

KCP 161

**PUBLIC SERVICE COMMISSION
OF WEST VIRGINIA
CHARLESTON**

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Case Nos. 14-1152-E-42T and 14-1151-E-D

**APPALACHIAN POWER COMPANY
and WHEELING POWER COMPANY**

COMMISSION ORDER ON THE TARIFF FILING
OF APPALACHIAN POWER COMPANY and
WHEELING POWER COMPANY TO INCREASE RATES,
and PETITION TO CHANGE DEPRECIATION RATES.

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E. Return on Equity and Resulting Rate of Return

As we indicated earlier, supra at 2, utility rates should allow a public utility the opportunity to earn a level of revenue sufficient to attract capital in the competitive capital market, balanced with the interests of the consuming public in receiving fair and reasonable rates. The Commission uses its best judgment to assess the record in order to determine a reasonable RoE that allows the utility a level of revenue sufficient to attract capital in the competitive market, while balancing the interests of ratepayers in receiving fair and reasonable rates. Black Diamond Power Company, Case No. 12-0064-E-42T, Order at 5 (August 10, 2012); West Virginia-American Water Company, Case No. 10-0920-W-42T, Order at 15 (April 18, 2011).

Although the goal of utility ratemaking is easy to state, the calculation of the appropriate cost of common equity is not as easy to determine. Witnesses presenting testimony on the cost of common equity capital frequently use the same or similar methodologies, but often end at significantly different results. The Commission has noted in the past that “all of these methods represent artful analyses rather than exact science, and none of them can be said to produce a finite ‘correct’ answer to the exclusion of the others. These studies are useful in providing data that is susceptible to interpretation, but the ultimate answer regarding investor expectations must rely heavily on the judgment of the Commission.” Appalachian Power Company, Case No. 91-026-E-42T Order at 4 (November 1, 1991).

We recently stated that the data that underlie the recommendations of RoE witnesses must be evaluated and judged carefully and practically, based on our judgment of the methods used by expert witnesses, the data presented by those witnesses and the current market conditions. There is no absolute, correct answer with regard to RoE, even though the determination of a reasonable RoE involves calculations on a mass of data presented by expert witnesses. The fair RoE result lies within a zone of reasonableness that is framed by the evidence, including the testimony and exhibits of various witnesses. The final determination of RoE, however, rests with the Commission based on our judgment and the application of regulatory principles and policies that have been used by this Commission. West Virginia-American Water Company, Case No. 10-0920-W-42T, Order at 18.

The Companies recommended a RoE of 10.62 percent. The Companies witness on RoE, Dr. Avera, provided fundamental analyses of APCo and WPCo, their parent company, American Electric Power Company (AEP), the electric utility sector and projected capital market conditions. Companies Exh. WEA-D at 5-13. He then estimated the cost of equity capital by means of discounted cash flow (DCF) analysis, capital asset pricing model (CAPM) analysis, the risk premium method, a comparable risk model and an expected earnings approach. Id. at 23-60. Dr. Avera’s RoE range was 9.5 percent to 11.5 percent, with a recommended point estimate of 10.5 percent. He added a flotation cost adjustment of twelve basis points to his point estimate of 10.5 percent to derive a RoE recommendation for the case of 10.62 percent.

SWVA witness Woolridge recommended a RoE of 8.70 percent. Dr. Woolridge also provided analyses of current capital costs and the credit markets. SWVA Exh. JRW-E at 7-14. Relying primarily on the results of his DCF analysis for a group of twenty-eight publicly-held electric utility companies and CAPM analysis of the same sample group, his recommended range for the cost of equity was 7.8 percent to 8.7 percent. He performed his same analysis on Dr. Avera's sample group of electric utility companies. His recommended cost of equity capital of 8.7 percent represented the upper range of his cost of equity range. *Id.* at 2. He also provided extensive critique of the Companies rate of return testimony.

Staff was the only other party in this proceeding to perform a cost of equity analysis. Staff witness Allen recommended a return on equity based on the application of the DCF and CAPM to a sample group of twenty-two electric utilities that produced average costs of equity of 8.63 percent and 9.86 percent, respectively. The average of those two measures resulted in the Staff-recommended RoE of 9.24 percent.

As indicated, Walmart witness, Steve W. Chriss, did not perform any independent analysis of RoE, but stated a concern that the Companies proposed RoE of 10.62 percent was excessive. In support of his claim, he produced a summary of authorized RoEs for AEP operating companies authorized in recent base rate cases and a chart of reported authorized RoEs for electric utility rate cases completed from 2012 to present. Walmart Exh. SWC-D at 5, attached Exh. SWC-5 at 3. Although CAD did not offer any specific rate of return testimony, it used two scenarios, the first a 9.0 percent RoE and the second a 10.0 percent RoE, to illustrate the impact on the overall weighted cost of capital at those levels of RoE. CAD Exh. RCS-D at 5.

The DCF model is based on the dividend discount model of financial theory that holds that the value (price) of any security is the discounted present value of all future cash flows. This financial theory assumes an investor buys a share of stock to receive a string of dividend payments plus capital appreciation when that stock is sold. The price of the stock is adjusted by the market until the investors receive their required return for the level of risk associated with that investment. The discount rate that makes the future anticipated dividends and future anticipated selling price equal to the current market price is the cost of common equity. The purpose of the DCF model is to capture that cost of equity based on the market data inputs used in the model.

Companies Witness Avera's DCF analysis incorporated a variety of projected earnings growth estimates added to the current yield for each of the companies in his sample electric group. Dr. Avera testified that it was reasonable to exclude the results for any company in the sample group when the calculated RoE failed to exceed the average bond yield by 100 basis points or more. The bond rate chosen by Dr. Avera to determine the outlier results was the forecasted BBB bond yield of approximately 6.7 percent for 2015-2018. Dr. Avera eliminated low-end DCF estimates ranging from 3.6 percent to 7.3 percent. Companies Exh. WEA-D at 33-36. The results of his DCF analysis,

utilizing exclusively projected earnings growth rates and eliminating only outliers on the low side, produced average DCF results for his four groups of growth estimates between 9.4 percent and 9.9 percent. A separate sustainable growth rate $br+sv$ DCF analysis (in which "b" is the expected retention ratio, "r" is the expected earned return on equity, "s" is the percent of common equity expected to be issued annually as new common stock and "v" is the equity accretion rate) produced an average RoE estimate for the electric sample group of 8.5 percent.

The CAPM is a type of risk premium analysis where a premium is added to the risk-free rate to estimate the cost of equity capital. The premium is the difference between the market return, estimated on either a historical basis, *ex poste*, or on a projected basis, *ex ante*, and the risk free rate. The CAPM model requires the determination of the risk for each sample company, called beta, that is a measurement of the relative movement (and relative risk) between a particular company's stock and the movement of the entire stock market. A company that experiences an exact correlation to the volatility of the market has a beta of 1.0, while a company that only changes by half of the total market volatility has a beta of 0.5. Multiplying the market return premium by the company specific beta and adding it to the risk-free rate produces a CAPM estimate of the RoE.

Dr. Avera utilized the empirical CAPM (eCAPM), a variant of the traditional CAPM, for his sample group and applied it on an *ex ante* basis. The eCAPM attempts to correct for understated returns for low beta stocks that would be produced by the standard CAPM. Companies Exh. WEA-D at 39. Dr. Avera calculated the market return as 12.7 percent by adding the weighted average dividend yield (2.3 percent) of the dividend paying firms in the S&P 500 with the weighted average IBES earnings growth rate (10.4 percent) of the dividend paying firms in the S&P 500. By subtracting the June 2014 average 30-year Treasury bond yield risk-free rate of 3.6 percent from the 12.7 percent market premium, multiplying the result by the company specific beta and then adding back the risk-free rate, produced an average sample group eCAPM RoE of 11.0 percent. Dr. Avera then made a size adjustment based on the relative market capitalization of the companies. His average size-adjusted eCAPM is a RoE of 11.8 percent. A similar analysis, using a projected 2015-2018 bond yield of 4.7 percent as the risk-free rate produced an unadjusted average RoE for the sample group of 11.2 percent and a size adjusted RoE estimate of 12.0 percent. As a check for reasonableness, Dr. Avera performed a traditional, or non-empirical CAPM analysis. Using the same data as his eCAPM, his traditional CAPM methodology produced an unadjusted RoE of 10.4 percent using current bond yields and a RoE of 10.7 percent using projected bond yields. Companies Exh. WEA-D, attached Exh. WEA-D9 at 1, 2.

For his third cost of equity estimation, Dr. Avera determined the additional risk that investors require to forgo the relative safety of bonds and to bear the greater risks associated with common stock. Dr. Avera calculated the average utility bond yield for the period 1974-2013 as 8.69 percent. He then subtracted that average bond yield from the average allowed RoE of 12.21 percent during that period to produce a risk premium

for electric utilities of 3.53 percent. Adjusting that result by a factor to reflect the risk premium/interest rate relationship and adding it to the June 2014 average BBB utility bond yield produced a risk premium RoE of 10.19 percent. The same methodology using projected average 2015-2018 utility bond yields produced a risk premium RoE of 11.19 percent. Companies Exh. WEA-D at 42-47.

SWVA witness, Dr. Woolridge, performed DCF and CAPM analyses on his sample group of electric utility companies. For his DCF analysis, he examined a variety of growth rate indicators from Value Line for earnings per share (EPS), dividends per share (DPS) and book value per share (BVPS) on both a historical and projected basis. He also examined projected EPS growth rate estimates from Yahoo, Zacks and Reuters. Dr. Woolridge calculated a sustainable growth rate for his sample group. For his sample electric proxy group, the average growth estimates were 3.3 percent, 4.4 percent, 4.8/4.6 percent and 3.9 percent, respectively. He did not apply any screening of his growth rates to eliminate outliers or negative rates of growth. From those data points, he determined an appropriate growth rate of 4.75 percent for his sample group. That growth rate, added to his dividend yield of 3.8 percent produced a DCF derived RoE estimate of 8.6 percent. He applied this same methodology to Dr. Avera's sample group of electric utility companies and produced a RoE estimate of 8.7 percent. SWVA Exh. JRW-D at 39.

Dr. Woolridge's CAPM analysis relied on an examination of various estimates of market premiums from a variety of sources; from that he determined the data indicate a market risk premium in the 4.0 percent to 6.0 percent range. SWVA Exh. JRW-D at 47. Using the midpoint of 5.0 percent as the market risk premium, an average beta for his sample group of 0.75 and a risk free rate of 4.0 percent, derived from yields on 30-year treasury bonds in the 3.0 percent to 4.0 percent range over the 2013-2014 time period, Dr. Woolridge's CAPM analysis produced a RoE estimate of 7.8 percent. SWVA Exh. JRW-D at 48.

Staff witness, Josh Allen, calculated the cost of equity capital as 9.24 percent, derived from his application of the DCF (8.63 percent) and the CAPM (9.86 percent). For his DCF analysis, Allen examined a sample group of twenty-two electric utilities and calculated their dividend yields by dividing each sample company's projected dividend for the next twelve months by its recent average stock price. To estimate the appropriate growth rate, Staff examined various measures of growth, on both an historic and projected bases, for dividends per share and earnings per share. Staff added those individual growth rates to the individual dividend yields of the sample companies. Those steps produced multiple DCF results. In order to remove outliers, Staff applied a first screening test and eliminated any DCF result lower than the 4.4 percent cost for the Companies recent long-term debt issue. Additionally, Staff eliminated any results that exceeded 300 basis points above or below the average RoE result. After elimination of these thirty-two outliers, Staff calculated the average growth rate as 5.0 percent that, when added to the average dividend yield of 3.64 percent, produced a DCF cost of equity of 8.63 percent (arguably 8.64 percent). Staff Exh. JA-D at 7, 8.

Mr. Allen's application of the CAPM to his sample group produced a cost of equity estimate of 9.86 percent. The Staff CAPM calculation used an historical, or *ex poste*, approach to determine the market premium for equity, made adjustments for the Company specific beta and added the result to the historical U.S. Treasury bill return of 3.5 percent as the risk free component. The Staff CAPM calculation resulted in an estimate of RoE of 9.86 percent. Staff Exh. JA-D at 9-12.

The DCF method has long been one of the methods relied on by the Commission for determining a reasonable RoE. All three cost of equity experts presented various DCF analysis. The Companies average DCF results ranged between 8.5 percent and 9.9 percent, with four of the five average estimates clustered between 9.4 percent and 9.9 percent, Staff produced an average DCF result of 8.63 percent and SWVA produced a DCF equity cost estimate of 8.7 percent.

The Commission also considers CAPM a valuable tool in evaluating the range from which to determine a reasonable RoE. The CAPM compares the risk adjusted RoE result to alternative utility investments, and provides the Commission with a basis to compare the reasonableness of the DCF results. The three return witnesses all presented CAPM RoE estimates. Dr. Avera relied more heavily on his eCAPM results, determined from forecasted market premium and interest rate data, then adjusted for size, to produce an average eCAPM range between 11.0 and 12.0 percent. He also presented his unadjusted traditional CAPM that produced a RoE of 10.4 percent. The Commission in the past, however, has stated a preference for the traditional CAPM analysis. Hope Gas, Inc., Case No. 08-1783-G-42T, Order at 14 (November 20, 2009). The Commission believes Dr. Avera's eCAPM results tend to overstate the cost of equity, and we placed less reliance on those results and relied more heavily on Dr. Avera's unadjusted traditional CAPM RoE estimate of 10.4 percent in determining a reasonable range for RoE in this case.

The Staff CAPM analysis produced an average CAPM RoE estimate of 9.86 percent utilizing an *ex poste* approach that incorporated historical market premiums and the average historical risk-free rate for U.S. Treasury bills. In light of the ongoing actions by the Federal Reserve to keep short-term interest rates at record lows to stimulate the economy, it is not realistic to rely on short-term treasury rates as the risk-free rates. The current treasury market is more driven by government intervention than market bidding, and we find the Staff *ex poste* approach reasonable.

For the SWVA CAPM analysis, Dr. Woolridge presented a myriad of equity risk premium studies from multiple sources covering different time periods, both historical and projected. These studies were published at various times over the past two decades. Dr. Woolridge did not attempt to quantify which result he preferred but instead summarily concluded a market premium of 5.0 percent was appropriate to use in his CAPM model, ultimately producing a CAPM cost of equity of 7.8 percent. We will dismiss his result because his recommendation lacks specific market data support.

As is generally acknowledged, calculation of RoE is more art than science. The Commission has reviewed all of the evidence, testimony and arguments, considered cases cited by the Companies, and reviewed prior decisions of the Commission. We are also familiar with the tremendous upheaval and change in the electric utility industry, particularly as it relates to generation, fuel mix, alternative energy, and numerous other factors. The recommendations of expert witnesses on cost of common equity are useful as guides, but the determination of an appropriate cost of common equity for a utility must rest principally with the best judgment of the Commission. The recommendations of the experts in this case, like most rate cases, are based on identical or similar methodologies and similar market analyses, but result in an array of recommendations on the cost of equity capital.

Based on our review of the record presented in this case, and applying the Commission judgment and expertise in this area, the Commission determines a RoE of 9.75 percent is reasonable, falls within the range of reasonable RoEs presented by the parties, fairly balances the interests of the Companies and their customers, and meets the standards set forth by the United States Supreme Court and the Supreme Court of Appeals of West Virginia.

F. Summary of Capital Structure and Cost of Capital

Based on the discussion and determinations described above concerning the capital structure, cost of debt and RoE, the Commission determines that an overall weighted cost of capital of 7.379 percent is reasonable for establishing rates in this proceeding and fairly balances the interests of the Company and its customers. The capital structure and cost of capital determination of the Commission are provided in Appendix B attached to this Order.

III. RATE BASE

A. Amos 3 Generating Unit Utility Plant

No party took issue with including in rate base \$411.3 million of utility plant for the acquisition of two-thirds of the Amos 3 generation unit. The Commission will adopt the inclusion of \$411.3 million in the Companies utility plant accounts for Amos 3.

B. Mitchell Generating Unit

1. Mitchell Settlement Interest Adjustments

The Companies included the full utility plant value of \$972.890 million for the acquisition of the fifty percent undivided interest in the Mitchell Plant as rate base in their June 30 2014 filing. Companies Rule 42 Exh., Statement B, Schedule 1, Statement G Adjustment 90-EPIS. Companies Exh. JDL-D at 8. At the time of the Companies' Petition, the ultimate resolution concerning acquisition of the Mitchell Plant by Wheeling