BEFORE THE
STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES
OFFICE OF ADMINISTRATIVE LAW

IN THE MATTER OF THE PETITION OF	**:**	
SUEZ WATER ARLINGTON HILLS	**:**	**BPU Docket No. WR16060510**
FOR APPROVAL OF AN INCREASE IN	**:**	**OAL DOCKET No. PUC-09261-2016**
RATES FOR WATER SERVICE AND	**:**	
OTHER TARIFF CHANGES	**:**	

DIRECT TESTIMONY OF

MARLON F. GRIFFING, PH.D.

On Behalf of the

DIVISION OF RATE COUNSEL

STEFANIE A. BRAND, ESQ.
DIRECTOR, DIVISION OF RATE COUNSEL

DIVISION OF RATE COUNSEL
140 EAST FRONT ST., 4TH FLOOR
P.O. BOX 003
TRENTON, NEW JERSEY 08625
Phone: 609-984-1460
Email: njratepayer@rpa.state.nj.us

Filed: January 27, 2017

TABLE OF CONTENTS

I. INTRODUCTION 1

II. THE COST OF EQUITY IN THE REGULATORY ENVIRONMENT 3
1. The Role of Economic Theory 3
2. Standards for Finding a Fair Rate of Return 5

III. CHOICE OF THE COMPARISON GROUP 12

IV. DCF OVERVIEW 21

V. DCF ANALYSIS FOR THE COMPARISON GROUP 23

VI. FLOTATION ADJUSTMENT TO ROE 26

VII. REASONABLENESS CHECK AND RECOMMENDED ROE 27

VIII. RECOMMENDED CAPITAL STRUCTURE AND OVERALL RATE OF RETURN 32

IX. SUMMARY 33

I. INTRODUCTION

Q. Please state your name, occupation and business address.

A. My name is Dr. Marlon F. Griffing. I am a Senior Consultant with the economic consulting firm of PCMG & Associates Inc. ("PCMG"). My business address is 22 Brookes Drive, Gaithersburg, MD 20785.

Q. Please describe PCMG.

A. PCMG was founded in 2015 to conduct research on a consulting basis into the rates, revenues, costs and economic performance of regulated firms and industries. The firm has a professional staff of five economists, accountants, engineers and cost analysts. Most of its work involves the development, preparation, and presentation of expert witness testimony before federal and state regulatory agencies.

Q. Have you prepared a summary of your qualifications and experience?

A. Yes. Exhibit MFG-1A is a summary of my qualifications and experience.

Q. Have you previously submitted testimony in regulatory proceedings?

A. Yes. Exhibit MFG-1B is a tabulation of my appearances as a cost-of-capital expert witness before state regulatory agencies.

Q. For whom are you appearing in this proceeding before the New Jersey Board of Public Utilities ("the Board")?

A. I am appearing on behalf of the New Jersey Division of Rate Counsel.

Q. What are your responsibilities in this Board proceeding?

A. My responsibility is to determine a fair rate of return on common equity capital and a fair overall rate of return for the wastewater service company SUEZ Water Arlington Hills ("SWAH" or "the Company"). SUEZ Water Resources, Inc. ("SWR") is the parent company of SWAH. See Exhibit MFG-10, Page 1 (Response to RCR-ROE-9). SWR is part of a large family of companies that provide regulated water and wastewater utility services. See Exhibit MFG-11, Pages 1-2 (Response to RCR-ROE-1).

Q. How do you address recommended rates for the Company?

A. To arrive at recommended rates for common equity capital and overall rate of return, I analyze the Company's capital structure and the costs for each component of that structure.

Q. How is your testimony organized?

A. My testimony has seven sections.

- First, I discuss economic considerations and legal precedents underlying the cost of equity in regulatory proceedings.
- Second, I explain how I selected the members of the Comparison Group of companies used in my analysis.
- Third, I provide an overview of the Discounted Cash Flow (DCF) analysis.
- Fourth, I perform a DCF return on equity (ROE) analysis for the Comparison Group.
- Fifth, I check the DCF ROE outcome for reasonableness using the Capital Asset Pricing Model (CAPM), and recommend an (ROE) for the Company.

- Sixth, I recommend a capital structure and overall rate of return (ROR) for the Company.
- Seventh, I summarize my testimony and recommendations.

Q. Please state your conclusions regarding the Company's ROE and ROR.

A. I recommend an ROE of 8.57 percent for the Company. When this number is included in the calculation of the ROR, the result is a weighted-average cost of capital of 6.98 percent for SWAH.

II. THE COST OF EQUITY IN THE REGULATORY ENVIRONMENT

1. The Role of Economic Theory

Q. What is the basis in economic theory for regulating certain industries?

A. According to economic theory, the forces of supply and demand interacting in a competitive environment produce an allocation of resources that yields an optimal mix of goods and services. Firms and individuals maximize profits and satisfaction given the prices and incomes that the interplay of market forces generates. One description for this outcome is that it is economically efficient. Put simply, there is no better output of goods and services that can be produced with the available resources.

Q. Does the economically efficient outcome occur in all industries?

A. No, several conditions must be present, including many buyers and sellers, perfect information about prices, identical products, and so forth. If these conditions exist, then price is the only way for providers of goods and services to compete in markets. If the

conditions for competition do not exist, however, then letting supply and demand work unfettered will not produce the socially desired efficient outcome.

Q. What condition for competition is missing in the wastewater industry?

A. The wastewater industry does not have several sellers. The large capital investment in wastewater systems required to provide the product means that local wastewater companies have high fixed costs. Consequently, it is difficult for firms to enter the market, resulting in less competition than would be the case if fixed costs were lower. High fixed costs in this context are known as a "barrier to entry."

Q. Are there other obstacles to competition in public utility markets?

A. Even if a firm is willing and able to raise the capital needed to be a viable water/wastewater company, state and local governments typically have permitting processes that govern where and when utilities can build facilities. Thus, money is not the only barrier that must be overcome. A further consequence of the existence of high fixed costs is that the average cost of service declines over the range of effective demand. This condition opens the door to market failure because, in the industry, the larger the market share a firm gains, the lower its average costs and the greater its advantage over competitors. In effect, there is not enough room in the market for another competitor. The logical result is a market with one producer—often referred to as a natural monopoly—not the many firms envisioned in the theory of competition.

Q. How has society responded to the absence of competition in public utility markets?

A. Since sufficient competition does not exist in the markets for public utilities to ensure low prices and adequate service, society has typically turned to regulation to achieve these goals. Government regulators of utilities generally are charged with pursuing an outcome that approximates the efficient outcome of the competitive model. Regulation thus is viewed as a way to decrease prices and increase services provided by a natural monopoly. A challenge for regulators is to set policies which ensure that the regulated firm provides an appropriate supply of services at reasonable rates. A reasonable rate enables a public utility not only to recover its operating expenses, depreciation, and taxes, but also to compete for funds in capital markets.

2. Standards for Finding a Fair Rate of Return

Q. Do standards exist for determining a fair rate of return?

A. Yes. Two United States Supreme Court (Court) cases are the basis for rate of return regulation in the United States. They are the *Bluefield Water Works (Bluefield)*[1] and the *Hope Natural Gas (Hope)*[2] cases. In *Hope*, the Court established the following standards for the return on equity that must be allowed a regulated public utility to provide for a "reasonable return":

> . . . the return to the equity owner should be commensurate with the 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.[3]

---

[1] *Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679 (1923).

[2] *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944).

[3] Id. at 603.

It can be seen from this excerpt that there are essentially three standards for determining an appropriate return on equity from the standpoint of the equity owners of a regulated utility. The first is the "comparable earnings" standard; i.e., that the earnings must be "commensurate with the returns on investments in other enterprises having corresponding risks." The second is that earnings must be sufficient to assure "confidence in the financial integrity of the enterprise," and the third is that they must allow the utility to attract capital.

Q. How can the comparable earnings standard be applied in estimating the rate of return on equity capital?

A. There is circularity to the comparable earnings standard because the competitive nature of the capital markets virtually ensures that the returns to all enterprises having corresponding risks are comparable with each other. Investors establish the price of each traded stock based on that stock's present and prospective earnings in comparison with the present and prospective earnings of all other stocks and other investments available to them. If the earnings of a firm are depressed, then investors will pay only a low price for that firm's stock. As a result, the return on the market value of that stock will be comparable to the return on the market value of the stock of other companies that are highly profitable but which, as a consequence of their profitability, have been bid up to a very high price. Thus, if "return" is defined as the earnings of an equity investment relative to its current market price, then the comparable earnings test becomes a nullity: All returns are comparable with all other returns.

Q. How is this circularity typically resolved in public utility regulation?

A. In public utility regulation, the conventional procedure for resolving this circularity is to identify the required equity return based on the market value of a utility's stock. That return is combined with the cost of debt, and the blended return to total capital is then applied to a rate base reflective of the book value of the utility's investment. The book value is the accountant's quantification of the depreciated original cost of the utility's assets adjusted for ratepayer contributions such as deposits and deferred taxes. Under this procedure, the market price of a stock is used only to determine the return that investors expect from that stock. That expectation is then applied to the book value of the utility's investment to identify the level of earnings that regulation will allow the utility's common shareholders to recover.

Q. How can the financial integrity and capital attraction standards enunciated in *Hope* be applied in estimating the rate of return on equity capital?

A. If a utility can earn a return on its investment comparable to that required by enterprises of comparable risk, then it should have no difficulty in attracting capital and maintaining credit. Investors would have no reason to shun such a utility in favor of other investment opportunities. Thus, if the comparable earnings test is met, then the financial integrity and capital attraction standards are met as well.

Q. What is risk?

A. Risk is the chance of a loss or less-than-expected return on an investment. A business, for example, may introduce a new product with the expectation that it will sell well. There is, of

course, no guarantee that consumers will take to the product. The risk investors attach to the company varies inversely with their view as to the probability of the product doing well. In the water/wastewater arena, product demand is not a large source of risk, but weather, system failure, and regulation compliance are among the risk factors that operating companies face. In general, the greater the risk of an investment, the greater the return required to attract investors.

Q. Does setting an allowed rate of return mean that the utility will earn that return?

A. No. There is no guarantee that the utility will earn the allowed rate of return. The utility has the reasonable *opportunity* to earn the allowed rate of return; in practice the utility may earn more or less than this return, depending on whether and how its management responds to technological and market developments, among other matters.

Q. What should the Board consider in setting an appropriate rate of return?

A. The Board should look to current market conditions as it balances investor and consumer interests. The rate of return should reflect the condition of the capital markets in which the Company must compete with other firms for funding. Under this forward-looking approach, historically allowed rates and historical performance are irrelevant issues except as they affect investors' views of a company's prospects.

Q. Please explain how the methods you have used to determine the cost of common equity capital for the Company reflect current market conditions.

A. I used a market-oriented approach to determine the common-equity cost for the Company. I analyzed the equity return that investors currently expect to receive from investing in

companies with risks similar to the Company. Many factors influence these investor expectations, among them: past performance of the companies, estimates of how the companies will perform in the future, and predicted general economic conditions. All of these factors and opportunity costs are considered by investors participating in the capital markets and are reflected in current prices in those markets. Thus, my analysis is forward-looking because it relies on investors' current assessment of what is likely to happen with their investments.

Q. What is the role of opportunity costs in your analysis?

A. An opportunity cost is the value of the next best choice forgone as the result of making a decision. Opportunity costs are central to my analysis. As investors decide where to place their assets, they have many opportunities from which to choose in the financial markets. Economic theory says they will choose the opportunity they think will provide them the best return, taking into account the level of risk with which they are comfortable. Thus, for SWAH to attract capital, the Company's forward-looking fair rate of return must at least equal the rate of return for the best alternative opportunity with similar risk.

Q. How do you know what equity rate of return the Company must offer to investors to be an attractive opportunity?

A. No one knows with certainty what specific rate of return the Company must offer to investors that is just sufficient to make the Company an attractive opportunity. However, various methods based on finance theory have been derived for reliably estimating what investors currently think that rate is. I have used the Discounted Cash Flow (DCF) method,

which is widely used in utility general rate cases. I check that result with the CAPM, another well-known model used in general rate cases.

Q. Please summarize the DCF method.

A. The DCF method uses the current dividend yield and the expected growth rate of this yield to determine a required rate of return on an investment opportunity. The required rate of return from a DCF analysis is derived from a formula for determining the net present value, or price, of a share of stock. There are variations of the DCF, but the constant-growth form I have selected assumes that dividends (D) are received at the end of each year, the annual growth rate of dividends (g) is constant to infinity, and the discount rate for dividends (k) is constant to infinity. The equation form of this constant-growth DCF model is:

$$k = \frac{D_1}{P_0} + g$$

Where:

- D_1 is the annual dividend one year from the present,
- P_0 is the current price of a stock share,
- g is the expected growth rate of the dividend, and
- k is the discount rate and also the fair rate of return for equity.

Q. What information is used to develop values for the various terms in the DCF equation?

A. The annual dividend one year from now is derived by applying the growth-rate estimate (g) to the actual current annual dividend (D_0), information that is publicly available.

Q. Does your equity rate of return analysis use information specific to the Company?

A. No. The Company is a wholly owned subsidiary of SWR. The Company is not publicly traded and, therefore, no such information is available for performing a direct DCF analysis on the Company.

Q. Does your equity rate of return analysis use direct financial information for SWR?

A. No. SUEZ Water Resources also does not trade publicly. However, SWR provides all the financing for SWAH. See Exhibit MFG-10, Page 1 (Response to RCR-ROE-9). Furthermore, SWR has a credit rating from Standard & Poor's ("S&P") that reflects that agency's evaluation of the risk for SWR as a U.S.-based water and wastewater utility. S&P states that its rating for SWR is based on the credit profile of the ultimate parent of SWAH and SWR, SUEZ Environnement. See Exhibit MFG-12, Pages 1-7 (Response to RCR-ROE-7). Therefore, SWR can serve as the basis for selecting water/wastewater utilities that are publicly traded and be proxies in determining a rate of return for Arlington Hills.

Q. How do you use the DCF analysis to estimate the Company's required rate of return?

A. I perform a DCF analysis on a group of water/wastewater utilities comparable to SWR whose members are publicly traded and have similar investment risk, as discussed below. The estimated rates of return for members of this group form the basis for my estimate of a fair rate of return for the Company.

III. CHOICE OF THE COMPARISON GROUP

Q. Please discuss your choice of the Comparison Group.

A. I set out to find a group of companies that are, from the perspective of investors, similar to the Company. Thus, I wanted firms that are water/wastewater utilities that represent approximately the same investment risk as does the Company.

Q. Please describe how you found suitable candidate companies for the Comparison Group.

A. I looked at Value Line, a widely used investor service, for companies that Value Line classifies as part of the Water Utility Industry. The January 13, 2017 edition of Value Line's Investment Survey includes 11 companies in this category. They are: American States Water, American Water Works, Aqua America, Artesian Resources Corporation, California Water, Connecticut Water Services, Consolidated Water, Global Water Resources, Middlesex Water, SJW Group, and The York Water Company. See Exhibit MFG-2.

Q. Is it appropriate to use water utilities as the proxy for finding an ROE for SWAH, which is a wastewater company?

A. Yes. As noted previously, SWAH is a subsidiary of SWR, which is part of a large group of companies operating under the SUEZ umbrella that provide a range of water services, including drinking water and wastewater treatment. It is SWR that matches the profiles of the companies in the Comparison Group. Thus, since SWAH is part of SWR, it is entirely appropriate to find an ROE for the Company based on companies that are like SWR.

Q. What basis do you have for the assertion that SWR matches the profiles of the Comparison Group members?

A. Like SWR, the water utilities in the Comparison Group operate water and wastewater systems. I have compiled a high-level summary of the wastewater operations of these companies, drawing upon information in their 10K reports filed in 2016. See Exhibit MFG-4, Schedule 2.

Q. Please describe what the summary shows regarding wastewater activity by the Comparison Group water utilities.

A. The summary shows that all the Comparison-Group companies have some wastewater activity among their operations. The detail available about the extent of their wastewater operations varies. Some 10Ks report wastewater customers and revenues, while others report other indicators or describe where their wastewater operations are. Most of the companies have, in addition to systems that they own, contracts to operate the wastewater systems of other, smaller water companies or the systems of municipalities and other governmental units. Many of the companies have contracts with the U.S. military to provide wastewater services for bases. Both contract types may not be part of the regulated operations of the Comparison Group members, but nevertheless demonstrate that the companies are engaged in wastewater operations. In this regard, they are like SWR, which has water and wastewater systems operations.

Q. Is there other evidence that SUEZ Water Resources and SUEZ Water Arlington Hills are integrated?

A. Yes. SWAH witness Peiling Lin states that all SWAH labor charges are based upon SUEZ Water New Jersey (SWNJ) employees whose work time is charged to the Company for services performed. See Exhibit PT-3, page 3, lines 9-11. SWNJ is, like SWAH, a subsidiary of SWR. Further, Lin states that the allocation to SWAH for the fringe benefits of these SWNJ employees is based on expenses incurred at SWNJ. See Exhibit PT-3, page 7, lines 19-23. Finally, SWAH witness Gary S. Prettyman states on page 5, lines 3-5 of Exhibit PT-1 that additional support is provided to SWAH by SUEZ Water Management and Services Company (SWMSC). SWMSC is shown on Exhibit MFG-11, Page 2 as being at the same level as SWR, with both entities being subsidiaries of SUEZ Water Inc.

Q. Please comment on the proportion of SWAH's operation and maintenance expenses that is accounted for by these three expense categories.

A. Exhibit P-2 shows that labor expense is about $131,000, fringe benefits about $44,000, and Management and Service Fees are about $95,000. The sum of these three amounts is about $270,000, or roughly 57 percent of SWAH's operation and maintenance expenses of about $472,000. Thus, SWAH is linked to SWR and SWMSC for more than half its operating and maintenance expenses.

Q. Please describe how you determined that the Value Line Water Utilities are comparable in risk to SUEZ Water Resources.

A. I applied screens to the initial set of Value Line Water Utility companies to ensure that the companies included in my Comparison Group were similar in risk to the risk of SUEZ Water Resources. As I have shown above, SWR's risk level applies to SWAH.

Q. Please list the criteria you applied in the selection of the Comparison Group.

A. I applied the following screens to the initial set of Water Utility companies:

1. U.S.-based firm;
2. shares publicly traded on a stock exchange;
3. have a record of paying dividends for five years without skipping or reducing the dividend amount;
4. not expected to sell, merge into or be acquired by another company, or be engaged in an unusual regulatory proceeding;
5. S&P investment-grade credit rating: BBB- and better;
6. have positive growth-rate projections from expert analysts; and
7. more than 70 percent of the three-year average of operating revenues, operating income or net income be derived from regulated water/wastewater utility operations.

Q. What is the purpose of applying the criterion that the companies be based in the United States?

A. I sought companies that face a business environment similar to that in which the Company operates. The Company's operating utility in this case is in New Jersey and subject to state regulation, statutes, and rules that are similar to those in the rest of the United States. Consolidated Water, which operates in the Caribbean area, is excluded for this reason. See

Exhibit MFG-2.

Q. What purpose is served by requiring that the companies be publicly traded and be paying dividends?

A. The primary analytical tool that I use for finding a company's ROE, the DCF model, requires information about common equity share prices, and dividends. The requirement that companies be publicly traded ensures that their common equity share prices are available. Global Water Resources has not been paying dividends for the required five years and, therefore, is eliminated from consideration for the Comparison Group. See Exhibit MFG-2.

Q. Why is it important that companies involved in sales, mergers, or acquisitions, be excluded from your analysis?

A. The share prices of companies involved in sales, mergers or acquisitions can be volatile. Extreme increases in the share prices of utilities that are part of sales, mergers, or acquisitions drive down the ROE results in DCF analysis, while extreme decreases in the share prices drive up the ROE results. Neither outcome yields meaningful DCF results. Therefore, it is appropriate to exclude such companies from the analysis.

Q. Are any companies in the initial set involved in sales, mergers, or acquisitions?

A. Yes. Connecticut Water Services has concluded one acquisition and has embarked on another. Connecticut Water Services (CTWS) received approval from the Connecticut Public Utilities Regulatory Authority for its acquisition of Heritage Village Water Company on December 8, 2017. The transaction was valued at about $20 million.

Further, CTWS announced on October 12, 2016 that it is pursuing the acquisition of Avon Water Company (AWC). This transaction, which has a target closing date of April 2017, will be worth about $32 million if approved. See Exhibit MFG-3.

Q. Have you eliminated Connecticut Water Services from the Comparison Group?

A. No.

Q. Please elaborate.

A. CTWS's acquisition of Heritage Village has concluded. Any effect on the company's common equity share price reflects investors' assessment of the value of the transaction, not speculation about its effect on either CTWS or Heritage Village. The proposed acquisition of AWC, on the other hand, can have such effects. However, the value of the transaction ($32.4 million) is only slightly greater than 5 percent of CTWS's market capitalization of $625 million, as estimated by Value Line. See MFG-14, Schedule 3, page 5. It is my judgment that the effect of this pending acquisition on the stock price of CTWS is minimal. Its share prices have fallen over the five-week period that I have used to arrive at an average share price for my DCF analysis, but that trend is in keeping with the share prices of all the other water utilities included in the Comparison Group. See MFG-7, pages 1-2. Therefore, I have retained Connecticut Water Services for consideration as a member of the Comparison Group.

Q. What is the purpose of using the S&P credit rating as a screen?

A. S&P's experts incorporate financial risk and business risk into a firm's credit rating. Within

these risk categories, S&P assesses such factors for public utilities as competitive advantage, operating efficiency, and scale, scope, and diversity. This last set of factors includes the effects of a utility's markets, service territories, and customer diversity on the company's cash-flow stability, and in turn on its risk level. After considering all the factors, S&P assigns a credit rating to a company. If companies have identical or similar credit ratings as determined by expert analysts, then their relative risks are similar. As S&P states:

> Creditworthiness is a multi-faceted phenomenon. Although there is no "formula" for combining the various facets, our credit ratings attempt to condense their combined effects into rating symbols along a simple, one-dimensional scale. Indeed, as discussed below, the relative importance of the various factors may change in different situations. [4]

Q. What S&P credit rating do you use as the basis of your screen?

A. Some operating companies for which an ROE is being calculated conduct their own borrowing and, therefore, have S&P credit ratings separate from the credit ratings of their parent companies. However, the operating company frequently is not rated by S&P. In the cases where no separate credit rating is assigned, the credit rating of the corporate parent is a good surrogate rating because the operating company's performance both influences and reflects the risk level of the parent company.

Q. What credit rating do you use as the screen in the selection of the Comparison Group

[4] *General Criteria: Understanding Standard & Poor's Rating Definitions*, second paragraph of "Key Attributes of Standard & Poor's Credit Ratings."
Available at the Standard & Poor's website: https://www.standardandpoors.com/en_US/web/guest/article/-/view/sourceId/5435305
Accessing the publication may require free registration.

for SWAH?

A. The Company does not have an independent S&P credit rating, but the credit rating for SUEZ Water Resources, its parent company, is A-, an investment-grade rating (investment grade is BBB- or better). Therefore, I use that credit rating as the basis for my screen.

Q. As you apply your credit-rating screen, do you require that water companies have S&P ratings identical to the rating that is the basis of your screen?

A. No. In my application of the screen I balance the goal of having companies with risk similar to that of the operating company with the goal of having a reasonable number of companies in the Comparison Group. In this analysis, I consider for inclusion in the Comparison Group companies that are plus or minus two notches from SWR's A- rating (from A+ to BBB).

Q. What is the result of applying your credit-rating screen?

A. The range of S&P credit ratings for the companies included in the Comparison Group is A- to A+. See Exhibit MFG-3.

Q. You require that water/wastewater utilities have positive growth-rate projections to be included in the Comparison Group. What purpose does this screen serve?

A. If the growth-rate projections are negative, then any DCF analysis performed on them is not meaningful. No Value Line rating is available for Artesian Water Resources, so it is eliminated from consideration.

Q. Finally, you require that more than 70 percent of a company's three-year average of operating revenues, operating income or net income be derived from regulated water utility operations to be included in the Comparison Group. Please explain the purpose of this criterion.

A. For the firms to have similar risks, they must operate in similar business environments. The Company has regulated water and wastewater utility operations, so the firms considered for the Comparison Group also must have predominantly regulated operations. This criterion ensures that most of the Comparison Group firms' operations are in the same environment as that of the Company.

Q. What is the outcome of your application of this screen?

A. All the remaining companies meet this screen. See Exhibit MFG-4, Schedule 1. The lowest percentage is American States Water's three-year average 79.7 percent for its regulated water operations as a percentage of operating income.

Q. Which companies are members of the Comparison Group?

A. The Comparison Group is composed of eight of Value Line's Water Utility firms. They are: American States Water, American Water Works, Aqua America, California Water, Connecticut Water Services, Middlesex Water, SJW Group, and The York Water Company. See Exhibit MFG-6.

IV. DCF OVERVIEW

Q. What is the purpose of a DCF analysis?

A. The goal of this analysis is to estimate an appropriate, forward-looking rate of return on equity. A DCF analysis requires a determination of expected growth rates and dividend yields in order to estimate this return.

Q. Please discuss expected growth rates.

A. Because a DCF analysis is forward-looking, I want to estimate the expected growth rate of dividends. Historical growth rates would be good indicators of the expected growth rate if:

1. the dividend payout ratio and the realized rate of return on equity capital were constant in the past and could be assumed to remain constant in the future, and;
2. any growth in book equity was attributable solely to retained earnings.

If, in practice, these conditions held, then earnings per share (EPS), dividends per share (DPS), and book value per share (BPS) would all grow at the same rate, and the past growth rates for these factors would be the rate at which they would grow in the future.

Q. Do you use historical growth rates in your analysis?

A. No. The conditions necessary for historical growth rates to be good indicators of future growth rates are rarely satisfied. Most utilities' returns on equity and payout ratios have not remained constant over time. Further, growth in book value has occurred not only due to retained earnings, but also due to the issuance of new shares of common stock. Consequently, past growth rates of earnings, dividends, and book equity are frequently unequal. Moreover, an industry may face a changed business environment, thereby making

the past a poor basis for projecting the future. Historical growth rates can differ significantly from forward-looking projected growth rates due to such factors as inflation rates, tax rates, the role of an industry in the economy, and the regulatory environment. In view of these limitations of using historical growth rates, I base my estimated growth rates on projected growth rates as publicly provided by "Zacks Investment Research," a respected investor services company, Yahoo! Finance, and "The Value Line Investment Survey."

Q. Please discuss the dividend yields used in your DCF analysis.

A. To estimate the required rate of return on equity capital today, I estimate the expected dividend yield, D_1/P_0 where P_0 is the price of a share of common equity today and D_1 is the dividend in the next period. The use of this dividend yield assumes that dividends are distributed at the end of each period (year). This version is known as the constant-growth DCF model. Since the current equity price per share incorporates all market information considered relevant by investors, generally speaking, non-recent historical prices should be avoided in calculating the dividend yield. However, since share prices are volatile in the short run, it is desirable to use a period of time long enough to avoid short-term aberrations in the capital market.

Q. What period do you use to establish average common equity share prices for the companies in the Comparison Group?

A. I use the trading period of December 19, 2016-January 20, 2017 to find average common equity share prices. This five-week period is long enough to dampen any short-term aberrations in the capital market. It is also close to the January 27, 2017 date of this

Testimony, thus making the results timely. I used closing prices for the Comparison Group member companies obtained at Yahoo! Finance. See Exhibit MFG-7, pages 1-2.

Q. You have used four weeks or a month of trading days to establish average common equity share prices in previous testimony in other jurisdictions. Please explain why you have extended the period in this case.

A. Three holidays with no trading fall within the price averaging period. They are the days after Christmas and New Year's Day, and Martin Luther King Day. By making the period somewhat longer, the sample size of closing prices is 22 days, instead of 17 or 20 days, which would have been the sample sizes for the shorter periods.

V. DCF ANALYSIS FOR THE COMPARISON GROUP

Q. Please discuss the required rate of return for the Comparison Group.

A. To estimate the required rate of return for the group, I estimate the expected growth rate, g, and the expected dividend yield, D_1/P_0.

Q. Please discuss the expected growth rate for the Comparison Group.

A. As noted above, it is appropriate in this proceeding to use only the forecasted growth rates to estimate the expected growth rate to be used in the DCF analysis. Zacks and Yahoo! Finance provide five-year growth-rate projections for EPS and Value Line provides five-year growth rate projections for EPS, DPS, and BPS. To maintain consistency across the sources, I used only the EPS estimates from Value Line.

Q. What information did you use from Zacks?

A. I used the Zacks EPS five-year growth projections available January 22, 2017 for the individual firms in the Comparison Group. See Exhibit MFG-14, Schedule 1, pages 1-16.

Q. What information did you use from Yahoo! Finance?

A. I used the Yahoo! Finance EPS five-year growth projections available January 22, 2017 for the individual firms in the Comparison Group. See Exhibit MFG-14, Schedule 2, pages 1-16.

Q. What information did you use from Value Line?

A. I used the Value Line EPS five-year growth projections for the individual firms in the Comparison Group as reported by Value Line in its January 13, 2017 issue. See Exhibit MFG-14, Schedule 3, pages 1-8.

Q. How do you combine the Zacks, Yahoo! Finance, and Value Line estimates?

A. I weighted the Zacks, Yahoo! Finance, and Value Line EPS values equally to find my best estimate of the expected growth rate for each company in the Comparison Group.

Q. Please discuss your calculation of the expected dividend yield for the Comparison Group.

A. The appropriate dividend to use in the constant-growth DCF model is the annual dividend rate at the beginning of the next period (year). I begin my estimation of the expected dividend yield by finding the dividends that each Comparison Group member company is

currently paying as reported by Value Line in its January 13, 2017 and by Zacks on January 22, 2017. I multiply the Value Line dividends by four to calculate the annualized dividend one year from now, whereas the Zacks dividends reported are for one year. See Exhibit MFG-6. I use the greater of these two options in my DCF analysis. See Exhibit MFG-8, Schedule 1. As it happens, the Value Line and Zacks dividends are identical in this instance.

Q. Please continue.

A. Next, I adjust the annualized dividends for expected growth. The dividends of all the companies in the Comparison Group are expected to increase, but the increases can come after one quarter, two quarters, and so forth. The method I use assumes that the dividend increases are evenly distributed over time. Hence, the average dividend will increase by one-half a year's projected growth rate. The annualized dividend yield for a firm is, therefore, transformed into the expected dividend yield by multiplying it by one-half the growth-rate estimate derived for the firm and adding the product to the annualized dividend yield. The sum of these operations for each firm yields the D_1 values that I use in my estimates. See Exhibit MFG-8, Schedule 1.

Q. What ROE did you find for the Comparison Group?

A. The Comparison Group has a mean growth rate of 6.48 percent and a mean expected dividend yield of 2.09 percent. The combination of these two components yields an ROE of 8.57 percent.

Q. Did you calculate other ROEs for the Comparison Group?

A. Yes. I calculated a Low ROE and a High ROE for each company in the Comparison Group, using only the lowest and highest growth-rate values among Zacks, Yahoo! Finance, and Value Line. I then took the averages of those High and Low ROEs to develop a range of ROEs for the group.

Q. What ROEs does this analysis yield?

A. The low end of the range is 7.03 percent and the high end of the range is 10.12 percent.

Q. What does your ROE range reflect?

A. The ROE range that I have estimated reflects differences of opinion among the various independent expert analysts contributing to the Zacks, Yahoo! Finance, and Value Line estimates about the forward-looking growth prospects of the companies in the Comparison Group. The sources of the variations among the experts are the different views they hold about the effect general economic factors and company-specific factors have on the firms. Thus, the analysts' perspectives about variables such as predicted interest-rate levels, predicted economic growth, and local regulatory environments affect their estimates.

VI. FLOTATION ADJUSTMENT TO ROE

Q. Please discuss what a flotation adjustment is.

A. When companies issue equity, the price paid by investors for the new shares is higher than the revenues per share received by the company. The difference is issuance, or flotation, costs. These costs are the fees and expenses the company must pay as part of the issuance.

The return on equity must be adjusted to recognize this difference, or a company will be denied the reasonable opportunity to earn its required rate of return. The adjustment is appropriate even if no new issues are planned for the test year. The effect of the flotation costs carries forward into subsequent years if this adjustment is not made.

Q. Have you made a flotation adjustment for the Company?

A. No. In response to Discovery Request RCR-ROE-14, the Company stated that *debt* issuance costs are recovered in rates through the mechanism of the weighted cost of debt. The Company did not identify any equity issuance costs in the same response. See Exhibit MFG-13. Therefore, there is no need to make a flotation adjustment in this proceeding.

VII. REASONABLENESS CHECK AND RECOMMENDED ROE

Q. Have you checked the reasonableness of your ROE estimate?

A. Yes. I performed a Capital Asset Pricing Model (CAPM) analysis for the companies in the Comparison Group.

Q. Please discuss the CAPM method.

A. The basic premise of the CAPM method is that any risk which is company-specific can be diversified away by investors. Therefore, the only risk that matters is the systematic risk of the stock. This systematic risk is measured by beta (β). In its simplest form, the CAPM assumes the following form:

$k = r + \beta (k_m - r)$, where
k is the required rate of return for the stock in question;
β is beta, the measure of systematic risk
r is the rate of return on a riskless asset; and

k_m is the required rate of return on the broad market portfolio.

Q. What are the strengths and weaknesses of the CAPM method?

A. The CAPM is theoretically sound, but its application raises some issues. The analysis using CAPM selects a riskless asset, beta, and market risk premium. The ROE analysis can vary considerably depending on the analyst's choices for these variables. Thus, what at first may seem like a model that is straightforward depends heavily on the particular input values used by an analyst.

Q. Are you recommending rejecting CAPM?

A. No. I use the CAPM, but only to check the reasonableness of my DCF analysis, which is a more reliable method of measuring equity return. Because of the CAPM's extensive requirement for judgment in selecting each of the inputs I question its value in directly estimating a return on equity.

Q. Please explain the calculation of a CAPM ROE.

A. First, the analyst must select the rate of return for a riskless asset. Short-term assets such as 90-day Treasury Bills are considered to be virtually riskless; the default risk is next to nothing and the inflation risk is negligible. Equity investors, however, typically have a longer planning horizon than the 90-day maturity of these instruments, so the return on these bills is not suitable for this CAPM process. Long-Term Treasury bonds, on the other hand, match the planning horizon and have yields that are closer to common equity returns. But these instruments are subject to substantial inflation risk and, therefore, are not riskless. Intermediate Treasury securities, those with maturities of three to five years, are a

compromise solution. The inflation risk is smaller than that for long-term bonds and the maturity period corresponds to the time span for the EPS growth-rate estimates made by expert analysts that are relied upon in DCF analysis. Typically, I would use the Intermediate Treasury securities in my analysis for these reasons. However, as I explain below, I do not use Intermediate Treasury securities in my CAPM analysis in the current docket.

Q. Are there reasons not to use the Intermediate Treasury securities in this docket?

A. Yes. Intermediate Treasury bonds' yields since the Federal Reserve took unusual measures to combat the Great Recession of December 2007-June 2009 have been low. Therefore, they are not appropriate for inclusion in CAPM analysis now.

Q. Which security do you use as the riskless asset in your CAPM analysis?

A. I use the average yield on a 30-year Treasury bond for December 19, 2016-January 20, 2017 as my riskless asset rate. This average yield is 3.04 percent. See Exhibit MFG-9, Schedule 1. However, the 30-year Treasury bond is not a free-risk asset. The yield on 30-year Treasury bonds incorporates a risk-premium associated with interest risk, which is the premium investors must be paid to induce them to forgo the opportunity of possibly earning higher interest rates later. Therefore, using 30-year Treasury bonds in a CAPM analysis may result in an upward bias of the ROE.

Q. What value do you use for beta (β)?

A. I use the betas for each company in the Comparison Group provided in their Value Line

Investment surveys. The average beta for the eight companies in the Comparison Group is 0.72. See Exhibit MFG-9, Schedule 2. A beta of 1 indicates that a company's share price will move with the market, while a beta higher than 1 indicates that a stock will be more volatile than the market, and a beta lower than 1 indicates that a stock will be less volatile than the market.

Q. What else is involved in your calculation?

A. I need to calculate a market rate of return. The term within parentheses in the CAPM equation often is called the "market risk premium."

Q. What method do you use to find the market risk premium?

A. I employ forecast data from Value Line regarding the dividend yield and growth rates for the broad economy (1,700 stocks in the "Value Line Universe"). Value Line forecasts the median dividend yield (2.1 percent) and 3- to 5-year appreciation potential (30 percent) for these companies. See Exhibit MFG-9, Schedule 3. The equivalent to the annual earnings per share growth rate for individual companies is calculated by computing the annual growth rate over four years (the midpoint of the 3- to 5-year period) that produces the appreciation potential. This growth rate is 6.78 percent. The forward-looking ROE for the companies is calculated by adding the 2.1 percent dividend yield to this annual growth rate, which produces a market rate of return of 8.88 percent.

Q. What is the next step in finding the CAPM return on equity?

A. The market risk premium is calculated by subtracting the rate of return on the 30-year

Treasury from the market rate of return to find the market risk premium. The result of this operation is 5.84 percent. This amount is multiplied by the average beta for the Revised Comparison Group to find the CAPM ROE. See Exhibit MFG-9, Schedule 4.

Q. What is the result of your CAPM analysis?

A. My CAPM analysis yields an ROE value of 7.24 percent.

Q. Please discuss how the CAPM analysis affects your ROE recommendation.

A. Reiterating, the mean ROE from my DCF analysis of the Comparison Group is 8.57 percent. My CAPM analysis yielded an ROE of 7.24 percent, within the lower bound of 7.03 percent of my DCF ROE range. While not definitive due to the identified shortcomings of the CAPM, this outcome indicates that I should look no higher than the midpoint of my DCF analysis for a recommended ROE for the Company.

Q. What is your recommended ROE for the Company?

A. My recommended ROE for the Company is the average of my DCF analysis, 8.57 percent.

Q. Have you made any adjustments to your ROE to accommodate other factors?

A. No. An advantage of the DCF model is that it incorporates factors that affect investors' view of the world and does not require ad hoc adjustments. The share price of common equity is the mechanism through which most of these influences are translated. For example, if investors are optimistic about the economy in general or about a specific company, the share price of that company will be higher, all other things being equal. If investors have

qualms about the economy or the company, the share price will be lower. Either case affects the ROE of the company, one making it lower and the other higher. Other factors that are incorporated into share prices are interest-rate expectations and market volatility. Investors will ask for common equity prices that compensate them for the degree of risk that they believe these two factors create if they are sensitive to the risk.

Q. What if investors are wrong about the expectations that they have for factors such as interest rates or volatility?

A. It is a strength of the DCF model that analysts do not have to be correct about the reason(s) investors send share prices one way or another; the analysts have to observe the share prices and correctly input them into the model. It is the investors who set the share prices based on their forward-looking beliefs about what will happen to the water utility. It is not the responsibility of an ROE analyst to anticipate any differences between investors' expectations and what actually might happen.

VIII. RECOMMENDED CAPITAL STRUCTURE AND OVERALLRATE OF RETURN

Q. What capital structures has the Company proposed to use in this general rate case?

A. The Company has submitted a proposed capital structure in the testimony of Mr. Prettyman. See PT-1, page 8, lines 9-10.

Q. Is the SWAH proposed capital structure reasonable?

A. Yes. The proposed capital structure of 47 percent long-term debt and 53 percent common equity is reasonable. The corresponding two-year average ratios for the Comparison Group

are 45.05 percent long-term debt, 1.18 percent short-term debt, 0.13 percent preferred stock, and 53.64 percent common equity. See Exhibit MFG-5. The proposed Company capital structure is quite close to these values.

Q. Do you accept the Company's proposed capital-structure ratios?

A. Yes. I have adopted the proposed capital structure of the Company for ratemaking purposes in my Direct Testimony. See MFG-8, Schedule 2.

Q. Do you have a comment about the Company's recommendation of 9.75 percent as an ROE?

A. Yes. Mr. Prettyman discusses the recommendation on pages 7-8 of Exhibit PT-1. He notes that it is based on an ROE award in a recent SWNJ case before the Board. The Company indicates that it will be filing testimony by an expert witness as to its recommended ROE. I will wait to see the ROE analysis of that witness before responding to the Company regarding ROE.

IX. SUMMARY

Q. What are the criteria the Commission should consider in setting the Company's ROE and ROR?

A. The Commission should only consider whether the ROE and ROR meet the *Bluefield* and *Hope* criteria for a fair return. Recounting, these criteria include returns commensurate with returns being earned on other investments with equivalent risks, rate of return sufficient to enable the utility to attract capital, and returns sufficient to enable the regulated company to

maintain its credit rating and financial integrity. The interpretation of the *Hope* and *Bluefield* criteria is that a company should be given the opportunity to earn an ROE and ROR sufficient to meet these standards.

Q. What is your recommended return on equity and overall cost of capital?

A. I recommend an ROE of 8.57 percent and an ROR of 6.98 percent.

Q. Does this conclude your testimony?

A. Yes, however I will update this testimony in Surrebuttal to reflect the DCF and CAPM inputs available at that time. The outcome of those calculations will be my final recommendations for ROE and ROR.