BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF DELAWARE

IN THE MATTER OF THE APPLICATION OF ARTESIAN WATER COMPANY, INC. FOR AUTHORITY TO INCREASE RATES AND CHARGES FOR WATER SERVICE (FILED APRIL 11, 2014)	)))))	PSC DOCKET NO. 14-132

FINDINGS, OPINION AND ORDER NO. 8816
DATED JANUARY 19, 2016

BEFORE COMMISSIONERS: J. DALLAS WINSLOW, Chair
JOANN T. CONAWAY, Commissioner
HAROLD B. GREY, Commissioner
MICHAEL KARIA, Commissioner
KIMBERLY DREXLER, Commissioner

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I. EXECUTIVE SUMMARY

1. This matter comes before the Delaware Public Service Commission ("Commission") on an application (the "Application") that Artesian Water Company, Inc. ("Artesian" or the "Company") filed on April 11, 2014, requesting a $9,983,823 increase in water rates. The Company also sought the approval of certain changes to its tariff, as well as a request to place into effect sixty days after the filing of the Application temporary rates for a portion of the proposed increase, subject to refund.

2. The Company's Application was based on a test year consisting of twelve months of actual data ending December 31, 2013, and a test period ending September 30, 2014 that consisted of three months of actual data and nine months of projected data. Artesian requested that its rates include certain expenses that it incurred or that took effect shortly after the end of the test period, because those costs are more reflective of the period during which rates will be in effect.

3. In this proceeding, based on our thorough review of the Company's Application and the record developed on this matter, we find that a revenue requirement increase of $6,030,000, an authorized return on equity of 9.75%, and an overall rate of return of 7.82% are appropriate. When applied to an allowed rate base of $216,771,690, this will produce annual operating income of $16,951,546. We believe that these additional revenues will be sufficient to permit the Company to provide safe and adequate service to its customers at just and reasonable rates.

II. PROCEDURAL HISTORY

4. On April 11, 2014, Artesian filed an Application and supporting direct testimony with the Commission. Artesian sought to increase its water rates and to obtain approval of certain changes to its tariff. The Application requested approval of rates that would allow the Company to meet an additional revenue requirement of $9,983,823, which reflected an increase over current rates of approximately 15.91%. Ex. 1 (Valcarenghi) at 2.[1]

5. The proposed 15.91% rate increase included a 3.32% Water Utility Distribution System Improvement Charge ("DSIC") that was already in effect. The purpose of the statutorily-mandated DSIC charge is to reimburse a water utility between rate proceedings for system improvements (such as replacing water mains and meters) and system improvements to meet water quality standards. *See* 26 *Del. C.* § 314. Since the DSIC rate is set to zero when temporary rates are placed into effect, customers would experience an incremental increase of 12.59%, the net of the overall 15.91% increase less the DSIC rate currently in effect of 3.32%. Ex. 1 (Valcarenghi) at 3.

6. After reviewing the Application, the Commission initiated this Docket pursuant to 26 *Del. C.* § 306(a)(1). In accordance with

[1] References to the exhibits from the evidentiary hearing are cited herein as "Ex. __ (Witness' Name) at ___" for direct testimony; Ex.__ (Witness' Name –R) at ___" for rebuttal testimony; and "Ex. __ at ___" for non-testimonial exhibits. Schedules from the Company's Application or pre-filed testimony are cited as "Ex.__ (Witness' name) at Sch. __at ___." Post-Hearing briefs are cited as follows: Artesian's Opening and Reply Briefs - "Artesian OB at ___" and "Artesian RB at ___." Staff's Answering Brief - "Staff AB at ___," DPA's Answering Brief - "DPA AB at ___," and CCHS' Answering Brief - "CCHS AB at ___." Exceptions are cited as "[PARTY] EB at ___." References to the Hearing Examiner's Report are cited as "HER at ___." References to the Evidentiary Hearing transcript are cited as "Tr. at __."

PSC Order No. 8558, dated May 13, 2014, Artesian published public notice of the Application. PSC Order No. 8558 also suspended the proposed rate increase pending full and complete evidentiary hearings into the justness and reasonableness of the proposed rates and tariff changes, designated Senior Hearing Examiner Mark Lawrence as the Hearing Examiner to conduct such hearings, and ordered the Hearing Examiner to report to the Commission his proposed findings and recommendations.

7. Consistent with 26 *Del. C.* § 306(a)(2), PSC Order No. 8558 also granted Artesian's request to place a temporary rate increase into effect on June 10, 2014. The temporary rate authorized approximately $2,460,674 of additional water service revenues, which constituted a 3.92% increase over pre-existing DSIC surcharges. The DSIC was reset to zero at that time in accordance with 26 *Del. C.* § 314(b)(9).

8. Additionally, PSC Order No. 8558 also granted Artesian's request to waive the surety bond requirement of 26 *Del. C.* § 306(b) because Artesian agreed to abide by a future refund order if the Commission entered one. The Commission determined that Artesian had sufficient financial resources to pay a refund if ordered to do so.

9. On June 2, 2014, the Hearing Examiner issued an agreed-upon procedural schedule for this Docket. The schedule included three duly-noticed public comment sessions that were held at: (a) the Commission's Dover office on July 24, 2014; (b) the Carvel State Office Building in Wilmington on July 29, 2014; and (c) Cape Henlopen High School in Lewes on July 31, 2014.

10. No customers commented at the first two public comment sessions. Fewer than five customers commented at the third session, with each one objecting to the proposed rate increase. One written comment was received by the Commission regarding this Docket. This written comment objected generally to Artesian's proposed rate increase.

11. Pursuant to 29 *Del. C.* § 8716, on May 29, 2014, the Division of the Public Advocate (the "DPA") exercised its statutory right to intervene in this Docket.

12. On September 11, 2014 representatives of Staff and the DPA toured certain of Artesian's facilities, including the Dispatch Center, the Castle Hills water treatment facility, the Jefferson Farms water treatment facility, the Llangollen water treatment facility, and Fairwinds Well No. 6. Ex. 10 (Driggins) at 2; Letter from Artesian to Hearing Examiner Lawrence dated September 23, 2014 (docketed October 7, 2014).

13. Pursuant to the Commission's Rules of Practice and Procedure, 26 *Del. Admin. C.* §1001-2.9, on July 1 and August 4, 2014, respectively, Christiana Care Health Services, Inc. ("CCHS") and the Independence Homeowner's Association (the "Association") (collectively "the Intervenors") filed petitions to intervene in this Docket. *See* PSC Order No. 8577 (July 1, 2014) for CCHS; PSC Order No. 8604 (Aug. 4, 2014) for the Association.

14. On June 30, 2014, Artesian filed supplemental testimony that reduced the amount of its requested revenue increase from $9,983,823 to $9,859,005. After subtracting the preexisting DSIC

charge from this requested revenue increase, Artesian's customers would experience a rate increase of 12.39% if granted.

15. Thereafter, the Commission's Staff ("Staff"), the DPA, and the Intervenors conducted extensive written discovery of the rate increase proposed by the Company. Staff performed an on-site audit of Artesian's books and records on September 10, 2014. Ex. 10 (Driggins) at 2.

16. On September 24, 2014, Staff, the DPA, and both Intervenors filed pre-filed testimony in which each recommended certain adjustments to Artesian's reduced revenue increase request. The parties' pre-filed testimony addressed many issues in detail, including the amount of the requested revenue increase, Artesian's pro forma rate calculation, operating revenues, operations and maintenance expenses, the proposed rate of return, cost of service, and rate design.

17. On October 28, 2014, the Company filed rebuttal testimony in support of its requested revenue increase and sought to refute issues raised in the other parties' direct testimony.

18. On November 13, 2014, by PSC Order No. 8664, the Commission granted Artesian's motion to place a second temporary rate into effect, subject to refund, pursuant to 26 *Del. C.* § 306(b).

19. PSC Order No. 8664 allowed Artesian to recover $7 million in additional annual water service revenues, or $4,500,000 million in additional revenues above the $2,500,000 million temporarily approved by PSC Order No. 8558. *See* PSC Order No. 8664 (Nov. 13, 2014) at 2,

fn. 1. With PSC Order No. 8664, the temporary rates increased by a total of 10.96%.

20. The Commission also granted Artesian's request to waive the requirements of 26 *Del. C.* § 306(b) because the Company agreed to comply with any future refund order entered by the Commission, and because the Company possessed sufficient financial resources to accomplish a refund.

21. The Hearing Examiner conducted an evidentiary hearing on December 8 and 9, 2014. The Association did not participate in the evidentiary hearing. Therefore, the Hearing Examiner did not admit its pre-filed testimony into the evidentiary record. Tr. at 48-49. The pre-filed testimonies of the remaining parties and other exhibits were introduced into the record,[2] and the parties' witnesses were available for cross-examination. The evidentiary record consists of 93 hearing exhibits and 819 pages of hearing transcript. Upon the conclusion of the hearing, the evidentiary record remained open due to certain issues raised by the parties. It was subsequently closed on February 2, 2015.

22. After completion of the evidentiary hearing the parties filed post-hearing briefs in support of their respective positions. On June 5, 2015, the Hearing Examiner issued his "Findings and Recommendations" (the "HER"). On June 22, 2015, the Company, Staff, the DPA and CCHS each filed exceptions to the HER.

[2] The "Direct Testimony of Ron Teixeira and All Related Schedules" was pre-marked as Exhibit 14 but was not admitted into evidence.

23. On August 18, 2015, the Commission met to hear oral argument from the parties and to deliberate on the issues involved in this case. We issued a "minute" order on September 8, 2015, that memorialized the effect of our decisions.[3] This is the Findings, Order and Opinion of the Commission reflecting our deliberations and decisions on the issues raised in this Docket.

III. DISCUSSION, FINDINGS AND OPINION

A. Overview of the Participants' Revenue Requirement Positions

24. *Artesian.* The Company selected a test year consisting of the 12 months ended December 31, 2013, and a test period consisting of the 12 months ending September 30, 2014 based upon three months of actual data and nine months of projected data. After making certain adjustments to rate base and operating expenses in its Supplemental Testimony, the Company calculated a revenue deficiency of $9,859,005. Ex. 5 (Valcarenghi) at 1. This deficiency was derived from a pro forma rate base of $221,242,816; an overall rate of return of 8.40%; a return on equity ("ROE") of 10.90% on a capital structure consisting of 49.46% long-term debt and 50.54% common equity; and pro forma operating income of $12,631,899. *Id.* at 3 & Sch. DLV-1-S.

25. *Staff.* Staff did not support the Company's selection of the proposed test period/test year. Instead, it suggested that a 13-point average method be used for historical information through the test year ended December 31, 2013, rather than a test period/year-end method. Staff contended that Artesian should be allowed a revenue

[3] *See* PSC Order No. 8783 (Sept. 8, 2015), which approved new water rates effective with service on and after September 8, 2015; *see also* PSC Order No. 8802 (Oct. 6, 2015) (concerning a refund of temporary rate revenues and the effective date of certain tariff changes).

requirement increase of $5,755,724 with a rate base of $201,202,366; an overall rate of return of 7.49% and ROE of 9.10% using the Company's proposed capital structure; and pro forma operating income of $15,070,057. Ex. 8 (Peterson) Sch. 1 DEP-1 at 1 of 3; Ex. 7 (Parcell) at 2.

26. *DPA.* The DPA did not contest Artesian's proposed test year or test period, but did take issue with several of the Company's proposed adjustments, its revenue normalization methodology, and its proposed ROE. By the time of the evidentiary hearings, the DPA had accepted Artesian's rate base as of the end of the test period, which included plant in service as of September 30, 2014 and Artesian's acceptance of a correction to its cash working capital calculation, and had also accepted Artesian's corrected customer count at the end of the test period. Using the DPA's recommended overall cost of capital of 7.31%, a recommended ROE of 8.75%, a rate base of $215,948,234 and current operating income of $14,564,990, the DPA calculated a revenue deficiency of $2,070,001. Ex. 18 (Watkins) at Sch. GAW-2 Updated; Tr. at 620-23.

27. *CCHS.* CCHS only sought adjustments to Artesian's class cost of service study ("COSS") and proposed rate design. Ex. 19 (Collins) at 2. Specifically, CCHS argued that the costs associated with purchased water expenses should be allocated among the customer classes the same way that water from Artesian's own water sources is allocated, using the same allocation factors. *Id.* at 6. In addition, CCHS suggested that the allocation of pumping power costs is also

incorrect since it should be allocated beyond the base component. *Id.* at 7-8.

B. Cost of Capital and ROE

1. Capital Structure

28. For purposes of determining the overall rate of return, the parties agreed on the Company's capital structure as of the end of the test period, which was September 30, 2014, consisting of 49.46% long-term debt, 50.54% common equity, and a long-term debt cost rate of 5.84%. Ex. 3 (Ahern) at 19-22; Ex. 7 (Parcell) at 2; Ex. 16 (Woolridge) at 16.

2. ROE - Background

29. As a result of the settlement in Artesian's most recent rate case, PSC Docket No. 11-207, its current cost of equity ("COE") is 10%. PSC Docket No. 11-207, Order No. 8907 ¶ 54 (Jan. 24, 2012). In this proceeding, the Company's cost of capital witness, Pauline M. Ahern, testified in support of a ROE of 10.90%. The Company's proposed 10.90% ROE included two upward adjustments: a) a 20 basis point upward adjustment for the costs of issuing common stock, which are also known as flotation costs; and b) a 25 basis point upward adjustment to reflect Artesian's greater relative business risk due to its smaller size relative to the comparable proxy group. Tr. at 57-58.[4]

30. In contrast to the Company's recommended ROE, Staff witness David C. Parcell's studies supported an ROE in the range of 8.7% to

[4]Although Ms. Ahern testified on rebuttal that data supported an ROE of 11.25%, the Company continued to request an ROE of 10.90%. Tr.at 510.

9.5%, with the mid-point being 9.1%. Ex. 7 (Parcell) at 3. The DPA's witness, J. Randall Woolridge, Ph.D., proposed an overall ROE of 8.75%. Ex. 16 (Woolridge) at 2.

31. Artesian, Staff and the DPA all employed the same proxy group of nine AUS Utility Reports water companies in forming their ROE recommendations. Ex. 3 (Ahern) at 17-18; Ex. 7 (Parcell) at 16; Ex. 16 (Woolridge) at 56. Ms. Ahern also developed an ROE for the Company using a proxy group of domestic, non-price regulated companies that are comparable in total risk to the utility proxy group. Ex. 3 (Ahern) at 52-54. Similarly, Dr. Woolridge considered a proxy group of publicly-held gas distribution companies. Ex. 16 (Woolridge) at 12-13.

3. Artesian's Position

32. Ms. Ahern employed five ROE models in performing her ROE analysis: Discounted Cash Flow ("DCF"), two variations of a Risk Premium Model ("RP") and two variations of a Capital Asset Pricing Model ("CAPM"). Ms. Ahern increased the ROE resulting from her studies by 45 basis points to account for floatation costs and the Company's small size.

(a) DCF

33. Ms. Ahern used the single-stage constant growth DCF model to reach an average DCF result of 8.98% and a median DCF result of 8.58%. Ex. 3 (Ahern) at 26. According to her pre-filed testimony:

> The theory underlying the DCF model is that the present value of an expected future stream of net cash flows during the investment holding period can be determined by discounting those cash flows at the cost of capital, or the investors' capitalization rate. DCF theory indicates that

> an investor buys a stock for an expected total return rate, which is derived from cash flows received in the form of dividends plus appreciation in market price (the expected growth rate). Mathematically, the dividend yield on market price plus a growth rate equals the capitalization rate, i.e., the total common equity return rate expected by investors.

Id. at 22-23.

34. Ms. Ahern testified that because the DCF model assumes a market-to-book ratio of 1, it mis-specifies investors' required return rate when, as with Artesian, the market value of common stock exceeds or is less than the book value of that stock. *Id.* at 26-28. Ms. Ahern testified that it is reasonable to expect the market values of utilities' common stock to continue to sell well above their book values. *Id.* at 28-29. As a consequence, Ms. Ahern testified that while considering multiple cost of equity models adds reliability and accuracy in the estimation of the cost of common equity, it is especially appropriate to consider multiple models when the DCF is mis-specifying investors' required returns. *Id.* at 30-31; Ex. 23 (Ahern-R) at 12-14.

35. The market values of the proxy group of water utilities have been well in excess of their book values, ranging between 145.24% and 173.44% for the five years ending 2012. Ex. 3 (Ahern) at 27. As a hypothetical example illustrating the mis-specification of investors' required returns, using the average DCF result for the water proxy group of 8.98%, Ms. Ahern testified that, because the market values of her proxy group exceeds book values by approximately 50%, "there is an opportunity for growth of $0.380 which is just 1.39%

in contrast to the 5.91% growth in market price expected by investors." *Id.* at 29-30; *see* Sch. PMA-6, at 1.

36. In rebuttal testimony, after stating that this mis-specification also applies to Dr. Woolridge's DCF recommendation of 8.48%, Ms. Ahern used Mr. Parcell's DCF recommendation of 8.70% as an example to show that Mr. Parcell's proxy group's expected growth rate of 5.6% (with an average 3.1% dividend yield) was not realistic because, after considering the average per share market price and average per share book value, the proxy group's expected growth rate would establish only a 1.41% growth rate in market appreciation, not 5.6%. Ex. 23 (Ahern-R) at 13-14. According to Ms. Ahern, "there is no possible way to achieve the expected growth of $1.557 (5.6%) related to an average market price of $27.81 absent a huge cut in annual cash dividends." *Id.*

37. Ms. Ahern further testified that requiring the utility to drastically reduce dividends "is an unreasonable expectation since most utility common stock investors rely upon those dividends and any such action by a corporate board of directors is usually indicative of extremely adverse financial conditions." *Id.* at 14. Ms. Ahern supported this contention by citing utility commission decisions from Pennsylvania and Indiana, as well as publications by well-known utility industry analysts Roger A. Morin, Charles F. Phillips and James C. Bonbright. *Id.* at 9-12.

38. According to Ms. Ahern, "[s]ince the cost of capital, including the cost of common equity, is expectational in nature,

expected interest rates are relevant to rate of return analyses." Ex. 23 (Ahern-R) at 5.

(b) CAPM

39. Ms. Ahern performed two CAPM analyses. The CAPM adds a risk-free rate of return to a market risk premium, which is adjusted proportionately to reflect the systematic risk of the individual security relative to the risk of the total market as measured by beta. Ex. 3 (Ahern) at 47. The model has four factors: the company's return rate on the common stock; the risk-free rate of return; the return rate on the market as a whole; and the adjusted beta (volatility of the security relative to the market as a whole). *Id.* at 47-48. The CAPM theory presumes that investors require compensation only for systematic risks which are the result of macroeconomic and other events that affect the returns on all assets, because all other risk can be eliminated through diversification. *Id.* at 47. Beta represents systematic risk. A beta of greater than 1.0 indicates the security has greater variability than the market while a beta of less than 1.0 indicates less variability than the overall market. *Id.*

40. For her CAPM analysis, Ms. Ahern used a projected rate of 4.40% for the 30-Year Treasury Note as the risk-free rate and a median beta of 0.65 for the proxy group water companies. Sch. PMA-9. She used a Market Risk Premium ("MRP") of 7.96%, which is the average of: (1) 4.55%, which is from Value Line's projected market return; (2) 10.36%, from the Predictive Risk Premium Model ("PRPM"); and (3) 6.55%, which is the difference between the mean returns on Ibbotson

SBBI stocks and Ibbotson SBBI long-term government bond income return. Ex. 3 (Ahern) at 48-50.

41. Ms. Ahern also performed an empirical CAPM ("ECAPM") analysis, wherein she assigned 75% weight to the actual betas for the proxy groups of water utilities and a 25% weight to an assumed beta of 1.0, i.e. "the market beta." *Id.* at 49.

42. Ms. Ahern testified during the December 2014 evidentiary hearing that the Federal Reserve has maintained interest rates below historically normal levels, but "there's consensus on the street that the Fed is going to have to raise [interest rates] sooner rather than later." Tr. at 90. Ms. Ahern also testified that the Federal Reserve's policy regarding interest rates directly affects CAPM estimates. Ex. 23 (Ahern-R) at 16, 47.

43. The results of Ms. Ahern's CAPM analysis are as follows: "the average traditional cost rate is 9.80%, while the median is 9.57%. The average ECAPM cost rate is 10.44%, while the median is 10.27%." Ex. 3 (Ahern) at 50-51. Ms. Ahern then averaged the median of both the traditional and empirical approaches to derive a 9.92% suggested COE. *Id.* at 51.

(c) RP Studies

44. Ms. Ahern's RP recommendation was based on the application of two risk premium approaches: (1) PRPM™, which is a proprietary model developed by Ms. Ahern and colleagues while they were all employed at AUS Consultants, and (2) an RPM using a market approach. *Id.* at 38-39. Ms. Ahern testified that the PRPM™ estimates the risk/return relationship directly by analyzing the actual results of

investor behavior rather than using subjective judgment as to the imputs required for the application of other cost of common equity models. *Id.* at 38. It is not based upon an estimate of investor behavior, but rather upon the evaluation of the results of that behavior, i.e., the variance of historical equity risk premiums. *Id.* In the derivation of the premiums, greater weight is given to more recent time periods, in contrast to reliance upon the arithmetic mean premium, which gives equal weight to each observed premium. *Id.* at 38-39. PRPM™ indicates an average common equity cost rate of 12.72% and a median rate of 11.67% for the nine proxy group water companies. *Id.* at 39. Ms. Ahern relied upon the median result due to the wide range of results and so as not to give any undue weight to any high or low outliers. *Id.*

45. The other risk premium model used by Ms. Ahern (known as the total return market approach model) adds a prospective public utility bond yield to an equity risk premium which is derived from a beta-adjusted total market equity risk premium and an equity premium based upon the S&P Utilites Index. The RP analysis supports a 10.79% ROE. Ex. 3 (Ahern) at 54; Sch. PMA-10 at 6.

46. In addition to analyzing the above-referenced models in connection with a proxy group of nine water companies, Ms. Ahern applied the same models to a group of domestic, comparable risk, non-regulated companies. Ex. 3 (Ahern) at 54. That analysis supported a 10.98% ROE. Sch. PMA-10 at 1.

47. Based upon the common equity cost rate results, Ms. Ahern concluded that an ROE of 10.45% is indicated for the nine water companies before any adjustments are considered. *Id.* at 56.

(d) Adjustments

48. Based upon Artesian's circumstances, Ms. Ahern determined that it would be appropriate to make two adjustments to the indicated common equity cost rate.

49. Because there is no other mechanism in the ratemaking paradigm through which the flotation costs associated with the sale of new issuances of common stock are recovered, Ms. Ahern calculated that a flotation cost adjustment of 0.20% is appropriate to recognize the costs of issuing equity that were incurred by Artesian's parent since 2004. *Id.* at 56-57, 59.

50. Because Artesian is smaller in size relative to the proxy group measured by the estimated market capitalization of common equity for AWC, whose common stock is not traded, Ms. Ahern determined that it has greater business risk than the average company in the proxy group. *Id.* at 60. Ms. Ahern determined that the estimated market capitalization for Artesian is $220.188 million, whereas the average market capitalization for the other water utilities in the proxy group is $1.769 billion, or 8.0 times larger. *Id.* To calculate the greater business risk that Ms. Ahern claims Artesian bears, she referenced the size premiums for decile portfolios of New York Stock Exchange, American Stock Exchange, and NASDAQ listed companies for the 1926-2012 period and related data from SBBI® - 2013. *Id.* at 61. The nine water companies fall in between the 5th and 6th deciles and Artesian's size

premium would fall in between the 9th and 10th deciles if its stock were traded and sold at the March 3, 2014 average market/book ratio of 213.0% experienced by the nine water companies. *Id.* The size premium spread between the 5th and 6th deciles and the 9th and 10th deciles is 2.70%. *Id.* Accordingly, Ms. Ahern determined that an upward adjustment of 0.25% was both reasonable and conservative to account for Artesian's greater relative business risk due to its smaller size in comparison to the other proxy group water utilities. *Id.*

(e) Artesian's Ultimate ROE Recommendation

51. Taking into account all of the valuation methodologies undertaken by Ms. Ahern, Artesian calculated an indicated common equity cost rate of 10.45%. Ex. 3 (Ahern) at 56. After making the flotation cost adjustment and business risk adjustment that Ms. Ahern determined was appropriate, Artesian recommeded an ROE of 10.90%, which results in an overall rate of return of 8.40%. *Id.* at 61-62.

4. Staff's Position

52. Because ROE is a market-based concept, and Artesian is not publicly traded (although its parent - Artesian Resources Corporation - is a publicly traded stock), a generally accepted practice analyzes groups of publicly-traded comparison or "proxy" companies with similar risk profiles to determine an appropriate COE for the subject company. Ex. 7 (Parcell) at 16. Staff witness David C. Parcell selected the same proxy group of water utilities that Ms. Ahern employed in Artesian's ROE analysis.[5] *Id.* at 16, Sch. DCP-6. The results of Mr.

[5] This proxy group includes American States Water Co., American Water Works, Aqua American Inc., Artesian Resources, California Water Service Group, Connecticut Water Service,

Parcell's three methodologies to determine a fair ROE are discussed below.

(a) DCF

53. Mr. Parcell explained that the DCF model, one of the oldest and most commonly used models, is based on the "dividend discount model" of financial theory. *Id.* at 17. The dividend discount model provides that the value (price) of any security is the discounted present value of all future cash flows. *Id.* Mr. Parcell used the constant growth variation of the DCF model and combined the current dividend yield for each of his proxy groups with several indicators of expected growth. *Id.* at 18. He recognized the timing of dividend payments and increases by making a quarterly compounding adjustment to the dividend yield component. *Id.* For his price component, he used the average of the high and low stock prices for each company for the period June to August 2014. *Id.* This resulted in an average adjusted yield of 3.0% for his proxy group. Sch. DCP-7 at 1.

54. Mr. Parcell then turned to the growth rate, which he called "the [DCF's] most crucial and controversial element." Ex. 7 (Parcell) at 18. He testified that the objective of estimating this component is to reflect the growth expected by investors that is embodied in the price (and yield) of a company's stock. *Id.* Because not all investors have the same expectations, Mr. Parcell viewed it as necessary to consider alternative indicators in deriving investor

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Inc., Middlesex Water, SJW Corporation, and York Water Group. Ex. 7 (Parcell) at 16 & Sch. DCP-6.

expectations. *Id.* at 18-19. He examined five different indicators in his analysis:

- Years 2009-2013 (5-year average) earnings retention, or fundamental growth;
- Five-year average of historic growth in earnings per share ("EPS"), dividends per share ("DPS") and book value per share ("BVPS");
- Years 2014, 2015 and 2017-2019 projections of earnings retention growth (per *Value Line*);
- Years 2011-2013 to 2017-2019 projections of EPS, DPS and BVPS (per *Value Line*); and
- Five-year projections of EPS growth (per First Call).

Id.

55. Mr. Parcell's DCF-derived ROEs are as follows:

	Mean	Median	Mean High[6]	Median High[7]
Value Line Water Group	7.6%	7.5%	8.7%	8.7%

Id. at 20.

56. The results indicate average DCF cost rates of 7.5% to 8.7%, and high DCF rates between 9.0% and 9.4% on an average and mean basis. *Id.* at 20. Based upon his analyses, and giving less weight to the lower values, Mr. Parcell concluded that 8.7% represented the DCF-calculated cost of equity for Artesian. *Id.*

(b) CAPM

57. Mr. Parcell performed a CAPM[8] analysis for the same groups of companies in his DCF analysis. The general idea behind the CAPM is

[6] This uses only the highest growth rate.
[7] This also uses only the highest growth rate.

that investors need to be compensated in two ways: time value of money and risk. Staff AB at 27. The time value of money is represented by a risk-free rate (usually tied to a U.S. Treasury instrument) and compensates the investors for placing money in any investment over a period of time. The other half of the formula represents risk and calculates the amount of compensation the investor needs for taking on additional risk. This is calculated by taking a risk measure (beta) that compares the returns of the asset to the market over a period of time and to the market premium (otherwise known as a risk premium) to make the investor consider investing in a more risky class of assets, such as stocks.

58. For the risk-free rate, Mr. Parcell used the three-month average yield from June to August 2014 for 20-year U.S. Treasury bonds, or 3.05%. Ex. 7 (Parcell) at 21. For the risk measure, he used the most current *Value Line* betas for each of his proxy group companies, noting that traditionally utility stocks have had betas below 1.0. *Id.* at 22. In this case, the betas for his proxy group ranged from 0.55 to 0.80. Sch. DCP-9.

59. Based on this analysis, Mr. Parcell estimated the market risk premium component of the CAPM, which represents the expected return from holding the entire market portfolio. Staff AB at 28. Technically, this reflects the return from holding the weighted combination of all assets (stocks, bonds, real estate, etc.); however, in utility rate proceedings, the traditional CAPM analysis focuses on

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[8] Mr. Parcell testified that the CAPM, a variant of the RP method, describes and measures the relationship between a security's investment risk and its market rate of return. Ex. 7 (Parcell) at 20. In his view, the CAPM is generally superior to the RP method because, unlike RP, the CAPM specifically recognizes the risk of a particular company or industry. *Id.* at 21.

the market return as the return on common stocks. *Id.* Like the DCF's growth component, Mr. Parcell testified that investors do not universally share the same expectations regarding overall market return. Thus, there are alternative methods for estimating this component. Ex. 7 (Parcell) at 22.

60. Mr. Parcell considered alternative measures of returns of the S&P 500 and 20-year U.S. Treasury bonds. *Id.* First, he compared actual annual returns on equity of the S&P 500 during the period 1978-2013 with actual annual yields of U.S. Treasury bonds. *Id.* Mr. Parcell concluded that the risk premium for investing in stocks is 6.75%. *Id.* Second, he considered the total return for this group, as tabulated by *Morningstar* (formerly Ibbotson Associates), using both arithmetic and geometric means. *Id.* He concluded that the expected risk premium is about 5.85% over the risk free rate, using the average of all three methods of determining market risk over U.S. Treasuries. *Id.* at 22-23.

61. Mr. Parcell's mean and median CAPM-derived equity costs were the same for his proxy group, 7.1%. *Id.* at 23. Thus, his CAPM results collectively indicated an equity cost of 7.1% for the proxy groups, which he used as a basis for concluding that Artesian's appropriate COE estimation is also 7.1%. *Id.*

(c) CE

62. Finally, Mr. Parcell also applied a comparable earnings ("CE") method to estimate the Company's cost of equity. He testified that the CE method was derived from the "corresponding risk" standard

of the *Bluefield*[9] and *Hope*[10] Supreme Court cases and was based upon the economic concept of opportunity cost. Ex. 7 (Parcell) at 23. According to Mr. Parcell, the CE method is intended to measure the expected returns on the original cost book value of similar risk enterprises. *Id.* He testified that it provides a direct measure of the fair return because it translates into practice the competitive principle upon which regulation rests. *Id.* It also normally examines the experienced and/or projected returns on book common equity. *Id.* This follows from the use of original cost rate base regulation for public utilities, which uses a utility's book common equity to determine the cost of capital. *Id.* at 23-24. This cost of capital is then used as the fair rate of return applied (multiplied) to the book value of rate base to establish the dollar level of capital costs to be recovered. *Id.* at 24. Thus, according to Mr. Parcell, this method is consistent with the rate base methodology used to set utility rates. *Id.* He noted that the CE analysis he employed is based upon market data (through use of market-to-book ratios) and is thus essentially a forward-looking market test. *Id.* Consequently, he maintains that his CE analysis is not subject to the criticisms made by some who maintain that past earned returns do not represent the current cost of capital.[11] *Id.*

[9] *Bluefield Waterworks & Improvement Co. v. Public Serv. Comm'n of W.V.*, 262 U.S. 679 (1923)

[10] *Federal Power Comm'n v. Hope Nat. Gas Co.*, 320 U.S. 591 (1944).

[11] According to Mr. Parcell, it is generally recognized that market to book ratios of greater than one (*i.e.* 100%) reflect positively a utility's ability to raise new equity capital without dilution, and, although there is no regulatory obligation to set rates to maintain such ratios above one, it is an indicator of a fair cost of equity. *Id.*

63. In performing his analysis, and in an attempt to examine earnings over a diverse period of time, Mr. Parcell focused on two periods: 2009-2013 (the current cycle) and 2002-2008 (the most recent business cycle). *Id.* at 24-25. He testified that a relatively long period of time is required for the analysis to determine trends in earnings over at least a full business cycle and to avoid any undue influence of unusual or abnormal conditions that may occur in a single year or shorter period. *Id.* His analysis demonstrated that historic returns on equity between 9.0% and 9.9% have produced market-to-book ratios of 175% to 232%. *Id.* at 25; Sch. DCP-10. Additionally, projected returns on equity for 2014, 2015, and 2017 to 2019 range from 9.5% to 10.6% for the proxy groups, which relate to market-to-book ratios for 2013 of 180% or greater. *Id.* at 25. Next, Mr. Parcell also examined the S&P 500 Composite group, which is comprised of unregulated firms. *Id.* at 26. He observed that over the periods studied, the S&P 500's earned returns ranged from 12.4% to 13.6% and its market-to-book ratios ranged from 209% to 341%. Sch. DCP-11.

64. Mr. Parcell testified that the recent earnings of utilities and the S&P 500 can be used to indicate the level of return expected and achieved in the regulated and competitive sectors of the economy. Ex. 7 (Parcell) at 26. To apply these returns to the COE for the proxy utilities, however, he compared the risk levels of the water utilities industry with those of the competitive sector. *Id.* Mr. Parcell's comparison demonstrated that the S&P 500 group is riskier than the utility comparison groups. *Id.*; Sch. DCP-12.

65. From this analysis, Mr. Parcell concluded that the Company's cost of equity under the CE method is no greater than 9.0% to 10% (9.5% being the mid-point). Ex. 7 (Parcell) at 26. Given the recent returns and resulting market-to-book ratios, he testified that a return on equity of between 9.0% and 9.9% should result in a market-to-book ratio of more than 170%. *Id.* Mr. Parcell concluded that the midpoint of 9.5% was the appropriate estimate for Artesian's CE COE. *Id.* at 27.

(d) Summary of Staff Results of Analyses

66. Mr. Parcell's analysis produced the following results:

Method	Calculated ROE
DCF	8.7%
CAPM	7.1%
CE	9.5%

Id.

67. Mr. Parcell's three analyses indicated a cost of equity ranging from 7.1% to 9.5%, based upon the individual models' results. In determining his recommended cost of equity for Artesian, Mr. Parcell testified that he focused on the higher end of his equity cost results, which already reflect the upper range of fair returns. Based on his COE results and those factors, Mr. Parcell testified that Artesian's fair ROE is in the 8.7% to 9.5% range, and so he recommended the mid-point of 9.10% for Artesian. *Id.*

5. DPA's Position

(a) DCF

68. DPA witness Dr. Woolridge's DCF studies produced an 8.5% ROE for his water proxy group (which was comprised of the same companies as Ms. Ahern's water proxy group). Ex. 16 (Woolridge) at 50. Dr. Woolridge's primary criticism of Ms. Ahern's DCF studies was that she used only analysts' forecasts for the DCF's growth component. *Id.* at 3. The DPA acknowledged that in this case it made little difference since Ms. Ahern's and Dr. Woolridge's proposed growth rates were essentially the same: Ms. Ahern's was 5.48% and Dr. Woolridge's was 5.50%. Ex. 16 (Woolridge) at 39; Sch. JRW-13 at 2.

(b) CAPM

69. Dr. Woolridge calculated a CAPM-derived ROE of 7.5% for the water proxy group, using inputs of a risk-free rate of 4.0%, a beta of 0.70, and a MRP of 5.0%. *Id.* at 50. Dr. Woolridge noted that the yield on 30-year Treasury bonds had been in the 3.5% to 4% range over the 2011-2013 time period, and at the time of his testimony were in the 3.25% range. *Id.* at 43. Given the recent yield ranges and the prospect of higher rates in the future, he selected a risk-free rate of 4.0%. *Id.* He used the betas for the companies that were published in *Value Line Investment Survey*; the median beta for the water proxy group companies was 0.70. *Id.* at 44.

70. Dr. Woolridge described an alternative approach to estimating the MRP, the final input to the CAPM. *Id.* The first alternative, called the "Ibbotson approach," uses the difference between historical stock and bond returns (*ex post* returns) to measure

the market's expected returns (*ex ante* returns). *Id.* at 45. This approach suggested an MRP in the range of 5% to 7% above the rate on long-term Treasury bonds. *Id.* He testified that this approach was problematic because: (1) *ex post* returns are not the same as *ex ante* expectations; (2) MRPs can change over time, increasing when investors become more risk-averse and decreasing when they become less risk-averse; and (3) market conditions can change such that *ex post* historical returns are poor estimates of *ex ante* expectations. *Id.* He noted that numerous academic studies had criticized the *ex post* returns approach because the data did not justify the large MRP discovered in historical stock and bond returns. *Id.* at 45-48. Other problems with this approach are the U.S. stock market survivorship bias, the company survivorship bias, and unattainable return bias. *Id.* at 62; Appendix D.

71. Dr. Woolridge also observed that there were several surveys of financial professionals and academics regarding the MRP, such as *CFO Magazine*'s quarterly study of chief financial officers, the Federal Reserve Bank of Philadelphia's annual survey of financial forecasters (published as the *Survey of Professional Forecasters*), and Pablo Fernandez's occasional surveys of financial analysts and companies regarding the MRPs they use in their investment and financial decision-making. *Id.* at 46. The median MRPs of the studies that Dr. Woolridge examined ranged from 4.4% to 4.9%. *Id.* at 47-48. Dr. Woolridge testified that much of the data indicated that the MRP was in the 4% to 6% range, and so he used the midpoint, 5%, as the MRP for his CAPM analysis. *Id.* at 48. He noted that this MRP was higher

than the expected MRP of CFOs surveyed in *CFO Magazine* and the expected MRP from the *Survey of Professional Forecasters*, and was consistent with the 5% median MRP employed by U.S. analysts and companies as reflected in the Fernandez survey results. *Id.* at 49.

(c) DPA's Recommended ROE

72. Based on the results of his DCF and CAPM studies, Dr. Woolridge testified that the appropriate ROE for his proxy groups was between 7.5% and 8.8%. *Id.* at 50. He gave greater weight to his DCF study results, and explained that the study results for his gas proxy group (which were higher than the results for the water proxy group) were relevant because of the limited data available for water companies. *Id.* Therefore, he opined that the appropriate ROE range was from 8.5% to 8.8%, and recommended an 8.75% ROE. *Id.* at 50. Dr. Woolridge testified that his 8.75% recommendation was appropriate for two reasons. *Id.* at 52. First, the water industry is one of the lowest risk industries as ranked by beta in *Value Line*. *Id.* Second, capital costs are at historically low levels, and consequently, the expected returns on financial assets - from savings accounts to Treasury bonds to common stocks - are low. *Id.* Furthermore, despite the fact that earned ROEs had been approximately 100 basis points lower than authorized ROEs, those returns had been adequate to meet investors' return requirements. *Id.* at 53-54. In this regard, Dr. Woolridge noted that in the past four years, the market to book ratios for publicly-traded water companies had been in the 1.70x - 2.0x range. *Id.* at 54; Sch. JRW-12 at 2.

73. Hearing Examiner's Recommendation. The Hearing Examiner found the Company's DCF opinion most persuasive. Thus, he recommend that the Commission accept the Company's expert's DCF opinion of her average for her Water Group, 8.98% -- as opposed to that of Staff (8.70%) or the DPA (8.50%). HER at 34.

74. According to the Hearing Examiner, accepting the Company's average DCF result of 8.98% "made sense" and was fair because:

> (1) the parties' DCF results are close;
>
> (2) interest rates appear to be "fairly stable, at least through the latter part of this year;"
>
> (3) "Artesian's business model through the end of the Test Period seems to not have the customer growth of past years when the real estate economy was better, which compensated for declining water usage due to inclining block rates, energy efficient appliances and conservation;"
>
> (4) he rejected Artesian's proposed flotation cost and small size adders; and
>
> (5) the Company's median DCF result of 8.58% "appears harsh under the current utility economic conditions in Delaware facing Artesian … ."

Id.

75. The Hearing Examiner also relied on the Company's average traditional CAPM calculation of 9.80%, and weighted it 33% in his overall rate of return recommendation. *Id.* at 34-36. Thus, he concluded that the DCF result should be afforded two-thirds weight in determining the overall ROE, while the CAPM result should be afforded the remaining weight. *Id.* at 34. The Hearing Examiner rejected the results of Ms. Ahern's ECAPM and RP studies, finding that Mr. Parcell's and Dr. Woolridge's criticisms of those methodologies were persuasive. *Id.* at 41.

76. The Hearing Examiner also found that Mr. Parcell's 7.10% CAPM result and Dr. Woolridge's 7.50% to 8.5% CAPM result were outside the realm of ROE reasonableness. *Id.* at 37-38.

77. Moreover, the Hearing Examiner believed the Company had persuasively argued that assuring a regulated public utility can fulfill its obligations to the public, while providing safe and reliable service at all times, required a level of earnings sufficient to maintain the integrity of presently invested capital as well as to permit the attraction of needed new capital at a reasonable cost in competition with other firms of comparable risk. *Id.* at 38. Hence, he recommend that the Company's average, traditional CAPM claim median of 9.80% be accepted and afforded one-third weight in determining the overall ROE. *Id.*

78. The Hearing Examiner rejected any additional adjustments to his recommended ROE, including the small size and flotation adjustments recommended by Artesian. *Id.* at 34. He rejected Artesian's proposed small size adjustment because he recognized, as Staff suggested, that most of the capital for companies in the proxy group have subsidiaries -- like AWC -- for which they (as the parent) raise capital. *Id.* at 28. Also, as the DPA witness discussed, there is no study that correlates small size with increasing capital costs for utilities, primarily because they are regulated. *Id.* at 28-29.

79. Regarding the suggested flotation cost adjustment of 25 basis points, the Hearing Examiner stated that adjusting equity returns for such costs would be "poor" policy as well as a new

Commission precedent, and thus he did not adjust his recommended equity return for this issue. *Id.* at 34.

80. The Hearing Examiner concluded that because the Commission "primarily" uses the DCF in determining ROE, he relied twice as much on this DCF result than the result of the CAPM model, which is the only other model he relied upon. *Id.* In determining the Company's overall ROE, he afforded two-thirds of the weight to his DCF result of 8.98%, with the remainder one-third being afforded to Ms. Ahern's CAPM study result of 9.80%. *Id.* at 34-35. The Hearing Examiner noted that if the Commission determined that his recommended 9.25% ROE was too low, it might reconsider the requested flotation cost and small size adjustments. *Id.* at 44.

81. Exceptions. Artesian, Staff and the DPA all excepted to the Hearing Examiner's conclusions regarding ROE.

82. *Artesian.* In its exceptions, the Company argued that the Hearing Examiner's recommended ROE of 9.25% was unjustly and unreasonably low. Artesian EB at 1-2. Artesian argued that accepting the recommendation would violate 26 *Del. C.* § 311, which requires this Commission to set a just and reasonable rate when any proposed rate is unjust and unreasonable. Artesian EB at 2. Similarly, Artesian contended that the Hearing Examiner's recommendation did not comport with *Bluefield*, *Hope* or *Application of Wilmington Suburban Water Corp.*, 211 A.2d 602, 605 (Del. 1965) ("*Wilmington Suburban*"). *Id.* at 2. Indeed, the Company argued that adopting the Hearing Examiner's recommended ROE would undermine the Company's ability to attract

capital and would cause it to suffer a "crippling disadvantage" when competing with other utilities. *Id.* at 6.

83. Artesian noted that the Hearing Examiner's 9.25% ROE recommendation was remarkable in two ways. *Id.* at 2. First, it would set Artesian's ROE 45 basis points lower than any other ROE this Commission has established for any water, wastewater, gas or electric utility during modern utility regulation.[12] *Id.* Second, the proposed 75 basis point drop from Artesian's extant ROE of 10.00% would be unprecedented in this Commission's modern regulation of utilities. *Id.* The last time this Commission made a greater than 25 basis point change in any utility's ROE from one rate proceeding to the next appears to have been nearly 20 years ago, and the Hearing Examiner's recommendation in this proceeding is three times as large as that amount. *Id.* at 2-3.

84. Artesian specifically contended that the Hearing Examiner's ROE recommendation was flawed in two ways: (1) it did not encompass in its calculation certain macro[13] factors that this Commission considers when setting a just and reasonable ROE, and (2) it did not ascribe any weight or influence to several of the valuation analyses that the parties presented in the case, even though this Commission generally considers all available information when setting ROE. *Id.* at 3. In short, Artesian contended that by attempting to reduce the

[12] The Company argued that presently, the lowest ROE this Commission has ever set was 9.70% for Delmarva in August 2014. *In re Delmarva*, PSC Order No. 8589 at ¶ 271 (Aug. 5, 2014).

[13] This is a term that the Commission itself has used to describe the consideration it gives to a utility's current ROE, economic conditions, and the requirements of *Bluefield, Hope* and *Wilmington Suburban* when setting a just and reasonable rate. *In re Delmarva*, PSC Order No. 8589 at ¶ 268.

setting of ROE to a rigid mathematical formula, the Hearing Examiner failed to exercise the judgment and experience that this Commission routinely applies when setting ROE. *Id.*[14]

85. The macro considerations that Artesian contends the Hearing Examiner failed to factor into his ROE recommendation include the Company's current ROE, ROEs that have recently been awarded by this Commission and other regulators, and the absence of any meaningful change in the economy since Artesian's last rate proceeding. *Id.*

86. Artesian noted this Commission recently acknowledged it anchors ROE awards to a certain extent on the utility's current ROE. *Id.* at 4 (citing *In re Delmarva*, PSC Order No. 8589 at ¶ 271). In Delmarva Power & Light Company's ("Delmarva") most recent rate proceeding, the presiding Hearing Examiner recommended a 0.50% increase in ROE from 9.75% to 10.25%. *In re Delmarva*, PSC Order No. 8589 at ¶ 271. This Commission determined that such a large move in ROE constituted a total departure from Delmarva's existing ROE, and instead set Delmarva's ROE at 9.70%. *Id.* Here, the Hearing Examiner recommended an even larger change in ROE than was recommended in the Delmarva proceeding, from 10.00% to 9.25%. HER at 44. Artesian contended that, as in the *Delmarva* case, there had been no change at the Company or in the economy that would support such a large change in ROE. Artesian EB at 3, 8, 9-10. Artesian noted that its ROE had changed by just 85 basis points over the past 17 years, but the

[14] This Commission has indicated several times that it is necessary to apply judgment and experience when setting the appropriate ROE. *See, e.g.*, *In re Delmarva*, PSC Order No. 8589 at ¶ 271; *In re Tidewater Utils., Inc.*, PSC Docket No. 02-28, Order No. 6111 at ¶ 24 (Feb. 11, 2003); *In re Artesian Water Co., Inc.*, PSC Docket No. 04-42, Order No. 6911 at ¶ 162 (May 9, 2006).

Hearing Examiner recommended a 75 basis point drop in this one proceeding. *Id.* at 9. The Company contended that although the Hearing Examiner had noted Artesian's existing ROE, there was no indication that it had any influence on the mathematical formula that the Hearing Examiner used to calculate his recommendation. HER at 43-44.

87. Artesian next asserted that *Bluefield* holds that public utilities are "entitled to such rates as will permit it to earn a rate of return … 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 …." 262 U.S. at 692-93; *see* Artesian EB at 6-7. Artesian further noted that as recently as August 2014, this Commission awarded Tidewater Utilities, Inc. ("Tidewater") an ROE of 9.75%. Artesian EB at 5. Artesian argued that Tidewater is the same type of utility as Artesian in the same market, comparably sized, and facing the same risks. *Id.* Although the Hearing Examiner noted the holding of *Bluefield* and Tidewater's 2014 ROE award, there is no indication that the Hearing Examiner accorded the Commission's recent ROE awards any influence in his mathematical calculation of ROE. HER at 43-44.

88. In connection with its argument that *Bluefield* requires consideration of the earnings of similarly situated entities, Artesian cited: (1) the ROE awards that this Commission has awarded Artesian in each of its rate proceedings since 1998, which ranged from 10.00% to 10.85%; (2) the ROE awards that this Commission has awarded

Artesian (water), United Water Delaware, Inc. (water), Tidewater (water), Delmarva (natural gas), Chesapeake Utilities Corporation (natural gas), Tidewater Environmental Services, Inc. (wastewater), Artesian Wastewater Management, Inc. (wastewater), and Delmarva (electric) during the period 1998 to the present, which ranged from 9.70% to 10.85%, and the currently effective ROEs are between 9.70% and 10.25%; (3) a chart from the testimony of DPA's witness Dr. Woolridge reflecting the most recent ROE awards for publicly-held water companies, which ranged from 9.75% to 10.29%; (4) a chart derived from Exhibits 45 and 47 reflecting the most recent ROE awards in Delaware, New Jersey and Pennsylvania, which range from 9.75% to 10.30%; and (5) summary information regarding Exhibits 45 and 47, which reflect more than 100 ROE awards nationally. Artesian EB at 10-18. Artesian contends that based upon the information in the record, the Hearing Examiner's recommendation here is substantially below any ROE awards in Delaware or the Delaware region, and is an abnormally low outlier on even a national level. *Id.* at 18. Artesian noted that of the numerous jurisdictions for which recent ROE awards are known, only two (New York and South Carolina) have ever set ROEs of 9.25% or less, and only one other (Illinois) has set an ROE of less than 9.50%. *Id.* at 16-17. Conversely, the record shows that 15 jurisdictions awarded ROEs of 9.75% or greater between 2011 and 2014. *Id.* at 16.

89. Artesian concluded based on the other utilities' awarded ROEs that if the Hearing Examiner's substantially lower recommendation were to be accepted, such award would place Artesian at an unfair disadvantage when competing with other utilities for capital

in the marketplace and could signify to the market questions about Artesian's financial integrity. *Id.* at 24.

90. The other macro factor Artesian raised was the absence of any meaningful change in the economy since Artesian's last rate proceeding. *Id.* at 18-20. Artesian noted the unchanged economy was one reason why the Commission rejected a recommendation to raise Delmarva's ROE in 2014. *Id.* at 18, citing *In re Delmarva*, PSC Order No. 8589 at ¶ 267. Here, the Hearing Examiner found that interest rates appeared to be stable and that Artesian's business model through the end of the Test Period did not appear to have the same customer growth of past years. HER at 34. The Hearing Examiner also cited testimony from the parties' witnesses suggesting that the economy has not changed significantly since Artesian's last rate case. HER at 19. Artesian contended that, given the absence of any meaningful change in the economy, a total departure from its existing ROE was not warranted. Artesian EB at 20.

91. Artesian's second objection to the Hearing Examiner's recommendation was that it failed to accord any weight or influence to most of the valuation information presented by the parties. *Id.* at 20-23.

92. Artesian cited precedents in which this Commission had previously acknowledged that although it relies primarily on DCF in setting ROE, all valuation models have their shortcomings, and therefore this Commission considers the various models presented by the parties when determining the range of reasonableness for setting ROE. *Id.* at 21. Indeed, Artesian cited an example where this

Commission stated that the entire reasonable range for an ROE award was higher than the highest DCF calculation presented by the parties. *Id.*, citing *In re Tidewater Utils., Inc.*, PSC Docket No. 02-28, Order No. 6111 at ¶ 21 (Feb. 11, 2003) (stating the range of reasonableness was 9.50% to 10.50%, where the suggested DCF value was 9.27%); *see also In re Delmarva*, PSC Docket No. 05-304, Order No. 6930 at ¶ 269 (June 6, 2006) (awarding an ROE of 10.00% where the highest DCF calculation was 9.50%).

93. Here, the Hearing Examiner gave no weight in his calculation of ROE to the Company's RP methodologies, Staff's methodologies, or the DPA's methodologies. HER at 43-44. According to Artesian, the result was a rigid formula that did not exercise judgment in applying all of the available information, as the Commission has stated it does. Artesian EB at 23.

94. Artesian concluded that the Hearing Examiner's ROE calculation did not comport with the aforementioned statutes and precedents, and did not establish just and reasonable rates. *Id.* at 23-24. Artesian opined that if the macro factors and all of the valuation methodologies presented in this case were properly considered, its ROE award should not be lower than 9.75%. *Id.*

95. *Staff.* According to Staff, the Hearing Examiner appeared to criticize Staff witness Parcell's observation that not every combination of yield and growth creates a DCF conclusion. Staff EB at 7. Rather, Mr. Parcell observed that a wide array of indicators exists for estimating investors' growth expectations and consequently investors do not always use one single growth indicator. *Id.* at 7-8.

Staff noted this Commission in the past had adopted Mr. Parcell's recommendations, but not Ms. Ahern's specific recommendations. *Id.* at 8. Finally, Staff also highlighted that Mr. Parcell's DCF conclusions matched within five (5) basis points those of Dr. Woolridge's, the other cost of capital witness in this case. *Id.*

96. Regarding the Hearing Examiner's reliance on Ms. Ahern's CAPM analysis in making his recommendation for Artesian's cost of equity, Staff pointed out the current yield -- rather than the projected yield used by Ms. Ahern -- should be used to determine the risk-free rate component of the CAPM. *Id.* As stated by Mr. Parcell, the current yield reflects the investors' collective assessment of all relevant capital market conditions. *Id.* at 9. In addition, prospective interest rates are not known or measurable, nor necessarily achievable. *Id.* In contrast, a current yield on a U.S. Treasury Bond of 3.0% is achievable and reflects the rate that investors can actually receive on their investment. *Id.* In her CAPM analysis, however, Ms. Ahern used a projected yield on a 30-year U.S. Treasury bond of 4.40%, which was much higher than the yield on such bond at the time of her filed testimony. Despite this purported error, the Hearing Examiner partially relied on Ms. Ahern's skewed analysis and consequently his reliance on Ms. Ahern's CAPM analysis was also erroneously skewed upwards. *Id.*

97. Staff also argued that the only additional model the Hearing Examiner reviewed (outside of Ms. Ahern's numerous studies) was the CE model prepared by Mr. Parcell. *Id.* at 10. Ms. Ahern criticized Mr. Parcell's use of the CE model because market prices for

utility stocks exceed their book value in most cases. Staff contended that most investors are aware that regulated utilities have their rates set based on the book value of their assets (rate base) and capital structure. *Id.* This is reflected in the prices that investors are willing to pay for utility stocks. Hence, the Hearing Examiner's rejection of the CE model reduced the data points that supported his overall finding of the ROE for Artesian. When coupled with his dismissal of the CAPM studies prepared by the other two rate of return witnesses in this case, the Hearing Examiner was left with only Ms. Ahern's work product upon which to make his recommendation. Staff suggested that the Commission should not be so constrained on reaching its conclusions on the proper applicable rate of return for this case. *Id.* at 10-11.

98. *DPA.* The DPA stated that although the Hearing Examiner's recommendation may be within the zone of reasonableness, the reasoning supporting his conclusion was flawed. DPA EB at 18. First, it argued that the Hearing Examiner, without explanation, found Ms. Ahern's DCF studies more persuasive than the other witnesses. *Id.* However, instead of using her median DCF result of 8.58%, which she testified was the most appropriate indicator of Artesian's ROE (Ex. 3 (Ahern-Direct) at 26 and Sch. PMA-6 at 1), the Hearing Examiner found that it "made sense" to use her higher average DCF of 8.98%. HER at 34.

99. The DPA took issue with the Hearing Examiner's justifications for using Ms. Ahern's higher average DCF result. DPA EB at 18-19. The DPA acknowledged that the witnesses' DCF results were fairly close, but the rest of the Hearing Examiner's

justifications for choosing Ms. Ahern's DCF results over those of the other witnesses did not "make sense." *Id.* at 19. The DPA contended that the theory behind the DCF model is that a company's current stock price is equal to the discounted value of all future dividends that investors expect to receive. *Id.*, citing Ex. 16 (Woolridge) at 25. The inputs to the constant growth DCF model, which all of the witnesses applied, are the company's current stock price and the dividend in year *n*. *Id.* citing Ex. 16 (Woolridge) at 25-26. The result of applying the model is the company's ROE. Neither interest rates, nor a company's business model, nor adders appear in the equation. Accordingly, the "harshness" the Hearing Examiner believed resulted from using the median DCF result was a function of current capital costs, which are (and have been) historically low. DPA EB at 19.

100. The DPA observed that Ms. Ahern had testified that the median DCF result was the most appropriate indicator of Artesian's ROE. DPA EB at 20, citing Ex. 3 (Ahern) at 26. The DPA contended that if Ms. Ahern's DCF ROE opinion, based on her median result, was the "most persuasive" to the Hearing Examiner, he should have used it, rather than the (higher) average DCF result, to reach his ROE recommendation. DPA EB at 20. The DPA argued that his selection of Ms. Ahern's average DCF result simply increased Artesian's indicated ROE. *Id.*

101. Second, the DPA argued that the Hearing Examiner should not have used the Company's traditional CAPM-derived ROE to determine the appropriate ROE for Artesian because doing so was inconsistent with

his rejection of Ms. Ahern's ECAPM and RP model results. *Id.* The DPA contended that problems with both of Ms. Ahern's RP models rendered their results unreliable. *Id.* at 21. First, they assumed that investors would hold their investments for the entire time period selected, which in this case would be 86 years. *Id.*, citing Ex. 3 (Ahern); Sch. PMA-8 at 8. However, the DPA contended, most investors do not purchase securities the day they are born and hold them until death, as other commissions have realized. DPA EB at 21, citing *Re Columbia Gas of Ohio, Inc.*, 107 PUR4th 457, 501 (Ohio PUC 1989) (Commission not persuaded that investors base current expectations on data derived from such a long-term average); *Barasch v. Bell Telephone Co.*, 94 PUR4th 13, 35-36 (Pa. PUC 1988) (Commission not satisfied that results of analysis over 50-year period was particularly relevant to current investors' expectations); *Re Western Massachusetts Electric Co.*, 80 PUR4th 479, 601 (Mass. DPU 1986) (would accept analysis showing RP calculated over historical period was representative of future or resulted from objective statistical analysis that accounted for unusual occurrences, but found using unadjusted data from long time period was unacceptable).

102. Second, the DPA contended that the projected base yield in Ms. Ahern's RP analyses (the projected yield on long-term A-rated public utility bonds) was excessive because it was subject to credit risk. DPA EB at 21. With credit risk, the expected return on a bond is below the yield-to-maturity. Therefore, the bond's yield-to-maturity exceeded investors' expected returns. *Id*, citing Ex. 16 (Woolridge) at 61.

103. Third, the DPA argued that both of Ms. Ahern's RP models used the historical relationship between stock and bond returns over long time periods to estimate the MRP, which produced an inflated measure of the true MRP. DPA EB at 21-22. DPA witness Woolridge identified several reasons why this occurs. *Id.*, citing Ex. 16 (Woolridge) at 62 and Appendix D at D-1. RP approaches assume that investors' expectations are realized over long time periods. But the actual returns that bondholders have experienced invalidate this assumption: they are biased downward as a measure of expectancy because of bondholders' past capital losses. This skews the MRPs derived from this data upward. DPA EB at 21-22, citing Ex. 16 (Woolridge) at D-1 to D-2. Using an arithmetic mean (as Ms. Ahern did), rather than a geometric mean to measure investment return, biases the MRP upward. DPA EB at 22. The geometric mean return provides the best measure of investment performance for analyzing a single security price series over time: it "'measures the changes in wealth over more than one period on a buy and hold (with dividends invested) strategy.'" *Id.*, citing Ex. 16 (Woolridge) at D-2 (quoting Willard T. Carleton and Josef Lakonishak, "Risk and Return on Equity: The Use and Misuse of Historical Estimates," *Financial Analysts Journal*, pp. 38-47 (Jan.-Feb. 1985)). The DPA contended that Artesian did not dispute Dr. Woolridge's testimony that the financial press generally reports stock returns and EPS growth rates using the geometric mean, and that the SEC requires equity mutual funds to report historic return performance using geometric mean returns. DPA EB at 22. The DPA observed that those sources are readily available

to investors, and investors rely upon them, not upon academic articles or treatises. *Id.*

104. According to Dr. Woolridge, measuring the MRP using historical stock and bond returns was subject to a substantial forecasting error:

> The arithmetic mean long-term MRP of approximately 6.5% has a standard deviation of more than 20%. This may be interpreted in the following way with respect to the historical distribution of the long-term [MRP] using a standard distribution and a 95%, +/- 2 standard deviation confidence interval: We can say, with a 95% degree of confidence, that the true [MRP] is between -34.7% and +47.7%.

Id., quoting Ex. 16 (Woolridge) at D-4. The DPA argued that such a broad delta between possible results was unreasonable. DPA EB at 22.

105. The DPA observed that returns developed using Ibbotson's methodology (as Ms. Ahern used) were computed on stock indexes, which do not reflect expectations because investors cannot attain these returns. *Id.* The Ibbotson methodology that Ms. Ahern used presumes monthly portfolio rebalancing so that an equal dollar amount is invested in each security at the beginning of each month. *Id.* This assumption results in high transaction costs and produces biased stock return estimates that are unavailable to investors. Transaction costs provide another bias in historical versus expected returns because transaction costs (and higher commissions) in the past did not accurately reflect realized returns. *Id.* at 22-23.

106. The DPA next contended that using historic return data from indexes like the S&P 500 to estimate a MRP reflects company survivorship bias because the indexes include only companies that survived. DPA EB at 23. Firms that do not perform well are dropped.

Thus, the index stock returns are biased upward. *Id.*, citing Ex. 16 (Woolridge) at D-5 to D-6.

107. Last, the DPA argued that using historic return data suffered from the U.S. stock market survivorship bias (the "peso problem"). DPA EB at 23. This issue (highlighted by Nobel laureate Milton Friedman) involves the observation that past stock market returns were higher because the U.S. survived despite war, depression and other social and economic events and thus did not suffer hyperinflation, invasion, and/or the calamities of other countries. *Id.* Nevertheless, such highly improbably events were factored into stock prices, which led to seemingly low valuations. *Id.* When the highly improbably events did not occur, the resulting returns were higher than expected. Therefore, historic stock returns as measures of expected returns are overstated because the U.S. markets have not experienced the disruptions of other major world markets. *Id.*, citing Ex. 16 (Woolridge) at D-6.

108. The DPA noted the Hearing Examiner had rejected Ms. Ahern's PRPM™ RP model results because he agreed with the criticisms of it made by the DPA's and Staff's witnesses. DPA EB at 23, citing HER at 41. One of those criticisms was that using historical market returns to calculate the MRP input to the PRPM™ resulted in inflated market risk premiums. *Id.*, citing HER at 39 and Ex. 16 (Woolridge) at 62-63. However, notwithstanding his rejection of Ms. Ahern's PRPM™, the DPA observed that the Hearing Examiner had accepted Ms. Ahern's traditional CAPM-derived ROE, even though she calculated the MRP input for her traditional CAPM in exactly the same manner as she calculated

the MRP input for the RP studies that the Hearing Examiner had rejected. DPA EB at 23-24, citing HER at 36-37; *see* Ex. 16 (Woolridge) at 65.

109. The DPA argued the Hearing Examiner had apparently accepted Ms. Ahern's CAPM-derived ROE because he thought that the CAPM-derived ROE resulting from the DPA's and Staff's studies were too low. DPA EB at 23-24, citing HER at 37-38. The DPA agreed that Staff's and the DPA's CAPM-derived ROEs were low, but pointed out that capital costs currently are low and are expected to remain low for some time, and the CAPM is a market-based ROE model. DPA EB at 23-24.

110. The DPA argued that it was illogical to reject one RP method because using historical market returns to predict the MRP input results in inflated risk premiums, while recommending another RP method (the CAPM) in which the witness used historical market returns to predict the MRP input. DPA EB at 24. Ms. Ahern's CAPM-derived ROE suffered from the same flaw as her RP-derived ROEs, and should not be used to calculate the overall recommended ROE. *Id.*

111. Finally, the DPA asked the Commission to reject the Hearing Examiner's suggestion that the Commission reconsider its position on flotation cost and small size adjustments if it thought the ROE results were too low. *Id.* The DPA contended that whether to include adders for flotation costs and/or small size should not depend upon where the market is at the time of a rate case. *Id.* The DPA noted that someday capital costs and indicated ROEs would increase, and that when they did, the Commission would award an ROE that is appropriate for then-existing market conditions. *Id.* The DPA argued that the

Commission should not jettison longstanding policy decisions simply because current market conditions result in low capital costs and low indicated ROEs in a particular case. *Id.* at 24-25.

112. Discussion and Decision. We have thoroughly reviewed the Hearing Examiner's report and considered the arguments made by the various parties on the appropriate return rate for Artesian's common equity. As in most rate cases that come before us, the experts testifying on behalf of the various parties have disparate opinions on this issue. We also observe that the range between the various witnesses' opinions is quite broad in this proceeding, extending over 200 basis points (8.75% to 10.90%).

113. In reaching our conclusion we are mindful of the principles set forth in both the *Bluefield* and *Hope* decisions cited by the three experts in their respective testimonies. Both precedents require a return on a utility's investment to be sufficient to attract capital on reasonable terms, to maintain the financial integrity of the utility, and to provide an opportunity to achieve a level of revenue that is comparable with investment in entities in the same region facing similar risks.

114. As the Hearing Examiner noted in his report, this Commission adopted Artesian's current ROE of 10% in connection with the settlement of its most recent rate case in January 2012. *See* PSC Order No. 8097 at ¶ 19 (Jan. 24, 2012). He also noted that in August 2014, while this rate case was pending, this Commission accepted as just and reasonable a proposed settlement with an ROE of 9.75% for

Tidewater, another Delaware water utility. HER at 15, citing PSC Docket No 13-466 (Tidewater), Order No. 8611 at ¶ 2 (Aug. 19, 2014).

115. In reaching his conclusion that 9.25% was an appropriate rate of return for Artesian based on the evidence before him, the Hearing Examiner referenced the Commission's most recent decision involving Delmarva in which we stated our preference to give primary weight to the DCF model in determining ROE for a utility. *In re Delmarva*, PSC Order No. 8589, ¶ 131 (Aug. 5, 2014). But primary weight, as we pointed out, does not mean "sole" or "exclusive" reliance, and other valuation methods, as well as the utility's current allowed ROE and economic conditions, are routinely analyzed, discussed and factored into the Commission's final determination on ROE.

116. We start our analysis of the record and the arguments made by the parties with the Company's currently authorized return of 10% set in 2012. We find today's economy to be similar to that of three years ago, including a historically low interest rate environment and continued slow recovery of the US economy.

117. The Hearing Examiner reached his recommendation by weighting what he found to be the most persuasive DCF valuation twice as much as what he viewed to be the most persuasive CAPM valuation in a mathematical formula. We do not believe our overall preference for the DCF model needs to be considered with such precision, as we continue to believe that judgment and experience are integral to setting just and reasonable ROEs for the utilities that we regulate. As pointed out to us during our deliberations, the DCF results trend

upwards in a high interest rate environment and trend in the opposite direction when interest rates are low (as they are now). Observing the DCF model results in this case, not one of the experts could support a DCF result above 9%. Other models proffered here included CAPM, CE and various RP studies supporting higher ROEs.

118. Another data point that we think is important to consider and weigh is Tidewater's recently awarded ROE of 9.75%. Tidewater is another major water company operating in Delaware. We believe that Artesian and Tidewater face similar business risks. Tidewater's return is within the zone of reasonableness established by the various witnesses' testimonies here, albeit near the high end of that range, and similar to Artesian's existing ROE. Although our acceptance of the proposed settlement of ROE in the recent Tidewater case does not dictate what Artesian should be awarded in this case, we also do not want to be perceived as punishing Artesian by awarding it an ROE substantially lower, notwithstanding that the evidence developed in this case could support a lower ROE.

119. We believe a return of 9.75% properly reflects the various considerations articulated by the parties and the record before us. We recognize that this record could support a return both higher and lower; however, in our collective judgment we deem 9.75% to be the appropriate return and that the evidence developed in this case supports it. This decision on ROE does not include any adjustment for flotation costs or small size effect. (Unanimous).

C. Rate Base Issues

1. Average Rate Base vs. Year-End Rate Base

120. In its direct testimony and schedules, Artesian used a year-end rate base for the Test Period ended September 30, 2014. Ex. 1 (Valcarenghi) at 2. Staff's primary challenges to the Company's rate request were: (a) the Company's use of actual, historical plant in service as of the end of the test year and test period, rather than a monthly average of plant in service through the end of the test year ended December 31, 2013; and (b) Artesian's inclusion of $24.6 million in forecast additions to plant in public service, net of forecast retirements, through the end of the test period ended September 30, 2014, which Staff claimed should not be allowed because such inclusion was a violation of the matching principle. Ex. 8 (Peterson) at 13, 16-18.

121. Staff's witness David E. Peterson opined that this Commission has generally used an average rate base, as opposed to a year-end rate base, in determining rates for the utilities it regulates. Ex. 11 (Peterson) at 7-8. According to Mr. Peterson, the average rate base or 13-point average reflects traditional ratemaking because rate base, particularly plant investment, is measured throughout the entire period (i.e. the test year beginning balance and the twelve month-end balances). *Id.* at 9-11. The year-end rate base only calculates the rate base at year-end, which in this case was September 30, 2014. *Id.* Mr. Peterson further testified that, unlike an average rate base, a year-end rate base does not give due consideration to when plant is placed into service. *Id.* at 10.

122. At the evidentiary hearing, the DPA accepted Artesian's calculation of used and useful plant in service as of the end of the test period ended September 30, 2014 (Tr. at 620, 628, 629), with the exception of certain restoration costs that Artesian incurred in connection with the Llangollen Wells just after the test period (Tr. at 657; Ex. 18; Sch. GAW-2 update, Sch. GAW-3 update).

123. In response to Staff's arguments, Artesian pointed out that, contrary to Mr. Peterson's testimony, this Commission has never used average rate base when determining rates for water utilities. Ex. 21 (Valcarenghi-R) at 7. Moreover, Artesian explained that the use of a 13-point average for rate base is incompatible with certain Delaware statutes that govern water utilities. For example, 26 *Del. C.* § 102(3) provides that the "original cost of all used and useful utility plant" shall be included in rate base. *See* Ex. 21 (Valcarenghi-R) at 7. Artesian contended that if one takes the average, however, it is mathematically impossible to include "all" of the original cost of used and useful plant. *Id.* at 8; Artesian RB at 5-6.

124. Artesian noted that Staff's decision to limit plant in service as of the end of the Test Year ended December 31, 2013, is also in conflict with other Delaware statutes and regulations. Ex. 21 (Valcarenghi-R) at 7, citing 26 *Del. C.* § 302 (allowing water utilities to include plant in rate base before the plant is fully used, without imputation of revenues, and expressly contemplating projections regarding numbers of customers); 26 *Del. Admin. C.* § 1002-1.2.2.1 (Part A) (providing for a "test period" that includes up to

nine months of projected data). Similarly, another statute authorizes water utilities to recover all costs associated with eligible distribution system improvements between rate cases through DSIC charges. Ex. 21 (Valcarenghi-R) at 9; 26 *Del. C.* § 314. Artesian contended that applying Staff's proposed average rate base methodology would lead to the irrational result of water utilities recovering the full expense of non-revenue producing capital expenditures between rate cases, but less than the full expense (only a 13-point average) once the Commission revised the water utility's rates. Artesian OB at 8 n.5; Artesian RB at 10.

125. Although Mr. Peterson opined certain changes that occur after the test year can be recognized in rate base, Artesian noted that Staff did not recognize any such changes. Artesian AB at 11-12. Accordingly, the Company contended Staff sought a fundamental change in the calculation of rate base for water utilities that was contrary to existing Delaware law. *Id.* at 5-13.

126. Hearing Examiner's Recommendation. The Hearing Examiner was not persuaded by Staff's arguments in light of the applicable statutory framework. He noted that by enacting Section 302 of Title 26, the Delaware legislature distinguished water utilities from other Delaware utilities. HER at 52. He assumed that Section 302 was enacted because of the expensive infrastructure investments, such as mains, wells and pumping stations, that water utilities must incur. However, he also noted that all utilities make expensive infrastructure investments. *Id.* He then concluded that the Commission must follow the plain wording of this statute enacted by

the Delaware legislature and use a year-end rate for the 12 months ending September 30, 2014. *Id.*

127. Exceptions. No parties filed exceptions on this issue.

128. Discussion and Decision. This issue comes before us as an uncontested one and, therefore, we will adopt the Hearing Examiner's recommendation without further additional discussion. Our decision is reflected in ordering paragraph No. 18, *infra*.

2. Restoration Costs at the Llangollen Water Treatment Plant

129. In its rebuttal testimony, the Company included $761,342 in restoration costs that were incurred in October 2014 in its calculation of test period rate base. Ex. 21 (Valcarenghi-R) at 6. According to Artesian, these restoration costs are ancillary costs, such as grading soil and repairing sidewalks, that arise after work on a plant. Tr. at 313-314. The restoration costs at issue here related to a portion of the Llangollen Wells that are located in a residential neighborhood. Tr. at 314-15.

130. According to Artesian, these restoration costs were incurred because New Castle County required the work to be performed. Ex. 4 (deLorimier) at 27-28. This work followed Artesian's replacement of two of the Llangollen Wells that had exceeded their useful lives and the setting up of a new decontamination process there to remove 1,4 dioxane. *Id.*

131. Artesian cited Delaware precedents that hold that expenses such as the restoration costs which are incurred after the test period can nevertheless be recovered in rates. Artesian AB at 16 (citing

Application of Delmarva Power & Light Co., 337 A.2d 517, 518 (Del. Super. 1975) ("While the Commission has discretion in setting the test year, this does not mean that it may arbitrarily refuse to consider later available accurate information."); *In re Application of Delaware Division of Chesapeake Util. Corp.*, PSC Docket No. 95-73, Order No. 4104, at ¶ 22 (April 4, 1995) ("This Commission has permitted expenses that will be incurred outside of the test period … [to] be included in operating expense or rate base for the purpose of establishing rates when it is reasonably certain that the expense will be incurred … and where the amounts associated therewith are sufficiently ascertainable.")).

132. Both Staff and the DPA contended that these costs should not be recovered now because they were incurred after the test period that is being used in this proceeding to set rates. Ex. 13 (Smith) at 4-5; DPA AB at 38-40. Furthermore, DPA suggested that since the costs were occurred outside the test period, they should be recovered through the Company's DSIC and not as part of this case.[15] DPA AB at 38. The DPA also argued although these costs were required by a government agency, that factor should not be determinative as to when they are recovered. *Id.*

133. Artesian contended the costs should be recovered in this proceeding because the costs are known and measurable, it had no choice in performing the work since it was required by New Castle County, and the expense had actually been incurred. Tr. 313-315.

[15] In fact, Artesian filed a DSIC application to recover the costs as an alternative to seeking recovery of them in through inclusion in rate base. Artesian OB at 15, fn. 11.

Artesian also noted the used and useful part of the plant associated with the restoration costs was in service prior to the end of the test period. Tr. at 314-315.

134. Hearing Examiner's Recommendation. The Hearing Examiner concluded that the costs should be included in rate base, citing the Commission's decision in PSC Docket No. 09-414 where we stated that expenses outside a test projected test period may be recovered if incurred to comply with government regulation. PSC Order No. 8011 at ¶ 49.

135. Exceptions. No parties filed exceptions on this issue.

136. Discussion and Decision. Since no party took exception to the Hearing Examiner's resolution of this issue in favor of Artesian, the Commission will accept the recommendation of the Hearing Examiner without further additional discussion. Our decision is reflected in ordering paragraph No. 18, *infra*.

3. Cash Working Capital

137. Cash working capital is another issue that the parties resolved prior to our deliberations on exceptions.

138. The Company's Application included deferred taxes as part of its lead/lag study. As pointed out by Staff witness Peterson, deferred taxes (taxes collected from ratepayers, but not paid to the U.S. Treasury) do not involve investor supplied capital. Since cash working capital is intended to compensate the utility for investor funds used to finance day-to-day cash operating needs of the Company, removal of deferred taxes from the lead/lag study was appropriate.

139. The DPA supported Staff's adjustment for deferred taxes. Artesian made the reduction for deferred taxes in its rebuttal testimony.

140. Hearing Examiner's Recommendation. Because the parties reached agreement on this issue, the Hearing Examiner did not specifically address it in his Report.

141. Exceptions. Because the parties reached agreement on this issue, no parties filed exceptions.

142. Discussion and Decision. The Commission will adopt the position of Artesian as modified to exclude deferred taxes, to which both Staff and the DPA have agreed. (Unanimous).

D. Operating Income Issues

1. Normalization and Revenue Projection Program

143. As Artesian claimed it had done in connection with its rate proceedings since at least the 1990s, Artesian used a program it had developed to project net operating income for the Test Period. Tr. 317-318. The Company began with test year revenues and made certain adjustments for incremental sales from customers it expected to add through the end of the test period. Ex. 3 (Valcarenghi) at 16.

144. Artesian analyzed customer consumption for the 12-month periods ending December 31, 2011, December 31, 2012, and December 31, 2013. *Id.* at 17. The Company then calculated a simple average of per-customer annual consumption for the same three-year period and used

this average in calculating each customer's test period gross water sales revenue. *Id.*[16]

145. Additionally, Artesian stated that certain anomalies within the measurement periods skewed the three-year average data. *Id.* An example of these anomalies was "bills that may have been issued incorrectly and either reissued or corrected." *Id.* If this occurred, Artesian compared the average results to the standard deviation of the customer's data. *Id.* If the average differed more than twice the standard deviation, higher or lower, Artesian adjusted the bill to the average of the customer's rate class. *Id.* at 17-18.

146. If the average was more than 50% above or below the customer's actual test year consumption, Artesian used the customer's actual test year consumption. *Id.* at 18. After the Company determined each customer's consumption, it then determined, on average, how much each customer used per quarter and the individual's rate block. *Id.* "The currently approved rates were applied to determine revenues for minimum charges, for customer and fire protection, and for water consumption." *Id.*

147. Artesian noted that the DPA had objected in previous rate cases to Artesian's normalization program because it could not replicate Artesian's entire normalization calculation, but the Commission had rejected that objection. Artesian RB at 16 (citing *In re Application of Artesian Water Company, Inc.*, PSC Docket No. 04-42,

[16] According to Artesian, when there was insufficient data to perform a three-year average or three years' worth of consecutive data points was not available, the available data was used to determine a projection. For example, if two years' worth of data were available, a two-year average was used. For new customers, or customers for whom the Company did not have a full twelve-month period of consumption information, the average overall consumption for the applicable customer class was used as projected consumption. *Id.*

Order No. 6911 at ¶ 66 (Mar. 23, 2006)). In fact, in 2006 the parties had an independent consultant examine Artesian's normalization methodology. Ex. 86 at 14. That consultant found the Company's method to be "sophisticated," "detailed," and "accurate and effective for purposes of predicting test year residential water consumption." *Id.*

148. Artesian noted that prior to filing its post-hearing brief, the DPA never criticized Artesian for using three years' worth of data in connection with its normalization method, as opposed to five years' worth of data as it had done previously. Artesian RB at 17. Artesian was limited to three years' worth of data because it had changed billing systems, and additional data was simply unavailable. Artesian explained that the data, of course, is not the method, so the change in data did not invalidate the methodology. *Id.* at 15. Regardless, the DPA's own expert also used three years' worth of data, and he did not opine at any time that his results were compromised in fairness, accuracy or reliability because he used only three years' worth of data. Ex. 17 at 22.

149. Artesian presented testimony that contradicted the testimony of the DPA's expert regarding its efforts to provide the information the DPA wanted. Tr. 626, 793-97. Mr. Watkins testified that "[g]iven the complexity of the documentation provided by the Company as well as the fact that the Company's algorithm consisted of some 10,000 lines of programming code, it was determined that further efforts to replicate the Company's analysis would be unreasonable, if not futile." Ex. 17 (Watkins) at 18. Mr. Spacht acknowledged this,

testifying that Mr. Watkins concluded that the material was "too voluminous and too much information that he could reasonably deal with in the time frame that he had." Tr. at 838-39. Artesian offered to allow the other parties to conduct sampling, which is how Artesian's auditors routinely assessed the accuracy of the program, but the DPA declined to review the sampling because the information, according to its expert, could not be verified merely by sampling. Tr. at 670-672.

150. Artesian also presented to the Hearing Examiner the numbers that resulted from its calculation and those that resulted from the DPA's calculation. Looking at actual historical information for the two years following each of Artesian's last four rate proceedings, the data showed that its method overestimated sales (which is beneficial for customers) in four of the eight years, was extremely close to the actual amount in two of the years, and underestimated sales in two years. Artesian RB at 20. With respect to the parties' calculations for sales during the pendency of this proceeding, Artesian's method overestimated sales (which was good for customers) by $362,963 (i.e., only 0.6% of actual sales), while DPA's revised calculation overestimated sales by $1,700,000. *Id.* at 21. The DPA's closest estimation was five times less accurate than Artesian's.[17]

151. Artesian further contended that no rule, statute or other applicable law mandates that third parties in rate proceedings must be able to replicate every calculation a utility makes. Artesian RB at

[17] The DPA contended that the numbers proved that Artesian's method was flawed, because two of the three years were wetter than normal. Artesian argued that the DPA's theory was not supported by the record because the DPA did not present any scientific or statistical analysis to show any particular effect, or the size of any effect, caused by weather. Artesian RB at 21.

14. The burden of proof in a rate proceeding is the preponderance of the evidence: Is it more likely than not that the Company's normalization methodology is reliably accurate? On the facts presented here, Artesian contended it had met that burden of proof through the report of the independent consultant, the approval of its auditors, and the proven historical reliability through after-the-fact comparison of the methodology's projections with historical data. *Id.* According to Artesian, there was no basis for concluding that the DPA's proposed methodology would be more accurate or reliable than Artesian's. *Id.*

152. Artesian argued although the Commission may reverse itself on issues, it should not do so without a rational explanation or facts that distinguished the present case from those it previously decided. *Id.*, citing *E. Shore Natural Gas Co. v. Pub. Serv. Comm'n*, 635 A.2d 1273, 1283 (Del. Super. 1993). On the facts presented here, Artesian concluded that there was no basis for this Commission to reverse its past acceptance of the Company's methodology. Artesian RB at 14.

153. The DPA opposed the Company's normalization process on several grounds. First, the DPA challenged Artesian's assertion that the Commission had endorsed Artesian's normalization methodology since the 1990s. The DPA observed that the first time the Commission addressed the revenue normalization methodology in a contested matter was in PSC Docket No. 04-42. It further observed that in PSC Docket No. 06-158, the settlement specifically required Artesian, Staff and the DPA to agree on an RFP for a consultant to examine Artesian's revenue normalization methodology. Finally, the DPA pointed out that

every other case until the current one had settled without the normalization issue being addressed. DPA AB at 10-13.

154. Second, the DPA argued that Artesian did not use the same methodology in this case as it had used in prior cases. *Id.* at 13. The DPA noted that in prior cases, the Company had used five years' worth of data, and the methodology that the independent consultant reviewed was a five-year normalization methodology. *Id.* In this case, however, Artesian had used only three years' worth of data. *Id.* The DPA pointed out that this difference was crucial in this case because the three years that Artesian used included two of the wettest years in Delaware history. *Id.* at 13-15. In addition, the DPA argued that the independent consultant had emphasized the importance of using a five-year methodology to reduce the variations in demand due to climate. *Id.* at 16, citing Ex. 85 at 9.

155. Third, the DPA contended that Artesian had failed to meet its burden of proof because the process employed by Artesian could not be replicated.[18] As DPA witness Watkins testified, he was trying to verify whether the Company's adjustments for particular customer "idiosyncrasies" (the Company's word) embedded in the program were appropriate - both as an issue (whether the particular adjustment was proper) *and* as a number (whether the amount of the adjustment was proper). Tr. at 632. A sample, according to Mr. Watkins, "would simply verify the exceptionally simple arithmetic espoused by Mr. Valcarenghi in his direct testimony." Ex. 17 (Watkins) at 17. Mr.

[18] In its post-hearing brief, Staff supported the position taken by the DPA, suggesting that any revenue adjustment should be verifiable by Staff or any third party. Staff AB at 9-12.

Watkins testified that a sample would not allow him to ascertain whether adjustments were appropriate unless every single one of the adjustments happened to be part of the sample. Tr. at 632. He further testified that in 34 years of examining utility revenue normalizations, he had never been unable to replicate how a utility derived its recommended revenue normalization adjustment. Ex. 17 (Watkins) at 1, 19. *See also* DPA AB at 16.

156. Fourth, the DPA observed that the Company had made all of the data supporting its cash working capital adjustment available even though that data had to be downloaded from the same mainframe computer as the revenue normalization data. DPA AB at 16. The DPA contended that nothing prevented Artesian from taking the revenue normalization information and transferring it into a PC-compatible format, as it did with its cash working capital data. The DPA argued that Artesian had produced no evidence to support its complaint that it would have been unduly burdensome to do so, noting that Mr. Spacht was not an IT expert, and Artesian did not present an IT witness to testify about the burden of doing so. *Id.* at 16-17.

157. Fifth, the DPA contended Artesian's claim that its method more closely approximated actual sales than the DPA's results was based on a different average and was an "apples to oranges" comparison. *Id.* at 18. The DPA contended that this fact was important because the three-year period that Artesian used in this case included two of the rainiest summers in Delaware history -- a fact that would reduce customers' actual water consumption and actual revenues for the Company. Exs. 58-60; Ex. 85 at 9 and Figure 4.2; Ex. 86 at Tab 17, p.

5 and Tab 19, p. 9. Had weather been normal, consumption would have been higher, and Artesian's method would likely have underestimated consumption. DPA AB at 18.

158. Finally, the DPA contended that its methodology was the same methodology that all of the other major utilities in Delaware used to normalize their revenues for ratemaking purposes. DPA AB at 2.

159. Hearing Examiner's Recommendation. The Hearing Examiner found the Company's normalization process reasonable and accepted it. HER at 49. He reasoned that since Artesian's program was approved in 2006, Artesian's revenues have closely tracked the revenues awarded by the Commission, particularly after the two most recent rate cases. *Id.* at 45, citing Ex. 21 (Valcarenghi-R) at 23; Artesian OB at 23.

160. Moreover, during the pendency of this case, according to the Hearing Examiner, Artesian's three-year results proved more accurate. He stated that Artesian's method overestimated sales (which was good for ratepayers) by $362,963, or by only 0.6% of the actual sales of $62,752,316. HER at 46. He also stated that DPA witness Watkins initially overestimated sales by $2.9 million, and then revised his estimate to an overestimation of $1.7 million. *Id.* Hence, Mr. Watkins' closest estimate was approximately five times less accurate than Artesian's estimate. *Id.* The Hearing Examiner concluded that Artesian's method was more accurate than the DPA's method. *Id.* at 46, citing Artesian RB at 21.

161. The Hearing Examiner did not find as persuasive the argument that the model previously approved by the Commission used a

five-year average, not a three-year average. HER at 48. The Hearing Examiner noted the Company had suggested that a change in the billing system in 2014 required use of only three years of customer information. *Id.* Furthermore, he also stated there was no legal requirement to use a five-year average as opposed to three. *Id.*

162. The Hearing Examiner also found unpersuasive the DPA and Staff's arguments that Artesian's model contained weather data for two of the three wettest summers in Delaware history, without normalization for aberrant weather. *Id.* Based on Artesian's press releases admitted into evidence, the Hearing Examiner concluded otherwise, finding that Artesian's three-year normalization period included only wet weather throughout "much of Summer 2013" and "from multiple tropical storms in Third Quarter 2011." *Id.*; Exs. 58, 59.

163. While Staff cited to Mr. Watkins' hearing testimony about 2014 weather, Artesian's normalization analysis relied on customer consumption for the 12-month periods ending December 31, 2011, December 31, 2012, and December 31, 2013, not 2014. HER at 48, citing Tr. at 698; Ex. 3 (Guastella) at 17. In fact, Mr. Watkins testified that 2014 weather was "immaterial because the Company and I were both using normalized revenues." HER at 48, citing Tr. at 638. Regardless of weather, the Hearing Examiner concluded that Artesian's program had proven accurate. HER at 49.

164. As noted by the Hearing Examiner, this is the last case in which Artesian will use this program since it is no longer viable. HER at 49, citing Tr. at 541-42.

165. Finally, to avoid encountering any data problems in the Company's next rate case, the Hearing Examiner recommended that the Commission order that, nine months from the date of the Commission's final order in this case, Artesian, Staff and the DPA report to Commission as to the status of Artesian's intended approach to normalization going forward. HER at 49.

166. Exceptions. The DPA filed exceptions to the Hearing Examiner's recommendations. According to the DPA, the Hearing Examiner incorrectly placed the burden of proof on the DPA (rather than on Artesian) to establish that its methodology was more accurate. DPA EB at 27-28. He argued that the Company did not use the previously approved methodology from prior cases; in prior cases it used five years' worth of data, but in this case it used only three years of data, and two of those years were two of the wettest in Delaware history. *Id.* at 29-31. Furthermore, the DPA argued that its expert witness claimed to have never had a problem verifying any other utility's revenue normalization methodologies and calculations and that in 34 years of examining utility revenue normalizations, Mr. Watkins had never been unable to replicate what a utility did to derive its recommended revenue normalization adjustment. *Id.* at 27.

167. The DPA again contended that the Company had exported data from that same mainframe computer for its cash working capital adjustment and had made that data available to the parties. *Id.* at 33. The DPA argued that since the Company controlled the filing of its rate case, it could have done the same thing with the data and formulas for its normalization adjustment. *Id.* The DPA noted that

Artesian had not supported its claim that to do so would have been unduly burdensome, because the only witness to testify on this issue was not an IT expert. *Id.* at 30. Furthermore, the DPA argued that a party whose manner of recordkeeping makes compliance with discovery obligations more burdensome or expensive cannot be heard to complain about it. *Id.* at 30-31, citing *Bayer Corporation v. United States*, 850 F. Supp. 2d 522 (W.D. Pa. 2012) and *Dunn v. Midwestern Indemnity*, 88 F.R.D. 191, 198 (S.D. Ohio 1980).

168. The DPA disputed the Hearing Examiner's finding that 2011 and 2013 were not abnormally wet. He contended that the Hearing Examiner had focused only on press releases noting the extremely rainy summer weather and had ignored Artesian's annual reports to stockholders for 2011 and 2013, in which it attributed its reduced annual revenues in 2011 and 2013 to extraordinarily bad weather. *Id.* at 34-35, citing Ex. 86, Tab 17 at p. 5 and Tab 19 at p. 9.

169. The DPA also contended that the independent consultant's study did not approve the methodology Artesian used in this case. DPA EB at 30. The DPA emphasized that the independent consultant reviewed a five-year normalization methodology and identified numerous references to the five-year method. *Id.* at 30-31.; Ex. 85 at i, 1, 4, 9, 14. Finally, the DPA pointed out that the independent consultant agreed that "using a five-year average is an acceptable approach, and is effective in reducing the variations in demand due to climate effects. … This approach usually reduces the annual consumption anomalies caused by weather - provided that the five-year period does

not include a prolonged dry or wet spell, such as a three-day dry period." DPA EB at 30; Ex. 85 at 9.

170. The DPA also argued that the facts did not support the Hearing Examiner's finding that Artesian's methodology was more accurate, because all of those results derived from a five-year average revenue normalization methodology, not the three year average that the Company used here. DPA EB at 30. The DPA noted that a five-year average "usually reduces the annual consumption anomalies caused by weather - provided that the five-year period does not include a prolonged dry or wet spell, such as a three-day dry period." *Id.*, citing Ex. 85 at 9. The DPA reiterated that the three-year average used here reflects reduced consumption during two of the rainiest summers in Delaware history. Had weather been normal in 2011 and 2013, consumption would have been higher, and Artesian's method would have underestimated consumption. DPA EB at 36-37. Finally, the DPA argued the Hearing Examiner's recommendation that the parties report back on Artesian's new revenue projection program in nine months provided no basis for accepting the Company's revenue normalization in this case. *Id.* at 37-38.

171. In response, Artesian raised the same four points that it had raised in post hearing briefing: (1) the Commission has previously rejected the exact objection that the DPA raises in this case - that it cannot replicate every calculation that Artesian's normalization method made; (2) the parties retained an independent consultant in 2006 and that consultant's conclusion was that the program was "sophisticated," "detailed," and "accurate and effective

for purposes of predicting test year residential water consumption;" (3) the purported issue of three years' worth of data versus five years' worth was a red herring, because the data is not the method, and the DPA's own expert also used three years' worth of data without any concern that the result would be inaccurate or unreliable; and (4) comparing the projections that Artesian's normalization methodology calculated over a period of eight years with actual sales, Artesian's methodology was demonstrably accurate and conservative, usually projecting sales in a manner that was beneficial for customers. Tr. at 967-77. Artesian noted that its method generated a significantly more accurate projection during the pendency of this proceeding than the DPA's methodology. *Id.* at 990-91.

172. Discussion and Decision. The issue raised here is a troubling one for the Commission to resolve. By statute the DPA is entitled to audit the books and records of any utility subject to our jurisdiction. 29 *Del. C.* § 8716(e)(5). The evidence presented here is that the revenue model used by the Company could be sampled, but not replicated. Thus, a thorough review of the adjustments to revenue that the Company made as part of its application for rate relief could not be duplicated or reviewed in the detail requested by the DPA.

173. As the DPA pointed out, the burden of proof in this case rests on the Company to establish the accuracy of its adjustments. 26 *Del. C.* § 307. Here, the Company presented evidence that the revenue model has in the past produced accurate results and although old (20 years), it continues to do so. In addition, this model will not be used in future rate cases filed by Artesian. The Hearing Examiner

relied on these factors in reaching his recommendation that the model be used in this case to calculate pro forma revenues. In addition, as the Hearing Examiner pointed out, the DPA revenue adjustments, when compared to the Company's adjustments, appeared less accurate. HER at 46.

174. Although we recognize there is a difference between three years and five years of data, we find that the record supports the Hearing Examiner's recommendation to apply the Company's normalization method in this proceeding. Artesian's methodology, using five years' worth of data, has been accepted by this Commission in a past rate case, it has been favorably assessed by an independent consultant, and its projections have proven remarkably accurate over a meaningful period of years. Its acceptance in this proceeding, however, is given with the understanding that the Company will not use the same normalization program in future rate proceedings.

175. We agree with Staff and DPA that they should be able to replicate the Company's normalization calculations. The Company testified it did not know how it would approach normalization in the future. If it designs a program, the program's calculations must be replicable. Accordingly, we will also adopt the Hearing Examiner's recommendation that Artesian, Staff and the DPA report to the Commission on this issue within nine months from the date of this order. (Unanimous).