cost of equity exceeds the cost of debt.

Q . 9 What is the overall or average cost of capital?

A. 9 The overall or average cost of capital is a weighted average of the cost of debt and cost of equity, where the weights are the percentages of debt and equity in a firm's capital structure.

Q. 10 Can you illustrate the calculation of the overall or weighted average cost of capital?

A. 10 Yes. Assume that the cost of debt is 7 percent, the cost of equity is 13 percent, and the percentages of debt and equity in the firm's capital structure are 50 percent and 50 percent, respectively. Then the weighted average cost of capital is expressed by .50 times 7 percent plus .50 times 13 percent, or 10.0 percent.

Q. 11 How do economists define the cost of equity?

A. 11 Economists define the cost of equity as the return investors expect to receive on alternative equity investments of comparable risk. Since the return on an equity investment of comparable risk is not a contractual return, the cost of equity is more difficult to measure than the cost of debt. However, as I have already noted, there is agreement among economists that the cost of equity is greater than the cost of debt. There is also agreement among economists that the cost of equity, like the cost of debt, is both forward looking and market based.

Q. 12 Does the required rate of return on an investment vary with the risk of that investment?

A. 12 Yes. Since investors are averse to risk, they require a higher rate of return on investments with greater risk.

Q. 13 Do economists and investors consider future industry changes when they estimate the risk of a particular investment?

A. 13 Yes. Economists and investors consider all the risks that a firm might incur over the future life of the company.

Q. 14 Are these economic principles regarding the fair return for capital recognized in any Supreme Court cases?

A. 14 Yes. These economic principles, relating to the supply of and demand for capital, are recognized in two United States Supreme Court cases: (1) *Bluefield Water Works and Improvement Co. v. Public Service Comm'n.*; and (2) *Federal Power Comm'n. v. Hope Natural Gas Co*. In the *Bluefield Water Works* case, the Court states:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding, risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties. [*Bluefield Water Works and Improvement Co. v. Public Service Comm'n.* 262 U.S. 679, 692 (1923)].

The Court clearly recognizes here that: (1) a regulated firm cannot remain financially sound unless the return it is allowed to earn on the value of its property is at least equal to the cost of capital (the principle relating to the demand for capital); and (2) a regulated firm will not be able to attract capital if it does not offer investors an opportunity to earn a return on their investment equal to the return they expect to earn on other investments of the same risk (the principle relating to the supply of capital).

In the *Hope Natural Gas* case, the Court reiterates the financial soundness and capital attraction principles of the *Bluefield* case:

> From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock [citation omitted]. By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital. [*Federal Power Comm'n. v. Hope Natural Gas Co*., 320 U.S. 591, 603 (1944)].

C. Business and Financial Risks in Electric Energy Business

Q. 15 What are the primary factors that affect the business and financial risks of electric energy companies such as Mississippi Power?

A. 15 The business and financial risks of electric energy companies such as Mississippi Power are affected by a number of economic factors, including:

1. Demand Uncertainty. Demand uncertainty is one of the primary business risks of investing in electric energy companies such as Mississippi Power. Demand uncertainty is caused by: (a) the strong dependence of electric demand on the state of the economy and weather patterns; (b) the ability of customers to choose alternative forms of energy, such as natural gas or oil; (c) the ability of some customers to locate facilities in the service areas of competitors; (d) the ability of some customers to conserve energy or produce their own electricity under cogeneration or self-generation arrangements; and (e) the ability of municipalities to go into the energy business rather than renew the company's franchise. Demand uncertainty is a problem for electric companies because of the need to plan for infrastructure additions many years in advance of demand.
2. Operating Uncertainty. The business risk of electric energy companies is also increased by the inherent uncertainty in the typical electric energy company's operations. Operating uncertainty arises as a result of: (a) high volatility in fuel prices or interruptions in fuel supply; (b) the prospect of rising employee health care and pension expenses; (c) uncertainty over plant outages, the cost of purchased power, and the revenues achieved from off system sales; (d) variability in maintenance costs and the costs of other materials,

(e) uncertainty over outages of the transmission and distribution systems, as well as storm-related expenses; and (f) the prospect of increased expenses for security.

3. Investment Uncertainty. The electric energy business requires very large investments in the generation, transmission, and distribution facilities required to deliver energy to customers. The future amounts of required investments in these facilities are highly uncertain as a result of: (a) demand uncertainty; (b) the prospect that Congress or state legislatures will pass stricter environmental regulations and clean air requirements; (c) the prospect of needing to incur additional investments to insure the reliability of the company's transmission and distribution networks; (d) uncertainty regarding the regulatory and management structure of the electric transmission network; and (e) uncertainty regarding future decommissioning costs. Furthermore, the risk of investing in electric energy facilities is increased by the irreversible nature of the company's investments in generation, transmission, and distribution facilities. For example, if an electric energy company decides to make a major capital expenditure in a generation plant, and, as a result of new environmental regulations, energy produced by the plant becomes uneconomic, the company may not be able to recover its investment.
4. High Operating Leverage. The electric energy business requires a large commitment to fixed costs in relation to the operating margin on sales, a situation known as high operating leverage. The relatively high degree of fixed costs in the electric energy business arises from the average electric energy company's large investment in fixed generation, transmission, and distribution facilities. High operating leverage causes the average electric energy company's operating income to be highly sensitive to revenue fluctuations.
5. High Degree of Financial Leverage. The large capital requirements for building economically efficient electric generation, transmission, and distribution facilities, along with the traditional regulatory preference for the use of debt, have encouraged electric utilities to maintain highly debt-leveraged capital structures as compared to

non-utility firms. High debt leverage is a source of additional risk to utility stock investors because it increases the percentage of the firm's costs that are fixed. The use of financial leverage also reduces the firm's interest coverage and increases vulnerability to variations in earnings.

6. Regulatory Uncertainty. Investors' perceptions of the business and financial risks of electric energy companies are strongly influenced by their views of the quality of regulation. Investors are painfully aware that regulators in some jurisdictions have been unwilling at times to set rates that allow companies an opportunity to recover their cost of service and earn a fair and reasonable return on investment. As a result of the perceived increase in regulatory risk, investors will demand a higher rate of return for electric energy companies operating in those states. On the other hand, if investors perceive that regulators will provide a reasonable opportunity for the company to maintain its financial integrity and earn a fair rate of return on its investment, investors will view regulatory risk as minimal.

Q. 16 Have any of these risk factors changed in recent years?

A. 16 Yes. The risk of investing in electric energy companies has increased as a result of significantly greater macroeconomic uncertainty; higher projected electric energy company capital expenditures; greater volatility in fuel prices; greater uncertainty in the cost of satisfying environmental requirements; more volatile purchased power and off system sales prices; greater uncertainty in employee health care and pension expenses; greater uncertainty with regard to legislative mandates related to generation mix, such as renewable portfolio standards; and greater uncertainty in the expenses associated with system outages, storm damage, and security. Each of these factors puts pressure on customer rates and therefore increases regulatory risk.

Q. 17 How does greater macroeconomic uncertainty affect the business and financial risks of investing in electric energy companies such as Mississippi Power?

A. 17 Greater macroeconomic uncertainty increases the business and financial risks of investing in electric energy companies such as Mississippi Power by fundamentally increasing demand uncertainty, investment uncertainty, and regulatory uncertainty.

Q. 18 Why does macroeconomic uncertainty increase demand uncertainty?

A. 18 Macroeconomic uncertainty increases demand uncertainty because the demand for electric energy services depends on the state of the economy. The greater the uncertainty regarding the state of the economy, the greater will be the uncertainty regarding the demand for energy.

Q. 19 How does increased demand uncertainty affect the uncertainty of the future return on investment for Mississippi Power?

A. 19 Increased demand uncertainty greatly increases the uncertainty of the future return on investment for Mississippi Power because most of the Company's costs are fixed, while its revenues are variable. Thus, greater volatility in revenues produces greater volatility in return on investment.

Q. 20 Why does macroeconomic uncertainty increase investment cost uncertainty?

A. 20 Increased macroeconomic uncertainty greatly increases the uncertainty of investment costs for electric companies like Mississippi Power because it increases the uncertainty regarding: the demand for electric energy; the economics of alternative generating technologies; the cost of environmental regulations; the cost of construction materials and labor; and the amount of additional investment required to ensure the reliability of the company's transmission and distribution networks.

Q. 21 Why does macroeconomic uncertainty increase regulatory uncertainty?

A. 21 Regulatory uncertainty arises because investors are not certain that regulators will be willing to set rates that allow companies an opportunity to recover their costs of service and earn a fair and reasonable return on investment. Regulatory uncertainty increases in difficult economic times because investors recognize that regulators are likely to face greater pressure to restrain rate increases in difficult economic times than in good economic times.

Q. 22 How do greater projected capital expenditures affect the business risks of investing in electric energy companies such as Mississippi Power?

A. 22 Greater projected capital expenditures increase the business risks of investing in electric energy companies such as Mississippi Power by increasing investment cost uncertainty, operating leverage, and regulatory uncertainty.

Q. 23 Why do greater projected capital expenditures increase an electric energy company's investment cost uncertainty?

A. 23 Greater projected capital expenditures increase investment cost uncertainty because investments in new generation, transmission, and distribution facilities take many years to complete. As investors found during the last electric energy investment boom of the 1980s, actual costs of building new generation, transmission, and distribution facilities can differ from forecasted costs as a result of changes in environmental regulations, materials costs, capital costs, and unexpected delays.

Q. 24 Why do greater projected capital expenditures increase operating leverage?

A. 24 As noted above, operating leverage increases when a firm's commitment to fixed costs rises in relation to its operating margin on sales. Increased capital expenditures increase operating leverage because investment costs are fixed, the investment period is long, and revenues do not generally increase in line with investment costs until the investment is entirely included in rate base. Thus, the ratio of fixed costs to operating margin increases when capital expenditures increase.

Q. 25 Why do greater projected capital expenditures increase regulatory uncertainty?

A. 25 As noted above, regulatory uncertainty arises because investors are aware that regulators in some states have been unwilling at times to set rates that allow a company an opportunity to recover its cost of service, including the cost of capital. Regulatory uncertainty is most pronounced when rates are projected to increase. Greater projected capital expenditures increase regulatory uncertainty because they frequently cause rates to increase.

Q. 26 How do greater projected capital expenditures affect the financial risk of investing in electric energy companies?

A. 26 The effect of greater projected capital expenditures on the financial risk of investing in electric energy companies depends on the regulatory treatment of Construction Work in Progress ("CWIP"). Greater capital expenditures generally increase financial risk because the plant and equipment associated with the capital expenditures are not included in rate base until the project is complete. However, the impact of higher capital expenditures on financial risk is reduced if CWIP is included in rate base.

Q. 27 Is the Company projecting significant capital expenditures over the next several years?

A. 27 The Company is projecting capital expenditures of $818 million in 2011, $1 billion in 2012, and $878 million in 2013. Most of these construction expenditures are associated with Mississippi Power's investment in the Kemper Integrated Gasification Combined Cycle ("IGCC") generation plant, which has been approved by the Mississippi Public Service Commission. In contrast to these projected capital expenditures, the Company's capital expenditures were approximately $102 million in 2009 and $247 million in 2010.**[1]**

Q. 28 Why are investments in new generation facilities especially risky?

A. 28 Investment in new generation facilities is especially risky because the required investment is large, illiquid, and irreversible; the investment horizon is unusually long; the investment and operating costs are highly uncertain; and environmental and safety regulations may change significantly over the life of the investment. In addition, there is no consensus on the best generation option for all utilities. The natural gas option has a lower investment cost and shorter investment horizon, but fuel costs are highly volatile. The coal and nuclear options have significantly lower long-run expected operating costs, but a higher required investment and a longer investment horizon. Renewable energy, though desirable from an environmental standpoint, may be

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[1] *See* Mississippi Power Company, 2010 Form 10-K, p. II - 360.

more expensive than other alternatives and may not produce reliable energy in peak periods. The uncertainties associated with all generation options create additional risks for electric utilities.

Q. 29 Can the risks facing Mississippi Power and other electric energy companies be distinguished from the risks of investing in companies in other industries?

A. 29 Yes. The risks of investing in electric energy companies such as Mississippi Power can be distinguished in several ways from the risks of investing in companies in many other industries. First, the risks of investing in electric energy companies are increased because of the greater capital intensity of the electric energy business and the fact that most investments in electric energy facilities are irreversible once they are made. Second, unlike returns in competitive industries, the returns from investment in the electric energy business are largely asymmetric. That is, there is little opportunity for electric energy companies to earn more than their required return, and a significant chance that they will earn less than their required return.

D. Cost of Equity Methods and Results

Q. 30 How do you estimate Mississippi Power's cost of equity?

A. 30 I estimate Mississippi Power's cost of equity by applying the discounted cash flow ("DCF") model to several proxy groups of electric energy companies.

Q. 31 Please describe the DCF model.

A. 31 The DCF model is based on the assumption that investors value an asset on the basis of the future cash flows they expect to receive from owning the asset. Thus, investors value an investment in a bond because they expect to receive a sequence of semi-annual coupon payments over the life of the bond and a terminal payment equal to the bond's face value at the time the bond matures. Likewise, investors value an investment in a firm's stock because they expect to receive a sequence of dividend payments and, perhaps, expect to sell the stock at a higher price sometime in the future.

A second fundamental principle of the DCF method is that investors value a dollar received in the future less than a dollar received today. A

future dollar is valued less than a current dollar because investors could invest a current dollar in an interest earning account and increase their wealth. This principle is called the time value of money.

Applying the two fundamental DCF principles noted above to an investment in a bond leads to the conclusion that investors value their investment in the bond on the basis of the present value of the bond's future cash flows. Thus, the price of the bond should be equal to:

EQUATION 1

$$P_B = \frac{C}{(1+i)} + \frac{C}{(1+i)^2} + \ldots + \frac{C+F}{(1+i)^n}$$

where:

P_B = Bond price;

C = Cash value of the coupon payment (assumed for notational convenience to occur annually rather than semi-annually);

F = Face value of the bond;

i = The rate of interest the investor could earn by investing his money in an alternative bond of equal risk; and

n = The number of periods before the bond matures.

Applying these same principles to an investment in a firm's stock suggests that the price of the stock should be equal to:

EQUATION 2

$$P_s = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \ldots + \frac{D_n + P_n}{(1+k)^n}$$

where:

P_S = Current price of the firm's stock;

$D_1, D_2 \ldots D_n$ = Expected annual dividend per share on the firm's stock;

P_n = Price per share of stock at the time the investor expects to sell the stock; and

k = Return the investor expects to earn on alternative investments of the same risk, i.e., the investor's required rate of return.

Equation (2) is frequently called the annual discounted cash flow model of stock valuation. Assuming that dividends grow at a constant annual rate, *g*, this equation can be solved for *k*, the cost of equity. The resulting cost of equity equation is $k = D_1/P_s + g$, where *k* is the cost of equity, D_1 is the expected next period annual dividend, P_s is the current price of the stock, and *g* is the constant annual growth rate in earnings, dividends, and book value per share. The term D_1/P_s is called the dividend yield component of the annual DCF model, and the term *g* is called the growth component of the annual DCF model.

Q. 32 Has the Commission made any decision on the DCF methodology that is applicable to electric companies?

A. 32 Yes. The Commission described such a DCF methodology in its 2000 SCE decision, subsequently affirmed in the Midwest ISO, New England ISO, and other orders.**[2]**

Q. 33 How does the Commission estimate the dividend yield component of the DCF model in that case?

A. 33 The Commission estimates the average low and high dividend yield for each month in a six-month period. It then adjusts the low and high dividend yields for one-half year of growth.

Q. 34 How does the Commission estimate the growth component of the DCF model in that case?

A. 34 The Commission estimates the growth component of the DCF model in two ways. First, it uses the familiar Gordon equation, *br* + *sv*, where *br* is internal growth and *sv* is growth from external financing. Second, the Commission uses the I/B/E/S mean estimate of long-term growth for each company.

Q. 35 Do you apply the Commission's DCF method from the SCE case?

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[2] *See*, for example*, Southern California Edison Co.*, 92 FERC¶ 61,070 (2000) ("SCE"); *Midwest Independent Transmission System Operator, Inc.*, 100 FERC ¶ 61,292 (2002) ("Midwest ISO"); *Bangor Hydro-Electric Co.*, 117 FERC¶ 61,129 (2006) ("New England ISO").

A. 35 Yes. I apply the Commission's DCF methodology to two groups of proxy electric companies. Group I consists of Value Line electric utilities that: (1) paid dividends during every quarter and did not decrease dividends during the last two years; (2) have at least two analysts included in the I/B/E/S mean growth forecast; (3) have a Value Line Safety Rank of 1, 2, or 3; (4) have an investment grade bond rating; and (5) are not the subject of a merger offer that has not been completed. Group II consists of electric utilities that satisfy the same criteria as Group I, but also have Standard & Poor's bond ratings in the range BBB+ or higher.

Q. 36 Group I contains twenty-nine electric utilities. Are there any benefits from including a large group of electric utilities in a proxy group for the purpose of estimating the cost of equity?

A. 36 Yes. The DCF model requires inputs of quantities such as investors' growth expectations that are inherently uncertain because they relate to the future rather than the past. Since investors' growth expectations are inherently uncertain, there is also some degree of uncertainty surrounding the estimate of the cost of equity for each company. However, the uncertainty in the estimate of the cost of equity for an individual company can be greatly reduced by applying the DCF model to a reasonably large sample of comparable companies. Intuitively, unusually high estimates for some individual companies are offset by unusually low estimates for other individual companies. Thus, financial economists invariably apply cost of equity methodologies to a group of comparable companies. In utility regulation, the practice of using a group of comparable companies is further supported by the regulatory standard that the utility should be allowed to earn a return on its investment that is commensurate with returns being earned on other investments of the same risk.**[3]**

Q. 37 In your second proxy group, Group II, why do you include only those companies with bond ratings of BBB+ or higher?

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[3] See *Bluefield Water Works and Improvement Co. v. Public Service Comm'n.,* 262 U.S. 679, 692 (1923) and *Federal Power Comm'n v. Hope Natural Gas Co*., 320 U.S. 591, 603 (1944).

A. 37 I include only those companies with bond ratings of BBB+ or higher in Group II because Mississippi Power's bond rating is A, and some analysts might consider companies with bond ratings in the BBB+ or higher range to be similar in risk to Mississippi Power.

Q. 38 Did the Commission use a range of bond ratings to select proxy companies in its SCE Decision?

A. 38 Yes. The Commission selected companies with bond ratings in the range A+ to A- at a time when SCE's bond rating was A.

Q. 39 Has the Commission changed its criteria for selecting proxy companies in recent decisions?

A. 39 Yes. The Commission seems to have changed its preferred criteria for selecting proxy companies in the Midwest ISO, New England ISO, and Atlantic Path Orders**[4]**. In these orders, the Commission selects proxy groups composed of electric energy companies that operate in the same region of the country as the entity whose rates are being set.

Q. 40 Does financial and economic theory require that proxy companies operate in the same region of the country as the company (the target company) whose cost of equity is being estimated?

A. 40 No. Financial economists define the cost of equity as the return investors expect to earn on other investments of the same or comparable risk. As long as the proxy group has approximately the same risk on average as the target company, the geographic region in which the proxy companies operate is irrelevant to cost of equity estimation. This conclusion is especially true in a world where capital flows freely across geographic boundaries.

Q. 41 Are there any problems with limiting the set of proxy companies only to those companies that operate in the same geographic region as the target company?

A. 41 Yes. First, the companies that operate in the same geographic region as the target company may not be comparable in risk to the target

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[4] *See,* for example*, Midwest ISO*; *New England ISO*; and *Atlantic Path 15, LLC*, 122 FERC ¶ 61,135 (2008) ("*Atlantic Path"*).

company. In such a case, the average cost of equity for the proxy companies will not equal the target company's cost of equity.

Second, restricting the proxy group only to companies that operate in the same geographic region unnecessarily limits the number of companies in the sample group. As discussed above, the uncertainty in the estimate of the cost of equity for an individual company can be significantly reduced by applying cost of equity methodologies to a reasonably large sample of comparable companies rather than to a smaller group that operates in the same geographic region as the target company.

Third, the choice of boundaries for the geographic region in which the target company operates can be subjective. When the analyst applies judgment to select a geographic region for the proxy company group, the analyst may be tempted to choose a region that includes proxy companies that produce a desired result. The analyst can eliminate the possibility of selection bias by starting with the largest possible group of comparable risk companies and eliminating only those companies with insufficient data to estimate the cost of equity.

Fourth, the use of geographic region as a criteria for selecting proxy companies could result in different estimates of the cost of equity for comparable risk companies with operations in different regions of the country. Such an outcome would produce incorrect economic signals for investment decisions.

Q. 42 What results do you obtain from your application of the Commission's DCF model to the electric utilities in Groups I and II?

A. 42 For both Group I and Group II, I obtain midpoint DCF results of 11.1 percent, median results of 9.6 percent, and average results of 9.6 percent (see Schedule 1 and Schedule 2). The average of the midpoint, median, and mean results is 10.1 percent. This average result excludes low DCF results that are less than one hundred basis points above the six-month average 2011 yield on bonds with the same rating

as the company, and excludes high DCF results that exceed 17.7 percent.**[5]**

Q. 43 How does the Commission arrive at its cost of equity in the SCE Order?

A. 43 The Commission arrives at its cost of equity by calculating the midpoint of the range of DCF results for each company in the proxy group.

Q. 44 Has the Commission continued to base the cost of equity on the midpoint of DCF results in recent decisions?

A. 44 No. In recent decisions, the Commission has based the approved cost of equity on the median rather than the midpoint of the proxy group DCF results.**[6]**

Q. 45 Do you agree with the Commission's use of the median DCF result of its chosen proxy group to set the allowed return on equity?

A. 45 No. However, I respectfully disagree with the Commission's use of the median DCF result because the median result is generally an unreliable estimate of a company's cost of equity.

Q. 46 Can you explain why the median DCF result for a proxy group of companies is likely to be an unreliable indicator of the cost of equity?

A. 46 Yes. The median result is likely to be an unreliable indicator of the cost of equity because it considers only the rank order of the results and not the values of any results other than those of the one or two middle companies.

Q. 47 Have you also estimated Mississippi Power's cost of equity using an alternative DCF methodology?

A. 47 Yes.

Q. 48 How does your alternative DCF methodology differ from the Commission's methodology described in the SCE case?

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[5] *See*, for example, *SCE* and *New England ISO*. In *SCE*, the Commission excludes a return that is insufficiently above the cost of debt, stating: "Because investors generally cannot be expected to purchase stock if debt, which has less risk than stock, yields essentially the same return, this low end-return cannot be considered reliable in this case." 92 FERC at ¶ 61,266. In *New England ISO*, the Commission excludes a high result of 17.7 percent. *See* 117 FERC at ¶¶ 8 and 16.

[6] See, for example, *Golden Spread Electric Cooperative, Inc*. 123 FERC ¶ 61,047 (2008) ("Golden Spread").

A. 48 My approach differs from that employed by the Commission in several ways. First, I recommend using a quarterly DCF model rather than an annual DCF model. Second, I rely on the I/B/E/S analysts' earnings growth estimates as the estimate of growth in the DCF model, rather than on a combination of I/B/E/S and the "*br + sv*" growth used by the Commission. Third, I recommend the use of the average of the high and low stock prices for the most recent three-month period rather than the most recent six-month period. Fourth, I recommend including an allowance for flotation costs.

Q. 49 Please explain why you recommend use of a quarterly DCF model.

A. 49 I recommend the use of a quarterly DCF model because it is the only model that produces correct estimates of a firm's cost of equity capital if the firm pays quarterly dividends, whereas the annual DCF model of stock valuation produces correct estimates of a firm's cost of equity capital if the firm pays dividends only once a year. Since most U.S. industrial and utility companies pay dividends quarterly, the annual DCF model produces downwardly-biased estimates of the cost of equity. Investors can expect to earn a higher annual effective return on an investment in a firm that pays quarterly dividends than in one which pays the same amount of dollar dividends once at the end of each year. An analysis of the implications of the quarterly payment of dividends on the DCF model is provided in Appendix 1.

Q. 50 Does the Commission's DCF approach correctly recognize that dividends are paid quarterly?

A. 50 No. In multiplying the current dividend by one-half of the expected future growth rate, the Commission states that it is recognizing that dividends are paid quarterly. However, the Commission's approach fails to recognize that there is a time value of money associated with future quarterly dividends. Thus, the Commission's approach fails to discount the expected future dividends over the next year for the time value of money. My quarterly DCF model corrects this deficiency.

Q. 51 Please describe the quarterly DCF model you use.

A. 51 The quarterly DCF model I use is described in Appendix 1. The quarterly DCF equation shows that the cost of equity is: the sum of the future

dividend yield and the growth rate, where the dividend in the dividend yield is the equivalent dividend at the end of the year, and the growth rate is the expected growth in dividends or earnings per share.

Q. 52 How do you estimate the quarterly dividend payments in your quarterly DCF model?

A. 52 The quarterly DCF model requires an estimate of the dividends, d_1, d_2, d_3, and d_4, investors expect to receive over the next four quarters. I estimate the next four quarterly dividends by multiplying the previous four quarterly dividends by the factor, (1 + the growth rate, g).

Q. 53 How do you estimate the growth component of the quarterly DCF model?

A. 53 I use the consensus analysts' estimates of future earnings per share (EPS) growth reported by I/B/E/S Thomson Reuters.

Q. 54 Why do you rely on analysts' projections of future EPS growth in estimating the investors' expected growth rate rather than giving equal weight to the analysts' projections and the br + sv approach?

A. 54 I rely on the analysts' projections for two reasons. First, my studies demonstrate that stock prices are more highly correlated with analysts' forecasts than with retention growth forecasts, such as those embodied in the br + sv approach.**[7]** Second, I find that the br + sv approach suffers from the fundamental difficulty that it relies on circular reasoning. Namely, the br + sv approach requires an estimate of the rate of return on equity as a basic input in the approach. Yet, the rate of return on equity is the very subject of this proceeding.

Q. 55 What price do you use in your DCF model?

A. 55 I use a simple average of the monthly high and low stock prices for each firm for the three-month period ending September 2011. I obtain the high and low stock prices from Thomson Reuters.

Q. 56 Why do you use the three-month average stock price in applying the DCF method, rather than the Commission's six-month stock price?

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[7] See Vander Weide and Carleton, "Investor Growth Expectations and Stock Prices: Analysts vs. History," *The Journal of Portfolio Management*, Spring 1988. My studies were updated by researchers at State Street Financial using data through year-end 2003. Their results confirm the conclusions reported in my earlier paper.

A. 56 There are two reasons why I use the three-month average stock price in applying the DCF method rather than the Commission's six-month stock price. First, stock prices fluctuate daily, while financial analysts' forecasts for a given company are generally changed less frequently, often on a quarterly basis. Thus, to match the stock price with an earnings forecast, it is appropriate to average stock prices over a three-month period. Six-month stock prices fail to match analysts' earnings forecasts. Second, my three-month average stock price includes the high and low observation for each of three months, for a total of six observations. The six-month approach rejects all but the highest and lowest dividend yield over the six-month period; and, thus, results are based on only two stock price observations. The use of six observations over the recent three-month time period is more likely to provide an accurate estimate of current price levels than the use of two price observations over a six-month time period.

Q. 57 Do you include an allowance for flotation costs in your DCF analysis?

A. 57 Yes. I include a five percent allowance for flotation costs in my DCF calculations.

Q. 58 Please explain your inclusion of flotation costs.

A. 58 All firms that have sold securities in the capital markets have incurred some level of flotation costs, including underwriters' commissions, legal fees, printing expense, etc. These costs are withheld from the proceeds of the stock sale or are paid separately, and must be recovered over the life of the equity issue. Costs vary depending upon the size of the issue, the type of registration method used and other factors, but in general these costs range between three and five percent of the proceeds from the issue [see Lee, Inmoo, Scott Lochhead, Jay Ritter, and Quanshui Zhao, "The Costs of Raising Capital," *The Journal of Financial Research*, Vol. XIX No 1 (Spring 1996), 59-74, and Clifford W. Smith, "Alternative Methods for Raising Capital," *Journal of Financial Economics* 5 (1977) 273-307]. In addition to these costs, for large equity issues (in relation to outstanding equity shares), there is likely to be a decline in price associated with the sale of shares to the public. On average, the decline due to market pressure has been estimated at two to

three percent [see Richard H. Pettway, "The Effects of New Equity Sales Upon Utility Share Prices," *Public Utilities Fortnightly*, May 10, 1984, 35—39]. Thus, the total flotation cost, including both issuance expense and market pressure, could range anywhere from five to eight percent of the proceeds of an equity issue. I believe a combined five percent allowance for flotation costs is a conservative estimate that should be used in applying the DCF model in this proceeding. A complete explanation of the need for flotation costs is contained in Appendix 2.

Q. 59 Does Mississippi Power issue common stock?

A. 59 No. Although Mississippi Power does not issue equity in the capital markets, its parent must issue equity to provide Mississippi Power the necessary financing to make investments in Mississippi Power's operations. If the parent is not able to recover its flotation costs through Mississippi Power's rates, it will have no incentive to invest in Mississippi Power.

Q. 60 Is a flotation cost adjustment only appropriate if a company issues stock during the test year?

A. 60 No. As described in Appendix 2, a flotation cost adjustment is required whether or not a company issued new stock during the test year. Previously incurred flotation costs have not been recovered in previous rate cases; rather, they are a permanent cost associated with past issues of common stock. Just as an adjustment is made to the embedded cost of debt to reflect previously incurred debt issuance costs (regardless of whether additional bond issuances were made in the test year), so should an adjustment be made to the cost of equity regardless of whether additional stock was issued during the test year.

Q. 61 How do you select your group of proxy electric energy companies for the purpose of applying your DCF method?

A. 61 I use the same selection criteria described for my selection of proxy Group I, namely, I select all the companies in Value Line's groups of electric companies that: (1) paid dividends during every quarter and did not decrease dividends during the past two years; (2) have at least two analysts included in the I/B/E/S mean growth forecast; (3) have a Value Line Safety Rank of 1, 2, or 3; (4) have an investment grade bond

rating; and (5) are not the subject of a merger offer that has not been completed. These companies are shown on Schedule 3.

Q. 62 Why do you require that your proxy companies pay dividends?

A. 62 I require that my proxy companies pay dividends because the DCF model assumes that each future dividend is equal to the previous dividend times (1 + the growth rate, g). Under this assumption, if the current dividend is zero, then all future dividends will also be assumed to be zero. But if all future dividends are assumed to be zero, the stock price in the DCF model must also be zero, a clearly nonsensical result.

Q. 63 Why do you require that a proxy company not have reduced its dividend?

A. 63 The DCF model requires the assumption that dividends will grow at a constant positive rate into the indefinite future. If a company has decreased its dividend in recent years, an assumption that the company's dividend will grow at the same positive rate into the indefinite future is questionable.

Q. 64 Why do you include only companies that have at least two analysts included in the I/B/E/S consensus forecasts?

A. 64 The DCF Model also requires a reliable estimate of a company's expected future growth. For most companies, the I/B/E/S mean growth forecast is the best available estimate of the growth term in the DCF Model. However, the I/B/E/S estimate may be less reliable if the mean estimate is based on the input of only one analyst.

Q. 65 Why do you eliminate companies that are being acquired in transactions that are not yet completed?

A. 65 A merger announcement generally increases the target company's stock price, but not the acquiring company's stock price. Analysts' growth forecasts for the target company, on the other hand, are necessarily related to the company as it currently exists. The use of a stock price that includes the growth-enhancing prospects of potential mergers in conjunction with growth forecasts that do not include the growth-enhancing prospects of potential mergers produces DCF results that tend to distort a company's cost of equity.

Q. 66 Please summarize the results of your application of your alternative DCF method to the Value Line electric energy companies.

A. 66 As shown on Schedule 3, my application of my alternative DCF method to the Value Line electric energy companies produces a midpoint DCF result of 11.5 percent, a median DCF result of 10.7 percent, and an average result of 10.6 percent.

E. Cost of Equity Recommendation

Q. 67 Based on your studies, what is your conclusion regarding the cost of equity for your proxy companies?

A. 67 On the basis of my studies, I conclude that the cost of equity for my proxy companies is 10.4 percent. This finding is based on my application of the Commission's DCF model to two groups of proxy companies and on my application of my alternative DCF approach to a large group of Value Line electric companies (see TABLE 1 below).

TABLE 1
SUMMARY OF DCF RESULTS

	GROUP I (LARGE PROXY GROUP)	GROUP II (BBB+- AND HIGHER)	QUARTERLY MODEL
Midpoint	11.1%	11.1%	11.5%
Median	9.6%	9.6%	10.7%
Mean	9.6%	9.6%	10.6%
Average	10.1%	10.1%	10.9%

Q. 68 What is your recommended rate of return on equity for Mississippi Power?

A. 68 I recommend that Mississippi Power be allowed a rate of return on equity equal to 10.4 percent.

Q. 69 Does this conclude your testimony?

A. 69 Yes, it does.

SCHEDULE 1
MISSISSIPPI POWER COMPANY
DISCOUNTED CASH FLOW ANALYSIS FOR LARGE ELECTRIC ENERGY COMPANY GROUP
USING THE COMMISSION'S METHODOLOGY

LINE NO.	COMPANY	D_0	P_0	I/B/E/S	BR+SV	AVERAGE LOW YIELD	AVERAGE HIGH YIELD	LOW G	HIGH G	LOW RESULT	HIGH RESULT
1	ALLETE	1.78	39.30	6.00%	3.71%	4.34%	4.74%	3.71%	6.00%	8.1%	10.9%
2	Alliant Energy	1.70	39.43	6.50%	5.02%	4.14%	4.51%	5.02%	6.50%	9.3%	11.2%
3	Amer. Elec. Power	1.84	37.01	3.97%	4.71%	4.79%	5.18%	3.97%	4.71%	8.9%	10.0%
4	Ameren Corp.	1.54	28.97	1.00%	2.61%	5.10%	5.56%	1.00%	2.61%	6.1%	8.2%
5	Avista Corp.	1.10	24.43	4.67%	3.23%	4.30%	4.74%	3.23%	4.67%	7.6%	9.5%
6	Black Hills	1.46	30.82	5.00%	2.00%	4.51%	5.03%	2.00%	5.00%	6.6%	10.2%
7	CenterPoint Energy	0.79	18.93	6.44%	4.37%	4.00%	4.37%	4.37%	6.44%	8.5%	10.9%
8	CMS Energy Corp.	0.84	19.44	6.03%	5.49%	4.16%	4.51%	5.49%	6.03%	9.8%	10.7%
9	Consol. Edison	2.40	53.29	3.55%	3.58%	4.37%	4.65%	3.55%	3.58%	8.0%	8.3%
10	Dominion Resources	1.97	47.60	3.34%	5.38%	4.00%	4.30%	3.34%	5.38%	7.4%	9.8%
11	DTE Energy	2.32	49.75	3.47%	3.35%	4.50%	4.85%	3.35%	3.47%	7.9%	8.4%
12	Duke Energy	0.99	18.66	3.36%	2.57%	5.14%	5.49%	2.57%	3.36%	7.8%	8.9%
13	Edison Int'l	1.29	37.86	2.90%	4.58%	3.28%	3.55%	2.90%	4.58%	6.2%	8.2%
14	G't Plains Energy	0.83	20.00	5.80%	2.45%	3.97%	4.38%	2.45%	5.80%	6.5%	10.3%
15	Hawaiian Elec.	1.24	24.08	8.60%	2.93%	4.93%	5.41%	2.93%	8.60%	7.9%	14.2%
16	IDACORP Inc.	1.20	38.47	4.67%	5.30%	3.00%	3.25%	4.67%	5.30%	7.7%	8.6%
17	Integrys Energy	2.72	50.25	9.40%	2.26%	5.21%	5.66%	2.26%	9.40%	7.5%	15.3%
18	ITC Holdings	1.38	71.68	17.98%	11.69%	1.85%	2.01%	11.69%	17.98%	13.6%	20.2%
19	NextEra Energy	2.20	55.62	5.80%	6.51%	3.82%	4.11%	5.80%	6.51%	9.7%	10.8%
20	Northeast Utilities	1.10	34.34	7.69%	5.72%	3.09%	3.33%	5.72%	7.69%	8.9%	11.2%
21	OGE Energy	1.52	49.55	7.17%	7.55%	2.93%	3.24%	7.17%	7.55%	10.2%	10.9%
22	Pepco Holdings	1.08	19.03	7.50%	1.30%	5.45%	5.93%	1.30%	7.50%	6.8%	13.7%
23	PG&E Corp.	1.82	42.71	3.81%	4.87%	4.11%	4.44%	3.81%	4.87%	8.0%	9.4%
24	Pinnacle West Capital	2.10	43.14	6.25%	3.39%	4.68%	5.08%	3.39%	6.25%	8.1%	11.5%
25	Portland General	1.06	24.53	5.32%	4.38%	4.16%	4.51%	4.38%	5.32%	8.6%	9.9%
26	SCANA Corp.	1.94	39.64	4.82%	4.49%	4.70%	5.11%	4.49%	4.82%	9.3%	10.1%

LINE NO.	COMPANY	D_0	P_0	I/B/E/S	BR+SV	AVERAGE LOW YIELD	AVERAGE HIGH YIELD	LOW G	HIGH G	LOW RESULT	HIGH RESULT
27	Sempra Energy	1.92	52.37	6.77%	6.15%	3.53%	3.83%	6.15%	6.77%	9.8%	10.7%
28	Southern Co.	1.87	39.71	5.94%	4.86%	4.57%	4.87%	4.86%	5.94%	9.5%	11.0%
29	TECO Energy	0.85	18.41	5.81%	5.22%	4.44%	4.83%	5.22%	5.81%	9.8%	10.8%
30	UIL Holdings	1.73	32.16	4.05%	1.70%	5.17%	5.62%	1.70%	4.05%	6.9%	9.8%
31	Vectren Corp.	1.39	27.30	5.57%	2.82%	4.89%	5.32%	2.82%	5.57%	7.8%	11.0%
32	Westar Energy	1.28	26.22	5.18%	3.15%	4.70%	5.09%	3.15%	5.18%	7.9%	10.4%
33	Wisconsin Energy	1.04	30.77	7.13%	6.36%	3.27%	3.51%	6.36%	7.13%	9.7%	10.8%
34	Xcel Energy Inc.	1.03	24.10	5.05%	4.48%	4.13%	4.43%	4.48%	5.05%	8.7%	9.6%
35	Midpoint									11.1%	
36	Median									9.6%	
37	Mean									9.6%	

Notes: Dividend is the annual dividend per Value Line, price is the average of the monthly high and low prices for the six months ending September 2011, b x r +sv growth rate calculated as described in the Commission's Order in 92 FERC ¶ 61,070 (2000), I/B/E/S long-term growth September 2011, br + sv growth calculated using Value Line Investment Survey issues dated 5 August 2011, 26 August 2011, and 23 September 2011. The summary results exclude results that are less than one hundred basis points above the yield on the company's debt and results that are greater than 17.7 percent. The average A-rated utility bond yield at the time of Dr. Vander Weide's studies is 5.1 percent, and the average BBB-rated utility bond yield is 5.6 percent. Thus, results for A-rated companies that are equal to or below 6.1 percent and results for BBB-rated companies that are equal to or below 6.6 percent are eliminated from the summary results.

SCHEDULE 2
MISSISSIPPI POWER COMPANY
DISCOUNTED CASH FLOW ANALYSIS FOR
ELECTRIC COMPANIES RATED BBB+ OR HIGHER USING THE COMMISSION'S METHODOLOGY

LINE NO.	COMPANY	D_0	P_0	I/B/E/S	BR+SV	AVERAGE LOW YIELD	AVERAGE HIGH YIELD	LOW G	HIGH G	LOW RESULT	HIGH RESULT
1	ALLETE	1.78	39.30	6.00%	3.71%	4.34%	4.74%	3.71%	6.00%	8.1%	10.9%
2	Alliant Energy	1.70	39.43	6.50%	5.02%	4.14%	4.51%	5.02%	6.50%	9.3%	11.2%
3	Consol. Edison	2.40	53.29	3.55%	3.58%	4.37%	4.65%	3.55%	3.58%	8.0%	8.3%
4	Dominion Resources	1.97	47.60	3.34%	5.38%	4.00%	4.30%	3.34%	5.38%	7.4%	9.8%
5	DTE Energy	2.32	49.75	3.47%	3.35%	4.50%	4.85%	3.35%	3.47%	7.9%	8.4%
6	Duke Energy	0.99	18.66	3.36%	2.57%	5.14%	5.49%	2.57%	3.36%	7.8%	8.9%
7	Integrys Energy	2.72	50.25	9.40%	2.26%	5.21%	5.66%	2.26%	9.40%	7.5%	15.3%
8	NextEra Energy	2.20	55.62	5.80%	6.51%	3.82%	4.11%	5.80%	6.51%	9.7%	10.8%
9	OGE Energy	1.52	49.55	7.17%	7.55%	2.93%	3.24%	7.17%	7.55%	10.2%	10.9%
10	Pepco Holdings	1.08	19.03	7.50%	1.30%	5.45%	5.93%	1.30%	7.50%	6.8%	13.7%
11	PG&E Corp.	1.82	42.71	3.81%	4.87%	4.11%	4.44%	3.81%	4.87%	8.0%	9.4%
12	SCANA Corp.	1.94	39.64	4.82%	4.49%	4.70%	5.11%	4.49%	4.82%	9.3%	10.1%
13	Sempra Energy	1.92	52.37	6.77%	6.15%	3.53%	3.83%	6.15%	6.77%	9.8%	10.7%
14	Southern Co.	1.87	39.71	5.94%	4.86%	4.57%	4.87%	4.86%	5.94%	9.5%	11.0%
15	Vectren Corp.	1.39	27.30	5.57%	2.82%	4.89%	5.32%	2.82%	5.57%	7.8%	11.0%
16	Wisconsin Energy	1.04	30.77	7.13%	6.36%	3.27%	3.51%	6.36%	7.13%	9.7%	10.8%
17	Xcel Energy Inc.	1.03	24.10	5.05%	4.48%	4.13%	4.43%	4.48%	5.05%	8.7%	9.6%
18	Midpoint									11.1%	
19	Median									9.6%	
20	Mean									9.6%	

Notes: Dividend is the annual dividend per Value Line, price is the average of the monthly high and low prices for the six months ending September 2011, b x r +sv growth rate calculated as described in the Commission's Order in 92 FERC ¶ 61,070 (2000), I/B/E/S long-term growth September 2011, br + sv growth calculated using Value Line Investment Survey issues dated 5 August 2011, 26 August 2011, and 23 September 2011. The summary results exclude results that are less than one hundred basis points above the yield on the company's debt and results that are greater than 17.7 percent. The average A-rated utility bond yield at the time of Dr. Vander Weide's studies is 5.1 percent, and the average BBB-rated utility bond yield is 5.6 percent. Thus, results for A-rated companies that are equal to or below 6.1 percent and results for BBB-rated companies that are equal to or below 6.6 percent are eliminated from the summary results.

SCHEDULE 3
MISSISSIPPI POWER COMPANY
SUMMARY OF DISCOUNTED CASH FLOW ANALYSIS
FOR VALUE LINE ELECTRIC ENERGY COMPANY GROUP
USING A QUARTERLY DCF MODEL

LINE NO.	COMPANY	D_0	P_0	GROWTH	COST OF EQUITY
1	ALLETE	0.45	38.898	6.00%	11.3%
2	Alliant Energy	0.43	39.062	6.50%	11.5%
3	Amer. Elec. Power	0.46	37.163	3.97%	9.6%
4	Ameren Corp.	0.39	29.002	1.00%	6.8%
5	Avista Corp.	0.28	24.422	4.67%	9.7%
6	Black Hills	0.37	29.822	5.00%	10.6%
7	CenterPoint Energy	0.20	19.289	6.44%	11.2%
8	CMS Energy Corp.	0.21	19.253	6.03%	11.1%
9	Consol. Edison	0.60	54.337	3.55%	8.5%
10	Dominion Resources	0.49	48.595	3.34%	7.8%
11	DTE Energy	0.59	49.183	3.47%	8.6%
12	Duke Energy	0.25	18.672	3.36%	9.3%
13	Edison Int'l	0.32	36.970	2.90%	6.7%
14	G't Plains Energy	0.21	19.500	5.80%	10.7%
15	Hawaiian Elec.	0.31	23.432	8.60%	15.0%
16	IDACORP Inc.	0.30	38.113	4.67%	8.2%
17	Integrys Energy	0.68	49.007	9.40%	16.2%
18	NextEra Energy	0.55	54.862	5.80%	10.3%
19	Northeast Utilities	0.28	33.790	7.69%	11.5%
20	OGE Energy	0.38	48.241	7.17%	10.8%
21	Pepco Holdings	0.27	18.747	7.50%	14.4%
22	PG&E Corp.	0.46	41.427	3.81%	8.8%
23	Pinnacle West Capital	0.53	42.548	6.25%	12.0%
24	Portland General	0.27	24.085	5.32%	10.3%
25	SCANA Corp.	0.49	39.052	4.82%	10.5%
26	Sempra Energy	0.48	50.753	6.77%	11.0%
27	Southern Co.	0.47	40.140	5.94%	11.3%
28	TECO Energy	0.22	17.948	5.81%	11.2%
29	UIL Holdings	0.43	32.330	4.05%	10.1%
30	Vectren Corp.	0.35	26.767	5.57%	11.5%
31	Westar Energy	0.32	25.659	5.18%	10.9%
32	Wisconsin Energy	0.26	30.648	7.13%	10.9%
33	Xcel Energy Inc.	0.26	23.913	5.05%	10.0%
34	Midpoint				11.5%
35	Average				10.6%
36	Median				10.7%

Notes:

d_1,d_2,d_3,d_4	=	Next four quarterly dividends, calculated by multiplying the last four quarterly dividends per Value Line, by the factor (1 + g).
P_0	=	Average of the monthly high and low stock prices during the three months ending September 2011 per Thomson Reuters.
FC	=	Flotation costs expressed as a percent of gross proceeds.
g	=	I/B/E/S forecast of future earnings growth September 2011.
k	=	Cost of equity using the quarterly version of the DCF model.

$$k = \frac{d_1(1+k)^{.75} + d_2(1+k)^{.50} + d_3(1+k)^{.25} + d_4}{P_0(1-FC)} + g$$

.

APPENDIX 1
MISSISSIPPI POWER COMPANY
DERIVATION OF THE QUARTERLY DCF MODEL

The simple DCF Model assumes that a firm pays dividends only at the end of each year. Since firms in fact pay dividends quarterly and investors appreciate the time value of money, the annual version of the DCF Model generally underestimates the value investors are willing to place on the firm's expected future dividend stream. In these work papers, we review two alternative formulations of the DCF Model that allow for the quarterly payment of dividends.

When dividends are assumed to be paid annually, the DCF Model suggests that the current price of the firm's stock is given by the expression:

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \ldots + \frac{D_n + P_n}{(1+k)^n} \quad (1)$$

where

P_0 = current price per share of the firm's stock,

$D_1, D_2, \ldots, D_n$ = expected annual dividends per share on the firm's stock,

P_n = price per share of stock at the time investors expect to sell the stock, and

k = return investors expect to earn on alternative investments of the same risk, i.e., the investors' required rate of return.

Unfortunately, expression (1) is rather difficult to analyze, especially for the purpose of estimating k. Thus, most analysts make a number of simplifying assumptions. First, they assume that dividends are expected to grow at the constant rate g into the indefinite future. Second, they assume that the stock price at time n is simply the present value of all dividends expected in periods subsequent to n. Third, they assume that the investors' required rate of return, k, exceeds the expected dividend growth rate g. Under the above simplifying assumptions, a firm's stock price may be written as the following sum:

$$P_0 = \frac{D_0(1+g)}{(1+k)} + \frac{D_0(1+g)^2}{(1+k)^2} + \frac{D_0(1+g)^3}{(1+k)^3} + \ldots , \qquad (2)$$

where the three dots indicate that the sum continues indefinitely.

As we shall demonstrate shortly, this sum may be simplified to:

$$P_0 = \frac{D_0(1+g)}{(k-g)}$$

First, however, we need to review the very useful concept of a geometric progression.

Geometric Progression

Consider the sequence of numbers 3, 6, 12, 24,…, where each number after the first is obtained by multiplying the preceding number by the factor 2. Obviously, this sequence of numbers may also be expressed as the sequence 3, 3 x 2, 3 x 2^2, 3 x 2^3, etc. This sequence is an example of a geometric progression.

Definition: A geometric progression is a sequence in which each term after the first is obtained by multiplying some fixed number, called the common ratio, by the preceding term.

A general notation for geometric progressions is: a, the first term, r, the common ratio, and n, the number of terms. Using this notation, any geometric progression may be represented by the sequence:

$$a, ar, ar^2, ar^3, \ldots, ar^{n-1}.$$

In studying the DCF Model, we will find it useful to have an expression for the sum of n terms of a geometric progression. Call this sum S_n. Then

$$S_n = a + ar + \ldots + ar^{n-1} . \qquad (3)$$

However, this expression can be simplified by multiplying both sides of Equation (3) by r and then subtracting the new equation from the old. Thus,

$$rS_n = ar + ar^2 + ar^3 + \ldots + ar^n$$

and

$$S_n - rS_n = a - ar^n ,$$

or

$$(1 - r)\, S_n = a\,(1 - r^n) \quad .$$

Solving for S_n, we obtain:

$$S_n = \frac{a(1 - r^n)}{(1 - r)} \qquad \textbf{(4)}$$

as a simple expression for the sum of n terms of a geometric progression. Furthermore, if $|r| < 1$, then S_n is finite, and as n approaches infinity, S_n approaches $a \div (1\text{-}r)$. Thus, for a geometric progression with an infinite number of terms and $|r| < 1$, Equation (4) becomes:

$$S = \frac{a}{1 - r} \qquad \textbf{(5)}$$

Application to DCF Model

Comparing Equation (2) with Equation (3), we see that the firm's stock price (under the DCF assumption) is the sum of an infinite geometric progression with the first term

$$a = \frac{D_0(1 + g)}{(1 + k)}$$

and common factor

$$r = \frac{(1 + g)}{(1 + k)}$$

Applying equation (5) for the sum of such a geometric progression, we obtain

$$S = a \bullet \frac{1}{(1 - r)} = \frac{D_0(1 + g)}{(1 + k)} \bullet \frac{1}{1 - \frac{1 + g}{1 + k}} = \frac{D_0(1 + g)}{(1 + k)} \bullet \frac{1 + k}{k - g} = \frac{D_0(1 + g)}{k - g}$$

as we suggested earlier.

Quarterly DCF Model

The Annual DCF Model assumes that dividends grow at an annual rate of g% per year (see Figure 1).

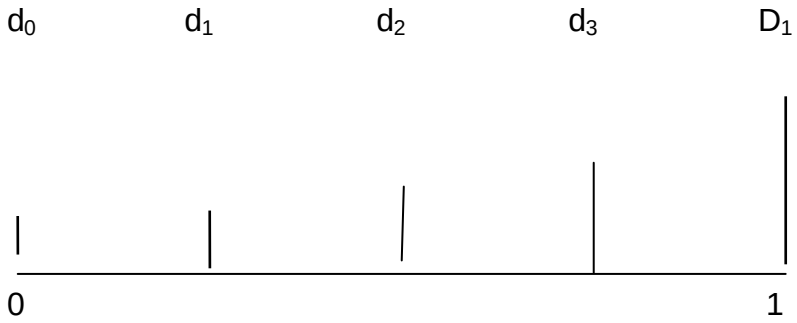
Figure 1

Annual DCF Model

$D_0 = 4d_0$ $D_1 = D_0(1 + g)$

Figure 2

Quarterly DCF Model (Constant Growth Version)



$d_1 = d_0(1+g)^{.25}$ $d_2 = d_0(1+g)^{.50}$

$d_3 = d_0(1+g)^{.75}$ $d_4 = d_0(1+g)$

In the Quarterly DCF Model, it is natural to assume that quarterly dividend payments differ from the preceding quarterly dividend by the factor $(1 + g)^{.25}$, where g is expressed in terms of percent per year and the decimal .25 indicates that the growth has only occurred for one quarter of the year. (See Figure 2.) Using this assumption, along with the assumption of constant growth and ***k*** > ***g***, we obtain a new expression for the firm's stock price, which takes account of the quarterly payment of dividends. This expression is:

$$P_0 = \frac{d_0(1+g)^{\frac{1}{4}}}{(1+k)^{\frac{1}{4}}} + \frac{d_0(1+g)^{\frac{2}{4}}}{(1+k)^{\frac{2}{4}}} + \frac{d_0(1+g)^{\frac{3}{4}}}{(1+k)^{\frac{3}{4}}} + \ldots \qquad \textbf{(6)}$$

where d_0 is the last quarterly dividend payment, rather than the last annual dividend payment. (We use a lower case d to remind the reader that this is not the annual dividend.)

Although Equation (6) looks formidable at first glance, it too can be greatly simplified using the formula [Equation (4)] for the sum of an infinite geometric progression. As the reader can easily verify, Equation (6) can be simplified to:

$$P_0 = \frac{d_0(1+g)^{\frac{1}{4}}}{(1+k)^{\frac{1}{4}} - (1+g)^{\frac{1}{4}}} \qquad \textbf{(7)}$$

Solving Equation (7) for k, we obtain a DCF formula for estimating the cost of equity under the quarterly dividend assumption:

$$k = \left[\frac{d_0(1+g)^{\frac{1}{4}}}{P_0} + (1+g)^{\frac{1}{4}} \right]^4 - 1 \qquad \textbf{(8)}$$

An Alternative Quarterly DCF Model

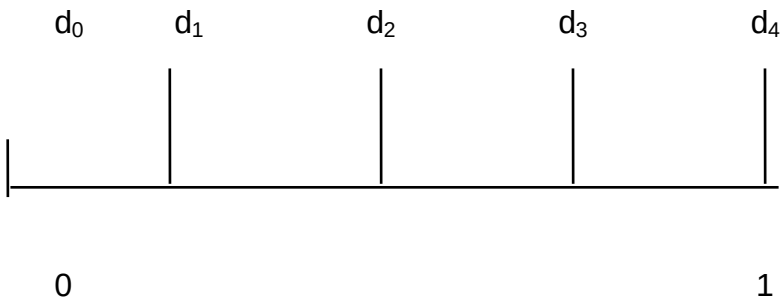
Although the constant growth Quarterly DCF Model [Equation (8)] allows for the quarterly timing of dividend payments, it does require the assumption that the firm increases its dividend payments each quarter. Since this assumption is difficult for some analysts to accept, we now discuss a second Quarterly DCF Model that allows for constant quarterly dividend payments within each dividend year.

Assume then that the firm pays dividends quarterly and that each dividend payment is constant for four consecutive quarters. There are four cases to consider, with each case distinguished by varying assumptions about where we are evaluating the firm in relation to the time of its next dividend increase. (See Figure 3.)

Figure 3

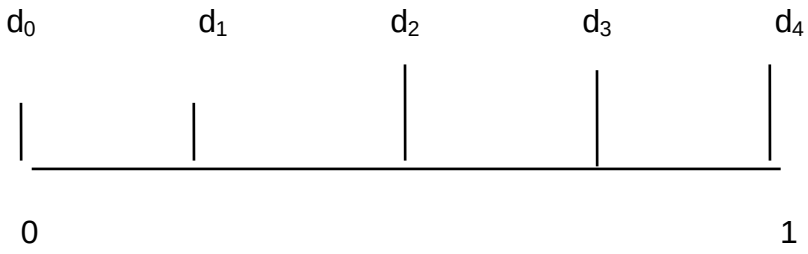
Quarterly DCF Model (Constant Dividend Version)

Case 1



$$d_1 = d_2 = d_3 = d_4 = d_0(1+g)$$

Case 2

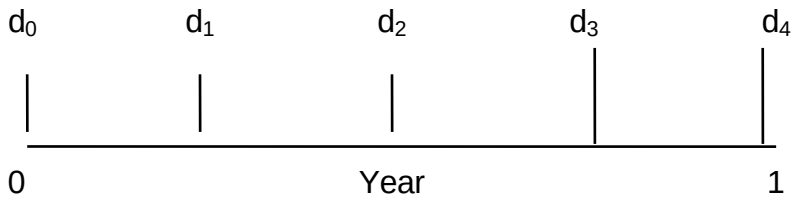


$$d_1 = d_0$$

$$d_2 = d_3 = d_4 = d_0(1+g)$$

Figure 3 (continued)

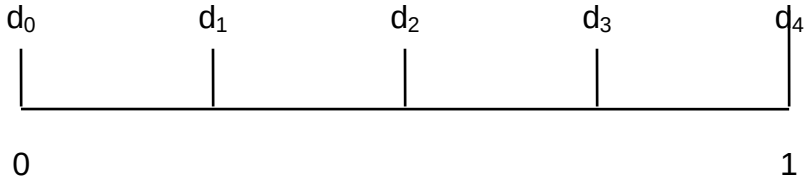
Case 3



$d_1 = d_2 = d_0$

$d_3 = d_4 = d_0(1+g)$

Case 4



$d_1 = d_2 = d_3 = d_0$

$d_4 = d_0(1+g)$

If we assume that the investor invests the quarterly dividend in an alternative investment of the same risk, then the amount accumulated by the end of the year will in all cases be given by

$$D_1^* = d_1 (1+k)^{3/4} + d_2 (1+k)^{1/2} + d_3 (1+k)^{1/4} + d_4$$

where d_1, d_2, d_3 and d_4 are the four quarterly dividends. Under these new assumptions, the firm's stock price may be expressed by an Annual DCF Model of the form (2), with the exception that

$$D_1^* = d_1 (1 + k)^{3/4} + d_2 (1 + k)^{1/2} + d_3 (1 + k)^{1/4} + d_4 \quad \textbf{(9)}$$

is used in place of $D_0(1+g)$. But, we already know that the Annual DCF Model may be reduced to

$$P_0 = \frac{D_0 (1 + g)}{k - g}$$

Thus, under the assumptions of the second Quarterly DCF Model, the firm's cost of equity is given by

$$k = \frac{D_1^*}{P_0} + g \quad \textbf{(10)}$$

with D_1^* given by (9).

Although Equation (10) looks like the Annual DCF Model, there are at least two very important practical differences. First, since D_1^* is always greater than $D_0(1+g)$, the estimates of the cost of equity are always larger (and more accurate) in the Quarterly Model (10) than in the Annual Model. Second, since D_1^* depends on k through Equation (9), the unknown “k” appears on both sides of (10), and an iterative procedure is required to solve for k.

APPENDIX 2
MISSISSIPPI POWER COMPANY
ADJUSTING FOR FLOTATION COSTS
IN DETERMINING A PUBLIC UTILITY'S
ALLOWED RATE OF RETURN ON EQUITY

Introduction

Regulation of public utilities is guided by the principle that utility revenues should be sufficient to allow recovery of all prudently incurred expenses, including the cost of capital. As set forth in the 1944 *Hope Natural Gas* Case [*Federal Power Comm'n v. Hope Natural Gas Co*., 320 U.S. 591, 603 (1944)], the U. S. Supreme Court states:

> From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock. [citation omitted] By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks.

Since the flotation costs arising from the issuance of debt and equity securities are an integral component of capital costs, this standard requires that the company's revenues be sufficient to fully recover flotation costs.

Despite the widespread agreement that flotation costs should be recovered in the regulatory process, several issues still need to be resolved. These include:

1. How is the term "flotation costs" defined? Does it include only the out-of-pocket costs associated with issuing securities (e. g., legal fees, printing costs, selling and underwriting expenses), or does it also include the reduction in a security's price that frequently accompanies flotation (i. e., market pressure)?
2. What should be the time pattern of cost recovery? Should a company be allowed to recover flotation costs immediately, or should flotation costs be recovered over the life of the issue?
3. For the purposes of regulatory accounting, should flotation costs be included as an expense? As an addition to rate base? Or as an additional element of a firm's allowed rate of return?

4. Do existing regulatory methods for flotation cost recovery allow a firm ***full*** recovery of flotation costs?

In this paper, I review the literature pertaining to the above issues and discuss my own views regarding how this literature applies to the cost of equity for a regulated firm.

Definition of Flotation Cost

The value of a firm is related to the future stream of net cash flows (revenues minus expenses measured on a cash basis) that can be derived from its assets. In the process of acquiring assets, a firm incurs certain expenses which reduce its value. Some of these expenses or costs are directly associated with revenue production in one period (e. g., wages, cost of goods sold), others are more properly associated with revenue production in many periods (e. g., the acquisition cost of plant and equipment). In either case, the word “cost” refers to any item that reduces the value of a firm.

If this concept is applied to the act of issuing new securities to finance asset purchases, many items are properly included in issuance or flotation costs. These include: (1) compensation received by investment bankers for underwriting services, (2) legal fees, (3) accounting fees, (4) engineering fees, (5) trustee’s fees, (6) listing fees, (7) printing and engraving expenses, (8) SEC registration fees, (9) Federal Revenue Stamps, (10) state taxes, (11) warrants granted to underwriters as extra compensation, (12) postage expenses, (13) employees' time, (14) market pressure, and (15) the offer discount. The finance literature generally divides these flotation cost items into three categories, namely, underwriting expenses, issuer expenses, and price effects.

Magnitude of Flotation Costs

The finance literature contains several studies of the magnitude of the flotation costs associated with new debt and equity issues. These studies differ primarily with regard to the time period studied, the sample of companies included, and the source of data. The flotation cost studies generally agree, however, that for large issues, underwriting expenses represent approximately one and one-half percent of the proceeds of debt issues and three to five percent

of the proceeds of seasoned equity issues. They also agree that issuer expenses represent approximately 0.5 percent of both debt and equity issues, and that the announcement of an equity issue reduces the company's stock price by at least two to three percent of the proceeds from the stock issue. Thus, total flotation costs represent approximately two percent[8] of the proceeds from debt issues, and five and one-half to eight and one-half percent of the proceeds of equity issues.

Lee *et. al.* [14] is an excellent example of the type of flotation cost studies found in the finance literature. The Lee study is a comprehensive recent study of the underwriting and issuer costs associated with debt and equity issues for both utilities and non-utilities. The results of the Lee *et. al.* study are reproduced in Tables 1 and 2. Table 1 demonstrates that the total underwriting and issuer expenses for the 1,092 debt issues in their study averaged 2.24 percent of the proceeds of the issues, while the total underwriting and issuer costs for the 1,593 seasoned equity issues in their study averaged 7.11 percent of the proceeds of the new issue. Table 1 also demonstrates that the total underwriting and issuer costs of seasoned equity offerings, as a percent of proceeds, decline with the size of the issue. For issues above $60 million, total underwriting and issuer costs amount to from three to five percent of the amount of the proceeds.

Table 2 reports the total underwriting and issuer expenses for 135 utility debt issues and 136 seasoned utility equity issues. Total underwriting and issuer expenses for utility bond offerings averaged 1.47 percent of the amount of the proceeds and for seasoned utility equity offerings averaged 4.92 percent of the amount of the proceeds. Again, there are some economies of scale associated with larger equity offerings. Total underwriting and issuer expenses for equity

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[8] The two percent flotation cost on debt only recognizes the cost of newly-issued debt. When interest rates decline, many companies exercise the call provisions on higher cost debt and reissue debt at lower rates. This process involves reacquisition costs that are not included in the academic studies. If reacquisition costs were included in the academic studies, debt flotation costs could increase significantly.

offerings in excess of 40 million dollars generally range from three to four percent of the proceeds.

The results of the Lee study for large equity issues are consistent with results of earlier studies by Bhagat and Frost [4], Mikkelson and Partch [17], and Smith [24]. Bhagat and Frost found that total underwriting and issuer expenses average approximately four and one-half percent of the amount of proceeds from negotiated utility offerings during the period 1973 to 1980, and approximately three and one-half percent of the amount of the proceeds from competitive utility offerings over the same period. Mikkelson and Partch found that total underwriting and issuer expenses average five and one-half percent of the proceeds from seasoned equity offerings over the 1972 to 1982 period. Smith found that total underwriting and issuer expenses for larger equity issues generally amount to four to five percent of the proceeds of the new issue.

The finance literature also contains numerous studies of the decline in price associated with sales of large blocks of stock to the public. These articles relate to the price impact of: (1) initial public offerings; (2) the sale of large blocks of stock from one investor to another; and (3) the issuance of seasoned equity issues to the general public. All of these studies generally support the notion that the announcement of the sale of large blocks of stock produces a decline in a company's share price. The decline in share price for initial public offerings is significantly larger than the decline in share price for seasoned equity offerings; and the decline in share price for public utilities is less than the decline in share price for non-public utilities. A comprehensive study of the magnitude of the decline in share price associated specifically with the sale of new equity by public utilities is reported in Pettway [19], who found the market pressure effect for a sample of 368 public utility equity sales to be in the range of two to three percent. This decline in price is a real cost to the utility, because the proceeds to the utility depend on the stock price on the day of issue.

In addition to the price decline associated with the announcement of a new equity issue, the finance literature recognizes that there is also a price decline

associated with the actual issuance of equity securities. In particular, underwriters typically sell seasoned new equity securities to investors at a price lower than the closing market price on the day preceding the issue. The Rules of Fair Practice of the National Association of Securities Dealers require that underwriters not sell shares at a price above the offer price. Since the offer price represents a binding constraint to the underwriter, the underwriter tends to set the offer price slightly below the market price on the day of issue to compensate for the risk that the price received by the underwriter may go down, but cannot increase. Smith provides evidence that the offer discount tends to be between 0.5 and 0.8 percent of the proceeds of an equity issue. I am not aware of any similar studies for debt issues.

In summary, the finance literature provides strong support for the conclusion that total underwriting and issuer expenses for public utility debt offerings represent approximately two percent of the amount of the proceeds, while total underwriting and issuer expenses for public utility equity offerings represent at least four to five percent of the amount of the proceeds. In addition, the finance literature supports the conclusion that the cost associated with the decline in stock price at the announcement date represents approximately two to three percent as a result of a large public utility equity issue.

Time Pattern Of Flotation Cost Recovery

Although flotation costs are incurred only at the time a firm issues new securities, there is no reason why an issuing firm ought to recognize the expense only in the current period. In fact, if assets purchased with the proceeds of a security issue produce revenues over many years, a sound argument can be made in favor of recognizing flotation expenses over a reasonably lengthy period of time. Such recognition is certainly consistent with the generally accepted accounting principle that the time pattern of expenses match the time pattern of revenues, and it is also consistent with the normal treatment of debt flotation expenses in both regulated and unregulated industries.

In the context of a regulated firm, it should be noted that there are many possible time patterns for the recovery of flotation expenses. However, if it is felt

that flotation expenses are most appropriately recovered over a period of years, then it should be recognized that investors must also be compensated for the passage of time. That is to say, the value of an investor's capital will be reduced if the expenses are merely distributed over time, without any allowance for the time value of money.

Accounting For Flotation Cost In A Regulatory Setting

In a regulatory setting, a firm's revenue requirements are determined by the equation:

Revenue Requirement = Total Expenses + Allowed Rate of Return x Rate Base

Thus, there are three ways in which an issuing firm can account for and recover its flotation expenses: (1) treat flotation expenses as a current expense and recover them immediately; (2) include flotation expenses in rate base and recover them over time; and (3) adjust the allowed rate of return upward and again recover flotation expenses over time. Before considering methods currently being used to recover flotation expenses in a regulatory setting, I shall briefly consider the advantages and disadvantages of these three basic recovery methods.

Expenses. Treating flotation costs as a current expense has several advantages. Because it allows for recovery at the time the expense occurs, it is not necessary to compute amortized balances over time and to debate which interest rate should be applied to these balances. A firm's stockholders are treated fairly, and so are the firm's customers, because they pay neither more nor less than the actual flotation expense. Since flotation costs are relatively small compared to the total revenue requirement, treatment as a current expense does not cause unusual rate hikes in the year of flotation, as would the introduction of a large generating plant in a state that does not allow Construction Work in Progress in rate base.

On the other hand, there are two major disadvantages of treating flotation costs as a current expense. First, since the asset purchased with the acquired

funds will likely generate revenues for many years into the future, it seems unfair that current ratepayers should bear the full cost of issuing new securities, when future ratepayers share in the benefits. Second, this method requires an estimate of the underpricing effect on each security issue. Given the difficulties involved in measuring the extent of underpricing, it may be more accurate to estimate the average underpricing allowance for many securities than to estimate the exact figure for one security.

Rate Base. In an article in *Public Utilities Fortnightly*, Bierman and Hass [5] recommend that flotation costs be treated as an intangible asset that is included in a firm's rate base along with the assets acquired with the stock proceeds. This approach has many advantages. For ratepayers, it provides a better match between benefits and expenses: the future ratepayers who benefit from the financing costs contribute the revenues to recover these costs. For investors, if the allowed rate of return is equal to the investors' required rate of return, it is also theoretically fair since they are compensated for the opportunity cost of their investment (including both the time value of money and the investment risk).

Despite the compelling advantages of this method of cost recovery, there are several disadvantages that probably explain why it has not been used in practice. First, a firm will only recover the proper amount for flotation expenses if the rate base is multiplied by the appropriate cost of capital. To the extent that a commission under or over estimates the cost of capital, a firm will under or over recover its flotation expenses. Second, it is may be both legally and psychologically difficult for commissioners to include an intangible asset in a firm's rate base. According to established legal doctrine, assets are to be included in rate base only if they are "used and useful" in the public service. It is unclear whether intangible assets such as flotation expenses meet this criterion.

Rate of Return. The prevailing practice among state regulators is to treat flotation expenses as an additional element of a firm's cost of capital or allowed rate of return. This method is similar to the second method above (treatment in rate base) in that some part of the initial flotation cost is amortized over time.

However, it has a disadvantage not shared by the rate base method. If flotation cost is included in rate base, it is fairly easy to keep track of the flotation cost on each new equity issue and see how it is recovered over time. Using the rate of return method, it is not possible to track the flotation cost for specific issues because the flotation cost for a specific issue is never recorded. Thus, it is not clear to participants whether a current allowance is meant to recover (1) flotation costs actually incurred in a test period, (2) expected future flotation costs, or (3) past flotation costs. This confusion never arises in the treatment of debt flotation costs. Because the exact costs are recorded and explicitly amortized over time, participants recognize that current allowances for debt flotation costs are meant to recover some fraction of the flotation costs on all past debt issues.

Existing Regulatory Methods

Although most state commissions prefer to let a regulated firm recover flotation expenses through an adjustment to the allowed rate of return, there is considerable controversy about the magnitude of the required adjustment. The following are some of the most frequently asked questions: (1) Should an adjustment to the allowed return be made every year, or should the adjustment be made only in those years in which new equity is raised? (2) Should an adjusted rate of return be applied to the entire rate base, or should it be applied only to that portion of the rate base financed with paid-in capital (as opposed to retained earnings)? (3) What is the appropriate formula for adjusting the rate of return?

This section reviews several methods of allowing for flotation cost recovery. Since the regulatory methods of allowing for recovery of debt flotation costs is well known and widely accepted, I will begin my discussion of flotation cost recovery procedures by describing the widely accepted procedure of allowing for debt flotation cost recovery.

Debt Flotation Costs

Regulators uniformly recognize that companies incur flotation costs when they issue debt securities. They typically allow recovery of debt flotation costs by

making an adjustment to both the cost of debt and the rate base (see Brigham [6]). Assume that: (1) a regulated company issues $100 million in bonds that mature in 10 years; (2) the interest rate on these bonds is seven percent; and (3) flotation costs represent four percent of the amount of the proceeds. Then the cost of debt for regulatory purposes will generally be calculated as follows:

$$\begin{aligned}\text{Cost of Debt} &= \frac{\text{Interest expense} + \text{Amortization of flotation costs}}{\text{Principal value - Unamortized flotation costs}} \\ &= \frac{\$7{,}000{,}000 + \$400{,}000}{\$100{,}000{,}000 - \$4{,}000{,}000} \\ &= 7.71\%\end{aligned}$$

Thus, current regulatory practice requires that the cost of debt be adjusted upward by approximately 71 basis points, in this example, to allow for the recovery of debt flotation costs. This example does not include losses on reacquisition of debt. The flotation cost allowance would increase if losses on reacquisition of debt were included.

The logic behind the traditional method of allowing for recovery of debt flotation costs is simple. Although the company has issued $100 million in bonds, it can only invest $96 million in rate base because flotation costs have reduced the amount of funds received by $4 million. If the company is not allowed to earn a 71 basis point higher rate of return on the $96 million invested in rate base, it will not generate sufficient cash flow to pay the seven percent interest on the $100 million in bonds it has issued. Thus, proper regulatory treatment is to increase the required rate of return on debt by 71 basis points.

Equity Flotation Costs

The finance literature discusses several methods of recovering equity flotation costs. Since each method stems from a specific model, (i. e., set of assumptions) of a firm and its cash flows, I will highlight the assumptions that distinguish one method from another.

Arzac and Marcus. Arzac and Marcus [2] study the proper flotation cost adjustment formula for a firm that makes continuous use of retained earnings and

external equity financing and maintains a constant capital structure (debt/equity ratio). They assume at the outset that underwriting expenses and underpricing apply only to new equity obtained from external sources. They also assume that a firm has previously recovered all underwriting expenses, issuer expenses, and underpricing associated with previous issues of new equity.

To discuss and compare various equity flotation cost adjustment formulas, Arzac and Marcus make use of the following notation:

k	=	an investors' required return on equity
r	=	a utility's allowed return on equity base
S	=	value of equity in the absence of flotation costs
S_f	=	value of equity net of flotation costs
K_t	=	equity base at time t
E_t	=	total earnings in year t
D_t	=	total cash dividends at time t
b	=	$(E_t-D_t) \div E_t$ = retention rate, expressed as a fraction of earnings
h	=	new equity issues, expressed as a fraction of earnings
m	=	equity investment rate, expressed as a fraction of earnings, $m = b + h < 1$
f	=	flotation costs, expressed as a fraction of the value of an issue.

Because of flotation costs, Arzac and Marcus assume that a firm must issue a greater amount of external equity each year than it actually needs. In terms of the above notation, a firm issues $hE_t \div (1-f)$ to obtain hE_t in external equity funding. Thus, each year a firm loses:

EQUATION 3

$$L = \frac{hE_t}{1-f} - hE_t = \frac{f}{1-f} \times hE_t$$

due to flotation expenses. The present value, V, of all future flotation expenses is:

EQUATION 4

$$V = \sum_{t=1}^{\infty} \frac{fhE_t}{(1-f)(1+k)^t} = \frac{fh}{1-f} \times \frac{rK_0}{k-mr}$$

To avoid diluting the value of the initial stockholder's equity, a regulatory authority needs to find the value of r, a firm's allowed return on equity base, that equates the value of equity net of flotation costs to the initial equity base ($S_f = K_0$). Since the value of equity net of flotation costs equals the value of equity in the absence of flotation costs minus the present value of flotation costs, a regulatory authority needs to find that value of *r* that solves the following equation:

$$S_f = S - L.$$

This value is:

EQUATION 5

$$r = \frac{k}{1 - \frac{fh}{1-f}}$$

To illustrate the Arzac-Marcus approach to adjusting the allowed return on equity for the effect of flotation costs, suppose that the cost of equity in the absence of flotation costs is 12 percent. Furthermore, assume that a firm obtains external equity financing each year equal to 10 percent of its earnings and that flotation expenses equal 5 percent of the value of each issue. Then, according to Arzac and Marcus, the allowed return on equity should be:

$$r = \frac{.12}{1 - \frac{(.05).(.1)}{.95}} = .1206 = 12.06\%$$

Summary. With respect to the three questions raised at the beginning of this section, it is evident that Arzac and Marcus believe the flotation cost adjustment should be applied each year, since continuous external equity financing is a fundamental assumption of their model. They also believe that the adjusted rate of return should be applied to the entire equity-financed portion of the rate base because their model is based on the assumption that the flotation cost adjustment mechanism will be applied to the entire equity financed portion of the rate base. Finally, Arzac and Marcus recommend a flotation cost adjustment formula, Equation (3), that implicitly excludes recovery of financing costs associated with financing in previous periods and includes only an allowance for the fraction of equity financing obtained from external sources.

Patterson. The Arzac-Marcus flotation cost adjustment formula is significantly different from the conventional approach (found in many introductory textbooks) which recommends the adjustment equation:

EQUATION 6

$$r = \frac{D_t}{P_{t-1}(1-f)} + g$$

where P_{t-1} is the stock price in the previous period and g is the expected dividend growth rate. Patterson [18] compares the Arzac-Marcus adjustment formula to the conventional approach and reaches the conclusion that the Arzac-Marcus formula effectively expenses issuance costs as they are incurred, while the conventional approach effectively amortizes them over an assumed infinite life of the equity issue. Thus, the conventional formula is similar to the formula for the recovery of debt flotation costs: it is not meant to compensate investors for the flotation costs of future issues, but instead is meant to compensate investors for the flotation costs of previous issues. Patterson argues that the conventional approach is more appropriate for rate making purposes because the plant purchased with external equity funds will yield benefits over many future periods.

Illustration. To illustrate the Patterson approach to flotation cost recovery, assume that a newly organized utility sells an initial issue of stock for $100 per

share, and that the utility plans to finance all new investments with retained earnings. Assume also that: (1) the initial dividend per share is six dollars; (2) the expected long-run dividend growth rate is six percent; (3) the flotation cost is five percent of the amount of the proceeds; and (4) the payout ratio is 51.28 percent. Then, the investor's required rate of return on equity is [k = (D/P) + g = 6 percent + 6 percent = 12 percent]; and the flotation-cost-adjusted cost of equity is [6 percent (1/.95) + 6 percent = 12.316 percent].

The effects of the Patterson adjustment formula on the utility's rate base, dividends, earnings, and stock price are shown in Table 3. We see that the Patterson formula allows earnings and dividends to grow at the expected six percent rate. We also see that the present value of expected future dividends, $100, is just sufficient to induce investors to part with their money. If the present value of expected future dividends were less than $100, investors would not have been willing to invest $100 in the firm. Furthermore, the present value of future dividends will only equal $100 if the firm is allowed to earn the 12.316 percent flotation-cost-adjusted cost of equity on its entire rate base.

Summary. Patterson's opinions on the three issues raised in this section are in stark contrast to those of Arzac and Marcus. He believes that: (1) a flotation cost adjustment should be applied in every year, regardless of whether a firm issues any new equity in each year; (2) a flotation cost adjustment should be applied to the entire equity-financed portion of the rate base, including that portion financed by retained earnings; and (3) the rate of return adjustment formula should allow a firm to recover an appropriate fraction of all previous flotation expenses.

Conclusion

Having reviewed the literature and analyzed flotation cost issues, I conclude that:

Definition of Flotation Cost: A regulated firm should be allowed to recover both the total underwriting and issuance expenses associated with issuing securities and the cost of market pressure.

Time Pattern of Flotation Cost Recovery. Shareholders are indifferent between the alternatives of immediate recovery of flotation costs and recovery over time, as long as they are fairly compensated for the opportunity cost of their money. This opportunity cost must include both the time value of money and a risk premium for equity investments of this nature.

Regulatory Recovery of Flotation Costs. The Patterson approach to recovering flotation costs is the only rate-of-return-adjustment approach that meets the *Hope* case criterion that a regulated company's revenues must be sufficient to allow the company an opportunity to recover all prudently incurred expenses, including the cost of capital. The Patterson approach is also the only rate-of-return-adjustment approach that provides an incentive for investors to invest in the regulated company.

Implementation of a Flotation Cost Adjustment. As noted earlier, prevailing regulatory practice seems to be to allow the recovery of flotation costs through an adjustment to the required rate of return. My review of the literature on this subject indicates that there are at least two recommended methods of making this adjustment: the Patterson approach and the Arzac-Marcus approach. The Patterson approach assumes that a firm's flotation expenses on new equity issues are treated in the same manner as flotation expenses on new bond issues, i. e., they are amortized over future time periods. If this assumption is true (and I believe it is), then the flotation cost adjustment should be applied to a firm's entire equity base, including retained earnings. In practical terms, the Patterson approach produces an increase in a firm's cost of equity of approximately thirty basis points. The Arzac-Marcus approach assumes that flotation costs on new equity issues are recovered entirely in the year in which the securities are sold. Under the Arzac-Marcus assumption, a firm should not be allowed any adjustments for flotation costs associated with previous issuances. Instead, a firm should be allowed only an adjustment on future security sales as they occur. Under reasonable assumptions about the rate of new equity sales, this method produces an increase in the cost of equity of approximately six basis points. Since the Arzac-Marcus approach does not allow

the company to recover the entire amount of its flotation cost, I recommend that this approach be rejected and the Patterson approach be accepted.

BIBLIOGRAPHY

1. Armknecht, Raymond, Fred Grygiel and Patrick Hess, “Market Pressure: The Sales of New Common Equity and Rate of Return Regulation, “Proceedings of the Business and Economic Statistics Section of the American Statistical Association, 1974, pp. 80—91.
2. Arzac, E. R., and M. Marcus, “Flotation Cost Allowance in Rate of Return Regulation: A Note,” *Journal of Finance*, December 1981, pp. 1199—1202.
3. Barclay, M. J. and R. H. Litzenberger, 1988, “Announcement Effects of New Equity Issues and the Use of Intraday Price Data,” *Journal of Financial Economics* 21, 71—99.
4. Bhagat, S. and P. A. Frost, 1986, “Issuing Costs to Existing Shareholders in Competitive and Negotiated Underwritten Public Utility Equity Offerings,” *Journal of Financial Economics* 15, 233—59.
5. Bierman, H., and J. E. Hass, “Equity Flotation Cost Adjustments in Utilities' Cost of Service,” *Public Utilities Fortnightly*, March 1, 1983, pp.46—49 .
6. Bowyer, Jr., John W., and Jess B. Yawitz, “The Effect of New Equity Issues on Utility Stock Prices,” *Pubic Utilities Fortnightly*, May 22, 1980.
7. Brigham, Eugene F., Dana Aberwald, and Louis C. Gapenski, “Common Equity Flotation Costs and Rate Making,” *Public Utilities Fortnightly*, May 2, 1985, pp. 28—26.
8. Calomiris, C. W. and D. M. G Raff, 1995, “The Evolution of Market Structure, Information, and Spreads in American Investment Banking,” in M. B. Bordo and R. Sylla, eds., *Anglo-American Finance: Financial Markets and Institutions in 20th Century North America and the U. K.* (Business One-Irwin Homewood, IL), 103—60.
9. Dunbar, C. G., 1995, “The Use of Warrants as Underwriter Compensation in Initial Public Offerings,” *Journal of Financial Economics* 38, 59—78.
10. Evans, Robert E., “On the Existence, Measurement, and Economic Significance of Market Pressure in the Pricing of New Equity Shares,” unpublished dissertation, University of Wisconsin, 1978.
11. Howe, K. M., “Flotation Cost Allowance in Rate of Return Regulation: Comment,” *Journal of Finance*, March 1984, pp. 289—290.

12. Howe, K. M., “Flotation Cost Allowance for the Regulated Firm: A Comparison of Alternatives,” unpublished working paper, School of Business, Iowa State University.

13. Ibbotson, R. C., “Price Performance of Common Stock New Issues,” *Journal of Financial Economics*, 1975, pp. 235—272.

14. Lee, Inmoo, Scott Lochhead, Jay Ritter, and Quanshui Zhao, “The Costs of Raising Capital,” *The Journal of Financial Research*, Vol XIX No 1 (Spring 1996), 59—74

15. Logue, D. E., “On the Pricing of Unseasoned Equity Offerings: 1965—1969,” *Journal of Financial and Quantitative Analysis*, January 1973, pp. 91—103.

16. McDonald, J. G. and A. K. Fisher, “New Issue Stock Price Behavior,” *Journal of Finance*, March 1972, pp. 97—102.

17. Mikkelson, Wayne H. and M. Megan Partch, “Valuation Effects of Security Offerings and the Issuance Process,” *Journal of Financial Economics* 15 (1986), pp. 31-60.

18. Patterson, C. S., “Flotation Cost Allowance in Rate of Return Regulation: Comment,” *Journal of Finance*, September 1983, pp. 1335—1338.

19. Pettway, R. H., “The Effects of New Equity Sales Upon Utility Share Prices,” *Public Utilities Fortnightly*, May 10, 1984, pp. 35—39.

20. Reilly, F. K. and K. Hatfield, “Investor Experience with New Stock Issues,” *Financial Analysts' Journal*, September--October 1969, pp. 73—80.

21. Richter, P. H., “The Ever Present Need for an Underpricing Allowance,” *Public Utilities Fortnightly*, February 18, 1982, pp. 58—61.

22. Scholes, M., “The Market for New Securities: Substitution versus Price Pressure and the Effects of Information on Share Prices,” *Journal of Business*, April 1972, pp. 179—211.

23. Securities and Exchange Commission, Report of Special Study on Securities Markets, U. S. Government Printing Office, Washington, D. C. 1963.

24. Smith, Clifford W. Jr., “Alternative Methods for Raising Capital,” *Journal of Financial Economics* 5 (1977) 273-307.

TABLE 1
DIRECT COSTS AS A PERCENTAGE OF GROSS PROCEEDS
FOR EQUITY (IPOS AND SEOS) AND STRAIGHT AND CONVERTIBLE BONDS
OFFERED BY DOMESTIC OPERATING COMPANIES 1990—1994[9]

EQUITIES

		IPOs				SEOs			
Line No.	Proceeds ($ in millions)	No. of Issues	Gross Spreads	Other Direct Expenses	Total Direct Costs	No. of Issues	Gross Spreads	Other Direct Expenses	Total Direct Costs
1	2-9.99	337	9.05%	7.91%	16.96%	167	7.72%	5.56%	13.28%
2	10-19.99	389	7.24%	4.39%	11.63%	310	6.23%	2.49%	8.72%
3	20-39.99	533	7.01%	2.69%	9.70%	425	5.60%	1.33%	6.93%
4	40-59.99	215	6.96%	1.76%	8.72%	261	5.05%	0.82%	5.87%
5	60-79.99	79	6.74%	1.46%	8.20%	143	4.57%	0.61%	5.18%
6	80-99.99	51	6.47%	1.44%	7.91%	71	4.25%	0.48%	4.73%
7	100-199.99	106	6.03%	1.03%	7.06%	152	3.85%	0.37%	4.22%
8	200-499.99	47	5.67%	0.86%	6.53%	55	3.26%	0.21%	3.47%
9	500 and up	10	5.21%	0.51%	5.72%	9	3.03%	0.12%	3.15%
10	**Total/Average**	**1,767**	**7.31%**	**3.69%**	**11.00%**	**1,593**	**5.44%**	**1.67%**	**7.11%**

Bonds

		Convertible Bonds				Straight Bonds			
Line No.	Proceeds ($ in millions)	No. of Issues	Gross Spreads	Other Direct Expenses	Total Direct Costs	No. of Issues	Gross Spreads	Other Direct Expenses	Total Direct Costs
1	2-9.99	4	6.07%	2.68%	8.75%	32	2.07%	2.32%	4.39%
2	10-19.99	14	5.48%	3.18%	8.66%	78	1.36%	1.40%	2.76%
3	20-39.99	18	4.16%	1.95%	6.11%	89	1.54%	0.88%	2.42%
4	40-59.99	28	3.26%	1.04%	4.30%	90	0.72%	0.60%	1.32%
5	60-79.99	47	2.64%	0.59%	3.23%	92	1.76%	0.58%	2.34%
6	80-99.99	13	2.43%	0.61%	3.04%	112	1.55%	0.61%	2.16%
7	100-199.99	57	2.34%	0.42%	2.76%	409	1.77%	0.54%	2.31%
8	200-499.99	27	1.99%	0.19%	2.18%	170	1.79%	0.40%	2.19%
9	500 and up	3	2.00%	0.09%	2.09%	20	1.39%	0.25%	1.64%
10	**Total/Average**	**211**	**2.92%**	**0.87%**	**3.79%**	**1,092**	**1.62%**	**0.62%**	**2.24%**

[9] Inmoo Lee, Scott Lochhead, Jay Ritter, and Quanshui Zhao, “The Costs of Raising Capital,” *Journal of Financial Research* Vol 19 No 1 (Spring 1996) pp. 59-74.

Notes:

Closed-end funds and unit offerings are excluded from the sample. Rights offerings for SEOs are also excluded. Bond offerings do not include securities backed by mortgages and issues by Federal agencies. Only firm commitment offerings and non-shelf-registered offerings are included.
Gross Spreads as a percentage of total proceeds, including management fee, underwriting fee, and selling concession.
Other Direct Expenses as a percentage of total proceeds, including management fee, underwriting fee, and selling concession.
Total Direct Costs as a percentage of total proceeds (total direct costs are the sum of gross spreads and other direct expenses).

TABLE 2
DIRECT COSTS OF RAISING CAPITAL 1990—1994
UTILITY VERSUS NON-UTILITY COMPANIES[10]

EQUITIES

	Non-Utilities	IPOs			SEOs		
Line No.	Proceeds ($ in millions)	No. of Issues	Gross Spreads	Total Direct Costs	No. Of Issues	Gross Spreads	Total Direct Costs
1	2-9.99	332	9.04%	16.97%	154	7.91%	13.76%
2	10-19.99	388	7.24%	11.64%	278	6.42%	9.01%
3	20-39.99	528	7.01%	9.70%	399	5.70%	7.07%
4	40-59.99	214	6.96%	8.71%	240	5.17%	6.02%
5	60-79.99	78	6.74%	8.21%	131	4.68%	5.31%
6	80-99.99	47	6.46%	7.88%	60	4.35%	4.84%
7	100-199.99	101	6.01%	7.01%	137	3.97%	4.36%
8	200-499.99	44	5.65%	6.49%	50	3.27%	3.48%
9	500 and up	10	5.21%	5.72%	8	3.12%	3.25%
10	**Total/Average**	1,742	7.31%	11.01%	1,457	5.57%	7.32%
11	**Utilities Only**						
12	2-9.99	5	9.40%	16.54%	13	5.41%	7.68%
13	10-19.99	1	7.00%	8.77%	32	4.59%	6.21%
14	20-39.99	5	7.00%	9.86%	26	4.17%	4.96%
15	40-59.99	1	6.98%	11.55%	21	3.69%	4.12%
16	60-79.99	1	6.50%	7.55%	12	3.39%	3.72%
17	80-99.99	4	6.57%	8.24%	11	3.68%	4.11%
18	100-199.99	5	6.45%	7.96%	15	2.83%	2.98%
19	200-499.99	3	5.88%	7.00%	5	3.19%	3.48%
20	500 and up	0			1	2.25%	2.31%
21	**Total/Average**	25	7.15%	10.14%	136	4.01%	4.92%

[10] Lee *et al, op. cit*.

TABLE 2 (CONTINUED)
DIRECT COSTS OF RAISING CAPITAL 1990—1994
UTILITY VERSUS NON-UTILITY COMPANIES[11]

BONDS

	Non- Utilities	Convertible Bonds			Straight Bonds		
Line No.	Proceeds ($ in millions)	No. of Issues	Gross Spreads	Total Direct Costs	No. of Issues	Gross Spreads	Total Direct Costs
1	2-9.99	4	6.07%	8.75%	29	2.07%	4.53%
2	10-19.99	12	5.54%	8.65%	47	1.70%	3.28%
3	20-39.99	16	4.20%	6.23%	63	1.59%	2.52%
4	40-59.99	28	3.26%	4.30%	76	0.73%	1.37%
5	60-79.99	47	2.64%	3.23%	84	1.84%	2.44%
6	80-99.99	12	2.54%	3.19%	104	1.61%	2.25%
7	100-199.99	55	2.34%	2.77%	381	1.83%	2.38%
8	200-499.99	26	1.97%	2.16%	154	1.87%	2.27%
9	500 and up	3	2.00%	2.09%	19	1.28%	1.53%
10	**Total/Average**	203	2.90%	3.75%	957	1.70%	2.34%
11	**Utilities Only**						
12	2-9.99	0			3	2.00%	3.28%
13	10-19.99	2	5.13%	8.72%	31	0.86%	1.35%
14	20-39.99	2	3.88%	5.18%	26	1.40%	2.06%
15	40-59.99	0			14	0.63%	1.10%
16	60-79.99	0			8	0.87%	1.13%
17	80-99.99	1	1.13%	1.34%	8	0.71%	0.98%
18	100-199.99	2	2.50%	2.74%	28	1.06%	1.42%
19	200-499.99	1	2.50%	2.65%	16	1.00%	1.40%
20	500 and up	0			1	3.50%	na[12]
21	**Total/Average**	8	3.33%	4.66%	135	1.04%	1.47%

Notes:
Total proceeds raised in the United States, excluding proceeds from the exercise of over allotment options.
Gross spreads as a percentage of total proceeds (including management fee, underwriting fee, and selling concession).
Other direct expenses as a percentage of total proceeds (including registration fee and printing, legal, and auditing costs).

[11] Lee *et al, op. cit*.

[12] Not available because of missing data on other direct expenses.

TABLE 3
ILLUSTRATION OF PATTERSON APPROACH TO FLOTATION COST RECOVERY

Line No.	Time Period	Rate Base	Earnings @ 12.32%	Earnings @ 12.00%	Dividends	Amortization Initial FC
1	0	95.00				
2	1	100.70	11.70	11.40	6.00	0.3000
3	2	106.74	12.40	12.08	6.36	0.3180
4	3	113.15	13.15	12.81	6.74	0.3371
5	4	119.94	13.93	13.58	7.15	0.3573
6	5	127.13	14.77	14.39	7.57	0.3787
7	6	134.76	15.66	15.26	8.03	0.4015
8	7	142.84	16.60	16.17	8.51	0.4256
9	8	151.42	17.59	17.14	9.02	0.4511
10	9	160.50	18.65	18.17	9.56	0.4782
11	10	170.13	19.77	19.26	10.14	0.5068
12	11	180.34	20.95	20.42	10.75	0.5373
13	12	191.16	22.21	21.64	11.39	0.5695
14	13	202.63	23.54	22.94	12.07	0.6037
15	14	214.79	24.96	24.32	12.80	0.6399
16	15	227.67	26.45	25.77	13.57	0.6783
17	16	241.33	28.04	27.32	14.38	0.7190
18	17	255.81	29.72	28.96	15.24	0.7621
19	18	271.16	31.51	30.70	16.16	0.8078
20	19	287.43	33.40	32.54	17.13	0.8563
21	20	304.68	35.40	34.49	18.15	0.9077
22	21	322.96	37.52	36.56	19.24	0.9621
23	22	342.34	39.77	38.76	20.40	1.0199
24	23	362.88	42.16	41.08	21.62	1.0811
25	24	384.65	44.69	43.55	22.92	1.1459
26	25	407.73	47.37	46.16	24.29	1.2147
27	26	432.19	50.21	48.93	25.75	1.2876
28	27	458.12	53.23	51.86	27.30	1.3648
29	28	485.61	56.42	54.97	28.93	1.4467
30	29	514.75	59.81	58.27	30.67	1.5335
31	30	545.63	63.40	61.77	32.51	1.6255
32	Present Value@12%		195.00	190.00	100.00	5.00

APPENDIX 3
MISSISSIPPI POWER COMPANY
STATEMENT OF QUALIFICATIONS
JAMES H. VANDER WEIDE, PH.D.

Q 1 Please state your name, title, and business address for the record.

A 1 My name is James H. Vander Weide. I am Research Professor of Finance and Economics at Duke University, the Fuqua School of Business. I am also President of Financial Strategy Associates, a firm that provides strategic and financial consulting services to corporate clients. My business address is 3606 Stoneybrook Drive, Durham, North Carolina 27705.

Q 2 Please describe your educational background and prior academic experience.

A 2 I graduated from Cornell University with a Bachelor's Degree in Economics and from Northwestern University with a Ph.D. in Finance. After joining the faculty of the School of Business at Duke University, I was named Assistant Professor, Associate Professor, Professor, and then Research Professor. I have published research in the areas of finance and economics and taught courses in these fields at Duke for more than thirty-five years. I am now retired from my teaching duties at Duke. A summary of my research, teaching, and other professional experience is presented in Attachment 1.

Q 3 Have you previously testified on financial or economic issues?

A 3 Yes. As an expert on financial and economic theory and practice, I have participated in more than four hundred regulatory and legal proceedings before the U.S. Congress, the Canadian Radio-Television and Telecommunications Commission, the Federal Communications Commission, the National Telecommunications and Information Administration, the Federal Energy Regulatory Commission, the National Energy Board (Canada), the public service commissions of forty-three states and four Canadian provinces, the insurance commissions of five states, the Iowa State Board of Tax Review, the National Association of Securities Dealers, and the North Carolina Property Tax Commission. In addition, I have prepared expert testimony in proceedings before the U.S. Tax Court, the U.S. District Court for the District of Nebraska; the U.S. District Court for the District of New Hampshire; the U.S. District Court for the District of Northern Illinois; the U.S. District Court for the Eastern District of North Carolina; the Montana Second Judicial District Court, Silver Bow County; the

U.S. District Court for the Northern District of California; the Superior Court, North Carolina; the U.S. Bankruptcy Court for the Southern District of West Virginia; and the U. S. District Court for the Eastern District of Michigan.

Q 4 What is the purpose of your testimony?

A 4 I have been asked by Mississippi Power Company (“Mississippi Power” or “the Company”) to prepare an independent appraisal of Mississippi Power’s cost of equity and to recommend a rate of return on equity (ROE) that is fair, that allows Mississippi Power to attract capital on reasonable terms, and that allows Mississippi Power to maintain its financial integrity.

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

ATTACHMENT 1
MISSISSIPPI POWER COMPANY
JAMES H. VANDER WEIDE, Ph.D.

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James H. Vander Weide is Research Professor of Finance and Economics at Duke University, the Fuqua School of Business. Dr. Vander Weide is also founder and President of Financial Strategy Associates, a consulting firm that provides strategic, financial, and economic consulting services to corporate clients, including cost of capital and valuation studies.

Educational Background and Prior Academic Experience

Dr. Vander Weide holds a Ph.D. in Finance from Northwestern University and a Bachelor of Arts in Economics from Cornell University. He joined the faculty at Duke University and was named Assistant Professor, Associate Professor, Professor, and then Research Professor of Finance and Economics.

Since joining the faculty at Duke, Dr. Vander Weide has taught courses in corporate finance, investment management, and management of financial institutions. He has also taught courses in statistics, economics, and operations research, and a Ph.D. seminar on the theory of public utility pricing. In addition, Dr. Vander Weide has been active in executive education at Duke and Duke Corporate Education, leading executive development seminars on topics including financial analysis, cost of capital, creating shareholder value, mergers and acquisitions, real options, capital budgeting, cash management, measuring corporate performance, valuation, short-run financial planning, depreciation policies, financial strategy, and competitive strategy. Dr. Vander Weide has designed and served as Program Director for several executive education programs, including the Advanced Management Program, Competitive Strategies in Telecommunications, and the Duke Program for Manager Development for managers from the former Soviet Union.

Publications

Dr. Vander Weide has written a book entitled *Managing Corporate Liquidity: An Introduction to Working Capital Management* published by John Wiley and Sons, Inc. He has also written a chapter titled, “Financial Management in the Short Run” for *The Handbook of*

Modern Finance; a chapter titled "Principles for Lifetime Portfolio Selection: Lessons from Portfolio Theory" for *The Handbook of Portfolio Construction: Contemporary Applications of Markowitz Techniques;* and written research papers on such topics as portfolio management, capital budgeting, investments, the effect of regulation on the performance of public utilities, and cash management. His articles have been published in *American Economic Review, Financial Management, International Journal of Industrial Organization, Journal of Finance, Journal of Financial and Quantitative Analysis, Journal of Bank Research, Journal of Portfolio Management, Journal of Accounting Research, Journal of Cash Management, Management Science, Atlantic Economic Journal, Journal of Economics and Business,* and *Computers and Operations Research*.

Professional Consulting Experience

Dr. Vander Weide has provided financial and economic consulting services to firms in the electric, gas, insurance, telecommunications, and water industries for more than twenty-five years. He has testified on the cost of capital, competition, risk, incentive regulation, forward-looking economic cost, economic pricing guidelines, depreciation, accounting, valuation, and other financial and economic issues in more than 400 cases before the United States Congress, the Canadian Radio-Television and Telecommunications Commission, the Federal Communications Commission, the National Energy Board (Canada), the National Telecommunications and Information Administration, the Federal Energy Regulatory Commission, the public service commissions of forty-three states, the District of Columbia, four Canadian provinces, the insurance commissions of five states, the Iowa State Board of Tax Review, the National Association of Securities Dealers, and the North Carolina Property Tax Commission. In addition, he has testified as an expert witness in telecommunications-related proceedings before the United States District Court for the District of New Hampshire, United States District Court for the Northern District of California, United States District Court for the Northern District of Illinois, Montana Second Judicial District Court Silver Bow County, the United States Bankruptcy Court for the Southern District of West Virginia, and United States District Court for the Eastern District of Michigan. He also testified as an expert before the United States Tax Court, United States District Court for the Eastern District of North Carolina; United States District Court for the District of Nebraska, and Superior Court of North Carolina. Dr. Vander Weide has testified in thirty states on issues relating to the pricing of unbundled network elements and universal service cost studies and has consulted with Bell Canada, Deutsche Telekom, and Telefónica on similar issues. He has also provided expert testimony on issues related to electric and natural gas restructuring. He has worked for Bell Canada/Nortel on a special task force to study the effects of vertical integration in the Canadian telephone industry and has worked for

Bell Canada as an expert witness on the cost of capital. Dr. Vander Weide has provided consulting and expert witness testimony to the following companies:

ELECTRIC, GAS, OIL, AND WATER COMPANIES	
	Kinder Morgan Energy Partners
Alcoa Power Generating, Inc.	Maritimes & Northeast Pipeline
Alliant Energy and subsidiaries	MidAmerican Energy and subsidiaries
AltaLink, L.P.	National Fuel Gas
Ameren	Nevada Power Company
American Water Works	NICOR
Atmos Energy and subsidiaries	North Carolina Natural Gas
BP p.l.c.	North Shore Gas
Central Illinois Public Service	Northern Natural Gas Company
Citizens Utilities	NOVA Gas Transmission Ltd.
Consolidated Natural Gas and subsidiaries	PacifiCorp
Dominion Resources and subsidiaries	Peoples Energy and its subsidiaries
Duke Energy and subsidiaries	PG&E
Empire District Electric Company	Progress Energy
EPCOR Distribution & Transmission Inc.	PSE&G
EPCOR Energy Alberta Inc.	Public Service Company of North Carolina
FortisAlberta Inc.	Sempra Energy/San Diego Gas and Electric
Hope Natural Gas	South Carolina Electric and Gas
Interstate Power Company	Southern Company and subsidiaries
Iberdrola Renewables	Tennessee-American Water Company
Iowa Southern	The Peoples Gas, Light and Coke Co.
Iowa-American Water Company	TransCanada

Iowa-Illinois Gas and Electric	Trans Québec & Maritimes Pipeline Inc.
Kentucky Power Company	Union Gas
Kentucky-American Water Company	United Cities Gas Company
	Virginia-American Water Company

TELECOMMUNICATIONS COMPANIES	
ALLTEL and subsidiaries	Phillips County Cooperative Tel. Co.
Ameritech (now AT&T new)	Pine Drive Cooperative Telephone Co.
AT&T (old)	Roseville Telephone Company (SureWest)
Bell Canada/Nortel	SBC Communications (now AT&T new)
BellSouth and subsidiaries	Sherburne Telephone Company
Centel and subsidiaries	Siemens
Cincinnati Bell (Broadwing)	Southern New England Telephone
Cisco Systems	Sprint/United and subsidiaries
Citizens Telephone Company	Telefónica
Concord Telephone Company	Tellabs, Inc.
Contel and subsidiaries	The Stentor Companies
Deutsche Telekom	U S West (Qwest)
GTE and subsidiaries (now Verizon)	Union Telephone Company
Heins Telephone Company	United States Telephone Association
JDS Uniphase	Valor Telecommunications (Windstream)
Lucent Technologies	Verizon (Bell Atlantic) and subsidiaries
Minnesota Independent Equal Access Corp.	Woodbury Telephone Company
NYNEX and subsidiaries (Verizon)	
Pacific Telesis and subsidiaries	

INSURANCE COMPANIES
Allstate
North Carolina Rate Bureau
United Services Automobile Association (USAA)
The Travelers Indemnity Company
Gulf Insurance Company

Other Professional Experience

Dr. Vander Weide conducts in-house seminars and training sessions on topics such as creating shareholder value, financial analysis, competitive strategy, cost of capital, real options, financial strategy, managing growth, mergers and acquisitions, valuation, measuring corporate performance, capital budgeting, cash management, and financial planning. Among the firms for whom he has designed and taught tailored programs and training sessions are ABB Asea Brown Boveri, Accenture, Allstate, Ameritech, AT&T, Bell Atlantic/Verizon, BellSouth, Progress Energy/Carolina Power & Light, Contel, Fisons, GlaxoSmithKline, GTE, Lafarge, MidAmerican Energy, New Century Energies, Norfolk Southern, Pacific Bell Telephone, The Rank Group, Siemens, Southern New England Telephone, TRW, and Wolseley Plc. Dr. Vander Weide has also hosted a nationally prominent conference/workshop on estimating the cost of capital. In 1989, at the request of Mr. Fuqua, Dr. Vander Weide designed the Duke Program for Manager Development for managers from the former Soviet Union, the first in the United States designed exclusively for managers from Russia and the former Soviet republics.

Early in his career, Dr. Vander Weide helped found University Analytics, Inc., which was one of the fastest growing small firms in the country. As an officer at University Analytics, he designed cash management models, databases, and software packages for use by most major U.S. banks in consulting with their corporate clients. Having sold his interest in University Analytics, Dr. Vander Weide now concentrates on strategic and financial consulting, academic research, and executive education.

UNITED STATES OF AMERICA

BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION

IN RE:

Application of Mississippi Power Company for Authority to Increase Rates for Wholesale All Requirements Electric Service

DOCKET NO. ER011-___-000

AFFIDAVIT OF JAMES H. VANDER WEIDE

PERSONALLY appeared before the undersigned officer authorized to administer oaths, JAMES H. VANDER WEIDE, who being duly sworn, deposes and says; that the foregoing direct testimony was prepared by him or under his supervision; that said testimony was prepared for use as direct testimony on behalf of Mississippi Power Company in the captioned proceeding; that the facts stated therein are true to the best of his knowledge, information and belief; and that if asked the questions appearing therein, his answers, under oath, would be the same.

Dated at Durham, North Carolina, the 27 day of October, 2011.

James H. Vander Weide

JAMES H. VANDER WEIDE

Sworn to and subscribed before me this the 27 day of October, 2011.

Amy C. Knud

Notary Public

My Commission Expires:

2/29/2012

AMY C. KNUDSEN NOTARY PUBLIC Person County, NC EXPIRES FEB. 29, 2012

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