1	**I. INTRODUCTION**
2	**Q. Please state your full name.**
3	A. My name is J. Randall Woolridge.
4	**Q. By whom are you employed and what is your business address?**
5	A. I am a Professor of Finance and the Goldman, Sachs & Co. and Frank P. Smeal
6	Endowed University Fellow in Business Administration at the University Park
7	Campus of Pennsylvania State University. I am also the Director of the Smeal
8	College Trading Room and President of the Nittany Lion Fund, LLC. A summary
9	of my educational background, research, and related business experience is
10	provided in Appendix A.
11	
12	**Q. What is the purpose of your testimony in this proceeding?**
13	A. I have been asked by the Staff of the New Hampshire Public Utilities Commission to
14	provide an approach to estimating a generic cost of equity capital or return on equity
15	("ROE") for New Hampshire water utilities. I also provide an assessment of the
16	geneic ROE testimony of Ms. Pauline M. Ahern.
17	
18	**Q. What guidelines have you followed in your generic ROE analysis?**
19	A. With several caveats, I have used the following guidelines as specified by PUC
20	610.03:
21	(1) I have employed the DCF model, which is based on the concept that stockholders
22	value a share of stock at the present value of the expected cash flow from that share

1

1   of stock, and that cash flow will grow at the same rate from the present to

2   perpetuity;

3   (2) I have used several different proxy groups of water companies which come from

4   the most current issue of the *Value Line Investment Survey* that have consistent

5   data for at least a 10-year period of time. Consistent with PUC 610.03, these

6   include a group of non-California water utilities ("Water Proxy Group III");

7   (3) For the purposes of this section, cash flow shall be measured using both dividends

8   and earnings, with a 3:1 weighting of dividends to earnings, reflecting the view

9   that investors discount that which they receive, but are also concerned with the

10   source of the cash flow. I show the ROE results using both historical and projected

11   growth rates, as well as using only projected growth rates;

12   (4) For comparison purposes, I have provided the authorized ROEs for water utilities

13   as well as electric utilities and gas distribution companies. I show that these

14   authorized ROEs have declined over the years with the decline in interest rates and

15   capital costs; and

16   (5) I also provide, for comparison purposes, a New Hampshire Risk Premium study

17   in which I show the average premium awarded in New Hampshire for water

18   companies over the thirty-year Treasury yield for the past five years.

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1	**II. NEW HAMPSHIRE GENERIC ROE STUDY**
2	
3	**Q. Please describe the publicly-traded water companies covered by *Value Line*.**
4	A. There are nine publicly-traded water utility companies covered by the *Value Line*
5	*Investment Survey* that have been covered for at least five years.[1] The companies
6	include American States Water Company, American Water Works, Aqua
7	America, Artesian Resources, California Water Company, Connecticut Water
8	Company, Middlesex Water Company, SJW Corp, and York Water Company.
9	Summary financial statistics for these companies are provided on page 1 of
10	Exhibit JRW-1. The median operating revenues and net plant for these companies
11	are $339.7 million and $1,172.9 million, respectively. The group receives, on
12	average, 92% of revenues from regulated water operations, and has an 'A' average
13	issuer credit rating from S&P, a median common equity ratio of 50.2%, and a
14	median earned return on common equity of 10.2%.
15	
16	**Q. Please review the investment risk of the publicly-traded water companies as**
17	**indicated by the various risk metrics published by *Value Line Investment***
18	***Survey?***
19	A. On page 2 of Exhibit JRW-1, I assess the riskiness of the water companies using
20	five different risk measures: Beta, Financial Strength, Safety, Earnings
21	Predictability, and Stock Price Stability. The risk measures comparisons for the

---

[1] *Value Line* recently added Consolidated Water and Global Water Resources but these companies have limited data and do not distribute water in the U.S.

1   water companies are: Beta (0.71), Financial Strength (B++) Safety (2.7), Earnings

2   Predictability (79 out of 100), and Stock Price Stability (79 out of 100). Overall,

3   these risk measures suggest that the investment risk of the water companies is

4   relatively low.

5

6   **Q. Please describe your three proxy groups.**

7   A. I have provided an analysis of three water proxy groups: (1) Water Proxy Group I

8   includes eight of the nine *Value Line* water companies. The only company

9   excluded is Artesian Water Company ("ARTNA"). It is excluded because there

10   is no projected *Value Line* data: (2) Water Proxy Group II includes six companies.

11   In addition to excluding ARTNA, it also excludes SJW Corporation ("SJW") and

12   Connecticut Water Service Group ("CTWS") since they are involved in a merger.

13   Water Proxy Group III excludes ARTNA, SJW, CTWS, as well as water

14   companies based in California (American States Water Company ("AWR") and

15   California Water Company ("CWT"). I have not excluded American Water

16   Works, which is the largest U.S. water company but does have operations in

17   California as well as 30 other states.

18

19   **Q. What caveats do you have with the Commission's Generic ROE Approach?**

20   A. There are several issues with applying the approach. First, there are data limitations,

21   which complicate applying the generic ROE approach for water utilities: (1) there

22   are a relatively small number of publicly-traded water utilities; (2) the analyses used

23   here only employs data from *Value Line*. Some of the water companies do have long-

4

1   term projected EPS growth rate forecasts from Wall Street analysts as published by

2   Yahoo Finance, Zacks, and Reuters. However, since water utilities are relatively

3   small and are not widely covered by investment firms and analysts, there are very

4   few forecasts available of water utility earnings and dividends. In addition, there are

5   some inconsistencies with the analysts' forecast data that is available; (3) Since water

6   companies are relatively small, there is a question as to whether a small company

7   risk premium is required? And (4) How do the results from the generic ROE

8   approach compare to the authorized ROEs for water utility companies as well as to

9   the risk premium indicated by past New Hampshire water utility ROE decisions?

10   These are discussed in more detail later in this testimony.

11

12   Q. **What dividend yields have you reviewed?**

13   A. I have calculated the dividend yields for the companies in the three water groups

14   using the current annual dividend and the 30-day average stock prices. These

15   dividend yields are provided on page 2 of Exhibit JRW-2. For the three groups,

16   . using the 30-day average stock price, the average annual dividend yields are

17   2.23%, 2.22%, and 2.29%.

18

19   Q. **Pease discuss the appropriate adjustment to the spot dividend yield.**

20   A. According to the traditional DCF model, the dividend yield term relates the

21   dividend paid over the coming period to the current stock price. As indicated by

22   Professor Myron Gordon, who is commonly associated with the development of

23   the DCF model for popular use, this is obtained by: (1) multiplying the expected

5

1 dividend over the coming quarter by 4, and (2) dividing this dividend by the

2 current stock price to determine the appropriate dividend yield for a firm that pays

3 dividends on a quarterly basis.[2]

4 In applying the DCF model, some analysts adjust the current dividend for

5 growth over the coming year as opposed to the coming quarter. This can be

6 complicated because firms tend to announce changes in dividends at different

7 times during the year. As such, the dividend yield computed based on presumed

8 growth over the coming quarter as opposed to the coming year can be quite

9 different. Consequently, it is common for analysts to adjust the dividend yield by

10 some fraction of the long-term expected growth rate.

11

12 **Q. Given this discussion, what dividend yield adjustment are you using?**

13 A. I adjust the dividend yield by one-half (1/2) of the expected growth so as to reflect

14 growth over the coming year. This is the approach employed by the Federal Energy

15 Regulatory Commission ("FERC").[3] The DCF equity cost rate ("K") is computed

16 as:

17 $$K = [\,(D/P) * (1 + 0.5g)\,] + g$$

18

19 **Q. Please summarize the historic and projected growth rates for the water**

20 **companies as published by _Value Line_.**

---

[2] _Petition for Modification of Prescribed Rate of Return_, Federal Communications Commission, Docket No. 79-05, Direct Testimony of Myron J. Gordon and Lawrence I. Gould at 62 (April 1980).
[3] Opinion No. 414-A, _Transcontinental Gas Pipe Line Corp._, 84 FERC ¶61,084 (1998).

1   A. The 10-year and 5-year historic earnings per share ("EPS"), dividends per share

2   ("DPS"), and book value per share ("BVPS") growth rates from *Value Line* are

3   provided on page 3 of Exhibit JRW-2. The mean 10-year/5-year EPS and DPS

4   growth rates of the *Value Line* Water Companies are 7.0/8.7% and 4.1%/5.2%,

5   respectively

6   The projected EPS and DPS growth rates from *Value Line* are provided on

7   page 4 of Exhibit JRW-2. These growth rates represent the projected growth from

8   a three-year base period of 2015 to 2017 to a three-year future period from 2021

9   to 2023. The mean EPS and DPS growth rates of the *Value Line* Water Companies

10   are 8.0% and 7.6%, respectively

11

12 **Q. What DCF growth rate have you used for the Water Proxy Groups?**

13 A. I have presented the DCF growth rate results on page 5 of Exhibit JRW-2. Panel

14   A provides the growth rate results for the three proxy groups where I have

15   averaged the historic and projected EPS and DPS growth rates. In other words, I

16   gave 50% weight each to the historic and projected growth rates. Panel B shows

17   only the projected EPS and DPS growth rates. In both panels, I initially average

18   the mean EPS and DPS growth rates for the three groups from *Value Line.* I then

19   give 75% weight to the mean *Value Line* DPS growth rate and 25% to the mean

20   EPS growth rate for each group. With 50%/50% historic and projected growth

21   rates, the resulting DCF growth rates for Water Proxy Groups I, II, and III are

22   6.3%, 7.7%, and 6.3% as shown in Panel A. Using only the projected growth rates,

7

1   as provided in Panel B, the DCF growth rates for Water Proxy Groups I, II, and

2   III are 7.7%, 8.0%, and 8.3%

3

4   **Q. What are the results from your application of the DCF model?**

5   A. My DCF-derived equity cost rate for the group are summarized on page 1 of

6   Exhibit JRW-2 and in Tables 1 and 2 below.

7   **Table 1**
8   **50% VL Historic EPS/DPS Growth and 50% VL Projected EPS/DPS Growth**
9   **DCF-derived Equity Cost Rate/ROE**

	Dividend Yield	1 + ½ Growth Adjustment	DCF Growth Rate	Equity Cost Rate
Water Group I	2.23%	1.0314	6.25%	8.55%
Water Group II	2.22%	1.0373	7.46%	9.77%
Water Group III	2.29%	1.0318	6.35%	8.71%
Mean				9.01%

10

11   **Table 2**
12   **100% VL Projected EPS/DPS Growth**
13   **DCF-derived Equity Cost Rate/ROE**

	Dividend Yield	1 + ½ Growth Adjustment	DCF Growth Rate	Equity Cost Rate
Water Group I	2.23%	1.0386	7.64%	9.95%
Water Group II	2.22%	1.0398	7.96%	10.27%
Water Group III	2.29%	1.0413	8.25%	10.64%
Mean				10.31%

14

15   The results for the three proxy groups indicate DCF equity cost rates using the

16   PUC 610.03 range from 8.55% to 9.77% with a mean of 9.01% using the average

17   of historical and projected DPS and EPS growth rates and from 9.95% to 10.64%

18   with a mean of 10.28% using only projected DPS and EPS growth rates.

8

1 **Q. Please provide some insights into the data and other issues with your generic**

2 **ROE analysis?**

3 A. There are a number of problems with the data as well as other issues in the generic

4 DCF application. These include:

5 1. There are a limited number of publicly-traded water utilities, and so the PUC

6 610.03 Water Group is a relatively small number of water companies;

7 2. Water utilities are relatively small and are not widely covered by investment firms

8 and analysts, and therefore there are very few forecasts available of water utility

9 earnings and dividends;

10 3. Due to the small number of water companies available, I have provided analyses

11 including and excluding Connecticut Water Company and SJW Corp, who are in the

12 process of merging;

13 4. As a DCF growth rate, I have provided two alternative DCF analyses employing

14 data from *Value Line*. The first DCF analysis uses the average of historical and

15 projected DPS and EPS growth rates and the second DCF analysis uses only

16 projected DPS and EPS growth rates. *Value Line* provides a consistent source of

17 data for water companies to use to perform a generic ROE analysis;

18 5. *Value Line* is the only source that provides projections of DPS;

19 6. The projected growth rates from *Value Line* and those from Yahoo, Zacks, and

20 Reuters measure expected EPS growth over different time periods. *Value Line*

21 measures projected growth from a base 3-year period (2015-2017) to a future 3-

22 year period (2021-2023). Yahoo, Zacks, and Reuters measure expected EPS

23 growth from the current year to the next three-to-five years. As such, the growth

9

1   rates measure expected growth over different time periods. In addition, *Value*

2   '*Line*'s expected growth rates can be impacted if the base years (2015-17) include

3   either abnormally high or low DPS or EPS; and

4   7. Yahoo, Reuters, and Zacks do not provide EPS growth rate projections for all eight

5   water companies covered by *Value Line*.

6   **Q. Has the Commission provided any guidance on ROE analysis relating to New**

7   **Hampshire water companies?**

8   A. Yes, the Commission has discussed its preferred methodology on determining

9   water utility cost-of-capital in a number of prior orders. Excerpts follow.

1 "The Commission follows the traditional approach of relying primarily on the

2 DCF model and using other valid methods as a check on the reasonableness of the

3 DCF result. Aquarion Water Company of New Hampshire, Inc., Order No. 25,539 at

4 17 (June 28 2013) citing EnergyNorth Natural Gas, Inc. d/b/a National Grid NH, Order

5 No. 24,972, 94 NH PUC 256, 285 (2009). Further, "over the years the Commission

6 has not relied exclusively on analysts' forecasted earnings per share but instead has

7 considered those forecasts among a mix of measures of growth." Id. at 18. The New

8 Hampshire Commission has consistently rejected the application of risk premiums by

9 water companies based upon their small size. See e.g. Aquarion Water Company at

10 20 (Commission rejected an increase of 0.40 percent to the DCF results for business

11 risk of a small water company); Southern New Hampshire Water Company, Order No.

12 20,196 at 28 (July 29, 1991) (Commission rejected a risk premium for the water

13 company's small size); and Pennichuck Water Works, Inc., Order No. 17,911

14 (October 18, 1985), 70 NH PUC 850, 863 (Commission rejected an increase of 0.50

15 percent to the DCF results for water company's small size).

16

17 **III. AUTHORIZED ROES FOR WATER UTILITY COMPANIES**

18

19 **Q. Pease provide evidence on average authorized ROEs for regulated utility**

20 **companies in the U.S.?**

21 A. Figure 1 shows the average authorized ROEs for electric, gas, and water utility

22 companies over the past ten years.[4] Authorized ROEs for the three groups of utilities

---

[4] The Staff of the New Hampshire Public Utility Commission subscribes to *Regulatory Focus*,

11

	have declined with interest rates and capital costs over this time. These data run
1	
2	through the first half of 2018. The average authorized ROEs for electric and gas
3	companies in the first half of 2018 were 9.58% and 9.55%, respectively. These were
4	slightly below the average authorized ROE for electric utility and gas companies in
5	the calendar year 2017, which were 9.68% and 9.72%, respectively. The average
6	authorized ROE for water utilities also declined slightly to 9.41% for the first half of
7	2018 versus 9.56% for calendar year 2017. The average ROE for water utilities
8	dipped primarily because the California Public Utility Commission issued decisions
9	for California Water Service Company, California American Water Company,
10	Golden State Water Company, and San Jose Water Company. The ROEs for these
11	four companies range from 8.90% to 9.20%.

1 have declined with interest rates and capital costs over this time. These data run

2 through the first half of 2018. The average authorized ROEs for electric and gas

3 companies in the first half of 2018 were 9.58% and 9.55%, respectively. These were

4 slightly below the average authorized ROE for electric utility and gas companies in

5 the calendar year 2017, which were 9.68% and 9.72%, respectively. The average

6 authorized ROE for water utilities also declined slightly to 9.41% for the first half of

7 2018 versus 9.56% for calendar year 2017. The average ROE for water utilities

8 dipped primarily because the California Public Utility Commission issued decisions

9 for California Water Service Company, California American Water Company,

10 Golden State Water Company, and San Jose Water Company. The ROEs for these

11 four companies range from 8.90% to 9.20%.

12   **Table 3**
13   **Average Authorized ROEs for**
14 **Electric Utility, Gas Distribution, and Water Utility Companies**

	Electric Utility	Gas Distribution	Water Utility
2017	9.68	9.72	9.56
2018	9.58	9.55	9.41
Mean	9.63	9.64	9.48

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published by Regulatory Research Associates ("RRA"). RRA follows rate case activity nationwide and publishes authorized ROEs for electric utilities and gas and water companies on a quarterly basis.

Figure 1
Authorized ROEs for Electric Utility, Gas Distribution, and
Water Utility Companies
2007-2018
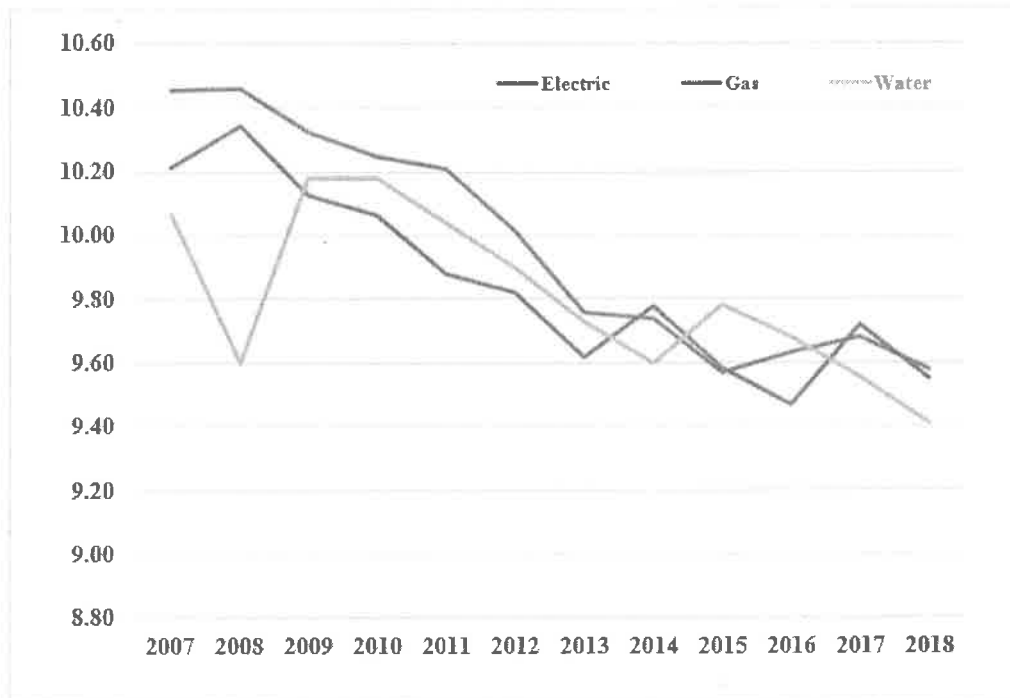
Source: Regulatory Research Associates, 2018.

Q. Are you aware of any other published authorized ROEs for regulated water

utility companies?

A. Yes. I am aware that American Water Works regularly provides the current

authorized ROEs for its operating subsidiaries in different states in the company's

SEC 10-K reports as well as in presentations to analysts. These presentations are

updated occasionally and are available on the company's website.

(http://ir.amwater.com/archived-presentations). The current indicated authorized

ROEs for ten state operating subsidiaries are provided in Exhibit JRW-3. In the

13

1   seven states with an order indicating an approved return, the average was 9.54%

2   with a 48.5% common equity ratio.

3

4   **III. NEW HAMPSHIRE RISK PREMIUM STUDY**

5   **Q. Please discuss your New Hampshire Risk Premium study.**

6   A. To assess the current results of the generic DCF ROE approach to past New

7   Hampshire water utility ROE decisions, I have performed a study of the risk

8   premium provided in the water utility decisions over the past five years. The risk

9   premium is defined as the water utility authorized ROE minus the average yield

10   on thirty-year Treasury yields over the 30 days prior to the order date.

11   **Q. What previous water utility authorized ROEs have you used in your study?**

12   A. Page 1 of Exhibit JRW-4 provides the order date, Docket No., authorized ROE,

13   water utility, and number of customers for the water utility ROE cases over the

14   past five years (2013-2018). There are ten water rate cases in the study.

15   **Q. Please discuss your New Hampshire Risk Premium study.**

16   A. Page 2 of Exhibit JRW-4 provides the results of the risk premium study. Panel A

17   shows the implied current authorized ROE. It is the sum of the average 30-day

18   yield on thirty-year Treasury bonds (3.01%) plus the average risk premium

19   (6.43%), which is 9.43%. The average risk premium of 6.43% is calculated in

20   Panel B. This figure represents the average authorized ROE for the water utility

14

1 cases in New Hampshire over the 2013-2018 time period minus the concurrent

2 average 30-day yield on thirty-year Treasury bonds.

3

4 **IV. Summary of Generic Water Utility ROEs**

5 **Q. Please provide a summary of your generic water utility ROEs.**

6 A. My generic ROEs and ROE indicators are summarized in Table 4.

7 **Table 4**
8 **Generic Water Utility ROEs and Water Utility ROE Indicators**

Generic DCF Study	Average (VL Growth Rates)	9.01%
NH Risk Premium Study	Water Cases (2013-18)	9.43%
Water Authorized ROEs	Average - 2017-18	9.48%
AWK Authorized ROEs	Average Reported - 6/18	9.54%

9
10 **Q. Please summarize your overall recommended generic ROE approach for**

11 **small water companies.**

12 A. I have generally followed guidelines specified by PUC 610.03 to establish a generic

13 ROE approach. I have used the DCF approach and weighted DPS growth more

14 than EPS growth. I have given 50%/50% weight to historic and projected growth

15 rates. I have also provided ROE indicators, including a NH risk premium study as

16 well as the authorized ROEs for water utility companies nationally as well as those

17 for subsidiaries of American Water Works. My generic DCF approach points to

18 a ROE of 9.01%, which is 40 to 50 basis points below the other indicators.

19 However, this ROE is above the generic DCF ROE of Ms. Ahern, which is 8.73%.

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21
22
23 **IV. Response to Companies Proposed Generic ROE analysis**

15

1   **Q. Please review the water companies generic ROE proposal.**

2   A. Ms. Pauline Ahern provides testimony on behalf of Abenaki Water Company

3   ("AWC"), Hampstead Water Co., Inc. ("HAWC") and Lakes Region Water Co.,

4   Inc. ("LRWC"). She performs DCF and CAPM studies to estimate a base water

5   company ROE, and then proposes a small size premium to reflect the smaller size

6   of the Companies relative to any company or group of companies upon

7   whose authorized or estimated market based ROE are to be based. In addition, Ms.

8   Ahern proposes a generic ROE methodology for the consideration of the New

9   Hampshire Public Utility Commission to be used to determine authorized ROEs

10   for the Companies. She also discusses the Massachusetts ("MA") and

11   Connecticut ("CT") generic methodologies for determining authorized ROEs for

12   the Companies. Finally, she has proposed ROEs for each of the Companies based

13   upon her proposed generic ROE formula as well as the MA and CT generic ROE

14   formulas.

15

16   **Q. Please review Ms. Ahern's proposed ROEs for the Companies.**

17   A. Ms. Ahern's Proposed ROEs for the Companies are provided in Exhibit JRW-5.

18   These results are summarized below:

19
20
21

Table 5
ROE Recommendations for the Companies

Abenaki Water Company	Low Size Risk Premium	High Size Risk Premium
Proposed generic ROE formula	13.30%	15.96%
Hampstead Area Water Co.	**Low Size Risk Premium**	**High Size Risk Premium**

16

Proposed generic ROE formula	17.33%	21.06%
Lakes Region Water Co.	**Low Size Risk Premium**	**High Size Risk Premium**
Proposed generic ROE formula	12.70%	14.93%

1

2   Ms. Ahern proposes that the NH PUC adopt her version of the Florida Public

3   Service Commission's ("FLPSC") generic ROE formula which was established in

4   1988 to establish, on an annual basis, a range of ROEs for water and wastewater

5   utilities. The Florida model uses DCF and CAPM analyses and include several

6   adjustments, including a flotation cost adjustment of 4%. Ms. Ahern also provides

7   estimates of ROEs for the Companies using her version of the CT and MA generic

8   ROE analyses.

9   With respect to the FLPSC DCF, she proposes the constant growth single-stage

10   DCF model using forecasted growth in earnings per share ("EPS") as the growth

11   rate component, and 60-trading days of market prices to develop the dividend yield

12   component. The FLPSC formula also relies upon a CAPM which uses an expected

13   return for the companies followed by *Value Line* as the market return and a

14   projected yield on 30-year U.S. Treasury bonds from *Blue Chip Financial*

15   *Forecasts* ("Blue Chip") in estimating the market equity risk premium. However,

16   Ms. Ahern proposes to include four different market equity risk premiums

17   ("MERPs"). These include two MERP studies based on long-term arithmetic mean

18   historical MERP from 1926 - 2016 using *Duff & Phelps* annual stock and bond

19   returns. Her other proposed MERP studies use *Value Line*'s expected median

20   price appreciation potential and dividend yield 3-5 years hence and an expected

1   return on the S&P 500 Composite Index as a proxy for the market, respectively,

2   minus Blue Chip's projected yield on 30-year U.S. Treasury bonds. The FLPSC

3   staff's application of the CAPM also uses adjusted betas as published by *Value*

4   *Line*. And while the FLPSC relies exclusively upon the traditional CAPM, Ms.

5   Ahern proposes including an Empirical CAPM ("ECAPM").

6   The FLPSC approach then adjusts the average results of the DCF and CAPM

7   by adding a bond yield differential, currently 0.63% (63 basis points) as estimated

8   by Ms. Ahern, to reflect the difference in yields between A (S&P) / A2 (Moody's),

9   the average bond rating of the Water Utility Group, and BBB- (S+P) / Baa3

10   (Moody's), the assumed bond rating of the Florida water and wastewater utilities.

11   Ms. Ahern proposes to retain this adjustment since she believes that the bonds of

12   water and wastewater utilities of the size of the Companies are likely to be rated

13   at the bottom of investment grade. The FLPSC approach also adds a private

14   placement premium of 0.50% (50 basis points) to reflect the yield on publicly

15   traded debt and privately placed debt. This premium is compensation for the lack

16   of liquidity of privately placed debt. Ms. Ahern proposes to retain this adjustment

17   as well, because neither AWC, HAWC, nor LRWC place debt publicly.

18   The FLPSC also adds a small utility risk premium of 0.50% (50 basis points)

19   because the average Florida water and wastewater utility is too small to even

20   qualify for privately placed debt. Ms. Ahern proposes to greatly increase the small

21   utility risk premiums for each of the Companies, i.e., 2.64% - 5.27% for AWC,

22   2.30% - 4.59% for HAWC, and 2.23% - 4.46% for LRWC. According to the

23   FLPSC approach, the bond yield, private placement, and size premium

18

1   adjustments are added to the average DCF and CAPM results. This produces a

2   range of ROEs applicable to a range of common equity ratios between 40.0% and

3   100.0%, which is estimated to be the by the average common equity ratio of the

4   Water Utility Group by the FLPSC Staff. The FLPSC staff then makes adjustment

5   for financial risk for common equity rations below 40% to account for the

6   relationship between leverage and financial risk.

7

8   **Q. What are your primary issues with the FLPSC generic ROE approach for**

9   **water and wastewater utilities?**

10   A. My primary areas of disagreement in measuring the FLPSC approach include: (1)

11   with respect to the DCF analysis, the growth rate is based solely on the upwardly

12   biased projected EPS growth rate forecasts of Wall Street analysts and excludes

13   other measures of growth; (2) with respect to the CAPM, the risk-free rate uses

14   economists' forecasts of interest rates and the market risk premium ("MRP") is

15   based on expected market returns and projected EPS growth rates that are not

16   realistic given current market conditions; and (3) there is no evidence that the

17   adjustments for credit risk, private placements, size premiums, and flotation costs

18   are needed.

19

20   **Q. Have Ms. Ahern's adjustments to the FLPSC's generic ROE approach**

21   **inflated the ROE results?**

22   A. Yes. Her adjustments have inflated the FLPSC generic ROE results in several

23   ways: (1) in the CAPM, she has used the ECAPM, an ad-hoc version of the original

1   model, and has employed several overstated measures of the MRP; and (2), most

2   significantly, she has made grossly overstated small firm risk premiums that result

3   in highly inflated ROEs.

4

5   Q. **What are Ms. Ahern's base line ROEs results for her water utility group?**

6   A. Ms. Ahern's base line ROE results using her DCF and CAPM approaches are

7   provided in the table below:

8   **Table 6**
9   **DCF and CAPM Base Line Results**

	Water Utility Group
DCF	8.73%
CAPM	9.78%
Average	9.26%

10

11   Q. **What are the primary reasons that Ms. Ahern's recommended ROE results**

12   **from Table 6 are so much higher than her base line ROE results in Table 6?**

13   A. The primary reason that her recommended ROEs are so much higher that her base

14   line results are: (1) the unnecessary FLPSC adjustments that she makes, including

15   the bond rating (63 basis points), private placement (50 basis points), and flotation

16   cost adjustments (20 basis points); and (2) most significantly, her grossly

17   overstated small firm risk premiums, which range from 2.23% to 5.47%.

18

19   Q. **Why are the bond rating, private placement, and flotation cost adjustments**

20   **unnecessary?**

21   A. In any utility rate proceeding, it is responsibility of the utility to demonstrate that

20

1   it has incurred expenses or costs if it expected to recover these costs from rate

2   payers. Ms. Ahern has not provided any evidence that the Companies have

3   incurred cost for bond ratings, private placements, and/or flotation costs.

4   Therefore, the Companies should not be able to collect these adjustments in the

5   form of a higher ROE and therefore higher rates to customers.

6

7   **Q. Please summarize Ms. Ahern's small firm risk premiums?**

8   A. As noted, Ms. Ahern's small firm risk premiums range from 2.23% to 5.47%.

9   These are calculated based on the historical stock return study published by *Duff*

10   *& Phelps*. In their annual study of returns, *Duff & Phelps* compute the long-term

11   stock returns (1926-2016) for ten deciles of stocks (Based on size, from large to

12   small) contained in the New York Stock Exchange (NYSE), the NYSE Amex

13   (AMEX) and the Nasdaq National Market (NASDAQ). They then computed the

14   realized annual market returns for the 10 deciles from 1926 – 2016. Ms. Ahern's

15   size premiums are then based on the higher stock returns calculated as the

16   arithmetic mean market equity risk premiums for each decile for 1926 - 2016

17   minus the arithmetic mean income return on long-term U.S. government bonds.

18

19   **Q. What are the issues with calculating small firm risk premiums using historic**

20   **stock and bond returns?**

21   A. As discussed in Appendix B, there are numerous errors in using historical market

22   returns to compute risk premiums. These errors provide inflated estimates of

23   expected risk premiums. Among the errors are survivorship bias (only successful

21

1   companies survive – poor companies do not survive) and unattainable return bias

2   (the Ibbotson procedure presumes monthly portfolio rebalancing). The net result

3   is that Ibbotson's size premiums are poor measures for risk adjustment to account

4   for the size of the Utility.

5   In addition, Professor Annie Wong has tested for a size premium in utilities

6   and concluded that, unlike industrial stocks, utility stocks do not exhibit a

7   significant size premium.[5] As explained by Professor Wong, there are several

8   reasons why such a size premium would not be attributable to utilities. Utilities are

9   regulated closely by state and federal agencies and commissions, and hence, their

10 financial performance is monitored on an ongoing basis by both the state and federal

11 governments.   In addition, public utilities must gain approval from government

12 entities for common financial transactions such as the sale of securities. Furthermore,

13 unlike their industrial counterparts, accounting standards and reporting are fairly

14 standardized for public utilities.   Finally, a Company's earnings are predetermined

15 to a certain degree through the ratemaking process in which performance is reviewed

16 by state commissions and other interested parties. Overall, in terms of regulation,

17 government oversight, performance review, accounting standards, and information

18 disclosure, utilities are much different than industrials, which could account for the

19 lack of a size premium.

20

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[5] Annie Wong, "Utility Stocks and the Size Effect: An Empirical Analysis," *Journal of the Midwest Finance Association*, pp. 95-101, (1993).

1   **Q. Please discuss other research on the size premium in estimating an equity cost**

2   **rate.**

3   A. As noted, there are errors in using historical market returns to compute risk

4   premiums. With respect to the small firm premium, Richard Roll (1983) found that

5   one-half of the historic return premium for small companies disappears once biases

6   are eliminated and historic returns are properly computed. The error arises from

7   the assumption of monthly portfolio rebalancing and the serial correlation in

8   historic small firm returns.[6]

9   In another paper, Ching-Chih Lu (2009) estimated the size premium over the

10   long-run.[7] Lu acknowledges that many studies have demonstrated that smaller

11   companies have historically earned higher stock market returns. However, Lu

12   highlights that these studies rebalance the size portfolios on an annual basis. This

13   means that at the end of each year the stocks are sorted based on size, split into

14   deciles, and the returns are computed over the next year for each stock decile. This

15   annual rebalancing creates the problem. Using a size premium in estimating a

16   CAPM equity cost rate requires that a firm carry the extra size premium in its

17   discount factor for an extended period of time, not just for one year, which is the

18   presumption with annual rebalancing. Through an analysis of small firm stock

19   returns for longer time periods (and without annual rebalancing), Lu finds that the

[6] *See* Richard Roll, "On Computing Mean Returns and the Small Firm Premium," *Journal of Financial Economics*, pp. 371-86, (1983).
[7] Ching-Chih Lu, "The Size Premium in the Long Run," 2009 Working Paper, SSRN abstract no. 1368705.

23

1   size premium disappears within two years. Lu's conclusion with respect to the

2   size premium is:[1]

3   However, an analysis of the evolution of the size premium will
4   show that it is inappropriate to attach a fixed amount of
5   premium to the cost of equity of a firm simply because of its
6   current market capitalization. For a small stock portfolio
7   which does not rebalance since the day it was constructed, its
8   annual return and the size premium are all declining over years
9   instead of staying at a relatively stable level. This confirms that
10   a small firm should not be expected to have a higher size
11   premium going forward merely because it is small now.

12

13   **Q. How does Standard & Poor's stand on this issue with respect to water**

14   **companies?**

15   A. Standard & Poor's released a report and addressed the issue of water company size

16   and risk. The Standard & Poor's publication indicated the following.[8]

17   Our criteria revision reflects our view that for general
18   obligation ratings, a small and/or rural issuer does not
19   necessarily have what we consider weaker credit quality
20   than a larger or more-urban issuer. Although we assess
21   these factors in our credit analysis for some revenue bond
22   ratings, we believe many municipal systems still exhibit,
23   in our view, strong and stable credit quality despite size
24   or location constraints. While we believe that smaller or
25   rural utility systems may not necessarily benefit from the
26   economies of scale that can lead to more-efficient
27   operations or lower costs, in our view, they can still
28   have affordable rates, even in places with less-than-
29   favorable household income and wealth levels.

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[8] Standard & Poor's, "26 Waste Water and Sewer Issuers are Upgraded on Revised Criteria," January 12, 2009.

24

1

Q. Are Ms. Ahern's ROE recommendations using the FLPSC generic ROE

formula similar to those provided water utilities in the state of Florida?

A. No.   Exhibit JRW-6 provides the ROE decisions in Florida for water and

wastewater utilities over the past five years.   These include the financial risk

adjustment as described by Ms. Ahern.   As shown, none of the water utilities

authorized ROEs approach Ms. Aherns's recommended ROE for the Companies.

This is primarily because of her grossly overstated size premium. Florida includes

a size premium of only 50 basis points. In Appendix C, I have provided the current

order approving the leverage formula for 2018.[9] It indicates a ROE of 10.19% for

an average water or wastewater utility.

Q. Has the NH PUC addressed the issue of size premiums in previous orders?

A. Yes, In a Pennichuck Water Company case, the NH PUC rejected the inclusion of

a small company risk premium as recommended by the Company's cost of capital

witness Mr. Moul. The Commission noted the following:

> Mr. Moul argues that because of its smaller size and somewhat higher
> financial leverage when compared to either the Sample or Barometer
> Group, Pennichuck is a riskier company and that the DCF results
> should therefore be adjusted by .5. Smallness, according to Mr. Moul,
> results generally in liquidity problems and difficulty in dealing with
> rapid changes in capitalization. We are not convinced that smallness
> per se makes a company more risky. Moreover, our review of the
> record reveals that Pennichuck has no such liquidity or capitalization
> problems. Nor do we feel that Pennichuck's slightly higher financial

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[9] Florida Public Service Commission, In re: Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f), F.S., DOCKET NO. 20180006-WS, ORDER NO. PSC-2018-0327-PAA-WS, ISSUED: June 26, 2018.

25

1   leverage position, all other things being equal, results in any significant
2   risk.

3

4

5 **Q. Ms. Ahern also provides ROE results which she claims to use the MA and CT**

6 **generic ROE approaches. Please initially discuss MA.**

7 A. In MA, the DPU instituted 220 CMR § 31, in D.P.U. 85-115 in 1985. This

8   provided for an optional formula for water companies to utilize in developing a

9   requested ROE. The formula rate, for companies with common equity ratios

10   between 25% and 75%, was equal to the sum of (1) the twelve-month average

11   yield on 30-year Treasury bonds, plus (2) three percentage points. The regulations

12   also provide for a minimum ROE of 11.5% and a maximum ROE of 14.5%, but

13   do allow the Department to deviate from the band if the record supports such a

14   finding.

15 **Q. What would the formula rate be if calculated per 220 C.M.R. § § 31 with the**

16 **current market rates?**

17 A. The formula rate is equal to the sum of (1) the twelve-month average yield on 30-

18   year Treasury bonds, plus (2) three percentage points. The twelve-month average

19   yield on 30-year Treasury bonds is currently 3.10%. Therefore, the formula ROE

20   for Aquarion is 3.10% + 3.0% = 6.10%.

21 **Q. You noted that the Department can deviate from the formula rate, with the**

22 **11.50% minimum. Has that occurred?**

23 A. Yes. As shown in Exhibit JRW-7, the Department made such a deviation in three

24   cases to reflect the lower ROEs indicated by capital market conditions and the

26

1   formula rate. In each case, a ROE of 10.5% was awarded. These are well below

2   the ROEs reported by Ms. Ahern using her version of the MA ROE formula which

3   range from 11.81% to 16.09%. This is due to her use of projected long-term

4   Treasury yields and, most significantly, her grossly overstated small company risk

5   premiums.

6

7 **Q. Please turn to her ROEs reported using the CT ROE formula.**

8 A. In CT, to streamline the ratemaking process for water utilities, the Connecticut

9   Public Utilities Regulatory Authority ("CT PURA") established a generic formula

10   with which to estimate the allowed ROE for the small water and wastewater

11   utilities.[10] PURA adopted a settlement between the parties which agreed that the

12   most recently allowed average ROEs of Aquarion Water Company

13   ("Aquarion") and the Connecticut Water Company "(Connecticut Water") be used

14   as the base ROE for the small water utilities. The Order establishing the

15   process is attached as Appendix D. To this average ROE, there would be

16   a "fixed adder" of 0 50% (50 basis points) plus, a "Variable Performance Adder"

17   of up to 0.50% (50 basis points). No regard was given to any difference in

18   financial risk between the small water companies and the average financial

19   risk of Aquarion and Connecticut Water. As such, any change in the authorized

20   ROE for the small water companies is dependent upon rate filings by Aquarion

21   and Connecticut Water.

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[10] Connecticut Public Utilities Regulatory Authority, Decision No. 13-01-29: Investigation for Streamlining the Ratemaking Process for Small Water Companies, October 23, 2013.

1

2   **Q. What are the current ROEs for Aquarion and Connecticut Water?**

3   A. In Aquarion's last rate case, the company was awarded a ROE of 9.13% in

4   September 2013. Connecticut Water's last rate case was in July of 2010 and the

5   company received a ROE of 9.75%. Therefore, the base ROE is 9.44%

6   ((9.75%+9.13%)/2)). Small utilities receive a fixed adder of 0.50% and are

7   eligible for a variable adder of another 0.50%. Therefore, the maximum ROE for

8   a small utility is 10.44%. In the most recent water case in CT, Heritage Village

9   Water Company received a ROE of 10.19%.[11]

10

11 **Q. What ROEs does Ms. Ahern report using the CT formula.**

12 A. Using Ms. Ahern's version of the CT ROE formula, she **reports** ROEs for the

13   Companies ranging from 11.90% to 14.16%. These are well above the ROEs

14   available to water utilities in CT using the formula rate. This is because in her

15   version of the CT formula, she includes her grossly overstated small company risk

16   premiums.

17

18 **Q. What is a just and reasonable ROE for AWC and HAWC?**

19 A. Based on current markets and the generic return formula, a 9.01% ROE is just and

20   reasonable. Ms. Ahern's DCF analysis produce a 8.73% ROE (see Table 4),

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[11] Docket No. 14-11-07, Decision dated April 29, 2015, Heritage Village Water Company Docket No. 14-11-07, Decision dated April 29, 2015, Heritage Village Water Company.

1   absent extraneous adjustments. Ms. Ahern's adjustments are not supported by

2   record and goes against Commission precedence.

3

4   **Q. What there any rate adjustments the Commission might consider related**

5   **ROEs for small water companies?**

6   A. One adjustment that may have merit is to adjust rates for the avoided cost of rate case

7   expense due to use of a generic ROE formula. Utility rate case expenses related to

8   ROE can easily exceed $100,000 in a litigated proceeding and are typically recovered

9   through a rate case expense surcharge on customers. For small water utilities which

10   have a limited customer base, the bill impact can be significant. To the extent use of

11   a generic ROE formula reduces or eliminates rate case expenses, an equitable sharing

12   between shareholders and rate payers of that savings is worth considering.

13

14   **Q. Does that conclude your testimony.**

15   A. Yes.